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PATENT AND TRADEMARK OFFICE NOTICES

Express Abandonments

Experience over the past several months has indicated the need to clarify and re-emphasize existing practice regarding express abandonments submitted under 37 CFR 1.138.

Since 1966, when Rule 138 was revised, it is no longer required that the applicant and the assignee of record, if any, sign an express abandonment. The revised rule indicates that a patent application may be expressly abandoned by an attorney or agent of record. Therefore, prior to signing a declaration of express abandonment of a patent application, it is imperative that the attorney or agent of record exercise every precaution in ascertaining that the abandonment of the application is in accordance with the desires and best interests of the applicant. Moreover, special care should be taken to insure that the appropriate application from a group of related applications is correctly identified in the letter of abandonment.

A declaration of abandonment signed by the applicant or his attorney or agent of record becomes effective when an appropriate official of the Office takes action in recognition of the declaration. When so recognized, the date of abandonment may be the date of recognition or a different date if so specified in the declaration itself. For example, where a continuing application is filed with a request to abandon the prior application as of the filing date accorded the continuing application, the date of the abandonment of the prior application will be in accordance with the request once it is recognized.

Action in recognition of an express abandonment may take the form of an acknowledgement by the examiner or the Patent Issue Division of the receipt of the express abandonment, indicating that it is in compliance with 37 CFR 1.138 (see Section 711.01 MPEP). Alternatively, recognition may be no more than the transfer of drawings to a new application pursuant to instructions which include a request to abandon the application containing the drawings to be transferred (see 37 CFR 1.60 and Section 608.02(1) MPEP).

It is suggested that divisional applications being submitted under 37 CFR 1.60 be reviewed before filing to ascertain whether the prior application should be abandoned. Recent experience reveals that some divisional applications are being filed under 37 CFR 1.60 with requests to transfer the drawings from, and abandon, the prior application. Following the recognition of the abandonment, the attorney or agent signing the request informs the Office that the request was made by mistake for any one of a number of reasons. Care should be exercised in situations such as these as the Office looks on express abandonments as acts of deliberation, intentionally performed.

Another common situation involves the submission of an express abandonment following the allowance of an application. The express abandonment may not be recognized unless it is actually received by appropriate officials in time to act before the date of issue. In those cases, once a patent number and issue date have been assigned to the application, it is considered too late to act on the express abandonment unless a petition under Rule 313(b) or Rule 183 is granted (see Section 711.01 of MPEP).

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Apr. 7, 1975.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,824,011, B. E. Williams, METHOD OF CLOTHING MEAT, **filed** June 28, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1482–LTL, *Bemis Company, Inc. and Beverly E. Williams* v. *Chromalloy American Corporation.* Filed stipulation for dismissal of complaint and defendant's counterclaim without prejudice, entered Dec. 3, 1974.

2,936,866, D. E. Brown, MOBILE WHOLE-TREE WOOD-CHIPPER UNIT; **3,661,333,** L. N. Smith, TREE DESTROYER, **filed** Dec. 11, 1974, D.C., N.D. Ala. (Birmingham), Doc. 74–P–1307–S, *Morbark Industries, Inc.* v. *Bush Manufacturing Company, Inc.*

3,144,149, Dempster, Herpich and Harvey, TRANSPORTING EQUIPMENT FOR CONTAINERS; **3,228,622,** French and Toppins, STATIONARY PACKER ASSEMBLIES, **filed** July 25, 1974, U.S. Court of Claims, Doc. 267–74, *Carrier Corporation* v. *The United States.*

3,163,436, R. G. Chesley, SPIRAL MEAT SLICER, **filed** May 4, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1005 AAH, *Mary Jane Schmidt, as trustee of the revocable living trust of Harry J. Hoenselaar* v. *C. Vincent Zazzare, individually and doing business as Mission Honey Hams et al.* Consent judgment, patent is valid; defendants are permanently enjoined from infringing upon said patent. However, defendant may continue using the "spiral meat slicer" until June 10, 1975. The cause of action for patent infringement against defendants is hereby dismissed with prejudice, nunc pro tunc, as of Dec. 10, 1974.

3,229,622. (See 3,144,149.)

3,289,168, Davey and Saltzberg, AUTOMATIC ADJUSTMENT OF TRANSVERSAL FILTER SO THAT RECEIVED PULSE IS CORRECTED TO CONFORM WITH STANDARDIZED SHAPE; **3,292,110,** Becker, Lucky and Port, TRANSVERSAL EQUALIZER FOR DIGITAL TRANSMISSION SYSTEMS WHEREIN POLARITY OF TIME-SPACED PORTIONS OF OUTPUT SIGNAL CONTROLS CORRESPONDING MULTIPLIER SETTING; **3,368,168,** R. W. Lucky, ADAPTIVE EQUALIZER FOR DIGITAL TRANSMISSION SYSTEMS HAVING MEANS TO CORRELATE PRESENT ERROR COMPONENT WITH PAST, PRESENT AND FUTURE RECEIVED DATA BITS; **3,375,473,** same, AUTOMATIC EQUALIZER FOR ANALOG CHANNELS HAVING MEANS FOR COMPARING TWO TEST PULSES, ONE PULSE TRAVERSING THE TRANSMISSION CHANNEL AND EQUALIZER; **3,414,819,** same, DIGITAL ADAPTIVE EQUALIZER SYSTEM; **3,515,805,** Fracassi and Savage, DATA SCRAMBLER; **3,573,668,** Bender, Hirsch and Rudin, Jr., SYSTEM FOR ADAPTIVELY EQUALIZING A DATA SIGNAL HAVING A CLOSED DATA EYE; **3,749,843,** Roycraft and Sheehan, DIGITAL AMPLITUDE MODULATOR; **Re. 27,047,** R. W. Lucky, DIGITAL ADAPTIVE EQUALIZER SYSTEM; **Re. 27,250,** same, ADAPTIVE EQUALIZER FOR DIGITAL TRANSMISSION SYSTEMS HAVING MEANS TO CORRELATE PRESENT ERROR COMPONENT WITH PAST, PRESENT AND FUTURE RECEIVED DATA BITS, **filed** Dec. 10, 1975, D.C., S.D. Fla. (Miami), Doc. 74–1601–C–Ca, *Western Electric Co., Inc.* v. *Milgo Electronic Corp. and International Communications Corp.*

3,292,110. (See 3,289,108.)

3,304,565, H. Fuhring, CLEANING INSTALLATIONS FOR VEHICLES, **filed** Jan. 7, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c64, *The Allen Group, Inc.* v. *Nu-Starr, Inc.*

3,339,474, Lamp, Jr., Anderson and Hagenauer, APPARATUS FOR TRANSPORTING PLANT AND ANIMAL MATERIALS; **3,453,119,** J. N. McGill, STORAGE OF FRESH LEAFY VEGETABLES; **3,534,577,** R. Tempero, PORTING APPARATUS FOR A REFRIGERATED STORAGE CHAMBER, **filed** Jan. 7, 1975, D.C., C.D. Calif. (Los Angeles), Doc. 75–37 WPG, *Transfresh Corporation* v. *Atcon Corporation.*

3,363,422, L. A. Turzillo, METHOD AND APPARATUS FOR ANCHORING A TIE-DOWN BAR IN AN EARTH SITUS; **3,464,216,** same, METHOD AND MEANS FOR FORMING CAST-IN-PLACE REINFORCED CONCRETE PILE, **filed** Jan. 8, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–0045 WHO, *Lee A. Turzillo and Lee Turzillo Contracting Company* v. *P & Z Co., Inc.*

3,363,168. (See 3,289,108.)

3,375,473. (See 3,289,108.)

3,389,814, J. H. Lemelson, LOAD RESPONSIVE CONTROL MEANS FOR A MATERIAL HANDLING APPARATUS; **3,402,835,** S. Saul, CONTROL SYSTEM FOR A ZONED AUTOMATIC WAREHOUSE ARRANGEMENT; **3,486,640,** J. H. Lemelson, MULTI-SPEED CONTROL SYSTEM FOR A LOAD CARRIER IN A WAREHOUSE SYSTEM, **filed** July 30, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2157, *The Triax Company* v. *Conco, Inc.*

3,402,835. (See 3,389,814.)

3,411,501, S. Greenberg, THERMOPLASTIC MOUTHPIECE AND METHOD OF MAKING SAME, **filed** Apr. 27, 1972, D.C., E.D. Pa. (Philadelphia), Doc. 72–832, *Samuel Greenberg and Right-Gard Corporation* v. *Croydon Plastics Co., Inc. Matthew Dobrowolski and Safe-Play Manufacturing Co., Inc.* Order, Claim 9 of said patent is declared invalid for obviousness under 35 U.S.C. 103. Judgment is entered for the defendants on all counts of the complaint with the exception of that portion which seeks injunctive relief and damages for the misappropriation and misuse of the plaintiffs' secret method of flavoring mouthguards made of Alathon 3180 thermoplastic, June 27, 1974.

3,414,819. (See 3,289,108.)

3,416,507, A. J. Little, ETHER INJECTION ASSEMBLY FOR INTERNAL COMBUSTION ENGINE, **filed** Dec. 15, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c3174, *Stewart Warner Corporation* v. *Colt Industries Operating Corp.* Defendant's counterclaims are dismissed with prejudice and without costs, Jan. 2, 1975.

3,428,333, V. E. Nelson, TOW-TYPE SECTIONAL AUTOMATICALLY FOLDABLE HARROW CART, **filed** Apr. 26, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1158, *Gladys Nelson Howen* v. *Clark Equipment Company.* Motion of defendant to transfer is granted and cause ordered transferred to USDC, District of Minnesota, Sixth Division, Jan. 3, 1975.

3,453,119. (See 3,339,474.)

3,464,216. (See 3,363,422.)

3,486,640. (See 3,389,814.)

3,515,805. (See 3,289,108.)

3,530,887, P. E. Stratman, QUICK DISCONNECT COUPLING; **3,646,964,** same, COUPLING DEVICE FOR PERMITTING COUPLING UNDER TRAPPED PRESSURE; **Re. 27,635,** L. A. Kopaska, COUPLING DEVICE, **filed** Apr. 5, 1974, D.C., W.D. Pa. (Pittsburgh), Doc. C.A. 74–0026, *Parker-Hannifin Corporation* v. *Snap-Tite, Inc.* Case dismissed, Dec. 27, 1974.

3,545,154, Bobzin and Sawyer, SURFACE PANEL ASSEMBLY WITH RIGID STRIPS TO CONCEAL FASTENERS, **filed** Jan. 7, 1975, D.C., N.D. Ind. (South Bend), Doc. S75–4, *The Celotex Corporation* v. *Bendix Homes Systems, Inc.*

3,564,495, Gould and Gould, PEDESTRIAN TRAFFIC CONTROL SIGNAL UNIT, **filed** July 19, 1974, D.C., N.D. Ohio (Cleveland), Doc. C–74–644, *Indicator Controls Corporation* v. *Winko-Matic Signal Co.* Same, **filed** July 17, 1974, D.C. C.D. Calif. (Los Angeles), Doc. 74–2033–DWW, *Indicator Controls Corporation* v. *Sesco, Inc.* Filed consent judgment and order thereon enjoining defendant from infringing plaitiff's U.S. patent, entered Dec. 27, 1974.

3,573,668. (See 3,289,108.)

3,601,202, H. Steffe, RIDGE LEVELER AND STALK COVERER, **filed** Feb. 12, 1973, D.C., N.D. Iowa (Sioux City), Doc. 73–C–3014–W, *Harlan E. Steffe,* v. *Lundell Manufacturing Company, Inc.* Stipulation enjoining defendant from infringing plaintiff's patent. Plaintiff's complaint shall stand dismissed with prejudice in its entirety. Defendant's Counterclaim shall stand dismissed without prejudice, Dec. 11, 1974.

3,646,964. (See 3,530,887.)

3,654,579, Kurtz, Mallon and Gravel, ELECTROMECHANICAL TRANSDUCERS AND HOUSINGS; **3,706,958,** Kicks and Louth, PARTICLE IMPACT PROTECTORS AND ASSEMBLIES THEREOF FOR PRESSURE SENSING TRANSDUCERS HAVING DIAPHRAGMS; **3,753,196,** Kurtz, Gravel and Mallon, Jr., TRANSDUCERS EMPLOYING INTEGRAL PROTECTIVE COATINGS AND SUPPORTS, **filed** Nov. 26, 1974, D.C.N.J. (Newark), Doc. 74–1847, *Kulite Semiconductor Products, Inc.* v. *Entran Devices, Inc.* Order entering default of defendants for failure to appear; and for permanent injunction, Jan. 15, 1975.

3,661,333. (See 2,936,006.)

3,689,123, L. C. Barbieri, TRACK LAYING ATTACHMENT FOR A VEHICLE, **filed** Jan. 15, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–99 AJZ, *Louis Barbieri* v. *Harold Firstenberg.*

3,690,231, L. Storch, PHOTOCOMPOSITION ERROR CORRECTION SYSTEM, **filed** Jan. 8, 1975, D.C., N.D. Ga. (Atlanta), Doc. C75–38A, *Leonard Storch* v. *Automix Keyboards, Inc.*

3,706,953. (See 3,654,579.)

3,749,843. (See 3,289,108.)

3,753,196. (See 3,654,579.)

3,770,550, M. D. Levitan, PACKET-TYPE LAMINATING MACHINE, **filed** Dec. 31, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3792, *Thermal Laminating Corporation* v. *Laminex, Inc.*

3,774,785, A. J. Gasseling, KILN LAYING APPARATUS, **filed** Jan. 7, 1975, D.C., E.D. Wash. (Spokane), Doc. C75–1, *Allen J. Gasseling* v. *Ronald Riel and Alice Riel.*

3,807,229, W. E. Chiles, BYPASS FLOWMETER, **filed** Jan. 11, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c103, *Max Von Radics et al.* v. *Trippe Manufacturing Company.* Filed plaintiffs' voluntary dismissal of action under Rule 41(a)(1), FRCP, Jan. 10, 1975.

3,834,577. (See 3,339,474.)

3,843,293, W. H. Harville, MACHINE FOR MOLDING PLASTIC ARTICLE, **filed** Jan. 2, 1975, D.C., W.D. Tenn. (Memphis), Doc. C–75–1, *H & L Distributing Co.* v. *Strike King Lure Co.*

Re. 27,047. (See 3,289,108.)

Re. 27,250. (See 3,289,108.)

Re. 27,635. (See 3,530,887.)

D. 217,942, N. P. Angelakos, ASHTRAY, **filed** Nov. 28, 1972, D.C., S.D.N.Y., Doc. 72–5038, *Lancaster Colony Corporation* v. *Aldon Accessories Ltd. and Royal London Ltd.* Judgment of said District Court be and it hereby is affirmed with costs to be taxed against the appellants, entered Jan. 10, 1975.

D. 232,075, H. Cooper, BOTTLE, **filed** Oct. 10, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2928, *Dog n Suds, Inc.* v. *Howard Cooper.* Case closed pursuant to Rule 41(a)(1), Jan. 8, 1975.

Certificates of Correction for the Week of May 6, 1975

3,586,011	3,833,384	3,856,335	3,865,484
3,626,753	3,833,644	3,856,464	3,865,489
3,674,816	3,834,813	3,856,639	3,865,631
3,677,384	3,835,435	3,856,858	3,865,697
3,700,717	3,836,654	3,856,983	3,865,787
3,710,915	3,837,331	3,857,020	3,865,960
3,745,594	3,840,577	3,857,213	3,866,144
3,746,663	3,840,655	3,857,281	3,866,317
3,747,076	3,841,722	3,857,333	3,866,511
3,755,552	3,842,040	3,857,355	3,866,693
3,759,368	3,842,075	3,857,797	3,866,891
3,759,874	3,842,129	3,857,848	3,866,935
3,761,843	3,842,199	3,858,197	3,867,120
3,764,505	3,842,547	3,859,117	3,867,327
3,765,446	3,844,496	3,859,195	3,867,395
3,779,064	3,844,781	3,859,325	3,867,501
3,780,907	3,844,791	3,860,412	3,867,571
3,786,437	3,845,162	3,860,569	3,867,812
3,788,784	3,845,249	3,860,794	3,867,822
3,791,107	3,845,472	3,860,880	3,868,140
3,793,147	3,846,378	3,860,887	3,868,187
3,794,961	3,846,740	3,861,331	3,868,369
3,796,412	3,847,257	3,861,550	3,868,584
3,797,926	3,847,656	3,861,857	3,868,758
3,798,440	3,848,453	3,861,909	3,868,779
3,800,770	3,848,511	3,861,948	3,869,002
3,802,720	3,848,646	3,862,100	3,869,038
3,809,158	3,849,338	3,862,110	3,869,272
3,810,885	3,850,547	3,862,174	3,869,386
3,811,419	3,851,286	3,862,240	3,869,424
3,813,251	3,851,760	3,862,241	3,869,651
3,815,992	3,851,842	3,862,242	3,869,759
3,818,038	3,852,318	3,862,386	3,869,831
3,819,686	3,852,414	3,862,393	3,870,076
3,820,140	3,853,013	3,862,519	3,870,098
3,821,131	3,853,025	3,862,839	3,870,282
3,823,032	3,853,728	3,863,030	3,870,477
3,823,403	3,853,935	3,863,217	3,870,674
3,823,662	3,853,973	3,863,331	3,870,774
3,824,310	3,855,238	3,863,764	3,870,830
3,825,544	3,855,456	3,864,318	3,871,158
3,825,596	3,855,541	3,864,661	3,871,207
3,825,599	3,855,697	3,864,768	3,871,838
3,825,943	3,855,811	3,864,775	3,872,385
3,828,750	3,855,897	3,865,216	3,872,397
3,828,856	3,856,144	3,865,455	3,872,440

Corrected Disclaimer

3,704,155.—*Bror E. Anderson*, Arlington Heights, and *Margery L. Schick*, Mount Prospect, Ill. THERMOGRAPHIC STENCIL SHEET AND METHOD OF MAKING AN IMAGED STENCIL SHEET. Patent dated Nov. 28, 1972. Disclaimer filed Jan. 24, 1974, by the assignee, *Weber Marking Systems, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Sept. 26, 1989.

Disclaimers

3,416,169.—*Edward A. Smeloff*, Sacramento, *Trevor B. Davey*, Carmichael, and *Boris Kaufman*, Sacramento, Calif. DOUBLE-CAGE HEART VALVE WITH CONTOURED OVERSIZE ORIFICE. Patent dated Dec. 17, 1968. Disclaimer filed Sept. 3, 1974, by the assignee, *Sutter Hospitals Medical Research Foundation.*

Hereby enters this disclaimer to claims 7, 8 and 15 of said patent.

3,706,236.—*Joseph Pickles*, Birmingham, Mich. TAILGATE WINDOW REGULATOR. Patent dated Dec. 19, 1972. Disclaimer filed Nov. 11, 1974, by the assignee, *Ferro Manufacturing Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

Dedications

3,118,567.—*Meigs W. Newberry*, East Longmeadow, Mass. ARTICLE DISPENSING MECHANISM. Patent dated Jan. 21, 1964. Dedication filed Oct. 7, 1974, by the assignee, *The Vendo Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,125,245.—*Meigs W. Newberry*, East Longmeadow, Mass. ARTICLE DISPENSING MECHANISM. Patent dated Mar. 17, 1964. Dedication filed Oct. 7, 1974, by the assignee, *The Vendo Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,189,218.—*Francis A. Gasparini* and *John A. Gormley*, Springfield, Mass. DISPENSING APPARATUS. Patent dated June 15, 1965. Dedication filed Oct. 7, 1974, by the assignee, *The Vendo Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,240,386.—*Graham S. McCloy*, Columbus, Ohio. VENDING APPARATUS. Patent dated Mar. 15, 1966. Dedication filed Oct. 7, 1974, by the assignee, *The Vendo Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,278,079.—*Gilbert M. Guard*, Chicopee Falls, Mass. VENDING MACHINE INTERLOCK. Patent dated Oct. 11, 1966. Dedication filed Oct. 7, 1974, by the assignee, *The Vendo Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,334,786.—*Meigs W. Newberry*, East Longmeadow, Mass. VENDING MACHINE. Patent dated Aug. 8, 1967. Dedication filed Oct. 7, 1974, by the assignee, *The Vendo Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,341,069.—*Meigs W. Newberry*, East Longmeadow, Mass. DOUBLE ROW CAN VENDOR. Patent dated Sept. 12, 1967. Dedication filed Oct. 7, 1974, by the assignee *The Vendo Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,406,776, L. Henry, ACOUSTIC METHOD AND APPARATUS FOR EXAMINING FORMATIONS ADJACENT THE WALLS OF BOREHOLES, Interference No. 96,981, decided Jan. 9, 1975, claims 7 and 17–19.

Patent No. 3,423,242, W. F. Meyers and J. W. Simmons, ELECTRIC CURRENT-PRODUCING CELL WITH ANHYDROUS ORGANIC LIQUID ELECTROLYTE, Interference No. 96,883, decided July 9, 1971, claim 17.

Patent No. 3,499,445, J. O. Reed, ANIMAL HUSBANDRY, Interference No. 97,754, decided Feb. 8, 1974, claims 1, 2 and 3.

Patent No. 3,509,305, R. B. Bertolasi, RANDOM GAP PULSING SYSTEM FOR EDM, Interference No. 97,991, decided Oct. 8, 1974, claims 1–10.

Patent No. 3,522,069, J. C. Checko and H. Umansky, METHOD FOR THE PREPARATION AND APPLICATION OF FOAMED MAGNESIA CEMENTS, Interference No. 97,774, decided Jan. 14, 1975, claims 1–7.

Patent No. 3,530,443, H. S. Crafts, W. B. Sander, J. B. Angell, MOS GATED RESISTOR MEMORY CELL, Interference No. 98,329, decided Dec. 18, 1974, claims 1, 2, 5, 6, 9, 14, 16 and 26–28.

Patent No. 3,547,996. M. W. Bullock, D1 2-{2-[(β-HYDROXYPHENETHYL)AMINO]ETHYL} - 2 - THIOPSEUDOUREA AND HYDROCHLORIDE SALT THEREOF, Interference No. 98,765, decided Jan. 24, 1975, claim 1.

Patent No. 3,595,477, G. Wollin and D. B. Ericson, FOG DISPERSING METHOD AND COMPOSITIONS, Interference No. 98,107, decided Oct. 17, 1974, claims 1, 5, 9 and 11.

Patent No. 3,651,349, D. Kahng and E. H. Nicollian, MONOLITHIC SEMICONDUCTOR APPARATUS ADAPTED FOR SEQUENTIAL CHARGE TRANSFER, Interference No. 98,199, decided Sept. 26, 1974, claims 5–8.

Patent No. 3,653,747, H. W. Kogelnik, FOCUSING DEVICE FOR COLOR TELEVISION CAMERAS, Interference No. 98,418, decided Jan. 17, 1975, claims 1 and 3.

Patent No. 3,691,476, I. Hayashi, DOUBLE HETEROSTRUCTURE LASER DIODES, Interference No. 98,390, decided Dec. 6, 1974, claim 7.

Patent No. 3,699,873, A. H. Irvin, AIR FLOW CONTROL APPARATUS, Interference No. 98,763, decided Jan. 24, 1975, claim 1.

Patent No. 3,715,600, J. C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of J. M. Weingart and R. K. Yasui, STACKED SOLAR CELL ARRAYS, Interference No. 98,539, decided Dec. 16, 1974, claims 1, 2, 4, 6 and 7.

Patent No. 3,727,684, B. D. Terral and P. Hewitt, DUPLEX MANDREL FOR A CROSSOVER SYSTEM, Interference No. 98,744, decided Jan. 24, 1975, claims 1 and 2.

Patent No. 3,744,228, E. C. Lundahl, COMPACTING SYSTEM FOR STACKING BULK HAY, Interference No. 98,673, decided Jan. 8, 1975, claims 13 and 16.

Patent No. 3,780,212, W. E. Glenn, Jr., COLOR FILTER AND SINGLE TUBE COLOR TELEVISION CAMERA SYSTEM UTILIZING SAME, Interference No. 98,746, decided Jan. 24, 1975, claims 1–5, 7, 9–12, 14, 16 and 17.

Patent No. 3,800,225, D. J. Meares, DIFFERENTIAL PULSE-CODE MODULATION, Interference No. 98,741, decided Jan. 30, 1975, claims 1, 2, 4, 5 and 10–13.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 12, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-3-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-15-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	6-11-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-27-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-7-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	9-25-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-15-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-12-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-18-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-3-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-23-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-12-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	8-6-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-31-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-5-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-23-74

Expiration of patents: The patents within the range of numbers indicated below expire during May 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,832,959, to 2,836,825 inclusive
Plant Patents..... Numbers 1,698, to 1,713 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MAY 6, 1975

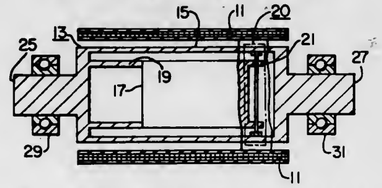
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T934,001
SUPERCONDUCTIVE DYNAMOELECTRIC MACHINE WITH IMPROVED CRYOGENIC SUPPORT ARRANGEMENT

Donald C. Litz, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 17, 1973, Ser. No. 398,023
Int. Cl. H02k *9/00*
U.S. Cl. 310—52
1 Sheet Drawing. 18 Pages Specification

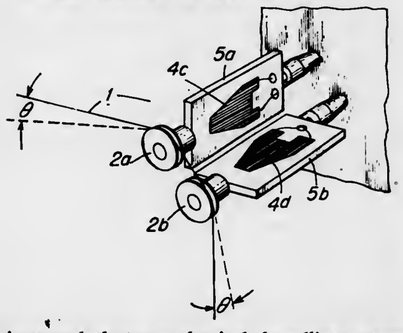


A superconducting dynamoelectric machine has a cryogenic portion of the rotor supported on the ambient temperature portion of the rotor by relatively long and thin spokes. The spokes extend between the ambient temperature portion and a flange located on a cryogenic temperature portion. The materials of the flange and spokes are selected so that contraction of the spokes along their length will be compensated for by contraction of the flange in that direction. Contraction in the transverse direction is compensated for by an appropriate displacement of the end of the spoke connected to the ambient temperature portion. Alignment and tension of the spoke is accurately achieved by an appropriate adjusting arrangement.

T934,002
TENSOMETER

George Cheatham Trail, Jr., 138 Doversbire Drive, Matthews, N.C. 28105

Continuation of application Ser. No. 292,569, Sept. 27, 1972. This application Sept. 24, 1973, Ser. No. 400,452
Int. Cl. G01l *5/10*
U.S. Cl. 73—144
1 Sheet Drawing. 10 Pages Specification



An improved electro-mechanical threadline-tensometer that gives an indicated tension that is largely independent of the error angle between the calibration position and the actual position of the tensometer in use, is provided by having at least one pair of conventional strip-cantilever tensometer heads mounted perpendicular to each other. In the most preferred embodiment the axes of heads are merely parallel rather than being in-line, and the calibration position is such that the calibrating load causes equal deflection in each of the strip cantilevers. The percentage error in indicated tension, caused by an error angle of θ in positioning the tensometer in actual use, is less than 0.5% for θ of $\pm 5°$; less than 1.5% for θ of $\pm 10°$; and less than 3.5% for θ of $\pm 15°$.

T934,003
PROCESS FOR PREPARING POWDERS

Harris N. Stephens, Jr., 921 Glade Mill Drive, Kingsport, Tenn. 37663, and Melvin D. Fink, 2309 Lakespur Drive, Johnson City, Tenn. 37601

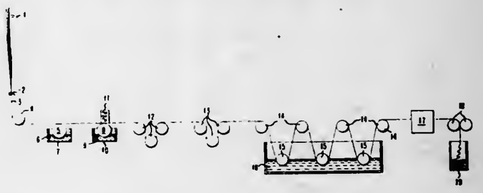
Filed Feb. 22, 1974, Ser. No. 444,939
Int. Cl. B22d *23/08*
U.S. Cl. 264—9
No Drawing. 8 Pages Specification

A process is disclosed for dyeing a bundle of dry-spun acrylonitrile polymer filaments after the filaments have been extruded through a spinneret from a solution of the polymer in a solvent therefor, and before the solvent remaining after the spinning step has been extracted. The extruded but unextracted filaments are passed over a rotating roll wetted with dye solution, preferably after moistening them by passing them over a rotating roll wetted with water, and are then drawn in air about 1.5× to 2.0×. Preferably, the extrusion, dyeing, and drawing steps are carried out continuously. Temperature conditions are not critical. After the filaments are dyed and drawn, they can be washed to remove spinning solvent and can be drawn further during the wash step.

T934,004
PROCESS

Allen Leroy Blancett, Camden, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 1, 1974, Ser. No. 447,255
Int. Cl. D06p *5/00*
U.S. Cl. 8—17
1 Sheet Drawing. 13 Pages Specification



A coordination catalyst system useful at high temperatures, e.g., 75° C., for making elastomeric high molecular weight copolymers of ethylene and at least one alpha-monoolefin of the formula $R—CH_2—CH=CH_2$ wherein

R can be hydrogen or an alkyl group of 1 to 15 carbon atoms, said catalyst system consisting essentially of (a) titanium tetrabromide, (b) a diorganoaluminum bromide containing 1 to 18 carbon atoms, e.g., disobutylaluminum bromide, (c) a diorganomagnesium compound represented by the formula R_1R_2Mg wherein R_1 and R_2 are alkyl, cycloalkyl, aralkyl, alkaryl, alkenyl, aryl substituted alkenyl, or cycloalkenyl, and R_1 and R_2 contain a total of 8 to 30 carbon atoms, e.g., *n*-butyl-*sec*-butylmagnesium, (d) as a modifier to raise the copolymer molecular weight, an aliphatic ether of the formula R'OR'' wherein R' and R'' represent alkyl groups each having 2 to 5 carbon atoms, and (e) an inert organic diluent, e.g., hexane, with the proviso that the ratios of magnesium atoms to titanium atoms and aluminum atoms to titanium atoms in the catalyst system are in accordance with the following relationships:

$$Al:Ti = A(2\text{–}30):1$$

$$\text{minimum } Mg:Ti = M_{min.} = 0.135A + \frac{0.15}{Q}$$

$$\text{maximum } Mg:Ti = M_{max.} = 0.826A + \frac{0.05}{Q}$$

where Q is the concentration of Ti (in millimoles/liter) in the reactor liquid phase and ranges from 0.05 to 0.2 and the moles of ether:atom of magnesium being in the range (0.5–1.5):1. The preferred catalyst has components in these proportions: Al:Mg:Ether:Ti=6:3:3:1. It is preferred that the catalyst be formed *in situ* by separate introduction of hydrocarbon solutions of each component; however, catalyst components can be premixed.

T934,005
COORDINATION CATALYST

James W. Crary, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 381,769, July 23, 1973. This application June 12, 1974, Ser. No. 478,788

Int. Cl. C08f *3/02*
U.S. Cl. 260—88.2

No Drawing. 16 Pages Specification

A process of producing fine particles of thermoplastic polymeric material is disclosed in which a thermoplastic polymeric material and an anionic surfactant are dispersed in a liquid which is not a solvent for said thermoplastic material at a temperature above the melting point of the polymeric material. The dispersion is agitated to form fine molten particles of said polymeric material in said dispersion, and is subsequently rapidly cooled to thereby solidify said particles of polymeric material and prevent agglomeration.

T934,006
COMPUTER CONTROL FOR REAL TIME DETERMINATION OF RESISTIVITY OF EPITAXIALLY GROWING CRYSTALS

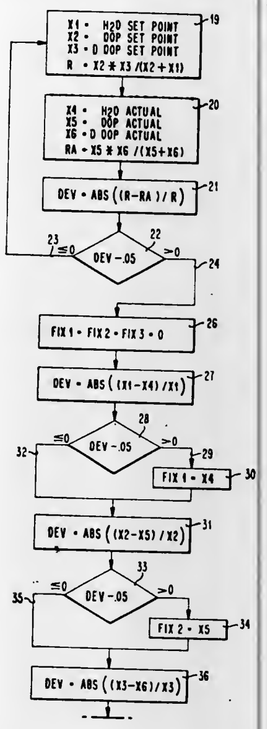
Ronald E. Chappelow, Wappingers Falls, Leo E. Elijah, Beacon, Virgil L. Elliott, Newburgh, Edward G. Grochowski, Wappingers Falls, Harry D. Harrison, Beacon, Homer A. Tice, Hyde Park, and Ralph S. York, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 97,235, Dec. 11, 1970. This application Nov. 19, 1973, Ser. No. 416,893

Int. Cl. G06f *15/46*
U.S. Cl. 235—151.1

4 Sheets Drawing. 29 Pages Specification

Method for the real-time control of the resistivity of an epitaxially growing crystal by a specially programmed process control computer. The diluent hydrogen, the arsenic dopant and the diluted arsenic dopant gas flow rates of a silicon tetrachloride-arsine reaction system are controlled simultaneously toward values determined in accordance with respective monotonic functions of a parameter S satisfying the relationships between the aforesaid three gas flow rates and the resistivity value of the epitaxial layer. The actual gas flow rates are monitored at predetermined intervals during epitaxial growth and



a computed resistivity function R thereof is compared to the same computed function based upon desired gas flow rates. Any deviation in excess of a preestablished amount causes the computer to increment the value of the parameter S until a new realizable combination of gas flow rate values is found which would restore the desired resistivity value of the growing epitaxial layer.

T934,007
METHOD AND APPARATUS FOR FORMING A DIAGONAL FLOW FILTER FROM CYLINDRICAL TOBACCO SMOKE FILTER RODS

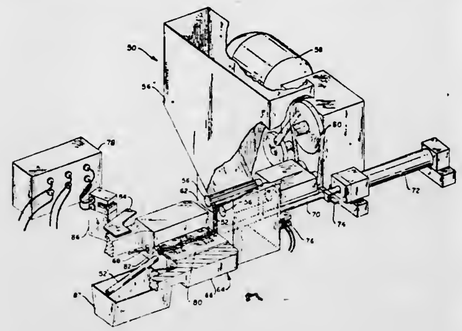
Robert C. Mumpower II, 2104 King Mill Pike, Bristol, Va. 24201

Continuation of application Ser. No. 234,434, Mar. 13, 1972. This application Nov. 28, 1973, Ser. No. 419,757

Int. Cl. B29j *5/00*
U.S. Cl. 264—109

5 Sheets Drawing. 21 Pages Specification

Method and apparatus for forming a diagonal flow filter from a cylindrical tobacco smoke filter rod, the apparatus including heated indenter blades or dies positioned within a mold for movement into engagement with the exterior surface of a filter rod to form in the filter rod one or more oppositely disposed first and second indentations of predetermined lengths and widths. The first and second indentations each extend longitudinally along the length of the filter rod and extend from the surface of the filter rod into the body of the filter rod to predetermined depths along such predetermined lengths. Each of the first indentations is offset with respect to each of the second indentations in a direction parallel to the longitudinal axis of the filter rod. One or more secondary, shorter indentations may be provided to alter to some degree the smoke flow by causing in the resulting filter some smoke to be diverted toward the shorter indentations. The indenter blades or dies remain in such engagement for a



predetermined length of time sufficient to mold the indentations in the filter rod.

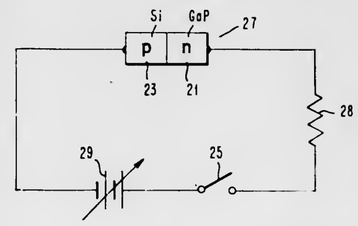
T934,008
HETEROJUNCTION SWITCHING AND MEMORY DEVICE

Harold J. Hovel, Putnam Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 242,145, Apr. 7, 1972, which is a continuation-in-part of application Ser. No. 46,943, June 17, 1970. This application Feb. 11, 1974, Ser. No. 441,712

Int. Cl. H03k *17/56, 17/70*
U.S. Cl. 357—16

2 Sheets Drawing. 38 Pages Specification



A bistable switching and non-volatile memory device which may be read either destructively or non-destructively is provided, as shown in FIG. 5, using a heterojunction consisting of a heavily doped, single crystal, semiconducting material in electrical and mechanical contact with a different, high resistivity, semiconducting material. The heterojunction exhibits stable high and low impedance states, as shown for example in FIG. 2, due to a high density of material imperfections, including deep energy "traps," both at the heterojunction interface and in the high resistivity grown region. The density of material imperfections including double or more acceptor-like traps may be of the order of $10^{-18}cm^{-3}$ or greater.

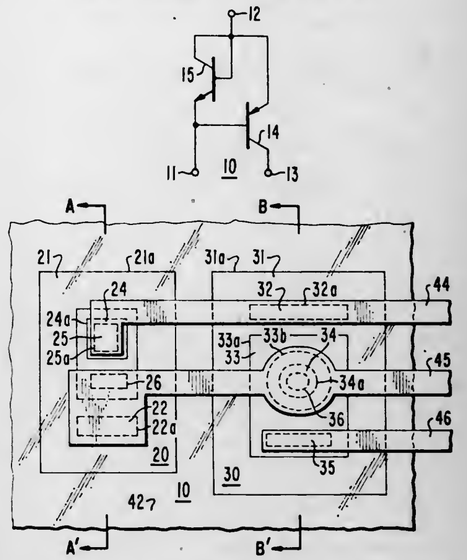
T934,009
COMPOSITE TRANSISTOR

Abel Ching Nam Sheng, Morris Plaines, N.J., assignor to RCA Corporation

Filed Apr. 11, 1974, Ser. No. 459,953

Int. Cl. H011 *19/00*
U.S. Cl. 357—44

2 Sheets Drawing. 10 Pages Specification



The composite transistor integrated within a common semiconductor body comprises a common-emitter amplifier connection of a lateral-structure transistor with its base-emitter junction paralleled by a diode-connection of a vertical-structure transistor. The magnitude of the "common-emitter forward current gain" of the composite transistor is the ratio of a saturation current of the lateral-structure transistor to the saturation current of the vertical structure transistor, which current gain is shown to be independent of temperature.

T934,010
LAMINATED ROLL

Michael John Maskornick, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

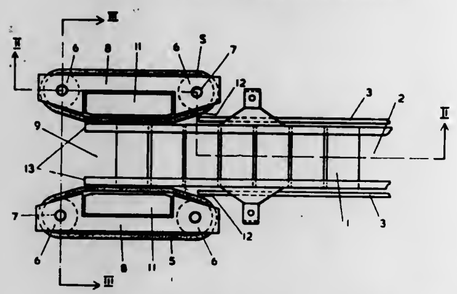
Continuation-in-part of abandoned application Ser. No. 307,952, Nov. 20, 1972. This application May 24, 1974, Ser. No. 473,224

Int. Cl. B32b *27/06*
U.S. Cl. 29—130

No Drawing. 17 Pages Specification

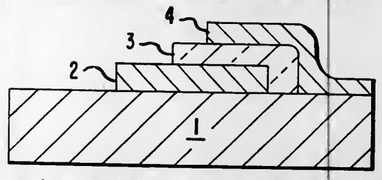
A very useful laminated roll which has as its essential components (A) a cylindrical metallic core, (B) a layer of adhesive adhering to and substantially surrounding said core and (C) a perfluorinated elastomer layer adhering to and substantially surrounding said adhesive layer, said perfluorinated elastomer being an elastomeric copolymer of tetrafluoroethylene, a perfluoroalkyl perfluorovinyl ether and optionally a suitable functionally substituted perfluoroalkyl perfluorovinyl ether. Rolls of this invention have beneficial utility as adhesive application rolls, textile finishing rolls, fuser rolls for office copying machines, and the like.

T934,011
PACKET SEALER
Peter Wray, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England
Filed June 24, 1974, Ser. No. 482,602
Int. Cl. B65b *51/18*
U.S. Cl. 53—39
2 Sheets Drawing. 21 Pages Specification



A method and apparatus are disclosed for sealing a protective or decorative wrapping material, such as a heat-sealable synthetic polymeric film, about a package, the method particularly adapted to seal the more resilient types of polymeric wrapping materials such as polyolefin or polyester films. According to the disclosed method a wrapped packet is conveyed past a member positioned to retain the folded wrapper in position on the packet while a movable surface is maintained between the wrapped packet and the retaining member. Next the surface is advanced, but only by engagement with the wrapped packet, relative to the retaining member in the direction of motion of and at substantially the same speed as that of the wrapped packet. Sealing is effected by supplying sufficient energy such as heat to the area of the wrapper in contact with the moving surface to seal the wrapper in that area of contact.

T934,012
SWITCH OF REDUCED THRESHOLD VOLTAGE
Stephen Charles Thayer, Lewistown, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of abandoned application Ser. No. 378,056, July 11, 1973. This application July 25, 1974, Ser. No. 491,670
Int. Cl. B32b *9/04*
U.S. Cl. 357—4
1 Sheet Drawing. 11 Pages Specification



Electronic and/or thermal switches, based upon VO_2, having reduced threshold voltage by virtue of using the thickness of the switch layer as the switch length, and/or having high current carrying capacity. Both discrete and thick-film switches are within the invention.

T934,013
POLYETHYLENE TEREPHTHALATE FILM-METAL LAMINATE
Carl John Heffelfinger, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of abandoned application Ser. No. 342,422, Mar. 19, 1973. This application July 31, 1974, Ser. No. 493,738
Int. Cl. B32b *15/08*
U.S. Cl. 428—458
No Drawing. 5 Pages Specification

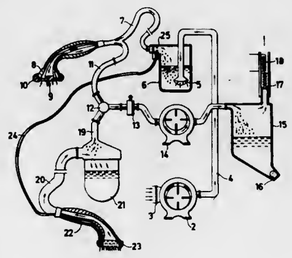
A laminated structure of a metal layer, e.g., copper, aluminum or silver, and a layer of unoriented, crystalline polyethylene terephthalate having an intrinsic viscosity of at least about 0.7 (preferably between 0.85 and 1) and a degree of crystallinity of at least about 20% (preferably 25 to 65%).

REISSUES

MAY 6, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

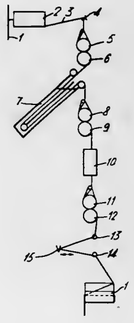
28,405
APPARATUS FOR WASHING PATIENTS HYGIENICALLY
Soren Sollerud, Norrkoping, Sweden, assignor to Svenska Utvecklingsaktiebolaget, Stockholm, Sweden
Original No. 3,574,239, dated Apr. 13, 1971, Ser. No. 786,988, Dec. 26, 1968. Application for reissue Nov. 9, 1972, Ser. No. 305,001
Claims priority, application Sweden, Jan. 12, 1968, 448/68
Int. Cl. A47k *7/00, 17/00*
U.S. Cl. 4—1 **20 Claims**



1. Apparatus for washing patients hygienically with minimum disturbance of the patient comprising a closed container for a washing liquid containing a small amount of a surface-active agent, means for compressing air, means for supplying compressed air from said compressor means to said closed container in an atomized state to form a cleansing foam of the washing liquid, at least one application nozzle having *at least one* outlet *port* [ports] and *at least one* suction *port* [ports], two flexible tubular elements, one of said tubular elements connecting the outlet ports of said at least one nozzle to said closed container for supplying foam under pressure to the outlet ports of said nozzle for application of cleansing foam to the patient's skin, means for creating [of] suction, a closed collecting container, said second tubular element connecting the suction ports of said at least one nozzle to the suction-creating means for withdrawing the cleansing foam from the skin and passing it to the closed collecting container where the foam disintegrates, means for withdrawing at a predetermined pressure the gases liberated in said closed collecting container and means for heat cleaning said withdrawn gases and means for withdrawing the liquid from said collecting container.

28,406
PROCESS FOR PRODUCING TEXTURED YARN
Michel Buzano, Villeurbanne, France, assignor to Rhone-Poulenc-Textile S.A., Paris, France
Original No. 3,772,747, dated Nov. 20, 1973, Ser. No. 84,131, Oct. 26, 1970, which is a division of Ser. No. 814,465, Mar. 17, 1969. Application for reissue Apr. 22, 1974, Ser. No. 463,138
Claims priority, application France, Mar. 18, 1968, 144,238
Int. Cl. D02j *1/22*
U.S. Cl. 28—72.17 **6 Claims**

1. A process for the production of continuous filament polyester fancy yarns having improved softness and dyeing properties, comprising subjecting an initially unstretched continuous filament polyester yarn first to partial stretching by a factor of 2.5–3.5 x in a bath of a crack-producing agent and then to a supplementary



stretch in the absence of such agent by a continuously varying factor, and before or after the supplementary stretch giving the yarn a relaxing heat treatment while allowing it to shrink.

28,407
APPARATUS FOR CULTIVATING PLANTS
Jorg Kuhn, Alpsteinstrasse 56, CH–9100, Herisau, Switzerland, and Elmar Sohm, am Wiesengrund 7, A6923 Lauterach, Austria
Original No. 3,717,953, dated Feb. 27, 1973, Ser. No. 197,432, Nov. 10, 1971, which is a continuation-in-part of abandoned application Ser. No. 4,918, Jan. 22, 1970. Application for reissue Feb. 25, 1974, Ser. No. 445,698
Int. Cl. A01g *1/04, 9/24*
U.S. Cl. 47—1.1 **24 Claims**

22. In a method of cultivating plants disposed in rows of stacked receptacles containing said plants, said receptacles being stored in an elongated enclosure of channel-shaped configuration having a pair of generally parallel, opposed side walls, the steps of:

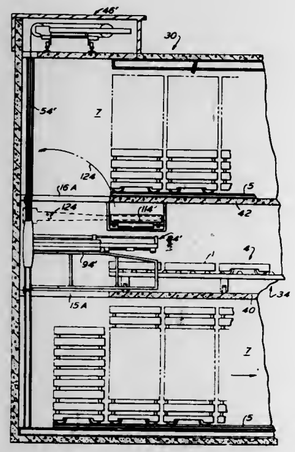
spacing said stacked receptacles top-to-bottom to define a plurality of first air channels each having a first height,

spacing said stacked receptacles with respect to at least one of said side walls to define a second air channel communicating with each of said first channels, said second air channel having a width less than the combined height of said first channels,

flowing conditioned air through said second channel at at a first velocity to each of said first channels for flow therethrough at a second velocity lower than said first velocity,

exhausting air from each of said first channels into a third air channel which is parallel to said second channel after passage over a single receptacle, there-

by to enhance the effectiveness of the air flow across said plants in removing unwanted gases, and



withdrawing air from said third channel in a direction substantially parallel to said one side wall.

28,408

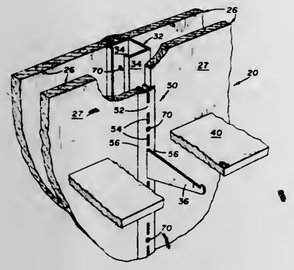
BRACKET STANDARD AND PARTITION MEMBER RETAINER

Nels Nelston, Des Plaines, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Original No. 3,685,234, dated Aug. 22, 1972, Ser. No. 87,035, Nov. 5, 1970. Application for reissue May 11, 1973, Ser. No. 359,366

Int. Cl. A47g *29/02;* **E04b** *2/72*

U.S. Cl. 52—36 **6 Claims**



8. A wall assembly comprising

upper and lower runners disposed in spaced-apart relationship from one another generally in the same plane,

a plurality of studs extending between said runners with respective ends thereof engaging said runners, said studs having surfaces for supporting partition members,

a plurality of partition members mounted in adjoining edge-to-edge relationship on the supporting surfaces of said studs, the adjacent edge surfaces of adjacent partition members being spaced apart from each other so as to define, in combination with one of said supporting surfaces of one of said studs, an elongate slot,

a plurality of bracket standards, each of said bracket standards contacting two adjacent edges of said partition members,

attachment means securing each of said bracket standards to one of said studs whereby said bracket standards hold said partition members in contact with said supporting surface of said studs, and

a plurality of shelf brackets removably engaging said standards by extension of a portion of said shelf bracket through said standard and into said elongate slot,

wherein said standard includes two legs extending therefrom between said adjacent edge surfaces toward said stud surface, said legs being of a length no greater than that necessary to permit said bracket standard to contact said two adjacent edges of said partition members, whereby said legs separate said adjacent edge surfaces by a distance sufficient to form said elongate slot, and

integral means engaging and restraining the face surfaces of adjoining partition members.

28,409

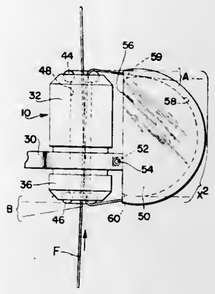
TWISTER AND METHOD OF TWISTING

Richmond T. Leeson, East Greenwich, and Hans H. Richter, Warwick, R.I., by Leesona Corporation, Warwick, R.I., assignee

Original No. 3,668,855, dated June 13, 1972, Ser. No. 48,167, June 22, 1970. Application for reissue May 4, 1973, Ser. No. 357,244

Int. Cl. D02g *1/02, 1/04*

U.S. Cl. 57—77.4 **27 Claims**



1. A method of processing a strand capable of receiving twist comprising the steps of: providing a rotatable member having spaced apart *ring-like* frictional surfaces thereon, directing said strand in a first path to engage *a first* of said surfaces, directing said strand in a second path to engage a second of said surfaces, rotating said member to thus drive said surfaces and insert twist into said strand, and tensioning said strand during twisting thereof.

28,410

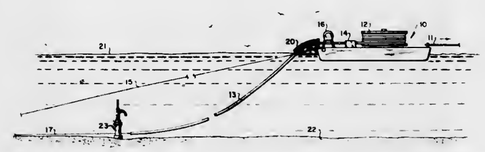
TENSION PIPE LAYING METHOD

Harold D. Cox, Metairie, La., Dillard S. Hammett, Houston, Tex., J. Ronald Dozier, Tulsa, Okla., and Howard L. Shatto, Jr., La Jolla, Calif., assignors to Shell Oil Company, New York, N.Y.

Original No. 3,331,212, dated July 18, 1967, Ser. No. 353,979, Mar. 23, 1964. Application for reissue May 28, 1968, Ser. No. 741,836

Int. Cl. B63b *35/04;* **F16l** *1/00*

U.S. Cl. 61—72.3 **13 Claims**



1. A method of laying a pipeline on the floor of a body of water from a vessel floating on said body, said method comprising:

(a) anchoring one end of the pipeline to the floor of the body of water;

(b) moving the vessel in the direction it is desired to lay the pipeline and paying out the end of the pipeline anchored to the floor of said body of water;

(c) controlling the paying out of the pipeline and movement of the vessel to hold the pipeline under preselected tension sufficient to maintain the bending and axial stresses applied thereto within a predetermined range;

(d) terminating the pipeline on the vessel at the length thereof desired to be laid, thus forming another end;

(e) securing a drawline between said other end of the pipeline and the vessel; and,

(f) paying out the drawline to lower said other end of the pipeline to the floor of the body of water, the paying out of the drawline being controlled to hold the pipeline under preselected tension sufficient to maintain the bending and axial stresses applied thereto within a predetermined range.

28,411

METHOD AND DEVICE FOR SUPPORTING A CONVEYED TANK AGAINST ROLL AND PITCH

Jean H. Alleaume, Saint Cloud, France, assignor to Technigaz, Paris, France

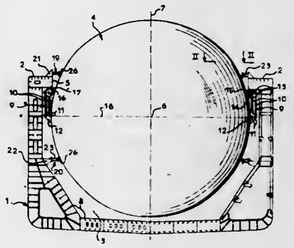
Original No. 3,712,257, dated Jan. 23, 1973, Ser. No. 104,239, Jan. 6, 1971. Application for reissue June 27, 1973, Ser. No. 374,036

Claims priority, application France, Apr. 30, 1970, 7016004

Int. Cl. B63b *25/08*

U.S. Cl. 114—74 A **13 Claims**

1. An auxiliary device for supporting a tank against roll and pitch and associated with a system of main movable and substantially vertical suspension supports, said device comprising at least one set of stationary bearing members substantially adjacent to one another and distributed along the periphery of said tank at least approximately in one and the same relative horizontal plane, each bearing member comprising a substantially triangular bracket support comprising in particular two overhanging rods, a stationary external structure spaced from said tank, [respectively at two, at least horizontally spaced points of the tank located respectively on either side of the normal relative vertical plane passing through said member], one of the ends of said rods being connected to said structure, said rods *projecting respectively from two at least horizontally spaced points of said structure located respectively on either side of the normal relative vertical plane passing through said member and said rods* converging towards said plane, a guiding element interconnecting the other ends of said rods in said plane, a [force-] *forced* guiding bearing solid with said tank with which said element cooperates, each guiding bearing having a guiding path forming a slideway constituted by a rectilinear elongated recess forming a substantially horizontal straight slot with parallel opposite edges, the longitudinal plane of symmetry of said slot being in said normal relative vertical plane, said guiding element constantly engaging said slideway with bilateral contact while moving in said normal relative vertical plane.



28,412

BRAKE ADJUSTERS

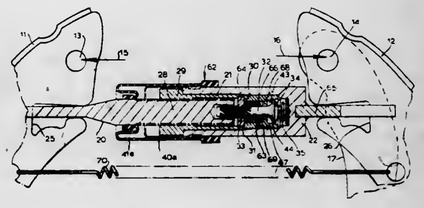
Glyn Phillip Reginald Farr, Leek Wootton, England, assignor to Girling Limited, Birmingham, England

Original No. 3,680,664, dated Aug. 1, 1972, Ser. No. 64,518, Aug. 17, 1970. Application for reissue Dec. 19, 1973, Ser. No. 426,345

Claims priority, application Great Britain, Aug. 21, 1969, 41,756/69

Int. Cl. F16d *65/56*

U.S. Cl. 188—79.5 GT **24 Claims**



17. A slack adjuster for a brake system comprising a first non-rotatable member, a second rotatable member

and a third non-rotatable member having a common thrust axis; a non-reversible screw-thread connection between said first and second members, said second member being axially displaceable and rotatable relative to said third member; a fourth rotatable member coaxial with said thrust axis; a reversible screw-thread connection between said fourth member and one of said second and third members; axially cooperating friction surfaces between said fourth member and the other of said second and third members; and a spring acting on said fourth member to urge said fourth member into a resting position when the brake system is released, said spring acting in an axial direction to urge said friction surfaces on said other member and said fourth member towards one another.

28,413

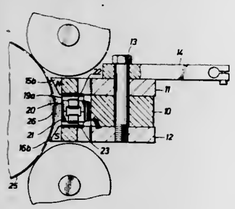
ORIENTING APPARATUS

John S. Evans, Jr., and Leslie L. Jasper, Houston, Tex., assignors to Mark Products, Inc., Houston, Tex.

Original No. 3,690,487, dated Sept. 12, 1972, Ser. No. 148,041, May 28, 1971. Application for reissue Dec. 4, 1972, Ser. No. 311,481

Int. Cl. B65g 7/00

U.S. Cl. 214—340 **17 Claims**



16. Apparatus for orienting a generally cylindrically shaped member to a preselected position comprising means for rotating the member on its longitudinal axis including two spaced rollers to engage the member and rotate it on its longitudinal axis, means for reducing the atmospheric pressure on the opposite side of the rollers from the member to cause the member to be held against the rollers by the pressure differential so created, and means for stopping the rollers when the member is in the desired orientation, said means for stopping the rollers including means providing a magnetic field through which the member moves as it is rotated and means sensitive to a change in the field by a known discontinuity in the member to stop the rollers a preselected period of time after said change occurs to position the member in the desired orientation.

28,414

FABRIC CUTTING AND MEASURING MACHINE

Clifford E. Keesling, San Jose, and Thomas B. Keesling, Los Gatos, Calif., assignors to Moore's Time-Saving Equipment Company, Inc., Elkhart, Ind.

Original No. 3,537,662, dated Nov. 3, 1970, Ser. No. 730,836, May 21, 1968. Application for reissue Nov. 1, 1972, Ser. No. 302,872

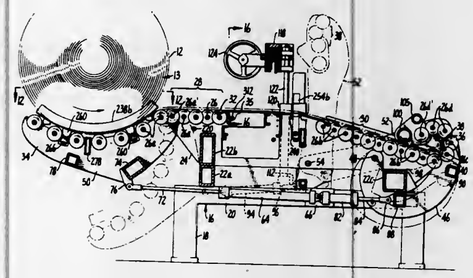
Int. Cl. B65h 19/20

U.S. Cl. 242—56 R **17 Claims**

1. Apparatus for conveying a generally cylindrical object in a direction generally parallel to its length which comprises:

an elongated concave cradle adapted to support a cylindrical object in a generally horizontal position with the length of said object generally parallel to the length of the cradle;

conveying means in said cradle for rotating a cylindrical object on said cradle in a direction transverse to the length of the cradle; and



skewing means for maintaining a cylindrical article in a skewed position on said cradle with the length of said article laterally inclined to the length of said cradle while said article is being rotated by said conveying means.

28,415

BLINK COMPENSATING APPARATUS AND METHOD FOR OBJECTIVE REFRACTOR FOR THE EYE

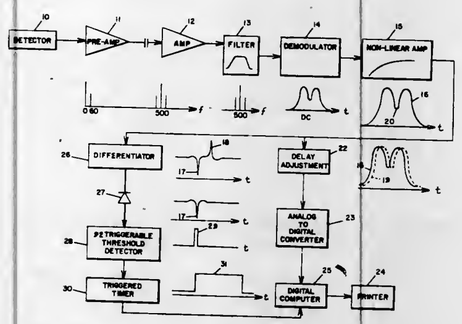
Bruce R. Robinson, Penfield, Charles R. Munnerlyn and Terrance N. Clapham, Fairport, and James W. Horwitz, Rochester, N.Y., assignors to Tropel, Inc., Fairport, N.Y.

Original No. 3,802,768, dated Apr. 9, 1974, Ser. No. 353,649, Apr. 23, 1973. Application for reissue June 10, 1974, Ser. No. 478,062

Int. Cl. A61b 3/10; G01j 5/28

U.S. Cl. 351—6 **19 Claims**

10. A method of compensating for a blink occurring



during examination of an eye by an automatic instrument directing radiant energy into said eye, said method comprising:

(a) producing a signal as a function of radiant energy reflected from said eye;

(b) detecting a rate of change of said signal exceeding a predetermined threshold and representing the beginning of a blink;

(c) producing a blink commencement signal upon detection of said blink; and

(d) using said blink commencement signal to stop said examination of said eye during said blink.

14. In an instrument for automatically examining an eye by directing radiant energy into said eye, a blink compensating system comprising:

(a) means for producing a signal as a function of radiant energy reflected from said eye;

(b) means for detecting a rate of change of said signal exceeding a predetermined threshold and representing the beginning of a blink;

(c) means for producing a blink commencement signal upon detection of said blink; and

(d) means responsive to said blink commencement signal for stopping said examination of said eye.

28,416

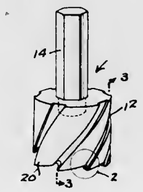
ANNULAR HOLE CUTTER

Everett D. Hougen, Flushing, Mich. (G–5072 Corunna Road, Flint, Mich. 48504)

Original No. 3,765,789, dated Oct. 16, 1973, Ser. No. 213,430, Dec. 29, 1971. Application for reissue Nov. 12, 1973, Ser. No. 414,927

Int. Cl. B23b 51/04

U.S. Cl. 408—204 **35 Claims**



40. An annular hole cutter comprising:

(a) a generally circular cylindrical side wall having a plurality of cutting teeth spaced around the lower end thereof and having means at the upper end for mounting the cutter on a rotary driving member;

(b) each tooth having an inner cutting edge extending generally radially outwardly from the inner periphery of said side wall and an outer cutting edge extending radially inwardly from the outer periphery of said side wall;

(c) all of said inner cutting edges being disposed at substantially the same height so as to penetrate into the material being cut to substantially the same depth and all of said outer cutting edges being disposed at substantially the same height so as to penetrate into the material being cut to substantially the same depth when the cutter is rotated and fed axially into the workpiece, whereby the cutting load is substantially the same on all of the inner cutting edges and the cutting load is substantially the same on all of the outer cutting edges;

(d) the inner cutting edge of each tooth being staggered circumferentially forwardly in the direction of rotation of the cutter at its radially outer end relative to the radially inner end of the outer cutting edge on each tooth and being spaced substantially closer to the outer cutting edge of its respective tooth than to the outer cutting edge of the next successive tooth;

(e) the circumferential space between the cutting edges of successive teeth comprising radially inner and outer gullets, said inner gullet extending upwardly from said inner cutting edge and having a radially inner wall which tapers radially outwardly in an upward direction, said outer gullet extending upwardly from said outer cutting edge and radially inwardly from the outer periphery of said side wall, said inner gullet opening outwardly into said outer gullet, said outer gullet having a radially inner wall spaced radially outwardly from the inner wall of said inner gullet and extending upwardly substantially beyond said inner gullet and beyond said teeth;

(f) the trailing face of the outer gullet being staggered circumferentially rearwardly from the trailing face of the inner gullet;

(g) said outer gullet having a radial dimension and a circumferential dimension at least as large as the effective length of the inner cutting edge so as to accommodate the flow of chips cut by the inner cutting edge and directed into the outer gullet by the radially inner wall of the inner gullet and thereby discharge the chips cut by both the inner and outer cutting edges upwardly through the passengeway defined by the outer gullet and the outer periphery of the groove cut by said teeth.

28,417

METHOD AND APPARATUS FOR DETECTING TRACER GAS

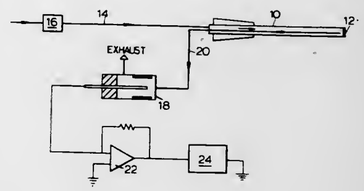
Anthony Jenkins and Richard C. Cornell, Royston, England, assignors to Analytical Instruments, Ltd., Royston, England

Original No. 3,699,342, dated Oct. 17, 1972, Ser. No. 63,571, Aug. 13, 1970. Application for reissue May 21, 1973, Ser. No. 362,432

Claims priority, application Great Britain, Apr. 27, 1970, 20,180/70

Int. Cl. G01c 1/18

U.S. Cl. 250—302 **5 Claims**



1. A method of detecting and monitoring the presence of an electron capture halogenated tracer gas in a gas supply having as a constituent thereof an electron capture material, comprising the steps of selectively isolating said halogenated tracer gas from the remainder of the supply by diffusion through a membrane formed from a silastomer having a greater permeability to said halogenated tracer gas than to the remainder of the supply, and thereafter conveying the tracer gas into an electron capture detector by means of a gas stream substantially inert to electron capture.

PLANT PATENTS

GRANTED MAY 6, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,713
STRAWBERRY PLANT
Herschel L. Boll, R.R. 4, Champaign, Ill. 61820
Filed Nov. 14, 1973, Ser. No. 415,496
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—49 1 Claim

1. A new and distinct variety of strawberry plant substantially as herein shown and described, characterized by its everbearing habit of growth; by its high productivity; by its vigorous growth; by its continuous bearing of fruit from June until freezing weather; by its runners usually producing flower buds before roots; and by its medium red, glossy, very firm, evenly colored, and very attractive fruit.

3,714
STRAWBERRY PLANT
Herschel L. Boll, R.R. 4, Champaign, Ill. 61820
Filed Nov. 14, 1973, Ser. No. 415,497
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—48 1 Claim

1. A new and distinct variety of strawberry plant substantially as herein shown and described, characterized by its high productivity, by its vigorous growth, and by its early season of maturity.

3,715
STRAWBERRY PLANT
Herschel L. Boll, R.R. 4, Champaign, Ill. 61820
Filed Nov. 14, 1973, Ser. No. 415,498
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—49 1 Claim

1. A new and distinct variety of strawberry plant substantially as herein shown and described, characterized by its everbearing habit of growth, by its high productivity, by its vigorous growth, and by its early season of maturity.

3,716
STRAWBERRY PLANT
Albert B. Cook, R.R. 1, Box 191, Grandview, Ind. 47615
Filed Nov. 15, 1973, Ser. No. 416,294
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—48 1 Claim

1. A new and distinct variety of strawberry plant substantially as herein shown and described, characterized by its extremely vigorous growth; by its very tall plants; by its very long runners; by its very large leaves; and by its very large fruit, which has an unusual and a high flavor.

PATENTS

GRANTED MAY 6, 1975

ERRATA

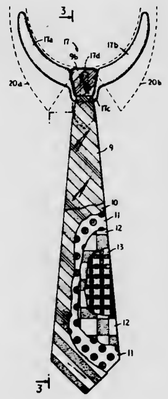
For CLASS	See PATENT NO.
032–033	3,881,254
152–361 R	3,881,492
015–327 E	3,881,535
259–004	3,881,688
252–455 R	3,881,696
075–130 R	3,881,937
250–361	3,882,028
200–016 C	3,882,056
029–025.42	3,882,059
264–024	3,882,063
240–052.1	3,882,450
360–098	3,882,473

PATENTS

GRANTED MAY 6, 1975

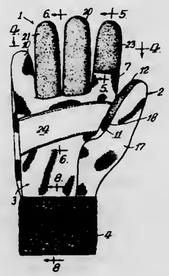
GENERAL AND MECHANICAL

3,881,196
TIE ARRANGEMENTS AND TIE-HOLDING DEVICE THEREFOR
Andrea Spada, Barros Arana 2999, Casilla 54, Arica, Chile
Filed Aug. 7, 1973, Ser. No. 386,296
Int. Cl. A41d *25/08*
U.S. Cl. 2—153 **7 Claims**



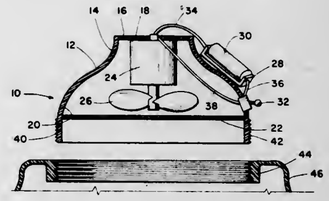
1. In combination, a plurality of separate, and independent ties of similar configuration and different decorative patterns positionable aligned with each other in superposed relationship in registry with each other, a tie-holding device for wearing of the ties on said device jointly simultaneously, said tie-holding device comprising a tie-holding means for releasably holding the ties as a plurality in superposed position and suspended in registry therefrom, and means on said device for wearing by a wearer of said device and plurality of ties.

3,881,197
HUNTER'S GLOVE
Warren L. Andrews, Chicago, Ill., assignor to Wells Lamont Corporation, Chicago, Ill.
Filed Oct. 7, 1974, Ser. No. 512,421
Int. Cl. A41d *19/00*
U.S. Cl. 2—161 A **11 Claims**



1. In a glove of the class described the combination of a hollow knitted palm portion, a plurality of hollow knitted tubular finger sections and a thumb section, said sections being joined to the palm portion, the first finger section of the palm portion being tubular and extending from the palm portion to a point substantially at the second joint of the first finger of the hand to be covered, a finger stall closed at its outer end and substantially covering the two outermost joints of said first finger and being joined to the aforesaid knitted first finger portion, said last-named joint being adapted to lie substantially at the innermost end of the second joint of the first finger of the user's hand, said first finger stall comprising stretchable walls adapted to cover the two outer joints of the trigger finger and having a granulated surface of adherent particles overlying the first and second joints of the occupying finger.

3,881,198
DETACHABLE AIR CONDITIONING UNIT FOR HEADWEAR
William A. Waters, 3648 E. 49th St., Tulsa, Okla. 74135
Filed Aug. 13, 1973, Ser. No. 387,956
Int. Cl. A42c *5/04*
U.S. Cl. 2—171.3 **7 Claims**

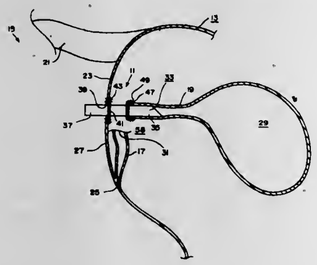


1. A detachable self-contained air conditioning unit for headwear and comprising housing means of a generally outwardly flaring configuration and having the opposite ends thereof open, a first air screen means disposed in one of said open ends, a second air screen means disposed in the other of said open ends, power means carried by said air screen and depending therefrom into the interior of the housing means, impeller means carried by the power means and interposed between the air screen means and temperature control panel means, said impeller means being rotatable by the power means for pulling air into the housing through the air screen means and discharging air from the housing through the temperature control panel means, power supply means operably connected with the power means for selective activation thereof, and securing means cooperating between the housing means and headwear for removably securing the self-contained unit to the headwear, and wherein the housing means includes an upstanding neck portion at one end having an opening therein of a smaller diameter than the opposite open housing end, said air screen means being removably secured in said neck portion opening.

3,881,199
URETHRAL SHUNT TUBE IMPLANT
James T. Treace, Memphis, Tenn., assignor to Richards Manufacturing Company, Memphis, Tenn.
Filed June 11, 1973, Ser. No. 368,655
Int. Cl. A61f *1/24;* **A61m** *27/00*
U.S. Cl. 3—1 **2 Claims**

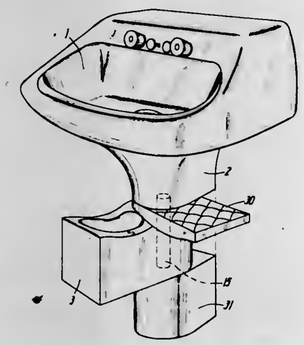
1. A surgical implant for bypassing the distal portion of the natural urethra tract to relieve urethral obstruction of certain

animals, said implant comprising a tube having an interior open end communicated with an exterior open end, a first flexible patch extending radially outwardly from said tube for attachment to the dermal layer of the animal, said first patch being provided with an aperture centrally thereof and receiving said tube therethrough, said first patch being attached to said tube adjacent said exterior end thereof, a second flexible patch extending radially outwardly from said tube for attachment to the severed end of the urethra of the animal, said second patch being provided with an aperture centrally thereof and receiving said tube therethrough, said second patch being attached to said tube intermediate the ends



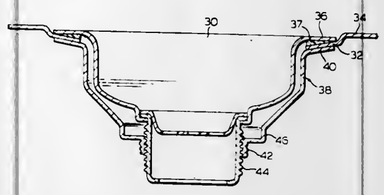
thereof, said interior open end of said tube being adapted for receiving the severed end of the urethra to communicate the bladder of the animal with said exterior open end of said tube, and said flexible tube and said first and second patches being compatible with and resistant to attack by animal body fluids, said first and second patches being formed from silicone impregnated Dacron mesh fabric, said tube being formed from silicone-elastomer, silicone adhesive means for fixedly attaching said first and second mesh patches to said tube, said adhesive means additionally establishing washerlike seal means for sealable engagement with certain portions of the animal abuttingly engaging said adhesive means.

3,881,200
WASHING APPARATUS
Hartmut-Wolfgang Maier-Gerber, Alte Ittersbacher Landstrasse 1, 7501 Karlsbad 1, Baden, Germany
Filed Mar. 19, 1974, Ser. No. 452,624
Claims priority, application Germany, Mar. 24, 1973, 2314789
Int. Cl. A47k *1/04, 3/22, 11/08*
U.S. Cl. 4—166 **4 Claims**



1. A washing apparatus comprising
a wash basin and seat washing basin combined to form a functional unit and having a single common battery of fittings for a feed of mixed water to be conducted optionally into said wash basin or into the said seat washing basin and with a common wash-water discharge,
a base under said wash basin supporting said seat washing basin such that it can be swung out of a position of rest concealed in said base into a position of use and from there back into said position of rest,
a hollow bottom part of said base being formed as a supporting arm in the form of a hollow molding which, in an axis of rotation of said seat washing basin, has a wash-water inlet which discharges into an adjoining water-collecting space,
a pump,
a pressure transmitter contained in said water collecting space for the connecting of said pump, the latter being arranged in another adjoining pump space which is separated off by a partition having a passage.

3,881,201
THREADED SINK STRAINER HOUSING
William T. Richards, Toronto, Ontario, Canada, assignor to Premier Tool and Die Limited, Toronto, Ontario, Canada
Filed Oct. 12, 1973, Ser. No. 406,037
Int. Cl. E03c *1/26*
U.S. Cl. 4—286 **9 Claims**

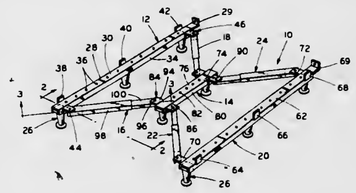


1. In a sink drain assembly, a housing, a tubular sink strainer body, for mounting through a sink drain opening in a sink, and having an annular flange at one end thereof which is adapted to contact the inner surface of a sink wall surrounding said opening and a threaded spout extending from the outer end of said sink strainer body, said housing being substantially tubular and of an interior dimension to permit positioning of said housing over the portion of said sink strainer body which projects exteriorly of said sink wall for securing said sink strainer body in said sink drain opening; the improvement comprising a circular thin-walled threaded portion provided at an end of said housing, said circular threaded portion being integral with said housing, the axis of said circular threaded portion being coincident with the longitudinal axis of said tubular portion, the threads on said circular thin-walled threaded portion being rolled threads and so dimensioned as to threadably engage said threaded spout to enable said housing to be positively advanced on rotation thereof to clamp said sink wall between said flange and the other end of said housing; said other end of said housing presenting an integral annular body portion having an inside diameter greater than the diameter of said sink drain opening.

3,881,202
BED FRAME
Stephen Tyhanic, 7761 E. Oxford Ave., Denver, Colo. 80237
Filed Feb. 21, 1973, Ser. No. 334,371
Int. Cl. A47c *19/12*
U.S. Cl. 5—176 R **5 Claims**

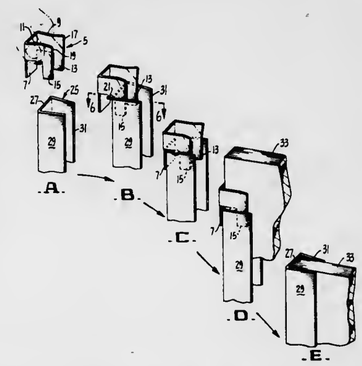
1. A collapsible bed frame comprising: a pair of spaced elongated parallel peripheral supports, each having the same length, each being adapted for supporting a peripheral edge of a box spring, a pair of legs connected to each of said elongated peripheral supports for holding the supports at a selected height, an elongated center support being shorter than the elongated peripheral supports, said elongated center support

adapted for supporting a central portion of the box spring positioned parallel to and between said peripheral supports within the ends of the peripheral supports, a support leg connected to said center support for holding the center support at substantially the same height as the elongated peripheral supports, a pair of connectors pivotedly connected to one end of the center support, one of said connectors being pivotedly connected to one end of one of the peripheral supports, the other of said connectors being pivotedly connected to one end of the other of the peripheral supports, a second pair of con-



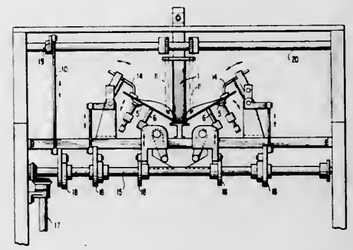
nectors pivotedly connected to the other end of the center support, one of said second pair of connectors being pivotedly connected to the other end of the one of the peripheral supports, the other of said second pair of connectors being pivotedly connected to the other end of the other of the peripheral supports, each of the connectors being adjustable in length to make the frame adjustable to receive a selected one of a plurality of sizes of box springs, and each of said connectors having a lock for releasably locking the connectors in a selected length.

3,881,203
TOOL FOR INSERTING PAPER INTO SPINES
Joe D. Giulie, Palo Alto, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Jan. 24, 1974, Ser. No. 436,217
Int. Cl. B42f *1/02*
U.S. Cl. 11—1 R **2 Claims**



1. An insertion device for inserting a sheaf of papers into a spring spine comprising in combination:
a. a flat back member,
b. arms extending at substantially right angles from the top sides of said back member, said arms extending from only the top portion of said back whereby the bottom portion of said back is free of said arms,
c. downwardly extending legs from the terminal ends of each of said side members, said legs extending downwardly to substantially the same level as said back member, said legs being spaced a substantial distance from said back member, and
d. the upper portions of said arm member being formed outwardly at an angle to facilitate the insertion of papers therebetween.

3,881,204
MEANS FOR OPENING COVERS OF BOUND BOOKS
Toshio Sato, Tokyo, Japan, assignor to Nishioki Mfg. Co., Ltd., Tokyo, Japan
Filed June 4, 1974, Ser. No. 476,233
Claims priority, application Japan, June 4, 1973, 48-062023
Int. Cl. B42c *11/02*
U.S. Cl. 11—1 R **3 Claims**

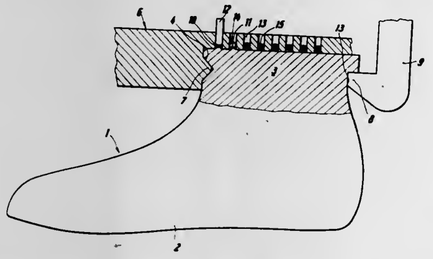


1. A mechanism for opening covers of bound books, comprising: a conveyor means for transporting bound books one behind another in the vertically upraised position with the book spine facing downwardly, sucker discs and support members disposed on the opposite sides of said conveyor means, means for moving said sucker discs and support members downwardly outward and in the forward direction in a synchronous manner with the advancement of said conveyor means while engaging the cover sheet of a bound book on said conveyor means to achieve opening of the cover sheet, retainers disposed on the opposite sides of said conveyor means for grasping and retaining most of the leaves in the bound book in their upraised position while the cover sheet is being opened, a pair of pusher members downstream of said sucker discs and support members on respective sides of said conveyor means and movable laterally inward with respect to said conveyor means to inwardly force the leaves which have accompanied the opened cover sheet, thus causing the same to assume upwardly curved form defining hollow spaces between the cover sheet and the curved leaves, and a pair of curved guide members disposed in juxtaposition to said pusher members telescoping said guide members into the hollow spaces thus formed and means for swinging upwardly to bring the curved leaves back to the vertically upraised position.

3,881,205
LAST FOR THE MANUFACTURE OF SHOES
Herbert Funck, Am Wasserbogen 43, 8032 Grafelfing-Lochham, Germany
Filed Apr. 26, 1973, Ser. No. 354,534
Claims priority, application Germany, May 4, 1972, 2221905; June 15, 1972, 2229307
Int. Cl. A43d *3/00*
U.S. Cl. 12—133 R **10 Claims**

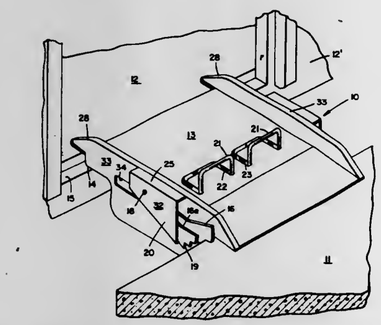
1. A last for the production of shoes comprising a core portion, said core portion including a neck extending therefrom, retaining element means on said neck for rapid detachable clamping of said last in shoe making machines and conveying devices, and at least one marking on said neck, which marking comprises means for transmitting to said shoe making machines a particular characteristic of said last and for caus-

ing said shoe making machines to automatically respond to the particular characteristic of said last, said marking comprising



elements which cooperate with corresponding tracing elements of said shoe making machines or conveying devices.

3,881,206
LOADING RAMP ADAPTED TO BRIDGE A PAIR OF PLATFORMS
Carl O. Christensen, Alamo, Calif., assignor to Roll-Rite Corporation, Oakland, Calif.
Filed Mar. 2, 1973, Ser. No. 337,633
Int. Cl. E01d *15/12*
U.S. Cl. 14—72 **11 Claims**

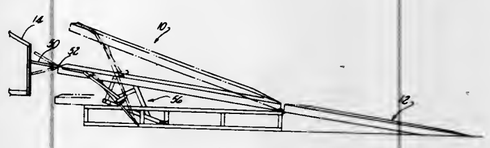


1. A ramp adapted to bridge a pair of spaced platforms, one of said platforms being fixed and the other being movable, said ramp comprising:

a stepped undersurface at one end adapted to engage the edge of said movable platform while the other end of said ramp is adapted to be supported on said fixed platform; and

first ramp biasing means associated with said ramp for biasing said ramp in a plurality of differing self-locking positions between said platforms, said ramp biasing means including a housing mounted on one side of said ramp, said housing having a rear wall and a top and bottom wall forming upper and lower surfaces, respectively, and being open toward the end of said ramp which is adapted to be supported on said fixed platform, at least a pair of elongated arms pivotally connected at one end within said housing vertically movable about a common horizontal axis extending generally transversely of said ramp, said arms being of differing lengths and extending out of the open end of the housing, the vertical movement of said arms being limited by their selective engagement with the upper and lower surfaces of said housing, said arms each having a plurality of downwardly extending teeth on the free ends thereof adapted to extend below the undersurface of said ramp when the arms pivot vertically downwardly into engagement with the lower surface of said housing, said teeth also varying in overall distance from said common horizontal axis, and a generally cylindrical rubberlike member disposed within said housing between said common horizontal axis and the rear wall of said housing, said cylindrical member having its longitudinal axis extending generally transverse to said ramp and generally parallel and spaced from said common horizontal axis, and said member being in contiguous relationship with the rear ends of said arms, the inner walls of both said upper and lower surfaces and said rear wall.

3,881,207
LOADING DOCK
Paul Jones, Jr., 4347 Moon Light Dr., and Ferris E. Jones, 4323 Moon Light Dr., both of Holly, Mich. 48442
Filed Oct. 10, 1973, Ser. No. 405,159
Int. Cl. B65g *11/00*
U.S. Cl. 14—72 **8 Claims**



1. A loading dock comprising:

a. a base structure,

b. a pair of spaced apart ramps pivotally mounted on the base structure for rotation between a substantially horizontal position and a substantially vertical position,

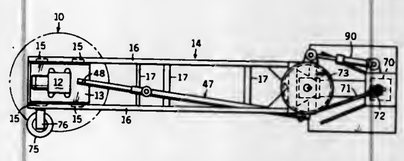
c. locking means associated with each of the ramps for positioning the ramps, the locking means being interconnected such that the locking means are simultaneously moveable to position the ramps anywhere between the horizontal and vertical position, each of the locking means comprising:

1 a tubular member pivotally connected to the base structure and having a plurality of apertures disposed therealong,

2 an extended collar pivotally connected to the ramp,

3 a locking pin insertable through the apertures, and wherein the tubular member telescopes within the extended collar.

3,881,208
CAR-WASH APPARATUS
Earl L. Miner, Long Lane, Mo., assignor to Detroit Tool & Engineering Co., Lebanon, Mo.
Filed Feb. 11, 1974, Ser. No. 441,048
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **10 Claims**



1. In a vehicle washing system, brush apparatus including:

a. a support,

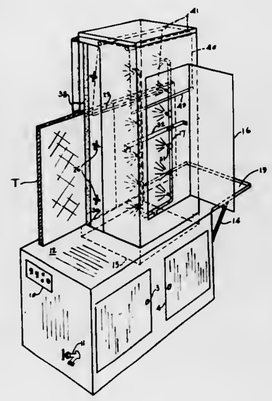
b. an arm pivoted to the support for horizontal swinging movement,

c. a carriage mounted on said arm for movement relative thereto,

d. a rotary brush means supported by said carriage, and

e. means operatively interconnecting said carriage and said arm to move said carriage relative to said arm responsively to swinging movement of the arm.

3,881,209
DEVICE FOR CLEANING CEILING TILE
Frederick Reinitz, 5 Lothian Pl., Philadelphia, Pa. 19128, and Julian G. Czeck, 3100 Butchers Mill Rd., Norristown, Pa. 19403
Filed Aug. 24, 1973, Ser. No. 390,328
Int. Cl. A47l *25/00*
U.S. Cl. 15—102 **6 Claims**



1. A device for cleaning ceiling tiles or the like comprising:

a. support means having

b. housing means thereon,

c. upper and lower guide means for guiding ceiling tile along the support means and through openings in two sides of the housing means,

d. means carried by the support means for cleaning the ceiling tile with liquid as it is guided through the housing means,

e. said cleaning means including means for supplying cleaning liquid under pressure to only one side of the ceiling tile,

f. means for varying the pressure of the cleaning liquid supplied against said one side of the ceiling tile,

g. said cleaning means also including wiper means mounting within the housing means for retaining the cleaning liquid inside said device and for removing cleaning liquid from the ceiling tile as it is removed from the housing means,

h. barrier means extending the entire width of the inside of the housing means to contain cleaning liquid inside the housing means and on only one side of the ceiling tile,

i. collar means connected to the lower guide means to form drain slots for containing cleaning liquid on only one side of the ceiling tile,

j. means for collecting cleaning liquid used in cleaning the tile,

k. filter means for cleaning the cleaning liquid present in the collecting means,

l. means for regulating the amount of cleaning liquid in said device, and

m. means for circulating the cleaning liquid from the filter means through the means for supplying cleaning liquid under pressure against one side of the ceiling tile.

3,881,210
FLUSHABLE, PRE-MOISTENED, SANITARY WIPER AND METHOD OF MANUFACTURING SAME
John E. Drach, Philadelphia, Pa., and Clifford John Roberts, Jr., Turnersville, N.J., assignors to Scott Paper Company, Philadelphia, Pa.
Filed Mar. 24, 1972, Ser. No. 237,859
Int. Cl. B08b *1/00*; **B32b** *3/30, 7/14*
U.S. Cl. 15—104.93 **7 Claims**

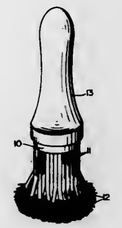
1. A flushable, pre-moistened wiper usable for cleansing parts of the human body and capable of being packaged in a wet condition for its required life without disintegrating, said wiper comprising:

A. a reinforcing layer of water-dispersible thermoplastic material having opposed major surfaces, said reinforcing layer being dispersible upon being subjected to the moisture encountered during flushing within the vortex of a toilet bowl;

B. a web of soft, fibrous material of high flexibility and water absorbency adhered to each of said opposed surfaces of said reinforcing layer in spaced regions comprising from between about 3% and about 25% of the surface area of said reinforcing layer; and

C. said continuous webs having a moisture content of from between about 100% and about 350% by weight based on the dry weight of the fibers in the continuous webs.

3,881,211
GREASE MOP FOR DIETARY CONTROL
Herbert M. Rhodes, New Orleans, La., assignor to Pro Diet Mop, Inc., New Orleans, La.
Filed Nov. 15, 1973, Ser. No. 416,217
Int. Cl. A47l *13/20*; **E02b** *15/04*
U.S. Cl. 15—225 **3 Claims**



1. An oil or grease mop for dietary control when cooking foods containing oil or grease comprising:

a. a thin long flat base strip of polypropylene,

b. branch strips extending off one side of said strip spaced along said strip at substantially uniform spacings,

c. a plurality of sub-branches extending off each branch strip,

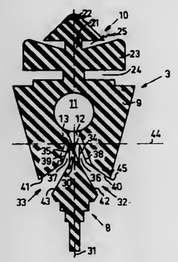
d. said flat base strip being wound in a volute curve so that all depending branches are not placed in radial alignment, and

e. handle means secured to said volute wound base strip on the side of said flat base strip opposite to the side from which said branch strips extend.

3,881,212
WIPER BLADE

Ake Ingemar Regler, Stocksund, Sweden, assignor to Safety Vehicles Development AB, Stocksund, Sweden

Filed Aug. 17, 1973, Ser. No. 389,427
Claims priority, application Sweden, Aug. 23, 1972, 10939/72; Sept. 25, 1972, 13779/72
Int. Cl. B60s *1/46*
U.S. Cl. 15—250.04 **9 Claims**

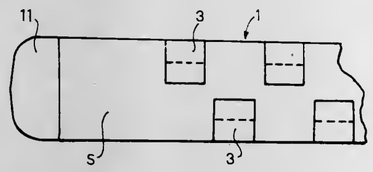


1. In a wiper blade of elastic material for cleaning of, for example, windshields in vehicles, comprising a body which, via a connecting portion carries a contact member intended for contact with the object to be cleaned and which is mountable by means of an anchor member in a holder which moves back and forth across the object to be cleaned, there being in the body a longitudinal conduit from which cleaning liquid can flow out on both sides of the contact member via channels, the contact member being constructed with sealing surfaces which, when the contact member is bent out from a middle position to a position to one side of the medial plane sealingly abut corresponding sealing surfaces of the body, thereby allowing the liquid to flow out on only the front side of the wiper blade relative to the direction of motion at that time; the improvement in which the channels opening on the same side of the contact member open into a groove which widens in a direction away from the medial plane, and the sides of which form the sealing surfaces, the sealing surfaces of the body and the contact member as well as the contact surface lying on the same side of a plane which is perpendicular to the medial plane and which intersects the region where the connecting portion of the contact member joins the body.

3,881,213
BLADE CARRIER FOR THE WINDSHIELD WIPERS OF MOTOR VEHICLES

Lodovico Tilli, Turin, Italy, assignor to Bre Landiere S.A.

Filed Mar. 2, 1973, Ser. No. 337,494
Claims priority, application Italy, Mar. 24, 1972, 22354/72; May 4, 1972, 23901/72
Int. Cl. B60s *1/04, 1/38*
U.S. Cl. 15—250.42 **3 Claims**



1. A blade carrier for a windscreen wiper of a motor vehicle, comprising (a) an elongated body for connection to a wiper arm, said body being formed as a single arcuate piece of an elastically flexible plastic material having a first plurality of hook-shaped retaining members spaced apart from one another along the concave side of said body, and a second plurality of hook-shaped retaining members spaced apart from one another along said concave side and arranged to define with said first plurality a holding groove for receiving and retaining the rear portion of a conventional windscreen wiper blade, and (b) first and second terminal holding means at opposite respective ends of the blade carrier for retaining the ends of the windscreen wiper blade, that hook-shaped retaining member which is nearest the first terminal holding means being spaced from said first terminal holding means by a distance greater than that separating adjacent hook-shaped retaining members of the first or second plurality, whereby a space is provided between said first terminal holding means and the hook-shaped retaining member nearest thereto so that the rear portion of the blade may be inserted by way of said space into the holding groove and slid along the holding groove.

3,881,214
WINDSHIELD WIPER BLADE MADE OF SYNTHETIC MATERIAL, WITH THE SUPPORTING STRUCTURE FORMED AS AN INTEGRAL ELEMENT

Attilio Dal Palu, Almese, Italy, assignor to Fister S.n.c. di Bosso Giacomo & C., Torino, Italy

Filed Aug. 31, 1973, Ser. No. 393,687
Claims priority, application Italy, Sept. 9, 1972, 69870/72; May 7, 1973, 68264/73
Int. Cl. B60s *1/04, 1/38*
U.S. Cl. 15—250.42 **8 Claims**



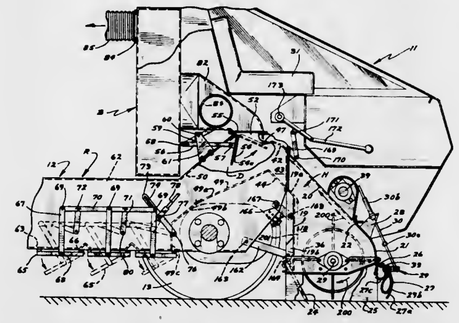
1. Windshield wiper blade, comprising a supporting structure having fixed on it a rubber element provided with an active edge which is apt to slide on the glass, said supporting structure being hinged to an attachment element which is apt to be fixed to a driving arm of the windshield wiper device, said supporting structure having a substantially constant cross section, and in the lower portion of said supporting structure being formed a continuous channel having a T-shaped cross section, in the interior of which channel being accomodated a corresponding projection of said rubber element, also having a T-shaped cross section, and in the upper wall of said continuous channel being formed a plurality of inner recesses or reliefs, said recesses presenting a height decreasing progressively as they approach the ends of said supporting structure, and the distance between two adjacent recesses being also decreasing progressively as they approach said ends, said recesses allowing the supporting structure to be deformed substantially in directions contained within the center line plane passing through said windshield wiper blade and said active edge of the rubber element,

3,881,215
SURFACE CLEANING APPARATUS

Keith N. Krier, Hopkins, and Paul W. Kimzey, St. Louis Park, both of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Dec. 19, 1972, Ser. No. 316,457
Int. Cl. A47l *9/00*
U.S. Cl. 15—340 **9 Claims**

1. A surface cleaning machine comprising a mobile vehicle having a frame, a downwardly opening debris pick up housing, said housing having a debris outlet, first means for mounting said housing on the frame, a power driven surface cleaning tool rotatably mounted in the housing adjacent the surface to be cleaned for raising debris from the surface, a combination filter and light debris collection container, second means for mounting the container on the frame, a suction blower having a discharge outlet and an inlet, third means for fluidly connecting the blower outlet to the container, a heavy trash receptacle mounted on the frame and having an inlet, and duct means for deflecting material passing therethrough to separate heavier material from lighter material, said duct means including a duct inlet fluidly connected to the housing outlet, a duct first outlet fluidly connected to the blower inlet, a second duct outlet at a lower elevation than the first duct outlet opening to the trash receptacle inlet, a bottom wall sloped upwardly and rearwardly of the housing inlet, a duct branch having the second duct outlet, a bottom wall and a top wall sloped downwardly and rearwardly from the first duct outlet, the first duct

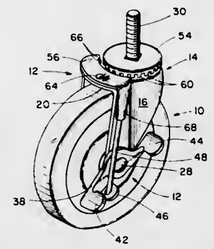


outlet being at a substantially higher elevation than the first mentioned bottom wall and extending rearwardly thereof, a transverse, vertically extending impact surface member adjacent the duct first outlet on the opposite side thereof from the duct inlet, extending to at least substantially the same elevation as the duct first outlet, and having a lower edge at a higher elevation than the lowermost part of the trash receptable inlet, and means hingedly mounting the impact member on the top wall to depend therefrom to permit pivoting of the impact member for minimizing damage to the door when hit by heavy debris.

3,881,216
CASTER BRAKE AND LATCH ASSEMBLY

Frank J. Fontana, Fairfield, Conn., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Jan. 23, 1974, Ser. No. 435,687
Int. Cl. B60b *33/00*
U.S. Cl. 16—35 R **14 Claims**

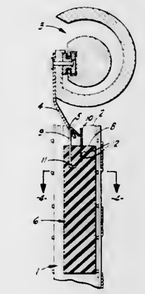


1. A brake and latch assembly, comprising; a pintle, a horn rotatably carried by said pintle, said horn rotatably carrying a wheel, brake means rotatably carried by said horn and manually rotatable for engaging the periphery of said wheel to brake said wheel, a latch member secured to said pintle for rotation with said pintle relative to said horn, a pawl, and means rotatably mounting said pawl on said horn about an axis generally parallel to the axis of said pintle independently of said brake means, said pawl being positioned to be engaged by said brake means for rotation in response to rotation of said brake means to engage said pawl with said latch member for thereafter preventing relative rotation between said pintle and horn.

3,881,217
DRAPERY HANGER

Mervin H. Bytheway, Jr., 9010 Feather River Way, Sacramento, Calif. 95826

Filed Feb. 19, 1974, Ser. No. 443,921
Int. Cl. E05d *13/02;* **A44b** *21/00*
U.S. Cl. 16—87.2 **8 Claims**

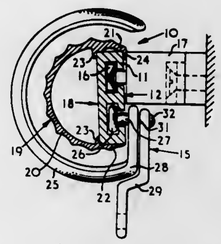


1. In the combination of a drape having horizontally spaced perpendicular roll pleats open at the upper end, and a horizontal drapery rod mounted above the drape and including depending suspension elements corresponding to the roll pleats; a drapery hanger, adapted to connect between each roll pleat and the corresponding suspension element, comprising a plug disposed in and encompassed by the roll pleat adjacent its open upper end, means securing the plug to the adjacent portion of the roll pleat, and a hook upstanding from the top of the plug and coupling in drape-suspending relation with the corresponding suspension element.

3,881,218
CURTAIN OR DRAPE SUSPENSION ARRANGEMENTS

Christopher Steven Palmer, Burton-on-Trent, England, assignor to Swish Products Ltd., Tamworth, Staffordshire, England

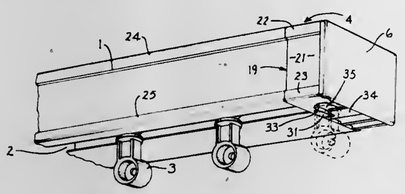
Filed Jan. 21, 1974, Ser. No. 434,958
Claims priority, application United Kingdom, Jan. 30, 1973, 4534/73
Int. Cl. A47h *15/00*
U.S. Cl. 16—93 D **10 Claims**



1. A rail for a curtain or drape suspension arrangement and including a member and an element, said element being of generally oblong recetangular cross-sectional shape thus having two wide faces, an upper and lower narrow face, said element being disposed upright in use, and said element being formed in its one wide face with a pair of superposed slots of

T-shaped cross section one of which receives and supports curtain gliders and the other of which connects to support brackets, said member having a generally semi-cylindrical outer surface and extending over the other wide face of said element, formations being provided on said member and said formations being capable of engaging said element of said rail to locate said member on said element.

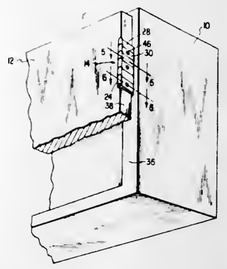
3,881,219
CARRIER GATE FOR TRAVERSE ROD
Steven R. Haarer, Howe, Ind., assignor to Kirsch Company, Sturgis, Mich.
Filed July 19, 1973, Ser. No. 380,668
Int. Cl. A47h *1/04*
U.S. Cl. 16—94 D **8 Claims**



1. A gated end cap engageable with the end of a traverse rod slotted for sliding drape hangers and adapted to end abut a building wall, and snugly locate a drape edge thereagainst, said end cap including in combination:
an end plate;
a plurality of roller supporting flanges extending perpendicularly from said end plate for telescopic cooperation with said traverse rod and at least one cord roller rotatably arranged between said flanges, said end plate, roller supporting flanges and traverse rod end defining a vertically and forwardly opening gap of width slightly exceeding that of a drape anchor hanger;
a gate in said gap forwardly and upwardly pivotable about an axis located above the bottom of the end cap, said axis being substantially perpendicular to the plane of said end plate and substantially parallel to the longitudinal extent of said roller supporting flanges, said gate having a front wall and a bottom wall, said gate when opened opening the front of said end cap and when closed providing means on said bottom wall extending across and closing the end of the traverse rod slot;
a gate mounting flange projecting forwardly into said gap and adjacent the traverse rod end from one of said roller supporting flanges, said gate mounting flange being spaced from and parallel to said end plate, a pair of pivot flanges extending from said gate for reception between said gate mounting flange and said end plate and means effecting pivotal relationship between said pivot flanges and gate mounting flange and end plate, wherein the gate pivot axis is spaced rearwardly and below the top of the gate front wall.

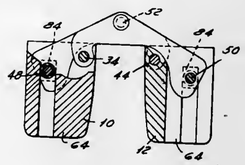
3,881,220
CABINET DOOR HINGE
Joseph Louis Kiraly, 18190 Lovell Rd., Spring Lake, Mich. 49456
Filed July 25, 1973, Ser. No. 382,572
Int. Cl. E05d *9/00*
U.S. Cl. 16—128 **3 Claims**

1. In combination with a cabinet having an open front bounded in part by opposed cabinet side panels having front edges; a cabinet door having a side edge; hinge assembly means mounting said door for movement between a cabinet closing position overlying the front edges of said side panels and an open position displaced 270° therefrom; said hinge assembly means comprising a pair of pin connected hinge leaves having interdigitated mounting portions; each said mounting portion including a pintle roll integral with planar, mutually perpendicular, proximal and distal leaf sections; fastener means securing the front edge of one of said cabinet side panels in facing relation to said distal sections of one of said hinge leaf mounting portions; fastener means securing



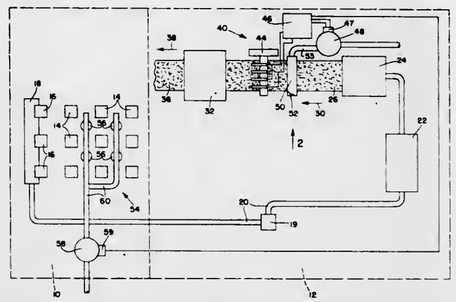
said cabinet door side edge in facing relation to said proximal sections of the other of said hinge leaf mounting portions; a pintle pin extending through said pintle rolls and mounting said other hinge leaf mounting portion and door for pivotal movement between a closed position defined by the respective coplanar positionment of said proximal and distal leaf sections and an open position displaced 270° therefrom.

3,881,221
INVISIBLE HINGE
Harold F. Schmidt, Warren, Mich., assignor to SOS Consolidated, Inc., Birmingham, Mich.
Filed Jan. 14, 1974, Ser. No. 432,945
Int. Cl. E05d *3/06*
U.S. Cl. 16—163 **2 Claims**



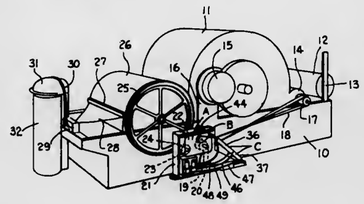
1. In an invisible hinge construction of the type including a pair of hinge blocks each to be recessed into relatively movable parts, each block having a first pivot pin adjacent a face surface parallel to the axis of hinging and each having a recess forming a slide portion, a plurality of interdigitally disposed contiguous sets of slide plates, each set composed of a plurality of plates and each set having one end transfixed by a pivot pin in one of said blocks and the other end transfixed by a slide pin parallel to said pivot pin, and a portion intermediate the ends transfixed by a second pivot pin parallel to said other pins and independent of said blocks, that improvement in metal hinge blocks which comprises a slide plate formed of dense, friction-reducing plastic at each end of each set of a plurality of metal slide plates, said end slide plates having a thickness approximately one-half of the metal plates whereby the two end plates take up space equivalent to one metal plate, the plastic slide plates being in sliding contact during motion of the hinge with other plastic slide plates of the contiguous sets in the hinge and with metal of the recesses in said hinge blocks.

3,881,222
METHOD AND APPARATUS FOR CONTROLLING THE MOISTURE CONTENT OF FIBROUS STOCK
James H. Roberson, Greenville, S.C., assignor to Crompton & Knowles Corporation, Worcester, Mass.
Filed Nov. 19, 1973, Ser. No. 417,013
Int. Cl. D01b *3/04*
U.S. Cl. 19—66 R **9 Claims**



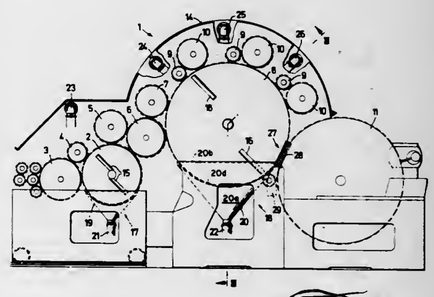
1. A process for controlling the moisture content of fibrous stock processed from bales which comprises:
a. opening said bales of fibrous stock;
b. forming said opened stock into a substantially uniform batt;
c. sensing the moisture content of said batt at a first point; and
d. applying moisture directly to said batt at a second point located upstream of said first point in accordance with the sensed moisture content at said first point.

3,881,223
CARDING MACHINE DRIVE
Thomas C. Brown, Greenville, S.C., assignor to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.
Filed Aug. 27, 1973, Ser. No. 391,566
Int. Cl. D01g *15/36*
U.S. Cl. 19—106 R **2 Claims**



1. For use in a carding machine and the like having means for feeding fibers to a main cylinder and means for doffing fibers from the main cylinder in the form of a web, a drive mechanism controlling the speed of each of said means comprising:
A. a frame;
B. a drive including variable speed mechanism carried by said frame for driving connection to said feeding means and said doffing means for accelerating said feeding means and said doffing to a predetermined creep speed at a predetermined rate for driving same at a predetermined operating speed;
C. a movable control arm controlling the output speed of said variable speed mechanism; and
D. first and second aligned fluid operated cylinder and piston assemblies having cylinders rigidly connected to each other, said first assembly being pivoted with respect to said control arm and said second assembly being pivoted with respect to said frame, for progressively positioning said control arm in a first position responsive to the action of one of said cylinders for achieving said creep speed and in a second position responsive to the action of the other of said cylinders for achieving operating speed;
E. whereby said feeding means and doffing means may be slowly accelerated to creep speed and following servicing of the carding machine to operating speed.

3,881,224
CARDING MACHINE FOR THE TREATING OF FIBROUS MATERIAL ETC.
Walter Wirth, Dulmen, Germany, assignor to Hergeth KG Maschinenfabrik u. Apparatebau, Dulmen, Westphalia, Germany
Filed Sept. 17, 1973, Ser. No. 397,620
Claims priority, application Germany, Oct. 24, 1972, 2252081
Int. Cl. D01g *15/82*
U.S. Cl. 19—107 **5 Claims**

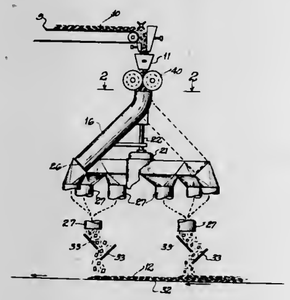


1. A carding machine for treating fibrous material or the like comprising at least one drum roll, a housing for said drum roll, means mounting said drum roll for rotation about a generally horizontal axis within said housing, said drum roll having a circumferential surface and axially opposite faces, vane means continguous said faces rotatable to direct currents radially outwardly relative to said axis, and funnel 8 shaped suction means projecting radially inwardly between the housing and each face of the drum roll beyond said circumferential surface and beyond the maximum diameter of the path of rotation established by said vane means for evacuating the area outboard of said faces during the rotation of said drum roll.

3,881,225
METHOD OF FELTING FIBROUS ELEMENTS
Robert D. Lambert, Fort Wayne, Ind., assignor to Multiply Development Corporation Ltd., Vancouver, B.C., Canada
Division of Ser. No. 233,244, March 9, 1972. This application Sept. 17, 1973, Ser. No. 398,162
Int. Cl. D01g *25/00*
U.S. Cl. 19—155 **6 Claims**

1. In the method of spreading a falling stream of particulate or fibrous material into a mat formed on a continuously moving collecting surface, the improvement comprising gathering the stream of particulate material into a compact downardly moving cylinder of material with its axis substantially coincident with that of the ingoing end of a rotating conveyor, rotating the conveyor about a vertical axis corresponding to the axis of the cylinder of material, said ingoing end being adapted to receive the stream of compacted particulate material, the outgoing end of said conveyor being adapted to successively feed increments of fibrous material in a non-

cylindrical arrangement into circularly arranged contiguous inlets of distributing conveyors adapted to convey and deposit

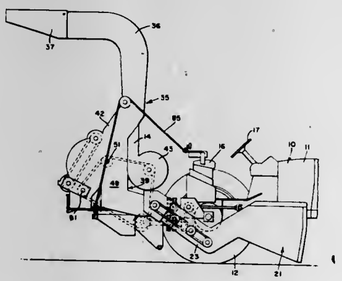


the material at non-contiguous positions across the collecting surface.

3,881,226
CLEANING AND DISCHARGE MECHANISM FOR COTTON HARVESTER

Brian Elwood Kent, and Leon Franklin Sanderson, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.

Continuation of Ser. No. 124,161, March 15, 1971, abandoned. This application July 27, 1973, Ser. No. 383,359
Int. Cl. D01b *3/00*
U.S. Cl. 19—203 **6 Claims**

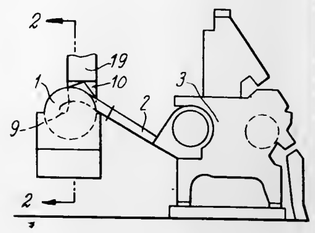


1. A cotton discharge mechanism for a cotton harvester in which cotton is discharged in a stream of comingled mixture of ripe and green bolls, a vertical duct having a lower end adjacent to and opening downwardly to the stream and extending upwardly to a discharge end; a blower having an outlet opening into the duct spacedly above its lower end and directed toward the discharge end and effective to induce a secondary air stream into the lower portion of the duct beneath the outlet for drawing the ripened bolls from the comingled mixture; a rotary cotton cleaner wheel supported in the duct and composed of a drive shaft traversing the duct adjacent its lower end and a plurality of vertically disposed cleaner blades supported on the shaft and spaced axially therealong to provide vertical spacings therebetween through which the secondary air stream may pass, said blades having peripheral teeth thereon on which the ripened bolls impinge as they move upwardly in said secondary air stream; a grate structure alongside the wheel against which the ripe bolls are drawn for removing trash therefrom; means for removing the ripened bolls from the wheel and for discharging the ripened bolls into the duct above the wheel; and an adjustable air inlet in said duct below said rotary wheel and above said comingled mixture for affecting the intensity of said secondary stream.

3,881,227
DEVICE FOR CLEANING FIBROUS MATERIALS

Ubai Arifovich Arifov, Observatorskaya ulitsa, 85; Dmitry Efimovich Kharmats, Bolshaya Mirabadskaya ulitsa, 119; Gafur Abdushukurovich Abdurashidov, Ts-13, dom 21, kv. 29; Alexandr Vasilievich Vzenkonsky, Ts-2 dom 6, kv. 16; Anatoly Dmitrievich Sapon, Ts-2, dom 15, kv. 25; Vladimir Fedorovich Lavnikanis, ulitsa Lenina, 16; Mark Isoifovich Kogan, ulitsa Botkina, 1, kv. 14; Nikolai Petrovich Egorov, ulitsa 7 topolie, 4; Jury Danilovich Gomelsky, Massiv Cherdantseva, 2, dom, 23, kv. 4, and Abuzar Gabdurakhmanovich Shaidullin, kvartal 6, dom 26, kv. 13, all of Tashkent, U.S.S.R.

Continuation of Ser. No. 275,961, July 28, 1973, abandoned. This application Oct. 11, 1973, Ser. No. 405,437
Int. Cl. D01b *1/00*
U.S. Cl. 19—205 **7 Claims**



1. A device for cleaning fibrous materials, comprising a horizontal cylindrical chamber with an air duct connected tangentially to said chamber for establishing a rotating air flow inside said chamber: a horizontal cylindrical waste separating chamber connected to said first cylindrical chamber; said separating chamber including in a lower portion bars grouped in sections and affixed with one end projecting into said waste separating chamber; plates with cylindrical surface disposed between said sections of bars; said bars and plates forming a bar grate constituting the lower portion of the waste separating chamber against which circulating material is beaten for extracting waste impurities; a compartment for collecting waste impurities and portions of partly fibrous material, said compartment being disposed beneath and communicating with said waste separating chamber; a second cylindrical chamber for receiving material passing over the bars for removing cleaned fibrous material, said second chamber extending axially inside said first cylindrical chamber and provided with a sleeve at one end thereof; the distal end of said sleeve being spaced from an end wall of said cylindrical waste separating chamber; said sleeve including means for providing axial displacement relative to the end wall for varying said distance to control the amount of material withdrawn and the degree of cleaning.

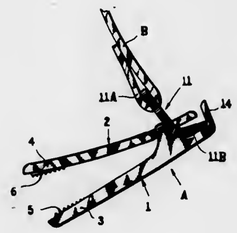
3,881,228
CLIP

Teruo Takabayashi, Kyoto, and Hiroyuki Fukushima, Tokyo, both of Japan, assignors to Kohshoh Limited, Kyoto City, Japan

Filed Dec. 17, 1973, Ser. No. 425,309
Int. Cl. A44b *21/00*
U.S. Cl. 24—250 **7 Claims**

1. A clip comprising a first and a second plate members pivotally connected to each other and each provided with jaws at one end thereof for engagement with an article to be clipped, the first plate member having a pivotal element which is integrally provided and traversely overbridging on the inner surface of the first plate member, the second plate member having a receiving element integrally provided on the outer

surface of the second plate member so as to engage with the pivotal member, a closing member for retaining the plate

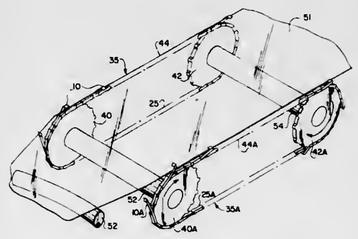


members in the closed position, and a spring biasing the jaws to the opened position.

3,881,229
CHAIN MOUNTABLE GRIPPER

Philip L. Reid, Duncan, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed June 3, 1974, Ser. No. 475,322
Int. Cl. D06c *3/02*
U.S. Cl. 26—61 B **12 Claims**



1. A grippper for gripping an advancing web of sheet material between a jaw face of the gripper and a jaw face presented by a link in a chain including connected links and pins pivotally interconnecting adjacent links, at least selected ones of said pins each having a hole therethrough, said chain defining a cycling endless loop having at least two arcuate segments and a generally linear segment therebetween, said gripper comprising:

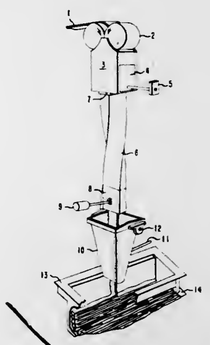
A. a generally U-shaped portion comprising first and second arms connected by a bridging member, said first arm being receivable in one of said holes, and

B. mounting means for substantially precluding rotation of said first arm relative to one of the two links directly interconnected by the pin receiving the arm when the first arm is so received and for permitting rotation of the first arm relative to the other of said two links when the first arm is so received, said second arm having a jaw face adapted to cooperate with the jaw of a link spaced from said arm-receiving pin to firmly and releasably grip a web therebetween when the first arm is so received and the generally linear segment includes said spaced link and said two directly interconnected links, said arm jaw being angularly displaceable away from the jaw of said spaced link to release the grip when said linear chain segment ceases to include said two directly interconnected links.

3,881,230
TOW PROCESSING APPARATUS

Harold Edward Arnold, Wilmington, N.C., and Joseph Boatner Herbert, Camden, S.C., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Dec. 13, 1973, Ser. No. 424,301
Int. Cl. D02g *1/20, 1/12*
U.S. Cl. 28—1.3 **1 Claim**

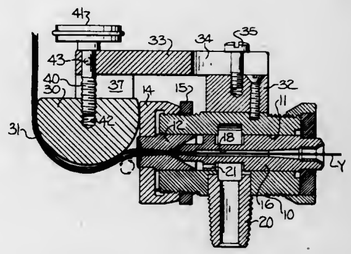


1. In a continuous tow processing apparatus including cooperating crimper rolls, a stuffer box associated with said rolls to crimp the tow and a four-sided helically twisted closed chute positioned below said stuffer box for changing the orientation of said tow, the improvement comprising: a biased first crimper gate positioned in said stuffer box for maintaining pressure on said tow in said stuffer box; an interface collar connecting said stuffer box and one end of said chute; and a biased second crimper gate incorporated into the other end of said chute the bias load on said second gate being the same as the first gate, whereby the crimped tow is supported under pressure while the orientation of said tow is being changed in said chute.

3,881,231
CYLINDRICAL BAFFLE FOR YARN TEXTURING AIR JET

Samuel T. Price, Kennedyville, Md., and Richard J. Polney, New Castle, Del., assignors to Enterprise Machine and Development Corporation, New Castle, Del.

Filed June 21, 1974, Ser. No. 481,555
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **6 Claims**



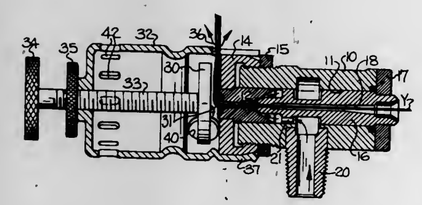
1. In a yarn texturing air jet of the type including an elongate housing having a central bore therethrough, an entrance end for passage of yarn into said air jet, an exit orifice for passage of yarn from said air jet, and means for directing pressurized air into the central bore of said housing to contact the yarn and pass outwardly through the exit end of said air jet to impart crimps, curls and loops to the filaments as the yarn passes through said air jet; the combination therewith of

means for enhancing the crimps, curls and loops imparted to the yarn by said air jet, said means comprising a baffle, means for supporting said baffle on said air jet for both vertical and horizontal adjustment adjacent said exit orifice of said air jet for engaging the yarn extending therefrom, the lower portion of said baffle being cylindrical and having a solid surface of uniform radius for engaging and directing the yarn in a semicircular path downwardly from said exit orifice and beneath the lower portion of said baffle, said baffle being engaged by the yarn and the pressurized air passing outwardly through said exit orifice of said air jet with some of the pressurized air being deflected to form a low pressure area between said exit orifice and said baffle and beneath the yarn leaving said exit orifice of said air jet, and with some of the pressurized air following the yarn in its semicircular path of travel beneath the lower portion of said baffle.

3,881,232
RESONANT BAFFLE FOR YARN TEXTURING AIR JET

Samuel T. Price, Kennedyville, Md.; Richard J. Polney, New Castle, and Walter A. Hoffsommer, Ridley Park, both of Del., assignors to Enterprise Machine and Development Corporation, New Castle, Del.

Filed June 26, 1974, Ser. No. 483,239
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **7 Claims**

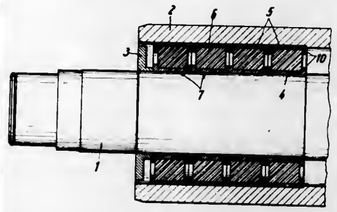


1. In a yarn texturing air jet of the type including an elongate housing having a central bore therethrough, a venturi supported in the central bore and in the exit end of said housing, said venturi defining the exit end of a turbulence chamber, a yarn guiding needle positioned in the central bore of said housing and having an inner end portion positioned closely adjacent said venturi and defining the entrance end of said turbulence chamber, and means for directing pressurized air into the central bore of said housing and along said inner end portion of said needle whereby the air passes through said turbulence chamber and outwardly through said exit orifice of said venturi to impart crimps, curls and loops to the filaments as the yarn passes through said turbulence chamber; the combination therewith of means for increasing the turbulence of air in said turbulence chamber and enhancing the crimps, curls and loops imparted to the yarn in said turbulence chamber, said means comprising a resonant baffle including a substantially planar face extending transversely across and spaced from said exit orifice of said venturi, and means for supporting said resonant baffle for axial adjustment toward and away from said exit orifice of said venturi to vary the spacing therefrom, said resonant baffle being solid and extending perpendicular to said central bore so that the pressurized air passing outwardly through said exit orifice of said venturi is engaged by said baffle to cause some of the energy of the pressurized air to echo back into said turbulence chamber and to thereby vary the normal resonance and increase the turbulence in said chamber.

3,881,233
ROLLER FOR HEAVILY LOADED ROLL TABLES AND RELATED METHOD

Ernest Schmidt; Helmut Licht, both of Bochum, and Willi Kasper, Wattenscheid, all of Germany, assignors to Fried, Krupp Huttenwerke AG

Filed Sept. 3, 1974, Ser. No. 502,397
Claims priority, application Germany, Sept. 1, 1973, 2344236
Int. Cl. B21b *13/02*
U.S. Cl. 29—110 **6 Claims**

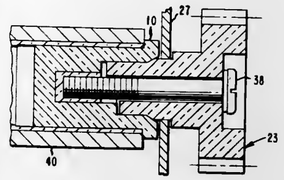


1. A roller for heavily loaded roll tables, such as rolling mill roller beds for blooms, said roller comprising a rotatable shaft, a shell of wear-resistant material connected with said rotatable shaft, concentric metal rings, moldings of resilient material arranged radially under prestress between said metal rings to form an arrangement between the shaft and the shell at least in two end regions of the shell, said rings being united firmly with the shell and the shaft respectively.

3,881,234
DEMOUNTABLE BEARING AND DRIVING MEMBER FOR RACK MOUNTED ROLLERS

John Arnold Crowell, Wilmington, Del., and Joel Leroy Vanover, Woodbury, N.J., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Apr. 10, 1974, Ser. No. 459,708
Int. Cl. B21b *13/02*
U.S. Cl. 29—115 **4 Claims**



1. In apparatus for transporting film having at least one demountable roller secured in a supporting frame the improvement which comprises:

a roll end socket on the end of said roller having an elongated recess along the axis therein, a collar at the end of said roll end socket circumscribing said recess and forming a thrust bearing surface for contacting the surface of said supporting frame, a first torque transfer means incorporated in said recess for transferring torque to said roller, and a securing means,

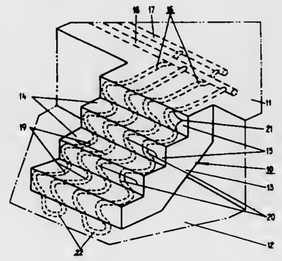
a unitary gudgeon having, a torque transmitting shaft rotatably and removably mounted in said supporting frame and removably insertable into the elongated recess of said roll end socket, said shaft having a bore along its axis, a second torque transfer means integral with the insertable end of said shaft for cooperating with and transferring torque to said first torque transfer means, a drive means mounted on the end of said shaft outside said supporting frame for providing torque to said shaft, a thrust bearing surface integrally affixed to said drive means between said drive means and said supporting frame for making contact with said supporting frame, and

a fastening member extending through said bore in said shaft and fastenable into said securing means for fastening said gudgeon to said roll end socket.

3,881,235
STEPS, STAIRS AND THE LIKE, AND A METHOD OF CONSTRUCTING SAME

Sven Gunnar Svenstam, Upplands, Vasby, Sweden, assignor to Gränges Essem Aktiebolag

Filed Aug. 28, 1972, Ser. No. 284,456
Claims priority, application Sweden, Aug. 27, 1971, 10908/71
Int. Cl. F24h *3/00*
U.S. Cl. 29—157.3 R **8 Claims**



1. A method of making a flight of steps, stairs and the like having at least one pipe for carrying heating medium arranged beneath the treads of the steps to maintain the steps free from ice and snow, each pipe being mounted to the frame structure of the steps at least prior to forming the external tread surfaces of the steps, the method comprising the steps of twisting at least one permanently pre-shaped pipe having interconnecting and substantially arcuate portions about the longitudinal axis of said pipe at regions along the length thereof to conform said pipe to the configuration of the step frame structure, and mounting the twisted pipe to said step frame structure with the pipe extending substantially in longitudinal direction of the finished steps in planes located generally parallel with the treads and risers of said steps, said interconnected and substantially arcuate portions curving alternatively toward either side of the steps, said pipe extending substantially at right angles to the longitudinal direction of said flight of steps at the point where the pipe passes between respective treads and risers.

3,881,236
METHOD OF PROVIDING BALL ENDS ON GUITAR STRINGS

William H. Chaffee; Alfred M. Rublo, and Richard L. Lorenz, all of Chicago, Ill., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

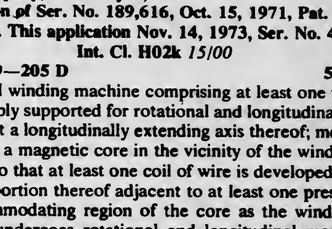
Division of Ser. No. 274,810, July 24, 1972, Pat. No. 3,777,613, which is a continuation-in-part of Ser. No. 160,734, July 8, 1971, abandoned. This application June 27, 1973, Ser. No. 373,950
Int. Cl. G10d *3/00*
U.S. Cl. 29—169.5 **81 Claims**

1. A method of providing an enlarged end on a string for a musical instrument, which comprises:

disposing an end portion of a string for a musical instrument longitudinally within an elongated object;

applying lateral compressive forces externally to said object to deform the same in such manner as to effect bending of said string end portion; and

applying longitudinal compressive forces externally to said object while said object is confined within a forming chamber having a predetermined shape, said longitudinal compressive forces being of a magnitude sufficient to



deform said object into generally the shape of said forming chamber and to cause said object to seize the bent string end portion for prevention of withdrawal thereof.

3,881,237
SQUARE CUT BIAS BELT OF STEEL TIRE CORD

Thomas A. Barnett, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1972, Ser. No. 319,278
Int. Cl. B21f *37/00*
U.S. Cl. 29—193 **1 Claim**

1. A bias belt comprising a plurality of steel wires, in essentially adjacent, parallel relationship wherein the planar area of each of the terminal ends of each wire is essentially equal to the minimum cross-sectional area of each wire.

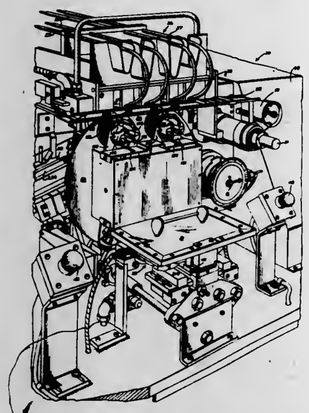
3,881,238
APPARATUS FOR WINDING MAGNETIC CORES AND TREATING LEADS

Lowell M. Mason, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 189,616, Oct. 15, 1971, Pat. No. 3,812,570. This application Nov. 14, 1973, Ser. No. 415,504
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 D **5 Claims**

1. A coil winding machine comprising at least one winding gun assembly supported for rotational and longitudinal movement about a longitudinally extending axis thereof; means for supporting a magnetic core in the vicinity of the winding gun assembly so that at least one coil of wire is developed with at least one portion thereof adjacent to at least one preselected coil accommodating region of the core as the winding gun assembly undergoes rotational and longitudinal movement; lead wire handling means for pulling a predetermined length of wire from the at least one winding gun assembly; means for severing the length of wire; and means for holding a portion of the wire so severed between the severed part thereof and the winding gun assembly; said lead wire handling means including a lead wire pulling element mounted for movement generally toward and away from a line extending between the winding gun assembly and a core supported adjacent thereto by the means for supporting a magnetic core; said means for severing forming part of an assembled mechanism having a wire accommodating opening therein and supported for

movement toward a line extending between the lead wire pulling element and a winding gun assembly; said assembled



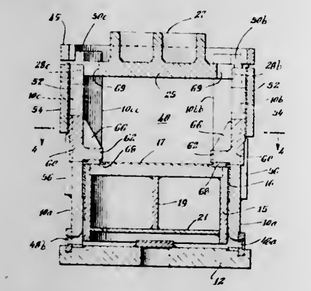
mechanism also including said means for holding a portion of the wire so severed.

3,881,239

METHOD OF FABRICATING HYDRAULIC PRESSES

Leland E. Coulter, New Canaan, Conn., and Herman S. Church, Cuyahoga Falls, Ohio, assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Jan. 28, 1974, Ser. No. 437,359
Int. Cl. B23p *17/00;* **B30b** *1/32*
U.S. Cl. 29—416 **3 Claims**



1. The method of fabricating enclosure parts for heavy duty presses from beginning stock comprising a rectangular steel plate having the length of one pair of parallel edges greater than the desired length of one finished enclosure part but shorter than the combined length of two such parts and having the length of the orthogonal edges substantially equal to the desired internal circumference of the finished enclosure, with method comprises

A. forming the steel plate into a hollow cylinder in which the said orthogonal edges define the ends of the cylinder and in which the first-mentioned pair of edges are in abutting contact;

B. welding the abutting edges to complete the continuity of the inner and outer surfaces of the hollow cylinder;

C. in a region of the cylinder between its ends cutting four identically dimensioned longitudinally extending separation slots which

1. are 90° displaced from one another about the circumference of the cylinder and

2. terminate at each end at a distance from the corresponding end of the cylinder which is the same for each of the slots and is also the same for each end of the individual slots, whereby identical uncut annular bands are left at each end of the cylinder;

D. at one end of the slotted region

1. cutting a first circumferential separation slot in the cylinder between the corresponding ends of two adjacent longitudinal slots and

2. cutting a second circumferential separation slot between the other two longitudinal slots in such location that every point along the second slot is diametrically opposed to a corresponding point along the first slot;

E. at the other end of the slotted region

1. cutting a third circumferential separation slot in the cylinder between the ends of two adjacent longitudinally extending slots in such a location that every point along the third slot is 90° circumferentially displaced from a corresponding point along each of the two previously mentioned circumferential slots, and finally

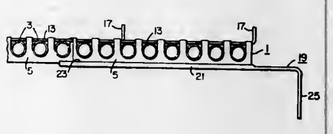
2. cutting a fourth circumferential separation slot between the ends of the remaining two longitudinally extending slots in such location that every point along this slot is diametrically opposed to a corresponding point along the third slot, whereby the cylinder is separated into two identical enclosure parts, each comprising a solid annular end portion and two opposed longitudinally extending segmental portions which are connected to the end portion and separated by openings similar in form and dimensions to the segmental portions themselves.

3,881,240

METHOD FOR INSTALLING A TUBE CLAMP

Charles C. Peake, and Harry H. Bolan, both of Media, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 306,132, Nov. 13, 1972, Pat. No. 3,813,749. This application Nov. 12, 1973, Ser. No. 415,281
Int. Cl. B23q *3/00*
U.S. Cl. 29—468 **2 Claims**



1. A method for installing a tube clamp formed from an elongated strip having generally parallel side margins and a plurality of transversely disposed elongated openings disposed therein to form kerfs when the strip is bent generally parallel to its longitudinal axis utilizing a straight pin and a tool formed from a flat bar which has its edges folded at an angle in excess of 90°, said method comprising the steps of:

compressing the margins of the strip to fit within the folded edges of the tool,

placing the kerfs over the tubes,

inserting the straight pin between the tubes and the bent portion of the strip to capture the tubes within the kerfs, and

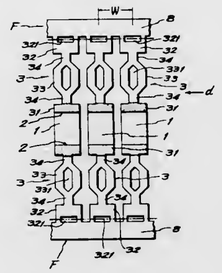
sliding the tool from the strip, whereby the margins of the strip spring outwardly tightly clamping the tubes against the pin.

3,881,241

GALVANO-MAGNETO EFFECT DEVICE

Noboru Masuda, Saitama, and Hisashi Takiguchi, Tokyo, both of Japan, assignors to Denki Onkyo Company, Ltd., Tokyo, Japan

Division of Ser. No. 183,007, Sept. 23, 1971, abandoned. This application July 21, 1972, Ser. No. 274,060
Claims priority, application Japan, Sept. 28, 1970, 45-84799
Int. Cl. B01j *17/00*
U.S. Cl. 29—574 **5 Claims**



1. A method of connecting a lead frame to a semiconductor element comprising:

a. positioning in parallel a pair of unconnected lead frame plates, each lead frame plate having a base and a plurality of lead frames extending therefrom forming a comb type structure, wherein said positioning includes positioning said bases in parallel with said lead frame extending towards each other, the extended ends of each said lead frame on one of said lead frame plates being positioned at a predetermined distance from the corresponding lead frame on the other of said lead frame plates;

b. providing a plurality of magneto-resistance effect elements with each element having at least a pair of electrodes, placing each magneto-resistance element between the extended ends of a pair of opposed lead frames of said pair of lead frame plates with each electrode of said pair of electrodes of each element contacting a different one of said pair of opposed lead frames; and

c. heating the extended ends of said lead frames to bond said extended ends to the electrodes of said pair of electrodes of said magneto-resistance elements.

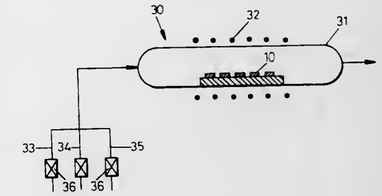
3,881,242

METHODS OF MANUFACTURING SEMICONDUCTOR DEVICES

Roy Nuttall, Cheadle, and Leslie Dormer, Poynton, both of England, assignors to Ferranti Limited, Hollinwood, Lancashire, England

Filed Nov. 8, 1973, Ser. No. 413,894
Claims priority, application United Kingdom, Nov. 8, 1972, 51566
Int. Cl. B01j *17/00*
U.S. Cl. 29—589 **16 Claims**

1. A method of manufacturing a semiconductor device, the device having a monocrystalline silicon semiconductor body, a passivating layer of silicon oxide on at least one surface of the semiconductor body defining an aperture through which a part of said surface of the semiconductor body is exposed, and an ohmic contact extending both to the part of said surface of the semiconductor body exposed through the aperture in the passivating layer and on portions of the passivating layer adjacent to the aperture, the method including forming the ohmic contact by depositing a layer of polycrystalline silicon and a layer of metal selected from the group tungsten and molybdenum, the polycrystalline layer and the metal layer are deposited consecutively within the same deposition apparatus, the polycrystalline layer is deposited from an atmosphere of silane maintained at a temperature in the range 700° to 750°C within the deposition apparatus, when the metal layer is to be deposited the atmosphere is modified by the introduction



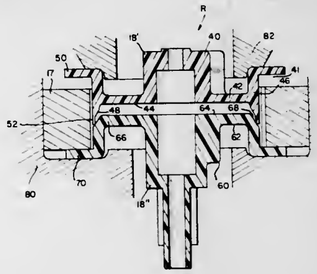
therein of a vapour of a compound of the metal, the modified atmosphere being maintained at a temperature in the same range, and the metal layer being deposited from the modified atmosphere by the reduction of the compound by the silane.

3,881,243

METHOD OF MAKING PERMANENT MAGNET ROTOR FOR A SYNCHRONOUS MOTOR

Albert C. Bannon, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Division of Ser. No. 342,072, March 16, 1973. This application Dec. 10, 1973, Ser. No. 423,183
Int. Cl. H02k *15/04*
U.S. Cl. 29—598 **3 Claims**



1. A method of forming a permanent magnet rotor comprising:

a. providing a hub of at least two sections,

b. positioning a permanent magnet having at least one recess therein between said sections at their outer peripheries, and

c. applying an ultrasonic vibration to at least one of said sections to bond said sections together at their outer peripheries, at least a portion of said sections being melted and flowing into at least said recess whereby said permanent magnet is secured in place.

3,881,244

METHOD OF MAKING A SOLID STATE INDUCTOR

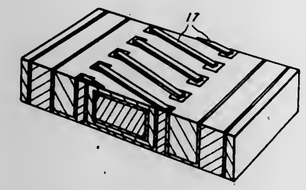
Don Leslie Kendall, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 259,325, June 2, 1972, abandoned. This application Aug. 3, 1973, Ser. No. 385,625
Int. Cl. H01f *7/06*
U.S. Cl. 29—602 **5 Claims**

1. The method of forming a semiconductor inductor from a semiconductor body having first and second surfaces comprising the steps of:

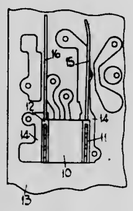
a. forming a plurality of selectively spaced parallel grooves in said first surface to provide at least first and second rows of semicondutor material between said grooves,

b. selectively removing portions of siad first and second rows to provide studs in said first and second rows,
c. depositing a core material of one permeability between said first and second rows of semiconductor studs,



d. lapping said lower surface to remove said semiconductor body between said second surface and said grooves, and
e. selectively electrically interconnecting said semiconductor studs in a helix configuration circumventing said core material.

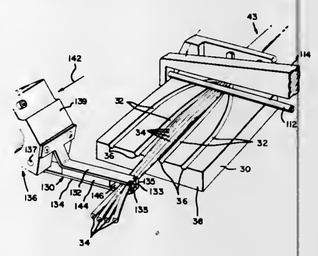
3,881,245
MOUNTING ELECTRICAL COMPONENTS ON THICK FILM PRINTED CIRCUIT ELEMENTS
Jeffrey Leoman Dudley, Solihull, and John Christopher Walker, Nuneaton, both of England, assignors to Lucas Aerospace Limited, Birmingham, England
Filed Feb. 26, 1974, Ser. No. 445,853
Claims priority, application United Kingdom, Mar. 13, 1973, 12041/73
Int. Cl. H05k *3/32*
U.S. Cl. 29—627 **9 Claims**



1. A method of mounting, on thick film printed circuit elements, components having metallised contact areas, comprising welding a strip of metal foil to a conductive area of the circuit element, placing the component so that a metallised area of said component overlays the welded portion of said strip, wrapping the ends of the strip around the component and welding them to said metallised area on the component.

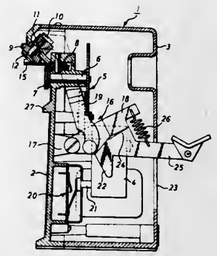
3,881,246
METHOD AND APPARATUS FOR FACILITATING THE POSITIONING OF THE FREE END SECTIONS OF A PLURALITY OF LEADS IN A PLURALITY OF GROOVES
Kenneth Foster Folk, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 12, 1973, Ser. No. 424,132
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 **21 Claims**

1. A method of positioning leads having free ends comprising the steps of:
providing an apparatus including a template having groove means;
holding a portion of a plurality of leads remote from the free ends of the leads adjacent one end of said groove means;
moving the free ends of the leads away from said one end



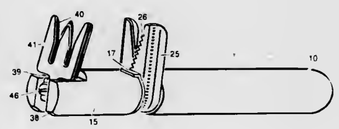
of the groove means; and
positioning the leads into the groove means.

3,881,247
ELECTRICALLY POWERED CAN OPENER
Tatuo Niwa, Mie-ken, Japan, assignor to Kabushiki Kaisha Aichi Denki Kosakusho, Kasugai, Japan
Filed June 22, 1973, Ser. No. 372,778
Claims priority, application Japan, Sept. 8, 1972, 47-104898[U]
Int. Cl. B67b *7/34*
U.S. Cl. 30—4 R **5 Claims**



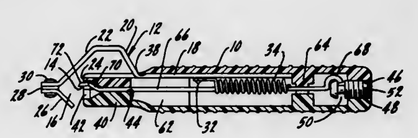
1. In an electrically powered can opener of the type adapted to sever the outer layer of an end seam of a can and including a body frame, an electric motor housed within said body frame, a drive shaft driven by said motor horizontally journalled on and protruding from the vertical front member of said frame, a can rim drive cog wheel mounted on the protruding portion of said shaft to rotate a can by driving the lower edge of the outer layer of the can end seam, a cutting wheel rotatably mounted on said front member and positioned so that the cutting edge thereof may be engaged with the outer layer of the end seam of a can, a lever mechanism mounted on said frame to activate said motor, and a cam rim engaging roller mounted on said lever mechanism in such a manner that the engaging portion of said roller may be brought inside the inner layer of the end seam of a can to depress the seam toward the cutting edge of said cutting wheel upon operating said lever mechanism; the improvement wherein said lever mechanism comprises an actuating lever pivoted for vertical movement to said body frame for activating said motor when lowered, an operation lever pivoted at one end co-axially with said actuating lever, a rotary plate having said can rim engaging roller mounted thereon and journalled at one end and having its other end pivotally connected by a link to a portion of said operation lever, and a resilient means connected between the other end of said operation lever and a portion of said actuating lever for normally biasing said actuating and operating levers toward each other, whereby said resilient means is stretched by a predetermined amount while said roller depresses the inner layer of a can end seam and is further stretched when said cutting edge of said cutting wheel severs a thicker portion of the outer layer of a can end seam.

3,881,248
WIRE CUT AND STRIP TOOLS
Harry Kaufman, New Rochelle, N.Y., assignor to O.K. Machine and Tool Corporation, New York, N.Y.
Filed June 1, 1973, Ser. No. 366,123
Int. Cl. H02g *1/12*
U.S. Cl. 30—90.1 **16 Claims**



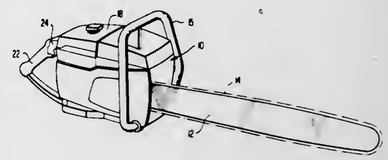
1. A hand tool for stripping insulation from an electrical wire, comprising a generally plate-like member having a groove extending inwardly from one edge of the member, said groove being defined by side walls of the member having a thickness direction generally perpendicular to the plane of the plate-like member, first side wall portions on opposite sides of one groove portion being parallel to one another and spaced apart by a distance substantially equal to the diameter of the metal part of the electrical wire to form a stripping slot capable of slicing through the insulation when the wire is forced down into the groove, second wall portions on opposite sides of said one groove portion and adjacent in the thickness direction said first side wall portions and being substantially parallel to one another and forming a centering slot aligned in the thickness direction with the stripping slot and having lateral dimensions such as to receive the insulated electrical wire and center and guide the metal part of the electrical wire as it passes through the stripping slot when the wire is pulled through the groove to strip the sliced insulation from one end of the wire.

3,881,249
CABLE STRIPPER
John A. Cox, Jr., Genoa, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.
Filed June 5, 1974, Ser. No. 476,511
Int. Cl. H02g *1/12*
U.S. Cl. 30—90.7 **7 Claims**



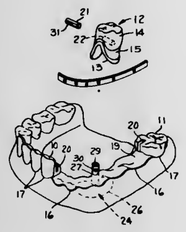
1. In a tool for stripping the insulation from cable and the like, an elongated handle with a generally circular cable-receiving zone on one end thereof, a frame overlying and defining a part of the cable-receiving zone with the handle and frame being spring-biased toward each other so that a cable in the cable-receiving zone will be firmly held against the end of the handle, and a cutting edge adjustably mounted in the cable-receiving zone with the cutting edge being free to rotate about a pivotal axis extending longitudinally through the handle and said cutting edge being along a line disposed at an angle that intersects the pivotal axis.

3,881,250
CHAIN SAW FILTER ASSEMBLY
Robert Eugene Frederickson, Southgate, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.
Filed Nov. 8, 1972, Ser. No. 304,592
Int. Cl. B23d *49/00*
U.S. Cl. 30—383 **6 Claims**



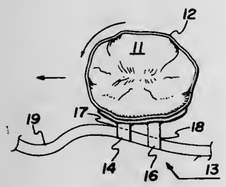
1. A chain saw comprising:
a metallic housing;
a guide bar connected to said housing;
a cutting chain carried by said guide bar;
an internal combustion engine carried by said housing and including a carburetor;
air passage means communicating with said carburetor;
a stationary retainer plate attached to said housing and located in said air passage means;
a vented metallic cover removably disposed over said air passage means;
said cover and said retainer plate including fastener means for releasably attaching said cover to said housing, said fastener means including a connector pin;
a filter assembly for segregating particulate matter from inlet air passing through said inlet air passage means, said filter assembly comprising:
at least one sheet of filter material, said filter sheet including an aperture accommodating passage of said connector pin, and
a one-piece holder formed of a flexible material for supporting said flexible sheet of filter material, said holder comprising a pair of apertured plates integrally joined along a common side to define a hinge axis for said plates, each plate comprising:
a peripheral rim,
a network of criss-crossing ribs defining a plurality of apertures including an aperture receiving said connector pin,
first resilient sealing ridge means projecting from both sides of said rim and extending substantially continuously around said rim, and
second resilient sealing ridge means projecting from both sides of the portion of said rib network defining said pin-receiving aperture to surround the latter;
said holder being foldable along said hinge axis to orient said plates in superposed relationship with said sheet of filter material sandwiched between said plates and engaged by internally located ones of said first and second sealing ridge means, with the apertures of said plates being in general alignment; and
seating ledge means on said housing for receiving said filter assembly;
said cover including pressure surface means engageable with externally located ones of said first and second sealing ridge means of one plate for urging internally located ones of said first and second sealing ridge means against opposite sides of said filter sheet, and urging externally located ones of said first and second sealing ridge means of the other plate against said seating ledge means, so as to impose an air seal around the periphery of said filter assembly and around said pin-receiving aperture when said cover is secured to said housing by said fastener means.

3,881,251
CROWN AND BRIDGE PREFABRICATED SYSTEM
Maurice Valen, Franklin Dental Studios, 40-17 83nd St., Jackson Heights, N.Y. 11373
Filed Jan. 2, 1974, Ser. No. 430,170
Int. Cl. A61c *13/22*
U.S. Cl. 32—5 **7 Claims**



1. An artificial tooth structure for placement in a mouth of an individual, in that portion thereof, requiring replacement of at least one missing natural tooth, said artificial tooth structure being an operatively viable, and simulative replacement for the natural missing teeth, each of the artificial teeth of said structure comprising a composite of two mutually bonded members, a first member of said composite being a crown section having the shape and color simulative of the missing natural tooth crown, a second member of said composite being bonded to a lower portion of said crown section and simulative in shape and color of a gum section immediately adjacent said missing natural tooth crown, which said gum section being a resorbed portion of the gum, said second gum-like member acting to replace said resorbed gum section so as to act as a natural base for said crown member, and also being flexible so as to act as a load carrying cushion between the resorbed gum and said crown section for adjusting for masticatory forces exerted upon said crown member during mastication, thus providing a natural functional viability to said artificial tooth structure, said composite tooth structure containing a slot-like aperture in a lower portion thereof, for receiving a bridge-like bar therein, and means supported by said composite to anchor the composite artificial tooth structure to said bridge-like bar, and further wherein said slot-like aperture receives a portion of an implanted structure which is anchored in said mouth.

3,881,252
ORTHODONTIC BRACKET EXTRACTION
Lawrence F. Andrews, 2025 Chatsworth Blvd., San Diego, Calif. 92107
Continuation-in-part of Ser. No. 249,684, May 1, 1972, abandoned. This application July 31, 1973, Ser. No. 384,196
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **3 Claims**



1. An orthodontic bracket for bodily tooth movement cases comprising:
a bracket having a groove recess therein for the reception of an archwire, said bracket having a leading edge and a trailing edge relative to bodily tooth movement; and said leading edge being narrower than said trailing edge creating an angle between an installed archwire and a transverse axis of the tooth, said angle being substantially equal in degrees to the desired number of millimeters of tooth movement.

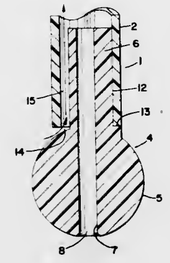
3,881,253
INSTA-PLOTTER APPARATUS FOR PLOTTING VISUAL AIRCRAFT POSITION USING RADIO INFORMATION
Robert E. Haws, 714 Placer Dr., Woodland, Calif. 95695
Filed Feb. 19, 1974, Ser. No. 443,686
Int. Cl. B43l *7/00*
U.S. Cl. 33—1 MP **4 Claims**



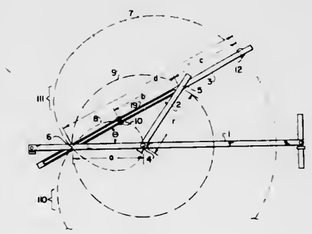
1. In an inflight plotting apparatus including a plotting board structure carrying a removable navigational map, a plotting device comprising:
a transparent flat circular plastic compass rose having a central opening;
a flat elongated transparent plastic rectangular first member having one end integral with a portion of the periphery of said rose, said rose and said first member lying in a common plane, said first member having a longitudinal slot extending from a position adjacent the other end of said first member to said one end of the first member, said first member having a linear scale disposed along the slot;
a transparent flat doughnut shaped second member secured to the top surface of the rose, said second member having an opening aligned with the central opening of said rose;
a transparent cap secured to the top surface of the second member and having a central hole centered on the aligned openings;
a bushing disposed at the center of the openings and hole and extending at right angles to said common plane, one end of said bushing extending through said hole;
lifting ring means secured to said one end of the bushing; and
a suction cup disposed outside of the opening in the rose and secured to the other end of the bushing.

3,881,254
SALIVA EJECTOR
Louis C. Epstein, 3813 Westwood Rd., University Heights, Ohio 44118
Filed Feb. 6, 1974, Ser. No. 440,074
Int. Cl. A61c *17/04*
U.S. Cl. 32—33 **13 Claims**

1. A saliva ejector of the character described, comprising a suction tube, an ejector head comprising a spherical portion and a stem extending radially from said spherical portion and frictionally secured within one end of said suction tube, said head having a single suction passageay extending completely diametrically through said spherical portion and axially through said stem, with the axis of said passageway coaxial with said suction tube, and means for aspirating a minimal amount of atmospheric air into the space between said stem and the inner wall of said suction tube.

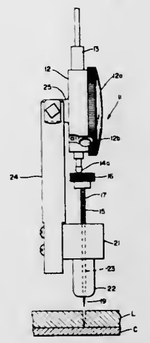


3,881,255
INSTRUMENT FOR INSCRIBING GEOMETRICAL LOOPS
Henry R. Pantek, 8717 Fallen Oak Dr., Bethesda, Md. 20034
Filed Apr. 5, 1974, Ser. No. 458,436
Int. Cl. B43l *9/00*
U.S. Cl. 33—27 R **9 Claims**



1. An instrument for inscribing on a surface a closed symmetrical planar loop having an inwardly directed cusp, said instrument comprising an axis arm member, a radius arm member, and an inscribing arm member joined to each other in a spaced relationship by three pivots, the first pivot joining the radially inner end portion of said radius arm member with the central portion of said axis arm member, the second pivot joining the radially outer end portion of said radius arm member and the central portion of said inscribing arm member by means permitting the distance between the first pivot and the second pivot to be adjustable, the third pivot joining one end portion of the axis arm member with one end of the inscribing arm member by means permitting the pivot to be adjustable with respect to the distance from it to each of the other two pivots, said inscribing arm member carrying two scribe means for inscribing said loop adjustable to locations along the length of said inscribing arm member, one of said scribe means being located between the second and third pivots and the other of said scribe means being located at the other end portion of the inscribing arm member, and said axis arm member having means for fixing its position with respect to the surface on which said loop is to be inscribed.

3,881,256
THICKNESS GAGE
Jack Jewell, Springfield, Ohio; Virgil D. Ferguson, McGregor, and Sherald J. Anderson, Waco, both of Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 21, 1974, Ser. No. 444,577
Int. Cl. G01b *5/06*
U.S. Cl. 33—172 R **1 Claim**

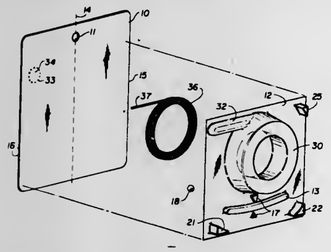


1. A thickness gage for measuring the thickness of an elastomeric liner, said liner being located in an enclosed casing comprising:
a. a base;
b. a zero dial indicator operably connected to the upper end of said base, said zero dial indicator having a spindle downwardly depending therefrom;
c. a pin assembly operably connected to the lower end of said base;
d. said pin assembly including a pin, a pin guide, a pin guide yoke, a spring and a head;
e. said pin having a pin point formed at the lower end and said head being attached to the upper end thereof, said head being in contact with said spindle;
f. said spring surrounding the upper region of said pin and positioned between said head and said pin guide yoke;
g. said pin guide surrounding the lower region of said pin and said pin guide yoke surrounding the middle region of said pin; and
h. the upper part of said pin guide being operably connected to the lower region of said pin guide yoke and said pin guide yoke being connected to lower end of said base.

3,881,257
LEVELLING DEVICE INCLUDING MERCHANDISE DISPENSING MEANS
Lee Richard Chasen, Port Chester, N.Y., assignor to Coats & Clark, Inc., New York, N.Y.
Filed July 16, 1974, Ser. No. 489,052
Int. Cl. G01c *9/10*
U.S. Cl. 33—354 **17 Claims**

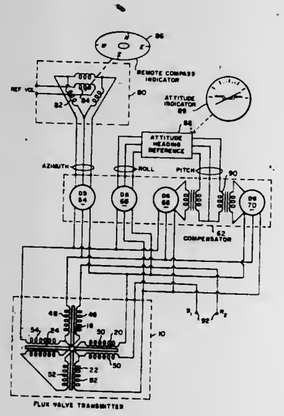
1. A levelling device comprising a flat backing sheet, a transparent layer affixed to said backing sheet, said transparent layer having a portion thereof formed to extend from the surface of said backing sheet to form a cavity having an arcuate side between said layer and said sheet, said cavity having an axis normal to the plane of said sheet, said device further having recesses formed by a portion of said layer extending from the surface of said sheet to define two surfaces of one plane which is normal to the surface of said sheet, an indicator member having a rolling surface and being movably located in

said cavity, and means on said device for indicating a centrally located annular position of said indicator member on said arcuate side of said cavity, whereby alignment of an object is



indicated by displacement of said indicator member to said angular position when said sheet is vertically held with said formed portion means held against said object.

3,881,258
ALL ATTITUDE COMPASS
Lloyd A. Iddings, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 10, 1973, Ser. No. 423,625
Int. Cl. G01c *17/30*
U.S. Cl. 33—357 **21 Claims**



1. An all-attitude magnetic compass and detector system compensated for magnetic variation, deviation, and dip comprising:

a flux valve transmitter having a four pole spool wherein said poles are spherically equiangularly spaced radiating from a common center;

an electromagnetic coil wound about each of said poles;

an azimuth differential synchro generator connected to said flux valve transmitter and deriving signals therefrom:

a remote compass indicator connected to said azimuth differential synchro generator;

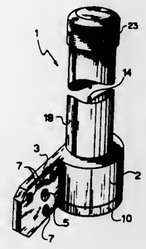
a roll differential synchro generator connected to said flux valve transmitter and providing roll compensating signals thereto;

an attitude heading reference for providing signals representing roll and pitch information; and

a pair of pitch differential synchro generators connected between said attitude heading reference and said flux valve transmitter and providing pitch compensating signals thereto;

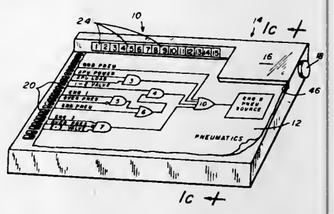
whereby said remote compass indicator displays accurate magnetic azimuth free of northerly and southerly turning errors and acceleration and deceleration errors.

3,881,259
LEVEL INDICATING DEVICE
Gérard Pigeon, 271 Quintal St., Laval-Des-Rapides, Quebec, Canada
Filed Aug. 7, 1973, Ser. No. 386,344
Int. Cl. G01c *9/14*
U.S. Cl. 33—397 **7 Claims**



1. A level indicating device comprising a base consisting of a first part and of a second part, a universal pivot means carried by said second part of said base and defining a universal pivot center, a needle member having a pivot portion and an indicating end portion, said pivot portion resting onto said universal pivot means with the center of gravity of said needle member operatively standing below the pivot center of said universal pivot means, a level indicating sight carried by said first part and extending adjacent said indicating end portion and having a line of sight extending substantially through said pivot center and arranged for displaying to a viewer to said sight all departures of said indicating end portion in any direction relative to said line of sight, said second part being laterally and adjustably secured to said first part for adjustment of said indicating, end portion relative to said level indicating sight, a plate extension secured to said first part of said base for attaching said device to an object, the level of which is to be monitored, and adjustment means engaging plate extension and constructed and arranged to produce levelling of said plate extension relative to said object.

3,881,260
SELF-TEACHING MACHINE FOR BINARY LOGIC
James M. Hombs, 3241 S. 93 East Ave., Tulsa, Okla. 74145
Filed July 5, 1973, Ser. No. 376,315
Int. Cl. G09b *23/18*
U.S. Cl. 35—30 **14 Claims**



1. An independent machine for teaching binary logic utilizing a printed problem sheet having a plurality of illustrated logic gates, input and output signal paths printed thereon, said machine comprising:

a. a plurality of programmable universal gates (PUG), each PUG having at least two input terminals and one output terminal,

b. annunciator means for at least one of said PUG,

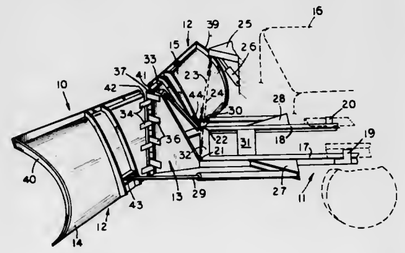
c. a plurality of manually operated situation selector switches to provide logic signals to the said PUGS,

d. a means to position said problem sheet to match a plurality of said situation selector switches with said plurality of illustrated logic input signal paths printed on said problem sheet

e. a programmable sensor means to selectively interconnect the output terminal of at least one said PUG to at least one input terminal of any second PUG and

f. said programmable sensor means comprising switching means carried by the machine and operably connected to the terminals of the PUG, operator means for said switching means carried by the said problem sheet and engagable with said switching means.

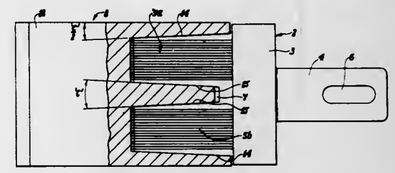
3,881,261
SMALL VEHICLE SNOW PLOW
Rene L. Lavoie, Box 135, Danville Junction, Maine
Filed June 4, 1973, Ser. No. 366,774
Int. Cl. E01h *5/04*
U.S. Cl. 37—46 **4 Claims**



1. In a snow plow having a support frame, including means to attach said frame to a selected vehicle, a first plow blade, a second plow blade substantially similar to said first plow blade, means on said frame to selectively extend or retract each said plow blade, and a pyramidal open brace means on said frame, said brace means tapering from said frame to a vertical apex, means to hinge the said first and second plow blade along the vertical length of the apex of said brace means, said means to hinge comprising a plurality of hinges on said first plow blade, a plurality of hinges on said second plow blade, a plurality of brace hinges on said brace means, said first plow blade and second plow blade and brace support hinges all engaging a single hinge pin forward of said apex said brace means and blades and hinges all supported by said support frame.

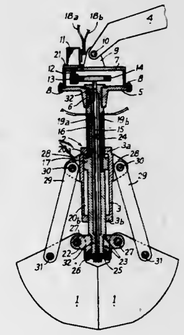
3,881,262
TWO-PART EXCAVATING TOOL
Clifford Cullen, Doncaster, Victoria, Australia, assignor to Vickers Ruwolt Proprietary Limited, Richmond, Victoria, Australia
Continuation of Ser. No. 70,396, Sept. 8, 1970, abandoned. This application July 11, 1973, Ser. No. 378,147
Claims priority, application Australia, Sept. 9, 1969, 60633/69
Int. Cl. E02f *9/28*
U.S. Cl. 37—142 R **16 Claims**

1. An excavator tool part adapted for weding engagement with another tool and having a motor external load bearing surface and a socket including locking side surfaces which extend transverse to said major load bearing surface, said locking side surfaces facing in opposite directions, being non-parallel in the direction of engagement with said another tool part and being curved in opposite directions in transverse cross-section, at least at their edges, and non-locking socket side surfaces extending transverse to said locking surfaces,



said non-locking surfaces facing in opposite directions and being non-parallel in the direction of engagement with said another tool part, and the included angle between said non-locking surfaces is greater than the included angle between said locking surfaces.

3,881,263
ANGULAR POSITION CONTROLLER FOR CLAM-SHELL BUCKET
Yves G. Coeurderoy, Lagny-le-Sec, France, assignor to Societe Anonyme: Poclain, Le Plessis Belleville, France
Filed Mar. 11, 1974, Ser. No. 449,609
Claims priority, application France, Apr. 18, 1973, 73.14238
Int. Cl. B66c *3/16*; E02f *3/44*
U.S. Cl. 37—186 **10 Claims**



1. A clam-shell bucket comprising

grasping elements,

ram means for adjusting the position of said elements, said ram means comprising,

a cylinder having opposed end walls,

piston means slidable in the cylinder, and

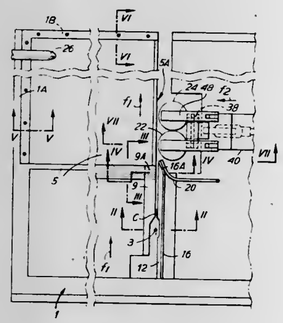
piston rod means carried by the piston means, said piston rod means including a central cavity open at at least one end of the piston rod means,

motor means operative to adjust the angular orientation of the grasping elements, said motor means comprising,

a body member, and

a shaft member rotatable relative to the body member, and rotary driving rod means, one of said members being rigid with an end portion of the piston rod means, and the other of said members being coupled with the driving rod means, said driving rod means extending into the said cavity through the open end thereof.

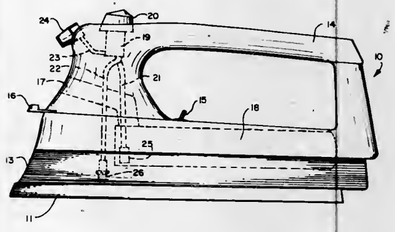
3,881,264
DEVICE FOR FLATTENING AND IRONING THE SEAM ZONE BETWEEN TWO LAYERS OF FABRIC
Affortunato Grazzini, Arezzo, Italy, assignor to Cassina & Co. S.R.L.
Filed Oct. 17, 1973, Ser. No. 407,039
Claims priority, application Italy, Nov. 2, 1972, 9733/72
Int. Cl. D06f *69/00*
U.S. Cl. 38—1 B **7 Claims**



1. A seam flattener apparatus for directing a pair of fabric layers past an ironing station and for ironing portions of said fabric layers, said fabric layers each including
a longitudinally extending outer edge,
a sewn seam extending generally parallel to said edges of said fabric layers and defining on each of said fabric layers
an edge portion extending between said seam and said outer edge, and
a main portion extending on a side of said seam opposite said edge portion,
said apparatus comprising, in combination,
first guide means configured to dispose said main portions in a coplanar relationship relative to each other, with each of said main portions extending away from said seam in opposite directions, second guide means configured to dispose said edge portions in a coplanar relationship relative to each other, with each of said edge portions extending away from said seam in opposite directions and with the edge portion of each of said fabric layers overlapping the respective main portion of its corresponding fabric layer,
means for supplying moisture to said edge portions and said main portions along said seam, and
means for pressing said edge portions against said main portions along said seam while simultaneously applying heat thereto, said pressing means being located relative to said first and second guide means to press and apply heat thereto after said main portions and said edge portions have been disposed in said coplanar relationships.

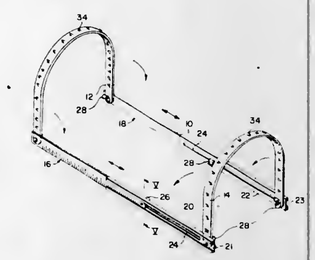
3,881,265
STEAM-SPRAY IRON
John L. Eaton, Delanco, N.J.; John C. Fagan, Philadelphia, and Roger V. Eeckhout, Warminster, both of Pa., assignors to SCM Corporation, New York, N.Y.
Filed May 25, 1973, Ser. No. 363,965
Int. Cl. D06f *75/06*
U.S. Cl. 38—77.5 **23 Claims**

1. In an electrical pressing iron having a sole plate with steam ports, a steam generating chamber communicating with said steam ports, a spray nozzle, a valve means with two outlets, one communicating with said spray nozzle and the other with said steam generating chamber, a reservoir, a pump having piston means, said pump having an inlet communicating with said reservoir and an outlet communicating with said valve, the improvement comprising:
said valve means being bistable for allowing only one of said two outlets to be open at a time, and



pump actuation means for operating said pump and for selecting said one of said valve's stable states.

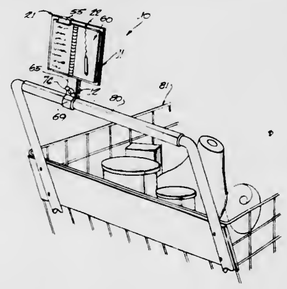
3,881,266
PORTABLE AND COLLAPSIBLE NEEDLEWORK FRAME
Maureen Finebloom, Garnerville, N.Y., assignor to Peska Associates, Inc., New York, N.Y., a part interest
Filed May 13, 1974, Ser. No. 469,284
Int. Cl. D06c *3/08*
U.S. Cl. 38—102.4 **5 Claims**



1. Needlework apparatus comprising, in combination, a frame adapted to rest on the lap of a user while said frame is in use, said frame including a pair of longitudinally adjustable horizontal members; a pair of semi-circular hoops adapted to fit over the arms of the user; pivot means for securing said semi-circular hoops to and within said horizontal members whereby said semi-circular hoops can be folded between said horizontal members, and needlework holding means on the outer periphery of said semi-circular hoops.

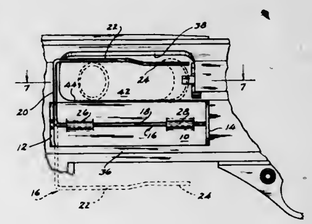
3,881,267
SHOPPING CART LIST HOLDER
Margie Hicks, 27 Marion St., Trenton, N.J. 08618
Filed Mar. 25, 1974, Ser. No. 454,676
Int. Cl. G09t *7/02*
U.S. Cl. 40—308 **1 Claim**

1. A shopping cart list holder device intended for detachable attachment to a handle of a conventional standard shopping cart for holding a shopping list conveniently thereon in a hand-free manner, the holder device comprising, in combination:
a first integrally formed arm member having a flat elongated longitudinally extending leg portion terminating at one end in an integrally formed curved semi-circular portion defining a clamping jaw member, the leg portion having a front surface and a back surface;
a second integrally formed arm member of a length substantially equal to said first arm member and having a leg portion terminating at one end in a curved semi-circular portion defining a clamping jaw member, the leg portion including a base member bent at an angle to the axis of the leg portion and forming the end thereof opposite said clamping jaw member, the base portion having a front surface and a back surface;
means affixing said back surface of said second arm base member to said back surface of said first arm member at their respective ends opposed from said clamping jaw members with said second arm projecting downwardly behind said first arm and at an angle rearwardly thereof relative to said first arm with each of said clamping jaw members being disposed in normal spaced apart confronting face-to-face relationship;
an aperture in said first arm member leg portion adjacent said C-shaped clamping jaw member configuration;



an aperture in said second arm leg portion adjacent said C-shaped clamping jaw member configuration and in general axial alignment with said first arm aperture;
an elongated bolt having a threaded shank extending axially through said aligned apertures of said first and said second arm members with the head of said bolt engaging the front surface of said second arm member and with the threaded portion of said bolt projecting outwardly of the front surface of said first arm member;
a wing nut threadedly received on said bolt and operable thereon to move said arm members toward and away from each other in a clamping and unclamping manner of said clamping jaw members, this depending upon the direction of rotation of said wing nut relative to said bolt shank;
said first and second arm members defining a bracket member with said clamping jaw members thereof adapted to be removably affixed to the handle of the shopping cart with the opposite ends of the leg portion projecting outwardly from the shopping cart handle in a direction normal to the axis of the shopping cart handle;
a pair of substantially flat front plate and back plate members disposed in side-by-side relationship, said front plate member of approximately the same size and configuration as said back plate member;
said back plate member having a flat front surface, a flat back surface opposed parallel top and bottom edges, and opposed parallel side edges;
said front plate member having a flat front surface, a flat back surface, opposed parallel top and bottom edges, and opposed parallel side edges;
said back plate member permanently affixed to said front surface of said first arm member forming said bracket and projecting outwardly therefrom and parallel to the plane defined by said leg portion of said first arm member;
a piano hinge extending along the joint formed between adjacentmost parallel side edges of said back plate and said front plate and hingedly connecting said front plate to said back plate for rotation of said front plate relative to said back plate between an open position wherein said front and back plates are co-planar, and a closed position wherein said front plate completely overlies said back plate with said front plate front surface disposed in adjacentmost juxtaposition with said back plate front surface;
an elongated flat rectangularly shaped flange forming member extending parallel to said hinged side edge of said front plate and affixed permanently to said back surface thereof in a manner overlying said hinged side edge to form therewith a shoulder portion overlying and engaging the adjacentmost back surface of said back plate when said front plate is in the open position, said flange member limiting the open position of said front plate to maintain said front plate co-planar with said back plate when in the open position;
a spring biased clip affixed to the top edge of said back plate and extending along a portion thereof and projecting forwardly of said back plate front surface and downwardly from said top edge to overlie a portion of said back plate front surface, the clip adapted for removably affixing to said back plate the shopping list by engaging a top edge of the shopping list beneath the clip to resiliently hold the same to the back plate;
an aperture provided in said front plate centrally therof and adjacent said top edge thereof;
an elongated flexible cord having one end affixed to said front plate by being tied through said front plate aperture, the opposite free end of the cord extending downwardly from said aperture along said front surface of said front plate; and
a writing instrument affixed to said free end of said cord for retention of said writing instrument to said front plate;
whereby said bracket may be adjustably secured to said shopping cart for holding a shopping list secured to said back plate in a manner projecting above said handle in a hand-free manner with said writing instrument readily available for the marking of said list while shopping.

3,881,268
SHELL CATCHER FOR GUNS
Clarence C. Petersen, 2221 Ashland Ave., Racine, Wis. 53403
Filed Sept. 28, 1973, Ser. No. 401,686
Int. Cl. F41c *27/00*
U.S. Cl. 42—1 T **5 Claims**

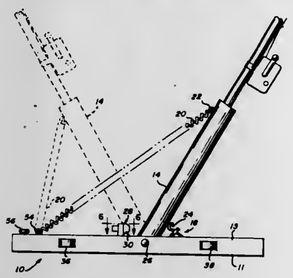


1. In a gun having a receiver portion, said receiver portion having a loading and ejecting opening therein, a shell catcher affixed to said receiver portion adjacent to said loading and ejecting opening and comprising a base, a shell retainer having a shaft portion defined by a fore-and-aft axis and pivoted on said base, said shaft portion terminating forwardly in an arm extending laterally relative to said shaft, said arm terminating in a rearwardly-extending finger portion.

3,881,269
AUTOMATIC FISHING DEVICE
James Edward Timmons, Newark, Calif., assignor to John Nicolls, Fremont, Calif.
Filed Aug. 16, 1974, Ser. No. 497,837
Int. Cl. A01k *97/10*
U.S. Cl. 43—15 **11 Claims**

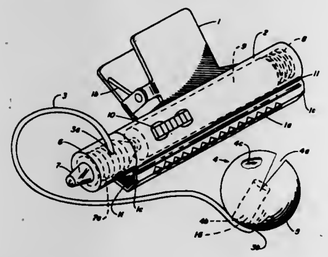
1. An automatic fishing device comprising:

a base;
a receiving tube pivotally mounted to said base for receiving the handle portion of a fishing rod therein, said receiving tube having a first spring connector and a trigger connector;
an adjustable spring mount engaged to said base, said adjustable spring mount including a track and a carriage assembly movably mounted within said track for lateral movement relative to the pivot of said receiving tube, said carriage assembly having a second spring connector and



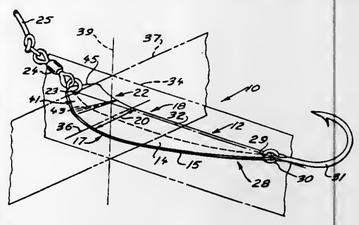
a locking means for locking said carriage assembly in place on said track at selected positions;
a spring connected at one end to said first spring connector of said receiving tube and at the other end to said second spring connector of said carriage of said adjustable spring mount; and
a trigger mount connected to said base for engaging said trigger connection of said receiving tube for holding said receiving tube in a loaded position opposing the force exerted by said spring.

3,881,270
BITE INDICATING DEVICE
Herbert K. Olcott, Keansburg, Middletown Township, N.J. 07748
Filed July 11, 1973, Ser. No. 379,541
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **4 Claims**



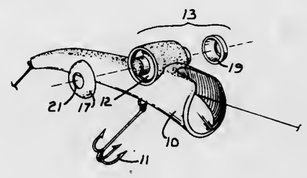
1. A bite indicating device comprising a springloaded clip attachable to the legs of a line guide on a fishing rod with a fishing line extending through said line guide, said clip having a pair of semi-circular portions biased together by spring means to form a cylindrical housing and serrated edges along the outer sides of said semi-circular portion, said serrated edges engaging the legs of a line guide, a flashlight having a bulb housing disposed in said cylindrical housing, a flexible insulated conductor wire connected to the flashlight bulb and extending outwardly through the bulb housing attached at its outer end to a ball coated with conductive metallic material and formed with a tapered slot therein, said ball engaging the fishing line rearwardly of the line guide with the line being frictionally retained in the ball slot, whereby a pull on the line causes the said ball to engage the line guide and complete an electrical circuit to actuate the flashlight, thus indicating the bite of a fish.

3,881,271
FISHING LURE
Sylvester Jacura, Victoria, British Columbia, Canada, assignor to Gibbs Tool and Stamping Works Ltd., Burnaby, British Columbia, Canada
Filed Apr. 8, 1974, Ser. No. 458,513
Int. Cl. A01k *85/04*
U.S. Cl. 43—42.5 **10 Claims**



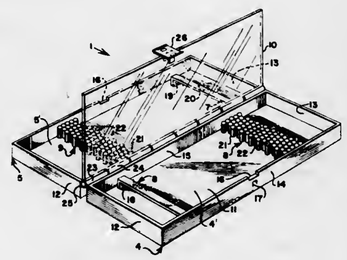
1. A fishing lure having an elongated curved body portion of stiff thin sheet material, the body portion having first and second faces having a perimeter defined in part by spaced side edges, the lure having a maximum width defined by maximum spacing between the side edges, the body portion being further characterized by:
i. a forward portion having a forward opening to accept a line swivel connector,
ii. an aft portion having an aft opening to accept a hook connector,
iii. a longitudinal axis defined as a straight line passing through the forward and aft openings,
iv. a longitudinal plane containing the longitudinal axis and disposed generally normally to the faces of the body portion,
v. a transverse axis extending across the lure normally to the longitudinal plane adjacent the maximum width position of the lure,
vi. a transverse plane containing the transverse axis and disposed normally to the longitudinal plane and generally normally to adjacent faces of the body portion, and intersecting the longitudinal plane at a vertical axis,
vii. the forward end portion having a generally plane deflector portion provided with the forward opening, the deflector portion being inclined to, and merging smoothly from, the aft portion through a fold extending obliquely across the body portion, the deflector portion having an inner edge defined by the fold and a leading edge generally parallel to the inner edge, the fold having a fold axis inclined to the longitudinal axis at a rake angle of between 40° and 80°,
viii. an oblique plane disposed generally normally to the faces of the body portion and intersecting the longitudinal and transverse planes on the vertical axis, thhe oblique plane being normal to the fold axis so that,, within a plane parallel to the deflector plane, the deflector portion is inclined to the transverse plane at a deflector angle of between 10° and 60 °,
ix. the perimeter of the body portion is defined by first and second essentially straight aft side edges converging rearwardly from the maximum width position toward the aft end at essentially equal angles to the longitudinal axis, and first and second forward side edges extending forwardly from the maximum width position, the first forward side edge curving forwardly to intersect the longitudinal axis at a nose spaced forwardly of the forward opening, the second forward side edge continuing as an essentially straight line coplanar with the second aft side edge and inclined at the deflector angle to a tip at one end of the deflector leading edge, the deflector leading edge defining a portion of the perimeter and extending to the nose,
curvature and asymmetry of the lure being such that when the lure is used in trolling it describes a motion similar to that of a wounded or frolicking small fish characterized by short period oscillations generally about the vertical axis, followed by a series of uncompleted hesitation rolls terminating with a snap roll through 360° about the longitudinal axis, followed by short period oscillations and a repeating of the action above in an opposite direction.

3,881,272
FISHING LURE EYE ASSEMBLY
Douglas W. Parker, 3015 Free Ferry, Fort Smith, Ark. 72901
Filed Oct. 1, 1973, Ser. No. 401,996
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.34 **3 Claims**



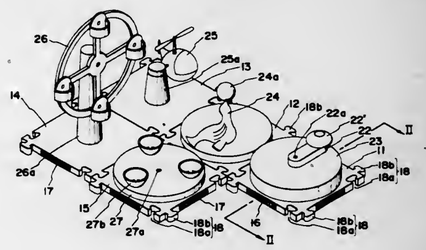
3. An eye assembly for a fishing lure having a lure body with an eye mounting surface, said eye assembly comprising:
a separate iris structure having a central circular hole extending therethrough, a convex exterior surface, and a lure body engaging rear surface for fixedly securing the iris structure on the eye mounting surface of said lure body; and
a pupil structure integrally formed with said lure body and having a cylindrical stem with a diameter substantially equal to the diameter of said hole through said iris structure;
whereby said stem is adapted to engageably penetrate said hole in said iris to thereby fix said iris in concentric alignment with said pupil on the lure body.

3,881,273
HOOK AND LEADER STORAGE STRUCTURE
John Luther Herring, 2626 S. 48th Ter., Kansas City, Kans. 66106
Filed July 30, 1973, Ser. No. 383,528
Int. Cl. A01k *97/06*
U.S. Cl. 43—57.5 R **3 Claims**



1. A hook and leader storage structure comprising:
a. a container having an outer wall and wall means extending therefrom, said wall means comprising laterally spaced front and rear walls and a pair of longitudinally spaced end walls each extending from said outer wall and each having a free edge;
b. means mounted on said wall means for selectively covering and uncovering said container, said means for covering and uncovering said container being movably mounted on said rear wall and movable to a position overlying the free edge of each of said front and rear walls and said end walls;
c. means in said container and spaced from said wall means for supporting a plurality of spaced fishing hooks, said means for supporting fishing hooks being positioned adjacent and spaced from one of said container end walls and comprising a bar extending transversely of said container and positioned substantially parallel with the one of said container end walls, said bar being adapted to support a shank portion of each fishing hook with a barbed portion thereof positioned between said container outer wall and said bar;
d. means in said container and spaced from said hook supporting means therein for engaging and retaining a plurality of leader lines each attached to a respective one of the fishing hooks, said means for engaging and retaining leader lines comprises a plurality of laterally spaced rows of longitudinally spaced flexible posts extending from said outer wall, said rows being in close proximity one with the other, each of said rows having a plurality of posts, said posts in each of said rows each being in longitudinally staggered relation with adjacent posts in adjacent rows of posts, said posts in adjacent staggered rows of posts each being positioned to be engaged by a leader line positioned between the adjacent staggered rows whereby a substantial length of the leader line is in retaining engagement with said adjacent staggered rows of posts; and
e. means on said means for covering and uncovering said container and engageable with said wall means for retaining said container covering means in a closed position.

3,881,274
INTERLOCKING UNITS HAVING MESHED GEARS AND DRIVE MEANS FOR A MOVABLE TOY THEREON
Yukio Kanda, Koshigaya, Japan, assignor to Okuma Seisakusho Co., Ltd., Soka-shi, Japan
Filed May 22, 1974, Ser. No. 472,149
Int. Cl. A63h *33/04*
U.S. Cl. 46—16 **4 Claims**



1. A toy assembly comprising:
a. a plurality of units, each unit including a base member and a gear mounted on said base member for rotation about an axis;
b. coupling means on each said base member for releasably coupling the base member to the base member of each of the other said units in a position in which the gears on the coupled base members meshingly engage each other;
c. drive means on a first one of said base members for driving the gear rotatably mounted thereon;
d. a movable toy mounted on a second one of said base members in driving engagement with the gear on said second base member.

3,881,275
ANIMATED DOLL WITH MEMBERS CONTROLLED BY WEIGHTED, SWIVELED, SLIDABLY MOUNTED INTERIOR ROD

Raymond Gerard Baulard-Cogan, Louveciennes, France, assignor to Agence Nationale de Valorisation de la Recherche ANVAR, Neuilly-sur-Seine, France

Filed Feb. 19, 1974, Ser. No. 443,505
Int. Cl. A63h *11/02*
U.S. Cl. 46—119 **11 Claims**



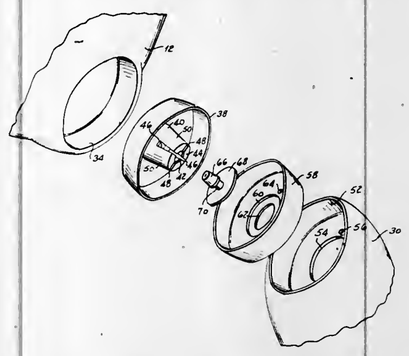
1. An animated doll comprising a body having movable and deformable members associated with said body, each member being provided with a respective actuating means connected thereto, a hollow space formed in said body, a movable ponderable ball-like member mounted for movement inside the hollow space of the body and transmitting means for transmitting the displacements of said ball-like member to said actuating means, said transmitting means comprising a rod movable in said hollow space, said ball-like member being mounted like a counterweight at one end of said rod, means movably mounting said rod comprising a swivel bearing fixedly mounted in said body of the doll, said rod freely sliding and rotating in said swivel bearing according to the movement of said ball member and said actuating means being connected to said rod.

3,881,276
DOLL INCLUDING A JOINT MEMBER WITH FILLING OPENING AND GAS VENT THEREIN

Witold W. Kosicki, Columbia, and Charles M. Hollingsworth, West Columbia, both of S.C., assignors to Horsman Dolls Inc., Columbia, S.C.

Continuation of Ser. No. 311,227, Dec. 1, 1972, abandoned. This application Apr. 9, 1974, Ser. No. 459,271
Int. Cl. A63h *3/46*
U.S. Cl. 46—162 **11 Claims**

1. In a doll, an assembly including a torso skin of relatively soft synthetic resin formed with a joint recess, a generally cup-shaped socket-forming member of relatively rigid synthetic resin secured in said recess, said socket-forming member having a frusto-conical boss provided with an end wall having an opening therein, said boss being provided with slots extending into said opening to form a plurality of resilient fingers around said opening, a filling of foamed synthetic resin in said torso skin, a filled limb on said doll, said limb comprising a limb skin of relatively soft synthetic resin and a filling of foamed synthetic resin in said limb skin, said limb skin having a joint recess, a generally cup-shaped plug-mounting member of relatively rigid synthetic resin secured in said limb joint recess, said limb having means enabling the filling of the limb skin with the foamed resin after said plug-mounting member has been secured in said limb joint recess, said means comprising a filling opening and gas vent in said limb skin recess and a corresponding filling opening and gas vent in said plug-mounting member and registering with said limb recess filling opening and gas vent, and a plug member of relatively rigid

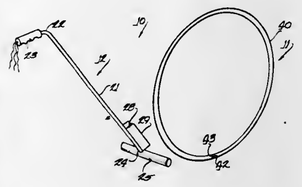


synthetic resin comprising a base plate and a frusto-conical head and a neck connecting said head to said base plate, said base plate secured in said plut-mounting member over the filling opening thereof on the surface facing away from said limb joint recess, said head adapted to be inserted into said boss through the boss opening and to be retained therein by said fingers.

3,881,277
ROLL-O-WHEEL TOY DEVICE

Bob Delph, and Carl Amburgey, both of Rt. 8, Box 260, London, Ky. 40741

Filed Jan. 7, 1974, Ser. No. 431,575
Int. Cl. A63l *33/02*
U.S. Cl. 46—220 **1 Claim**



1. A roll-o-wheel toy device comprising, in combination:
a circular hoop formed of a length of seamless extruded plastic hollow tubing of a substantially circular cross-section;
said tubing having a first end and a second end;
said first end of said tubing being of the same cross-section configuration as the length of said tubing;
said second end of said tubing being of a reduced exterior diameter having an exterior diameter thereof adapted to be snugly telescopically received within said first end of said tubing;
an annular shoulder portion defined between said reduced portion of said second end of said tubing and said main body length of said tubing, said shoulder being of a truncated conical configuration having its truncated apex portion formed contiguous with said reduced portion and having its base portion formed contiguous with said main body length of said tubing;

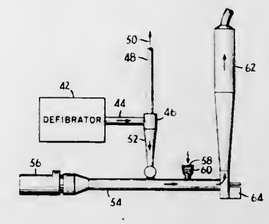
the outermost edge of said first end of said tubing adapted to engage said shoulder portion of said second end of said tubing when said reduced portion of said second end is axially inserted into said first end;
a coating of adhesive disposed about the exterior circumference of the cylindrical side walls of said reduced portion of said second end of said tubing and engaging the juxtapositioned interior circumferal surfaces of said first end of said tubing when the reduced end portion is telescopically inserted into the first tubing end to fixedly secure said ends of said tubing permanently together and seal the hollow interior of said tubing from the atmosphere;
a liquid disposed in said hollow interior of said tubing to provide varying characteristics to said hoop as to weight and stability as it is rolled along on its peripheral edge with the liquid constantly shifting its position within the hollow tubing;
a guide stick for effecting the propelling, rolling, guiding and maneuvering of said hoop along any desired path, said guide stick including a shaft, a handle portion, a head portion, a guide rod, and a push block;
said shaft being of an elongated cylindrical configuration having said handle portion formed at the top end thereof and having said head portion formed along the bottom end thereof;
said handle portion being of a tubular configuration formed integrally with said shaft and bent at an angle to the axis of said shaft rearwardly thereof;
a handle member received about the projecting free end of the handle portion and provided with a series of adjacent finger gripping partially annular grooves disposed along a bottom segment of the circumference thereof adapted to receive the fingers of an individual's hand firmly therein to assist the individual in the firm holding and guiding of the guide stick;
said head portion being formed integrally with said shaft and axially aligned therewith;
said guide rod being of an elongated cylindrical configuration fixed at a mid point to the bottom end of said head portion and projecting symetrically from opposite sides of said head portion normal to the plane defined by said shaft and said handle portion;
said push block being of elongated box like rectangular configuration having a face surface and a back surface with the back surface affixed to said head portion and the face surface projecting outwardly therefrom in a direction opposed to the direction of said handle portion and with the push block extending longitudinally along said head portion from a position adjacent said guide rod to a position spaced upwardly therefrom along said head portion;
an arcuate concave groove extending longitudinally completely through the face surface of said push block and adapted to engage the peripheral edge of said hoop therealong for use in the maneuvering of said hoop by said guide stick.

3,881,278
METHOD OF MAKING MULCH COMPOSITION

Otis R. Videen, Roseville, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 310,418, Nov. 29, 1972, abandoned. This application June 17, 1974, Ser. No. 479,831
Int. Cl. A01g *1/00*
U.S. Cl. 47—58 **7 Claims**

1. The process of preparing a dry, relatively free-flowing mass planting mulch material comprising:
a. defibrating vegetable material in the presence of steam;
b. adding a granular tackifier material to said defibrated material while it is still moist with from about 25 to about 100 percent water by weight of defibrated material and while it is under sufficient turbulence to create intimate admixture of the defibrated vegetable material and the tackifier material and at a temperature of from about 212° to about 375°F. to cause the granules of tackifier material to become attached to the defibrated vegetable material, said tackifier material being present in an amount of from about ½ to about 5 percent of said defibrated vegetable matter and said tackifier material being one which will pass Test FF–1 and Test I–357;

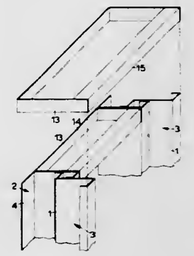


c. drying the admixture comprising defibrated vegetable material and tackifier under sufficient turbulence to keep the particles of defibrated vegetable material with attached tackifier material substantially discrete; and
d. packaging the dried admixture comprising defibrated vegetable material with tackifier material attached thereto.

3,881,279
DOORFRAMES

Charles S. Kirton, 14 Dingler St., Rynfield, Benoni, Transvall Province, South Africa

Filed May 8, 1973, Ser. No. 358,324
Int. Cl. E06b *1/20*
U.S. Cl. 49—505 **5 Claims**

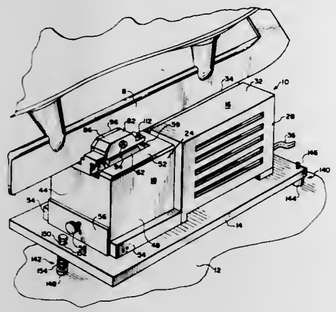


1. A stile of a door frame comprising:
a first elongated member having a first web portion,
a second elongated member having a second web portion, said first and second members being transversely and slidably adjustable to provide variable width to the stile; said first elongated member being channel-shaped in cross-section and comprising said first web portion and a pair of first flanges extending from said web portion adjacent each longitudinal edge thereof, one of said first flanges having an inwardly extending lip portion abutting and connected to said second web portion, and
said second elongated member comprising said second web portion and a pair of second flanges extending from said web portion adjacent each longitudinal edge thereof, one of said second flanges extending from one side of said second web portion and the other of said second flanges extending from the other side of said second web portion, one of said second flanges having a lip portion abutting said first web portion.

3,881,280
ICE SKATE SHARPENING DEVICE WITH A FLOATING SKATE GUIDING MEMBER

Arnold M. Thompson, 181 Gary Ave., Wheaton, Ill. 60187

Filed Oct. 29, 1974, Ser. No. 518,235
Int. Cl. B24b 9/04
U.S. Cl. 51—102 10 Claims

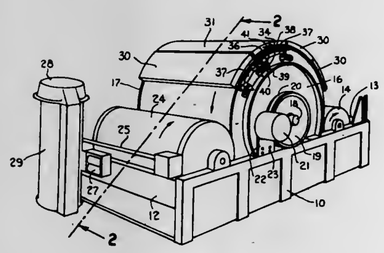


1. A skate blade sharpening device adapted to hollow grind the effective supporting edge of a skate blade and comprising a base plate adapted for positioning on a bench top or the like, an electric motor mounted on said base plate and having a drive shaft projecting forwardly therefrom, a circular abrasive grinding wheel fixedly mounted on the forward end of said shaft, a casing emcompassing said wheel and a portion of the shaft, the upper region of said casing being provided with an opening which exposes a limited peripheral region of the wheel for transverse application thereto of the skate blade at such time as the supporting edge of the latter is drawn progressively and longitudinally through the slot, a floating cradle member at least in part encompassing said shaft and capable of limited free oscillation about the axis of the shaft, and a blade-positioning and guide assembly defining a blade-receiving slot for sliding reception therein of the skate blade and adjustably mounted on the cradle member for small increments of lateral adjustment in a generally tangential direction with respect to the grinding wheel.

3,881,281
METHOD OF GRINDING CARD CLOTHING

John D. Hollingsworth, P.O. Box 516, Greenville, S.C. 29202

Filed Mar. 7, 1973, Ser. No. 338,911
Int. Cl. D01g 15/00; B24b 1/00, 19/18
U.S. Cl. 51—281 R 2 Claims



1. The method of grinding the teeth of metallic card clothing on a roll of a textile carding machine comprising the steps of:

A. removing a carding surface opposite said card clothing on the roll;

B. placing a substantially stationary abrasive concave grinding surface in grinding relation transversely of the card clothing on the roll so that said grinding surface extends substantially entirely across the roll and engages the teeth of the card clothing;

C. restraining said grinding surface against arcuate movement about the roll during grinding;

D. imparting rotation to the roll causing the grinding to result substantially entirely from the rotation of the teeth with respect to such stationary grinding surfaces; and

E. removing the grinding surface from the roll after a predetermined amount of grinding of the teeth has been accomplished.

3,881,282
ABRASIVE GRAIN OF FUSED ALUMINA-ZIRCONIA-CERIA ALLOY

George R. Watson, Niagara Falls, Ontario, Canada, assignor to Norton Company, Worcester, Mass.

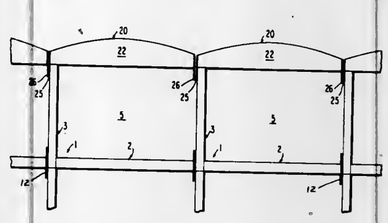
Filed Oct. 24, 1973, Ser. No. 409,323
Int. Cl. C04c 1/68; C04b 31/16
U.S. Cl. 51—309 4 Claims

1. An improved fused crushed abrasive grain consisting essentially of a co-fusion of alumina, zirconia and ceria; said zirconia being present in a range of from 10 to 60% by weight; the ceria being present in a range of from 1 to about 7%.

3,881,283
MODULAR HOUSING STRUCTURE

David R. Pender, 1018 Marion St., Columbia, S.C. 29201

Filed Sept. 10, 1973, Ser. No. 395,517
Int. Cl. E04h 1/04, 9/06
U.S. Cl. 52—79 8 Claims

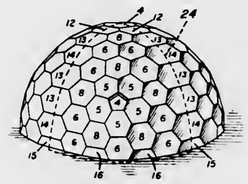


1. A plural level multi-family dwelling comprising plural horizontal and vertical rows of front-to-back elongated rectangular cross section dwelling compartments, said dwelling compartments formed by a plurality of substantially identical right angular front-to-back elongated L-modules, said modules arranged in said dwelling so that a horizontal wall of each module forms the floor of one dwelling compartment and the ceiling walls of the dwelling compartment immediately therebelow, and a vertical wall of each module forms the party wall between two laterally adjacent dwelling compartments in one level of the dwelling, the opposite faces of the horizontal and vertical walls of the modules having finishing material thereon, attachment means for the plural L-modules of said dwelling comprising plural spaced readily bendable strap anchors secured to the longitudinal front-to-back edge of the horizontal wall of each module and extending above and below the horizontal wall for attachment by nailing to the vertical walls of a like module on the same level and a like module on the next lowermost level of the dwelling, each such strap anchor having its upper end nailed to the vertical wall of the next adjacent module on the same level at a point near and above the horizontal wall of that module and having its lower end nailed to the vertical wall of the next underlying module at a point near the top of such wall, additional laterally spaced readily bendable strap anchors secured to each L-module at the juncture of its horizontal and vertical wall s and serving to join such walls in structurally assembled relationship and having lower terminal end portions projecting below said horizontal wall of each module, said lower terminal end portions nailed to the vertical wall of the next lowermost module to complete the structural joining of L-modules in the plural levels of said dwelling, means forming an end wall for said plural level dwelling adjacent the endmost vertical row of L-modules having open sides, and roofing means for the uppermost horizontal row of L-modules in said dwelling.

3,881,284
ELLIPSE DOMED STRUCTURE

Roy H. Martin, McCamey, Tex., assignor to Frankie SoRelle, Sweetwater, Tex., a part interest

Filed Nov. 1, 1973, Ser. No. 411,771
Int. Cl. E04b 1/32
U.S. Cl. 52—81 2 Claims

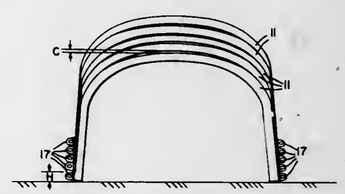


1. A self-supporting, elliptical, dome structure comprising a plurality of rigid, polygonal panels secured together around their peripheral edges to define a hollow enclosure having a generally horizontal bottom edge, said panels including a plurality of hexagonal panels and a plurality of pentagonal panels having their edges connected, all of said panels being flat and provided with an inwardly extending flange along each edge thereof, each edge flange being straight and flat, said edge flanges and the flat panel having an included angle of substantially 83°, said panels being arranged with a pentagonal panel at the apex of the dome structure with the five side edges thereof being of equal length and the included corner angles being equal, five arcuate rows of hexagonal panels disposed outwardly and arcuately downwardly from the apical pentagonal panel along arcuate paths defining great circles of the dome structure, the top and bottom edges of the hexagonal panels being equal in length to the side edges of the apical pentagonal panel, said rows of hexagonal panels defining five identical spherical isosceles triangles each having an apex in the center of the apical pentagonal panel, two sides defined by lines through the centers of the rows of hexagonal panels and a base along the bottom edge of the dome structure, each spherical isosceles triangle including a central pentagonal panel oriented centrally between the arcuate rows of hexagonal panels and having its base line generally parallel to the bottom edge of the dome structure, a first circular row of five identical hexagonal panels encircling and connected to each of said central pentagonal panels, a second circular row of ten hexagonal panels encircling and connected to the first row of five hexagonal panels with three of the hexagonal panels at opposite portions of the second row being connected with the hexagonal panels in the arcuate rows and the lowermost hexagonal panel in the second row having its lower edge defining a portion of the bottom edge of the dome structure, a group of three connected upper filler hexagonal panels connected to the second circular row of hexagonal panels and the arcuate rows of hexagonal panels, a lower filler hexagonal panel connected to the second circular row of hexagonal panels and each arcuate row of hexagonal panels with the lower edge of each lower filler hexagonal panel defining a portion of the bottom edge of the dome structure, each arcuate row of hexagonal panels having a half hexagonal filler panel connected thereto with the lower edge thereof defining a portion of the bottom edge of the dome structure, and a half hexagonal filler panel connected to the lowermost panel in the second circular row of panels and each of the lower hexagonal filler panels with the lower edges thereof defining a portion of the bottom edge of the dome structure, said dome structure being enlarged by increasing the length of each side of the apical pentagonal panel, each top and bottom edge of each hexagonal panel in each arcuate row and the top and bottom edge of each half hexagonal filler panel in each arcuate row while leaving all other pentagonal and hexagonal panels the same size and in the same orientation.

3,881,285
STACKING AND ELONGATING BUILDING STRUCTURE

Robert F. Schumaker, Bremerton, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 24, 1973, Ser. No. 400,490
Int. Cl. E04b 1/32
U.S. Cl. 52—86 2 Claims



1. A building structure comprising:

a. an elongated structure having a ceiling and first and second side walls but no floor or end walls;

b. the first and second respective bottom edges of said first and second side walls extending outwardly further than the upper sections of said first and second side walls;

c. a first elongated beam connected to the outward side along said first bottom edge of said first said wall;

d. a second elongated beam connected to the outward side along said second bottom of said second side wall;

e. each of said first and second elongated beams comprising a U-beam having a cross section including a vertical section and first and second short legs extending therefrom;

f. said first and second short legs extending outwardly from the side walls of said elongated structure;

g. the bottom surfaces of said second short legs of said first and second elongated beams extending below the first and second bottom edges of said first and second side walls;

h. the width of the ceiling of said building structure being less than the distance between the upper and lower surfaces respectively of said first and second short legs of each of said first and second elongated beams;

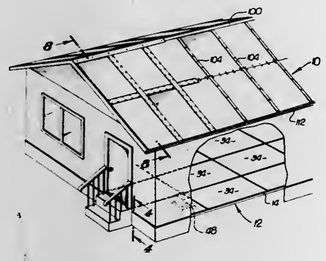
i. first and second lifting plates connected near the opposite ends of each of said beams and rigidly positioned between said first and second short legs and extending outwardly from said beams and rigidly positioned at positive and negative angles;

j. each end of each of said first and second side walls of said building structure includes an opening forming half a door opening and the positioning of two of said structures end to end forms a full door opening;

k. a flexible joint cover for connecting the ends of said structures when they are positioned end to end and said flexible covering including a door that is co-extensive with said full door opening; and

l. whereby at least two building structures may be stacked one upon the other wherein the beams of each of said at least two building structures rest against each other and maintain a separation between said at least two building structures.

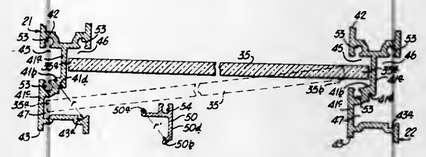
3,881,286
PREFORMED FLOOR AND ROOF STRUCTURE
Edward A. Smith, 6641 W. 6th St., Los Angeles, Calif. 90048, and Robert L. Day, 1518 Grismer St., Burbank, Calif. 91504
Filed July 23, 1973, Ser. No. 381,529
Int. Cl. E04b *2/56*
U.S. Cl. 52—90 **7 Claims**



1. In a building structure:
a. a series of spaced parallel rails, said series including inside rails as well as two outside rails;
b. each inside rail having at least one pair of connector structures affixed thereto and extending laterally outwardly on opposite sides of the corresponding inside rail at a place located intermediate the length of the said inside rail;
c. each outside rail having at least one connector structure affixed thereto extending laterally inwardly on one side at an intermediate place corresponding to the location of said pair of connectors;
d. a series of tubular braces extending perpendicular to the said series of rails and connected at opposite ends to adjacent rails by telescopically receiving and fitting said connector structures to form a rigid substantially rectangular grid;
e. mechanical means operative between each connector and the corresponding brace ends to lock the braces to the connectors at a predetermined relative telescoped position therebetween;
f. said rails and braces being dimensionally controlled to determine the configuration of the grid;
g. a plurality of rectangular panels interfitting the grid, each panel comprising a pair of outer plies and a substantially rigid core, the outer plies overlying the rigid core to form a peripheral groove;
h. said braces and said series of rails each laterally projecting into said peripheral panel grooves to lock the panels to said grid;
i. said panels being dimensionally controlled to prevent interference in the fit of said rails and braces.

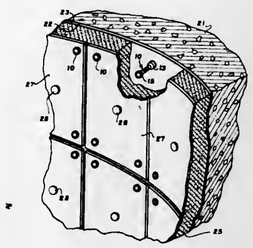
3,881,287
GLASS FRAMING SYSTEM
Lawrence F. Biebuyck, Mesquite, Tex., assignor to Kawneer Company, Inc., Niles, Mich.
Continuation of Ser. No. 401,592, Sept. 28, 1973, abandoned, which is a continuation of Ser. No. 197,705, Nov. 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 59,915, July 31, 1970, abandoned. This application Aug. 21, 1974, Ser. No. 499,216
Int. Cl. E04b *2/60*
U.S. Cl. 52—127 **11 Claims**

1. In combination, a construction element of the type including transversely aligned inner and outer face portions and interconnecting portions, said interconnecting portions including a longitudinally extending transverse web having one edge integrally secured to one of said face portions intermediate its width and forming the bottom of opposed shallow glazing pockets, a longitudinally extending web extending from the other edge of the first mentioned web in one direction therefrom, and a longitudinally extending transverse jamp web extending from the edge of said second mentioned web to the other of said face portions to define a deep glazing pocket contiguous with one of said shallow glazing pockets;



and a mullion filler locked to said construction element and including a longitudinally extending web normal to the first mentioned web seated in said deep glazing pocket, and a longitudinally extending transverse jamp web extending from the edge of the last mentioned web to said other of said face portions whereby said combination defines a mullion having opposed shallow glazing pockets.

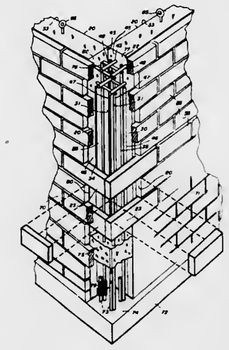
3,881,288
ATTACHMENT ASSEMBLY
H. Peter Fay, Solana Beach, Calif., assignor to General Atomic Company, San Diego, Calif.
Filed May 4, 1972, Ser. No. 250,363
Int. Cl. G21 *13/00*
U.S. Cl. 52—224 **2 Claims**



1. In a pressure vessel, a wall assembly comprising, a fixed rigid metal liner for the pressure vessel, a plurality of rigid metal panels spaced from said liner to form an insulating space, a resilient compressible fibrous thermal insulation material filling said insulation space between said panels and said liner, said panels being displaceable toward said liner to compress said insulation, and a plurality of attachment assemblies securing said panels to said liner with said fibrous thermal insulation under compression, each of said attachment assemblies comprising a flexible cable, first and second shank balls secured toward opposite ends of said cable, a first ball socket secured to said liner, said first shank ball being received and secured in said ball socket to secure one end of said cable to said liner, each of said attachment assemblies also having a second ball socket secured to one of said panels and secured about said second shank ball, said cable being under tension provided by said compressed insulation.

3,881,289
BUILDING WALLS AND PREFABRICATED REINFORCED CONCRETE WALL SECTIONS
Curtis Mauroner, 627 W. Concord, Orlando, Fla. 32801
Filed Aug. 20, 1973, Ser. No. 386,830
Int. Cl. E04c *2/06*
U.S. Cl. 52—259 **8 Claims**

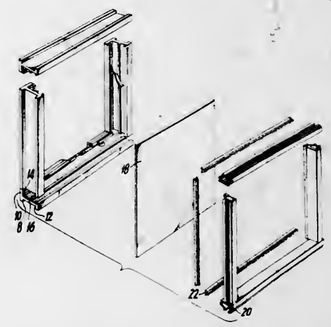
1. A prefabricated exterior wall section for a building, said section being supported upright on a foundation therefor and having interior and exterior side faces, said section comprising a pair of substantially rectangular, reinforced concrete panels that are spaced apart in a face to face arrangement and respectively located at said interior and exterior side faces of said section, and an elongated horizontally arranged reinforced concrete lintel that is supported by and overlies the space between said panels; said lintel comprising a concrete structure and reinforcing means embedded in said concrete structure, each of said panels having an upper portion and comprising a concrete structure which is joined along its upper portion to and precast integrally with the concrete



structure of said lintel, and each of said panels comprising reinforcing means embedded in its concrete structure; said section further comprising a plurality of elongated metal elements that are spaced apart and extend through the space between said panels, each of said elements having opposite ends which are embedded in the respective concrete structures of said panels and secured to the respective reinforcing means embedded therein, the concrete structure of said lintel having opposite end surfaces that lie in respective vertical planes, and each of said panels having opposite side edge surfaces that respectively lie in said vertical planes.

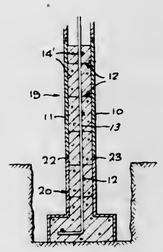
3,881,290
GLAZED IMPERVIOUS SHEET ASSEMBLY AND METHOD OF GLAZING
George J. Bouchey, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.
Filed Apr. 15, 1974, Ser. No. 461,399
Int. Cl. E04b *1/66*; **E06b** *1/04*
U.S. Cl. 52—398 **11 Claims**

1. A glazed, weathertight sheet assembly for a wall opening comprising:
i. an exterior stop adapted to engage the marginal edges about an opening in an outside wall, said stop being L-shaped in cross-section, the vertical leg of said stop extending into the opening and the horizontal leg of said exterior stop extending from the wall toward the inside;
ii. a continuous ridge of resilient pressure sensitive tape affixed to the inside face of the vertical leg of said exterior stop adjacent to the inner periphery of said exterior stop, the inwardly presented face of said tape being adapted to receive an impervious sheet member;
iii. a toe bead of silicone rubber composition around the outer periphery of the ridge of said resilient tape, said bead bridging the tape edge and the inside face of the vertical leg of said exterior stop;
iv. an impervious sheet member in full weathertight engagement around its outwardly presented edge with the inwardly presented face of the ridge of resilient tape and the toe bead of said silicone composition; and
v. an interior stop framing the exterior stop and the impervious sheet member, said interior stop being affixed to the



exterior stop and having a resilient surface biased against the impervious sheet member so as to prevent inward displacement of said member from said opening and to maintain its position in said opening.

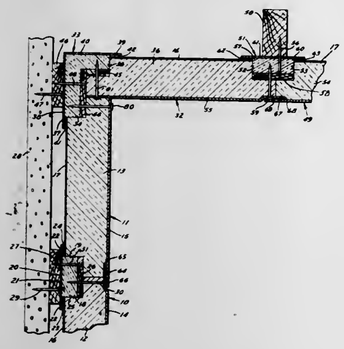
3,881,291
PANEL MOLD FOR FORMING COMPOSITE CONCRETE-REINFORCED WALLS
Melvin E. Layne, 7063 Alden Ave., Los Angeles, Calif. 91335
Filed July 19, 1973, Ser. No. 380,769
Int. Cl. E04b *2/86*
U.S. Cl. 52—426 **3 Claims**



1. A panel for forming composite concrete-reinforced walls comprising:
a pair of parallel sheets composed of pressed composition material having opposing wall surfaces in fixed spaced apart relationship defining an open space therebetween;
a plurality of rigid rod members extending between said sheet opposing wall surfaces maintaining said pair of sheets in their fixed parallel relationship;
each of said sheets having top and bottom edge marginal regions incorporating an elongated notch so as to provide a registering means for mating with and bearing against similar adjoining panels;
a concrete core occupying said open space between said sheet opposing wall surfaces so as to form an interlocking composite wall structure of rod members, said sheets and said concrete core;
additional steel reinforcements extending normal to said rod members and interlocked by said concrete core;
bonding means attaching the opposite ends of said rod members to the respective wall surfaces of said sheets; and
each opposing wall surface of said sheets is provided with a plurality of aligned pairs of recesses for insertably receiv-

ing the opposite respective ends of each of said rod members and for holding said bonding means.

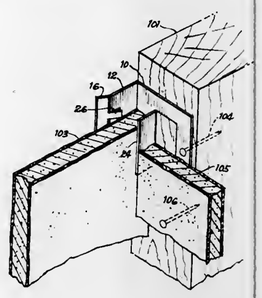
3,881,292
INSULATING STRUCTURAL ASSEMBLY AND STUD MEMBER FOR FORMING SAME
William H. Porter, Holland, Mich., assignor to W. H. Porter, Inc., Holland, Mich.
Filed Mar. 26, 1973, Ser. No. 344,569
Int. Cl. E04c *1/04*
U.S. Cl. 52—461 **11 Claims**



1. In combination, a structural assembly comprising:
1. abutting insulating panels, each having:
a. a foamed core slab of an insulating material,
b. a rigid facing sheet affixed to the core slab on one side thereof which facing sheet has at least one portion thereof which overlaps the underlying foam core slab and the facing sheet from an adjacent panel, and
c. a recess provided at an abutting edge of said core slab extending longitudinally along said edge, the recesses of two abutting panels cooperating to define a continous open channel therebetween,
2. an elongated insulating connecting stud member complementary to and disposed in said channel, comprising:
a. a foamed core slab,
b. a moisture-impervious sheet-form layer affixed to an outer surface of said slab and having margins extending outwardly beyond the edges of said slab to provide lateral flanges covering each juncture between said stud member and the core slab of said adjacent abutting insulating panels, and
c. a relatively hard attachment member affixed to the other side of said stud member foamed core slab, and
3. attachment means securing said panels to said attachment member **2**(*c*).

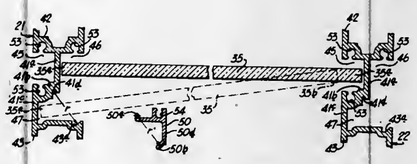
3,881,293
CORNER CONSTRUCTION AND BACK UP BRACKET THEREFOR
John Conville, 13515 Oval Dr., Largo, Fla. 33540
Continuation of Ser. No. 322,410, Jan. 10, 1973, abandoned, which is a continuation of Ser. No. 103,298, Dec. 31, 1970, abandoned, which is a continuation of Ser. No. 776,578, Nov. 18, 1968, abandoned. This application Aug. 15, 1974, Ser. No. 497,580
Int. Cl. E04b *1/38*; **E04c** *5/00*; **F16b** *5/06*
U.S. Cl. 52—712 **2 Claims**

1. A back-up clip for corner construction of wall panels consisting of a single piece of sheet material having
1. a flat body portion dimensioned to have a length greater than the thickness of the wall panels;
2. a first flanged member extending substantially perpendicularly from one edge of the body portion;
3. a second flanged member struck-out from and extending continuously substantially perpendicularly from an intermediate portion of the flat body portion in the same direction as the first flanged member and in substantially parallel relation therewith, and spaced therefrom by an amount corresponding to the thickness of a first panel for receiving an edge portion of the first panel therebetween;
4. said second flanged member terminating in a free edge, the dimension of said second flange member between said flat body portion and said free edge corresponding to the thickness of a second panel so that when a second panel is positioned parallel to and in abutting relation with the body member and with the edge of the second panel abutting the second flanged portion, the latter will be substantially concealed by the second panel while the edge of the second panel is in abutting relationship with



the second flanged member substantially throughout its width;
5. the first flanged member having its free outer edge portion inclined at a slight angle in the direction away from the second flanged member to provide an entrant portion for the first panel into the space between the first and second flanged members; and
6. spring members struck from the first flanged portion adjacent the inclined portion and extending angularly inwardly into the space between the first and second flanged members and in a direction towards the second flanged member and the body portion to prevent retraction movements between the first panel and clip once the first panel has cleared the spring fingers during movement into the space between the first and second flanged members.

3,881,294
CONSTRUCTION ELEMENT FOR GLASS FRAMING SYSTEM
Lawrence F. Biebuyck, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.
Continuation of Ser. No. 277,638, Aug. 3, 1972, abandoned, which is a continuation of Ser. No. 59,915, July 31, 1970, abandoned. This application Mar. 15, 1974, Ser. No. 451,526
Int. Cl. E04c *3/32*, *2/38*
U.S. Cl. 52—720 **16 Claims**

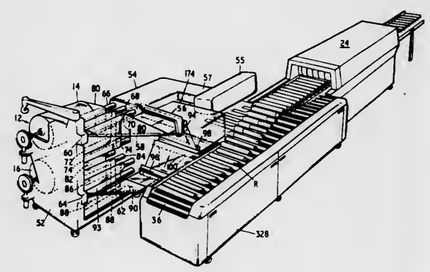


4. A construction element having inner and outer face portions and interconnecting portions, said interconnecting portions and said face portions defining a pair of glazing pockets for retaining the edges of adjacent panels, one of said glazing pockets being a stepped pocket, said interconnecting portions including a web member forming a bottom surface of one portion of said stepped pocket and further including a web member forming a bottom surface of a second portion of said stepped pocket, said web portions being laterally disposed.

3,881,295
DISPOSAL SYSTEM
Robert L. Derby, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Apr. 20, 1973, Ser. No. 353,194
Int. Cl. B65b *3/00*; **B65f** *1/00*, *5/00*
U.S. Cl. 53—21 R **5 Claims**

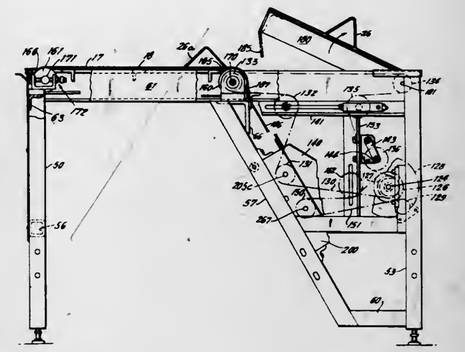
1. A method for the disposition of ecologically undesirable polymer swelling liquid, the steps of the method comprising
containing the liquid within particles of a liquid swellable solid cross-linked vinyl addition resinous polymer having a swelling index of from about 2 to 50, the liquid being present in a quantity at least sufficient to form a gel, said swellable resinous particles being located within a container,
containing said gel in a shipping container, and
transferring said shipping container to a disposal site.

3,881,296
METHOD AND APPARATUS FOR PACKAGING
Frederick Douglas Clavell Bate, 155 Barkerhouse Rd., Nelson, England
Filed Mar. 15, 1973, Ser. No. 341,526
Claims priority, application United Kingdom, June 29, 1972, 30399/72
Int. Cl. B65b *9/02*, *9/14*, *43/08*
U.S. Cl. 53—30 **33 Claims**



1. A method of forming a package containing an article comprising the steps of feeding a web comprising two layers of wrapping film in close juxtaposition along aligned paths of travel in the same direction, inserting an expansible tube opening device between said two layers of film, causing a sealed relationship between said two layers of film in separate transversely extending areas located at opposite sides of the inserted device and spaced apart relative to said direction of travel to form a compartment for said inserted device, severing the web at said areas to separate said compartment from said web, then expanding said inserted tube opening device for opening out said compartment to form a tube having at least one open end and frictionally grip the interior of said tube, and supporting and conveying said severed tube in said direction of travel by said tube opening device while inserting an article to be packaged into the open end of said tube.

3,881,297
BOTTOM-WRAP APPARATUS
George T. Rushforth, Costa Mesa, Calif., assignor to Sun Chemical Corporation, New York, N.Y.
Filed Sept. 4, 1973, Ser. No. 394,143
Int. Cl. B65b *57/12*, *41/16*
U.S. Cl. 53—74 **9 Claims**

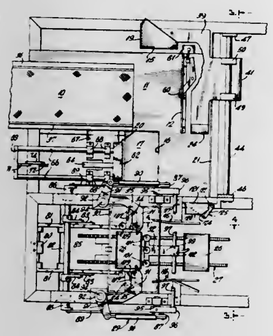


1. Bottom wrap applying apparatus comprising, in combination:
frame support means,
a rotatable paper roll support shaft supported by said frame support means,
a web storage means for storing up to a given length of web as it unrolls from the paper roll supported by said support shaft,
a first pair of paper drive rolls for receiving said web from said web storage means and for moving said web out of said web storage means and supported relative to said frame support means, first roll drive means connected with said first drive rolls for rotating them;
a second pair of paper drive rolls disposed parallel to and spaced from said first pair of paper drive rolls for moving said web away from said first pair of paper drive rolls and supported relative to said frame support means, second roll drive means connected with said second drive rolls for rotating them;
an elongaged cut-off knife means supported relative to said frame support means disposed between said first and second pairs of paper drive rolls for cutting said web,
means connected to said first and second pairs of paper drive rolls for simultaneously engaging said web between both said first and second pairs of paper drive rolls, said second roll drive means rotating said second pair of rolls while said first roll drive means resists rotation of said first pair of rolls and this while said elongated cut-off knife means is operated to cut said web,
a top support surface on said frame support means,
conveyor systme means disposed on said top support surface for conveying signature bundles over said top surface,
a bottom wrap presentation slot extending across said top surface, and
paper guide channel means for guiding lengths of said web precut to a given length by said knife extending from said second pair of rolls to said presentation slot.

3,881,298
CARTONING APPARATUS

Arthur J. Griner, Delray Beach, Fla.; Robert J. Albrecht, River Edge, N.J.; V. H. Hoagland, Fair Lawn, N.J., and Daniel Ignatuk, Morris Plains, N.J., assignors to Nabisco, Inc., New York, N.Y.

Filed May 28, 1974, Ser. No. 473,567
Int. Cl. B65b *35/50*
U.S. Cl. 53—164 5 Claims

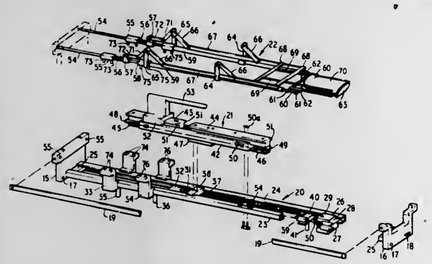


1. Cartoning apparatus comprising in combination an infeed conveyor carrying the articles to be cartoned, a stop member for positioning a column of articles delivered by the conveyor, a first transversely moving pusher for moving a group of articles from said column across a surface, a second surface beneath said first surface, means for depositing part of said group of articles onto said second surface, a longitudinally moving pusher for moving the articles of said group remaining on said first surface, and a second transversely moving pusher for simultaneously moving the aligned articles on both surfaces into a carton.

3,881,299
DEVICE FOR OPENING AND FILLING AN ENVELOPE

Frederick Douglas Clavell Bate, 155 Barkerhouse Rd., Nelson, England

Filed June 25, 1973, Ser. No. 373,417
Claims priority, application United Kingdom, June 29, 1972, 30398
Int. Cl. B65b *43/34*
U.S. Cl. 53—187 19 Claims

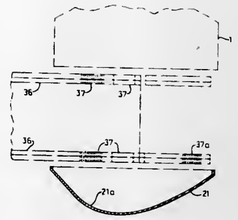


1. A device for opening and filling an envelope comprising at least two opening members adapted to lie in a substantially planar flat condition between two layers of plastics film forming a substantially flat envelope at least partly containing the members, carriage means on which said members are mounted for movement between said substantially flat condition and a spaced apart condition, means for moving said carriage means in a direction to dispose said opening members while in said flat condition in said envelope, means operable for moving said members apart to open at least the mouth of the envelope, an article pusher device on said carriage means, means for actuating said pusher device to push an article in said direction between the members when they are spaced apart and into the envelope, and means for moving said opening members and the pusher device towards one another when said pusher device is actuated so that as the pusher device pushes an article into the envelope the opening members draw the envelope over the article.

3,881,300
METHOD AND APPARATUS FOR SUPPLYING STEAM DURING THE LOCATION OF THREADED CAPS ON CONTAINERS

Einar Zetterberg, Professorsgatan 4B, Malmo, Sweden (21453)

Filed Aug. 24, 1973, Ser. No. 391,053
Claims priority, application Sweden, Feb. 25, 1972, 2321/72
Int. Cl. B65b *31/00*
U.S. Cl. 53—11 8 Claims



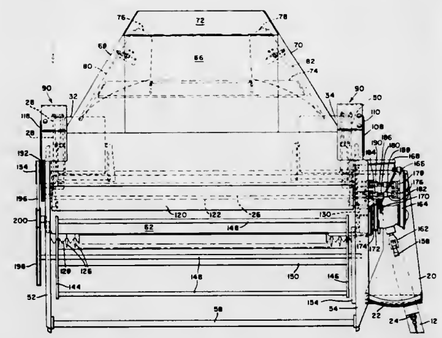
5. A method of closing containers such that a reduced pressure exists therein, the method comprising:
feeding open containers by means of a conveyor; locating a cap with respect to a corresponding container by guiding the cap between guide rails until the cap is engaged by its corresponding container;
providing a steam opening in one guide rail such that the opening faces the open container;
supplying steam outside the one guide rail and facing the open container;
streaming steam from the steam opening across the container and the cap at the position where the leading edges of the cap and container are engaged but while the trailing edges of the cap and container are vertically separated whereby air removed by the streaming steam is replaced by steam;
thereafter lowering said trailing edges into engagement while redirecting the steam from outside the other rail to the area between the guide rails; and finally,
preliminarily tightening the cap onto the corresponding container.

3,881,301
CROP HARVESTING MACHINE

Bobby Gene Sawyer, Ottumwa, Iowa, and Donald E. Burrough, West Bend, Wis., assignors to Deere & Company, Moline, Ill.

Filed July 3, 1972, Ser. No. 268,562
Int. Cl. A01d *45/02*
U.S. Cl. 56—14.4 14 Claims

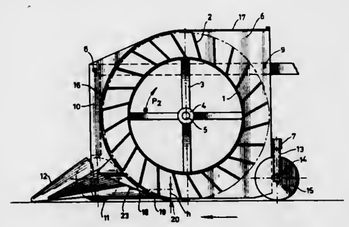
1. A crop harvesting machine comprising: transversely extending frame means adapted to advance forwardly through a field; transversely extending cutting means mounted forwardly on said frame means and adapted to cut a swath of crop material as said frame means is advanced forwardly; a generally fore-and-aft draft member extending forwardly from one side of the frame means along one lateral side of the cutting means; an upper and lower pair of parallel, transversely extending crop conditioning rolls mounted on said frame means above and rearwardly of said cutting means; crop transfer means for transferring cut crop material from said cutting means to said crop conditioning rolls, said rolls being operative to receive crop material therebetween and discharge said crop material rearwardly, the momentum of the crop carrying it along an air borne path extending rearwardly from said rolls in spaced relation to the ground and thence downwardly to the ground; and a transversely spaced pair of ground-engaging wheels connected to said frame means and operative to support said frame means relative to the ground, at least one of said wheels being disposed rearwardly of and within the transverse extent of said conditioning rolls, and directly below and forwardly of the air borne path of crop material discharged from said rolls, whereby in operation of said crop harvesting machine crop material is discharged from said rolls directly over said one wheel and thence downwardly to the ground rearwardly of said one wheel.



3,881,302
PICKING MACHINE

Lolke Lokema, Delfzijl, Netherlands, assignor to Ter Borg & Mensingae's Machinenfabriek N.V., Appingedam, Netherlands

Filed June 14, 1974, Ser. No. 479,290
Int. Cl. A01d *45/22*
U.S. Cl. 56—130 6 Claims

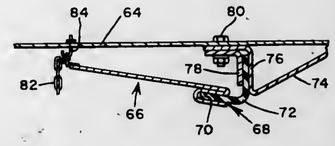


1. Machine for harvesting low growing crops, such as beans, said machine comprising a drum provided with a plurality of picking fingers, said drum having an axis transverse to the direction of travel, and being rotatable in a sense opposite the sense of rotation of the machine wheels, said drum cooperating with the lower edge, substantially at picking height, of a picking plate extending in curved shape at least at the front side partially around the drum, wherein the picking plate is provided at alternate locations with extensions, curved cylindrically around the picking drum contiguous with the cylindrically curved main picking plate body, these extended plate portions having edges substantially at the same level as the lowermost of the picking fingers, the distance between the centers of the extensions being chosen so as to correspond with the row spacing of the crop to be harvested.

3,881,303
ELASTOMERIC HINGE FOR A SWINGABLE AGRICULTURAL MACHINE ELEMENT

Jerry Lee Krafka; Bobby Gene Sawyer, and Ralph August Gerhardt, all of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed July 12, 1973, Ser. No. 378,729
Int. Cl. A01d *43/00*
U.S. Cl. 56—192 10 Claims



1. In an agricultural machine having an elongated sttationary member and an elongated swingable member having a longitudinal edge disposed adjacent to the stationary member, the combination therewith of improved hinge means connecting the swingable member to the stationary member for swinging about said edge and comprising: at least one elongated, normally flat, flexible element primarily made of elastomeric material; means connecting the flexible element to the stationary member substantially along the length of the element adjacent one longitudinal edge with the portion of one side of the element adjacent said edge flat against the stationary element; an elongated slot extending longitudinally along the longitudinal edge of the swingable member, the other longitudinal edge of the flexible element being tightly received in the slot to clamp the swingable member to the resilient element, whereby the flexible element bends about a longitudinal axis between its opposite edges to permit the swingable member to swing relative to the stationary member about said axis.

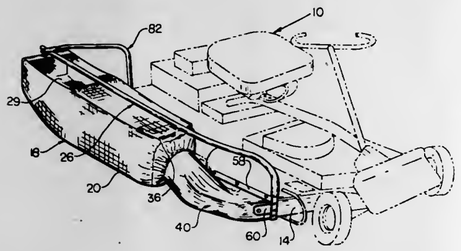
3,881,304
DUMPABLE GRASS CATCHER

Leslie C. Lempke, Bloomfield Hills, Mich., assignor to Homelawn Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 210,061, Dec. 20, 1971, abandoned. This application May 9, 1973, Ser. No. 358,538
Int. Cl. A01d *35/22*
U.S. Cl. 56—202 62 Claims

1. Apparatus for catching grass clippings or the like upon being discharged from a discharge opening of a power operated lawn mower comprising:
a container having an inlet opening at the front end for receiving the grass clippings and a storage space therewithin for accumulating the grass clippings and an outlet opening at the rear end for dumping the grass clippings; rigid support means for holding the container in fixed relationship to the mower in a substantially horizontal catching position; and
pivotal connecting means between the container and the mower enabling movement of the container between the catching position and a substantially vertical dumping position,
said pivotal connecting means being located outwardly beyond said mower and above said container adjacent the

rear end of said container whereby the rear end of said container is located a substantial distance upwardly above and beyond the mower and above the ground in the dumping position to enable the grass clippings to be discharged through the outlet opening at the rear end of



said container into a disposal container positioned thereunder,

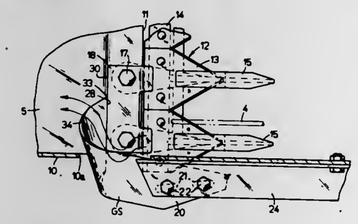
the weight of said container and the grass clippings contained therein being supported by said mower in the vertical dumping position.

3,881,305

CROP HANDLING IMPLEMENT HAVING A GUIDE SHIELD FOR CUT CROP MATERIAL

Donald E. Burrough, West Bend, Wis., assignor to Gehl Company, West Bend, Wis.

Filed Dec. 19, 1973, Ser. No. 426,085
Int. Cl. A01d *55/02*
U.S. Cl. 56—257 **11 Claims**



1. A crop treating implement for travelling over a crop and including a transverse sickle assembly for severing the crop and also having a generally vertical side wall means located at one side of the implement, said sickle assembly extending through an opening in said side wall means, said implement also having a frame for supporting said side wall and said sickle assembly, and a guide shield extending generally transversely through said opening and having an end portion secured to said frame, said guide shield having an intermediate portion extending rearwardly and inwardly from said opening and terminating in a lower edge that snugly abuts against a rear side of said sickle assembly whereby said guide shield acts to shield said generally vertical wall means and permits crop material to be smoothly directed past side wall means.

3,881,306

MACHINE FOR FORMING A COMPACT STACK OF CROP MATERIAL

James R. Koop, Fowler; Gene R. Butler, Kingsburg; David L. Darnall, Fresno, and Lee D. Butler, Kingsburg, all of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Apr. 5, 1974, Ser. No. 458,267
Int. Cl. A01d *87/02*
U.S. Cl. 56—346 **7 Claims**

1. In a machine for forming a compact stack of crop material such as hay or the like, the combination comprising:

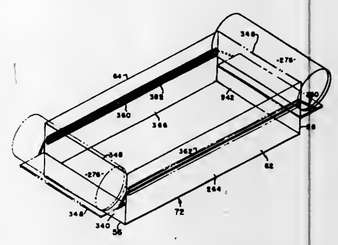
a mobile chassis adapted to move across a field;

a generally rectangular stack forming chamber mounted on said chassis;

means for picking up crop material from the field and progressively forming said crop material into a stack in said chamber;

packing means extending across said chamber between opposite sides thereof and moveable between opposite ends of said chamber to compact said crop material as said stack thereof is progressively formed in said chamber;

gate means mounted at each of said ends of said chamber, each of said gate means being moveable between a first position located adjacent to, and substantially closing said corresponding end of, said chamber and a second position located outwardly from said first position and remote from, and at least partially opening said corresponding end of, said chamber;



means for moving said packing means between said ends of said chamber and at least partially past each of said ends so as to engage and move said one gate means at said corresponding end of said chamber from its first position to its second position and thereby achieve compaction of said crop material located adjacent said ends of said chamber;

and

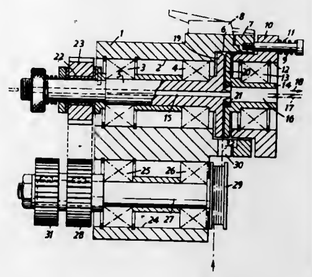
means for positioning each one of said gate means in said first position to substantially close said corresponding end of said chamber prior to each engagement of said one of said gate means by said packing means.

3,881,307

WINDING MATERIAL ON A CORE

Peter Rebbettes, Dorset, England, assignor to Aerostatic Limited, Poole, England

Filed Sept. 17, 1973, Ser. No. 397,759
Claims priority, application United Kingdom, Sept. 27, 1972, 44593/72
Int. Cl. B65h *81/08*
U.S. Cl. 57—18 **6 Claims**



1. A method, of applying a helical winding of filamentary material, to a core, comprising the steps of:

i. forming the filamentary winding material into a spiral of which the inner end is connected to the core and the outer end is continued by a bulk supply of the winding material;

ii. relatively moving the core axially through the spiral so as to cause the innermost turn of the spiral of winding material to be drawn into a helix about the core;

iii. simultaneously causing relative rotation of the innermost turn of the spiral with respect to the outermost turn of the spiral in the direction to cause the innermost turn to become smaller;

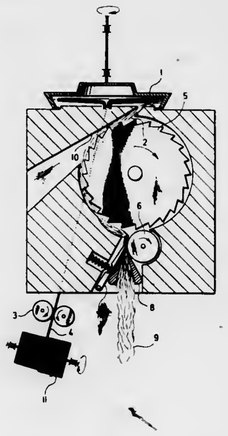
iv. feeding winding material to the outermost turn of the spiral at the same rate as it is removed from the innermost turn of the spiral.

3,881,308

SLIVER CONDENSER FOR A FIBER SEPARATING DEVICE OF OPEN-END SPINNING UNITS

Milan Marsalek, Nachod; Vaclav Brynda, Usti nad Orlici; Jan Junek, Usti nad Orlici; Frantisek Hortlik, Usti nad Orlici; Josef Ripka, Usti nad Orlici; Vaclav Vobornik, Letohrad, and Vladimir Ohlidal, Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Nov. 14, 1973, Ser. No. 415,808
Claims priority, application Czechoslovakia, Nov. 29, 1972, 8120/72
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.95 **6 Claims**



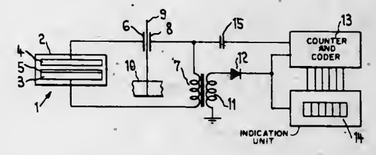
1. A sliver condenser for a fiber separating device of an open-end spinning unit, comprising a combing-out cylinder and a sliver supplying mechanism associated therewith comprising a feed roller cooperating with a pressure member between which the sliver discharged from the condenser is compressed, a sliver condenser duct having an intake and an outlet port, the cross-sectional area of the duct continuously diminishing from the intake to the outlet port, the heights of duct cross-sections within at least a portion of the duct length parallel with the feed roller axis being greater than the maximum widths of the respective cross-sections perpendicular to the last-mentioned heights, so that at least within said portion of the duct length the two opposite duct walls are wider than the two other opposite duct walls, within one and the same duct cross-section the cross-sectional width gradually varying so that the maximum width of the cross-section is adjacent at least one of the opposite duct walls.

3,881,309

ELECTRONIC TIMEPIECE

Rene Jenni, Biel, and Karl Adler, Grenchen, both of Switzerland, assignors to Biviator S.A., Grenchen, Switzerland

Filed Mar. 5, 1974, Ser. No. 448,281
Claims priority, application Switzerland, Mar. 13, 1973, 3613/73
Int. Cl. G04b *1/00*
U.S. Cl. 58—23 V **4 Claims**



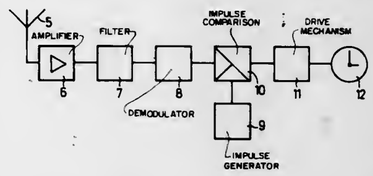
1. An electronic timepiece such as a watch comprising liquid-crystal time indicating means, a single isotope direct voltage source, a mechanical resonator regulating the timekeeping function of said timepiece, an electrostatic driving system for said resonator, a driving circuit interconnecting said driving system with said voltage source, said resonator generating electric signals which are synchronous with the resonator oscillation, voltage transducing means having its input connected to said driving circuit, a counting and coding circuit connected at a control input to said driving circuit and at an output to said indicating means, the output of said transducing means being connected to supply operating potential to a power input of said counting and coding circuit and to said indicating means for energizing them, energy from said signals being employed both as a control input signal to said counting and coding circuit and as an operating voltage for said counting and coding circuit and for said indicating means.

3,881,310

CLOCK ADAPTED TO BE SYNCHRONIZED BY ALTERNATING CURRENT IN A WIRELESS MANNER

Erich Gerum, and Alfred Meisner, both of Nuremberg, Germany, assignors to Diehl, Nuremberg, Germany

Continuation-in-part of Ser. No. 230,326, Feb. 29, 1972, abandoned. This application July 16, 1973, Ser. No. 379,563
Claims priority, application Germany, Mar. 2, 1971, 2109707; Mar. 2, 1971, 2109705
Int. Cl. G04b *1/00*
U.S. Cl. 58—35 W **12 Claims**



1. In combination with an electric clock and a transmitter, said clock having therein an electromagnetically operated mechanical oscillator with a predetermined natural frequency which is a selected whole number times the rated frequency of an alternating current network, said electromagnetically operated mechanical oscillator including actuating coil means therein, said transmitter that generates a carrier wave being installed at a location remote from the electric clock wherein said mechanical oscillator is provided, aerial means respectively being provided for effective relationship between said transmitter and said clock, modulating means in the transmitter, said transmitter being adapted to be connected to said network and including means operable to transmit said carrier

wave at a higher frequency greater than that of audible sound and modulated by said modulating means effective with said network at a lower frequency which is said selected whole number times the frequency of the network, a receiver at the clock having an input end and an output end, a demodulating means in the receiver, said receiver being adapted to receive said modulated carrier wave at said input end and including amplifier means operable to amplify and connected serially with said demodulating means to demodulate the wave to develop first pulses at said lower frequency at said output end, means connecting said output end of said receiver to said coil means to supply said first pulses thereto, a battery powered electric oscillator at said clock developing second pulses at said natural frequency of said mechanical oscillator and connected to said coil means, semi-conductor control means in circuit between said electric oscillator and said coil means normally disabling said electric oscillator, means lying between said coil means and said electric oscillator sensitive to the supply of an impulse signal in response to deviation of frequency of the network by a predetermined amount from the rated frequency thereof to enable said electric oscillator to operate, and comparing means comparing the frequency of said first pulses to the said natural frequency of said mechanical oscillator connected therewith and connected to supply a said impulse signal to said semi-conductor control means in response to deviation of said network frequency by a predetermined amount from the said rated frequency thereof, said receiver at the output end including a first transistor having the emitter-collector path in series with said actuating coil means and the base connected to receive said first pulses; said electric oscillator comprising a second transistor having the emitter-collector path in series with a portion of said actuating coil means and said battery; said semi-conductor control means comprising a third transistor having the remainder of said actuating coil means connected between the base and the emitter thereof, the collector of said third transistor being connected to the base of said second transistor and via a capacitor to the emitter of said third transistor and via a resistor to one side of said battery, said mechanical oscillator having magnet means linking said remainder of said actuating coil means to develop pulses therein during oscillation of the mechanical oscillator.

3,881,311

DRIVING ARRANGEMENT FOR PASSIVE TIME INDICATING DEVICES

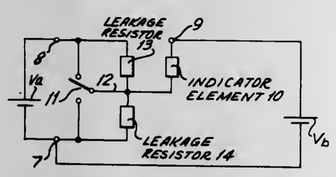
Tetsuro Hama, and Izuhiko Nishimura, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 232,461, Feb. 28, 1972, Pat. No. 3,797,225. This application Mar. 19, 1974, Ser. No. 452,588

Claims priority, application Japan, Feb. 27, 1971, 46-9804

Int. Cl. G04b *19/30;* **Ho2j** *3/10;* **H05b** *39/02*

U.S. Cl. 58—50 R **9 Claims**



1. An electronic timepiece comprising oscillator means for producing a high frequency time standard signal; divider circuit means for producing an intermediate frequency signal and low frequency timing signals in response to said high frequency time standard signal; decoder means for producing display actuation signals in response to said timing signals; driving circuit means coupled to said decoder means and including double throw-type switching means connected for selective disposition in one of first and second switching modes in response to display actuation signals; liquid crystal display means defining passive indication means and including at least four digits for the visual indication of time, each of said digits of said display including seven segmented electrodes oriented in a seven-bar display and a common electrode, corresponding segments of said segmented electrodes being electrically connected together, one of said driving circuit means being connected to each of said commonly connected segments; and digit timing pulse generator means respectively connected to each of said common electrodes for sequentially applying said first potential to each of said common electrodes, said double throw type switching means having first and second input terminals and an output terminal for selective placement in either of said first switching mode at which said first input and said output terminals are coupled and said second switching mode at which said second input and said output terminals are coupled, each said switching means output terminal being connected to one group of corresponding segmented electrodes; and means for applying a second and third potentials to said first and second switching means input terminals, respectively, said potentials being selected to have a value such that the difference between said first and second potentials is sufficient to actuate said passive indication means to provide a visual indication, and the difference between said first and third potentials is less than the threshold voltage of said passive indication means at which such visual indication is first produced.

3,881,312

MECHANICAL WATCH MOVEMENT

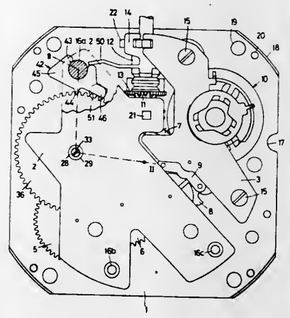
Peter Bachmann, Bettlach, Switzerland, assignor to Ebauches Bettlach S.A., Bettlach, Switzerland

Filed Apr. 30, 1974, Ser. No. 465,663

Claims priority, application Switzerland, May 11, 1973, 6730/73

Int. Cl. G04b *33/00*

U.S. Cl. 58—59 **8 Claims**



1. A mechanical watch movement comprising a base-plate and at least one bridge fastened to the base-plate by pillars, wherein the base-plate, viewed in plan, is in the shape of a square having its corners cut off by a circle concentric with the square, and the other parts of the movement are fitted within an imaginary cylindrical surface tangent to the sides of the square.

3,881,313

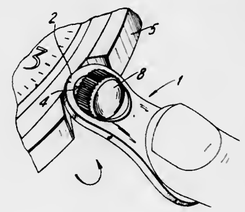
BATTERY DISCHARGE GUARD FOR ELECTRIC WATCH

Edward Kaulins, New Milford, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Sept. 3, 1974, Ser. No. 502,998

Int. Cl. G04b *43/00;* **G04c** *3/00;* **H01h** *35/00*

U.S. Cl. 58—105 **5 Claims**



1. A battery discharge guard for an electric watch of the type having a depressible external actuator for closing an internal circuit or connecting the battery and having a stem slidable within a pendant and an enlarged crown,

said guard comprising a first pendant-enclosing portion of stretchable material of sufficient thickness to hold the stem in an extended non-operative position, and a second portion connected to the pendant-enclosing portion for stretching it and pulling it over the crown of the actuator.

3,881,314

POWER TRANSMISSION CHAIN

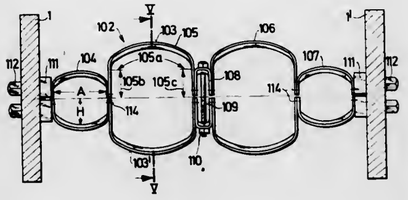
Kurt Hennig, and Hans-Peter Schmidberger, both of Munich, Germany, assignors to Kurt Hennig, Munich, Germany

Filed Aug. 15, 1973, Ser. No. 388,401

Claims priority, application Germany, Aug. 31, 1972, 2242898; Nov. 23, 1972, 2257511; Nov. 4, 1972, 2254086

Int. Cl. F16l *3/00;* **F16g** *13/16*

U.S. Cl. 59—78.1 **8 Claims**



1. A connecting web, for a power transmission channel having at least two chain belts transversely connected by a plurality of such webs, said connecting web

a. having greatly improved stiffness for its weight,

b. being formed of sheet metal strips each having a width substantially greater than its thickness, the width of each strip extending longitudinally of the channel, and

c. consisting of two superimposed parts, each part being composed of a plurality of U-shaped sections with the legs of adjacent sections secured together in flat contact, the legs of each U-shaped section of one part being opposed to the legs of a corresponding U-shaped section of the other part, whereby said corresponding sections form an opening to receive a power supply line, and each part having a bracket interposed between two adjacent U-shaped sections and aligned with the bracket on the other part, for receiving a screw to hold the two parts together.

3,881,315

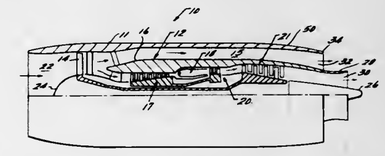
FAN DUCT FLOW DEFLECTOR

Paul J. Hess, Cincinnati, and Hans P. Mehr, Mason, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 19, 1973, Ser. No. 342,767

Int. Cl. F02k *3/06*

U.S. Cl. 60—226 R **10 Claims**



1. In a gas turbine engine of the turbofan variety including a core engine having a core exhaust nozzle and a fan duct having a fan exhaust nozzle disposed to the radial exterior of the core nozzle, and wherein the fan flow from the fan nozzle substantially encircles the core flow from the core nozzle, the improvement comprising:

means disposed between the core nozzle and the fan nozzle for turning the fan flow radially outwardly at the discharge plane of the core nozzle to reduce back pressure on the core flow.

3,881,316

EXHAUST GAS PURIFYING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

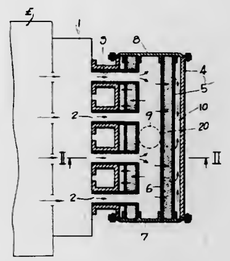
Tsuchio Bunda, Okazaki; Itaru Niimi, Nagoya; Yasuhisa Kaneko, and Fumiyoshi Noda, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation-in-part of Ser. No. 209,698, Dec. 20, 1971, abandoned. This application May 14, 1973, Ser. No. 360,078

Claims priority, application Japan, Apr. 16, 1971, 46-24327

Int. Cl. F01n *3/14*

U.S. Cl. 60—302 **8 Claims**



1. An exhaust gas purifying device for an internal combustion engine, comprising:

a converter body connected to an exhaust outlet passage,

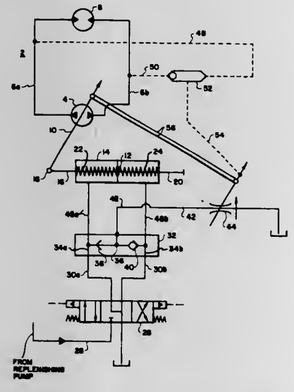
a major diameter cylindrical member and a minor diameter cylindrical member comprising an air permeable material, concentrically arranged within said converter body, a duct for directly introducing exhaust gases into the bore of said minor diameter cylindrical member from an internal combustion engine,

a catalyst material for effecting exhaust gas purification located in the space between the walls of said major and minor diameter cylindrical members,

substantially horizontal partition plates located in the space between the walls of said major and minor diameter cylindrical members, dividing the catalyst material into an upper catalyst portion and a lower catalyst portion, for

preventing the weight of the upper catalyst portion from bearing upon the lower catalyst portion,
and the portions of the major diameter cylindrical member immediately below said partition plates, are non-permeable to exhaust gases.

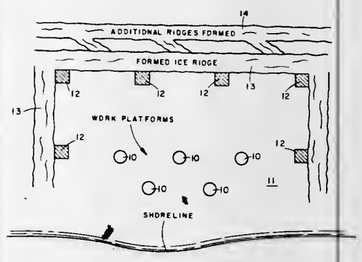
3,881,317
CONTROL SYSTEM FOR VARIABLE DISPLACEMENT HYDRAULIC PUMP
Jon R. Swoager, Imperial, Pa., assignor to Automation Equipment, Inc., Imperial, Pa.
Filed Oct. 25, 1973, Ser. No. 409,746
Int. Cl. F16h *39/46*
U.S. Cl. 60—444 **6 Claims**



1. In a control system for a hydraulic transmission having a pump for supplying fluid under pressure to a motor through a closed circuit, said control system being in selective communication with a fluid drain and including a control piston operably connected to the cam plate of said pump, the improvement comprising:
first valve means having an inlet and an outlet for selectively introducing control fluid under pressure to one or the other side of said control piston;
flow control means in communication with said outlet of said first valve means for directing said control fluid to said selected side of said control piston and providing an outlet for a portion of said control fluid;
and
second valve means having an inlet connected to said flow control means outlet and an outlet connected to said fluid drain for selectively proportioning the flow of said control fluid through said second valve means outlet to said fluid drain in response to said fluid pressure present in said closed circuit.

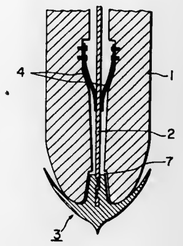
3,881,318
ARCTIC BARRIER FORMATION
David E. Galloway, Simonton, Tex., assignor to Exxon Production Research Company, Houston, Tex.
Filed Aug. 27, 1973, Ser. No. 392,146
Int. Cl. E02b *3/00*
U.S. Cl. 61—1 R **3 Claims**

1. A method for forming a protective barrier for offshore facilities in frigid regions comprising the steps of:
constructing multiple artificial islands at spaced apart distances from each other along the seaward edge of the area in which said facilities are located, each artificial island comprising materials anchored to the sea floor and extending to near sea level, spacing between each artificial island being preselected relative to the depth of water in which said island structures are located to induce grounding of ice formations such as pressure ridges and ice islands; and



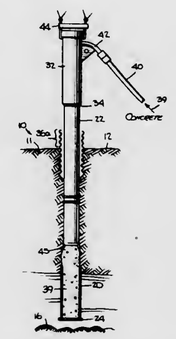
creating a mass of grounded ice formations to prevent encroachment of ice formations upon said offshore facilities, said spacing being sufficiently narrow to prevent ice formations of a magnitude the offshore facilities are incapable of resisting from passing between said islands.

3,881,319
APPARATUS FOR DRIVING BOARD DRAINS UNDERGROUND
Kotaro Katagiri, Yokohama; Masyuki Saito, Kodaira; Jiro Saito, Tokyo; Kiyoshige Nishibayashi, Niiza, and Tatsuyuki Matsuo, Tokorozawa, all of Japan, assignors to Shinetsu Chemical Company, Tokyo and Ohbayashi-Gumi, Ltd., Osaka, both of, Japan
Filed Oct. 3, 1973, Ser. No. 403,069
Claims priority, application Japan, Oct. 5, 1972, 47-100121
Int. Cl. E02b *11/00*
U.S. Cl. 61—11 **8 Claims**



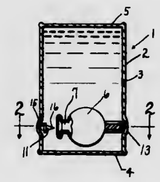
1. Apparatus for insertion of board drains into soft clay soils comprising a board drain, a hollow mandrel and a capping means, said hollow mandrel having at least one open end, said capping means having means for securing said board drain thereonto, said capping means surrounding the open end of said mandrel to protect it from entry of foreign matter when the mandrel, capping means and board drain are driven into the soil, and said capping means being provided with two diverging edged wings on opposing sides, said wings extending outwardly from the lower end of said hollow mandrel so as to anchor said capping means and said board drain in the soil by cutting the soil when said hollow mandrel is pulled up.

3,881,320
PILE INSTALLATION IN SUBMERGED BEARING STRATA
George J. Gendron, Houston, Tex., assignor to Raymond International Inc., Houston, Tex.
Filed June 27, 1973, Ser. No. 373,977
Int. Cl. E02d *5/34, 5/72*
U.S. Cl. 61—53.64 **17 Claims**



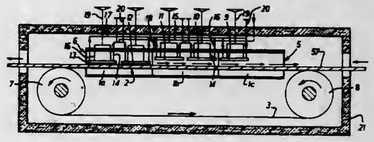
1. A method of installing a pile in a bearing stratum which underlies a softer non-supporting stratum of earth, said method comprising the steps of detachably fitting an elongated, hollow, tubular, closed bottom overboot over the lower end of an elongated drive member capable of transmitting driving forces applied to its upper end down to the lower end of said overboot, driving said overboot down through the earth and into said bearing stratum by application of said driving forces to the upper end of said drive member until said overboot reaches a depth in said bearing stratum sufficient to produce a predetermined maximum driving resistance but less than the length of said overboot so that at least a portion of the upper end of said overboot extends up beyond said bearing stratum and into said non-supporting stratum, thereafter removing said drive member from said overboot and installing a load carrying column to extend from within said overboot up through said softer stratum.

3,881,321
SELF-COOLING DISPOSABLE LIQUID CONTAINER
William T. Riley, Harrison, Ohio, assignor to The Drackett Company, Cincinnati, Ohio
Substitute for Ser. No. 13,290, Feb. 24, 1970, abandoned. This application Feb. 19, 1974, Ser. No. 443,679
Int. Cl. F25d *3/10*
U.S. Cl. 62—294 **17 Claims**



1. A self-cooling disposable beverage container comprising in combination:
a disposable beverage container for containing a beverage;
a refrigerant chamber disposed within said container;
pressurized refrigerant fluid, said fluid being contained in said refrigerant chamber and being a mixture of carbon dioxide and a material selected from the group consisting of iso-butane, nitrous oxide, nitrogen, propane and mixtures thereof; and
means for puncturing said refrigerant chamber to permit said pressurized refrigerant fluid to escape through the beverage.

3,881,322
METHOD OF COOLING PRODUCTS
Raymond Le Diouron, Grenoble, France, assignor to L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des procedes George Claude, Paris, France
Filed Nov. 10, 1972, Ser. No. 305,283
Claims priority, application France, Nov. 19, 1971, 71.41572
Int. Cl. F25d *13/06*
U.S. Cl. 62—63 **7 Claims**

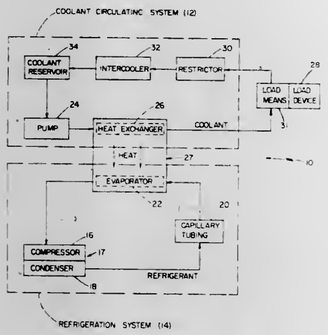


1. A method of cooling a body, comprising;
a. displacing the body to be cooled inside an elongated cooling zone, from the inlet to the outlet thereof, in a longitudinal direction with respect to said cooling zone,
b. introducing into said cooling zone a pressurized gaseous medium, and causing at least part of said introduced gaseous medium to circulate in direct contact with said body, towards said inlet, in said longitudinal direction, as a countercurrent flow with respect to the displacement direction of said body,
c. pressurizing a refrigerant liquid to a pressure higher than the ambient pressure outside said cooling zone; vaporizing said pressurized refrigerant liquid in at least a longitudinal heat exchanger, said heat exchanger being in heat exchange relationship with said cooling zone, and in direct contact with said countercurrent flow; obtaining said pressurized gaseous medium from at least part of the vaporized refrigerant liquid issuing from said heat exchanger,
d. in at least a longitudinal flow path section of heat transfer, extending along said heat exchanger, constraining said countercurrent flow into a substantially turbulent and longitudinal gaseous stream, closely enveloping at least part of the body to be cooled, whereby said gaseous medium acts in at least said longitudinal flow path section as a heat transfer medium from said body to said heat exchanger and has a substantially constant low temperature along said longitudinal flow path section.

3,881,323
VISCOSITY REGULATED COOLING SYSTEM
John H. Porter, Colchester Point, Vt., assignor to Ladd Research Industries, Inc., Burlington, Vt.
Filed May 24, 1973, Ser. No. 363,564
Int. Cl. F25d *17/00*
U.S. Cl. 62—216 **4 Claims**

1. A viscosity regulated cooling system for cooling a load device, comprising
a closed coolant circulating system adapted to contain a coolant whose viscosity varies inversely with its temperature and having
coolant circulating means for supplying and circulating coolant through said closed system,
refrigeration means for cooling said coolant
load means for bringing said coolant after being cooled by said refrigeration means into heat absorbing relationship with the load device, and

flow restriction means downstream of said load means and upstream of said circulating means for limiting flow of said coolant responsive to its viscosity as established by said load means, and termperature normalizing means

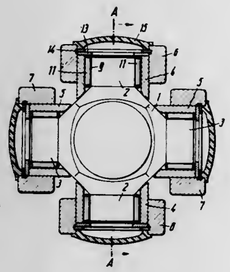


connected downstream of said flow restriction means for causing the temperature of said coolant to approach an ambient temperature after passing through said load means.

3,881,324
UNIVERSAL JOINT

Sobhy Labib Girquis, Troisdorf, Germany, assignor to Uni-Cardan AG, Lohmar, Rhine, Germany

Filed May 22, 1973, Ser. No. 362,785
Claims priority, application Germany, May 26, 1972, 2224594
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 A **13 Claims**



1. A universal joint comprising a cross member having a body portion and pins thereon in a cruciform arrangement, said body portion having a beveled surface forming a valve seat surface adjacent each of said pins, a bearing housing on each of said pins and bearing element means within the housings, said bearing housings each comprising a tubular member having an end portion of spherical configuration supported and adapted to smoothly fit on said beveled surface of said cross member body portion, a pair of yokes each having a pair of yoke arms, each yoke arm having a bore therethrough to receive a bearing housing therein, and means in each said yoke arm bore for positioning axially a said bearing housing therein to connect pivotally said yokes to said cross member pins.

3,881,325
OVERRIDE CLUTCH

Laszlo N. Repay, Chagrin Falls, and Thomas A. Young, Burton, both of Ohio, assignors to Tenna Corporation, Cleveland, Ohio

Filed Sept. 21, 1973, Ser. No. 399,301
Int. Cl. F16d *3/56*
U.S. Cl. 64—29 **19 Claims**



1. In a mechanism which includes a drive motor and an actuating member for causing actuation of an associated operative element, and releasable clutching means for clutching said actuating member to said motor for causing actuation of said actuating member and thus operation of the operative element, said clutching means comprising a rotatable clutch member for clutching the power of the motor to the actuating member, abutment means on said clutch member and on said actuating member, said abutment means on said clutch member being adapted for abutting engagement with said abutment means on said actuating member for causing rotation of the latter during energization of the motor, ramp means coacting with said abutment means on one of said members for preventing sudden movement and undesirable sound between said abutment means in the event that the driving connection between the clutch member and said actuating member is released when the stress between the abutment means results in an overload causing one of the abutment means to override the confronting abutment means, and said abutment means on the other of said members comprising a rollable element and wherein said motor is of reversible drive type, said members having a coincident axis of rotation, said abutment means on one of said members comprising a plurality of abutments which are located at predetermined different distances from the axis of rotation of said members, certain of said abutments being operative during rotation of said one member in one rotary direction, while the other of said abutments are operative during rotation of said one member in the opposite rotary direction.

3,881,326
DEVICE FOR AND METHOD OF MAKING A KNITTED BAND HAVING A SPIRAL ZIPPER INCORPORATED THEREIN

Alain Bourgeois, Le Sejalat, France, assignor to Elastelle Paul Fontanille & Fils, Le Puy, Haute-Loire, France

Filed Feb. 22, 1973, Ser. No. 334,861
Claims priority, application France, Mar. 1, 1972, 72.07065
Int. Cl. D04b *23/00*
U.S. Cl. 66—86 R **6 Claims**

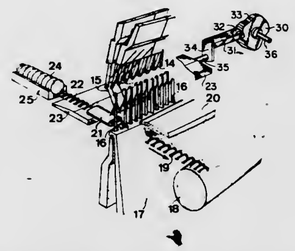
1. A method of making a knitted band having a zipper spiral securely incorporated into a longitudinal edge thereof, said zipper spiral having a plurality of turns with a plurality of hooking means extending outwardly therefrom, said method comprising the steps of:

warp-knitting said band with stitch threads and weft threads in longitudinal columns of stitches interconnected with each other, said stitch threads and weft threads being guided as a layer to said band during the knitting thereof;

placing said zipper spiral adjacent the longitudinal exterior edge of said band during the knitting of said band with said hooking means being directed away therefrom, the longitudinal axis of said zipper spiral being essentially perpendicular to the plane of said layer of stitch and weft threads and essentially aligned with the plane of said bend;

passing said zipper spiral through a guide tube positioned immediately forward of and axially perpendicular to said layer of threads;

moving said zipper spiral longitudinally through said guide tube during the knitting of said band in accordance with the formation cycle of said stitches; and

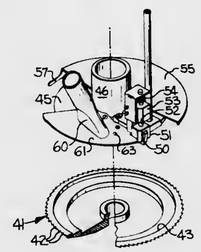


simultaneously passing each of said turns transversely through at least one column of stitches being formed on the longitudinal exterior edge of said band by moving said guide tube in a uniform, essentially rectilinear cyclic manner perpendicular to its longitudinal axis and parallel with the plane of said band, said guide tube moving said zipper spiral in a direction transverse to and in the same plane with the band being formed so as to pass at least one of said threads on both sides of each turn of said zipper spiral to secure each turn in at least one stitch of said bend at its longitudinal exterior edge.

3,881,327
YARN CUTTER FOR COARSE GAUGE KNITTING MACHINE

Peter A. Mahler, High Point, N.C., assignor to H. E. Crawford Co., Inc., Kernersville, N.C.

Filed Aug. 8, 1974, Ser. No. 495,577
Int. Cl. D04b *15/61*
U.S. Cl. 66—134 **6 Claims**



1. In a circular knitting machine including a needle cylinder supporting a circle of vertically movable needles, means for selectively rotating and reciprocating said needle cylinder, a yarn feeding station with feed fingers movable between active and inactive positions for selectively feeding body yarns to the needles, an elastic yarn feed finger positioned in spaced apart relationship and in advance of said body yarn feeding station, and a vertical drive shaft movable with said needle cylinder and with its lower end supported in the upper end of said circle of needles, the combination therewith of means for cutting the ends of yarns introduced and removed by said body yarn feed fingers and said elastic yarn feed finger, said cutting means comprising

a. a single-piece circular cutter fixed on the lower end of said vertical drive shaft for rotary and reciprocatory movement with said needle cylinder, said circular cutter including teeth around the outer periphery and having an annular recess in its upper surface, the lower surface of said circular cutter tapering inwardly and downwardly from the teeth on the outer periphery to permit the smooth passage of yarns therebeneath,

b. a circular dial plate supported in non-rotating position and in said annular recess in said circular cutter with the upper surface of said dial plate extending above the upper level of said circular cutter,

c. a cutter blade supported on said dial plate and substantially opposite said body yarn feed station, said cutter blade contacting the upper surface of said peripheral teeth on said circular cutter to sever yarns introduced and removed at said body yarn feeding station and said elastic yarn feed finger,

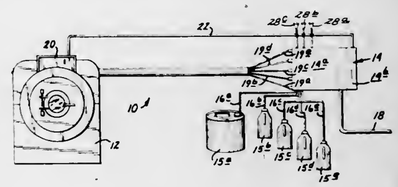
d. a guard plate fixed to the upper surface of said dial plate and extending outwardly over said peripheral teeth on said circular cutter, said guard plate extending from a position in advance of said elastic yarn feed finger and around to said body yarn feed station, and

e. a fabric hold-down plate fixed at one end on the end of said guard plate adjacent said body yarn feed station, said fabric hold-down plate extending in front of said body yarn feed station and downwardly to hold the fabric down on the needles as the needles move past said body yarn feed station.

3,881,328
ELECTRONIC DETERGENT DISPENSING SYSTEM

David L. Kleimola; Marcus I. Nystuen, both of St. Paul, and David L. Nystuen, Bloomington, all of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Division of Ser. No. 210,669, Dec. 22, 1971, abandoned. This application Feb. 23, 1973, Ser. No. 335,136
Int. Cl. D06f *33/02, 39/02*
U.S. Cl. 68—12 R **2 Claims**



1. A system for supplying precisely controlled amounts of liquid product to a washing machine having a main water supply controlled in a predetermined machine cycle, comprising:

a. a carrier liquid conduit in addition to the main water supply connected to the washing machine, for conveying carrier liquid thereto;

b. electrically actuable valve means located in said carrier liquid conduit and effective when actuated to enable the continuous flow of carrier liquid to the machine therethrough;

c. venturi-aspirator means located in said carrier liquid conduit for conduction of the carrier liquid under the control of said valve means;

d. a receptacle for containing a liquid product to be injected into said machine;

a liquid product conduit connecting said receptacle to said venturi-aspirator means so that upon flow of carrier liquid therethrough the liquid product is drawn from said receptacle and injected into the carrier liquid flow, whereby the amount of liquid product supplied to the washing

machine is determined by the duration of carrier liquid flow in the carrier liquid conduit;

f. a cycle controlling timing device associated with the washing machine for providing an electrical triggering signal synchronized with a step of the machine cycle; and

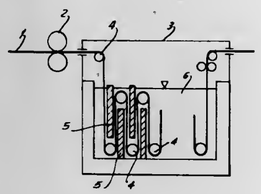
g. electrical control apparatus connected to receive said electrical triggering signal from said cycle controlling timing device, including an electrical timer connected to said valve means, and operative upon initiation of said electrical triggering signal to produce first and second control signals spaced by a predetermined delay interval, said apparatus including means actuating and maintaining actuated said valve means in response to said first control signal and deactuating said valve means in response to said second control signal, so that the amount of said liquid product supplied to said machine as a result of each triggering signal is a function of the duration of said delay interval, regardless of further continuance of said triggering signal.

3,881,329

APPARATUS FOR TREATMENT OF FLEXIBLE MATERIALS IN LIQUID MEDIA

Helmar Passler; Rudolf Hanke, and Adolf Heger, all of Dresden, Germany, assignors to VEB Textilkombinat Cottbus, Cottbus, Germany

Filed June 28, 1973, Ser. No. 374,545
Int. Cl. B05c *3/152*
U.S. Cl. 68—175 **5 Claims**



1. An apparatus for treatment of strips or sheets of flexible material in liquid media, comprising a tank for holding a liquid medium; means for feeding the flexible material into and out from the tank and along a zig-zag path through the liquid medium in said tank such that successive portions of the flexible material during their path through said liquid medium extend substantially parallel to each other, said means including two vertically spaced rows of guide rolls, with the guide rolls in each row transversely spaced from each other and with the guide rolls in one row transversely spaced with respect to the guide rolls in the other row; a plurality of successive substantially parallel and transversely spaced baffle walls, successive baffle walls respectively extending from opposite sides toward the guide rolls of one and the other row between successive portions of the flexible material guided by said guide rolls; and a plurality of rod-shaped projections fixed in staggered relationship along successive baffle walls and projecting with portions thereof into the path of the material guided by said guide rolls to constrain the material to move between successive baffle walls along as undulating path.

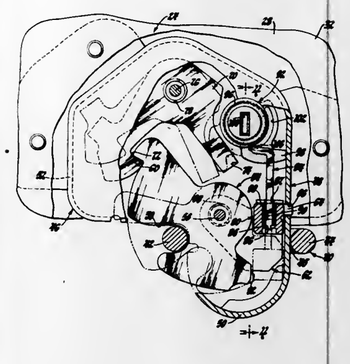
3,881,330

CLOSURE LATCH ASSEMBLY

Howard D. Hester, Romeo, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 22, 1974, Ser. No. 462,885
Int. Cl. E05b *63/00*
U.S. Cl. 70—1.5 **3 Claims**

1. In a closure latch assembly including a frame, latch bolt means supported on said frame for movement between a latched position and an unlatched position, detent means supported on said frame for movement between a detenting position engaging said latch bolt means in the latched position of the latter and maintaining said latch bolt means in the latched position and a releasing position remote from said latch bolt means permitting movement of the latter to the releasing position, the combination comprising, a cam member, means supporting said cam member on said frame for movement in a first mode between a first position remote from said detent lever and a second position engaging said detent lever and moving the latter to the releasing position in response to a predetermined actuating force input and for independent movement in a second mode in response to a force input corresponding to one mode of unauthorized manipulation of said closure latch assembly, a blocking member, means



supporting said blocking member on said frame for movement between a non-blocking position remote from said latch bolt means and a blocking position preventing movement of said latch bolt means to the unlatchced position, means continuously urging said blocking member to the blocking position, link means attached to said blocking member and movable as a unit therewith, and link retainer means connected to said link means and to said cam member for movement as a unit with the latter, said link retainer means maintaining said link means in a position corresponding to the non-blocking position of said blocking member during movement of said cam means in the first mode but releasing said link means in response to movement of said cam means in the second mode thereby to permit movement of said blocking member to the blocking position.

3,881,331

LOCKING DEVICE INCORPORATING A LOCK CASE, AN ESCUTCHEON AND A DOOR HANDLE

Erik Rudolf Tranberg, and Nils Kaj Gunnar Rosenqvist, both of Eskilstuna, Sweden, assignors to GKN-Stenman AB, Eskilstuna, Sweden

Filed Oct. 2, 1973, Ser. No. 402,688
Int. Cl. E05b *59/00, 13/00*
U.S. Cl. 70—107 **11 Claims**

1. A locking device comprising:

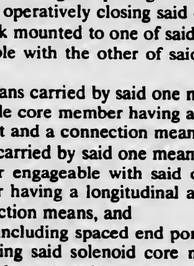
a lock case, an escutcheon housing and a door handle;

the lock case including therein a spring bolt operable by a sectioned bar, said sectioned bar in a cooperative arrangement with the door handle;

a cylinder lock mechanism to effectuate a locking of said spring bolt, said lock mechanism being substantially contained in the escutcheon housing;

a dead lock mechanism including a dead bolt latchable separately from the spring bolt; and

means in said escutcheon housing cooperating with said



lock cylinder for releasing the door handle from the sectioned bar upon the latching of the spring bolt.

3,881,332

ELECTRIC LOCK ASSEMBLY

Howard T. Ballew, Sr., Rt. 3, P.O. Box 271; Ellick E. Burton, Rt. 3, and Charles C. Lancaster, 400 S. Main St. c/o Missouri, Pacific Railroad, all of Poplar Bluff, Mo. 63901

Filed May 1, 1973, Ser. No. 356,187
Int. Cl. E05b *47/04, 65/14*
U.S. Cl. 70—282 **1 Claim**

1. An interiorly mounted, electrically operated lock assembly for a carrier vehicle to prevent theft from the vehicle between loading stations comprising:

a. framing means defining an opening to the vehicle interior,

b. door means operatively closing said opening,

c. an electric lock mounted to one of said means and lockingly engageable with the other of said means the lock including:

1. solenoid means carried by said one means and including a movable core member having a longitudinal axis of movement and a connection means,

2. bolt means carried by said one means and including a bolt member engageable with said other means said bolt member having a longitudinal axis of movement and a connection means, and

3. link means including spaced end portions operatively interconnecting said solenoid core member and said bolt member between said connection means for longitudinal movement of said bolt member by said core member, said spaced end portions permitting relative, transverse translational movement of said bolt member and said core member connection means substantially without transfer of transverse shear forces to said solenoid core member from said bolt member, and

d. an electric energy supply means selectively connectible with the solenoid means for actuating said solenoid means and inducing longitudinal movement into the bolt member said supply means including:

1. a remote conventional 110 volt alternating current power supply outlet at the loading station, and

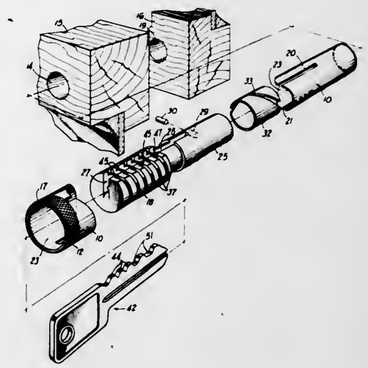
2. an extension cord extending between the outlet and the carrier vehicle.

3,881,333

LOCK FOR WINDOW SASHES

William Christmas, 6720 Glenmoor Dr., Charlotte, N.C. 28214

Filed Aug. 28, 1974, Ser. No. 501,046
Int. Cl. E05b *27/00*
U.S. Cl. 70—364 R **10 Claims**



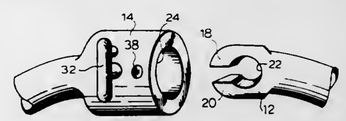
1. A rotary bolt lock comprising a sleeve having an interior cylindrical wall with at least one indentation formed therein; a bolt slidably disposed within said sleeve; camming means for rotating said bolt as it moves longitudinally in said sleeve; and a tumbler coupled with said bolt, said tumbler including a cylindrical body disposed within said sleeve and defining a keyway having an entrance at one end thereof and an opening along the cylindrical periphery thereof, and a set of springs mounted to said body overlaying said keyway opening with a plurality of said springs having an end projecting from the cylindrical periphery of said tumbler body for movement out of and into said sleeve indentation upon insertion and removal of a key into said keyway and into and out of engagement with the portions of said springs overlaying said keyway opening.

3,881,334

STORAGE RING WITH INTEGRAL CLOSURE

Porter C. Wilson, Box 11010, Tucson, Ariz. 85734

Filed Jan. 3, 1974, Ser. No. 430,577
Int. Cl. A44b *15/00, 11/00*
U.S. Cl. 70—457 **4 Claims**



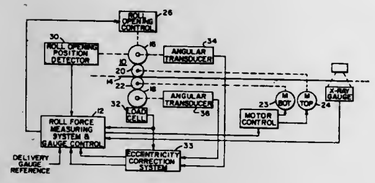
1. Apparatus comprising a unitary flexible member having first and second ends and closure means detachably connecting said ends, said closure means comprising a hollow socket on one of said ends and a plug on the other of said ends, said plug having a pair of lips defining a narrow slot, an enlarged recess provided in said plug in communication with said slot, said socket having a bore for the reception of said plug, a locking rod extending transversely across said bore and in one position thereof being configured to pass through said slot into said recess in said plug, means to enable rotation of said locking rod to a position preventing removal of said rod from said recess, said locking rod extending outwardly from two sides of the exterior periphery of said socket, whereby said locking rod can move perpendicular to the longitudinal axis of the bore in said socket to a position preventing rotation of said locking

rod, and a latch to maintain said locking rod in said position preventing rotation of said locking rod.

3,881,335
ROLL ECCENTRICITY CORRECTION SYSTEM AND METHOD

John W. Cook, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 7, 1974, Ser. No. 448,868
Int. Cl. B21b *37/00*
U.S. Cl. 72—11 **9 Claims**



1. A method of controlling the delivery gauge of a workpiece operative with a rolling mill stand having a pair of work rolls between which said workpiece is passed, and a pair of back-up rolls, with each said work roll being operative with a different back-up roll having eccentricity, said method including the steps of:

establishing the maximum value of said eccentricity of at least one of said back-up rolls in relation to a plurality of angular positions of that said back-up roll before said workpiece is passed between said work rolls,

sensing the angular position of said one back-up roll with said workpiece passing between said work rolls,

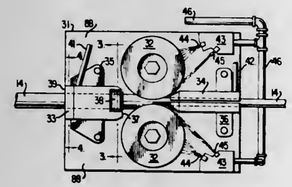
determining a portion of said maximum value of eccentricity of said back-up roll in relation to said sensed angular position, and

controlling the delivery gauge of said workpiece passed between said work rolls in relation to said portion of said eccentricity of said back-up roll.

3,881,336
CONTINUOUS ROLLED ROD DIRECT COOLING METHOD

Daniel B. Cofer; Francis Marion Mitchell; George C. Ward, and Milan Kozak, all of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Division of Ser. No. 106,149, Jan. 13, 1971, Pat. No. 3,766,763. This application June 6, 1973, Ser. No. 367,593
Int. Cl. B21b *27/06, 45/02*
U.S. Cl. 72—45 **2 Claims**



1. A method of producing aluminum rod while employing rod oxidation control techniques which rod, when drawn into wire using prior art drawing techniques, will possess higher tensile strength and higher electrical conductivity than aluminum rod not produced in accordance with the method, said method comprising the steps of:

passing aluminum rod through a continuous rolling mill having a plurality of roll stands each of which includes an entrance guide means and an exit guide means,

sealingly enclosing said aluminum rod in said entrance guide means and

sealingly engaging said aluminum rod therein to form said sealing enclosure and to support said rod as it enters a roll stand,

flooding said sealingly enclosed entrance guide means with a cooling and lubricating liquid,

rolling said rod down into smaller rod while simultaneously providing a cooling and lubricating liquid to the area in which rolling is occurring, wherein at least a portion of the liquid provided to the area in which rolling is occurring is obtained by overflowing the liquid from the entrance guide means while supplying the liquid to the entrance guide means at a rate greater than the rate of overflowing,

spraying a high pressure stream of cooling and lubricating liquid directly onto said rod immediately after rolling,

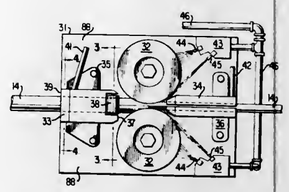
enclosing said aluminum rod in said exit guide means, and

flooding said exit guide means with cooling and lubricating liquid.

3,881,337
APPARATUS FOR DIRECT COOLING OF CONTINUOUS ROLLED ROD

Daniel B. Cofer; Francis Marion Mitchell; George C. Ward, and Milan Kozak, all of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Division of Ser. No. 106,149, Jan. 13, 1971, Pat. No. 3,766,763. This application June 6, 1973, Ser. No. 367,594
Int. Cl. B21b *27/06*
U.S. Cl. 72—45 **7 Claims**

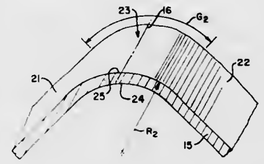


1. In a rolling mill for rolling cast metal bar into an elongate metal rod, said rolling mill possessing individual roll stands, the improvement comprising: rod guiding means at the entrance and at the exit to a roll stand for guiding the rod through a set of rolls mounted in said roll stand, said rod guiding means comprising enclosed guide housing means having sealing means positioned at at least one end thereof, each of said guide housing means having openings at opposite ends thereof to permit passage of the rod therethrough, one of said openings being disposed adjacent said rolls and the other of said openings being disposed outwardly of said rolls, said sealing means being arranged to establish a lesser restriction to liquid flow through said one opening than through said other opening, said sealing means adapted to rollingly contact the surface of the rod for substantially frictionlessly supporting the rod in said housing means, said rod guiding means being affixed to said roll stand, and means for flooding the enclosed interior of said guiding means with liquid whereby said guiding means and rod are cooled and lubricated and the liquid will flow out of said housing through said lesser-restricted one opening onto the respective roll stand for at least partially cooling and lubricating the rolls mounted therein.

3,881,338
METHOD OF BENDING A METAL SHEET AND A CORNER PRODUCED THEREBY

Walter Tischuk, Richmond, Ind., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Division of Ser. No. 149,245, June 2, 1971, abandoned. This application Aug. 16, 1973, Ser. No. 388,955
Int. Cl. B21d *5/00, 11/20, 21/00*
U.S. Cl. 72—46 **8 Claims**



1. A method of bending a building panel along a selected line, comprising

providing a metal facing sheet having an exposed face and a hidden face;

indenting said facing sheet along said selected line to produce a groove in said exposed face and a complementing bead in said hidden face;

applying a backing to substantially the entire area of said hidden face;

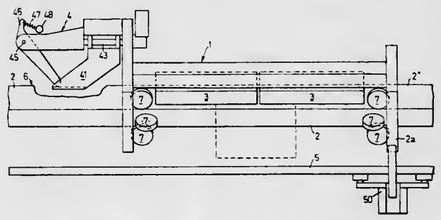
notching said backing to provide a V-groove having an apex proximate to and parallel with said complementing bead; and

bending said building panel about said selected line to provide angularly presented panel segments having a common bending edge and such that the inside of said common bending edge is formed from said complementing bead and the outside of said common bending edge is formed from said groove.

3,881,339
EXTRUSION PULLERS

Keith Edward Mannell, Chestnut, England, assignor to Edwards & Company, Chestnut, Hertfordshire, England

Filed May 23, 1973, Ser. No. 363,148
Claims priority, application United Kingdom, May 25, 1972, 24700/72
Int. Cl. B21c *35/00, 1/14*
U.S. Cl. 72—257 **15 Claims**

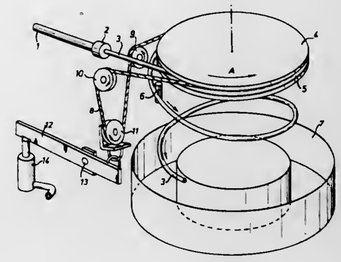


1. An extrusion puller comprising an elongated rail, a carriage and at least one on-board linear motor, means connected between said carriage and said linear motor for driving said carriage along said rail, said carriage carrying a gripper head for grasping the end of the extrusion to be pulled, and said carriage being powered by said on-board linear motor, said linear motor and said means cooperating with said carriage and rail not only for driving the carriage along the rail but also for providing by slippage a clutch effect for pulling control.

3,881,340
DRAWING MACHINE

Robert Thomas Vernon Hay, Southampton, England, assignor to Marshall Richards Barcro Limited, Hampshire, England

Filed Nov. 22, 1972, Ser. No. 308,748
Claims priority, application United Kingdom, Nov. 26, 1971, 54923/71
Int. Cl. B21c *1/14*
U.S. Cl. 72—289 **11 Claims**

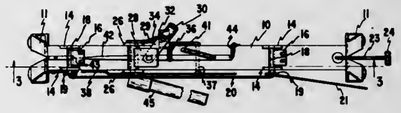


1. A method of reducing the diameter and/or the wall thickness of metal tubing by generating sufficient tension in a length of tubing downstream of a reducing die to draw the tubing through the die, characterized in that the tension is created by urging the tubing into a convex groove section of an endless groove defined by two converging relatively acutely inclined wedging surfaces to releasably wedge the metal tubing therebetween with a sufficient radial force substantially less than and established independently of the drawing tension to prevent relative slip between the tubing and the wedging surfaces when the endless groove and the die are relatively moved at the desired drawing speed and relatively moving the die and endless groove to draw the metal tubing through the die.

3,881,341
BAR STRAIGHTENER

Maurice L. Evans, 1401 Peninah, Yankton, S. Dak. 57078

Filed Feb. 7, 1973, Ser. No. 330,267
Int. Cl. B21d *3/00*
U.S. Cl. 72—297 **9 Claims**

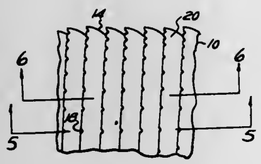


1. A bar straightening device comprising a longitudinal extending base, support means mounted on said base near end thereof, clamping members pivotally mounted on each of said support means, said clamping member being spaced from said support means whereby a bar can be clamped therebetween, operating means movably mounted on said base between said clamping members, and adapted to engage said bar, said movable mounting being such as to allow movement of at least part of said operating means in two directions perpendicular to each other and transversely of said bar, means on said operating means adapted to engage at least three sides of said bar whereby the operating means is adapted to apply force against said bar in two directions to apply straightening force is those two directions.

3,881,342
METHOD OF MAKING INTEGRAL FINNED TUBE FOR SUBMERGED BOILING APPLICATIONS HAVING SPECIAL O.D. AND/OR I.D. ENHANCEMENT

John K. Thorne, Decatur, Ala., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 271,835, July 14, 1972, abandoned. This application Nov. 7, 1973, Ser. No. 413,611
Int. Cl. B21d *53/06*
U.S. Cl. 72—68 6 Claims

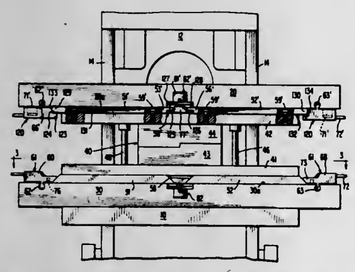


1. The method of making heat transfer tubing modified for the enhancement of heat transfer from heating fluid flowing through the tubing to liquid in contact with the exterior surface thereof in submerged boiling applications, which comprises providing a multiplicity of axially spaced fin convolutions extending radially outwardly from and around the tubing so as to provide fin convolutions having inner base portions extending generally radially outwardly from said wall and having outer portions terminating in an outer edge, providing a plurality of circumferentially spaced recesses extending inwardly from the outer edges of said convolutions, thereafter bending the fin convolutions laterally uniformly to bring the outer edge of each fin convolution into proximity to the side of the adjacent convolution to form partially enclosed spaces between each pair of adjacent convolutions having continuous circumferentially extending elongated restricted openings communicating with the interior of said spaces, the recesses in the edges of said fin convolutions forming substantial enlargements in said openings, said openings having an average substantially uniform width intermediate said enlargements of not more than 0.007 inch.

3,881,343
DIE SET CLAMPING MECHANISM

John S. Ducate, Suite 100, 800 Dutch Square Blvd., Columbia, S.C. 29210

Filed July 22, 1974, Ser. No. 490,338
Int. Cl. B21d *37/12*
U.S. Cl. 72—455 14 Claims



1. In a metal working apparatus having one or more bolsters for supporting metal shaping die components, a clamping mechanism for securing die components in operative position upon a bolster, comprising:

a. a pair of clamping plates disposed in planar relationship on the bolster with inboard side edges is adjacent, spaced-apart relationship to define a central gap therebetween and outboard side edges directed toward opposite sides of the bolster;

b. means for rigidly securing die components to said pair of clamping plates;

c. first clamping means movable mounted on said bolster adjacent to each of the outboard side edges of said clamping plates, said first clamping means and said outboard side edges having coacting clamping surfaces;

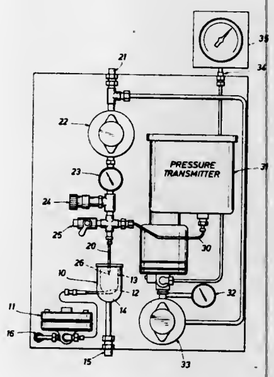
d. second clamping means movably mounted on said bolster and disposed within said central gap adjacent to each of the inboard side edges of said clamping plates, said second clamping means and said inboard side edges having coacting clamping surfaces; and

e. means for actuating said first and second clamping means to move said coacting clamping surfaces into frictional engagement for clamping each of said clamping plates securely between said first and second clamping means and flush upon the surface of said bolster in operative position.

3,881,344
MONITOR FOR CONTINUOUSLY MEASURING SURFACE TENSION OF LIQUIDS

John D. Jobe, Deer Park, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 16, 1973, Ser. No. 351,737
Int. Cl. G01n *13/02*
U.S. Cl. 73—64.4 5 Claims



1. An apparatus for measuring the surface tension of a liquid comprising:

a closed cylindrical housing having an outlet disposed in the bottom thereof;

an open top sample cell mounted within said housing and having an inlet disposed in the bottom thereof;

liquid supply means communicating with the inlet of said sample cell for supplying a sample of the liquid to the sample cell, said liquid supply means including flow control means for establishing a constant flow of liquid through said sample cell;

an elongated tubular probe member mounted in said housing and having a first open end extending below the top of said sample cell;

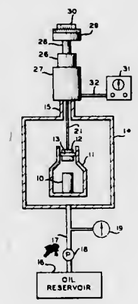
supply means communicating with the other end of said probe for supplying a compressed gas to the probe to form a bubble of said gas on said first end of said probe; and

measuring means disposed to measure the pressure of said gas required to form a bubble in said liquid.

3,881,345
POSITION MEASURING APPARATUS

Wallace W. Souder, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 22, 1974, Ser. No. 444,868
Int. Cl. G01n *3/10*
U.S. Cl. 73—94 7 Claims



1. Apparatus adapted to be used to measure movement of an element comprising:

a differential transformer having a primary coil, which is adapted to have a source of alternating current connected thereto, and two secondary coils spaced from one another;

a slug of a magentic material which is adapted to be connected to the element to be measured and to be moved relative to and adjacent said secondary coils;

means connecting said secondary coils in electrical opposition to one another; and

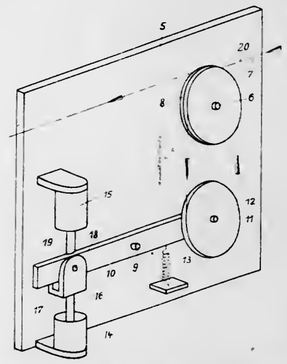
a measuring circuit connected to said secondary coils, said measuring circuit including rectifying means to establish a DC output signal representative of an AC signal established across said secondary coils, amplifying means connected to said rectifying means, said amplifying means having a nonlinear response to a DC input signal such that the gain of the amplifying means increases when the input signal decreases, and a meter connected to said amplifying means.

3,881,346
PROCESS FOR MEASURING THE MODULUS OF ELASTICITY

Erwin Scheucher, Roth near Nurnberg, Germany, assignor to Leonische Drahtwerke AG, Nurnberg, Germany

Filed Oct. 24, 1972, Ser. No. 300,229
Int. Cl. G01n *3/08*
U.S. Cl. 73—95.5 6 Claims

1. In a process for the continuous measurement of the modulus of elasticity of an elongated body of metallic or non-metallic material whose yield point corresponds approximately to a predetermined percentage elongation, comprising the steps of: advancing the body along a feed path; stretching the body for attaining a constant percentage elongation while it is being advanced; and continuously measuring the tensile force to attain this elongation, the improvement wherein said step of stretching is carried out to effect such predetermined

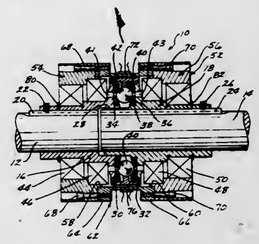


percentage elongation such that the corresponding tensile force is nearly the yield point of the material.

3,881,347
STRAIN-GAUGE, BRUSHLESS TORQUE METER

Wesley F. Buchele, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Aug. 22, 1973, Ser. No. 390,602
Int. Cl. G01l *3/14*
U.S. Cl. 73—136 R 9 Claims



1. A strain-gauge torque meter comprising, a female input shaft means, means therewith, connecting said input shaft means to

a power source shaft for rotation threwith,

a female output shaft means, means for connecting said output shaft means to a machine shaft for rotation therewith, said means for connecting enabling relative axial displacement of said input and output shaft means,

said power source shaft and machine shaft being in-line and spaced apart, said input and output shaft means having first and second spaced apart flanges thereon respectively having a face substantially perpendicular to the center line of said power source shaft and said machine shaft,

said flanges having a plurality of spaced apart conical seats provided in the faces thereof arranged in an opposing manner,

a ball in each of said opposing conical seats,

said balls transmitting rotational movement from said input shaft means to said output shaft means,

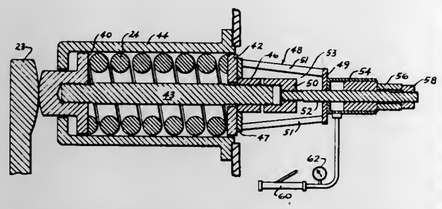
a stationary transducer shell means extending around said input and output shaft means,

said balls tending to roll up the conical seats to separate said first and second flanges to create tension in said shell when rotational force is applied to said input shaft means, said transducer shell means being instrumented with strain gauges which sense tension proportional to torque imposed in said transducer shell when said rotational force is applied to said input shaft means.

3,881,348
HYDRAULIC SPRING ADJUSTING DEVICE FOR BOWL MILLS

John Allison Morton, Helena, Ala., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed June 20, 1973, Ser. No. 371,638
Int. Cl. G01l 1/02
U.S. Cl. 73—141 R 3 Claims

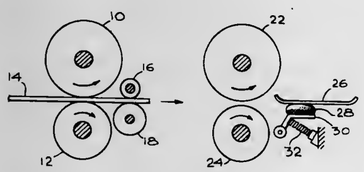


1. Means for adjusting the compression of a spring including a rod, coupling means at a first end of the rod adapted to be connected to a center stud of a spring, jig means surrounding the rod, said jig means having a first base at one end adapted to come in contact with a spring seat, said jig means having a second base at its other end, an annular fluid jack surrounding the rod and being in contact at one end with the second base, means for causing opening of the jack, retaining means secured to a second end of the rod for maintaining the jack in contact with the jig, means for determining the force exerted by the jack, the jig means having an opening in the side wall thereof to permit accessibility to the space inside thereof.

3,881,349
SYSTEM AND METHOD FOR MEASURING DRYING TIME

Joseph J. Stone, Northbrook, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Dec. 5, 1973, Ser. No. 421,849
Int. Cl. G01n 33/32
U.S. Cl. 73—150 R 2 Claims



1. A system for determining the drying time of a marking fluid deposited on a recording medium comprising

marking fluid deposition means for applying marking fluid timing marks at known intervals therebetween to the recording medium which is advanced therethrough,

first means for advancing the recording medium through said marking fluid deposition means at a regular known rate,

an abrading station for smearing deposited marking fluid prior to its drying on the recording medium,

second means for advancing said recording medium through said abrading station, after the application of a predetermined number of timing marks to said recording medium, at a rate which is very much higher than the rate at which that recording medium was advanced for marking fluid deposition, whereby the drying time of the marking fluid equals

$$T_1 + (T_2 - T_1)\,((n-1)/(N-1))$$

where T_1 is the time required for the first timing mark to reach the abrader,

T_2 is the time required for the last timing mark to reach the abrader,

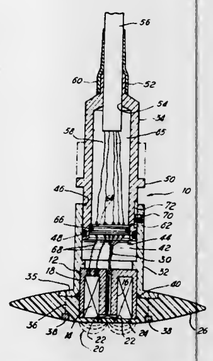
n is the number of the first timing mark to be smeared counted in the sequence of timing marks commencing with the first mark to be deposited, and

N is the number of the last timing mark to be deposited.

3,881,350
ELECTROMAGNETIC SENSOR FOR MEASURING VELOCITY OF FLUIDS UNDER HIGH PRESSURE

Jacques Andre Nosley, Marseille, France, assignor to Societe Ben, Marseille, France

Filed June 15, 1972, Ser. No. 263,255
Claims priority, application France, June 17, 1971, 71.23145; May 4, 1972, 72.15848
Int. Cl. G01f 1/00
U.S. Cl. 73—194 EM 8 Claims



1. An electromagnetic sensor for measuring velocity of fluids under high pressure comprising first hollow means having a closed end and an open end; electromagnetic means disposed in said first hollow means adjacent said closed end and adapted to establish a magnetic field through a portion of a fluid to be measured; electrode means disposed in said closed end of said first hollow means to serve variations in the magnetic field; electrical conductor means connected with said electromagnetic means and said electrode means; and second hollow means having a first end slidably engaging said open end of said first hollow means with a fluid-tight seal and a second end, said electrical conductor means extending through said first and second hollow means and exiting said electromagnetic sensor through said second end of said second hollow means, said first and second hollow means sliding relative to each other with a piston effect to balance the internal pressure within said first and second hollow means with the pressure of the fluid external of said first and second hollow means.

3,881,351
METHOD OF MEASURING THE MASS FLOW RATE OF A CONSTITUENT OF A GASEOUS STREAM

Otakar P. Prachar, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 29, 1972, Ser. No. 267,589
Int. Cl. G01f 1/00
U.S. Cl. 73—194 M 1 Claim

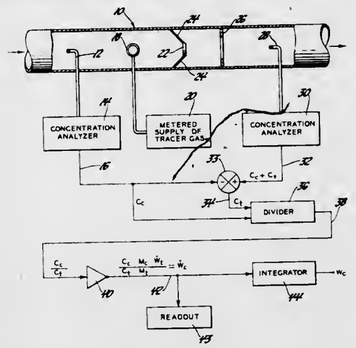
1. A method of measuring the mass flow rate of a constituent of a gaseous flow, the constituent having a known molecular weight, comprising the steps of:

injecting into the gaseous flow a tracer gas at a known mass flow rate and having a known molecular weight,

measuring the combined concentrations of the tracer gas and the constituent in the gaseous flow,

measuring the concentration of the constituent upstream of the tracer gas,

determining the concentration of the tracer gas by subtracting the measured concentration of the constituent from the measured combined concentrations, and

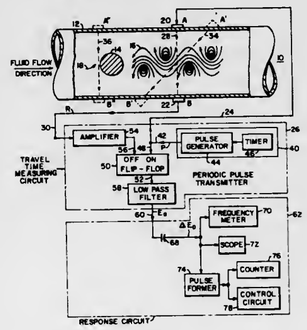


computing by electrical means the mass flow rate of the constituent according to the relationship $W_c = C_c M_c W_t / C_t M_t$ where W_c and W_t are the mass flow rates of the constituent and the tracer gas respectively, C_c and C_t are the concentrations of the constituent and the tracer gas respectively, and M_c and M_t are the molecular weights of the constituent and the tracer gas respectively.

3,881,352
FLOWMETER APPARATUS AND METHOD

James L. McShane, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1972, Ser. No. 276,479
Int. Cl. G01f 1/00; G01p 5/18
U.S. Cl. 73—194 B 3 Claims



1. An apparatus for measuring the velocity of relative movement in a direction of displacement between a fluid and a body immersed therein, the cross-section of said body being such that fluid disturbances varying at a frequency characteristic of said velocity are created in a zone extending in front and in the wake of said body, said apparatus comprising:

a pulse generator having a constant repetition rate;

transmitting transducer means energized by said pulse generator for directing acoustic signals at said constant repetition rate across said zone at an angle to said direction of displacement;

receiving transducer means responsive to said transmitted acoustic signals after modulation by said disturbances in said zone;

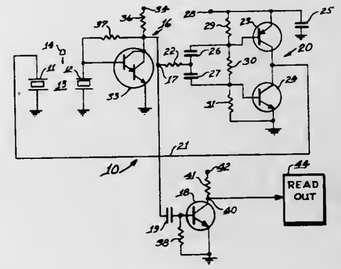
means responsive to said transmitting transducer means and to said receiving transducer means for deriving amplitude signals representing respective time intervals, each time interval being defined between the transmision of one of said acoustic signals by said transmitting transducer means and the reception by said receiving transducer means of a corresponding one of said transmitted acoustic signals; and

means responsive to said amplitude signals for detecting a frequency signal characteristic of fluctuations in the amplitude of said amplitude signals said frequency signal being representative of said velocity.

3,881,353
ULTRASONIC SENSOR

George H. Fathauer, Mesa, Ariz., assignor to Dickey-John Corporation, Auburn, Ill.

Filed Apr. 29, 1974, Ser. No. 465,314
Int. Cl. G01f 1/00
U.S. Cl. 73—194 A 14 Claims



1. In a sensing device for determining the passage of high velocity, relatively small articles, the combination comprising: ultrasonic transducer means having an ultrasonic transmitting portion and an ultrasonic receiving portion, said transmitting portion radiating ultrasonic energy having a predetermined wavelength which is determined by the velocity of propagation of the ultrasonic signal divided by the frequency between said transmitting portion and said receiving portion, support means for receiving and holding said transmitting portion and said receiving portion and maintaining a spacing therebetween, said spacing being an integral number of half wavelengths of said predetermined wavelength, amplifier means coupled to said receiving portion of said ultrasonic means to produce an output signal corresponding to the signal received from said transmitting portion and output means coupled to said amplifier means to produce a count signal in response to a change in amplitude of said output signal, whereby high velocity, relatively small articles passing between said transmitting and receiving portions will produce a change in amplitude of said output signal to correspond to said count signal.

3,881,354
FLUID VELOCITY RESPONSIVE INSTRUMENT

Sheldon L. Block, 9517 Woodley Ave., Sepulveda, Calif. 91314

Filed Apr. 17, 1973, Ser. No. 352,012
Int. Cl. G01f 1/00
U.S. Cl. 73—228 2 Claims

1. A fluid flow responsive device comprising:

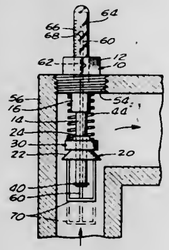
a fluid flow conduit;

an elongated fixed guide extending substantially coaxially of said conduit;

a flow responsive element slidable along said guide and being spaced inwardly from the sides of said conduit sufficiently to substantially eliminate any pressure drop in fluid flowing in said conduit past said element whereby said element moves along said guide only in response to fluid flow in said conduit;

a permanent magnet carried by said element for movement therewith;

means yieldably urging said element and magnet to slide along said guide to an upstream position; and



a magnetically operable reed switch within said guide and responsive to said magnet when proximate thereto to actuate said switch to one of an open and closed condition.

3,881,355

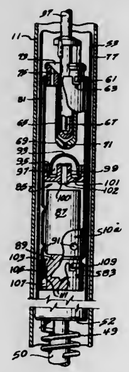
ARCHIVE-CUP INSERT FOR LIQUID-METAL SAMPLING

Paul A. Nelson, Wheaton; Verne M. Kolba, Plainfield; Erwin C. Filewicz, Calumet City, and John T. Holmes, Downers Grove, all of Ill., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 30, 1973, Ser. No. 411,127

Int. Cl. G01n *1/14*

U.S. Cl. 73—422 R **6 Claims**



1. An insert for collecting a sealed sample of liquid metal from within a vertical casing comprising:

a. an elongated tube having detachable support means for retrieving said tube from within said vertical casing;

b. a sample cup for containing sample liquid axially within the lower portion of said tube and spaced from the internal walls thereof to define a passageway for sample liquid overflow;

c. first, overflow seal means for hermetically occluding said tube above said sample cup, said first means having a reservoir for trapping solidifiable sample liquid and an overflow discharge directed into said sample cup; and

d. second, overflow seal means for hermetically occluding said tube below said sample cup, said second means having a reservoir for trapping solidifiable sample liquid received from said sample cup and having an overflow for discharging said sample liquid.

3,881,356

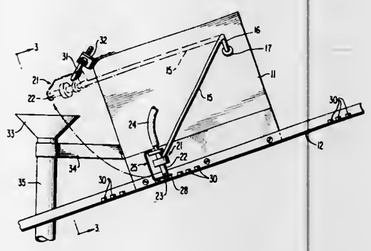
TIME INTERVAL SAMPLING MECHANISM

Ronald K. Palm, Greenville, S.C., assignor to Engineering Development Associates Incorporated, Taylor, S.C.

Filed May 13, 1974, Ser. No. 469,626

Int. Cl. G01n *1/04*

U.S. Cl. 73—423 R **12 Claims**



1. A sampling mechanism for small objects moving in a production stream comprising a body portion adapted for attachment to a discharge tray on which said production stream of small objects are moving, a transport arm for individual samples of small objects taken from said production stream mounted for oscillatory movement on said body portion and adapted to move between a down position close to and above said stream to an elevated sample object release position, power means to produce continuous oscillation of said transport arm between said positions at a substantially constant speed including means to cause the arm to dwell at both the down and elevated positions, a suction pickup unit carried by the transport arm including a resilient valve means which is normally positioned on the pick-up unit to activate suction for seizing one and only one small object from said production stream when said arm is in said down position, and means engageable with said resilient valve means when said arm is in the elevated object release position and moving the valve means sufficiently to disable the suction and thereby release the transported small object from the suction pick-up unit at a sample collection point.

3,881,357

DEVICE FOR INDICATING THE PRESENCE OF A SOLID OBJECT

Sven Lennart Sahlin, Vasterhaninge, Sweden, assignor to AB Mecman, Alvsjo, Sweden

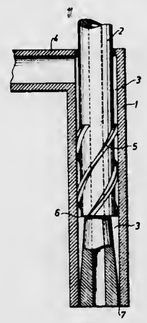
Filed Feb. 8, 1971, Ser. No. 113,439

Claims priority, application Sweden, Mar. 11, 1970, 3247/70

Int. Cl. G01b *13/12*

U.S. Cl. 73—37.5 **6 Claims**

1. A device for indicating the presence of a solid object or a liquid surface, comprising a nozzle adapted to be connected to a source of pressurized gas and having an outlet passage formed as a tubular space between two coaxial tubes, pressure sensitive means being connected to the rear end of the inner tube to indicate the changed pressure, when the tubular air curtain ejected from the nozzle hits an object, characterized in that the outlet passage of the nozzle contains one or several guide ribs extending helically around the axis of the nozzle to



impart a rotary movement to the expelled air, so that a cylindrical or conically diverging air curtain may be obtained.

3,881,358

APPARATUS FOR MEASURING FLUID PRESSURE AT A PLURALITY OF MEASURING POINTS

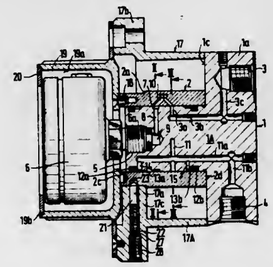
Hans Wölfges, Lohr/Main, Germany, assignor to Gesellschaft fur Hydraulik-Zubehor mbH, Sulzach/Saar, Germany

Filed Aug. 22, 1973, Ser. No. 390,562

Claims priority, application Germany, Aug. 25, 1972, 2241883

Int. Cl. G01l *19/00*

U.S. Cl. 73—420 **11 Claims**



1. Apparatus for measuring fluid pressure at a plurality of measuring points, comprising a selector valve including a stationary member having a cylindrical portion and an end face and including a plurality of inlets each connectable to a different measuring point and an outlet, and a rotary valve member mounted on and surrounding said cylindrical portion of said stationary member and having connecting channel means, said valve member being indexible between a plurality of angular positions in each of which said channel means establishes communication between said outlet and a different inlet of said stationary member; and a pressure gauge connected with said outlet and located adjacent to said end face of said cylindrical portion.

3,881,359

HOT ATMOSPHERE PARTICULATE SAMPLER

Thomas L. Culbertson, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 26, 1974, Ser. No. 464,607

Int. Cl. G01n *1/24*

U.S. Cl. 73—421.5 A **6 Claims**

1. A hot atmosphere particulate sampler comprising:

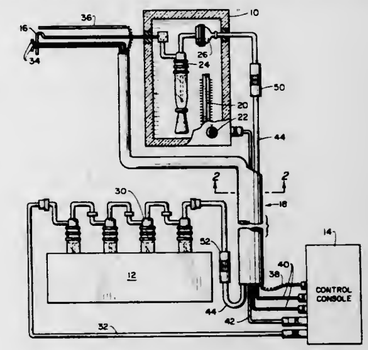
a. an insulated box;

b. means for heating the interior of said insulated box;

c. a separator mounted in said insulated box for receiving the particulate sample;

d. a filter mounted in said insulated box and connected to receive the particulate sample from the separator;

e. a condenser box having impinger bottles in a cooling bath remotely mounted away from said insulated box;



f. means remotely connecting the flow of the particulate sample, from the filter to the condenser box; and

g. means for heating the remotely connecting means to maintain the particulate sample above a predetermined temperature during its flow from the filter to the condenser box.

3,881,360

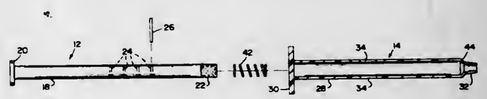
MEASURING DISPENSING DEVICE

Rodrigo Jurado, 13602 Circle A Trl., Helotes, Tex. 78023

Filed July 9, 1973, Ser. No. 377,773

Int. Cl. B01l *3/02*

U.S. Cl. 73—425.6 **9 Claims**



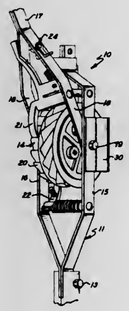
1. A volumetric measuring pump for measuring a predetermined fixed volume of fluid comprising: syringe means including limit means formed thereon, plunger means at least partially disposed within said syringe means for reciprocal movement therein, stop means removably connected to said plunger means so as to move therewith and disposed in engageable relation to said limit means to limit the reciprocal movement of said plunger means, said stop means comprising at least one pin element extending outwardly from the sides of said plunger means and removably mounted thereon, said limit means comprising at least one elongated aperture formed longitudinally in the side wall of said syringe means in substantially surrounding relation to said pin means, said pin means extending through said aperture such that the longitudinal extremes of said aperture engage said pin means, whereby longitudinal movement of said plunger means relative to said syringe means is regulated in opposite directions; a variable volume suction chamber defined by the relative dispositions of the inner portions of said plunger means in the inner end of said syringe means, said syringe means including attachment means formed thereon, a disposable measuring tube mounted on said syringe means by said attachment means, said suction chamber disposed in fluid communication with the interior of said disposable measuring tube, said plunger means being movable from a first to second position within said syringe means to evacuate fluid from at least a portion of said variable volume suction chamber, said plunger means being movable

from said second to said first position to draw fluid into said evacuated portion of said suction chamber, seal means fixedly connected to said plunger and movably disposed on the interior of said syringe and further disposed in fluid sealing relation between said suction chamber and the remainder of said plunger, whereby fluid is drawin into said disposable measuring tube because of the sealed relation of said plunger and said suction chamber and fluid communicating relation between said suction chamber and said measuring tube.

3,881,361
ROPE PULLEY HOIST WITH IMPROVED HOLDING MEANS

E. Strohm Newell, 2350 6th Ave., San Diego, Calif. 92101

Filed July 13, 1973, Ser. No. 379,143
Int. Cl. F16d *69/00*; **F16h** *55/38*
U.S. Cl. 74—230.24 **11 Claims**



1. A power unit useful for pulling a load with a rope line, comprising:

a. a frame for attachment to a fixed object,

b. a pulley member rotatably mounted on said frame and having an annular groove to receive a single strand of rope line,

c. means for pressing said rope line in contact against the pulley member during rotation of the pulley member whereby the rope line is maintained in the annular groove while having a load thereon when the pulley member is rotating in either a clockwise or counter clockwise direction,

d. means for stripping said rope from the pulley member while the power unit is loaded,

e. said rope stripping means being disposed a spaced distance around the periphery of the pulley member from the pressing means so that an unlimited length of rope may be used with said unit,

f. said pressing means and said stripping means being disposed in a fixed relationship with respect to each other and the pulley member,

g. ratchet teeth carried by said pulley member for driving same,

h. a swingable operating lever pivotally mounted on the frame,

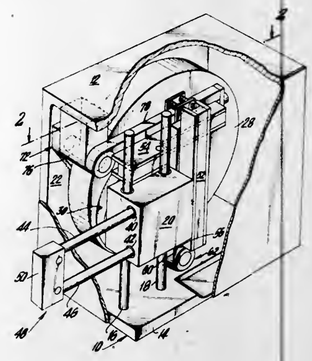
i. a feeding pawl pivoted to the operating lever and engageable with the ratchet teeth to rotate the pulley member when the operating lever is swung in one direction, and

j. a holding pawl pivotally mounted and resiliently biased toward active engagement with the ratchet teeth.

3,881,362
ADJUSTABLE X AND Y AXIS CONTROLLED MOVEMENT MECHANISM

Earl F. Beezer, Hillsdale, N.J., assignor to Stelron Cam Co., Saddle Brook, N.J.

Filed Dec. 20, 1973, Ser. No. 426,604
Int. Cl. F16h *25/12*
U.S. Cl. 74—53 **7 Claims**

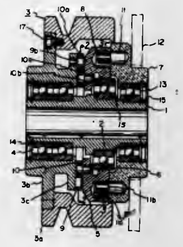


1. A motion transmitting device, particularly for positioning one machine part in relation to another, comprising a first direction guide means, a first member movable to and fro on said first direction guide means, a second direction guide means carried on said first member extending at an angle to said first direction guide means, a second member movable to and fro on said second direction guide means, rotatable shaft means, first drive means connected between said shaft means and said first member for moving said first member, second drive means connected between said shaft means and said second member for moving said second member, each of said first and second drive means having means for adjusting its connection to the associated first and second member for varying the magnitude of movement of said member in accordance with the rotation of said shaft means.

3,881,363
SPEED REDUCTION MECHANISM

Isamu Takasu, Tokyo, Japan, assignor to Toyo Glass Machinery Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 416,014, Nov. 15, 1973, abandoned. This application Jan. 30, 1974, Ser. No. 437,785
Claims priority, application Japan, Nov. 18, 1972, 47-115242
Int. Cl. F16h *21/12*
U.S. Cl. 74—63 **10 Claims**



1. A speed changer comprising:

a driving element disposed for rotation at a first speed;

a disc; means for locking the disc against rotation and for mounting it for movement in a closed circular path;

a driven element disposed for rotation;

motion transforming means between one of said elements and said disc, comprising a number of first lugs mounted on one of said elements to define a first circle, the lugs being equally circumferentially spaced apart along said circle, a different number of second lugs mounted on said disc to define a second circle concentric with the first circle, the second lugs being equally circumferentially spaced apart along said second circle, the lugs of one circle being disposed individually — sequentially to bear upon the lugs of the other circle in approximately tangential directions; and

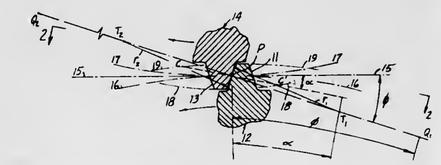
means for drivingly connecting said disc with the element other than said one element;

to effect quiet rotation of the driven element at a speed different from said first speed and defined by the different numbers of lugs in the first and second circles.

3,881,364
LOW NOISE GEARING

William S. Rouverol, 52 Lovell Ave., Mill Valley, Calif. 94941

Filed Mar. 22, 1974, Ser. No. 453,564
Int. Cl. F16h *55/06*
U.S. Cl. 74—462 **26 Claims**



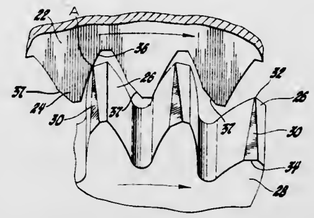
1. In a pair of mating gears,

teeth having a profile radius coefficient of less than unity, a pressure angle of less than 40° in planes perpendicular to the pitch line of said pair, an addendum height greater than 0.5 divided by the diametral pitch, and a tooth utilization ratio of substantially unity.

3,881,365
GEARING

Alexander Hardy, 13565 Marion St., Detroit, Mich. 48239, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 1, 1974, Ser. No. 456,844
Int. Cl. F16h *55/06*
U.S. Cl. 74—462 **6 Claims**

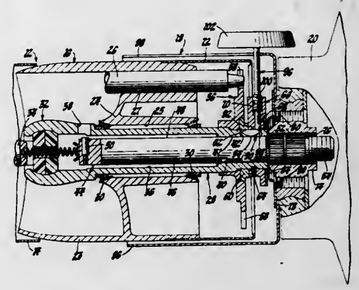


1. A pair of meshing spur gears comprising a first conventionally formed spur gear and a second spur gear having a taper formed along at least one edge of the crown of each tooth thereof, said taper beginning at a tip of said crown at one end of each tooth and extending uniformly along the full length of said tooth to the other end thereof so as to progressively diminish the height of the contacting portion of the wall of said tooth, providing a tapered edge with respect to the axis of said second spur gear for progressively contacting an adjacent wall of a tooth of said first spur gear.

3,881,366
ADJUSTABLE STEERING COLUMN

Arthur W. Bradley, Saginaw, and Robert L. White, Frankenmuth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 19, 1973, Ser. No. 416,949
Int. Cl. B62d *1/18*
U.S. Cl. 74—493 **3 Claims**



1. In a vehicle steering column including an outer support tube, a main steering shaft means disposed on said support tube for rotation about a first axis of the latter, and an adjustable shaft disposed on said support tube for rotation as a unit with said main shaft means and for axial bodily shiftable movement relative thereto along said first axis between a plurality of positions, the combination comprising, a rod disposed on said main shaft means for rotation as a unit therewith and for bodily shiftable movement relative thereto along a second axis perpendicular to said first axis into and out of a locking position, means disposed between said rod and said main shaft means for maintaining said rod in the locking position, and means on said main shaft means defining a lever including a fulcrum portion engaging said main shaft means and a bearing surface adapted for engagement on said rod and a reaction surface between said fulcrum and said bearing surface engaging said adjustable shaft, said rod in the locking position thereof engaging said bearing surface and generating on said lever a force which is multiplied by a factor corresponding to the lever ratio of said lever and exerted by the latter at said reaction surface on said adjustable shaft thereby to generate a friction force of substantial magnitude between said main shaft means and said adjustable shaft for preventing relative axial bodily shiftable movement therebetween.

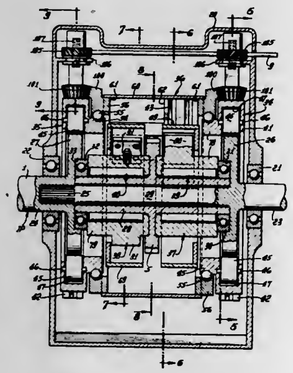
3,881,367
INFINITELY VARIABLE RATIO GEAR TRANSMISSION

Bernard J. Call, 2201 Walnut Ave., Manhattan Beach, Calif. 90266

Filed Mar. 18, 1974, Ser. No. 452,208
Int. Cl. F16h *37/06*
U.S. Cl. 74—681 **20 Claims**

1. In an angular motion phase generator for an infinitely variable change speed transmission having two phase generators for driving a summing differential: a frame, a power input shaft journalled in said frame, a power output shaft, first and second cams in phase with one another and rotatable with said input shaft, adjustable ratio control means reciprocable by said cams and including opposed drive members having oppositely facing parallel drive surfaces at opposite sides of said output shaft, first and second driven gear means in out-of-phase relationship, one way clutch means unidirectionally connecting said gear means to said output shaft for driving the same, said gear means being engaged by said drive surfaces,

and said ratio control means including means for angularly adjusting said drive surfaces with respect to said gear means

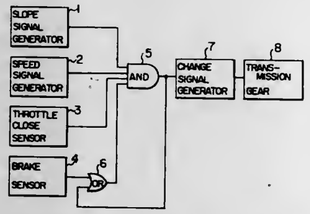


to vary the ratio of input to output motion caused by reciprocation of said ratio control means.

3,881,368
CONTROL DEVICE FOR AUTOMATIC TRANSMISSION IN AUTOMOBILES

Toshio Furuhashi, Katsuta, and Takesi Kinosita, Hitachi, both of Japan, assignors to Hitachi, Ltd.

Filed July 6, 1973, Ser. No. 376,970
Claims priority, application Japan, July 12, 1972, 47-69077
Int. Cl. B60k *21/02*; F16h *3/74*
U.S. Cl. 74—866 **13 Claims**



1. A control device for an automatic transmission in an automotive vehicle of the kind in which the running conditions of the vehicle are detected for controlling the combination of transmission gears, comprising a slope signal generator generating an output signal when the inclination of the vehicle body exceeds a predetermined setting, a vehicle speed signal generator generating an output signal when the running speed of the vehicle exceeds a predetermined setting, a full-closed throttle position sensor generating an output signal when the throttle valve is in the full-closed position, a foot brake actuation sensor generating an output signal in response to the actuation of the foot brake, an OR gate connected to said foot brake actuation sensor to receive a first input therefrom, an AND gate connected to said slope signal generator, said vehicle speed signal generator, said full-closed throttle position sensor and said OR gate to receive a plurality of inputs therefrom, circuit means for applying the output signal of said AND gate to said OR gate as a second input to the latter, and a gear change signal generator connected to said AND gate for controlling the transmission gears so as to establish a gear combination most suitable for braking of the engine depending on the output signal of said AND gate.

4. An electric transmission gear control device for an automatic transmission in an automotive vehicle comprising:

a. a gear change signal generator controlled by combinations of the signals from a throttle valve opening sensor for sensing the opening of a throttle valve and a vehicle speed signal generator for generating an output signal representative of the speed of the vehicle;

b. a downhill sensor generating a first output signal when the inclination of the vehicle body exceeds a predetermined setting;

c. an exceeding speed sensor generating a second output signal when the running speed of the vehicle exceeds a predetermined setting;

d. a full-closed throttle position sensor generating a third output signal when the throttle valve is in the full-closed position;

e. a foot brake actuation sensor generating a fourth output signal in response to the actuation of a foot brake;

f. an OR gate receiving the fourth output signal from said foot brake actuation sensor as its first input signal and generating a fifth output signal; and

g. an AND gate receiving the first, second third and fifth output signals from said downhill sensor, said exceeding speed sensor, said full-closed throttle position, sensor, and said OR gate, respectively and generating a resultant output signal, said resultant output signal being transmitted to said OR gate as its second input signal and to said gear change signal generator, so as to change its output signal to a predetermined lower gear signal irrespective of the combination of the signals from said throttle valve opening sensor and said vehicle speed signal generator.

5. An electric transmission gear control device for an automatic transmission in an automotive vehicle comprising:

a. a gear change signal generator controlled by combinations of signals from a throttle valve opening sensor for sending the opening of a throttle valve and a vehicle speed signal generator having a tacho-generator generating a signal in response to the vehicle speed and rectifier means for rectifying the signal from the tachogenerator;

b. a downhill sensor having
a Colpitts oscillator,
a first coil for receiving an oscillation signal from the Colpitts oscillator,
a second coil magnetically coupled with the first coil,
a shield plate disposed between the first and second coils for varying the oscillation signal to be transmitted therebetween in response to the inclination of the vehicle, and
a first comparator comparing the modified signal from the second coil with a predetermined first reference signal and generating a first output signal when the magnitude of the modified signal exceeds that of the predetermined first reference signal;

c. an exceeding speed sensor having a second comparator comparing the signal from the rectifier means with a predetermined second reference signal and generating a second output signal when the magnitude of the rectified signal exceeds that of the predetermined second reference signal;

d. a full-closed throttle position sensor for generating a third output signal when a throttle valve is in a full-closed position;

e. a foot brake actuation sensor generating a fourth output signal through a NOT gate in response to the actuation of a foot brake;

f. an OR gate receiving the fourth signal from said foot brake actuation sensor as its first input signal and generating a fifth output signal; and

g. an AND gate receiving the first, second third and fifth output signals from said downhill sensor, said exceeding speed sensor, a full-closed throttle position sensor, said OR gate respectively, and generating a resultant output signal, said resultant output signal being transmitted to said OR gate as its second input signal and to said gear change signal generator to change its output signal to a predetermined lower gear signal irrespective of the combinations of the signals from said throttle valve opening sensor and said vehicle speed signal generator.

6. A control device for an automatic transmission in an automotive vehicle comprising:

first means, responsive to the inclination of the vehicle, for generating a first output signal upon the downhill inclination of the vehicle exceeding a predetermined slope;

second means, responsive to the running speed of the vehicle, for generating a second output signal upon the speed of the vehicle exceeding a predetermined speed;

third means, responsive to the position of throttle valve, for generating a third output signal upon the throttle valve being in its fully-closed position;

fourth means, responsive to the actuation of the foot brake, for generating a fourth output signal upon the actuation of said foot brake;

fifth means, responsive to the position of said throttle valve, for generating a fifth output signal representative of the degree of opening of said throttle valve;

sixth means, responsive to the running speed of the vehicle, for generating a sixth output signal representative of the running speed of the vehicle;

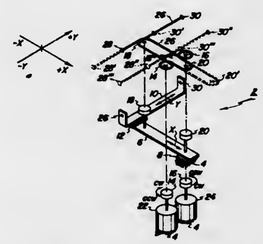
seventh means, coupled to said first, second, third and fourth means, for generating a seventh output signal in response to the simultaneous existence of said first, second, third and fourth output signals; and

eighth means, coupled to said fifth, sixth and seventh means, for normally selecting the gears of said transmission in accordance with said fifth and sixth output signals and for selecting a prescribed gear of said transmission in response to said seventh output signal irrespective of said fifth and sixth output signals.

3,881,369
BI-AXIAL POSITIONER

John H. Looney, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 26, 1973, Ser. No. 428,157
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.2 **3 Claims**



1. A drive mechanism for positioning a driven member at any desired coordinate position on an X-Y coordinate plane, including:

a frame,

a first link operatively connected to and reciprocable relative to said frame in an X direction,

a second link operatively connected to and reciprocable relative to said first link in a Y direction, normal to said X direction,

a first and a second pulley rotatably mounted to first and second reversible drive motors respectively, said drive motors being mounted on said frame,

a third and a fourth pulley rotatably mounted on said first link,

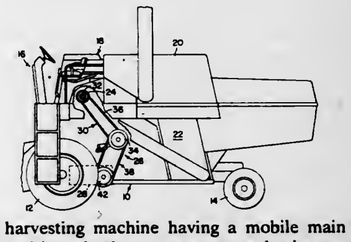
a drive belt connected at each of its ends to said second link and operatively engaging said pulleys,

said drive motors being selectively actuable in either direction of rotation and braked against rotation when not energized for rotation, to effect a desired direction of displacement of the driven member in said X-Y coordinate plane.

3,881,370
VARIABLE SPEED BELT DRIVE FOR AN AGRICULTURAL MACHINE

Bernard Francis Vogelaar, Moline; Mahlon Lloyd Love, Osco, and Charles Edward Cook, Hampton, all of Ill., assignors to Deere & Company, Moline, Ill.

Filed June 29, 1973, Ser. No. 374,901
Int. Cl. F16h *55/56*
U.S. Cl. 74—230.17 F **22 Claims**



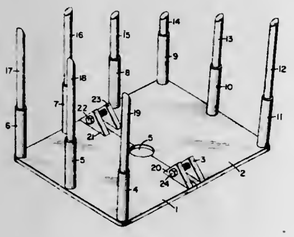
1. In a harvesting machine having a mobile main frame mounted on drive wheels, a power source having an output shaft and transmission means drivingly connected to the drive wheels, the combination therewith of improved belt drive means drivingly connecting the output shaft to the transmission and comprising: a shiftable shaft; means mounting the shiftable shaft on the main frame for shifting movement transverse to the shaft axis; a fixed ratio belt drive including a fixed diameter drive sheave operatively connected to and driven by the output shaft, a fixed diameter driven sheave mounted on the shiftable shaft, and a first drive belt drivingly trained around said drive and driven sheaves; and a variable ratio belt drive including a variable diameter drive sheave mounted on the shiftable shaft adjacent the fixed diameter driven sheave and driven thereby, control means operatively associated with said drive sheave for controlling the sheave diameter, a variable diameter torque-sensing driven sheave having a fixed sheave element and shiftable sheave element axially shiftable and rotatable relative to the fixed element, a spring means biasing the shiftable sheave element toward the fixed element and toward a maximum diameter condition, cam means operatively connected to the opposite sheave elements to shift the shiftable sheave element toward the fixed sheave element in response to relative rotation between the sheave elements as a result of torque transmitted therethrough above a predetermined value, and a second drive belt trained around the variable diameter drive and driven sheaves, the spring bias on the torque-sensing driven sheave causing a tension in the second drive belt that is transmitted to the first drive belt through the fixed diameter driven sheave, and the shifting of the sheave elements of the torque-sensing sheave as a result of increasing torque causing increased belt tension in both belts.

14. An improved belt drive comprising: an input shaft; a fixed diameter drive sheave mounted on the input shaft; a shiftable shaft parallel to the input shaft and shiftable toward and away from the input shaft; a fixed diameter driven sheave mounted on the shiftable shaft; a first drive belt means drivingly trained around the fixed diameter drive and driven sheaves; an output shaft parallel to the input shaft and the shiftable shaft; a variable diameter drive sheave coaxially mounted on the shiftable shaft with the fixed diameter driven sheave and operatively connected to and driven thereby, and including control means operatively associated therewith for controlling the sheave diameter; a variable diameter torque-sensing driven sheave mounted on the output shaft and having a fixed sheave element connected to said shaft and a shiftable

sheave element axially shiftable and rotatable relative to the fixed element, a spring means biasing the shiftable sheave element toward the fixed element and toward a maximum diameter condition, cam means operatively connected to the opposite sheave elements to shift the shiftable sheave element toward the fixed sheave element in response to relative rotation between the sheave elements in response to increasing torque transmitted therethrough, and a second drive belt trained around the variable diameter drive and driven sheaves, the spring bias on the torque-sensing driven sheave causing a tension in the second drive belt that is transmitted to the first drive belt through the sheaves mounted on the shiftable shaft.

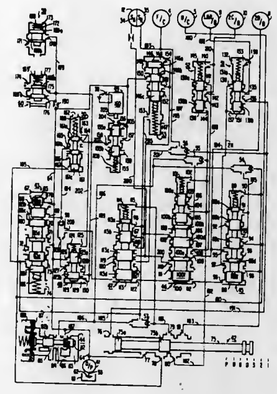
21. An infinitely variable speed belt drive comprising: a first shaft; a variable diameter drive sheave coaxially mounted on said shaft and including an axially fixed sheave element having an inclined sheave face, an axially shiftable sheave element having an inclined sheave face opposite the fixed element sheave face, spline means coaxially connecting the shiftable sheave element to the fixed sheave element for rotation of the elements in unison while accommodating axial shifting of the shiftable sheave element, and control means operatively associated with the shiftable sheave element for controlling the position of said element; a variable diameter torque-sensing driven sheave including an axially fixed sheave element having an inclined sheave face, an axially shiftable sheave element having an inclined sheave face opposite the fixed sheave element face and mounted for rotation relative to the fixed sheave element, spring means operative between the two sheave elements for biasing the shiftable sheave element toward the fixed sheave element, and cam means operative between the opposite sheave elements for shifting the shiftable sheave element toward and away from the fixed sheave element in response to rotation of the shiftable sheave element in opposite directions relative to the fixed sheave element; and drive belt means trained around the drive and driven sheaves, increasing torque transmitted through the driven sheave element causing the shiftable sheave element to rotate relative to the fixed sheave element so that the cam means causes the shiftable sheave element to move toward the fixed sheave element to increase the driven sheave diameter and increase the tension in said belt.

3,881,371
POLISHED ROD GUARDS
James R. Watson, P.O. Box 831, Big Lake, Tex. 76932
Filed July 5, 1973, Ser. No. 376,887
Int. Cl. F16p *1/02*
U.S. Cl. 74—608 **4 Claims**



1. A safety device particularly suited for use as a guard for the the vertical reciprocating motion of the polished rod and rod hanger of a pumping oil well, said guard securely attached in a fixed and stationary position horizontal to the stuffing box of an oil well and including a plurality of upwards standing guard rods.

3,881,372
PRESSURE REDUCING CONTROL DEVICE FOR THE HYDRAULIC CONTROL CIRCUIT OF AN AUTOMATIC TRANSMISSION
Toshiyuki Miyauchi, and Kunio Ohtsuka, both of Yokohama, Japan, assignors to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan
Filed Oct. 9, 1973, Ser. No. 404,590
Claims priority, application Japan, Oct. 20, 1972, 47-104953
Int. Cl. B60k *21/00*
U.S. Cl. 74—867 **4 Claims**



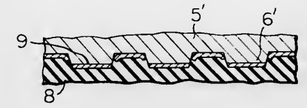
1. In a hydraulic control circuit for an automatic transmission of the type wherein a plurality of shift control valves selectively deliver hydraulic fluid to a plurality of frictional elements to cause engagement and disengagement of said frictional elements, having a hydraulic pressure source, a primary pressure regulating valve interposed between said pressure source and said shift control valves to regulate the pressure of the hydraulic fluid supplied to said shift control valves a manually controllable gear selector valve with an inlet connected to said hydraulic pressure source and a plurality of outlets, the improvements comprising:

a. a first speed pressure reducing valve interposed between a first shift control valve and a first frictional element to reduce the pressure of the fluid supplied to the first frictional element when the shift control valve is in a first position and the manually controllable gear selector valve is in a position selecting the lowest forward speed; and

b. a second speed pressure reducing valve interposed between a second shift control valve and a second firctional element to reduce the pressure supplied to said second frictional element when said first shift control valve is in a second position and when said manually controllable gear selector valve is in a position allowing the transmission to shift into its second lowest forward speed but no higher.

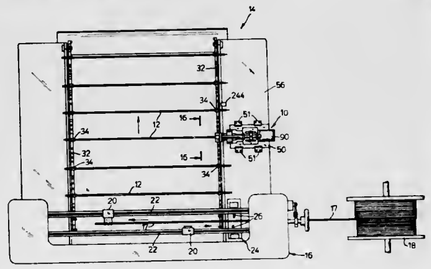
4. The improved hydraulic control circuit of claim 1 wherein said first speed pressure reducing valve is also hydraulically connected to said manually controllable gear selector valve so as to transmit hydraulic fluid therethrough when said manually controllable gear selector valve is in a position selecting reverse gear.

3,881,373
METHOD OF MAKING OUTER BLADE FOR ELECTRIC SHAVER
Yoshimitsu Nakamura, Settsu, and Mitsuo Sugioka, Neyagawa, both of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Mar. 13, 1974, Ser. No. 450,807
Int. Cl. B21k *11/00*
U.S. Cl. 76—104 R **5 Claims**



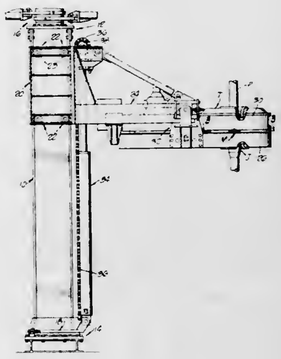
1. A method of making outer blades for electric shavers in which a countersunk part having a smooth hair inlet part is formed on the peripheral edge of each of hair inlet holes, comprising steps of preparing a die in which convex parts and concave parts are alternately and continuously formed and a curved surface having any desired radius of curvature is formed on the shoulder part of each of said convex parts, inserting a metal lamina between said die and a plate-shaped soft material, plastically deforming said metal lamina so as to conform to the surface shape of the die, removing thus deformed metal lamina out of the die, and grinding the deformed metal lamina so as to form therein hair inlet holes.

3,881,374
ROTARY WIRE STRIPPER
Ragnar Gudmestad, West Allis, Wis., assignor to Artos Engineering Company, New Berlin, Wis.
Filed May 24, 1974, Ser. No. 473,274
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 **18 Claims**



1. A rotary wire stripping machine comprising: a support for releasably positioning an insulated wire member in a stationary position with an end portion projecting from said support, lock means movable from one position to a position in engagement with said support to lock said insulated wire in a stationary position, a table continuously reciprocating between a first position spaced a predetermined distance from the end of said wire to a second position adjacent to the end of said wire, a head member supported on said table for movement with the latter and for rotation about an axis in general alignment with the axis of said wire, said head forming a chamber receiving a predetermined part of the end portion of said wire when said table is in said second position, a pair of opposed blade members supported in said chamber of said head for rotation therewith and being movable from an initial position when said table is in the first position to a cutting position radially inward to engage and sever insulation material at a point spaced from the end of said wire when said table is in a second position, and guide elements movable with each of said blade members to guide the wire member between the end thereof and said blade members, said guide elements and said blade members engaging the severed insulation material as said table is moved from said second to said first position to remove said insulation material from said wire member.

3,881,375
PIPE TONG POSITIONING SYSTEM
Robert R. Kelly, Hoffman Estates, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Dec. 12, 1972, Ser. No. 314,285
Int. Cl. B25b *13/50*
U.S. Cl. 81—57.35 **13 Claims**



1. In combination, pipe tong means engageable with the threadedly engaged joint portions of a tool joint of well pipe extending vertically into a well bore for making up and breaking out said tool joint portions, power actuated hoist means associated with said pipe tong means for vertically moving said pipe tong means along the well pipe between a first inoperative position in which said pipe tong means is below the tool joint and a second inoperative position in which said pipe tong means is above the tool joint, control means associated with said hoist means for controlling the movements of said pipe tong means between said positions, said control means including magnetic eddy current responsive detector means carried by said pipe tong means and sensitive to the tool joint for operating said control means to stop said hoist means when said pipe tong means moves into operative position adjacent to the tool joint in which position said pipe tong means is engageable with the joint portions, and wherein said detector means has a sensing head provided with spacing means for predetermining the space between said sensing head and said joint portions.

3,881,376
SOCKET EJECTING MECHANISM FOR RATCHET WRENCHES
Richard B. Wright, Akron, Ohio, assignor to The Wright Tool & Forge Co., Barberton, Ohio
Filed Mar. 5, 1974, Ser. No. 448,189
Int. Cl. B25b *13/46*
U.S. Cl. 81—63 **7 Claims**

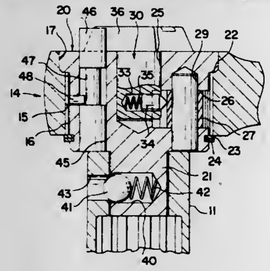
1. A ratchet wrench for driving interchangeable socket heads removably attachable thereto, comprising:

a lever,

a socket carrier mounted in an end of said lever for rotation relative to said lever and including a stud extending downwardly from said lever for receiving and retaining said socket head,

ratchet drive means operatively located between said socket carrier and said lever,

a socket head ejector element extending through said socket carrier for limited endwise sliding movement parallel to the axis of said rotation and adapted to engage a socket received on said stud and to be depressed by the tool user to positively eject said socket head from said stud.



3,881,377

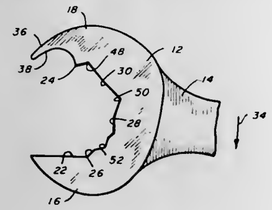
RATCHETING WRENCH FOR OCTAGONAL MEMBERS

James P. Evans, 3233 S.W. 23 St., and Calvin G. Turner, 1037 S.W. 24 St., both of Oklahoma City, Okla.

Filed Dec. 15, 1972, Ser. No. 315,321

Int. Cl. B25b *13/02*

U.S. Cl. 81—186 **1 Claim**



1. A ratcheting wrench for an octagonal and a hexagonal member, the width across opposite corners of the octagonal member being designated by B, the width across opposite sides of the member being designated by A, and the length along a side of the member by D, the wrench comprising: a body;

a handle means attached to the body;

two spaced apart, parallel jaws designated a torquering jaw and a backup jaw, the jaws extending from the wrench body in the direction opposite the handle means, the backup jaw having a planar working surface facing the torqueing jaw, the torqueing jaw having a working surface, facing the backup jaw working surface the torqueing jaw working surface being in the form of a projecting tooth, the distance between said backup and torqueing jaw working surfaces being slightly greater than A, and the body having member engaging working surfaces between the backup jaw and torqueing jaw working surfaces defined by:

a. a first body working surface of length slightly greater than D intersecting said backup jaw working surface at an angle of 45°,

b. a second body working surface of length less than D intersecting said first body working surface at an angle of 45°, the plane of the second body working surface being perpendicular to the plane of said backup jaw working surface, and

c. a third body working surface of length slightly greater than D and at a 45° angle with respect to said second body working surface,

said torqueing jaw terminating at the outer end thereof opposite said handle in an inclined slipping surface adjacent said torqueing jaw working surface, the plane of the inclined slipping surface intersecting the plane of said backup jaw working surface at an acute angle and in the direction of said handle,

said torqueing jaw working surface having a recess therein formed by the intersection of said third body working surface and said projecting tooth, the distance between said backup jaw working surface and said recess being greater than A,

said first body working surface having a first V-shaped notch formed therein adjacent the intersection of said first body working surface with said second body working surface and a second V-shaped notch formed at the end of said second body working surface opposite said first body working surface, said third body working surface forming one side of said second V-shaped notch, said recess in said torqueing jaw working surface, said first and second V-shaped notches, and said backup jaw working surface engaging a hexagonal member.

3,881,378

MACHINE FOR PRODUCING ASPHERICAL SURFACES

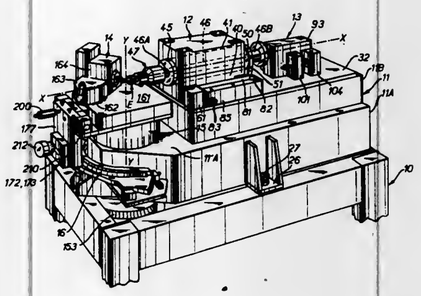
Bruno P. Bettiol, Quincy-Voisins, France, assignor to Essilor International S.A., Joinville-le-Pont, France

Filed Dec. 26, 1973, Ser. No. 427,447

Claims priority, application France, Dec. 29, 1972, 72.46934

Int. Cl. B23b *3/28*

U.S. Cl. 82—19 **21 Claims**



1. A machine for producing concave or convex aspherical surfaces comprising a frame, a spindle, support means carried on the frame for mounting said spindle for rotation about its axis, a blank carrier, means for supporting said blank carrier on said spindle, a cutting tool, first mounting means for mounting the cutting tool for travelling movement along a second axis, second mounting means for mounting the cutting tool for rotation about a third axis substantially perpendicular to said axis of the spindle and said second axis, a fixed control cam fastened to said frame, drive means controlled by said control cam and coacting with said first mounting means to effect the displacement of the cutting tool along a path of movement for cutting the aspherical surface, and first adjustment means for adjusting the orientation of said axis of the spindle in a plane substantially perpendicular to said third axis so that said axis of rotation of the spindle may be brought into precise coincidence with said path of movement of the cutting tool at the center of the aspherical surface to be cut.

3,881,379

METHOD OF AUTOMATICALLY CUTTING OUT MATERIAL PIECES FROM A WEB IN CONFORMANCE WITH A SCANNED CUTTING PATTERN

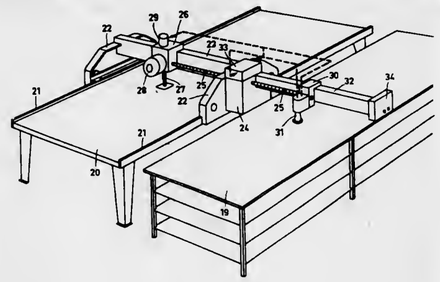
Günter Otto Stumpf, 7421 Mehrstetten, Kreis Munsingen, Germany

Filed June 13, 1973, Ser. No. 369,760

Claims priority, application Germany, June 14, 1972, 2234674

Int. Cl. D06h *7/00;* **B26d** *1/10*

U.S. Cl. 83—49 **2 Claims**



1. A method of automatically cutting out material pieces from a material web in conformance with a cutting pattern of pattern segments, said cutting pattern being formed by a continuous line of predetermined width, comprising; automatically scanning said line with a sensor arrangement sensitive to distinctions between said line and the background of said cutting pattern; transmitting a signal generated in response to sensed distinctions to a control installation; and imparting a cutting movement to a cutting tool for said material in conformance with the signal received by said control installation, said continuous line having portions extending between at least two adjacent pattern segments of said cutting pattern and being in coincident or crossing relationship in at least one location, said sensor arrangement including photo scanning means, conveying said photo scanning means along the center of said line in an oriented relationship with reference to both edges of said line, said line having a portion extending between at least two pattern segments of said cutting pattern in crossover configuration at a crossing angle of about 90°, and forming corners on said pattern segments through the crossing point of a loop formed in said line, said loop extending away from said pattern segment.

3,881,380

SCRAP DISPOSAL MECHANISM FOR METALLIC CAN BODY TRIMMERS

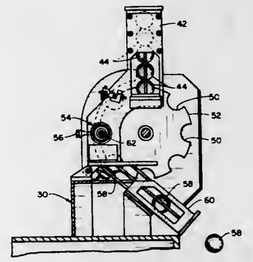
Elpidifor Paramonoff, Los Angeles, Calif., assignor to Standun, Incorporated, Compton, Calif.

Filed Jan. 12, 1973, Ser. No. 323,330

Int. Cl. B23d *21/14*

U.S. Cl. 83—150 **22 Claims**

1. In a scrap ring disposal mechanism for metallic can body trimmers and the like of the type wherein a metallic can body is positioned on a mandrel with can body walls at a can body open end being trimmed to sever an annular scrap ring therefrom; the combination of: an annular rotatable frame generally radially outwardly surrounding said can body open end to be trimmed; scrap positioning means on said frame for axially receiving a portion of said can body walls at said body open end of a can body positioned on said mandrel including at least a part of said scrap ring to be severed from said can body during said trimming, said scrap positioning means rotating said scrap ring at least after said scrap ring severing and during rotation of said frame; at least two circumferentially spaced nipper assemblies on said frame each including nipper means actuatable for completely cutting said scrap ring into separated scrap pieces at said nipper assembly; drive means for rotating said frame; nipper actuating means at a circumferential location generally stationary relative to said frame rotation for actuating said nipper means one at a time after said scrap ring severing and during nipper assembly movement past said circumferential location.



3,881,381

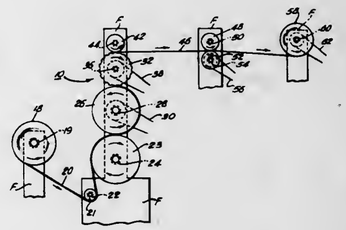
APPARATUS FOR PRODUCING RETICULATE SHEET MATERIAL

Frank Kalwaites, Somerville, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 857,989, Sept. 15, 1969, abandoned. This application May 1, 1972, Ser. No. 249,425

Int. Cl. B29c *17/02;* **B29f** *5/00;* **B32b** *3/10*

U.S. Cl. 83—170 **42 Claims**

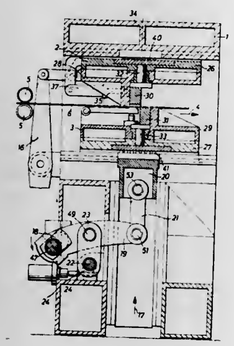


1. Apparatus for forming a reticulate sheet material of a polymer selected from the class consisting of high-density polyethylene and predominantly isotactic polypropylene which comprises; spaced means for supporting and advancing a thin sheet of polymer, said supporting means including means for heating said polymer to a formable state, forming means adjacent said supporting and heating means and in close proximity thereto for removing said polymer while in a formable state from said supporting and heating means while simultaneously applying compressive and shearing forces capable of penetrating through said polymer to form said polymer into a substantially open reticulate structure comprising filaments, said filaments being integral at their intersections and means including said forming means for cooling said substantially open reticulate structure to below the solidification temperature of the polymer and means for removing said reticulate sheet material from said forming means whereby a stretchable reticulate sheet material of said polymer is produced.

3,881,382
FLYING SHEAR FOR CROSS-CUTTING MOVING SHEET-METAL STRIP

Otto Rasenberger, Goeppingen, and Hans Braun, Weilheim, Teck, both of Germany, assignors to L. Schuler GmbH, Goppingen, Germany

Filed Oct. 15, 1973, Ser. No. 406,358
Claims priority, application Germany, Oct. 13, 1972, 2250242
Int. Cl. B23d 25/02
U.S. Cl. 83—305
24 Claims

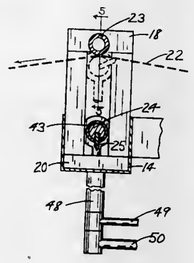


1. Flying shear apparatus for cross-cutting moving sheet material comprising:
a first cutting bar,
a second cutting bar,
first reciprocating means for reciprocating both of said bars in the travel direction of the sheet material,
second reciprocating means for reciprocating said first bar in a cutting direction transverse to said travel direction, said first and second cutting bars being positioned in opposing relationship to one another such that said cutting bars cooperate to cut said sheet material upon a predetermined relative movement of said cutting bars in the cutting direction, said second reciprocating means including a rotatable drive shaft and drive train means drivingly connecting said drive shaft to said first bar,
and cutting stroke control means for varying the distance said first bar moves in the cutting direction toward said second bar means independently of the rotational speed of the drive shaft, said cutting stroke control means including means engaged with a member of said drive train means,
wherein said first reciprocating means includes a movable driving member attached to only one of said cutting bars and linear guide means interconnecting said cutting bars with one another for similar movement in the travel direction, and
wherein said linear guide means includes a coupling member and first and second guide arms, said coupling member being pivotally connected to one of said cutting bars at a position intermediate the ends of said coupling member by a coupling pivot pin, said first guide arm having one end thereof pivotally connected to the other of said cutting bars and the other end thereof pivotally connected to an end of said coupling member, said second guide arm having one end thereof pivotally connected to the other of said cutting bars and the other end thereof pivotally connected to the end of said coupling member which is opposite the end of said coupling member connected to said first guide arm.

3,881,383
WEB SEVERING DEVICE

Ronald W. Alverth, Lombard, and Frank Sander, Chicago, both of Ill., assignors to Uniweb International, Inc., Elmhurst, Ill.

Filed Oct. 23, 1973, Ser. No. 408,642
Int. Cl. B26d 1/36
U.S. Cl. 83—308
10 Claims

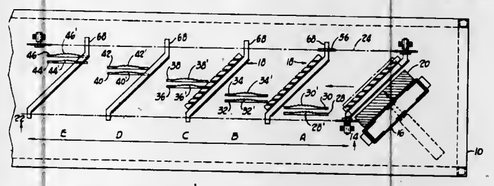


1. A web severing device for a press or the like comprising, in combination, a pair of rotatable rollers freely rotatable in either direction, means for mounting the rollers on the press in generally parallel, spaced apart relationship, said rollers being positioned transverse to the direction of motion of the web and straddling the path of the web so that the web passes between the rollers, means for moving said rollers toward or away from each other to thereby engage or disengage the web between the rollers, and means including a severing blade carried by one of said rollers for severing a moving web, said one of said rollers being operable upon engagement with a moving web to rotate and thereby swing the blade against the web to sever it.

3,881,384
MACHINE FOR CUTTING FROZEN FOODS

Charles J. Frank, Walton Hills, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Filed July 16, 1973, Ser. No. 379,383
Int. Cl. B26d 7/06, 4/06
U.S. Cl. 83—407
3 Claims

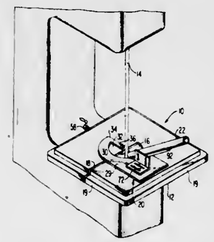


1. A machine for cutting a series of similar frozen food slabs at low temperature, each into a plurality of cut-up pieces which comprises: an essentially planar, elongated support for said slabs, the surface of said support defining along its length a part of travel for said slabs and the resulting cut-up pieces thereof, said support having a plurality of elongated slots along its length, said slots being spaced and arranged in a diagonally staggered array of several locations;
a plurality of toothed saw blades each protruding through said slots in said support there being one or a gang of blades at each of said locations, each of said blades being disposed for intercepting and cutting through said slabs against supporting pressure exerted thereon from said support, all of said blades being substantially parallel to each other and being inclined in a plane oblique to the plane of said support at an angle between about 40° and 60°;
drive means for said blades;
driven conveyor means adapted for propelling said slabs into and through, and the resulting cut-up pieces thereof away from cutting relationship with said blades, said conveyor means being equipped with a plurality of gangs of follower projections, the follower projections of each said gang of follower projections being arrayed for engaging the trailing edge of a slab and the cut-up pieces therefrom and restricting rearward motion thereof in said path of travel;
drive means for said conveyor means: and
slotted slab holddown means for restraining upward movement of said slabs and the cut-up pieces therefrom while they are moving forwardly in said path; said holddown means being a portion of said conveyor means.

3,881,385
PIPE CUTTING FIXTURE FOR BAND SAW

Vernon Carl Coy, Slidell, La., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Apr. 23, 1974, Ser. No. 463,234
Int. Cl. B23d 53/06, 55/04
U.S. Cl. 83—411 R
4 Claims



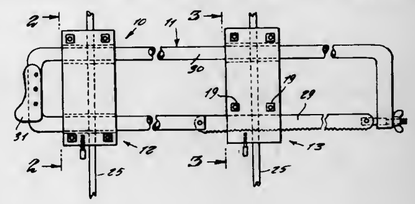
1. In a fixture for attachment to a band saw for facilitating the cutting of pipe at varying angles and radii to match the curvature of another pipe to which the cut pipe is to be joined, and wherein said band saw comprises a horizontal table including an open center portion with an endless band saw blade projecting therethrough and means for driving said blade to effect cutting of a pipe supported on said table and movable relative to said blade, and wherein said fixture includes a base plate overlying said table, means for pivotably mounting said plate for pivoting about a vertical pivot axis and for moving said plate horizontally along a path including the plate pivot axis and the saw blade, pipe support means carried by said plate for holding said pipe in axial alignment with the plate pivot point and means for pivoting said pipe about a horizontal axis intersecting said vertical pivot axis, the improvement wherein: said means for mounting said plate for pivoting about a vertical axis comprises means for mounting said plate on said table parallel to the saw blade where it projects through said table and to one side and free of said blade, said plate being provided with an arcuate opening through which said blade projects and said blade including a narrow arm which projects within said opening with the vertical pivot axis of said plate extending through said arm.

3,881,386
HACK SAW MITER BOX

Joseph E. Zimmerman, 701 S.E. Port, Lincoln City, Oreg. 97367

Filed Feb. 7, 1974, Ser. No. 440,310
Int. Cl. B27g 19/02; B27b 5/02
U.S. Cl. 83—762
3 Claims

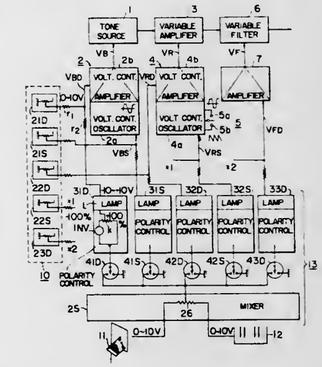
1. In a hack saw miter box, the combination of a pair of guide carriers and a tubular hack saw for being slidably supported upon said guide carriers during a sawing operation, each of said guide carriers being comprised of a pair of blocks secured together by means of a bolt and nut means, a pair of tubular guide sleeves being clamped between one of said guide carriers while a singular tubular guide sleeve is clamped between said blocks of the other said guide carrier, each of said guide carriers being supported upon a pair of vertically extending, parallel, spaced apart support rods each one of which extends slidably free through each one of said blocks of each said guide carrier, said rods being longer than said blocks, and said rods at their lower ends being supported upon a rod support.



3,881,387
ELECTRONIC MUSICAL INSTRUMENT WITH EFFECT CONTROL DEPENDENT ON EXPRESSION AND KEYBOARD MANIPULATION

Fukushi Kawakami, Hamamatsu-shi, Shizuoka-ken, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha

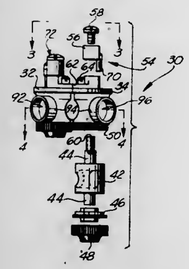
Filed Feb. 13, 1974, Ser. No. 441,996
Claims priority, application Japan, Feb. 19, 1973, 48-21524
Int. Cl. G10h 1/02, 5/02
U.S. Cl. 84—1.24
4 Claims



1. An electronic musical instrument which comprises:
a controllable tone source section for developing tone signals;
at least one tone modifying circuit cooperative with said controllable tone source and receptive of said tone signals for developing time variations of the frequency and amplitude of said tone signals to modify the tonal effect of said tone signals;
at least one modification signal generator which develops modification signals applied to said tone modifying circuit for determining the frequency and amplitude variations of said tone signals developed by said tone modifying circuit;
a control panel section which produces at least one first control voltage applied to said modification signal generator for controlling said modification signal;
an expression-keyboard controlled section including manually set expression control device and a keyboard for producing at least one second control voltage whose

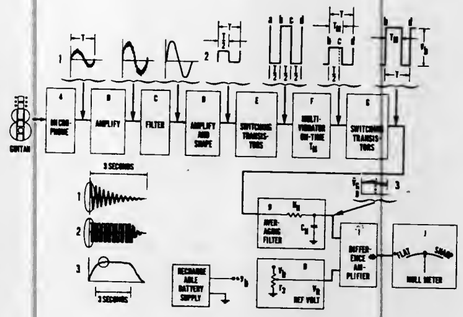
value is representative of the setting of said expression control device and said keyboard;
and means for selectively applying said second control voltage to said modification signal generator for controlling said modification signal.

3,881,388
BIFURCATED VALVE STRUCTURE
George T. McCracken, Mayfield Village, Ohio, assignor to King Musical Instruments, Division of the Seeburg Corporation of Delaware, Eastlake, Ohio
Filed Dec. 11, 1973, Ser. No. 423,733
Int. Cl. G10d *9/04*
U.S. Cl. 84—388 **5 Claims**



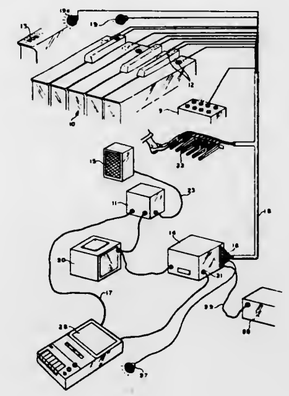
1. A valve for use in a musical instrument for controlling the flow of sound through the instrument comprising, a unitary block valve body, first and second chambers adjacently located in said unitary block valve body, a first valve stem, a first rotor mounted for rotation on said first valve stem in said first chamber, a second valve stem, a second rotor mounted for rotation on said second valve stem in said second chamber, a first inlet for directing sound into said unitary block valve body and into said first chamber disposed therein, a first outlet for directing sound out of said first chamber and out of said unitary block valve body, a second inlet for directing sound into said unitary block valve body and into said second chamber disposed therein, a second outlet for directing sound out of said second chamber and out of said unitary block valve body, and passageway means disposed in said unitary block valve body connecting said first and second chambers to provide for the flow of sound therebetween, a first actuator assembly connected to said first valve stem for effecting rotation of said first rotor between a first position providing for the flow of sound from said first inlet through said first chamber, through said passageway means to said second chamber and a second position providing for the flow of sound from said first inlet through said first chamber to said first outlet, a second actuator assembly connected to said second valve stem for effecting rotation of said second rotor between a first position providing for the flow of sound from said first chamber through said passageway means and said second chamber to said second outlet and a second position providing for the flow of sound from said inlet through said second chamber to said second outlet, said first inlet, said first outlet and said passageway means are spaced apart approximately 120° about said first chamber, said second inlet, said second outlet, and said passageway means are spaced apart approximately 120° about said second chamber, said first actuator assembly including a first actuator member and a first pair of stop members, said first actuator member effecting rotation of said first valve stem and said first rotor, said first actuator member includes a stop surface thereon which is operable to engage with one of said first pair of stop members when said actuator member is rotated in a first direction to position said first rotor in said first position and is operable to engage with the other of said first pair of stop members when said first actuator member is rotated in a second direction, opposite said first direction, to position said first rotor in said second position, and said second actuator assembly includes a second actuator member and a second pair of stop members, said second actuator member effecting rotation of said second valve stem and said second rotor, said second actuator member includes a stop surface thereon which is operable to engage with one of said second pair of stop members when said second actuator member is rotated in said first direction to position said second rotor in one of said positions and is operable to engage with the other of said second pair of stop members when said second actuator member is rotated in said second direction to position said second rotor in the other of said positions and wherein said first and second actuator assemblies are operable to be simultaneously actuated to effect simultaneous rotation of said first and second rotors.

3,881,389
ELECTRONIC GUITAR TUNER
Frederick G. Allen, Los Angeles, Calif., assignor to F. G. Allen Associates, Inc., Los Angeles, Calif.
Filed May 21, 1973, Ser. No. 361,859
Int. Cl. G10g *7/02*
U.S. Cl. 84—454 **4 Claims**



1. An electronic device for tuning a stringed instrument comprising: transducing means for converting into an electrical signal the acoustic vibrations of a struck, plucked or bowed string; filter means for removing unwanted noise and overtones from said signal; amplifier and limiting means for rendering all excursions of said signal of equal amplitude for a sufficient time after the striking of the string to permit frequency measurement thereof; one-shot multivibrator means responsive to said signal for delivering pulses having frequency of said signal and having predetermined width determined by the internal parameters of said multivibrator means, so that the average DC value of said pulses becomes proportional to the frequency of said signal; filter means to extract the average DC value of said pulses; a DC reference voltage; means for comparing said DC reference voltage and said average DC value, thereby to indicate whether the fundamental frequency of the struck string is above or below a predetermined frequency; a single DC supply voltage; transistor switching means following said multivibrator means for making said average DC value of pulses proportional to said DC supply voltage; voltage divider means for making said DC reference voltage also proportional to said DC supply voltage, so that both average DC value of pulses and reference voltage rise and fall together with changes in supply voltage, with the result that when the two voltages are matched by tuning to the correct frequency, their difference continues to be zero over a considerable range of supply voltage, making regulation unnecessary.

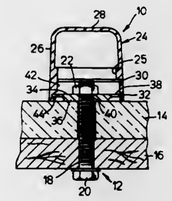
3,881,390
SIGHT AND SOUND MUSICAL INSTRUMENT INSTRUCTION WITH EXPANDED CONTROL CAPABILITIES
Cecil F. Gullickson, 2018 Fosgate Dr., Winter Park, Fla. 32789
Continuation-in-part of Ser. No. 182,484, Sept. 21, 1971.
This application Nov. 21, 1973, Ser. No. 418,211
Int. Cl. G09b *15/08*
U.S. Cl. 84—478 **34 Claims**



1. An instructional device for a musical instrument having a keyboard, comprising a plurality of illumination means disposed within the keys of such instruments, a stereo cassette type tape player arranged for playing a prerecorded tape contained in a cassette, such tape containing aural instructions and coded instructional information, control means operatively connected to said plurality of illumination means, and decoder means responsive to such coded instructional information, said decoder means comprising signal conditioning means for accepting such coded instructional signals from such tape, whereby noise, interference, crosstalk and level variations originating from said tape player are effectively eliminated, and decoder memory means responsive to such conditioned signals whereby said control means are caused to selectively energize said plurality of illumination means singly and in various combinations and sequences, and for selected periods of time as determined by such instructional information.

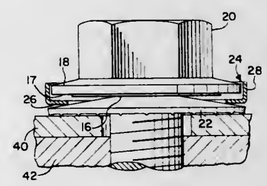
3,881,391
QUICK-MOUNT CAPS
Timothy B. Dereszynski, 700 W. Layton Ave., Milwaukee, Wis. 53221
Filed July 5, 1973, Ser. No. 376,310
Int. Cl. A47g *3/00*
U.S. Cl. 85—55 **9 Claims**

1. A bolt cover assembly for covering the exposed end of a hold-down bolt and nut for a toilet fixture, the assembly comprising:
a cap having a hollow cylindrical body member,
a top enclosing one end of said body member,
a first groove in said body member spaced upwardly from the open end a distance greater than the height of the nut,
and a second groove in said body member between said first groove and the open end of said member,
and a resilient disc having a central hub, a flange extending radially outward from said hub a distance greater than the inner diameter of said cylindrical body member and a central opening in said disc having a diameter less than said bolt, said second groove being spaced inwardly from the open end of said member a distance substantially



equal to the thickness of the central hub, whereby said disc is adapted to be mounted on said bolt on either side of the nut and said cap can be mounted on said disc with said flange seated in one of said first or second grooves.

3,881,392
TENSION INDICATING FASTENER UNIT
Gary Martin Curtis, Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jan. 28, 1974, Ser. No. 437,597
Int. Cl. F16b *31/02*, *39/24*
U.S. Cl. 85—62 **11 Claims**

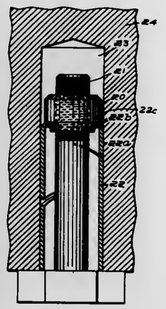


1. A preassembled tension indicating fastener unit comprising a rotary fastener member with rotation inducing surfaces, a generally circular bearing surface located beneath the rotation inducing surfaces and integral therewith, a conical-like spring washer device preassembled to the rotary fastener member, the washer device having an inner periphery spaced upwardly from its outer periphery, a generally circular indicating member preassembled to the unit and including a central aperture concentric with the outer periphery, the indicating member comprising radially inwardly extending flange means positioned between outer peripheral marginal portions of the bearing surface and the upper surface of the spring washer device, the inner periphery of the flange means being substantially equidistant from the axis of the fastener member and the spring washer device, side wall portions integral with the flange means extending upwardly therefrom surrounding the circular periphery of the bearing surface preventing lateral movement of the indicating member relative to the bearing surface and retaining the inner periphery of the flange means equidistant from the fastener and spring washer device axes, wherein the flange means is adapted to be pinched between said outer peripheral marginal portions of the bearing surface and the upper surface of the spring washer device as the spring washer device is compressed to a predetermined height which is directly related to a predetermined tension in the fastener unit.

3,881,393
EXPANSION FASTENER

Maxwell S. Campbell, P.O. Box 134, Elkins, N.H. 03233

Filed Nov. 27, 1972, Ser. No. 309,702
Int. Cl. F16b *13/06*
U.S. Cl. 85—64 6 Claims

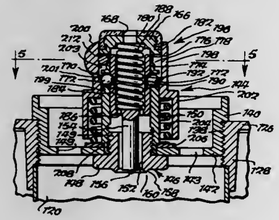


1. An expansion fastener comprising: a bolt; a spring coil surrounding said bolt, said coil being a flat helically wound strip having generally cylindrical inner and outer surfaces, and said coil having axially spaced turns all of substantial width in the axial direction and being adapted to expand radially under axial load; a bearing element connected to said bolt and having a generally annular portion, said coil having a turn nearest said bearing element free to expand radially; and connecting means surrounding said annular portion and fixedly connected to said bearing element and said nearest turn, said connecting means being adapted to flatten under axial load and having an outer portion adapted to expand and maintain bearing engagement with said nearest turn and an inner portion adapted to contract and grip said annular portion.

3,881,394
GAS GENERATOR ASSEMBLY

Loyal G. Netteland, East Aurora, N.Y., assignor to A-T-O Inc., Willoughby, Ohio

Division of Ser. No. 180,558, Sept. 15, 1971, Pat. No. 3,756,785. This application Mar. 29, 1973, Ser. No. 345,992
Int. Cl. A62b *7/08*
U.S. Cl. 89—1 B 9 Claims

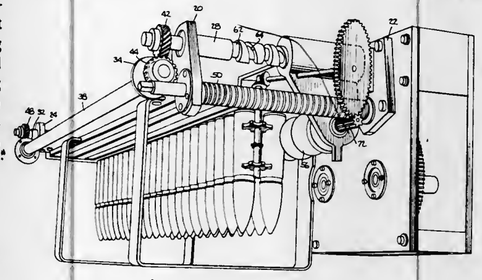


1. In combination with oxygen evolving apparatus adapted to be carried with the user; a manually operable actuating mechanism for igniting an oxygen evolving candle in said apparatus comprising: a casing; a retainer mounted in said casing adapted for connection to a cartridge containing an oxygen evolving candle, an actuator body mounted in said casing, said actuator body having adjacent peripheral surface portions of different dimensions, a firing pin mounted in said actuator body and movable from a cocked position to a firing position, means biasing said firing pin to said firing position, means retaining said firing pin in said cocked position against said biasing means, means for disabling said retaining means enabling said firing pin to move to said firing position, said disabling means comprising an element movably mounted on said actuator body for movement between a first position where said retaining means maintains said firing pin in said cocked position to a second position disabling said retaining means, and means locking said disabling means to prevent actuation of said firing pin into said firing position, said locking means comprising an elongated element having adjacent portions of different cross section and mounted in said disabling element for movement between a locked position wherein said locking element engages said actuator body on the periphery thereof with one of said portions of said locking element engaging one of said peripheral surface portions of said actuator body in a manner preventing relative movement between said disabling element and actuator body and a release position wherein said locking element is disengaged from the periphery of said actuator body in a manner allowing relative movement between said disabling element and actuator body.

3,881,395
ARTICLE HANDLING SYSTEM

Thomas W. Cozzi, Burlington; Douglas P. Tassie, St. George, and Raymond A. Patenaude, Burlington, all of Vt., assignors to General Electric Company, Burlington, Vt.

Filed July 17, 1973, Ser. No. 379,930
Int. Cl. F41d *9/02*
U.S. Cl. 89—34 26 Claims



1. An article storage and feed system, comprising:
an array of laterally spaced apart channels, each channel for storing a respective plurality of articles in a respective column along a longitudinal axis,
first means for concurrently engaging each of the plurality of articles in any one of said plurality of channels and for sequentially extracting such articles as a train of articles of uniform pitch;
second means, coupled to said first means, for translating said first means to each of a plurality of extraction stations in sequence, each of said extractor stations being adjacent a respective one of said plurality of channels; and
control means, coupled to said second means, for automatically actuating said second means.

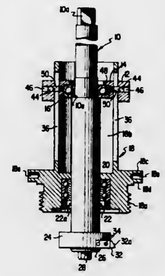
3,881,396
PORTABLE BORING BAR

Charles E. Case, Virginia Beach, Va., assignor to Ernest E. Grimsley, Portsmouth, Va.

Filed Mar. 1, 1974, Ser. No. 447,261
Int. Cl. B23c *1/20*
U.S. Cl. 90—12.5 10 Claims

1. A tool for machining the seal ring seat in a valve, said tool comprising:
a generally hollow housing having a first cylindrical portion threaded so that it may be screwed onto said valve, and a second cylindrical portion with external threads and

first and second slots extending generally axially along said second portion;
manually operable feed ring means having an interior annular recess and internal threads which match with the threads on the second portion of said housing, said feed ring means being mounted on said second portion of said housing whereby rotation of said feed ring means advances it axially along said housing;
an arbor bar extending through said housing and adapted to be rotationally driven;

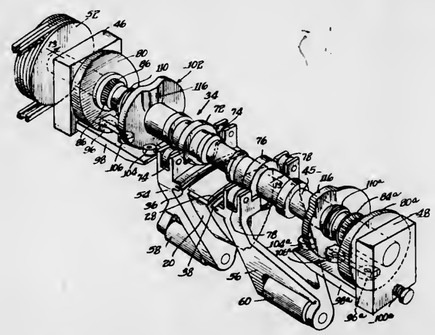


cutting tool means mounted on said arbor bar at the end nearest the first cylindrical portion of said housing;
bearing means within said housing supporting said arbor bar;
means acting on said arbor bar,
Means extending through said slots and into said annular recess and acting on the means acting on the arbor bar, for axially moving said arbor bar in response to rotational movement of said feed ring.

3,881,397
METHOD AND TOOLING FOR CUTTING SIDE SEAL GROOVES

Oliver E. Saari, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 244,030, April 14, 1972, Pat. No. 3,786,702. This application Dec. 17, 1973, Ser. No. 425,482
Int. Cl. B23d *5/02*
U.S. Cl. 90—24.3 8 Claims

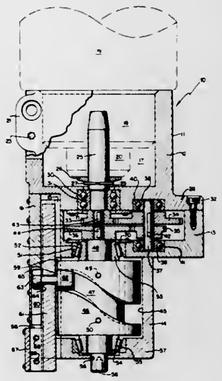


1. Apparatus for forming an elongate seal accommodating slot in the side surface of a rotor of a rotary type internal combustion engine including a longitudinally reciprocable elongate slotting blade having a series of cutting teeth provided along one marginal edge thereof, means for clampingly holding and retaining said blade so that the teeth are aligned along an arcuate path corresponding to the desired arcuate configuration of the seal accommodating slot, means for providing a limited oscillation of the clamping means and the arcuate aligned teeth about a predetermined center point and providing a cutting stroke and return stroke, cam means for providing an orbital path to the cutting teeth including means for retracting the cutting teeth from engagement with the workpiece after each predetermined limited cutting stroke along the arcuate path, means for advancing the cutting teeth to successively greater depths into the workpiece surface, means for supporting a rotor in a predetermined fixed position with a side surface thereof located in proximity to and in substantial parallelism with the cutting teeth of said blade.

3,881,398
RECIPROCATING TOOL ATTACHMENT FOR MILLING MACHINE

Vincent J. Gravagne, 15 Beverly Way, Wayne, N.J. 07420

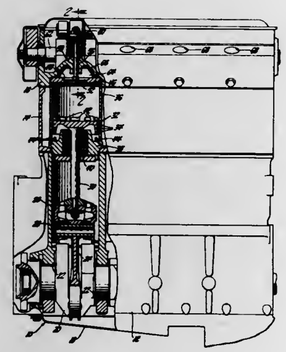
Continuation-in-part of Ser. No. 294,562, Oct. 3, 1972, abandoned. This application May 8, 1974, Ser. No. 468,334
Int. Cl. B23d *41/08*
U.S. Cl. 90—96 2 Claims



1. A tool attachment for milling machines to permit reciprocating cutting operations on metallic materials comprising:
a housing;
a cylindrical cavity in the upper portion of said housing adapted to receive the spindle column of a milling machine head, providing a rotatable drive shaft received in said spindle column for said tool attachment;
a screw-operated clamp to secure said housing to said milling machine head;
an expansion screw to expand said housing for release of said housing from said milling machine head; said clamp and said expansion screw providing means for connection and release of said tool attachment to the head of a milling machine;
a cam connected to said rotatable drive shaft having a helix curve grooved on said cam;
a reciprocating ram slidably received in said housing;
a cam follower on said reciprocating ram adapted to be slidably received in said cam groove; said cam and cam follower providing means for conversion of the rotary motion of said shaft to the reciprocal motion of said ram;
a tool bit having a shaped end for cutting a geometric shape;
a slot in said reciprocating ram adapted to receive said tool bit;
a support plate to cover said slot and hold said tool bit in position;
means for securing said support plate in position;
a shaft extending from said cam and being coaxial with said drive shaft;

a cylindrical cavity in the base of said shaft extending from said cam adapted to receive a dial indicator instrument;
a dial indicator instrument having a cylindrical shaft adapted at its upper end to be received into said cylindrical cavity, the measuring element of said indicator extending downward to a horizontal plane in alignment with the lower end of a tool bit in said ram;
means for securing said indicating instrument in said cavity; said indicator instrument being visible to the operator and capable of indicating the precise center of a work piece.

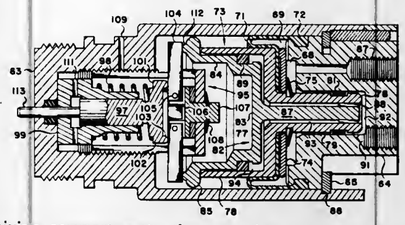
3,881,399
STEAM ENGINE WITH IMPROVE INLET VALVE ARRANGEMENT
Charles J. Sagi, Rochester, and Charles A. Amann, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 29, 1970, Ser. No. 32,815
Int. Cl. F01l *31/08*
U.S. Cl. 91—325 **4 Claims**



1. A steam engine expander of the type having a cylinder, a piston movable in said cylinder and connected with a crank mechanism for the delivery of power, a steam inlet opening in a wall of said cylinder and connecting said cylinder with a throttled supply of steam for operation of said engine over a varied speed range, a poppet inlet valve adapted to close said opening and movable between open and closed positions, and valve actuating mechanism operable to open and close said valve on a predetermined lift curve fixed with respect to the engine piston motion and the respective angular positions of the crank mechanism, said valve mechanism being arranged to require a crank angle change of at least 18% of the total crank angular movement during the valve closing period to move the valve through the final 5% of its closing motion.

3,881,400
FLUIDIC OPERATED VALVE ACTUATOR
Frank D. Lewis, Sr., Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Division of Ser. No. 6,980, Jan. 28, 1970, abandoned. This application Feb. 27, 1973, Ser. No. 336,255
Int. Cl. F01b *7/20*
U.S. Cl. 92—52 **2 Claims**

1. A low, fluidic pressure operated force amplifying actuator comprising: a hollow housing, the interior of the housing being compartmented into a fluid receiving compartment portion and an operating compartment portion vented to the ambient atmosphere; piston means including an assembly of concentrically mounted primary and secondary piston members each having a sidewall and adapted for reciprocation within the housing during ingress and egress of low, fluidic pressures into and from said fluid receiving compartment portion; an impervious flexible diaphragm positioned between and connected to the sidewall of the housing and the primary piston member forming with the piston means a first fluid receiving compartment and providing a fluid tight seal between the first fluid receiving compartment and the operating compartment; a seal means between the confronting sidewalls of the concentric primary and secondary piston members forming in conjunction with the primary and secondary piston members a second fluid receiving compartment and providing a fluid tight seal between the second fluid receiving compartment and the operating compartment, said second fluid receiving compartment distinct from and without direct communication with the first fluid receiving compartment; a first means for admitting low, fluidic pressure into said first fluid receiving compartment; a second means for admitting low, fluidic pressure into said second fluid receiving compartment, said second means separate from said first means; an operating rod means within the operating compartment and reciprocable along with said piston means during ingress and egress of low, fluidic pressures into either of the first and second fluid

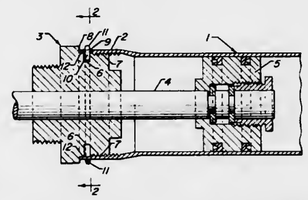


receiving compartments, the operating rod means having a portion thereof extending exteriorly of the housing and includes a spring biasing means so that the operating rod means is normally spring biased toward the piston means; and force amplifying motion transmitting means interposed between the piston means and the operating rod means whereby when low, fluidic pressures are admitted to either of the first and second fluid receiving compartments the piston means moves the motion transmitting means to cause the operating rod to move, the spring biasing means on the operating rod means maintaining the operating rod means in operational contact with the motion transmitting means being by the secondary ting means in operational contact with the piston means, said primary and secondary piston members structural relationship providing the only operational contact of the piston means with the motion transmitting means being by the secondary piston member whereby movement of the motion transmiting means resulting from admission of pressure into the first fluid receiving compartment is accomplished by concurrent movement of the primary and secondary piston members as a unit and movement of the motion transmitting means resulting from admission of pressure into the second fluid receiving compartment is accomplished by movement of the secondary piston member only.

3,881,401
FLUID POWER CYLINDER WITH SPRING LOCKING CLIP FOR THREADED END CAP AND BODY CYLINDER
Charles W. Bimba, 101 E. Main St., Crete, Ill. 60449
Filed Oct. 29, 1973, Ser. No. 410,800
Int. Cl. F16j *11/02*
U.S. Cl. 92—169 **3 Claims**

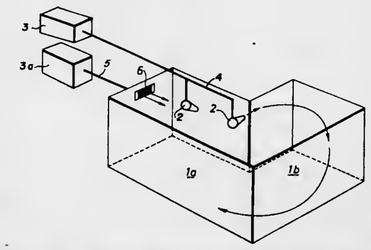
1. In a fluid power motor unit having a cylindrical body section, a removable end cap for at least one end thereof, a movable piston member in the body section, a piston rod connected to the piston member, and fluid inlet-outlet means to the interior of the body section to receive and discharge a pressurized fluid stream which gives motion to the piston

member and there is a threaded assembly between said removable end cap member and the cylindrical body section which can become loosed from each other by jarring from the motion of the piston member, the improved construction and assembly which comprises, having a continuous peripheral relatively narrow and deep groove that is around the midportion of the end cap member at a position closely adjacent the termination of external threading provided on the interior end portion of such cap member, a raised shoulder around the exterior of said cap member and positioned beyond said groove and toward the outer portion of the cap member with respect to the interior termination of the threading thereon, having internal threading on the end portion of the body section which engages said external threading on said cap



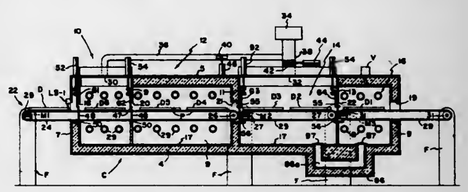
member and encompasses the interior end portion thereof to the point of contact of the end of the body section with said raised shoulder whereby the narrow groove is totally covered by the body section, further having a small hole through the wall of said body section at a location near the end thereof and in alignment with said peripheral groove in said cap member when the body section is tightly engaged over the latter, and a greater than **180°** spring wire clip member sized and shaped to snap-fit around said cylindrical body section and also have a short inwardly bent pin-like portion that is sized to fit through said hole in the wall of the latter and also sized to fit into and be only slightly smaller than said narrow peripheral groove in said cap member, whereby the latter will be held from disengagement with said body section.

3,881,402
DISTRIBUTING VENTILATING MEDIUM WITHIN SPACES
Birger Larkfeldt, Odensjo-Barnarp, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden
Filed May 4, 1973, Ser. No. 357,252
Int. Cl. F24f *13/00*
U.S. Cl. 98—40 N **9 Claims**



1. A method for ventilating spacious public rooms, workshop spaces, industrial halls, and like spaces, in which the ventilating medium within the space is conveyed and distributed to selected areas within the space; comprising the steps of supplying ventilating medium in the required amount at low velocity, directing the ventilating medium into a controlled circulating path by means of a plurality of ejectors positioned in said path; supplying each ejector with medium to emit a jet of high velocity, the amount of which high velocity medium is small with respect to the ventilating medium; and locating said ejectors within said space in said circulating path in a series so that the second ejector of the series is disposed within the action range of the first ejector in the series.

3,881,403
APPARATUS FOR MAKING BREAD AND LIKE FOOD PRODUCTS
Charles E. Ingram, Freeland; Roy H. Brunk, Saginaw, and Edward Witkoske, Plymouth, all of Mich., assignors to Baker Perkins Inc., Saginaw, Mich.
Filed Mar. 30, 1973, Ser. No. 346,642
Int. Cl. H05b *9/06*
U.S. Cl. 99—338 **3 Claims**



1. A baking system including:
a proofing chamber for proofing dough product;
a cooking chamber for cooking proofed dough product;
conveyor means for successively receiving and conveying dough product through said proofing chamber and moving proofed dough product from said proofing chamber through said cooking chamber;
means for introducing microwave energy into said proofing chamber and said cooking chamber;
microwave shield means in said proofing chamber and said cooking chamber selectively operable to prevent the escape of microwave energy from said chambers;
means for operating said conveyor means at a predetermined speed to move dough to said proofing chamber, transfer proofed dough product from said proofing chamber to said cooking chamber, and remove cooked product from said cooking chamber;
means for interrupting the operation of said microwave energy introducing means when product is transferred to and from said chambers; and
means for operating said microwave shield means in timed relation with the operation of said conveyor means and said microwave energy introducing means to render said microwave shield means inoperative and permit dough product to move to and from said chambers when said conveyor means are operating to transfer products to and from said chambers, but preventing the escape of said microwave energy when said microwave energy introducing means is operating;
said proofing chamber including:
a first proofing chamber section having an inlet and an outlet;
and a second proofing chamber section having an inlet and an outlet;
said cooking chamber having an inlet and an outlet;
said conveyor means including:
first conveyor means for successively receiving dough product at the inlet of said first proofing chamber section and conveying it through said first and second proofing chamber sections and discharging the proofed dough product at the outlet of said second proofing chamber section; and
second conveyor means for receiving the proofed dough product from said first conveyor means and moving it from the inlet of said cooking chamber section to the outlet of said cooking chamber section; and
means is provided for introducing microwave energy into said first proofing chamber section and said cooking chamber;

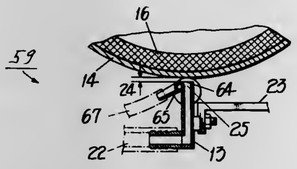
said microwave shield means being movable between removed positions and shielding positions covering the inlets and outlets of said first proofing chamber section and said cooking chamber to prevent the escape of microwave energy;

means is provided for operating said first and second conveyor means at a predetermined speed to move dough from the inlet toward the outlet of said first proofing chamber section, transfer partially proofed dough from said first proofing chamber section to said second proofing chamber section, transfer proofed dough from said second proofing chamber section to said cooking chamber, and remove the cooked product from said cooking chamber;

means is provided for moving said microwave shield means between said shielding and removed positions in timed relation with the operation of said conveyor means to permit dough product to move through said inlets and outlets when said conveyor means are operating at said predetermined speeds, but covering said inlets and outlets when said conveyors are not operating at said predetermined speeds; and

means is provided for preventing operation of said microwave means when said shield means are in said removed positions.

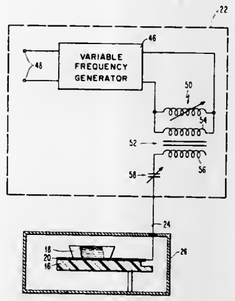
3,881,404
DOUGH PROCESSING DEVICE
Nobuyoshi Ohkawa, Amagasaki, Japan, assignor to Daieigiken, Inc., Amagasaki, Japan
Filed Mar. 12, 1974, Ser. No. 450,492
Int. Cl. A21c *3/04*; **A21b** *1/42*
U.S. Cl. 99—353 **1 Claim**



1. A dough processing device, for the preparation of rolled food consisting of a mixture of minced vegetables, meat and the like, wrapped in a sheet of dough of predetermined size, the device comprising a heated, rotatable drum having a substantially smooth outer circular surface; a flat nozzle to which dough is supplied and which deposits the dough through an outlet orifice onto said circular surface during the rotation of said drum; a tube being disposed substantially parallel and contiguous with a rim of said orifice; and cooling-water supply and circulating means for said tube, thereby to cool the dough emerging from said orifice, producing water droplets, and thus preventing the dough from sticking to said nozzle, said orifice and said circular surface of the drum.

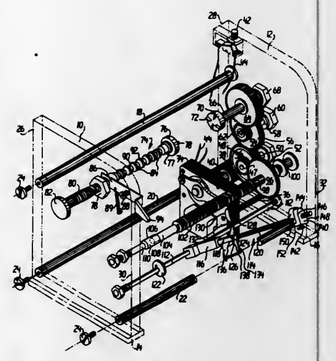
3,881,405
ENERGY SOURCE FOR GENERATING AN ELECTROMAGNETIC FLUX
Beniamino P. Morando, Edificio Manaure, Oficinia 52, Piso 5, Sabana Grande, Caracas, Venezuela
Filed Mar. 6, 1973, Ser. No. 338,588
Int. Cl. A23c *19/00*
U.S. Cl. 99—452 **15 Claims**

7. An energy source for providing an electromagnetic flux having a high voltage and a relatively high frequency to milk, comprising a metal container having milk located therein comprising, in combination, variable frequency generator means having input and output terminals for receiving an input voltage and frequency and for generating a different output voltage and frequency; load means connected to the output terminals of said variable frequency generator means; power transformer means having a primary winding connected to said load means and having a secondary winding for



generating a high output voltage; and adjustable capacitor means connected to said secondary winding of said power transformer means for adjusting the amplitude of the output signal of said energy source, a conductive lead connecting said adjustable capacitor means to said metal container.

3,881,406
APPARATUS FOR PEELING FRUIT OR VEGETABLES
Artemio R. Perez, 14540 S.W. 284th St., Leisure City, Fla. 33030
Filed Nov. 28, 1973, Ser. No. 419,655
Int. Cl. A47j *17/04*, *43/28*
U.S. Cl. 99—594 **2 Claims**



1. An apparatus for peeling fruit and the like comprising:

A. a frame and an encompassing cover;

B. means operatively mounted in said frame for rotatably and releasably holding a piece of fruit for rotation about an axis thereof;

C. a rotatably mounted shaft having a worm gear segment thereon and mounted for rotation in said frame, the gearing of said segment having spaced threads;

D. drive means attached to said frame operable for simultaneously rotating the worm gear shaft and the fruit holding means including;

i. a drive motor; and

ii. a gear train interconnecting an output shaft of said motor and said shaft and said fruit holding means;

E. a guide bar pivotally mounted in said frame;

F. a paring blade mounting rod;

G. means slidably attaching said mounting rod on said guide bar with the mounting rod extending laterally thereof;

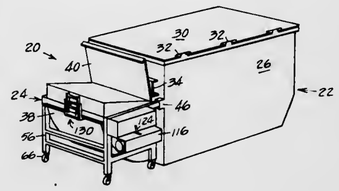
H. a curved closed nose flexible paring blade mounted on said blade mounting rod, said blade being arcuately swingable upon pivoting movement of said guide bar, and translationally movable upon sliding of said mounting rod, the curved nose portion being adjustably engageable with the fruit for depth of cutting into the peel thereof;

I. a worm gear engaging arm pivotally attached to said mounting rod, said arm having a compound curvilinearly shaped edge engaging the spaces between said worm gear segment threads and operable to translate said paring blade mounting rod and blade thereon upon rotation of said worm gear and said fruit holding means;

J. spring means adjustably resiliently retaining said shaped edge of said engaging arm in said spaces between the threads of said worm gear segment; and

K. said compound curvilinearly shaped edge being resiliently retained in driving engagement with said worm gear segment threads by the shape thereof as said paring blades moves along the axis of a fruit being peeled and swings outwardly and inwardly during resiliently engaged peeling contact of said paring blade due to curvature of the fruit.

3,881,407
WASTE REDUCTION EQUIPMENT
James D. Goar, 9 Skylark Dr., Larkspur, Calif. 94939
Filed July 16, 1973, Ser. No. 379,656
Int. Cl. B30b *13/00*
U.S. Cl. 100—35 **17 Claims**



14. A method for compacting and storing waste material, said method comprising,

a. moving a portable packing mechanism into a position in which a movable platen of the packing mechanism is movable down through a top opening and through a charging chamber of a storage box,

b. swinging the platen upwardly about a pivot on one edge to uncover the opening in the charging chamber for loading of waste materials into the charging chamber,

c. closing the opening by swinging the platen downward about said pivot,

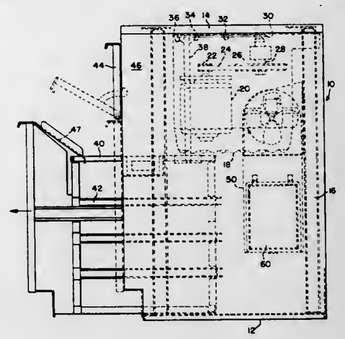
d. latching the packing mechanism to the storage box in the closed position,

e. powering the platen downward about the pivot to eject and compact the material from the charging chute into the storage box,

f. repeating steps (b) through (e) until the storage box is filled with compacted material, and

g. disconnecting the packing mechanism from the storage box.

3,881,408
COMPACTOR AND FILTER SYSTEM
Ben J. Valor, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio
Continuation of Ser. No. 273,693, July 21, 1972, abandoned. This application Feb. 20, 1974, Ser. No. 444,032
Int. Cl. B30b *15/14*
U.S. Cl. 100—53 **18 Claims**



3. A compactor comprising:

a. a compactor housing having a top, a base and sides extending between said top and base,

b. a receptacle movable between a compacting position within said housing and a noncompacting position displaced therefrom,

c. a ram mounted in said housing in opposition to said receptacle,

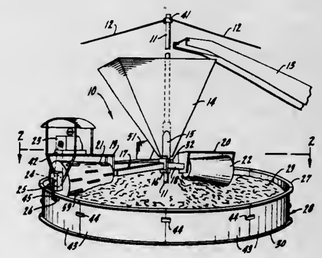
d. drive means for moving said ram in a compacting operation into and out of said receptacle in compacting an retracting strokes,

e. a filter communicating with the interior of said housing,

f. means for circulating air in said housing to cause odor laden air within said housing to contact and be deodorized by said filter, and

g. an air circulating control coordinated with actuation of said ram for energizing said air circulating means at a higher speed when said ram is moved in a compacting stroke.

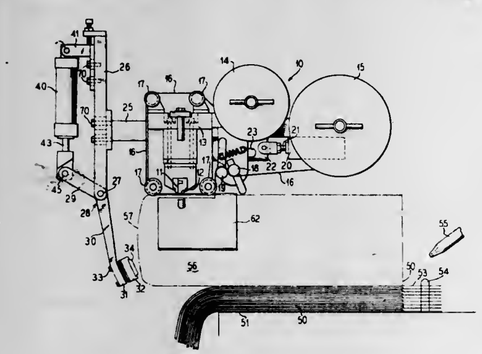
3,881,409
SILAGE COMPRESSION APPARATUS
Ugo Luciano Frigieri, Modena, Italy, assignor to Tulio C. Luisada, Hinsdale, Ill.
Filed Feb. 21, 1974, Ser. No. 444,306
Claims priority, application Italy, Mar. 29, 1973, 40026/73
Int. Cl. A01f *25/04*; **B65g** *3/04*
U.S. Cl. 100—68 **9 Claims**



1. A silage compression apparatus for compressing forage into a compact cylindrical stack, comprising:

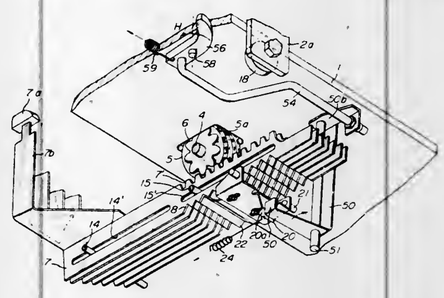
a central upright support;
a confining ring, disposed in encompassing relation to the central support, for confining compressed forage;
compression means, rotatably mounted on and vertically movable on the central support, for compressing forage deposited within the confining ring;
compression drive means for rotating the compression means about the central support;
ring elevation means for raising the confining ring to accommodate added increments of compressed forage within the ring;
and forage distribution means for distributing forage across a stack area encompassed by the ring, the forage distribution means comprising;
at least one distribution auger having an input end rotatably mounted on the central support and extending substantially radially outwardly thereof;
auger travel connection means interconnecting the distribution auger and the compression means to rotate the auger about the central support synchronously with rotation of the compression means, the auger travel connection means allowing limited vertical movement of the free end of the auger relative to the compression means;
and funnel means, mounted on the central support, for feeding forage to the input end of the auger, the auger conveying the forage outwardly from the center toward the periphery of the ring and continuously levelling the stack formed within the ring.

3,881,410
INFLATED BAG PRINTER HAVING THE ANVIL MOUNTED ON A BELL CRANK
James L. Shenoha, Lockport, Ill., assignor to Norwood Marking & Equipment Company, Downers Grove, Ill.
Continuation-in-part of Ser. No. 358,962, May 10, 1973, Pat. No. 3,823,664. This application Oct. 26, 1973, Ser. No. 410,096. The portion of the term of this patent subsequent to July 16, 1991, has been disclaimed.
Int. Cl. B41f *17/00*
U.S. Cl. 101—41 **4 Claims**



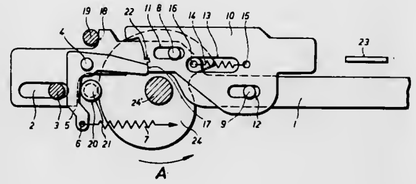
1. In an apparatus for imprinting bags comprising an imprint marker device having a marking head, an anvil, said anvil attached to the end of a moving member, means for moving the member to move the anvil towards and away from the marking head, means for positioning a bottom wall of a bag inflated by an air jet from a stack of deflated bags between the anvil and the marking head, the means for moving, moving the anvil against the bottom wall to collapse a portion of the inflated bag to press a first surface portion thereof against the marking head, the first surface being adjacent, non-opposed to the bottom wall, and means for withdrawing the anvil from contact with the bag, the improvement of the anvil being attached to one end of a bell crank, the means for moving being a prime mover being attached to an opposite end of the bell crank, the bell crank pivotally attached to a frame member, movement of the prime mover causing the anvil to move toward and away from the marking head.

3,881,411
TYPE WHEEL ARRESTING AND BLOCKING DEVICE
Yasuo Araki; Fumiyuki Mishima, and Kenzi Tsukahara, all of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed Aug. 3, 1973, Ser. No. 385,602
Claims priority, application Japan, Feb. 16, 1973, 48-19644
Int. Cl. B41f *1/08*
U.S. Cl. 101—45 **10 Claims**



1. Type wheel arresting and blocking device comprising supporting means; a set of type wheel means, each type wheel means including a type wheel having a series of types and a gear fixedly secured to said type wheel, each type wheel means being mounted on said supporting means for angular movement to bring a selected type to a printing position; setting means including a set of rack bars having a series of rack teeth meshing with said gears, said rack bars being movable in longitudinal direction for selectively turning and setting said type wheels so that an aligned row of types represents information and is placed in said printing position, said rack bars having a series of projections, each of said projections having a pair of side faces inclined with respect to each other so as to define between subsequent projections V-shaped arresting recesses; carriage means mounted on said supporting means for movement in a printing stroke out of an initial position, said carriage means including a platen roller moving over said aligned row of set type wheels during said printing stroke; a single yieldable arresting means mounted on said supporting means for movement between an arresting position and an inoperative position, said arresting means including a single arresting member extending across said rack bars and a single arresting spring permanently biasing said arresting member into selected recesses of all rack bars to engage in said arresting position the sides faces of the projections defining said selected recesses to maintain the types set by said setting means in printing position, said arresting means resiliently yielding to said inoperative position by moving at least one of said rack bars in longitudinal direction during setting the respective type wheel means and thereby pushing said arresting member out of the recess by the inclined side face of the respective projection; blocking means having a blocking position engaging and blocking said arresting member in said arresting position so that said type wheels are blocked in an exact position, and an inoperative position spaced from said arresting means; biasing means for urging said blocking means to said blocking position; and linkage means connecting said carriage means with said blocking means for holding, in said initial position of said carriage means, said blocking means in said inoperative position against the action of said biasing means so that the type wheel means can be set with said arresting means resiliently yielding, and for releasing said blocking means during the printing stroke of said carriage means so that the blocking means is moved by said biasing means to said blocking position when said carriage means is moved in said printing stroke by said prime mover.

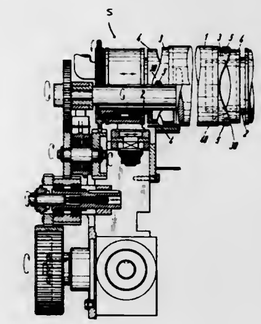
3,881,412
PRINTER FOR DATA PROCESSING MACHINES
Paul Thevis, Oberndorf (Neckar), Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany
Filed Nov. 13, 1973, Ser. No. 415,448
Claims priority, application Germany, Nov. 18, 1972, 2256666
Int. Cl. B41j *9/26*
U.S. Cl. 101—93.48 **10 Claims**



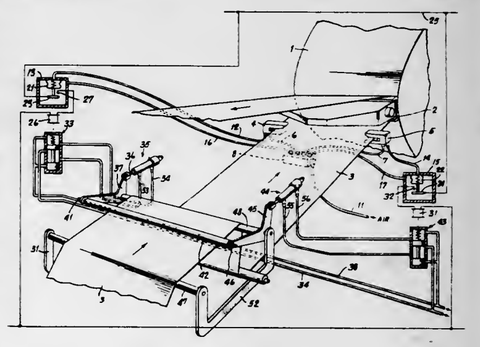
1. In a printer for use with a data processing machine, the printer being composed of: a plurality of type carriers each settable to print a respective type character; a printing arm arranged for movement in a direction to cause each type carrier to effect a printing operation; and power storage means operatively associated with said printing arm to provide operating power to drive said printing arm in a manner to produce a printing operation, the improvement comprising coupling means operatively disposed between said printing arm and said power storage means and including: lever means mounted for pivotal movement about a pivot bearing on said printing arm and having one end connected to said power storage means; actuating means movably mounted on said printing arm and arranged for limiting the pivotal movement of said lever means until completion of a printing operation and for releasing said lever means upon completion of such operation; and an abutment member arranged for further limiting the movement of said lever means during such printing operation, said abutment member lying in an area between the pivot bearing and the connection of said lever means to said power storage means.

3,881,413
PIVOTING ROTARY SCREEN END RING MOUNT
Mathias Mitter, Senne, Germany, assignor to Mitter & Co., Schloss Holte, Germany
Filed Nov. 8, 1973, Ser. No. 413,991
Claims priority, application Germany, Nov. 9, 1972, 2254819
Int. Cl. B41f *15/38*; B41n *1/24*
U.S. Cl. 101—127.1 **7 Claims**

1. In a screen printing machine, a combination comprising a tubular printing screen having spaced axial ends; a support adjacent each of said ends; a pair of mounting rings each fixed to one of said axial ends; a pair of journal ring units each fixedly mounted on one of said supports; and two pivot joints each connecting one of said mounting rings with a respectively associated journal ring unit, said pivot joints together forming a multi-directional pivot mount which allows said tubular printing screen to yield in response to fluctuations in the spacing which exists between said tubular printing screen and material which is being printed upon.



3,881,414
APPARATUS FOR CONTROLLING THE LATERAL POSITION OF AN ELONGATED WEB
Salvatore F. D'Amato, Floral Park, and Chauncey P. Foote, Jr., Katonah, both of N.Y., assignors to American Bank Note Company, New York, N.Y.
Filed Aug. 20, 1973, Ser. No. 390,001
Int. Cl. B41f *9/14*
U.S. Cl. 101—156 **4 Claims**



1. A printing press, comprising:
a. wiping means for removing ink from the surface of an inked intaglio plate, comprising:
1. an elongated web movable longitudinally;
2. a pad for holding a portion of the web against the surface of the rotating cylinder;
3. means for guiding the web between said pad and the cylinder; and
4. means for controlling the lateral position of the web, comprising:
i. two edge sensing means;
ii. means supporting said two edge sensing means at the opposite edges of said web;
iii. two motors, each controlled by one of said edge sensing means;
iv. two fixed guide means extending across and engaging the web and spaced longitudinally of the web, said two guide means defining a straight run for the web;

v. third guide means extending across and spaced from but movable into engagement with the web between the two fixed guide means; and

vi. means controlled by each said motor for moving one end of the third guide means into engagement with the web so that each motor is effective upon operation thereof to change the length of the path traversed by one edge of the web as compared to the length of the path traversed by the other edge.

3,881,415

PROCESS FOR PRINTING WITH NON-FERROUS METAL LITHOGRAPHIC PRINTING PLATES

James E. Harper, 6804 Border Pl., Oxon Hill, Md. 20022

Continuation-in-part of Ser. No. 250,297, May 4, 1972, abandoned, which is a division of Ser. No. 819,110, April 4, 1969, Pat. No. 3,696,746. This application Aug. 20, 1973, Ser. No. 389,563

Int. Cl. B41m *4/100*

U.S. Cl. 101—451 **2 Claims**

1. A process for treatment of a non-ferrous lithographic printing plate in a planographic printing process comprising applying to said printing plate a fountain solution containing an alkali metal phosphate glass in the proportion of from 50–300 grams of a said alkali metal phosphate glass to 1,000 cc of water, said solution containing an acid of phosporous to provide a pH of from 5 to 7; said solution being diluted in the ratio of 1 part solution to 30 to 60 parts of water when introduced into the press fountain.

3,881,416

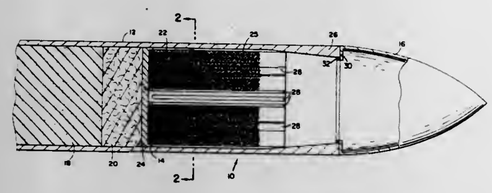
CHOKED FLECHETTE WEAPON SYSTEM

Thomas E. Dilworth, Jr., Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 23, 1973, Ser. No. 353,930

Int. Cl. F42b *13/48, 7/00*

U.S. Cl. 102—63 **1 Claim**



1. A flechette weapon system for ejecting at high velocity a plurality of flechettes from a warhead of a missile comprising: a launch tube in said missile, one end of said launch tube having a smaller inner diameter than the remainder of the tube; an ogive tip for closing said launch tube, said ogive tip having an inwardly extending flange and a depending collar thereon for mating with said launch tube; a container for stacking said flechettes in said launch tube; said container being provided with a plurality of slots around its periphery to allow inner compression of the container as it passes through said smaller inner tube diameter; an ejection piston disposed in said launch tube engaging said container and said flechettes and pressurizing means in said launch tube to provide pressure for actuating said ejection piston and ejecting said flechettes.

3,881,417

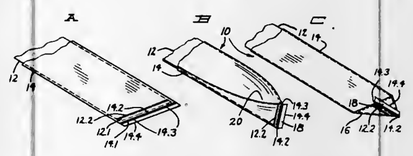
BLAST HOLE LINER WITH INTEGRAL WEIGHT POCKET

Charles R. Mesia, Mt. Iron, Minn., assignor to Mesabi Jobbers, Inc., Virginia, Minn.

Filed Nov. 9, 1973, Ser. No. 414,145

Int. Cl. F42d *3/00*

U.S. Cl. 102—22 **18 Claims**



1. A reinforced, waterproof, flat-storable blast hole liner with integral weight pocket comprising:

a flattened, flexible, waterproof, tubular inner tube terminating at its lower end in a waterproof seal and having a length-to-diameter ratio of at least 20/1;

a flattened, flexible, waterproof, tubular outer sheath substantially coextensive with and sheathing the inner tube, and having a separate heat-sealed waterproof seam at its lower end, the seam having a midpoint and laterally extending ends folded about the midpoint and joined together to form an exteriorly accessible pocket into which weighting material may be placed, the inner tube extending into close proximity with the seam of the sheath and conforming to the configuration of the pocket.

3,881,418

CARTRIDGE FOR SHOTGUN

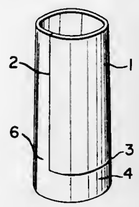
Hiroshi Sato; Bunji Yoshida, and Kenji Sumikawa, all of Aichi, Japan, assignors to Nihon Yushi Co., Ltd., Aichi Prefecture, Japan

Filed Nov. 23, 1973, Ser. No. 418,243

Claims priority, application Japan, Nov. 24, 1972, 47-17162

Int. Cl. F42c *7/08*

U.S. Cl. 102—42 C **10 Claims**



1. A cartridge for a shotgun shell, comprising a one-piece cylindrical shot container having an annular sidewall which is open at one end and defines therein a shot compartment which is of converging tapered configuration as it extends inwardly from said one end, said shot container also having a base fixedly connected to the other end of said sidewall for closing said compartment, said sidewall being tapered in the longitudinal direction thereof so that the thickness thereof increases as it extends longitudinally from the one end to the other end thereof, said sidewall having a first slit formed therein and extending longitudinally thereof, said first slit extending from the one end of said sidewall to a location disposed adjacent to other end thereof, the sidewall also having a second slit formed therein and extending circumferentially thereof, said second slit communicating with said first slit at said location and being positioned at the other end of said sidewall whereby said second slit is disposed directly adjacent the inside surface of said base, said second slit extending peripherally of said sidewall throughout substantially the complete periphery thereof except for a small connecting portion which fixedly connects said sidewall to said base, and the shot compartment as defined within said container being filled with iron shot.

3,881,419

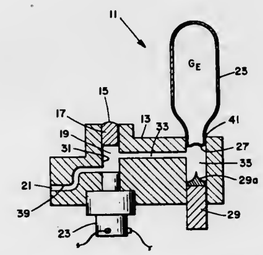
PYROTECHNIC INITIATOR

Gayle A. Bea, Mountain View, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 2, 1973, Ser. No. 412,509

Int. Cl. F42c *15/28*

U.S. Cl. 102—70 R **7 Claims**



1. A pyrotechnic initiator comprising in combination:

a. at least one means for storing and containing an explosive gas;

b. at least one means for controlling the flow of the explosive gas;

c. a secondary explosive in contact with the flow of the explosive gas; and

d. a means for igniting said explosive gas and said secondary explosive.

3,881,420

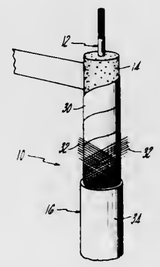
SMOKE CORD

John Mitchell Smith, Simsbury, and Hector Joseph Zilcosky, Litchfield, both of Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.

Continuation-in-part of Ser. No. 183,164, Sept. 23, 1971, abandoned. This application July 13, 1973, Ser. No. 379,175

Int. Cl. C06d *3/00*

U.S. Cl. 102—90 **8 Claims**



1. In a pyrotechnic fume generating cord having substantial flexibility and a length to diameter ratio of at least about 50:1, said cord being adapted to be coiled and spliced and comprising an elongated igniter stem extending along the length of the cord, a fume generating pyrotechnic charge in abutting relationship with said stem along its length and capable of being ignited by said igniter stem and a covering circumscribably confining both said charge and said stem along the length thereof, the combination wherein said pyrotechnic charge is a flameless smoke generating charge, said igniter stem is an incendiary composition encased within said charge and adapted to progressively burn with a short flame zone for initiating confined combustion of said flameless smoke generating charge without rupturing said covering and said covering includes a yarn wrapping and an outer plastic sheath exhibiting sufficient structural integrity to provide limited confined flameless combustion of said charge and to promote complete combustion of said charge and improved smoke generation, said cord having a combustion time of up to about 20 feet per second.

3,881,421

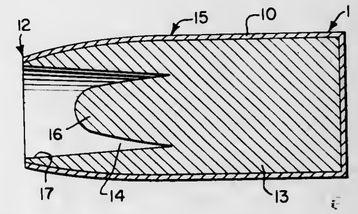
BULLET

Thomas J. Burczynski, 111 Roosevelt Ave., Horseheads, N.Y. 14845

Filed Feb. 14, 1974, Ser. No. 442,421

Int. Cl. F42b *11/00*

U.S. Cl. 102—92.2 **4 Claims**



1. A bullet comprising a body of relatively soft material terminating at its forward end in a blunt nose of ogival form, the forward end of the body having a cavity formed therein and extending coaxially into the body to a substantial depth, and a center-piece of substantial mass coaxially extended forwardly from the base of the cavity toward but not substantially beyond the blunt nose of the body of the bullet, the outer wall of the center-piece and the opposing wall of the cavity defining therebetween a deep annular channel or trench terminating at its bottom near the transverse plane of the shoulder of the ogive of the bullet.

3,881,422

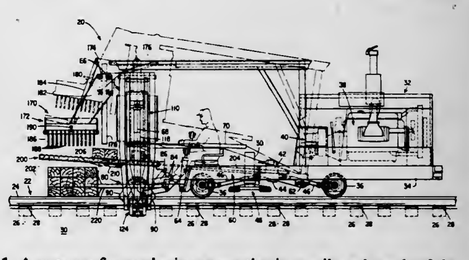
TIE REPLACING SYSTEM

John F. Bryan, Jr., 3212 Mapleleaf Cir., Dallas, Tex. 75233

Filed Dec. 27, 1972, Ser. No. 319,004

Int. Cl. E01b *29/06*

U.S. Cl. 104—9 **67 Claims**



1. A process for replacing worn ties in a railroad track of the type comprising longitudinally extending metal rails supported on transversely extending wooden ties by metal tie plates and a ballast roadbed supporting and at least partially enclosing the ties including the steps of:

removing the portions of a worn tie which project above the tie plates;

advancing a tie pushing-tie pulling member along a path extending substantially axially of the worn tie and thereby

pushing the worn tie out from beneath the tie plates and the rails and out of the roadbed of the railroad track;

securing a replacement tie to the tie pushing-tie pulling mechanism;

retracting the tie pushing-tie pulling mechanism along substantially the same path and thereby pulling the replacement tie into position in the roadbed and beneath the tie plates and the rails of the railroad track.

3,881,423

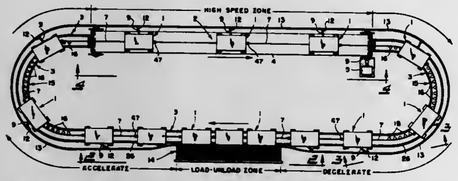
VARIABLE SPEED VEHICLE

Harry E. Woods; Gerald L. Woodling, both of Akron, and Newton D. Brown, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 307,579, Nov. 17, 1972, abandoned. This application Apr. 29, 1974, Ser. No. 464,845

Int. Cl. A63g *1/00*

U.S. Cl. 104—25 **7 Claims**



1. A variable speed vehicle for an endless train driven along a continuous track, a flexible elongated member between said variable speed vehicle and an adjacent vehicle of said train, and a rotatable reel mounted on said variable speed vehicle and responsive to actuation from said track for winding and unwinding of said elongated member to change the length of said elongated member between said variable speed vehicle and said adjacent vehicle, said reel reducing the length of said connecting means between said variable speed vehicle and said adjacent vehicle by pulling said variable speed vehicle and said adjacent vehicle closer together and said reel increasing the length of said connecting means by permitting said variable speed vehicle and said adjacent vehicle to be pulled further apart whereby acceleration, deceleration and different speeds of said variable speed vehicle can be obtained at predetermined portions of the track.

3,881,424

STORAGE AND RETRIEVAL ARRANGEMENT

Harry W. Thompson, Chicago, Ill., assignor to Interlake, Inc., Chicago, Ill.

Division of Ser. No. 230,788, March 1, 1972, which is a continuation of Ser. No. 98,193, Dec. 14, 1970, which is a continuation of Ser. No. 737,199, June 4, 1968. This application Nov. 16, 1973, Ser. No. 416,385

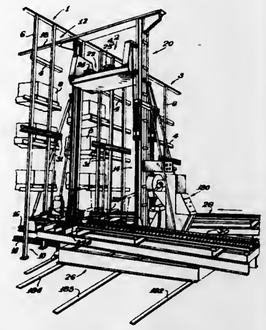
Int. Cl. B60s *13/02*

U.S. Cl. 104—48 **8 Claims**

6. A transport vehicle for transporting a second movable vehicle along a predetermined longitudinal path of travel substantially perpendicular to the normal longitudinal path of travel of said second movable vehicle,

a plurality of first support means supporting said transport vehicle at a plurality of locations spaced a predetermined distance from each other in the direction of movement of said second movable vehicle along said normal path of travel, said first support means supporting said transport vehicle for movement along said predetermined path of travel,

a plurality of second support means supporting said second movable vehicle at a plurality of locations also spaced from each other in the direction of movement of said second movable vehicle along said normal path of travel, by a distance substantially equal to said first mentioned distance and supporting said second movable vehicle for movement both relative to and independently of said transport vehicle, said second spaced support means being simultaneously substantially vertically alignable with respective ones of said first support means both in the direction of movement of said transport vehicle and second movable vehicle in said predetermined and normal paths of travel respectively, when said second movable vehicle is positioned on said transport vehicle for transport, whereby the weight of the second movable vehicle is distributed substantially entirely to said vertically aligned first support means and deflection of said transfer vehicle is minimized.



3,881,425

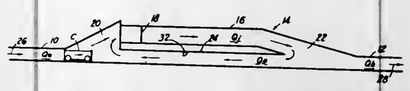
PUMP FOR USE IN A CAPSULE TRANSPORT PIPELINE

Marion R. Carstens, Atlanta, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Filed May 30, 1973, Ser. No. 365,051

Int. Cl. B61d *13/10*

U.S. Cl. 104—138 R **24 Claims**



1. In a mass transportation system including a series of cars, conduit means for guiding said cars along a selected path and means for flowing air at a selected rate through said conduit means, the improvement wherein said means for flowing air includes pump means having an inlet for withdrawing air at one point from said conduit means and having an outlet for injecting air at another point into said conduit means, said points being spaced apart along the direction of air flow to define a car by-pass section, and means for causing said pump means to withdraw and inject air at a rate at least normally at a rate greater than said selected rate whereby to create a tendency for reverse air flow through said car by-pass section; and

holding means in opposition to said tendency for reverse air flow for causing at least one car of said series at a time to reside temporarily within said car by-pass section.

3,881,426

DOFFER MECHANISM CARRIAGE

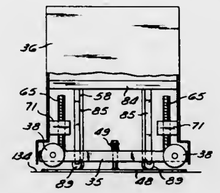
Kenneth H. Long, Charlotte, N.C., assignor to Whitin Machine Works, Inc., Charlotte, N.C.

Filed Nov. 23, 1973, Ser. No. 418,753

Int. Cl. B61c *13/00*

U.S. Cl. 105—28 **6 Claims**

1. A transporter unit for a textile spindle doffing machine comprising a carriage frame having wheels adapted to roll along a surface, a main frame carried on said carriage frame and vertically movable with respect thereto, a turntable carried by said carriage frame and vertically movable with respect thereto, and means selectively operable in one mode to elevate said main frame and turntable with respect to said carriage frame and allow said transporter unit to roll on said wheels and operable in another mode to lower said main frame and said turntable with respect to said carriage frame and allow said main frame and said carriage frame to rotate about said turntable.



3,881,427

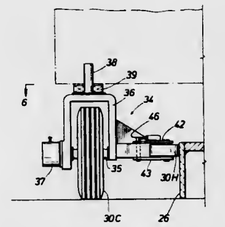
MONORAIL CAR AND WHEEL ASSEMBLY

Lowell R. Blume, 1902 Mallard, Houston, Tex. 77043

Filed Dec. 3, 1973, Ser. No. 421,287

Int. Cl. B61b *13/04*

U.S. Cl. 105—141 **5 Claims**



1. A monorail car assembly for operation on a road surface extending from either side of a central monorail having parallel vertical guiding surfaces wherein said central monorail has a short radius of curvature in curved sections, said car assembly comprising

elongated car body means having a longitudinal center line, at least one pair of supporting wheels where each of the supporting wheels are located at opposite sides of said center line at one end of said car body means,

means individually journaling each of said supporting wheels for rotation about a horizontal axis,

means on each of said journaling means for individually providing a pivot connection along a first vertical axis of rotation, said first vertical axis intersecting a respective horizontal axis of a supporting wheel, said pivot connection for each supporting wheel being free to pivot independently of the pivot function of said other supporting wheels,

a pair of guide wheels for each of said supporting wheels,

guide frame means on each of said individual journaling means for journaling each of said pairs of guide wheels for rotation about a vertical axis, each pair of said guide wheels being located relative to a supporting wheel in a plane to one side of a first vertical axis and disposed fore and aft of such vertical axis, each said pair of guide wheels being engageable with a vertical guiding surface of a monorail thereby to permit tracking of each such supporting wheel independently of one another relative to said central monorail.

3,881,428

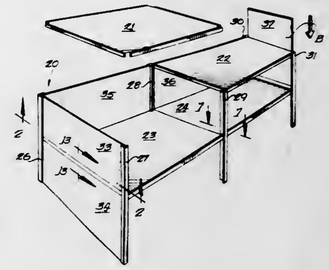
SHELVING UNIT

John J. Klecki, Antioch, Ill., assignor to Quaker Industries, Inc., Antioch, Ill.

Filed Nov. 5, 1973, Ser. No. 412,688

Int. Cl. A47b *17/02*

U.S. Cl. 108—27 **7 Claims**



1. A shelving structure comprising at least one elongated leg member having an outer perimeter section and an inner perimeter section inset with respect to the outer perimeter section to form at least one leg flange, a margined shelf member having skirt portions extending along the shelf margin and a cutaway corner portion adapted to mate with only a portion of said leg inner perimeter section for orienting the shelf margin adjacent to, but spaced apart from, the leg flange by a predetermined distance, said predetermined distance between the leg flange and the shelf skirt substantially equalling the thickness of a panel member thereby permitting the insertion of the panel member between the leg flange and the shelf margin and retention of the panel member between the leg flange and the shelf margin, and shelf-leg connecting means for mounting the shelf to the leg at a predetermined location.

3,881,429

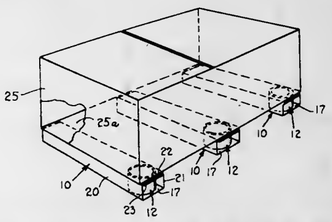
PALLET RUNNER

Ralph J. Seymore, 301 Washington Ave., Greenville, S.C.

Filed Aug. 24, 1972, Ser. No. 283,376

Int. Cl. B65d *19/20*

U.S. Cl. 108—51 **2 Claims**



1. A pallet runner for use in a disposable pallet assembly for shipping articles stacked thereon having a single rectangular section of carboard having fluting consisting essentially of:

A. a single row of aligned cylindrical fiber cores spaced across and centrally disposed on said rectangular section of cardboard with a base portion of each of said cores glued to said rectangular section of cardboard;

B. said cores being aligned in a direction across said fluting of said carboard;

C. a first pair of centrally disposed parallel scores spaced a distance substantially equal to the diameter of said cores aligned with said cores forming a base for said runner;

D. a second pair of scores parallel to said first scores and spaced outwardly therefrom a distance substantially

equal to the height of said cores forming sides for said runner;

E. marginal flaps having a width substantially equal to the diameter of said cores; and

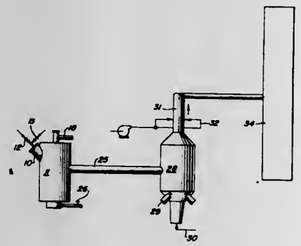
F. an upper portion portion of each of said cores to which said flaps are folded down and glued forming a beam like runner having a flat double thickness of carbdoard for gluing to a bottom portion of an article carrying member; whereby a plurality of such pallet runners may be glued in spaced relation to each other to said bottom portion forming a disposable pallet assembly.

3,881,430

TWO-STAGE INCINERATOR

Howard M. Katz, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 3, 1973, Ser. No. 420,888
Int. Cl. F23g 5/12
U.S. Cl. 110—8 F **2 Claims**



1. A two-stage contiguous incinerator comprising:

a. a first stage comprising a vaporization zone, at least one first burner, at least one forced air supply, inlet for waste materials, outlet for gaseous products,

b. a bed of catalyst within said vaporization zone,

c. a second stage comprising a combustion zone, at least one second burner, at least one second forced air supply, entrance for receiving gaseous products from said first stage, outlet for combusted gaseous products from said second stage,

d. connecting conduit for conducting vaporous products from said first stage to said second stage by confined means.

3,881,431

INCINERATOR

Sabatino DiSabatino, 29 Waldo Ave., Bloomfield, N.J. 07003

Filed June 19, 1974, Ser. No. 480,904
Int. Cl. F23g 5/12
U.S. Cl. 110—8 C **8 Claims**

1. An improved incinerator for complete combustion of waste materials comprising:

a base housing;

an elongated casing member mounted on said housing and defining a primary combustion chamber;

steel grates mounted along the base of said primary combustion chamber;

perforated fire brick mounted on said steel grates, said grates and brick forming a fixed grate on which said waste materials are burned and through which resultant ash can fall;

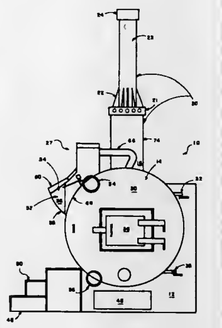
means to collect and remove said ash;

means to load waste materials into said primary combustion chamber;

a stack assembly unit mounted on said primary combustion chamber;

an afterburner unit mounted at the base of said stack assembly unit;

an aspirator ring mounted in said stack assembly unit above said afterburner;



a spark arrester mounted on top of said stack assembly;

a fan and ducts connected thereto to supply air to the primary combustion chamber and the afterburner;

an air control system to maintain a negative air pressure in said primary combustion chamber to insure a slow smoldering smokey non-turbulent fire therein;

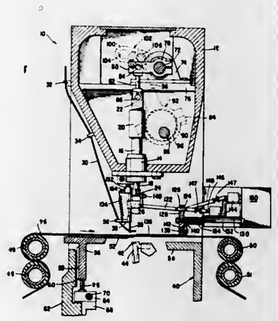
means to supply power and fuel to said incinerator.

3,881,432

CONTROLLED NEEDLE TUFTING MACHINE

Connie W. Dodd, Chattanooga, and William D. Stone, East Ridge, both of Tenn., assignors to The Singer Company, New York, N.Y.

Filed June 13, 1974, Ser. No. 479,021
Int. Cl. D05c 15/32
U.S. Cl. 112—79 R **4 Claims**



1. In a controlled needle tufting machine, means for supporting a workpiece, a needle bar, means for reciprocating said needle bar, a yarn carrying needle, means for selectively coupling said needle to said needle bar for reciprocating said needle through said workpiece, stop means spaced above said needle, means urging said needle against said stop means when not coupled to said needle bar, means spaced below said workpiece supporting means for cooperating with said needle to form pile extending from the lower face of said workpiece, means for vertically adjusting said workpiece supporting means to vary the pile height, means for vertically adjusting the stroke of the reciprocating needle bar without changing the bottom point in the stroke, and means for adjusting the vertical position of the stop means corresponding to the

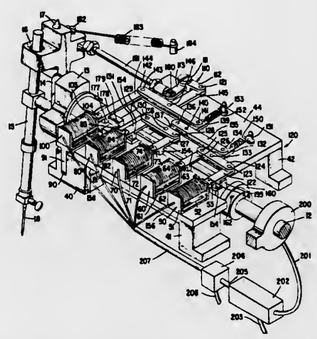
change in stroke of the needle bar so that the needle may be coupled to the needle bar at each adjusted stroke.

3,881,433

ELECTRO-MECHANICAL ACTUATOR

Donald R. Davidson, S. Orange, N.J., assignor to The Singer Co., New York, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,982
Int. Cl. D05b 3/02
U.S. Cl. 112—158 E **5 Claims**



1. In a sewing machine having a frame, stitch-forming instrumentalities in said frame, and actuating mechanism for imparting stitch-forming movement of said stitch-forming instrumentalities, control linkage in said sewing machine frame operatively associated with said stitch-forming instrumentalities for selectively influencing the production of a variety of patterns of stitches, an electromagnetic locking device comprising a field coil element and an armature element, said elements being free to shift relatively to each other in one predetermined direction when said field coil element is not electrically actuated, and said elements being urged magnetically toward an interlocked relative position when said field coil element is electrically actuated, means for interconnecting said control linkage to one of said electromagnetic locking device elements, means for supporting the other of said electromagnetic locking device elements relatively to said sewing machine frame, mechanism driven in timed relation with said sewing machine actuating mechanism for vibrating one of said electromagnetic device elements in said predetermined direction into and out of said interlocked relative position, and means for selectively energizing said field coil element electrically during each vibration of said electromagnetic device elements into said interlocked relative position.

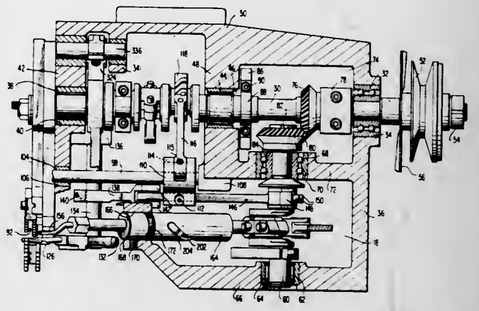
3,881,434

OVEREDGE SEWING MACHINE CONSTRUCTION

Edward A. Kelly, Wethersfield, Conn., assignor to The Merrow Machine Company, Hartford, Conn.

Filed Apr. 26, 1973, Ser. No. 354,714
Int. Cl. D05b 1/20, 57/34
U.S. Cl. 112—162 **24 Claims**

1. In an overedge sewing machine including a housing, a horizontal work support on said housing, feed means for feeding a workpiece in intermittent increments over said work support past a stitching station, cooperating stitch forming elements including a needle, a lower looper and an upper looper, separate mounting means supporting said needle, said lower looper, and said upper looper for independent movement, and a drive means for operating said feed means and said cooperating stitch forming elements in synchronization to form an overedge seam along the edge of a workpiece as it is fed past said stitching station, the improvement wherein said drive means comprises, in combination, a horizontal main drive shaft extending through said housing and mounted therein for rotation about an axis extending substantially perpendicular to the direction of feed of the workpiece over said work support, an auxiliary drive shaft mounted within said housing for rotation about a horizontal axis extending at right angles to said main drive shaft, gear means connecting said main drive shaft and said auxiliary drive shaft for simultaneous rotation about their respective axes, first, second, and



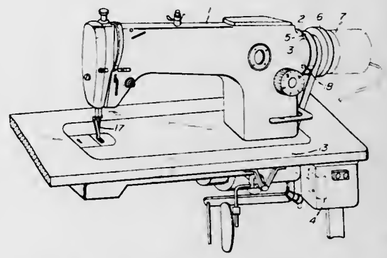
third articulated bar linkage mechanisms each mounted in a fixed plane within said housing and operable within their respective planes to drive said cooperating stitch forming elements, said first, said second and said third bar linkage mechanisms each operably connecting one of said cooperating stitch forming elements to one of said shafts to be driven thereby.

3,881,435

ARRANGEMENT FOR DETECTING THE POSITION OF THE SEWING NEEDLE IN A SEWING MACHINE

Hachiro Makabe, Tokyo, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed May 4, 1973, Ser. No. 357,322
Claims priority, application Japan, May 9, 1972, 47-53900
Int. Cl. D05b 69/22
U.S. Cl. 112—219 A **9 Claims**



1. In a sewing machine of the type comprised of a sewing needle, a main rotating shaft, means interconnecting said needle and said shaft for converting rotational movement of said shaft into longitudinal reciprocating movement of said needle, a hollow drive pulley fixedly mounted on one end of said main shaft, and a drive arrangement for driving said main shaft including a drive belt trained around said hollow drive pulley, an arrangement comprising magnet means mounted inside said hollow drive pulley for rotation therewith; flux-responsive means; and mounting means mounting said flux-responsive means on a stationary part of the sewing machine with such an orientation relative to the path of motion of said magnet means that when said drive pulley assumes a predetermined angular orientation corresponding to a predetermined position of said needle a flux-responsive voltage is induced in said flux-responsive means, wherein said flux-responsive means comprises Hall generator means including a Hall generator semiconductor element having a pair of control elec-

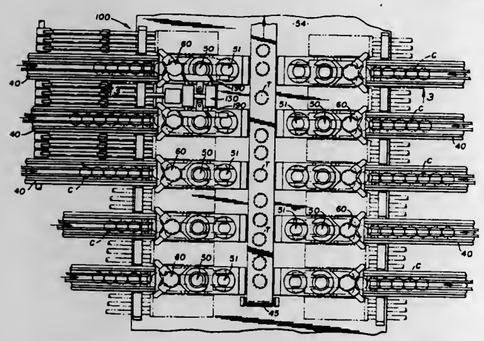
trodes and a pair of Hall-voltage electrodes; and further including current source means connected across said control electrodes for establishing flow of a control current through said Hall generator semiconductor element; and a detecting circuit comprising a pair of transistors and means so connecting the electrodes of said transistors to the electrodes of said Hall generator semiconductor element that when magnetic flux of one polarity passes through said semiconductor element one of said transistors becomes conductive whereas when magnetic flux of opposite polarity passes through said semiconductor element the other of said transistors becomes conductive.

3,881,436

WORKPIECE TRANSFER MECHANISM

Thomas B. Paumier; Joseph D. Bulso, Jr., and William R. Lewers, all of Canton, Ohio, assignors to Paumier, Inc., Canton, Ohio

Division of Ser. No. 126,860, March 22, 1971, Pat. No. 3,768,667. This application July 17, 1973, Ser. No. 380,071
Int. Cl. B21d *43/10*
U.S. Cl. 113—115 **13 Claims**



1. In a redraw press receiving at least one row of continuously fed cups to be redrawn and trimmed into a finished can, a first station for drawing the cups into cans upon the downward movement of the press, a second station for trimming the cans upon the same downward movement of the press, escapement means for each row of cups placing one of the continuously fed cups into position to be transferred to said first station, and transfer means for simultaneously transferring a cup from said escapement means to said first station and a can from said first station to said second station, said transfer means including a rotatably powered drive shaft, shuttle means, finger mechanisms carried by said shuttle means, first rocker means activated by said drive shaft for reciprocating said shuttle means into and out of said press, and second rocker means rocking with said first rocker means as well as rocking independently of said first rocker means for moving said finger mechanism transversely of said shuttle means to selectively grip and release the cups and cans.

3,881,437

METHOD OF MAKING POP-IN CONTAINER CLOSURE

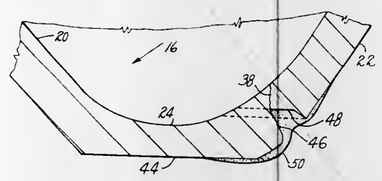
Walter C. Lovell, 348 Mountain Rd., and Frederick G. J. Grise, 12 Maiden Ln., both of Wilbraham, Mass. 01095

Continuation-in-part of Ser. No. 331,844, Feb. 12, 1973, abandoned. This application Mar. 25, 1974, Ser. No. 454,384
Int. Cl. B21d *51/00*
U.S. Cl. 113—121 C **10 Claims**

1. The method of making a manually disruptable pop-in type of button closure for a planar metal container lid comprising:

a. depressing the lid in a generally closed, continuous path to provide an integral button portion having inner and outer bounding walls respectively including opposed parallel surfaces inclined to the plane of the lid,

b. shear-coining one of the bounding walls to form a lengthwise indentation in one of said inclined surfaces thereof and concommitantly produce a fractured but integral section extending between the other of said surfaces and the bottom of the indentation for a portion of its length, and then



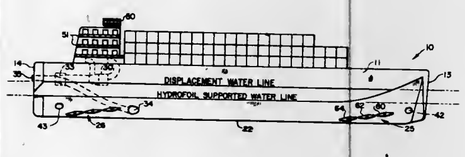
c. swedging the indented bounding wall to dilate a face of the indentation at least partly outwardly relative to said fractured section and thereby effectively lock the closure to the container lid.

3,881,438

SEMI-DISPLACEMENT HYDROFOIL SHIP

Allen Jones, Jr., 5028 Lauderdale Ave., Virginia Beach, Va. 23455

Filed Aug. 10, 1972, Ser. No. 279,714
Int. Cl. B63b *1/18*
U.S. Cl. 114—66.5 H **11 Claims**



1. A displacement hull ship comprising:

a. a hull having a generally T-shaped cross section;

b. said hull having side walls with upper and lower portions joined by intermediate portions;

c. said upper portions extending substantially vertically and being spaced apart along the majority of their length by a substantially constant first distance;

d. said lower portions extending substantially vertically and being spaced apart along the majority of their length by a substantially constant second distance which is about one third of said first distance, said lower portions extending substantially the full length of said hull and being operable to define a usable space in the lower portion of said hull whereby the displacement of said lower portions contributes a significant amount of buoyancy to the ship;

e. said intermediate portions providing inclined transition surfaces connecting said upper and lower portions;

f. said portions being of such configuration as will give the ship a displacement waterline near the juncture of said upper and intermediate portions;

g. a plurality of hydrofoils disposed along said lower portions for raising the hull in the water when the ship is underway such that the cruising waterline during cruising is near the juncture of said lower and said intermediate portions; and,

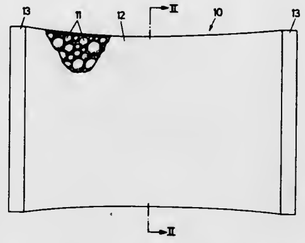
h. said hydrofoils being positioned below said cruising waterline.

3,881,439

BUOYANCY BODY

Erik V. Svanholm, Skurusundsvagen 35, S-130 10 Ektorp, Sweden

Filed June 12, 1973, Ser. No. 369,145
Claims priority, application Sweden, June 15, 1972, 7862/72
Int. Cl. B63b *43/00*
U.S. Cl. 114—69 **2 Claims**



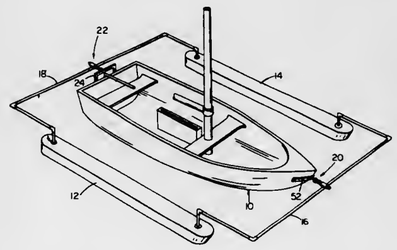
1. A buoyancy body comprising a multiplicity of individual pieces of a substantially rigid buoyancy material having density substantially less than that of water and a hermetically sealed substantially flat and rectangular flexible envelope enclosing the pieces of buoyancy material, the absolute pressure within the envelope being lower than one atmosphere at sea level, but higher than 0.8 atmosphere, at temperatures between 0° and 25°C.

3,881,440

SAILING VESSEL

Scott Mason, P.O. Box 369, Wakefield, R.I. 02880

Continuation-in-part of Ser. No. 183,357, Sept. 24, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,969
Int. Cl. B63b *43/14*
U.S. Cl. 114—123 **4 Claims**



1. In a trimaran having a central hull, two outrigger hulls and means connecting said hulls to each other to permit pivotal movement of the central hull about its longitudinal axis relative to said outrigger hulls so as to heel to the wind with respect to said outrigger hulls in the manner of a single hull sailing vessel, the improvement wherein:

said connecting means comprise relatively rigid connecting members pivoted to fore and aft portions of the central hull and extending between the central hull and each outrigger hull and including

resilient means acting between the central hull and said rigid connecting members arranged to resist heeling motion of said central hull in either direction and exert a restorative force which increases with the degree of heeling motion of said hull, and

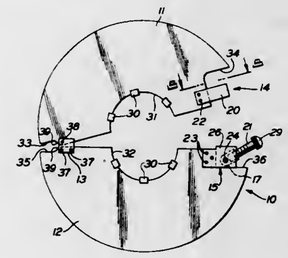
said connecting means including longitudinal rigid rods, one of which extends forwardly of the bow of the central hull and the other of which extends aft of the stern of the central hull and both of which are rigidly connected to the central hull so as to pivot therewith and which are further journaled in said rigid connecting members, and wherein said resilient means comprise springs acting between said rigid rods and said rigid connecting members.

3,881,441

TROLLING ATTACHMENT FOR A PROPELLER

John F. Kader, 464 E. 33rd St., Erie, Pa. 16504

Filed Jan. 15, 1974, Ser. No. 433,580
Int. Cl. B63h *25/44*
U.S. Cl. 114—145 A **3 Claims**



1. A trolling attachment for a boat comprising

a circular disk made up of two semi-circular members each having a semi-circular oepning formed therein,

hinge means connecting said semi-circular members together to form said circular disk, having a concentric circular opening in the center,

said concentric circular opening being adapted to receive the hub of an outboard motor,

resilient members spaced around the inside of said opening for frictionally engaging a spinner,

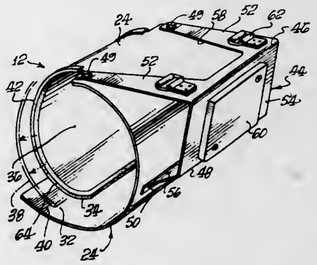
and a clamping means for clamping said two semi-circular halves to said hub.

3,881,442

MOTOR MOUNT FOR AN INFLATABLE BOAT

Ronald L. Seiple, Kailua, Hawaii, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 28, 1974, Ser. No. 484,039
Int. Cl. B63b *7/08*
U.S. Cl. 115—.5 B **7 Claims**



1. A motor mount for an inflatable boat of the type having a flat bottom, bow, and inflatable side and stern tubular gunwale sections comprising:

a resilient coiled plate which, in its relaxed condition, is capable of receiving the stern gunwale in a deflated condition;

said coiled plate being capable of expanding outwardly when the stern gunwale is inflated into its tubular form inside the coiled plate;

said coiled plate upon expansion tightly engaging both bottom and top surfaces of the flat bottom of the boat so that the coiled plate becomes rigidly mounted to the boat; and means mounted to the coiled plate for receiving a boat motor.

3,881,443

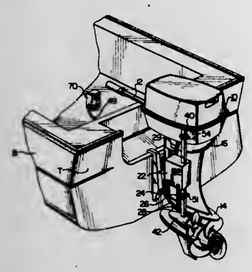
OUTBOARD PROPULSION TROLLING ASSEMBLY

John K. Hamp, Rt. 1, Box 462, Hot Springs, Ark. 71901

Filed Mar. 6, 1974, Ser. No. 448,628

Int. Cl. B63h *21/26*

U.S. Cl. 115—18 E **10 Claims**



1. An improved propulsion means for mounting on the transom of a boat, comprising:

a. a main outboard motor pivotally mounted on said transom and operative for driving and steering the boat at cruising speeds;

b. an electric outboard motor for driving the boat at trolling speeds;

c. means connecting the outboard motor to the main outboard motor so that the former steers in unison with the latter;

d. a mounting assembly for supporting the electric outboard motor including a shaft extending upwardly from the electric motor, a fixed supporting frame receiving said shaft above the motor and supporting it in vertically reciprocable relationship to the frame, and means for raising and lowering the shaft so that the electric motor will selectively occupy an up position with the motor out of the water and a down position with the motor in the water; and

e. limit switches on the frame and including an up limit switch connected to disable the electric motor and a down limit switch connected to disable the main outboard motor.

3,881,444

MARINE DRIVE GEARING

Hans Sigg, Widen, Switzerland, assignor to Maag Gear Wheel & Machine Company, Zurich, Switzerland

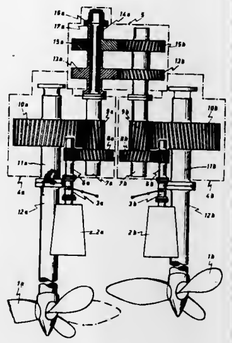
Filed July 10, 1972, Ser. No. 270,461

Claims priority, application Germany, July 13, 1974, 2134972

Int. Cl. B63h *5/08*

U.S. Cl. 115—37 **5 Claims**

1. Drive gear transmission for a pair of marine propellers comprising, in combination, a first propeller shaft for one of the propellers and a second propeller shaft for the other one of the propellers, respective drive means for rotating said first and second propeller shafts, and respective trains of drive gears connected to and rotated by said drive means, said gear trains being connected to said shafts to transmit the drives of said respective drive means to said first and second propeller shafts, mechanical interconnection means coupling said first and second propeller shafts together so that said propeller shafts rotate in synchronism, said interconnection means comprising a first gear interconnection and a second gear interconnection arranged in parallel and intermeshed engagement, preloading means associated with at least one of said first and second gear interconnections for applying opposite



preloading torques to said first and second gear interconnections, each said drive gear train comprising an intermediate shaft, the gearing of said train connecting said intermediate shaft to said drive input means and to said propeller shaft, the respective intermediate shafts having said interconnection means secured to them, and said first and second gear interconnections each comprising a pair of gear wheels.

3,881,445

APPARATUS FOR SEQUENTIALLY EVACUATING AND IMPREGNATING A TEXTILE WEB

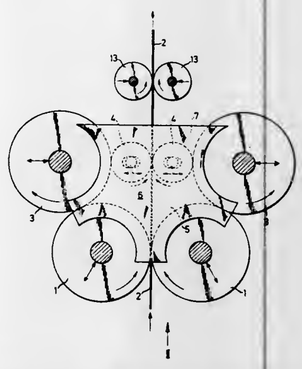
Otto Nothiger, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,092

Claims priority, application Switzerland, Sept. 27, 1972, 14102/72

Int. Cl. B05c *3/12*

U.S. Cl. 118—4 **4 Claims**



1. An apparatus for the sequential evacuation and impregnation of a textile web, including:

a vacuum chamber defined by a pair of opposed side walls and first and second sets of rollers disposed between said side walls with the end faces of each roller in sealing relationship with respective ones of said side walls and in each set adjacent rollers being in sealing contact with one another, each set of rollers comprising a first and a second roller and at least one roller intermediate said first and second rollers and spaced from the path of a web through said vacuum chamber, first and second rollers of said first set being disposed adjacent first and second rollers, respectively, of said second set to provide, respectively, inlet and outlet pairs of rollers for guiding a textile web into and out of, respectively, said vacuum chamber, at least one roller of said sets being arranged as a driven roller for longitudinally moving a textile web through said vacuum chamber, at least one roller in each set being journalled in bearings movable in a direction transverse to the roller axis whereby the sealing force on the roller is adjustable, and at least one of said side walls comprising a member movably mounted for movement in the direction of the roller axes whereby the sealing force between said one side wall and the adjacent end faces of said rollers is adjustable;

automatic control means for moving said movable bearing and said movable side wall member, said control means being responsive to the pressure in said vacuum chamber to adjust the aforementioned sealing forces in dependence thereon; and

an impregnation vessel at least partially defined by surface portions of said pair of outlet rollers external of said vacuum chamber and adjacent portions of said side walls whereby a textile web leaving the nip of said outlet rollers passes into said impregnation vessel.

3,881,446

MAGNETIC BRUSH DEVELOPING APPARATUS

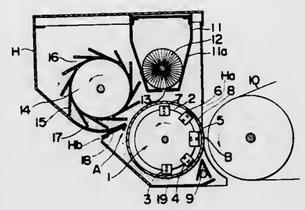
Takaji Kurita, Kawachinagano, and Takao Fujiwara, Sakai, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 17, 1974, Ser. No. 434,114

Claims priority, application Japan, Jan. 25, 1973, 48-10756

Int. Cl. G03g *13/08*

U.S. Cl. 118—637 **7 Claims**



1. A magnetic brush developing apparatus for developing an electrostatic latent image which comprises a housing structure with an opening adjacent to a photoreceptor surface, a magnetic brush developing roller provided at the lower part of said housing and adjacent to said photoreceptor surface, a toner powder supplying means provided above said developing roller, a vaned cylinder having a plurality of outwardly extending vanes which form buckets for transporting developer material rotatably provided close to the surface of said developing roller and a used developer material sump provided under said vaned cylinder, the majority of developer material on said developer roller being scraped off by vane tips of said vaned cylinder, carried upward in said buckets, and subsequently emptied into said used developer sump for mixing and diffusing of said developer material as said vaned cylinder rotates.

3,881,447

ELECTROSTATIC APPLICATION OF THERMOPLASTIC ADHESIVE

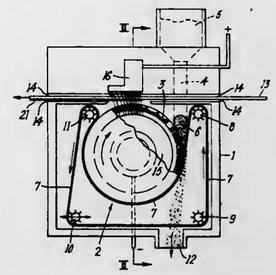
Hans W. Rebentisch, Frankfurt, and Gerhard W. Steinmeyer, Hunoldstal, Taunus, both of Germany, assignors to USM Corporation, Boston, Mass.

Filed Aug. 27, 1973, Ser. No. 392,034

Claims priority, application Germany, Oct. 31, 1972, 2253444

Int. Cl. G03g *13/06*

U.S. Cl. 118—638 **9 Claims**



1. A device for the application of a powder melt adhesive in the form of a strip onto a backing material, which strip is to be subsequently used to adhere the backing, comprising:

a rotatable member,

means for containing a powder melt adhesive on an arcuate portion of said rotatable member,

stationary electrode means in spaced relation with said arcuate portion of said rotatable member,

means for limiting the quantity of powder melt adhesive contained on said portion of said rotatable member when disposed in the area of said stationary electrode,

other electrode means integral with said rotatable member, and

means for applying a voltage of predetermined polarity to said stationary electrode and a voltage of opposite polarity to said other electrode to establish a high tension electrical field across said space between said stationary electrode said arcuate portion of said rotatable member whereby particles of the powder melt adhesive are drawn toward said stationary electrode and deposited as a strip onto a backing material fed through said space between said stationary electrode and said arcuate portion of said rotatable member by the force of the energy exerted by the established field.

3,881,448

MILKING VALVE

Olof A. Hallstrom, 1350 Hallstrom Rd., Tillamook, Oreg. 97141

Filed Nov. 23, 1973, Ser. No. 418,670

Int. Cl. A01j *3/00*

U.S. Cl. 119—14.19 **10 Claims**

1. A milking valve comprising

a. a valve component including

1. a valve body having a longitudinal passageway therethrough,

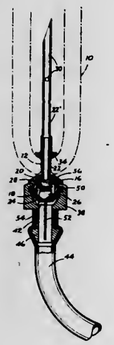
2. a valve member in the valve body normally closing said passageway, and

3. a hollow inlet tube extending from the valve body and adapted for insertion through the opening defined by the sphincter muscle of an udder teat, and

b. a coupler component including

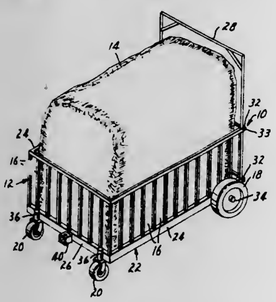
1. a hollow valve coupler body arranged for removable connection to the valve body and adapted for commu-

nication with a milk collection receptacle, and



2. valve actuating means associated with the coupler body for moving the valve member to open the passageway upon connection of the coupler body to the valve body.

3,881,449
STACK FEEDING DEVICE
Theodore W. Burrack, and Gary F. Burrack, both of Farmersburg, Iowa 52047
Filed Apr. 25, 1973, Ser. No. 354,171
Int. Cl. A01k *5/00*
U.S. Cl. 119—60 **4 Claims**

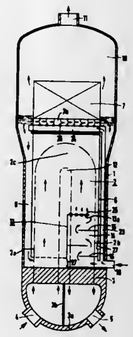


1. A feeding device for restricting the waste of feed materials being fed to cattle from a stack of the feed material on the ground, said device comprising:

a rigid frame having four generally vertical walls, each wall comprising a lattice of spaced structural members defining a plurality of openings, each of which openings is adapted to receive the head of one of said cattle and is sufficiently narrow that structural members will abut and restrict passage of the shoulders of said cattle, three of said walls being assembled welded into a generally U-shaped portion of said frame having spaced ends defining an open side adapted to receive the stack and including a rigid brace comprising vertical and horizontal members bridging between said ends and adapted to pass over the stack received in said U-shaped portion, with the fourth wall being sufficiently long to span said open side and having one end pivotably mounted on one of the ends of said U-shaped portion for movement between a position from said open side and a closed position across the open side; and including means for releasably and rigidly latching said fourth wall in the closed position; and

means for movably supporting the U-shaped portion of the frame on the ground adapted, when said fourth wall is in said open position, to allow movement of the U-shaped portion about a said stack, and after said fourth wall is then moved to the closed position, to allow movement of the frame relative to the stack within said frame by the force exerted by cattle reaching through said openings to reach the stack.

3,881,450
STEAM GENERATOR
Hans Mayer, Bubenreuth, and Heinz-Jurgen Schroeder, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed June 12, 1973, Ser. No. 369,192
Claims priority, application Germany, June 26, 1972, 2231235
Int. Cl. F22b *1/06*
U.S. Cl. 122—32 **6 Claims**

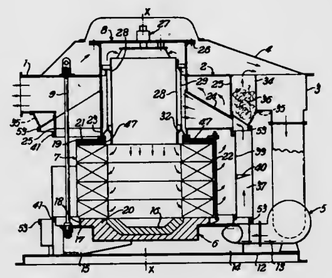


1. A pressurized-water coolant nuclear reactor steam generator including a vertical housing containing an inverted U-shaped nest of heat-exchanging tubes having coolant inlet and outlet ends and radially enclosed by a vertical guide jacket having its top provided with a water separator for the generated steam, said housing forming a water down-draft space around said jacket and having a feed water inlet adjacent to said nest's outlet end and said separator discharging separated water mixed with steam into a chamber from which it flows into the upper level portion of the steam-generating water fed into said housing, and a preheater receiving heat from said nest's outlet end and through which feed water from said inlet is conducted for preheating before introduction to said steam-generating water; wherein the improvement comprises means for feeding a portion of the required feed water without preheating to said chamber and mixing it with said separated water and steam in amounts condensing substantially its steam content.

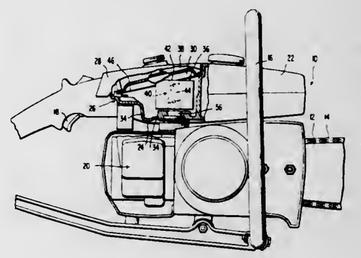
3,881,451
FLUID HEATERS
Peter R. Smith, Crawley, England, assignor to Stone-Platt Crawley Limited, Sussex, England
Filed Dec. 6, 1973, Ser. No. 422,504
Claims priority, application United Kingdom, Dec. 20, 1972, 58700/72
Int. Cl. F22b *27/08*
U.S. Cl. 122—250 R **17 Claims**

1. A fluid heater comprising in combination

a. a base assembly,
b. a heat exchange assembly supported above said base assembly,
c. a fuel combustor assembly positioned so that substantially its entire weight is supported upon the upper portion of said heat exchange assembly,
d. said heat exchange assembly being
1. adapted to carry the fluid to be heated, and
2. being positioned to receive the hot combustion gases from said fuel combustor,



e. a wall member surrounding at least part of said heat exchange assembly, which wall member serves to confine and channel the hot combustion gases after the hot combustion gases have passed through said heat exchange assembly, said wall member being substantially non-load bearing with respect to said fuel combustor in the sense that the wall member can be removed for purposes of cleaning or inspection of the heat exchange assembly without the need to move either the heat exchange assembly or the fuel combustor assembly.



3,881,452
METHOD AND APPARATUS FOR OPERATING AN ENGINE-DRIVEN CHAIN SAW IN AN ENVIRONMENT WHERE ICE MAY FORM IN THE CARBURETOR OF THE ENGINE
John Lewis Dilworth, Santa Monica, and John Louis Zimmerer, Torrance, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.
Filed Jan. 22, 1973, Ser. No. 325,346
Int. Cl. F02b *75/12*
U.S. Cl. 123—1 A **1 Claim**

1. A method for operating a chain saw in an environment where ice may be formed in a carburetor means thereof, and wherein said chain saw comprises:

a two-cycle, internal combustion, chain saw engine;
a cutter chain drivenly engaged with said chain saw engine;
reservoir means connected to said chain saw engine and operable to contain a combustible lubricating oil-gasoline mixture for transmittal to a carburetor means;
carburetor means for transmitting a volatile mixture of air and said lubricating oil-gasoline mixture therethrough for passage to a combustion chamber of said chain saw engine; and
said carburetor means having an interior portion including an induction passage;

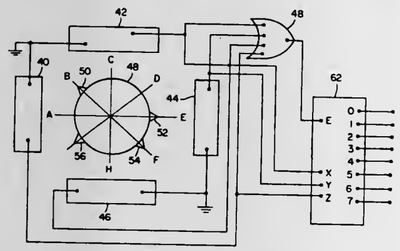
said method comprising:

a. storing an ice inhibiting means with a lubricating oil composition,
b. maintaining a ratio of said ice inhibiting means to said lubricating oil composition so as to ensure that when said lubricating oil composition is added at a predetermined lubricating ratio to said gasoline, a ratio of ice inhibiting means to gasoline will automatically be provided which will substantially prevent the formation of ice when said gasoline is drawn through said induction passage with air at a temperature of less than about 40°F and having a relative humidity of greater than about 50%,
c. concurrently mixing said lubricating oil composition and ice inhibiting means with gasoline to provide a combustible lubricating oil-gasoline mixture containining an ice inhibiting means mixed therewith, and simultaneously
i. condition said gasoline for effective lubrication and combustion in said two-cycle, internal combustion chain saw engine, and
ii. condition said gasoline to prevent the formation of ice when said gasoline is drawn through said induction passage with air at a temperature of less than about 40°F and having a relative humidity of greater than about 50%,
d. providing, in said reservoir means, said combustible lubricating oil-gasoline mixture containing an ice inhibiting means mixed therewith and operable to substantially prevent the formation of ice within said induction passage of said carburetor means during operation of said chain saw engine in an environment where ice may be formed in said carburetor means and where said mixture is drawn through said induction passage with air at a temperature of less than about 40°F and having a relative humidity of greater than about 50%;
e. operating said chain saw engine to pass said combustible mixture through said carburetor means of said chain saw engine and thereby introduce said ice inhibiting means into said induction passage of said chain saw engine to substantially inhibit a formation of ice therein and prevent an ice blockage in said induction passage when said chain saw engine is operated in an environment where ice may be formed in said carburetor means, and where said mixture is drawn through said induction passage with air at a temperature of less than about 40°F and having a relative humidity greater than about 40%;
f. said combustible lubricating oil-gasoline mixture, containing said ice inhibiting means, being contained within said reservoir means during said operation of said chain saw while being subject to chain saw operation-induced vibration;
g. said volatile mixture of air and lubricating oil-gasoline mixture being transmitted through said induction passage of said chain saw engine carburetor means with said ice inhibiting means while said induction passage is subject to said chain saw operation-induced vibration; and
h. said volatile mixture of air lubricating oil-gasoline mixture, including said ice inhibiting means, being transmitted from said induction passage through a crank case of said chain saw engine prior to combustion of said volatile mixture in said combustion chamber of said chain saw engine.

3,881,453
ELECTRONIC FUEL INJECTION TRIGGERING MEANS

Peter W. Harper, and Leslie Confair, both of Royal Oaks, Mich., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Oct. 1, 1973, Ser. No. 402,434
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **6 Claims**



1. In combination with a fuel system having computing means for providing a fuel injection command signal to control the actuation of injector valve means whereby the injection of fuel to an internal combustion engine is controlled, means for triggering the computing means comprising:

a rotor rotating with the engine crankshaft and having disposed thereon a first magnet, a second magnet disposed 90° from the first magnet, a third magnet disposed 135° from the second magnet and a fourth magnet disposed 45° from the third magnet;

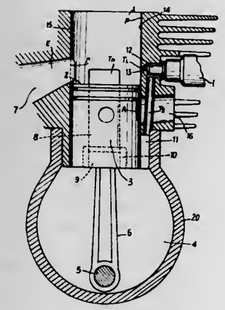
a plurality of magnetic switches surrounding the rotor and opened and closed by the magnets when the rotor rotates so that signals are provided by the switches in accordance with a binary code; and

means responsive to the signals from the switches for providing signals for triggering the computing means, said means operable to minimize the interval from the start of the engine rotation to the first fuel injection and for maintaining a desired injection sequence.

3,881,454
TWO STROKE ENGINE CONSTRUCTION

Eric E. Jaulmes, Paris, France, assignor to Ateliens de La Motobecane

Continuation-in-part of Ser. No. 297,861, Oct. 16, 1972. This application Mar. 8, 1974, Ser. No. 449,446
Int. Cl. F02b *33/07*
U.S. Cl. 123—73 B **10 Claims**

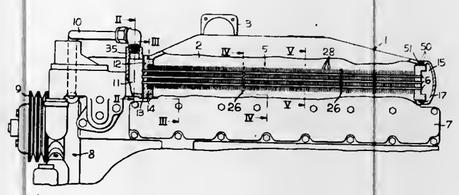


1. In a two stroke combustion engine of the crankcase compression type, including a cylinder, a piston disposed in the cylinder for reciprocal motion therein, a sealed crankcase, air intake passage means communicating with said crankcase through an air intake port, an exhaust port which is open in the side wall of the cylinder and opened and closed by the piston, at least two main scavenging passages communicating said crankcase with the cylinder through at least two main scavenging ports which are open in the side wall of the cylinder and opened and closed by the piston, said main scavenging ports being disposed symmetrically with respect to a diametral plane of the cylinder passing through the center of the exhaust port, and so directed that the air flows therefrom coverage towards a first point located on a first generatrix of the cylinder diametrically opposite to a second generatrix passing through the center of the exhaust port, an auxiliary scavenging passage of smaller cross-section than that of the main scavenging passages and opening at one end into the cylinder through an auxiliary scavenging port which is opened and closed by the piston and is located substantially opposite the exhaust port and arranged to direct its air flow towards a second point located substantially on the second generatrix, and fuel injection means located in the auxiliary scavenging passage and having its axis directed towards said second point, the improvement consisting in that the auxiliary scavenging passage communicates at its other end with said crankcase at least as long as the auxiliary scavenging port is uncovered by the piston.

3,881,455
AFTERCOOLER FOR INTERNAL COMBUSTION ENGINE

James F. Belsanti, Blue Island, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 31, 1973, Ser. No. 411,475
Int. Cl. F01p *11/00*
U.S. Cl. 123—119 CD **10 Claims**

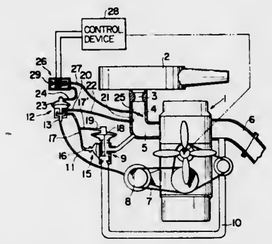


1. An internal combustion engine having at least one cylinder comprising, an intake manifold including means defining a supercharger air discharge chamber for receiving air from a supercharger, an intake passage communicating with said cylinder, a core supporting section intermediate said air delivery chamber and said intake passage including manifold core supporting walls defining inner surfaces, an aftercooler core including a plurality of fluid conduits extending the length of said manifold, a plurality of core supporting plates embracing said plurality of conduits and defining peripheral surfaces for engaging the inner surfaces of said manifold core supporting walls of said intake manifold, a plurality of cooling fins interleaved between said supporting plates forming cooling air passages through said aftercooler core, means defining coolant fluid chambers at the ends of said aftercooler core for circulating coolant fluid through said core for cooling of intake air supplied to said internal combustion engine.

3,881,456
EXHAUST GAS RECIRCULATION SYSTEM

Hidetaka Nohira, and Kiyoshi Kobashi, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 29, 1974, Ser. No. 474,351
Claims priority, application Japan, May 30, 1973, 48-59711
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **4 Claims**



1. An exhaust gas recirculation system in which the exhaust system and intake system of an internal combustion engine are connected to each other by a conduit so as to recirculate a part of exhaust gas from the exhaust system into the intake system, said system comprising:

a pressure control unit provided in said conduit and having a fixed throttle,

a pressure chamber and valve arranged successively in that order in the direction from the exhaust system to the intake system,

a pressure control section comprising:

a first chamber communicated with said pressure chamber,

a second chamber separated from said first chamber by a diaphragm and communicated with a pressure source and also with the atmosphere, and

a valve assembly secured to said diaphragm and adapted to control communication between said second chamber and said pressure source,

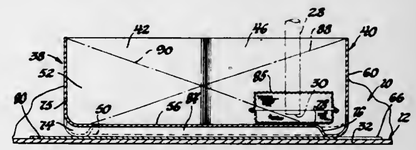
and a controlled pressure chamber communicated with said second chamber in said pressure control section and compartmented by a diaphragm joined to said valve in said pressure control unit, whereby compressed air supplied into said second chamber in said pressure control section from said pressure source is released into the atmosphere corresponding to pressure in said pressure chamber to control pressure in said chamber in the pressure control section, and said valve in the pressure control unit is operated responding to the thus controlled pressure so as to maintain pressure in said pressure chamber substantially equal to atmosphere pressure.

3,881,457
FUEL PICK-UP BAFFLE

Robert J. Benner, Lansing, and Roger J. Lundquist, Grand Ledge, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 9, 1974, Ser. No. 468,500
Int. Cl. B65d *87/12*
U.S. Cl. 123—136 **4 Claims**

1. A fuel supply system comprising a tank having means including a tank bottom to define a main fuel chamber, a baffle container having a base located on the bottom of said tank, said container having a generally rectangular configuration to define a second fuel chamber within said tank, said baffle container including an upper open end and a peripheral sidewall having a height less than that of said tank, a fuel pick-up tube having an inlet end thereof located adjacent the base of said baffle container for drawing fuel from said second chamber, a pair of parallel conduits extending diagonally of said baffle container base, one of said conduits including an inlet located outside of one corner of said baffle container within said main tank and including an outlet located inside of an opposite corner of said baffle container, the other of said conduits including an inlet located outside of said opposite corner and including an outlet therefrom located inside of said one corner, said conduits serving to fill said second chamber with fuel from said main tank chamber when the fuel supply

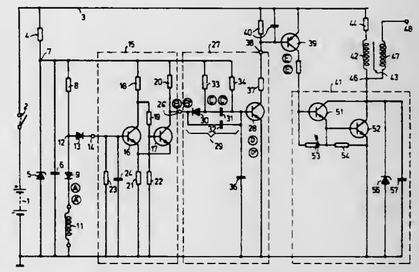


in the main tank is below the height of said sidewall and dynamic forces on the fuel supply are balanced, fuel within said conduits being responsive to vehicle maneuvers to produce a back pressure against fuel flow from within said secondary chamber to said main fuel chamber thereby to maintain an assured supply of fuel to the fuel pickup tube during vehicle maneuvers wherein a minimum fuel supply in the main tank is located out of communication with the fuel pickup tube.

3,881,458
IGNITION SYSTEM DEPENDENT UPON ENGINE SPEED

Herman Roozenbeek, Schweiberdingen; Bernd Bodig, Leinfelden; Klaus Meyer, Daverden, and Adolf Fritz, Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 12, 1973, Ser. No. 396,517
Claims priority, application Germany, Sept. 13, 1972, 2244781
Int. Cl. F02b *1/02*
U.S. Cl. 123—148 E **13 Claims**



1. In the ignition system of an internal combustion engine comprised of at least one electrical igniting element operative for producing an ignition spark once per ignition cycle, in combination, an ignition transformer having a secondary winding connected across said igniting element and having a primary winding; means for establishing a flow of current through said primary winding and including electronic switch means in the current path of said primary winding operative for, controlling the flow of current through said primary winding; crankshaft-synchronized triggering means operative for generating a train of crankshaft-synchronized triggering pulses; monostable control means connected to said electronic switch means and having a trigger input connected to said triggering means for receipt of said triggering pulses, and operative when triggered into the unstable state thereof for rendering and maintaining said switch means non-conductive for the duration of said unstable state, whereby to interrupt the flow of current through said primary winding and induce across said secondary winding a voltage surge causing said

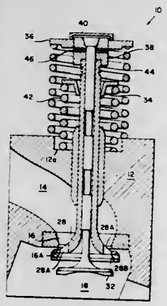
igniting element of produce an ignition spark, and operative upon reverting to the stable state thereof for rendering and maintaining said switch means conductive for the duration of said stable state, whereby to establish a build-up of current flow in said primary winding in preparation for the next interruption of current flow, said monostable control means including timing means operative with increasing engine speed within a predetermined range of engine speeds for automatically and progressively decreasing the duration of said unstable state while increasing the ratio of the duration of said unstable state to the duration of said ignition cycle, and wherein said timing means comprises energy-storing means, means for effecting a first change of stored energy of said energy-storing means during the intervals between said triggering pulses and thereby for time periods dependent upon engine speed, and means operative upon generation of a triggering pulse by said triggering means for causing said monostable control means to undergo a transition to said unstable state and initiating an opposite second change of stored energy of said energy-storing means and maintaining said monostable control means in said unstable state until the completion of said second change of stored energy.

3,881,459

INLET VALVE FOR INTERNAL COMBUSTION ENGINE AND METHOD FOR SUPPLYING FUEL THERETO

Werner Gaetcke, 4603 Locust, Bellaire, Tex. 77401

Filed Feb. 28, 1974, Ser. No. 446,608
Int. Cl. F01l *3/06*
U.S. Cl. 123—188 R **9 Claims**



1. In combination with an internal combustion engine having a cylinder defining a variable volume combustion chamber and means defining an inlet passage to deliver a combustible mixture to said combustion chamber, inlet valve means for controlling the flow of said combustible mixture from said inlet passage to said combustion chamber, said inlet valve means comprising:

a. means defining an inlet port in said combustion chamber connecting said inlet passage with said combustion chamber, said inlet port having a portion defining a first valve seat;

b. main valve means having a main valve head moveable out of and into engagement with said first valve seat to respectively open and close said port to flow therethrough, said main valve head including means defining at least one flow passage therein for permitting the flow of said combustible mixture from said inlet passage therethrough, said main valve head further including means defining a second valve seat surrounding said at least one flow passage;

c. auxiliary valve means having an auxiliary valve head disposed for movement out of and into engagement with said second valve seat for respectively opening and closing said at least one flow passage in said main valve head to flow therethrough; and

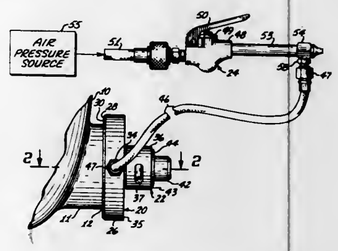
d. means for sequentially moving said auxiliary valve head out of engagement with said second valve seat and said main valve head out of engagement with said first valve seat to permit the flow of said combustible mixture from said inlet passage to said combustion chamber, first through said at least one flow passage, and second through said inlet port around said main valve head.

3,881,460

APPARATUS AND METHOD FOR PRIMING AN ENGINE OIL PUMP

Marshall T. Allen, and Darrell E. Norris, both of Glendale, Ariz., assignors to Marshall T. Allen, Glendale, Ariz.

Filed Feb. 22, 1974, Ser. No. 445,317
Int. Cl. F01m *11/10*
U.S. Cl. 123—196 S **7 Claims**



1. A method for remotely priming an oil pump in an engine comprising the steps of:

a. exposing the oil filter mounting pad of the engine to reveal the oil inlet passage from the oil pump, the oil outlet passage to the engine's lubricated parts and the oil chamber formed within said mounting pad;

b. convering the oil chamber of said mounting pad for sealing that chamber and the oil inlet passage communicating therewith against leakage and for isolating the oil outlet passage therefrom; and

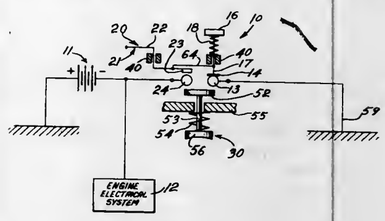
c. applying a suction to said sealed oil chamber to cause oil to move from the oil sump of the engine through the oil pump, through the oil inlet passage and through the oil chamber so that any entrapped air will be purged therefrom.

3,881,461

AUTOMATIC POWER CUT-OFF DEVICE FOR VEHICLES

Stanislaw F. Filip, 15 Vicora Linkway, Don Mills, Ontario, Canada

Filed Aug. 3, 1973, Ser. No. 385,482
Int. Cl. F02b *77/08*
U.S. Cl. 123—198 D **7 Claims**



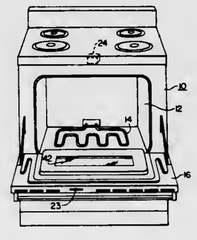
1. An automatic power cut-off device for use with a cable operated carburetor throttle valve, said device comprising a housing having a throttle control hand operable means secured thereto, said hand operable means being spring biased against a first switch to maintain a normally closed switch contact condition, said first switch having a stationary and a movable contact, a throttle cable connected at one end to said hand operable means for operating said throttle valve means, said throttle cable being provided with an elongated enlarged section located a predetermined distance from its connected end to said hand operable means, a second switch having a stationary contact and a movable contact, said movable contact of said second switch being resiliently biased against said throttle cable so that axial movement of said cable by displacement of said hand operable means will cause said movable contact to be displaced by said enlarged section and assume a closed contact condition with its associated stationary contact, said first switch being activated to an open contact condition prior to said activation of said second switch to a closed contact condition, said movable contact of said first and second switches being electrically connected together, one of said stationary contacts being connected to a battery and the other to ground whereby to bypass said battery to ground when both said switches are closed.

3,881,462

WINDOWED DOOR FOR A HEAT CLEANING OVEN

Eugene J. Barnett, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 1, 1974, Ser. No. 465,985
Int. Cl. F23m *7/00*
U.S. Cl. 126—197 **7 Claims**



1. A cooking oven comprising:

means defining a forwardly open oven;

a door for closing said oven including at least a first panel and a second panel spaced apart from said first panel;

a window in said door including at least a pair of spaced apart panes on opposite sides of a generally planar space defined in part between said windows;

a shutter having sidewardly extending flanges positionable in said door to seat in a first position between said first panel and said second panel and movable to at least a second position in said generally planar space between said panes to obstruct viewing therethrough into said oven;

means defining guide slots disposed transverse to said panels and said panes and further defining said planar space between said panes, said slots receiving said flanges therein, said slots including means to receive said flanges in a seated relationship at said first position;

means for latching said door closed;

means for positioning said shutter within said door, said positioning means connected with said latching means to locate said shutter in said first position with said door in an unlatched condition and to draw said shutter from said first position to said second position when said door is latched closed; and

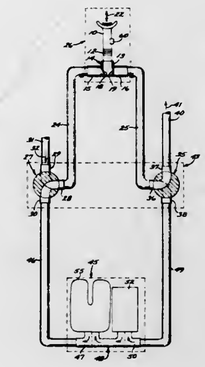
said means to receive said flanges in a seated relationship comprise lower tapers at the bottom of each of said slots, and upper tapers at a position in each slot corresponding to the top of each flange when said shutter is seated, said upper and lower tapers having oppositely directed slopes to import a tilted disposition to said shutter in its seated position.

3,881,463

RADIOACTIVE GAS INHALATOR

David E. LeMon, 11160 Poplar St., No. B, Loma Linda, Calif. 92354

Filed Apr. 26, 1972, Ser. No. 247,562
Int. Cl. A61b *5/08*
U.S. Cl. 128—2 A **4 Claims**



1. A radioactive gas inhalator apparatus comprising:

an inhalator valve having an air inlet port, an air outlet port and a mouthpiece port;

an inhalator mouthpiece connected to said mouthpiece port;

means for producing a closed breathing loop between said air inlet port and said air outlet port;

a source of radioactive material;

means for introducing a single injection of radioactive material into said closed breathing loop for causing said radioactive material to be introduced into the lungs of a patient with every breath;

said means for introducing said radioactive material comprising a self-sealing needle-pierceable diaphragm.

3,881,464

SAMPLING DEVICE AND METHOD

Max Moses Levene, 46 Cranky Gardens, Kensington, London S.W. 7, England

Filed Dec. 4, 1972, Ser. No. 311,817
Claims priority, application United Kingdom, Dec. 9, 1971, 57304/71
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **3 Claims**

1. A method of obtaining from the uterine cervix a sample that is suitable for both cytological and histological examination, which comprises the steps of obtaining from the uterine cervix a sample which contains both tissue and cellular material by contacting said cervix with a generally conical brush having radially projecting bristles made of soft fibres having the firm sample-retaining texture of cellulose acetate, which bristles are soluble in a solvent that does not cause morphological damage to the sample when said bristles and sample are immersed in said solvent, but are insoluble in conventional fixatives for said cells and tissues, immersing the brush having the sample thereon in a fixative for said sample, causing rela-

tive agitation between said brush and fixative to remove cellular material therefrom for cytological examination, and subse-



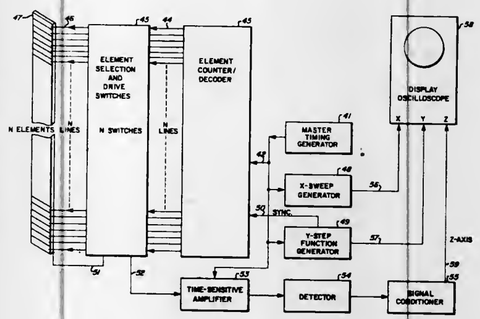
quently dissolving said bristles in said solvent to prepare a sample suitable for histological examination.

3,881,465
METHOD AND APPARATUS FOR COLLECTING URINE
Russell G. Raitto, Fitzwilliam, N.H., assignor to Concord Laboratories, Inc., Keene, N.H.
Division of Ser. No. 204,496, Dec. 3, 1971, Pat. No. 3,777,739. This application May 29, 1973, Ser. No. 365,005
Int. Cl. A61h *10/00*
U.S. Cl. 128—2 F **11 Claims**



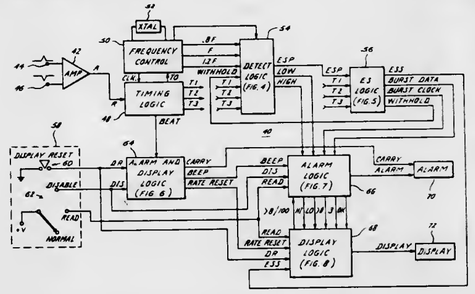
1. A closed internally sterile device for collecting a urine specimen from a patient in a substantially uncontaminated state, said device comprising
an internally sterile container having a closed end, and, at its other end, an opening through which said urine can be directed for retention therein;
a hollow internally sterile intermediate member open at its ends and having an opening therethrough and including first coupling means being located on said intermediate member and removably securing said intermediate member to and over said container opening with the opening therethrough in unobstructed communication with said container opening
a lip portion being formed as part of said intermediate member and covering the edge of said container opening to protect it from contamination when said intermediate member is removably secured to said container, and
second coupling means located on said intermediate member and displaced from said first coupling means, one open end of said intermediate member nearest said second coupling means forming one edge of said intermediate member;
an internally sterile cap member removably secured to said second coupling means of said intermediate member to cover said one edge of said intermediate member and to close said opening thereof and thereby the opening of said container to which said intermediate member is removably secured, said cap member having means for removably securing it to said container opening over said opening and its edge to close said container when said intermediate member has been removed from said container.

3,881,466
ULTRASONIC CROSS-SECTIONAL IMAGING SYSTEM
Martin H. Wilcox, Franktown, Colo., assignor to Advanced Diagnostic Research Corporation, Tempe, Ariz.
Filed Aug. 20, 1973, Ser. No. 389,958
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 V **1 Claim**



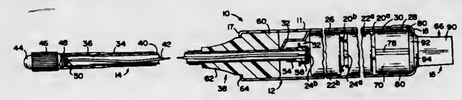
1. In a real-time ultrasonic cross-sectional imaging system, said system including
timing generator means for generating a pulsed electrical signal,
transducer means for
generating a pulsed ultrasonic energy beam in response to said electrical signal,
transmitting said pulsed ultrasonic beam into a heterogenous body,
receiving echos reflected from a moving discontinuity in said body, and
generating an electrical echo signal in response to said received echos, and
display means for converting said echo signal to a continuous visible image representing the moving cross-sectional structure of said heterogenous body.
the improvement whereby the quality of said image is substantially improved in comparison to rotating transducer and fixed-array transducer systems, said improvement comprising:
a. said transducer means consisting of a fixed segmented elongated array formed of N discrete adjacent transverse transducer elements, said elements being large in comparison to the wave length of said pulsed ultrasonic energy beam;
b. element counter-selector means for
1. transmitting identical cophased pulsed electrical signals to A selected adjacent transducer elements to generate identical cophased pulsed ultrasonic energy beams, and
2. sequentially pulsing selected groups of A contiguous elements as in paragraph (b) (1), each of which groups are longitudinally displaced along said elongate array, each said group being displaced B elements from the location of the immediately preceding group;
N, A and B being positive integers and $N > A$, $N > B$.

3,881,467
HEART MONITORING SYSTEM
Albert Leven Stanly, and Robert Judd Hromadka, both of Los Angeles, Calif., assignors to Hycel, Inc., Houston, Tex.
Filed Nov. 9, 1973, Ser. No. 414,310
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A **16 Claims**



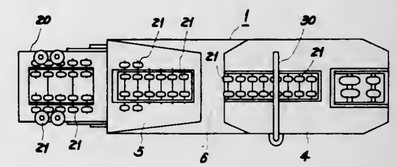
1. A heart monitoring system comprising:
A. means for providing a beat signal indicative of the occurrence of each heartbeat, whereby a normal or an abnormal time interval exists between successive heartbeats;
B. control means responsive to said beat signal for determining the interval between beat signals and for providing a first interval signal manifesting the time of said last occurring interval and for comparing said signal manifesting said last occurring interval with a stored signal manifesting the last occurring normal interval to determine whether the duration of said last occurring interval is at lease a certain percentage of the duration of said last occurring normal interval, said control means further providing a compared signal manifesting whether said last occurring interval is at least said certain percentage of said stored last occurring normal interval; and
C. storing means responsive to said compared signal for storing a signal manifesting the duration of the time interval of said last occurring interval as said last occurring normal interval only in the event said last occurring interval is at least said certain percentage.

3,881,468
FLEX LIGHT
Carl L. Foltz, Holiday, Fla., assignor to Concept, Inc., St. Petersburg, Fla.
Filed July 16, 1973, Ser. No. 379,218
Int. Cl. A61b *1/06*
U.S. Cl. 128—23 **6 Claims**



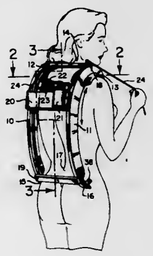
1. A surgical light comprising a housing configured to retain a voltage source therein, said housing having a first conductor means disposed therein, an extended bulb assembly and a switch means attached to said housing, said extended bulb assembly comprising an elongated sleeve having a second and third conductor means disposed therein, a bulb housing attached to one end of said elongated sleeve, a light source secured within said bulb housing by attachment means, mounting means attached to the opposite end of said sleeve to mount said extended bulb assembly to said first conductor to hold said third conductor means in operative engagement with said voltage source, said second and third conductor means being electrically insulated from each other, said first conductor means coupled to said second conductor means, said switch means rotatably mounted within said housing and electrically coupled to said voltage source, said switch means being out of contact with said first conductor means when in a first position to deactivate said surgical light; said switch means comprising a switch base means having a recess formed therein, contact means mounted within said recess and including a clip member configured to expose a plurality of first conductor contacts to movably engage said first conductor means and tongue means integrally attached to said clip member so as to complete the circuit between the voltage source, contact means and first conductor means.

3,881,469
MUSCLE RELAXING APPARATUS
Seizo Kanemitsu, 1,549, Takochi, Yaoshi, Osakafu, Japan
Filed Apr. 5, 1973, Ser. No. 348,232
Claims priority, application Japan, Apr. 8, 1972, 47-35513
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 R **7 Claims**



1. A muscle relaxing apparatus comprising:
a. a relaxant surface comprising first and second movable portions spacedly separated from each other; and
b. first means cooperatively connecting said first and second portions and operative to cooperatively move both said first and second portions; and
c. wherein said first means comprises support means operative to permit movement of said first and second portions in horizontal and vertical directions; and
d. wherein said support means comprises respective frames connected to said first and second portions, respectively, and to respective housings including universal means.

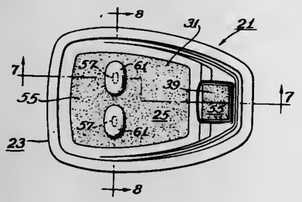
3,881,470
BACK MASSAGING APPARATUS
Avis O. Glore, 11524 National Blvd., W. Los Angeles, Calif. 90064
Filed July 8, 1974, Ser. No. 486,529
Int. Cl. A61h *23/00*
U.S. Cl. 128—55 **3 Claims**



1. A back massaging apparatus comprising, in combination:
a. left and right shoulder frame members shaped to engage over a person's shoulders on either side of the neck at their upper ends, and extend down the back on either side of the spinal column to terminate at lower ends adjacent the person's lumbar;

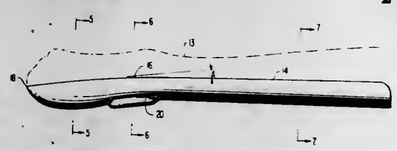
b. cross members connecting the frame members at points adjacent to their upper and lower ends to hold the spacing between the frame members substantially constant, each of said frame members defining track means;
c. a carriage mounted on the track means for movement along the frame members to various positions between the person's neck and lumbar regions;
d. a motor carried on said carriage;
e. first and second paddle means carried on said carriage;
f. actuating means operated by said motor engaging the paddle means to cause rapid alternate movement of the paddle means against the person's spinal column; and
g. means manually operable by the person for moving the carriage up and down along the frame members while the paddle means are being actuated to thereby massage said spinal column.

3,881,471
HYDROTHERAPY FOOT BATH
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated, Chicago, Ill.
Filed May 20, 1974, Ser. No. 471,455
Int. Cl. A61h *7/00*
U.S. Cl. 128—65 **8 Claims**



1. An improved hydrotheraphy foot bath for providing comforting and refreshing hydro-massage for feet and the like comprising:
a body including an upwardly open tub compartment and second separate, closed compartment, the tub compartment having a side wall and a relatively flat bottom wall and being adapted to hold a volume of water;
wall means for isolating the second compartment from the tub compartment so as to prevent ingress of water from the tub compartment into the closed compartment;
means detachably mounted on the bottom wall of the tub compartment for providing support for the arches of a person's foot disposed in the tub compartment; and
means for selectively imparting vibratory motion to the walls of the tub compartment so as to cause the continuous formation of multitudinous, relatively small waves in the water in the tub compartment whereby the water affords hydro-massaging action.

3,881,472
SPLINT FOR THE LEG OF A DOG OR CAT
George Timothy Lee, Anderson, Ind., assignor to Edgewood Surgical Company, Inc., Anderson, Ind.
Filed Feb. 22, 1974, Ser. No. 444,943
Int. Cl. A61f *5/04*
U.S. Cl. 128—89 R **2 Claims**



1. A splint for the lower front leg of a small animal such as a dog or a cat comprising:
a rigid elongate member having a forward and rear portion which is generally part cylindrical in cross-section for securing to the ventral portion of the animal's leg,
said forward portion of the member being adapted to receive the paw and carpal pad of a small animal and being inclined ventrally at an angle relative to the rear portion of the member and adapted to be positioned upwardly of the location of the carpal pad,
said member defining a recess to receive the carpal pad of the leg,
said member on its concave inner surface being lined with a soft, resilient material.

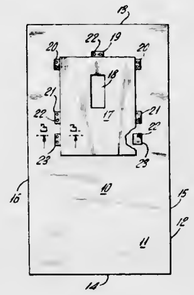
3,881,473
ULTRAVIOLET LIGHT CURABLE ORTHOPEDIC CAST MATERIAL AND METHOD OF FORMING AN ORTHOPEDIC CAST
Joseph A. Corvi, Newport Beach, and Donald C. Garwood, Santa Monica, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.
Continuation of Ser. No. 209,766, Dec. 20, 1971, abandoned.
This application Feb. 8, 1974, Ser. No. 440,936
Int. Cl. A61f *13/04*
U.S. Cl. 128—90 **24 Claims**



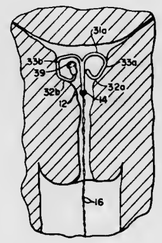
1. An orthopedic cast material which when wrapped about a body member and cured by exposure to ultraviolet light, forms a rigid, high strength immobilizing structure and which comprises a highly light and air permeable nonirritating open textile fabric of interknit or interwoven glass yarns and an ultraviolet light curable resin system carried by said yarns, said open textile fabric being of a mesh having essentially regularly spaced generally rectilinear openings with side dimensions between about 0.045 inches and 0.150 inches and wales or warp yarns separating adjacent openings to provide an average thickness to the open textile fabric of between about 0.035 inches and 0.060 inches in order to permit the ultraviolet rays to penetrate the multiplicity of layers of wrapped fabric that is required to produce an orthopedic cast.

3,881,474
REINFORCED SURGICAL DRAPE
Henrietta K. Krzewinski, Old Bridge, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Continuation of Ser. No. 222,854, Feb. 2, 1972, abandoned.
This application Mar. 29, 1974, Ser. No. 456,348
Int. Cl. A61t *13/00*
U.S. Cl. 128—132 D **5 Claims**

1. A surgical drape comprising a main panel having an upper surface and a lower surface, a top edge and a bottom edge and two opposed side edges, a reinforcing panel having corresponding top, bottom and side edges, affixed to the upper surface of said main panel, at least one tab positioned at the top edge of the reinforcing panel and at least one tab positioned at a side edge of the reinforcing panel near the bottom edge of the reinforcing panel, each of said tabs having a flexible portion free of the body of the drape, said flexible portion having at least two openings which extend through the tab and through which a flexible member may be inserted and secured thereto.

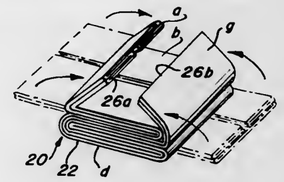


3,881,475
INTRA-UTERINE CONTRACEPTIVE DEVICE
Harry W. Gordon, and Gunther Storz, both of Brooklyn, N.Y., assignors to Schmid Laboratories, Inc., New York, N.Y.
Filed Feb. 18, 1972, Ser. No. 227,465
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 **6 Claims**



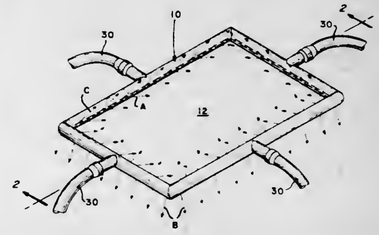
1. An intra-uterine contraceptive device comprising a substantially straight stem portion from which extends at one end thereof a pair of oppositely disposed loops which are generally coplanar with the stem, at least the loops of said device being of a soft plastic material and having a partially retentive memory to permit the loops of the device to deform and more readily conform to the walls of the uterine cavity into which the device is to be inserted, each loop having a first arch with a respective first radius and commencing in one direction from one end of the stem and curved to extend and terminate in a second direction opposite from said first direction; (a) an elongated straight section commencing at the termination of said first arch and extending for a distance in said second direction and generally parallel to the stem, and a second arch each of a (smaller) respective second radius (than) which is smaller than the radius of said first arch commencing at the termination of said elongated straight section extending in said second direction and then curving back to terminate with a free end extending toward said first direction; the cross-section of the loop material having a maximum dimension in one direction in the range of from about 0.055 to about 0.065 inches and a maximum dimension in a direction generally transverse to said one direction in the range of from about 0.045 to about 0.055 inches.

3,881,476
INTERLOCKED SURGICAL DRAPE AND METHOD
James H. Bolker, Hoffman Estates; Richard L. Zoephel, Lake Villa, and Robert F. Collins, Barrington, all of Ill., assignors to The Kendal Company, Walpole, Mass.
Filed May 3, 1973, Ser. No. 356,989
Int. Cl. A61f *13/00*
U.S. Cl. 128—132 D **16 Claims**



2. An interlocked surgical drape comprising, a sheet of flexible material including a pair of side edges extending longitudinally along the sheet, a pair of laterally extending end edges connecting said side edges, a plurality of longitudinally extending folds reducing the width of said sheet, a first lateral fold of the longitudinally folded sheet generally in the longitudinal mid-region of the sheet, said first fold defining a pair of contiguous end portions extending from the first fold and having free ends, and a lateral accordion fold extending through both of the contiguous end portions to interleave said end portions with ends of the end portions being exposed at an outer surface of the laterally folded sheet, whereby said sheet is interlocked to prevent premature unfolding of a substantial portion of the drape during manipulation of the drape and the sheet may be readily unfolded during placement by grasping the ends of the end portions.

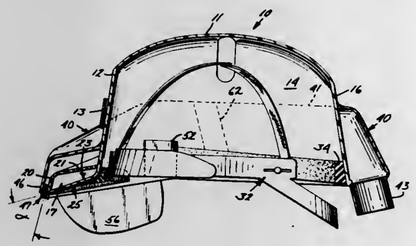
3,881,477
FLUID DISCHARGE APPLIANCE FOR MAINTAINING A STERILE ENCLOSURE
Robert E. Von Otto, Washington, D.C., assignor to Henry E. Nichols, Washington, D.C.
Filed Aug. 7, 1973, Ser. No. 386,350
Int. Cl. A61f *13/00*
U.S. Cl. 128—132 **8 Claims**



1. A surgical appliance for application to a living body to maintain a protective fluid shield for isolating an area of said body from the surrounding atmosphere, comprising: means defining a supporting surface for said body; a hollow tubular member of endless configuration in plan surrounding an access opening and supported at a level above said surface; means communicating with said member for delivering into said member a constant flow of fluid at super atmospheric pressure; said member being formed with a first series of substantially contiguous upwardly and inwardly directed fluid discharge ports, completely surrounding said access opening and discharging said fluid as a continuous, upwardly directed and convergent fluid shield over and completely around said access opening; said member being formed with a second series of substantially contiguous, downwardly directed dis-

charge ports for discharging said fluid as a continuous, downwardly directed fluid shield completely around said access opening.

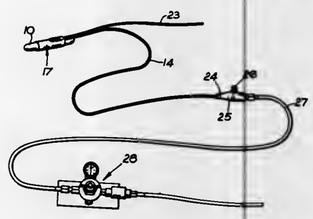
3,881,478
HARD HAT AIR CURTAIN
Thomas E. Rosendahl, McMurray, Pa., and William J. Krisko, Eden Prairie, Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.
Filed June 13, 1974, Ser. No. 478,838
Int. Cl. A61f *9/06*
U.S. Cl. 128—145 R **10 Claims**



1. In an industrial helmet for protecting the wearer against inhalation of air-borne particulate matter, in combination:
an impact resistance shell carrying internal suspension means for mounting the helmet on the head of the wearer and comprising crown, front, side, and back portions and a chambered bill portion having a front wall, a perforated top, and a grillwork bottom extending from the rim of said front wall to the rim of said front portion to define the chamber of said bill;
an inwardly concave member surrounding said shell and sealed along a top edge to the walls of said shell and along a bottom edge to the front wall of said bill and the side and rear walls of said shell to define a manifold;
coupling means for receiving air supplied to said manifold;
an air curtain member forming a part of the seal between said manifold and the front wall of said bill, and comprising a strip of material having a plurality of parallel tubular passages extending therethrough and directed downwardly along the front of said bill to provide a high velocity output for air from said manifold in the form of an air curtain encircling the wearer's face;
and diffuser means secured to the grillwork bottom of said bill and the front wall of said shell to provide a low velocity output of air passing through the perforations in the top of said bill from said manifold, whereby to constitute a supply of inhallation air within said air curtain.

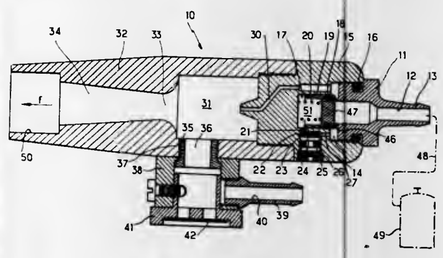
3,881,479
VENTILATING DEVICE FOR USE IN ANESTHESIOLOGY
Edward Carden, Cavendish House, Priestnall Rd., Stockport, England
Filed Mar. 13, 1974, Ser. No. 450,613
Claims priority, application United Kingdom, Mar. 10, 1973, 11692/73
Int. Cl. A61m *25/02*
U.S. Cl. 128—145.8 **7 Claims**

1. A ventilating device connected to a supply of high pressure oxygen for use in anaesthesiology comprising:
a cannula having a lumen approximately 6.5 cm. in axial length,
an oxygen jet tube disposed within and connected to the cannula and terminating within the lumen thereof, the jet tube being directed toward an outlet end of the cannula, the oxygen jet tube being of a smaller diameter than the diameter of the lumen,
an inflatable cuff circumscribing the cannula with the axial length of the cannula being slightly in excess of the length



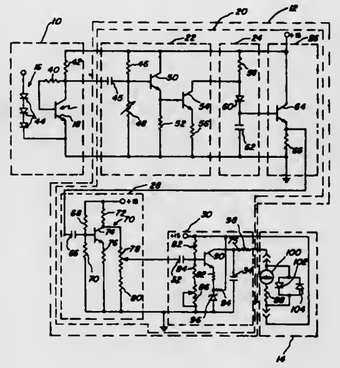
of the cuff, the supply of high pressure oxygen communicating with the jet tube for facilitating respiration in a patient.

3,881,480
BREATHING AID APPARATUS
Jean-Michel Lafourcade, 7, rue Santos-Dumont, Paris, France
Filed Mar. 7, 1973, Ser. No. 338,979
Claims priority, application France, Mar. 10, 1972, 72.08488
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 **9 Claims**



1. An artificial respiration apparatus comprising:
a tip connectable to a source of gas under pressure, said tip including a bore hole;
a valve seat at the end of said bore hole facing away from the source;
an outlet connectable to the respiratory system of a patient; and
means for controlling the flow of gas permitting it to pass from the source of gas to said outlet during the inhalation phase of the patient but preventing said flow during the exhalation phase of the patient, said means comprising a movable valve member cooperating with said valve seat to close said bore hole, a spring cooperating with said movable valve member and biasing the same against said valve seat, a housing including a first chamber communicating with said source of gas and also with said outlet when the moving valve member is not in contact with the valve seat; and a second chamber in which said spring is housed, one wall of said second chamber being formed of said movable valve member, channel means causing said first chamber and said second chamber to communicate with each other, a pellet of porous material disposed in said channel means, said pellet introducing a loss of pressure in the channel means; and a pressure screw cooperating with said pellet for varying the compression thereof, variation of the compression of the pellet permitting adjustment of the flow of gas between said first and second chambers.

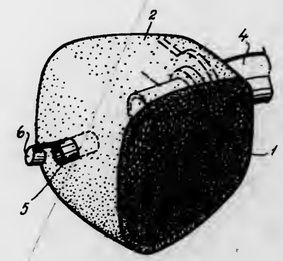
3,881,481
LEFT VENTRICULAR EJECTION METER
James E. Heule, Plymouth Village, and Richard C. Gaard, Golden Valley, both of Minn., assignors to Audronics, Inc., Minneapolis, Minn.
Filed Feb. 8, 1973, Ser. No. 330,746
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 V **6 Claims**



1. An apparatus for measuring and indicating the left ventricular output of the heart by monitoring light reflective characteristics of blood flow in blood vessels and capillaries, comprising:
a. a pulsating light source placed in proximity to said blood vessels and capillaries;
b. a light responsive element placed in reflective relationship to said light source and said blood vessels and capillaries, and having means for converting received light into electrical signals;
c. circuit means, connected to said light responsive element, for receiving said electrical signals and attenuating frequency components of said signals below about 0.6 Hz. and above about 40 Hz.; and
d. indicator means, connected to said circuit means, for providing an observable indication of said nonattenuated electrical signals.

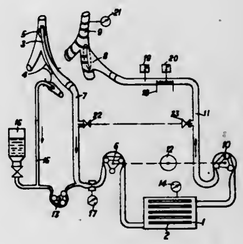
3,881,482
DEVICE FOR MOISTENING AND HEATING INHALATION AIR WITH TRACHEOTOMY AND ENDOTRACHEAL INTUBATION
Carl-Eric Lindholm, Uppsala, Sweden, assignor to Medical Products Octagon AB, Uppsala, Sweden
Filed Oct. 25, 1973, Ser. No. 409,571
Claims priority, application Sweden, Nov. 6, 1972, 14331/72
Int. Cl. A61m *15/00*
U.S. Cl. 128—212 **7 Claims**

1. A device for moistening and warming inhalation air with tracheotomy and endotracheal intubation, said device having a cavernous body which is made of a light, porous material having an open pore structure and which is encased in a cylinder-like casing of light material having open ends and having a porosity which is denser than that of the body, said cavernous body completely filling said cylinder, a recess extending through the casing into the body intended to function as a



passage-way through said casing for air passing between said cavernous body and a patient through a tracheal tube.

3,881,483
EXTRACORPOREAL BLOOD CIRCUIT
Andre Sausse, Sceaux, France, assignor to Rhone-Poulenc, S.A., Paris, France
Filed Sept. 12, 1973, Ser. No. 396,603
Claims priority, application France, Sept. 12, 1972, 72.32286
Int. Cl. A61m *01/03*
U.S. Cl. 128—214 R **20 Claims**

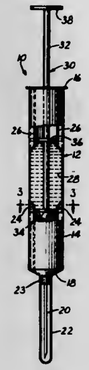


1. An extracorporeal blood circuit comprising, in combination:
a. a blood oxygenator;
b. a first peristaltic pump including a variable tube means of a type having a capacity variable between maximum and minimum values in proportion to the pump inlet pressure, the maximum capacity being reached at an inlet pressure of atmospheric pressure ± 20 mm of mercury;
c. an inlet of said first pump connectable to a patient's blood circuit;
d. an outlet of said pump connected in series with said oxygenator;
e. a second peristaltic pump including a variable tube means of a type having a capacity variable between maximum and minimum values in proportion to the pump inlet pressure, the minimum capacity being reached at an inlet pressure of atmospheric pressure ± 20 mm of mercury;
f. an inlet of said second pump connected in series with said blood oxygenator; and
g. an outlet of said second pump connectable to said patient's blood circuit.

3,881,484
MIXING SYRINGE HAVING A ROTATIONALLY RESTRAINED PISTON ROD

Charles F. Gidcumb, Jr., 207 E. Maywood, Morton, Ill. 61550

Filed July 5, 1973, Ser. No. 376,427
Int. Cl. A61m 5/22
U.S. Cl. 128—218 M 4 Claims



1. A syringe device for separately storing and facilitating mixing of two substances preparatory to discharge from the syringe, comprising, in combination, body means defining a longitudinally extending chamber having an open end and a discharge end, plunger means disposed within said chamber and longitudinally movable therein, said body means having a first pair of ribs formed within said chamber and extending from within said chamber and extending from adjacent said discharge end longitudinally along said chamber a distance substantially less than the longitudinal length of said chamber, said body means having a second pair of ribs formed within said chamber and extending from adjacent said open end longitudinally along said chamber to a position spaced longitudinally from said first pair of ribs to define an intermediate generally cylindrical chamber portion, first piston means supported by said plunger means for movement between a position engaging said first pair of ribs and a position disposed within said intermediate chamber portion, said first piston means having a peripheral surface configuration conforming to the cross-sectional configuration of said chamber taken through said first pair of ribs so as to provide a sealing relation with the peripheral surface of said chamber when said first piston means is engaging said first pair of ribs, said first piston means when in engagement with said first pair of ribs defining with said discharge end a first compartment to receive one of said two substances, second piston means carried by said plunger means in longitudinally spaced relation from said first piston means and having a peripheral surface configuration conforming to the cross-sectional configuration of said chamber taken through said second pair of ribs so as to engage said second pair of ribs and the adjacent peripheral surface of said chamber in sealing relation therewith, said second piston means cooperating with said first piston means to define a second compartment therebetween adapted to receive the other of said two substances, said second piston means and said second pair of ribs cooperating to prevent rotation of said plunger means about its longitudinal axis while allowing movement of said plunger means to a position wherein said first piston means is spaced longitudinally from said first pair of ribs to allow intermixing of said substances, said plunger means being thereafter movable to effect discharge of the mixed substances from said discharge end of said body means.

3,881,485
RECTAL APPLIANCE

Hal M. Davis, Jr., Apt. No. 706, 4045 Linkwood, Houston, Tex. 77025

Filed July 16, 1973, Ser. No. 379,502
Int. Cl. A61f 13/20
U.S. Cl. 128—270 2 Claims



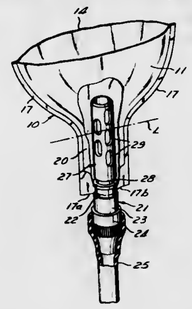
1. Device for insertion through the anus and rectum to a fitted position at or near the sigmoid flexure of a person for wiping the anus and rectum and for preventing passage of fecal matter from the colon through the sigmoid flexure into the rectum, comprising a wiper plug element of non-irritating reaction and of yieldable material which does not swell excessively when wetted, said plug element having a smoothly convexly rounded forward end and cylindrical sides and having a concave depression in its rearward end of a size to receive the end of a finger during insertion of said plug element through the anus and rectum said device including sleeve means of flexible film material having said wiper plug element disposed therewithin, an end of said sleeve means being closed and said wiper plug element being disposed adjacent thereto, said sleeve means having a first temporary seal adjacent said wiper plug element at the opposite side of said wiper plug element from said closed sleeve end and having a second temporary seal spaced therefrom, and a supply of lubricant within said sleeve means between said first and second temporary seals, whereby said first temporary seal may be broken to expose said wiper plug element to said lubricant and whereby said second temporary seal may be broken to expel said lubricated wiper plug element from said sleeve for introduction through the anus of the user, said sleeve being invertable to form a lubricated cover for a member used to force said wiper plug element through the anus and rectum to a position at or near the sigmoid flexure of the user.

3,881,486
DRAINAGE POUCH

Leonard Fenton, Beachwood, Ohio, assignor to Marlen Manufacturing and Development Co., Bedford, Ohio

Filed Mar. 13, 1973, Ser. No. 340,818
Int. Cl. A61f 5/44
U.S. Cl. 128—283 8 Claims

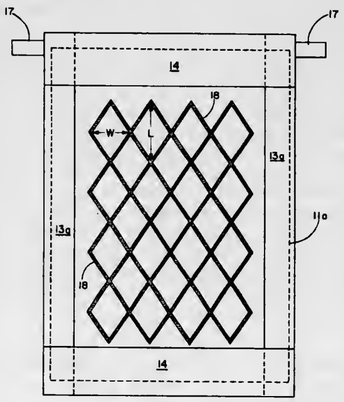
1. A drainage pouch comprising a bag having relatively flat sidewalls, a first opening in one of said sidewalls adjacent one end adapted to be applied to and surround the stoma of a bedridden patient, the other end of said bag having a narrowed, hollow neck portion which defines a second opening at its distal end, and tube means projecting from said second opening within and through said neck portion and terminating beyond said neck portion in a main chamber defined by said bag, said tube having at least one aperture in communication with the main chamber for freely passing drainage from said main chamber through said tube means, said tube means being relatively rigid compared to said bag.



3,881,487
FLUSHABLE DISPOSABLE DIAPER STRUCTURE

Mark S. Schrading, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 30, 1973, Ser. No. 383,898
Int. Cl. A61f 5/44
U.S. Cl. 128—284 4 Claims

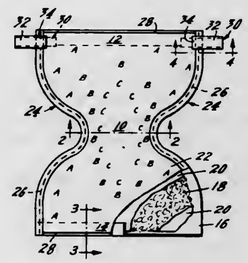


1. In a disposable diaper comprising a substantially rectangular absorbent pad of intermingled wood pulp fibers, a fluid-pervious cover sheet, a fluid-impervious backing sheet of thin plastic film and narrow plastic film baffle members extending transversely across the diaper at each end thereof; in which the longitudinal edge portions of said backing sheet are folded around the respective pad edges to extend over the top of the pad for a short distance and are attached to said cover sheet along the entire length thereof; in which each of the ends of said backing sheet and said cover sheet extend beyond each of the ends of said pad and have said baffle member interposed therebetween; in which the cover sheet, backing sheet and baffle are bonded to each other on a line adjacent the pad ends; and in which the free edge of said baffle member opposite from the bonded portion is interposed between said pad and said cover sheet; the additional structure wherein said pad is adhered to said backing sheet by interconnected lines of adhesive disposed in a selected lattice-like open pattern in only that area of said pad which does not underlie said baffle members or said folded-over portion of said backing sheet, said adhesive being applied in sufficient quantity to penetrate said pad for a short depth, the open area encompassed within the individual segments defined by the unbonded spaces between the lines of said pattern being between about 2 square inches and 3 square inches in area.

3,881,488
DISPOSABLE DIAPER

John T. Delanty, and William E. Hanson, both of Neenah, Wis., assignors to International Paper Company, New York, N.Y.

Continuation of Ser. No. 194,307, Nov. 1, 1971, abandoned.
This application Aug. 9, 1973, Ser. No. 387,155
Int. Cl. A41b 13/02
U.S. Cl. 128—287 8 Claims



1. A disposable diaper of substantially hourglass outline having an intermediate portion of less width than the two end portions, comprising a moisture-impermeable outer backing sheet, an integral fluid absorbant pad of unbonded cellulose fiber fluff disposed on said backing sheet and a fluid-permeable, high wet strength inner liner sheet of non-woven material disposed on said absorbant pad, said backing and liner sheets extending beyond the side edges of said pad and having their inside faces in superimposed face-to-face adhered relationship in the area of such extension, the end portions of said backing sheet extending around and covering the end edges of said absorbant pad and being back-folded and lap-sealed to said inner liner sheet, said absorbant pad being formed of a single, integral layer of varying thickness and smoothly contoured for even transition from relatively thin sections near the diaper side and end edges to a relatively thick section, said relatively thick section being generally eliptical in plan view with the major axis of said elipse disposed longitudinally of said diaper and the minor axis of said elipse disposed transversely of said diaper and generally aligned with the minimum width portion of said diaper, said eliptically shaped relatively thick section constituting a central area of between approximately 15 to 30 percent of the total absorbative pad area.

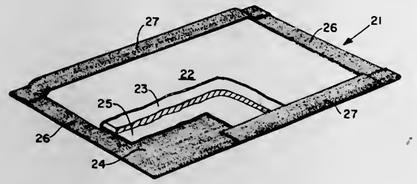
3,881,489
BREATHABLE, LIQUID INPERVIOUS BACKSHEET FOR ABSORPTIVE DEVICES

Edward Wallace Hartwell, Lawrenceburg, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio

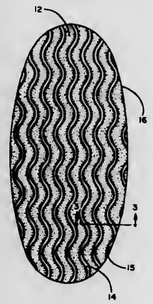
Filed Aug. 20, 1973, Ser. No. 389,841
Int. Cl. A41b 13/02
U.S. Cl. 128—287 20 Claims

1. In a disposable absorbtive device having an absorbent body and a backsheet, an improved breathable, liquid impervious backsheet, comprising: the combination of two adjacent hydrophobic layers to form an effective breathing portion of the improved backsheet; the first layer being liquid permeable under pressure and having a low void volume; the second layer

being liquid permeable and having a high void volume, whereby the combination of the two layers prevents the passage of liquid while permitting the passage of vapors and gasses.

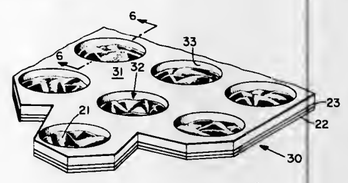


3,881,490
THIN, FLEXIBLE ABSORBENT PADS
Howard A. Whitehead, Appleton, and Ralph V. Braun, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 20, 1973, Ser. No. 426,521
Int. Cl. A61f 13/16
U.S. Cl. 128—287 **9 Claims**



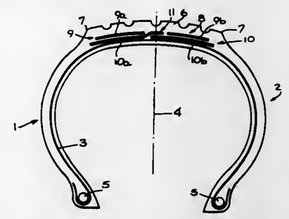
1. An elongate thin absorbent pad with soft flexible edges, said pad comprising a fluid pervious cover sheet of non-woven fibers, a central absorbent batt of comminuted wood pulp fibers, and a fluid impervious backing element; said cover sheet, absorbent batt, and backing element being coextensive; the entire undersurface of said cover sheet being secured to said batt by a light overall layer of flexible adhesive which does not penetrate into the batt; said cover sheet and said batt having a spaced pattern of line embossments impressed therein; said line embossments extending primarily in the longitudinal direction of said pad and intersecting the edges and ends of said pad at spaced intervals; said line embossments defining areas of said batt in which the fibers have been moisture conditioned and sufficiently compacted in the z direction to form hydrogen bonds between those fibers disposed in said line embossment areas; said backing element being secured to the bottom of said batt by discrete adhesive segments disposed in a spaced pattern; the adhesive between said cover sheet and said backing element respectively serving to attach only the respective surface fibers of the batt to said cover sheet and backing element in the adhesive areas; the integrity of said batt in the z direction between cover sheet and backing sheet being provided solely by said hydrogen bonding; and the fibers in the ends and edges of said batt being free of z-direction bonding except where intersected by said line embossments.

3,881,491
SELF-INFLATING STRUCTURE
David Denzil Whyte, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 29, 1974, Ser. No. 456,510
Int. Cl. A61f 13/16
U.S. Cl. 128—287 **4 Claims**



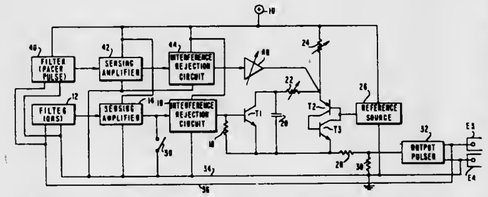
1. A disposable diaper comprising a self-inflating pillow structured laminated backsheet, an absorbent pad, a wicking sheet of hydrophilic material, and a topsheet of porous hydrophobic material, said absorbent pad being disposed intermediate said backsheet and said wicking sheet, and said wicking sheet being disposed intermediate said absorbent pad and said top sheet, said laminated backsheet comprising a plain lamina of substantially water impermeable thermoplastic film, an embossed lamina of semipermeable thermoplastic film which is substantially water permeable, and a predetermined amount of water-reactive gas-evolving reagent, said embossed lamina having a plurality of pillow forming embossments formed therein which are spaced by unembossed areas of said embossed lamina, said pillows being formed by sealingly securing said unembossed areas of said embossed lamina to adjacent portions of said plain lamina while said embossments are substantially collapsed and with a predetermined quantity of said reagent disposed within each said embossment, said absorbent pad having a plurality of spaced apertures therethrough which are so spaced and configured to accommodate said pillows, said absorbent pad being secured to said embossed lamina of said laminated backsheet with said pillows in registration with said apertures whereby portions of said absorbent pad surround each said pillow and said pillows extend through said apertures when inflated by gas evolved by said reagent when water permeates said embossments of said embossed portions of said pillows formed from said embossed lamina and when said water reacts with said reagent.

3,881,492
PNEUMATIC TIRE BREAKER ASSEMBLY
Henri J. Mirtain, Compiegne, France, assignor to Uniroyal, a Societe Anonyme, Clairoix, France
Filed Apr. 19, 1974, Ser. No. 462,262
Claims priority, application France, July 3, 1973, 73.24443
Int. Cl. B60c 9/18
U.S. Cl. 152—361 R **17 Claims**



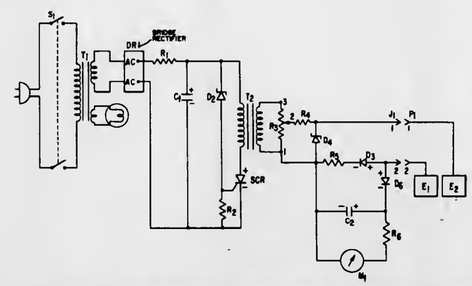
1. A pneumatic tire comprising a carcass having a crown region, a tread overlying said crown region, and a reinforcing breaker interposed between said tread and carcass, said breaker comprising a first pair of plies lying substantially in a common circumferential plane, said plies having respective marginal edge portions one of which overlaps the other and defines a second circumferential plane surrounding the first said circumferential plane, and a second pair of plies overlying said first pair of plies, extending in said second circumferential plane and axially spaced from one another by said overlapping marginal edge portions of said first pair of plies.

3,881,493
SYNCHRONOUSLY REINFORCING PACER
Robert L. Cannon, Waltham, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Feb. 7, 1974, Ser. No. 440,612
Int. Cl. A61n 1/36
U.S. Cl. 128—419 PG **10 Claims**



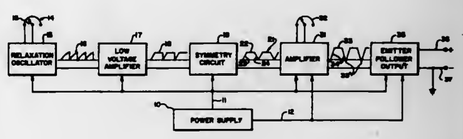
6. An external heart pacer for supplementing the operation of the implantable heart pacer of a patient comprising means for generating pulses, electrode means for coupling to a patient's heart, timing means for controlling the cyclic application of generated pulses to said electrode means, means for detecting electrical signals on said electrode means, and means responsive to the detected electrical signal on said electrode means representing a heartbeat for inhibiting the generation of a pulse and for starting a new cycle of operation of said timing means and responsive to the detected electrical signal on said electrode means representing a stimulating pulse from said implantable pacer for immediately controlling the generation of a pulse and for starting a new cycle of operation of said timing means.

3,881,494
ELECTRO PULSE ARTHRITIC PHYSIOTHERAPY SYSTEM
James M. Paul, Jr., Rt. 3, P.O. Box 400-B, Panama City, Fla. 32401
Filed May 22, 1973, Ser. No. 362,678
Int. Cl. A61n 1/36
U.S. Cl. 128—421 **8 Claims**



1. An electro-pulse arthritic physiotherapy system for providing an output electronic stimulative impulse to a mammalian subject comprising an alternating current source; a switch means connected to said source; a first transformer having a primary and a secondary; said switch and primary being connected in series with said source; a bridge rectifier; said rectifier being connected to said secondary of said first transformer; said rectifier having first and second outputs; a first resistance; a second transformer having a primary and secondary; said first resistance being connected to said first output; a circuit including a first capacitor connected between said first resistance and the second output; a first Zener diode; a second resistance; said Zener diode and said second resistance being connected in a series circuit between said first resistance and second output of said bridge rectifier; a silicon controlled rectifier having a gate lead; the primary of said second transformer and said silicon controlled rectifier being connected in a circuit in series between said first resistance and second output; and said first capacitance circuit, said Zener diode circuit and said second transfomer primary circuit all being arranged in parallel; said gate lead of the silicon controlled rectifier being connected in to said Zener diode circuit between the Zener diode and second resistance; first and second pins forming output connections for the secondary of said second transformer; a variable resistance connected between said first and second pins in parallel with said secondary of said second transformer; a first electrode for attachment to a mammalian subject; a third resistance; means to connect said third resistance in series with said electrode and a portion of said variable resistance; a second electrode for attachment to a mammalian subject; a first diode; a fourth resistance; a second Zener diode; said second electrode, said first diode and said fourth resistance being connected in series with said second pin; said second Zener diode being connected between said third and fourth resistance elements, and also in parallel with the secondary of said second transformer; a second capacitor connected in parallel with said first diode and said fourth resistance; a second diode connected between said first diode and said second capacitor; a voltmeter connected in parallel with said second capacitor; and a fifth resistance connected between said second capacitor and said voltmeter.

3,881,495
METHOD OF NERVE THERAPY USING TRAPEZOIDAL PULSES
Anthony N. Pannozzo, 3755 Barber Dr., Youngstown, Ohio 44406, and Anthony M. Jannetto, 245 Sleepy Hollow Dr., Canfield, Ohio 44406
Filed Aug. 8, 1973, Ser. No. 386,514
Int. Cl. A61n 1/36
U.S. Cl. 128—422 **9 Claims**

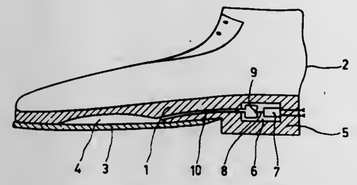


1. A method of treating nerves of a patient by electrical stimulation which includes the steps of:
positioning electrodes at spaced locations on the body of the patient such that current flowing between said electrodes will pass through a nerve;
generating electrical pulses each having a trapezoidal wave shape defined by a top portion of essentially greatest electrical potential and sloping sides diverging from said top portion as the electrical potential falls to zero and below to form a negative pip that comes to a point, and applying said electrical pulses across said electrodes.

3,881,496
APPARATUS AND METHOD FOR ELECTRICALLY STIMULATING LEG MUSCLES

Jakob Vredenbregt; Willem Hadde Noordermeer, and Jacobus Martinus Westoff, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 783,004, Dec. 11, 1968, abandoned. This application Feb. 16, 1971, Ser. No. 115,786
Int. Cl. A61n
U.S. Cl. 128—423 11 Claims

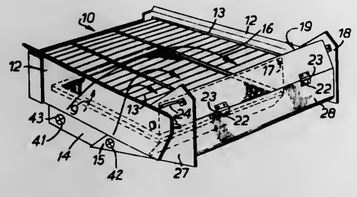


8. A therapeutic apparatus for electrically stimulating the nerve tissues controlling the muscles in a leg having inadequate neurological control in order to obtain a normal walking pattern comprising, means for generating activation current pulses, an air-filled chamber having a flexible wall and adapted to be located beneath the ball of the foot of the sound leg, pneumatic coupling means coupling the air chamber to the pulse generating means for periodically actuating said pulse generating means in response to the change in pressure in the air chamber produced by the displacement of the body weight on the ball of the sound foot during walking, a pair of electrodes adapted to be placed over said nerve tissues on the defective leg, and means connecting said electrodes to the output of said pulse generating means.

3,881,497
GRAIN HARVESTER EQUIPMENT

David John Farrant, Welshes Farm, Clatworthy, Wivelliscombe, Somerset, England

Filed Dec. 22, 1972, Ser. No. 317,818
Claims priority, application United Kingdom, Dec. 23, 1971, 60052/71; Apr. 25, 1972, 19098/72
Int. Cl. A01f *12/52*
U.S. Cl. 130—24 6 Claims

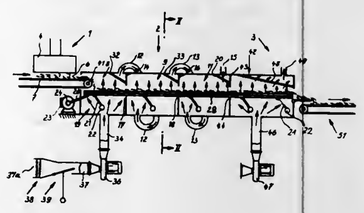


1. Grain harvesting equipment comprising a collector screen for separating grain from chaff, an outlet duct adapted to receive the grain passing through the screen, a return duct having an unobstructed mouth positioned to collect grain and chaff which passes over a downstream end of the screen, the return duct being positioned to communicate with the outlet duct for the return to the outlet duct of the grain so collected, a blower located upstream of the outlet duct for providing an upward and downstream current of air through the outlet duct and the screen and beyond the mouth of the return duct, means defining a restricted opening between the ducts for preventing a current of air from the blower which passes into the outlet duct from opposing movement of the grain from the return duct into the outlet duct.

3,881,498
APPARATUS FOR INCREASING THE VOLUME OF MOIST TOBACCO

Waldemar Wochnowski, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. AG, Hamburg, Germany

Filed Jan. 26, 1972, Ser. No. 220,848
Claims priority, application Germany, Jan. 27, 1971, 2103669
Int. Cl. A24b *3/18, 9/00*
U.S. Cl. 131—134 10 Claims

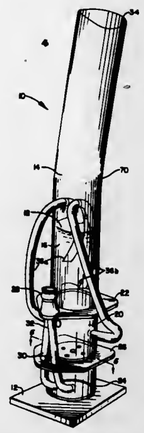


1. Apparatus for increasing the volume of tobacco which comprises means for conveying moistened tobacco thru a heating unit wherein the moistened tobacco is subjected to the action of a high frequency field element and the moisture in the tobacco capillaries is vaporized with attendant expansion of the tobacco, means for conveying the expanded tobacco through a drying unit wherein the tobacco is subjected to a short-lasting external heating action sufficient to effect rapid drying of the tobacco adjacent the external surfaces of the tobacco and means for conveying the thus heated tobacco to a cooling unit said unit being provided with means to produce a forcible cooling action on the tobacco sufficient to effect condensation of the vaporized moisture already present in the capillaries of the tobacco without significantly affecting the surface thereof.

3,881,499
WATER PIPE OR BONG

Michael Duncan McFadden, 10601 River Rd., Potomac, Md. 20854, and Peter Robin Barnhard, 7539 Spring Lake Dr., Bethesda, Md. 20034

Filed Sept. 11, 1973, Ser. No. 396,138
Int. Cl. A24f *01/30*
U.S. Cl. 131—173 27 Claims

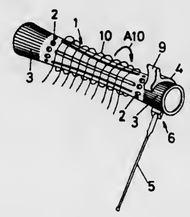


1. A water pipe or bong comprising: an inhalation and water chamber; a base chamber comprising ash and solid matter contaminant trap means and including top, divider plate means for separating said base chamber from said inhalation and water chamber, a bottom wall and sidewall means connecting said divider plate means and said bottom wall to complete said chamber; an inhalation and water chamber mounted on said base chamber; a bowl for burning a substance to be smoked; primary fluid communication means for directing combustion products including smoke from said bowl to said trap through said sidewall means; and secondary fluid communication means for directing smoke substantially free of ash and solid matter contaminants from said trap to said inhalation and water chamber; said primary and secondary fluid communication means being in indirect registry with each other in said trap; whereby during use of the bong, said trap, substantially by virtue of gravity forces, collects such solid matter passing from said bowl through said primary fluid communication means thereby substantially preventing matter other than smoke from passing to water in said inhalation and water chamber.

3,881,500
HAIR CURLING EQUIPMENT

Toshiharu Shinbashi, 3-655, Maekawacho, Kawaguchi-shi, Saitama-ken, and Yuichi Yasumoto, 823-3, Ohaza Ryoke, Urawa-shi, Saitama-ken, both of Japan

Filed Nov. 26, 1973, Ser. No. 418,872
Int. Cl. A45d *2/12*
U.S. Cl. 132—33 B 9 Claims



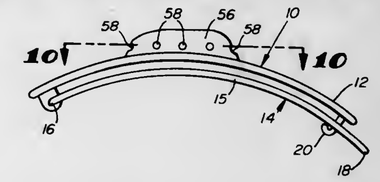
1. A hair curling device comprising:
a stick having a straight pin portion;
a cylindrical rod having an outer portion on each end thereof and an inner portion therebetween, attaching means being provided on at least one of said outer portions for cooperating with said stick to hold said stick non-rotatably with respect to said rod with said pin portion projecting in a direction substantially perpendicular to the longitudinal axis of said cylindrical rod;
said stick having cooperating means thereon for cooperating with the attaching means of said rod;
such that a lock of hair can be wrapped on said inner portion and said stick attached to said outer portion without contacting said lock of hair.

3,881,501
BARRETTE FOR SUPPORTING ORNAMENTAL BROACHES

Shirley H. Kleine, 8877 Weller Rd., Cincinnati, Ohio 45242

Continuation-in-part of Ser. No. 305,592, Nov. 10, 1972, Pat. No. 3,817,260. This application June 10, 1974, Ser. No. 477,666
Int. Cl. A45d *8/24*
U.S. Cl. 132—48 R 9 Claims

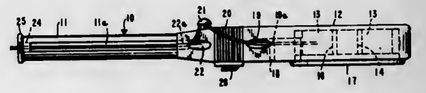
1. A barrette for securing therein an ornamental broach, said broach being of the type having an ornamental element with a fastening element on one side thereof, said fastening element including an elongated pin having one end pivotally secured to the fastening element, the opposite end of said pin being adapted to be removably secured to said ornamental element; said barrette comprising a body portion, hair tress clasping means carried by the body portion for securing the barrette to a hair tress, a cradle carried by said body portion and having at least one bore extending longitudinally therethrough, said cradle being adapted to receive the pin of said broach through a bore thereof in a plurality of different angular positions relative to said body portion.



3,881,502
DENTAL FLOSS DISPENSER

William E. Bennington, 5 Fillmore Dr., St. Armands, Sarasota, Fla. 33578

Continuation-in-part of Ser. Nos. 215,532, Jan. 5, 1972, Pat. No. 3,833,009, and Ser. No. 54,253, July 13, 1970, abandoned. This application June 25, 1974, Ser. No. 483,025
Int. Cl. A61c *15/00*
U.S. Cl. 132—91 1 Claim



1. A dental floss dispenser comprising a finger section communicating with a spool section, a freely turnable spool of dental floss in said spool section and retaining cap means for retaining said spool in said spool section, a bore hole extending through said finger section and comprising a longitudinal slot along the top thereof communicating with said bore hole, said spool section comprising a side open slot extending from within the spool section to a first hole means in the top of said dispenser, a second hole means in the top of said dispenser communicating with said bore hole, braking means disposed between said first and second hole means comprising top serrated frictional means for manually holding said floss taut during use and pin means on the side of said dispenser around which said floss passes and is also frictionally held during use, whereby said floss is threaded from said spool section through said side slot means, out of said first hole means, over and around said serrated means and pin means, into said second hole means, through said bore means and out the end of said finger means, and whereby said braking means are manually operable during use of said dispenser for frictionally holding said dental floss taut, and when manually released will permit said floss to be freely pulled through said dispenser.

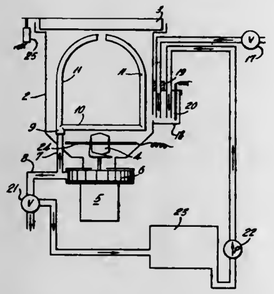
3,881,503
APPARATUS FOR WASHING AND DECONTAMINATING ARTICLES

John Francis Fox, Edinburgh, Scotland, and Bernard Frank Harber, Poole, England, assignors to Ethicon, Inc., Somerville, N.J.

Filed July 12, 1973, Ser. No. 378,748
Claims priority, application United Kingdom, July 12, 1972, 32609/72
Int. Cl. B08b *11/02*
U.S. Cl. 134—57 R 5 Claims

1. In an apparatus for washing and decontaminating articles including a bowl having a motor driven impeller located therein and a top cover for sealing said bowl, a motor driven pump for supplying pressurized fluid to a support means having pipes connected thereto located within said bowl, each of said pipes having at least one outlet orifice and being adapted

to have some articles connected thereto in a manner such that in use fluid from said pipes passes through the interior of the articles and into said bowl, said bowl having passage means connecting the interior of the bowl with the inlet of said pump and having a valve controlled drain, a heating coil located within said bowl, a storage tank for a decontaminating fluid, said fluid having a fixed effective life, means for bringing the decontaminating fluid into effective contact with said articles located within said bowl, means for returning the decontaminating fluid from said bowl to said storage tank at the end of



a decontaminating cycle, and electrical control means for affecting the operation of said motor driven impeller, said motor driven pump, said bowl drain valve, said decontaminating fluid bringing means and said decontaminating fluid returning means; the improvement comprising:

means associated with said bowl for promoting self-draining of bowl surfaces when a fluid is drained from the bowl; and

means associated with said electrical control means for regulating the operational life of said decontaminating fluid.

3,881,504
CONVERTIBLE CRUTCH
Carl F. Pfaff, P.O. Box 155, Cave Creek, Ariz. 85331
Filed June 3, 1974, Ser. No. 475,629
Int. Cl. A61h 3/02; A45b 9/04
U.S. Cl. 135—53 **1 Claim**



1. A crutch convertible for use on dry or slippery surfaces comprising:

a pair of spacedly arranged elongated support members interconnected at one end by a cross member for fitting under the arm pits of a user,

a handgrip arranged to extend laterally between said support members at a point between their ends,

a tread member formed of resilient material for gripping a smooth surface interconnecting said support members at their other ground engaging ends,

said tread member having an aperture extending therethrough longitudinally of said crutch,

a rod arranged between and within the plane of said support members longitudinally of said crutch with one end movable in said aperture of said tread member,

a spike removably attached to said one end of said rod for aiding in gripping a slippery surface,

the other end of said rod extending adjacent to said handgrip,

means mounted adjacent said handgrip and attached to said other end of said rod for moving said rod within said aperture of said tread member to protrude said one end of said rod beyond said tread member or retract it within said aperture,

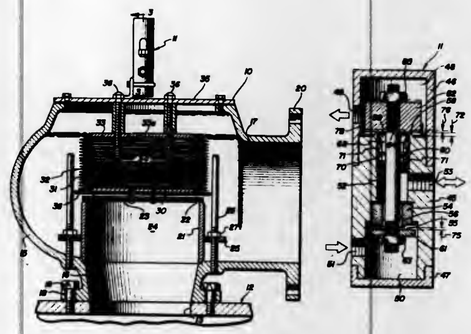
said means comprising a locking means for holding said rod in its retracted and extended positions,

said locking means comprises a supporting plate having a slotted cross like configuration with one arm of the slot extending longitudinally of the crutch and the other arm laterally thereof,

a flat plate pivotally mounted at said one end of said rod for fitting into either arm of said slotted configuration, and

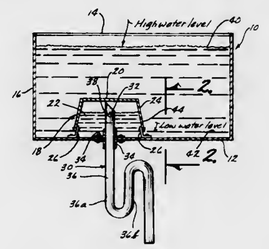
means for moving said plate into either arm of said slotted like configuration to lock said rod in either the retracted or protruding position.

3,881,505
PRESSURE RESPONSIVE PILOT VALVE
Evald Dunkelis, Glen Ellyn, Ill., assignor to Vapor Corporation, Chicago, Ill.
Filed Mar. 4, 1974, Ser. No. 447,962
Int. Cl. F16k 17/10, 11/02
U.S. Cl. 137—375 **21 Claims**



1. In combination with a differential pressure main relief valve mounted on a tank including a relief seat having a relief port communicating on one side with the tank and on the other side with atmosphere, a relief pallet coacting with the seat to selectively open and close the relief port to atmosphere, means defining a differential pressure chamber for controlling movement of said relief pallet, a pilot valve connected between the tank and the differential pressure chamber having first means for selectively connecting the chamber to atmosphere when the tank pressure reaches a set point pressure above atmospheric thereby permitting the tank pressure to unseat the relief pallet and connect the relief port to atmosphere to vent the tank, and second means selectively connecting the chamber to tank thereby maintaining the relief pallet seated to close the relief port or closing the tank connection thereto when said first means connects the chamber to atmosphere thereby preventing the venting of the tank through the pilot valve when the relief port of the main valve is open.

3,881,506
DOSING SYPHON
Thamon E. Hazen, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed July 26, 1973, Ser. No. 382,652
Int. Cl. F07f 10/02
U.S. Cl. 137—137 **3 Claims**



1. In a dosing syphon, comprising,

a water reservoir comprised of a housing having bottom and top portion,

a bell compartment means in said housing and spaced from said bottom portion, said bell compartment means having a closed upper portion and a lower portion in communication with the interior of said housisng for receiving water from the interior of said housing,

a substantially vertical conduit extending from an upper open end within said bell compartment means downwardly and outwardly through said housing,

a trap element in said conduit to capture a quantity of water therein at times,

a water charging opening in communication with the interior of said conduit adjacent said opening in the upper portion of said conduit below the upper end thereof and above the bottom portion of said bell compartment means so that a supply of water will be available to said trap element while the water level rises within said bell compartment means but before water flows into the upper end of said compartment, wherein a constant supply of water will be available in said trap element,

said vertical conduit having a beveled open upper end whereby the natural rotational movement of water as it enters said conduit is substantially eliminated,

said open upper end being continuously sloped.

3,881,507
CAP FOR LIQUID CONTAINER
Eugen Stump, Stuttgart, Germany, assignor to Suddeutsche Kuklerfabrik, Stuttgart, Germany
Filed Feb. 13, 1974, Ser. No. 442,093
Claims priority, application Germany, Feb. 22, 1973, 2308669
Int. Cl. F16k 15/16
U.S. Cl. 137—493.4 **10 Claims**

1. A cap with automatically operating excesspressure and vacuum valves for a liquid container having a cylindrical opening neck and a shoulder extending within said neck below the top thereof, comprising

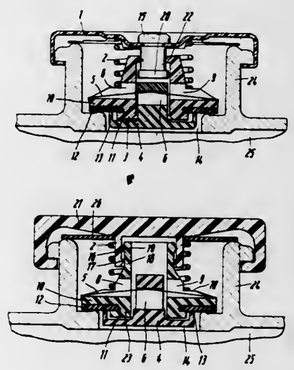
a sealing lid having means for engaging the neck of the liquid container;

a central part displaceably connected to said lid and positioned on the underside thereof and said central part having radial slots therethrough;

a compression spring urging said central part away from said sealing lid toward contact with the shoulder of the liquid container;

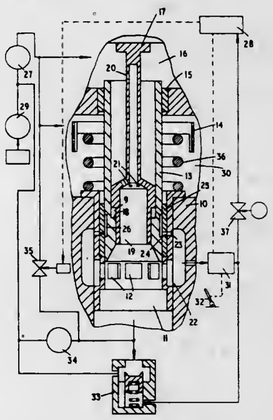
a vacuum valve part displaceably mounted within said central part and having a flanged portion therebelow and said vacuum valve part having a lateral hole therethrough in the area of said radial slots, and

spring means comprising a leaf spring passing through said radial slots and said lateral hole for urging the flanged portion of said vacuum valve part toward said central part;



whereby an excess pressure will urge said central part away from sealing engagement with the shoulder and a vacuum will urge said vacuum valve part away from sealing engagement with said central part.

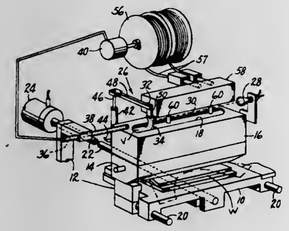
3,881,508
THROTTLE VALVE ARRANGEMENT
Trevor Stanley Smith, Birmingham, England, assignor to Lucas Aerospace Limited, Birmingham, England
Filed Oct. 3, 1973, Ser. No. 403,006
Claims priority, application United Kingdom, Oct. 3, 1972, 45458/72
Int. Cl. F16k 31/12
U.S. Cl. 137—501 **2 Claims**



1. A throttle valve arrangement for use in a gas turbine engine, comprising an inlet, an outlet, a fixed orifice and a variable orifice in series between said inlet and outlet, said variable orifice being on a side of said fixed orifice remote from said inlet and said variable orifice having a piston control member, a spring biasing said control member in a direction to open said variable orifice, said control member comprising a sleeve having first, second and third areas respectively responsive to the pressures on the inlet side of said fixed orifice, on the side of said fixed orifice remote from said inlet side and on the outlet side of said variable orifice, an increase in the pressure on said first and third areas urging the control member towards its closed position and an increase in the pressure

on said second area urging the control member towards its open position, said sleeve having a stepped cylindrical internal surface, a tubular member extending into the interior of the control member and having a head of stepped cylindrical form engaging the interior of the control member on opposite sides of the step therein.

3,881,509
MECHANISM FOR MAINTAINING THE LEVEL OF A VISCOUS LIQUID
Albert E. Newton, Beverly, Mass., assignor to USM Corporation, Boston, Mass.
Filed Apr. 19, 1973, Ser. No. 352,714
Int. Cl. B05c *11/10*
U.S. Cl. 137—386 **9 Claims**

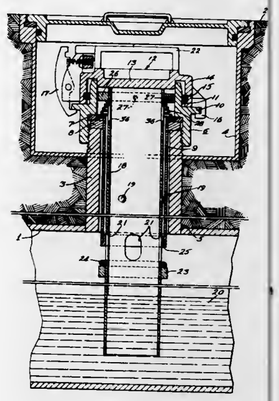


1. Mechanism for controlling the level of a viscous liquid in a container comprising means associated therewith for replenishing the liquid therein, means for directing a beam of light adjacent to the surface of the liquid, a sensor responsive to said beam for controlling operation of said liquid replenishing means and a plunger movable heightwise in the container and across the beam between a position wherein a portion of said surface is potentially contacted by at least the lower end of the plunger and an upper position wherein said lower end is above said beam, the arrangement being such that upward movement of the plunger following its contact with the liquid in the container when the liquid surface level therein is adequate raises a liquid curtain blocking the beam, and when said level is inadequate the upward movement of the plunger is ineffective to produce a beam-blocking curtain whereupon the sensor signals for operation of said replenishing means.

3,881,510
VALVED VAPOR SEAL FOR UNDERGROUND TANKS
William B. Hansel, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
Filed Jan. 2, 1974, Ser. No. 430,333
Int. Cl. F17d *1/00*
U.S. Cl. 137—590 **2 Claims**

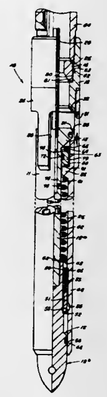
1. In a subterranean tank for the storage of a liquid hydrocarbon, the tank having a gauge conduit extending from the upper portion of the tank to ground level, a valve which prevents the flow of hydrocarbon vapors to the atmosphere while permitting passage of a gauge stick therethrough comprising: a. a tube passing from the ground level, downwardly through the gauge conduit, and terminating below the surface of the liquid in the tank, having an opening in its wall adjacent the top of the tank,

b. and means for selectively covering or uncovering said opening, thereby preventing the flow of hydrocarbon



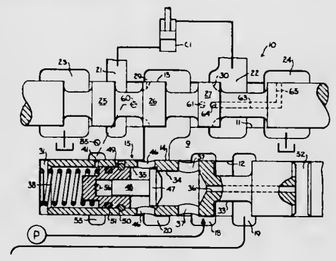
vapor through the valve while permitting a gauge stick to pass through the valve to the tank bottom.

3,881,511
WELL SAFETY VALVE
William W. Dollison, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Dec. 26, 1973, Ser. No. 428,395
Int. Cl. F16h *17/02*
U.S. Cl. 137—460 **9 Claims**



1. A well safety valve comprising: a valve housing having a bore and adapted for connection with means for supporting said safety valve in a tubing string; said housing having ports for admission of well fluids to said bore; means defining a valve seat around said bore on a first side of said ports in said housing; flow rate responsive pressure reducing means in said housing on the opposite side of said valve seat from said ports; a valve member movable in said housing and engageable with said valve seat for shutting off flow through said bore from said ports; a valve operator piston connected with said valve member and movable in sealed relationship in said housing; said operator piston having a first portion thereof exposed to well fluid pressure; passage means extending to the low pressure side of said flow rate pressure reducing means for communicating a flow rate related reduced fluid pressure to an opposite second side of said operator piston for applying a flow rate related pressure differential across said piston for closing said piston when the well fluid flow rate through said valve exceeds a predetermined value; and means for biasing said operator piston in a direction to open said valve.

3,881,512
HYDRAULIC CONTROL VALVE AND PRESSURE COMPENSATING MECHANISM THEREFOR
Raud A. Wilke, Brookfield, Wis., assignor to Koehring Company, Milwaukee, Wis.
Filed Sept. 21, 1973, Ser. No. 399,527
Int. Cl. F15b *11/08*; F16k *11/10*
U.S. Cl. 137—596.13 **17 Claims**



13. A control valve instrumentality having an inlet, an outlet, an open center passage connecting the inlet with the outlet, a pair of valve spools, one upstream from the other, each movable to an operating position to communicate an associated motor port with a feeder passage, and a pair of pressure compensating valve mechanisms, one for each valve spool, mounted in bores which are serially intersected by the open center passage and each having a plunger movable in a direction to establish communication of the associated feeder passage with the adjacent upstream portion of the open center passage in consequence of subjection of one end of the plunger to the pressure of fluid in the associated motor port when the latter is in communication with its associated feeder passage, characterized by:

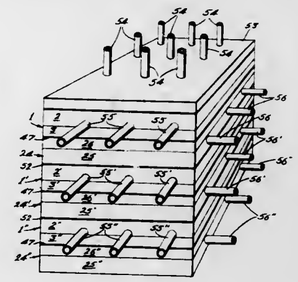
A. the upstream one of said plungers being incapable of restricting the open center passage and consequently incapable of effecting build up in pressure in the upstream portion of the open center passage when in position communicating the latter with the associated feeder passage;

B. the other plunger having means thereon to effect restriction of the open center passage when moved in the direction to communicate the adjacent upstream portion thereof with the associated feeder passage;

C. and means operable to subject said end of said other plunger to the pressure of fluid in the motor port associated with the upstream plunger in said operating position of the upstream one of said valve spools.

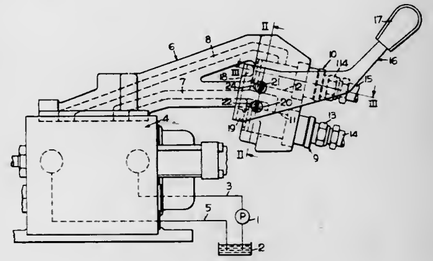
3,881,513
THREE-COORDINATE FLUID MANIFOLD
Robert C. C. Chang, Sao Paulo, Brazil, assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
Filed Jan. 25, 1974, Ser. No. 436,819
Int. Cl. F15c *3/06*
U.S. Cl. 137—608 **11 Claims**

1. A fluid manifolding arrangement comprising one assembly of first and second stacked manifolds; said first manifold having therein a plurality of spaced, parallel, elongated channels; said second manifold having therein a plurlaity of spaced, parallel, elongated channels which are orthogonally related to the channels of the first manifold, the channels of the first manifold crossing the channels of the second manifold to



provide node junctions at the points where the channels meet; and means forming in said manifolds, at certain preselected node junctions, separate parallel channels which are orthogonally related to the channels of both the first and the second manifolds.

3,881,514
QUICK DISCONNECT COUPLING
David A. Berg, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Jan. 2, 1974, Ser. No. 430,194
Int. Cl. F16l *37/28*
U.S. Cl. 137—614.04 **10 Claims**

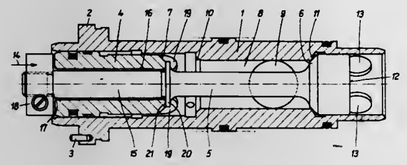


1. A hydraulic coupling means for use in a hydraulic system comprising, a housing defining radial passages and a first and a second bore having axes in parallel relationship, a coupling including, a socket section including a cylindrical casing means with a closed end mounted in each of said bores, locking means carried on said casing means, a locking sleeve engaging said locking means, resilient means biasing said sleeve to a normal locking position, a plug section including a tubular member for reception in said socket section, valve means in said coupling permitting flow through said coupling when said coupling is connected and interrupting flow when said coupling is disconnected, a release lever pivotally mounted on said housing, means pivotally supporting said lever for selective and alternative pivotal movement for selective release of said couplings, a pair of arms on said lever with each arm engaging the closed end of a mating of said casing means for selectively biasing said casing means against said resilient means to a disengaging position relative to said locking sleeve by pivoting said lever to release one coupling in a fore direction and in an aft direction to release the other coupling.

3,881,515
THREE-WAY VALVE

Gerhard Grieger, and Joaquin Bohrdt, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed July 2, 1973, Ser. No. 375,744
Claims priority, application Germany, July 14, 1972, 2235515
Int. Cl. F15b *13/042*
U.S. Cl. 137—625.66 **4 Claims**



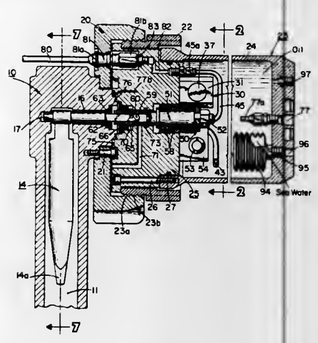
1. A three-way valve for reversing a fluid actuating device such as the kind used for actuating an electrical switching apparatus or the like comprising: a cylinder defining a valve-inlet passage, a valve-outlet passage and a space between said passages, said cylinder having an opening formed therein for connecting said space to the fluid actuating device; said cylinder further defining valve seats at said passages respectively; a single drive piston movable in said cylinder between first and second end positions, said piston being a differential piston and having an end-face portion facing said space, said end-face portion being configured as a valve-body corresponding to one of said passages; a second valve body corresponding to the other one of said passages; and, a valve rod carrying said second valve body and extending through said space and into said differential piston for coupling said valve bodies together to coact to cause said other passage to open when said one passage is closed and conversely, to cause said one passage to open when said other passage is closed, said differential piston engaging said valve rod to hold the same in wobble-like fashion so as to facilitate the movement thereof within defined limits relative to said piston whereby a firm seating of said valve bodies on corresponding ones of said valve seats is assured.

3,881,516
HYDRAULICALLY OPERATED DIVERTER

Thomas W. Childers, Woodland Hills; Ronald A. Weber, Ojai; John K. Rains, Ventura, all of Calif., and Benton F. Baugh, Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Aug. 15, 1973, Ser. No. 388,697
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.44 **20 Claims**

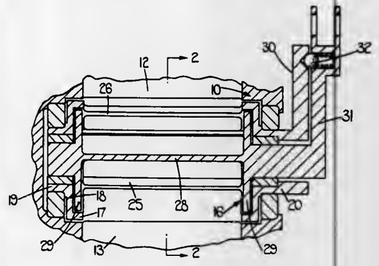
1. Apparatus for diverting flow comprising:
a flow diverter body member containing branched passageways joined together in a wye configuration;
a paddle arranged at the junction of said passageways and movable from one position in which flow through one of said passageways is blocked to another position in which flow through said other passageway is blocked;
a shaft nonrotatably connected to said paddle;
rotatable means connected to said shaft;
means for rotating said rotatable means including piston means and spring means, said piston means rotating said rotatable means against the bias of said spring means from one position of said rotatable means to another position of said rotatable means and said spring means rotating said rotatable means in a counter direction; and means on said piston means for limiting stress on said rotatable means, said shaft and said paddle, and for adjusting travel of said paddle to permit full rotation of said paddle from said one to said other position where differences might exist in the distance to be travelled by said paddle between its two positions.



3,881,517
FLUID FLOW CONTROL VALVES

Arthur Leslie Lloyd; Anthony Michael Parry-Evans, both of Wolverhampton, and Terence John Capewell, Gnosall, all of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed July 27, 1973, Ser. No. 383,250
Claims priority, application United Kingdom, Sept. 23, 1972, 44128/72
Int. Cl. F16k *11/00, 11/14*
U.S. Cl. 137—637.1 **2 Claims**

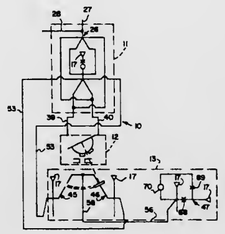


1. A fluid flow control valve comprising a body having a bore, an inlet port opening into said bore and at least one further port the connection of which to the inlet port is to be controlled, a first closure member in the form of a sleeve in said bore having an opening in communication with the inlet port and a port which is alignable with the further port so as to control the interconnection between the inlet port and said further port via the interior of the sleeve, a second closure member within the first closure member movable relative to the first closure member to cover or uncover said port therein, said closure members being operable in first and second distinct modes in the first of which said closure members move in unison to control the interconnection of said inlet port to said further port and in the second of which the closure members move relative to one another to control such interconnection, an input member on said second closure member for applying operating torque thereto; and spring loaded detent means acting between said first and second closure members and causing said closure members to be operated in said first mode when the torque applied is insufficient to overcome said detent means and in the second mode when the torque applied is sufficient to overcome said spring detent means.

3,881,518
MEMORY CIRCUIT FOR BINARY COUNTER

David J. Schaffer, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 1, 1974, Ser. No. 456,486
Int. Cl. F15c *3/00, 1/08*
U.S. Cl. 137—821 **8 Claims**



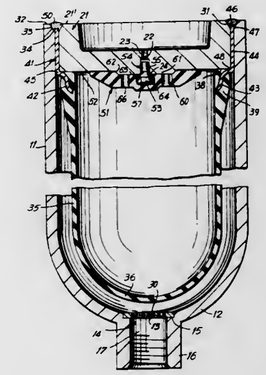
1. A fluidic binary counter with a memory characteristic, comprising:
a. a fluidic circuit having a bistable fluidic amplifier with an inlet connected with a source of fluid pressure, a pair of control ports, spaced output ports and means for applying a counting signal;
b. indicator means responsive to fluid flow from said output ports to move between indicating positions;
c. a branch circuit with a plurality of "not" elements, each "not" element having an inlet connected with the source of fluid pressure, a vent port normally receiving and venting fluid supplied to said inlet, an output port connected with a control port of said bistable amplifier, and a control port for diverting fluid from the "not" element inlet to said output port;
d. means for directing a single fluid impulse to the control ports of said "not" elements when the source of fluid pressure is initially energized; and
e. means dependent upon the position of said indicator means for blocking the application of the fluid impulse to the control port of a predetermined "not" element to prevent the direction of fluid from the output port of such "not" element to the respective control port of said bistable amplifier.

3,881,519
PRESSURE VESSEL

Abduz Zahid, Monterey Park, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 353,544, April 23, 1973, abandoned. This application June 5, 1973, Ser. No. 367,231
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **13 Claims**

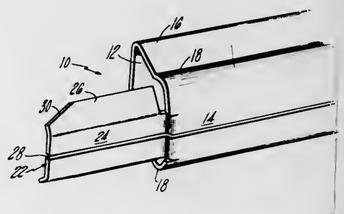
1. A pressure vessel comprising a container of rigid material having an opening at one end and an oil port at the other end, a deformable partition in said container intervening between said opening and said oil port and defining a gas chamber and an oil chamber on opposed sides thereof respectively, a rigid member secured in said opening and presenting a generally planar inner surface, said member having a bore therethrough defining a gas port having its inner end opening through said inner surface adjacent said gas chamber, a layer of resilient material generally paralleling and overlying said inner surface and defining a disc portion extending over the inner end of said bore, the periphery of said disc portion being bonded to the inner surface of said rigid member through which the inner end of said bore opens, the central portion of said disc portion being movable toward and away from said surface and having passage means therethrough with one end opening toward the rigid member inner surface whereby gas introduced under pressure through said gas port may be charged into the gas chamber, said passage means being positioned laterally remote from said gas port and between the bonded periphery and the axis of said portion, the central portion of said disc portion, in the relaxed position thereof, being retained against said surface of said rigid member and both closing and sealing said gas port by engagement of the disc portion against the inner end of the bore and both closing and sealing said passage means by engagement of said one end of the passage means against the inner surface of the rigid member, said central portion upon movement away from said surface, opening both the gas port and the passage means to provide communication between said gas port and said gas chamber.



3,881,520
ONE-PIECE RACEWAY WITH INTEGRAL COUPLING

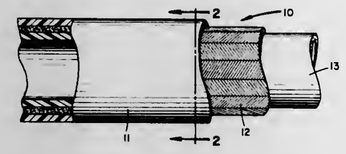
Robert H. Murphy, West Hartford, Conn., assignor to The Wiremold Company, West Hartford, Conn.

Filed Jan. 7, 1974, Ser. No. 431,090
Int. Cl. F16l *9/22, 21/00, 37/02*
U.S. Cl. 138—109 **7 Claims**



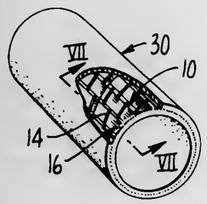
1. A raceway for electrical wiring and the like comprising an elongated tubular member of one-piece construction having an elongated base wall portion, a canopy portion integral with the base wall portion along its length and cooperating therewith to form an elongated enclosed raceway cavity, and a coupling portion integral with the base wall portion and extending longitudinally from one end thereof beyond the canopy portion, said coupling portion being offset from the base wall portion by a distance equal to at least the thickness of the base wall portion and having a lateral dimension slightly greater than the lateral dimension of the raceway cavity adjacent the base wall, said coupling portion and said base wall portion having a continuous narrow slot extending longitudinally through the coupling portion and along the base wall portion to impart flexibility and resiliency to the raceway and permit contraction of the coupling portion during assembly.

3,881,521
DIMENSIONALLY STABLE, FLEXIBLE HYDRAULIC HOSE HAVING IMPROVED CHEMICAL AND TEMPERATURE RESISTANCE
Hans A. Johansen, Mantua, and David D. Russell, Atwater, both of Ohio, assignors to Samuel Moore & Company, Mantua, Ohio
Filed Jan. 31, 1973, Ser. No. 328,367
Int. Cl. F16l *11/08*
U.S. Cl. 138—126 **14 Claims**



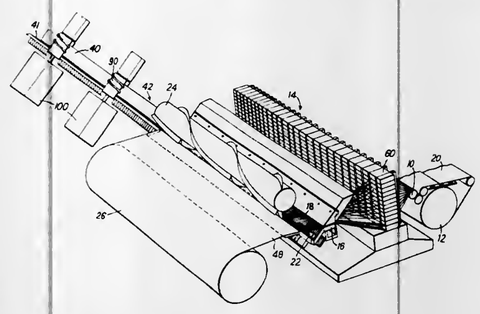
14. A flexible, dimensionally stable hydraulic hose comprising an extruded elastomeric core tube which has been cross-linked by irradiation with ionizing electrons, biased overlapping layers of reinforcing fibers tautly wound about the core tube in each direction at an angle of from about 50° to about 65° with the longitudinal axis of the core tube and preventing the expansion of the core tube while the hose is conveying fluids at pressures above atmospheric.

3,881,522
UNIDIRECTIONAL WEBBING MATERIAL
Albert Lewis, Covina, and Ronald G. Krueger, Azusa, both of Calif., assignors to Kaiser Glass Fiber Corporation, Oakland, Calif.
Division of Ser. No. 288,793, Sept. 13, 1972. This application Jan. 28, 1974, Ser. No. 436,974
Int. Cl. F16l *9/14*; D03d *15/00*
U.S. Cl. 138—144 **1 Claim**



1. A plastic seamless pipe comprising a helically wound relatively distortion resistant unidirectional tape, said tape being comprised of a plurality of relatively widely spaced, smooth surfaced and parallel synthetic fiber warp strands intersecting glass fiber fill elements arranged in weft bundles that are interlaced with and arranged crosswise to said warp strands, the ratio of said warp strands to said weft fill elements being relatively low, said fill elements being bonded to said warp strands at their areas of intersection, said tape having a uniform coating of polymerized plastic fill material on each side thereof and providing a seamless hard walled pipe having said glass fiber fill elements substantially aligned with the longitudinal axis of said pipe.

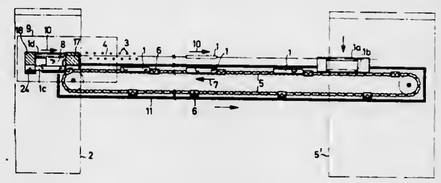
3,881,523
WEAVING
Anthony David Paton, 51 Mills Lane, Longstanton St. Michael, and Stephen Temple, 9 Almond Grove, Bar Hill, both of Cambridge, England
Filed May 10, 1973, Ser. No. 358,910
Claims priority, application United Kingdom, May 10, 1972, 21902/72; Jan. 26, 1973, 4147/73
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 **29 Claims**



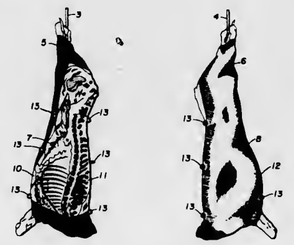
1. A loom comprising:
a shedding section;
feeding means for feeding a plurality of warp yarns to said shedding section;
first and second gripping means for gripping a length of each one of said plurality of warp yarns, extending between said first and second gripping means, so that each length of warp yarn has a predetermined amount of slack;
a plurality of fluid flow means associated with respective ones of the lengths of warp yarn for creating gaseous fluid flow along at least one portion of each of the lengths of warp yarn, thereby applying longitudinal force to each length of yarn;
application of the longitudinal force in a first direction urging the length of yarn to be held in tension in said shedding section while a slack portion is formed at a second location remote from said shedding section, and application of the longitudinal force in a second direction urging the length of yarn to move so that a slack portion is formed in said shedding section while the yarn is held in tension at said second location;
a plurality of forming means associated with each of said fluid flow means, for forming the slack portion in said shedding section into a shed for the insertion of a weft yarn; and
shedding control means for controlling the shedding operation, by causing said plurality of fluid flow means to form a slack portion in each of said plurality of warp yarns in the shedding section according to a predetermined sequence.

3,881,524
SHUTTLE RETURN APPARATUS
Hans Bracher, Burgdorf, and Heinz Baumann, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited
Filed Sept. 10, 1973, Ser. No. 395,560
Claims priority, application Switzerland, Sept. 8, 1972, 13195/72
Int. Cl. D03d *47/24*
U.S. Cl. 139—126 **10 Claims**

1. Shuttle return apparatus for a loom having picking and catching mechanisms on opposite sides of a shed-forming mechanism, said return apparatus comprising an endless belt adapted to extend from the catching to the picking side of the loom, means defining a shuttle guide path along one run of the belt, plural means arranged on the belt to propel shuttles along said guide path, means to retard the motion of shuttles along said path, and a shutter retractably extensible across said guide path between said picking mechanism and retarding means.



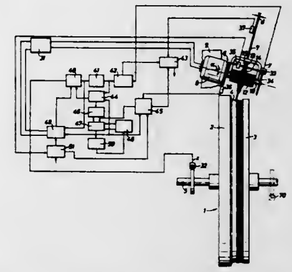
3,881,525
POLYESTER MEAT SHROUD
Witold R. Kocay, Creve Coeur, Mo., and James B. Denmark, Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.
Filed Sept. 26, 1973, Ser. No. 400,870
Int. Cl. D03d *15/00*
U.S. Cl. 139—420 R **11 Claims**



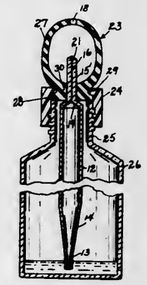
1. Meat shrouds consisting essentially of a fabric, a major portion of which comprises a continuous filament yarn, a major portion of which comprises a manufactured filament in which the filament-forming substance is a long-chain synthetic polymer composed of at least 85% by weight of an ester of a dihydric alcohol and a dicarboxylic acid, said fibers being characterized by:
a. A denier from about 4 to 8;
b. A tenacity of at least about 4 gpd
said fabric being characterized by:
a. A simulated carcass relative moisture retention capability of at least 15%;
b. A skewer strength of at least about 80 lbs.;
c. A grab strength of at least about 200 lbs. in both warp and fill direction;
d. A fabric moisture absorption of no more than about 70%.

3,881,526
APPARATUS FOR MANUFACTURING ANNULAR BEADS
Robert Graham Bell, Hartlebury, England; James Edward Collins, and Gwylfa George Griffiths, both of Swansea, Wales, assignors to National-Standard Company Limited, Kiddermunster, Worcestershire, England
Filed June 1, 1971, Ser. No. 148,429
Claims priority, application United Kingdom, June 1, 1970, 26288/70
Int. Cl. B21f *3/04*
U.S. Cl. 140—92.2 **16 Claims**

1. Apparatus for manufacturing an annular bead, comprising a cylindrical former having a longitudinal axis, a circumferential recess in the former, means for rotating the former about said axis at a uniform speed, guide means for laying a length of wire in said recess circumferentially of the former, means for adjusting the guide means in the direction of said axis, a stepping electric motor for moving said adjusting means intermittently in the direction of said axis, and electronic control means controlling the supply of electric pulses intermittently to said motor to effect rotation of said motor according to a pre-chosen programme, whereby the adjusting means is moved through a predetermined programme of stepwise movements to cause the wire to be laid in said recess in a predetermined number of superimposed layers each consisting of a predetermined number of turns for the purpose of forming an annular bead of a predetermined cross-sectional shape, said electronic control means comprising a first manually settable unit for determining the number of turns of wire in each of said superimposed layers and a second manually settable unit for determining the number of superimposed layers.



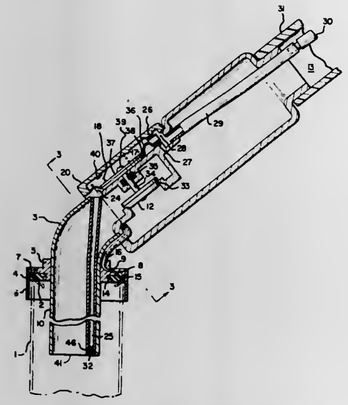
3,881,527
BULB-OPERATED PIPET
Justin Joel Shapiro, 1802 Second St., Berkeley, Calif. 94710
Filed Jan. 3, 1974, Ser. No. 430,384
Int. Cl. B65b *3/04*
U.S. Cl. 141—24 **6 Claims**



1. A liquid transfer pipet comprising a barrel member having a liquid-receiving cavity portion and an intake conduit element at one end of said barrell member communicating with said cavity portion, the opposite portion of said barrel member being formed with a capillary bore coextensive in length therewith in communication with said cavity portion and opening at the opposite end of the barrel member, and a flexible operating bulb sealingly engaged on and slidably receiving said opposite portion, said bulb being formed with an upper vent opening adapted to be sealingly engaged at times by an operator, and wherein said opposite portion of the barrel member is of substantial length and of uniform cross-sectional size and shape and is much smaller than the bulb, whereby the bulb may be adjusted to a position along said opposite portion wherein said opposite portion projects upwardly a substantial distance through an opening in the bulb to define within said bulb above said opposite portion an air space and within said bulb below said opposite portion an overflow space of substantial volume in the bottom of the bulb around said opposite portion, and said upper vent opening

being in communication with said air space, and whereby liquid accumulating in said overflow space will not re-enter said capillary bore when the bulb is squeezed to discharge liquid from the pipet.

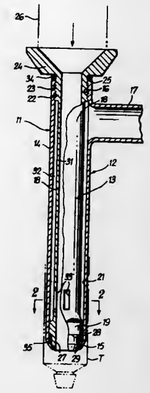
3,881,528
HOSE NOZZLE WITH SEAL SENSING SYSTEM
Elbert K. Mackenzie, 304 Britt Road, North Wales, Pa. 19454
Filed Oct. 23, 1973, Ser. No. 408,600
Int. Cl. B65b *57/06;* **B67c** *3/26*
U.S. Cl. 141—52 **7 Claims**



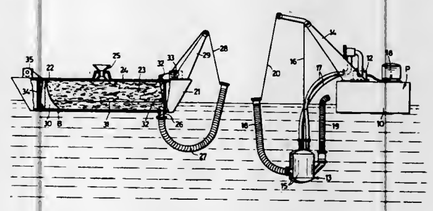
7. A gasoline hose nozzle for filling gasoline tanks having a filling neck comprising:
a flanged outlet spout,
a pressure seal mounted on the flange of said spout, said seal being constructed to mate with a matching surface on a filling neck,
a sensing chamber in said seal having an opening which mates with said filling neck to enclose said sensing chamber when said seal is mated with said filling neck,
a valve connected between said outlet spout and a source of said gasoline, and
a pneumatic sensing device connected to said sensing chamber, said sensing device being actuated when said seal is mated with said filling neck, said sensing device being connected to open said valve when said sensing device is actuated so that the gasoline flows through said valve only when said seal is mated with said filling neck.

3,881,529
STRIPED TOOTHPASTE FILL NOZZLE
Giuseppe Mannara, Rome, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Nov. 28, 1973, Ser. No. 419,624
Claims priority, application Italy, Dec. 6, 1972, 54513/72
Int. Cl. B67c *3/02;* **B05b** *7/00*
U.S. Cl. 141—100 **6 Claims**

1. A nozzle assembly for filling containers with fluent materials arranged in desired composite relation comprising longitudinally coextensive inner and outer tubular members removably secured together to form an annular space therebetween, said tubular members being threadedly connected at one end, means for introducing a first fluent material into one end of the inner tubular member, means forming a discharge opening at the other end of said inner tubular member, said inner tubular member having an enlarged portion adjacent its other end slidably fitting within the outer tube, means for introducing a second fluent material into said space, means providing a plurality of spaced orifices in said inner tubular member providing communication between said space and the interior of said inner tubular member, and resiliant sealing means between the tubes at opposite ends for preventing fluent material from leaving said annular space except through said orifices.

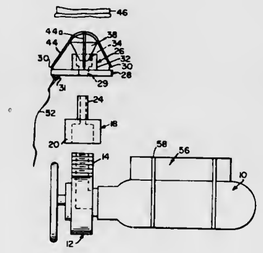


3,881,530
PLANT FOR EVACUATING DREDGED MATERIAL
Giovanni Faldi, via Forese Donati 27, Florence, Italy
Filed Apr. 3, 1973, Ser. No. 347,373
Claims priority, application Italy, May 17, 1972, 24498/72
Int. Cl. B63b *35/30*
U.S. Cl. 141—284 **4 Claims**



1. A plant for conveying and discharging at a distance dredged material in the form of an aqueous suspension, in which the dredged material is loaded into lighters at a dredging station for transport to a distance, characterized in that said plant comprises a floating flow pumping station provided with at least one and preferably a plurality of submerged pneumatic flow pumps, having, respectively, a plurality of inlet pipes at least one transporting lighter selectively operatively connected to or disconnected from said floating flow pumping station, said transporting lighter having a discharge connection, the inlet pipe of each pump being removably connected to the discharge connection of the transporting lighter arranged for shuttling between the dredging station and said floating flow pumping station, further characterized in that said lighter, provided preferably with its own drive means, comprises a completely closed loading cavity with an upper aperture for receiving the dredged material and a discharge aperture situated in the bottom of the cavity, said discharge aperture being arranged for connection by way of said discharge connection to said flow pump inlet pipe in said floating station, means provided in said cavity for conveying the dredged material filling said cavity towards said discharge aperture, said flow station comprises in addition to at least one submerged pneumatic flow pump a mooring corridor for the lighters, provided with fixed mooring points such as to dispose the lighter and in particular its discharge connection in a predetermined position with respect to the submerged pump and in which are further provided means for bringing the inlet pipe of the submerged pump into tight communication with the discharge connection of the lighter, and said means for bringing the inlet pipe of the submerged pump into tight communication with the discharge connection of the lighter comprising a part shaped as a funnel generally coaxial with said inlet pipe and rigid with the free end of said inlet pipe, said funnel part terminating in a flat flange fitted with a seal gasket, arranged to mate with a flat flange formed on the bottom of the lighter at and concentric with said discharge connection, and means anchored adjustably downwards and rigid with said funnel part to ensure that the funnel part floats.

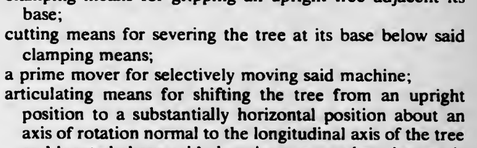
3,881,531
INFLATABLE SIGNAL DEVICE
Nicholas V. Rossi, 21 Greeley St., Sayville, N.Y. 11782
Filed Dec. 11, 1972, Ser. No. 314,279
Int. Cl. A63h *3/06;* **B64b** *1/58*
U.S. Cl. 141—313 **3 Claims**



1. A balloon in combination with a supply adapter and a balloon adapter, said adapters being adapted to communicate with each other in position of use, said balloon adapter having an opening therethrough and a seat surrounding said opening, a movable sealer member normally resting on said seat thus closing said ballon adapter, and movable means normally holding said sealer member in closed position on said balloon adapter seat, said sealer member being adapted to be moved away from said seat by pressure of gas from said supply adapter and thus move said movable means and permit gas to enter said ballon, the latter having a neck, said ballon adapter being mounted in said neck and said sealer member being within said neck, said balloon adapter having a flange in contact with the interior of said neck, and having an opening therethrough, said balloon adapter having an extension extending from said flange in the direction of the balloon and having an opening therethrough communicating with the opening in said flange, and saod opening in said extension having a greater diameter then said flange opening.

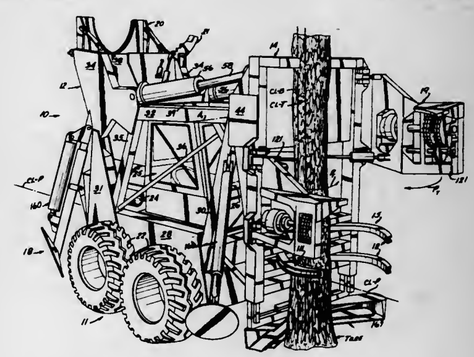
3,881,532
SEPARABLE BLADE CRADLE DEVICE FOR DELIMBING TREES
Eino J. Jouppi, Isabella, Minn. 55607
Division of Ser. No. 252,619, May 12, 1972, Pat. No. 3,814,151, which is a continuation-in-part of Ser. No. 3,941, Jan. 19, 1970, abandoned. This application Aug. 22, 1973, Ser. No. 390,587
Int. Cl. A01g *23/8*
U.S. Cl. 144—2 Z **4 Claims**

1. A separable blade cradle device for delimbing felled trees comprising:
a. a base frame,
b. a flexible lower blade cradle for receiving a felled tree therein and encompassing the lower portion thereof.
c. means for supporting said lower blade cradle on said base frame with the blades in a U-shaped position,
d. a flexible upper blade cradle,
e. arm means pivotally mounted on said base frame and on which said upper cradle is mounted for pivotally lowering said upper blade cradle from a first position above, laterally removed and longitudinally offset from the lower blade cradle to a second and released position with the blades thereof upon and in engagement due to gravity



with and encompassing the upper portion of a felled tree positioned in the lower blade cradle with the upper blade cradle longitudinally offset from the lower blade cradle, such that said upper blade cradle and said lower blade cradle encompass a felled tree in said blade cradle device for delimbing the same, said upper cradle automatically lowering upon the tree and continually encompassing the tree due to gravity as the tree is progressed through the cradles and the diameter of the tree progressively reduces.

3,881,533
TREE HARVESTER
Donald D. Savage, 2883 Cobb St.; Robert V. Chambers, 2895 Robinson Rd., N.E., and Maurice T. Mills, 108 Margaret Ave., N.E., all of Marietta, Ga. 30060
Filed Sept. 29, 1972, Ser. No. 293,482
Int. Cl. A01g *23/00*
U.S. Cl. 144—3 D **31 Claims**



1. A tree harvesting machine including:
clamping means for gripping an upright tree adjacent its base;
cutting means for severing the tree at its base below said clamping means;
a prime mover for selectively moving said machine;
articulating means for shifting the tree from an upright position to a substantially horizontal position about an axis of rotation normal to the longitudinal axis of the tree and located above said clamping means when the tree is in its upright position, said articulating means including a support bed pivoted to said prime mover at its upper end for rotation about said axis of rotation normal to the longitudinal centerline of said prime mover to maintain substantially vertical alignment between said tree and said longitudinal centerline of said prime mover, said support bed mounting said cutting means at its lower end and mounting said clamping means above said cutting means; and

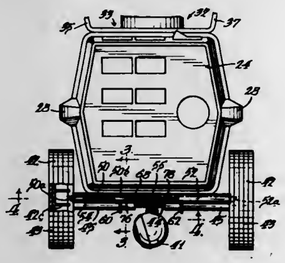
traversing means for moving said tree longitudinally of itself and said support bed after said tree has been felled, said traversing means including a plurality of gripping members selectively and drivingly engagable with said tree trunk, and power means for rotating said gripping members to selectively move said tree trunk.

3,881,534
BREAK AWAY PURSE
Juanita V. Gist, 11605 S. Avalon Blvd., No. D, Los Angeles, Calif. 90061
Filed Apr. 5, 1974, Ser. No. 454,441
Int. Cl. A45c *13/20*
U.S. Cl. 150—33 **10 Claims**



1. A pocket book having an outer portion with an openable top and bottom, a purse detachable secured to said outer portion, an elongated cord attached to said inner purse with a wrist bracelet on its free end wherein said purse is secured tightly enough to said outer portion to be used as an integral pocket book but upon extraordinary pulling said inner purse will become released from said outer portion.

3,881,535
STAIRHOLDING DEVICE FOR VACUUM CLEANER
Jean P. Du Bois, Villa Park, and Roger A. Rieckman, Elmhurst, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed May 14, 1973, Ser. No. 360,149
Int. Cl. A47l *9/00*
U.S. Cl. 15—327 E **8 Claims**



1. A household vacuum cleaner comprising an elongated housing having a front end from which a suction hose extends and a rear end, front wheel means and rear wheel means at said front end and at said rear end respectively, brake means mounted on said housing adjacent said rear wheel means to prevent rotation of said rear wheel means when said vacuum cleaner is in an inclined position on stairs, said rear wheel means engaging the tread of a stair to prevent said vacuum cleaner from sliding down the stairs, said rear wheel means comprising a pair of spaced wheels mounted on a fixed axis positioned adjacent the lower rear edge of said housing, said suction hose being adapted to drag said cleaner forwardly including up stairs, said brake means locking at least one of said rear wheels against rotation in a first direction preventing rearward movement of said cleaner while permitting rotation in the opposite direction to provide forward movement of said cleaner.

6. A vacuum cleaner comprising an elongated tank having means for attaching a suction hose to one end thereof, support means for said cleaner including a pair of wheels on said tank at the end remote from said one end, said wheels being mounted on a fixed horizontal axis which is positioned at the bottom of said tank with said wheels extending substantially below said tank to engage a substantial portion of a stair tread when said cleaner is in an inclined position on said stairs with said one end up and the other down, ratchet means on said tank engageable with said wheels to permit rotation of said wheels when said tank is moved in a direction toward said one end and to lock said wheels when said tank is moved in the opposite direction, and manually operable means for rendering said ratchet means inoperative.

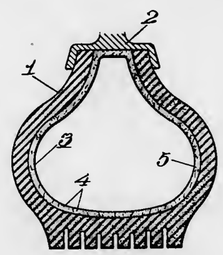
3,881,536
RUBBER VULCANIZATES
Thomas J. Doran, Jr., Norton, Ohio, and Roland H. Hess, Au, Switzerland, assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 285,297, Aug. 31, 1972, abandoned. This application May 13, 1974, Ser. No. 469,566
Int. Cl. C08c *11/10;* **B60c** *5/00, 11/00*
U.S. Cl. 152—330 **20 Claims**

1. In the process of compounding a siliceous pigment reinforced sulfur curable rubber to provide a vulcanizable composition suitable for use in the manufacture of tires, the improvement which comprises including in the composition a silanated rubber coupling agent consisting essentially of the catalytic reaction addition product of (1) organohydrosilane having the dual functionality, A and B, wherein A is a functional group capable of forming a bond with a siliceous pigment particle and B is a hydrosilyl group and (2) synthetic unsaturated rubber polymer having at least 1 percent by weight of its olefinic unsaturation present, as pendant vinyl groups, said coupling agent furnishing from about 0.1 to about 3 parts of organohydrosilane equivalent per 100 parts of total rubber in the vulcanizable composition.

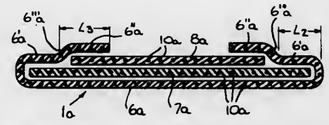
3,881,537
LINING AGENT FOR A TUBELESS PNEUMATIC TIRE
Teruhiko Miyazato, 18-7, Shiomi-cho, Sasebo, Nagasaki Prefecture, Japan
Division of Ser. No. 271,686, July 14, 1972, which is a continuation-in-part of Ser. No. 158,562, June 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 767,433, Sept. 4, 1968, abandoned. This application Feb. 5, 1974, Ser. No. 439,749
Claims priority, application Japan, Sept. 13, 1967, 42-78828
Int. Cl. B60c *21/08*
U.S. Cl. 152—347 **13 Claims**

1. A self sealing tubeless pneumatic tire comprising a tubeless pneumatic tire and a fluid tire lining agent disposed in the interior thereof, said tire lining agent including:

a. An adhesive consisting essentially of an aqueous emulsion of polyvinyl acetate, polyacrylic acid ester, butadiene-acrylonitrile rubber, polychloroprene or polychloroprene copolymer, said aqueous emulsion being
   i. dispersible in water; and
   ii. adhesive to finely divided particulate solid rubber particles, 100 parts of said aqueous emulsion being present per 18 to 54 parts of water; and
b. finely divided particulate solid rubber particles intimately dispersed in said aqueous dispersion, said finely divided particulate solid rubber particles having a particle size of from about 50 to 1,200 microns and being present in an amount sufficient to seal a small puncture hole in said vehicle tire, said finely divided particulate rubber particles (b) having been added in their solid form to said adhesive (a), whereby the resultant mixture comprises said finely divided particulate solid rubber particles intimately admixed in said adhesive.



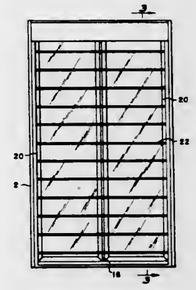
3,881,538
PNEUMATIC TIRES AND BREAKERS THEREFOR
Henri J. Mirtain, Compiegne, France, assignor to Uniroyal, a Societe Anonyme, Clairoix, France
Filed June 6, 1973, Ser. No. 367,467
Claims priority, application France, Aug. 11, 1972, 72.29181
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 FP **9 Claims**



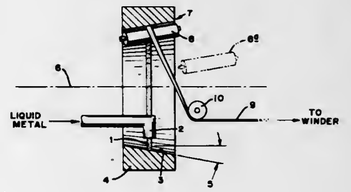
1. A pneumatic tire comprising a radial ply carcass having a crown region, a tread overlying said crown region, and a breaker assembly interposed between said tread and carcass, the breaker assembly comprising a first ply, a second ply overlying said first ply, and a third ply overlying said second ply, said first ply having a greater axial span than said second ply and terminating in a pair of folded marginal edge portions overlying at least in part said second ply, said third ply having a lesser axial span than said second ply and terminating in a pair of oppositely directed edges which are proximate and substantially coplanar with at least a substantial extent of each of said folded marginal edge portions of said first ply, each of said folded marginal edge portions of said first ply including a bent transition zone which divides said edge portions each into a pair of integral sections, one section of each of said edge portions overlying said second ply and being coplanar with said third ply, the other section of each of said edge portions overlying said third ply.

3,881,539
COMBINED WINDOW STRUCTURE
Raymond Falgas, Calle Guadalajara 382, Urb Valencia, Rio Piedras, P.R. 00923
Filed Nov. 29, 1971, Ser. No. 202,852
Int. Cl. E04f *10/10*
U.S. Cl. 160—107 **1 Claim**

1. As a new article of manufacture, a window closure for a wall opening, comprising a window frame having front and rear surfaces and the size and shape to fit in the wall opening, two transparent doors movably mounted on vertical hinges at the sides of the window frame to open or close the entire opening of the front of the window frame, a second frame having the same shape and substantially the same size as the interior of the window frame whereby it will snugly but movably fit within the interior of the window frame, the second frame being hinged at its upper end to the window frame between the front and rear surfaces thereof whereby it is normally in a depending vertical position between such front and rear surfaces and may be moved to a position within and inclined to the window frame with its lower part outside the window frame, a plurality of parallel horizontal louvers which are individually rotatably mounted in the second frame, means carried by the second frame for raising and lowering the louvers, and means carried by the second frame for rotating the louvers to open and closed positions.



3,881,540
METHOD OF FORMING METALLIC FILAMENT CAST ON INTERIOR SURFACE OF INCLINED ANNULAR QUENCH ROLL
Sheldon Kavesh, Whippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Oct. 29, 1973, Ser. No. 410,855
Int. Cl. B22d *11/06*
U.S. Cl. 164—87 **2 Claims**



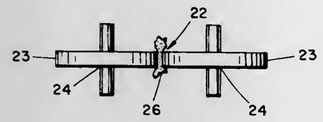
1. A process for the production of continuous length untwisted metal filaments from a molten stream comprising the steps of:

a. casting the molten stream on the inside surface of a rotating annular chill roll wherein the inside surface is inclined at an angle of 2°–30° to the axis of rotation of the chill roll;
b. after solidification of the filament exerting pressure on the quenched molten stream in contact with the inside surface of the chill roll; to increase retention of the filament in contact with the quenching surface by nipping means applied on the inside surface of the chill roll; and
c. collecting the filament thus formed.

3,881,541
CONTINUOUS CASTING OF NARROW FILAMENT BETWEEN ROTARY CHILL SURFACES

John Robert Bedell, Sparta, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,483
Int. Cl. B22d *11/06*
U.S. Cl. 164—87 6 Claims

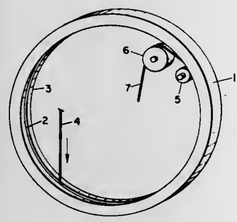


1. In an apparatus for the production of metal filaments from a molten stream ejected from a source of molten metal wherein the contact faces of contiguous cooperating rotary elements are used as the quenching source, the improvement which comprises orienting the rotary elements so that the molten metal is introduced into the nip thereof, providing contact faces on the rotary elements which allow unconfined lateral dispersion of the excess of said molten stream quenched on said contact faces, said contact faces comprising widths that are in the range of about 0.003 to 0.100 inch and are essentially coextensive with the width of the filament to be produced.

3,881,542
METHOD OF CONTINUOUS CASTING METAL FILAMENT ON INTERIOR GROOVE OF CHILL ROLL

Donald E. Polk, Morristown, and John R. Bedell, Sparta, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 16, 1973, Ser. No. 416,720
Int. Cl. B22d *11/06*
U.S. Cl. 164—87 2 Claims

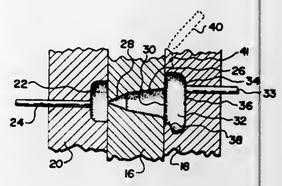


1. In a method of producing a shaped metal filament from a stream of molten metal deposited in a quenching groove formed in the inner periphery of a cylindrical chill roll wherein said quenching groove is provided immediately contiguous to the top thereof with a tapered opening of a material which has a substantially greater thermal insulating property than the chill roll, the improvement which comprises introducing the molten stream within the area defined by the width of the tapered opening afforded by said insulating material whereby said insulating material is not wetted and quenching said stream in said groove.

3,881,543
METAL DIE CASTING AND METHOD OF DEGATING

Karl Hannes, White Plains, N.Y., assignor to Coats & Clark, Inc., New York, N.Y.

Division of Ser. No. 274,910, July 25, 1972, Pat. No. 3,854,521. This application Dec. 3, 1973, Ser. No. 421,154
Int. Cl. B22d *27/10*
U.S. Cl. 164—113 4 Claims



1. A method of degating and ejecting a metal cast part formed in a die comprising

positioning a first outer die plate having a first recess therein so that it is in abutment with one side of a second inner die plate having an opening therethrough, said first recess being in alignment with said opening, said opening having a reduced cross section at the junction of said first recess that is less than the cross section of said first recess at said junction;

providing a third outer die plate having a second recess with an undercut edge portion;

positioning said second die plate so that its other side is in abutment with said third outer die plate and said second recess is in alignment with said opening;

injecting molten metal into said opening and said recesses to thereby form a gate part in said opening and said second recess and to form the cast part in said first recess;

moving said third die plate away from said second die plate thereby separating said gate part from said cast part due to the reduced cross section of said opening at the junction with said first recess;

then ejecting said gate part from said third outer die member by pivoting said gate part out of said second recess about said undercut edge portion; and

moving said first die plate away from said second die plate and ejecting said cast part therefrom after said first mentioned step of moving said third die plate.

3,881,544
MOLD OSCILLATING APPARATUS

Jose A. Botta, Jr., Pittsburgh, and Dale K. Beachy, Finleyville, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jan. 11, 1974, Ser. No. 432,766
Int. Cl. B22d *27/08*
U.S. Cl. 164—260 4 Claims

1. Apparatus for oscillating a vertical flow-through continuous casting mold comprising:

a. a mold table supporting said mold;

b. means supporting said mold table;

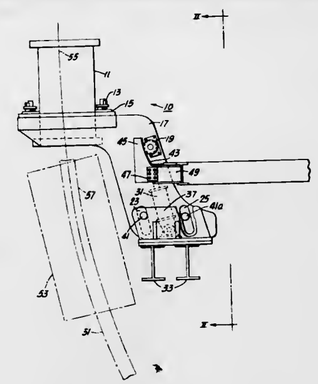
c. a pair of members fixed adjacent and coacting with said means supporting the mold table in such a way that said means moves along a preselected path;

d. a roller mounted to said means supporting the mold table and movable therewith;

e. an arcuate guide fixed adjacent to and coacting with said roller; and

f. powered means engaging the mold table supporting

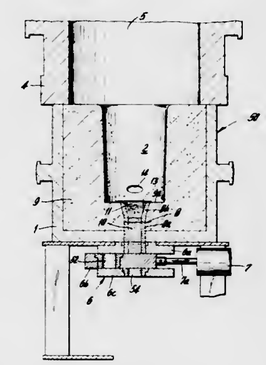
means for moving said supporting means upwardly and downwardly whereby as said roller coacts with said arcuate guide and as said fixed members coact with the supporting means, said mold oscillates along an arcuate path.



3,881,545
APPARATUS FOR CASTING COMPOSITE CAST ROLLS

Heinz Dieter Braukmann, Duisburg, and Wolfgang Hattwig, Rheinkamp, Baerl, both of Germany, assignors to Rheinstahl Gieberei

Filed Feb. 4, 1974, Ser. No. 439,527
Int. Cl. B22c *9/28*
U.S. Cl. 164—349 6 Claims

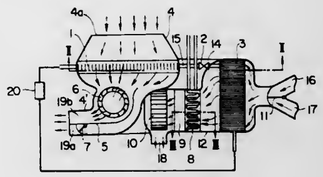


1. An arrangement for casting composite cast rolls having a hard shell and a soft core, comprising a bottom molding box having a lower roll pin cavity for forming the lower roll pin, a permanent mold for the roll body having a molding part with an upper roll pin cavity for the upper roll pin and which overlies the lower roll pin cavity, a pouring conduit for the shell material connected laterally into said bottom molding box, a trestle supporting said bottom molding box, a valve connected to the lower end of said bottom mold box and having an opening for discharging the excess shell material after the solidification of the desired thickness of the shell to be formed, a refractory tubular drain brick connected between said slide valve and said lower roll pin cavity and being filled with a granular refractory material and being located in the bottom of said bottom molding box, and a thin refractory plate covering said drain brick and resting on the granular refractory material flush with the top surface of said drain brick and completely closing the interior of said drain brick.

3,881,546
AIR CONDITIONER FOR AUTOMOTIVE VEHICLES

Yoshinori Otsuka; Masakatsu Hayashi, both of Tokyo; Jun Ichi Mantoku, Yao; Susumu Yamazaki, Tokyo; Akira Tomita, Hitachi, and Masanori Musou, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 21, 1973, Ser. No. 390,304
Claims priority, application Japan, Sept. 1, 1972, 47-87168
Int. Cl. B60h *3/00*
U.S. Cl. 165—42 10 Claims



1. An air conditioner for installation within an automotive vehicle comprising:

compressor means,

condenser means in fluid flow communication with said compressor means for receiving refrigerant to be condensed from said compressor means, said condenser means being disposed within a condenser casing having a bottom portion, said condenser casing also having an inlet directed toward a front portion of the vehicle and an outlet opened at a side portion of the vehicle,

condenser cooling fan means disposed between said condenser means and said outlet,

a duct casing provided with two air inlets adapted to receive air from a vehicle compartment and from the atmosphere surrounding the vehicle, respectively, said duct casing also being provided with an outlet opened into a vehicle compartment,

refrigerant evaporator means arranged within said duct casing in fluid flow communication with said condenser means, and heater means and duct fan means arranged within said duct casing with the heater means downstream of said evaporator means, said evaporator means having a lower portion, and

said duct casing being assembled with said condenser casing as a unitary structure with said evaporator means arranged opposite said condenser means within said unitary structure and with said heater means and said duct fan means arranged between said condenser means and said evaporator means.

3,881,547
HEAT TRANSFER DEVICE EMPLOYING FINS IN A FLUID STREAM

Gordon R. Lavering, Belmont, Calif., assignor to Varian Associates, Palo Alto, Calif.

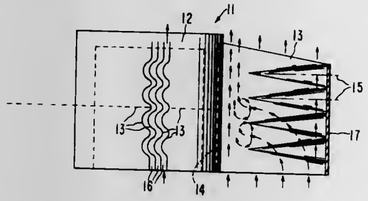
Filed Nov. 12, 1973, Ser. No. 415,068
Int. Cl. F28f *7/00*
U.S. Cl. 165—80 6 Claims

1. In a heat transfer apparatus for transferring heat between a device and a stream of fluid wherein said device comprises an elongate member and a sleeve surrounding said elongate member and where said stream of fluid flows between said elongate member and said surrounding sleeve member

an arcuate array of circumferentially-spaced thermally-conductive fins coupled in heat-exchanging relationship

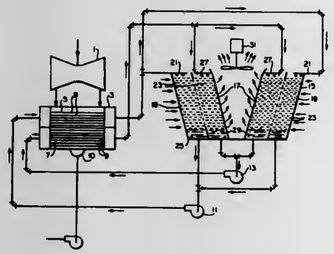
with said elongate member and extending outwardly therefrom, each of said fins being corrugated into a wave-like configuration, the mean plane of the wave-like configuration of each of said fins being generally parallel to the axis of revolution of said arcuate array;

the wave amplitude of said wave-like configuration increasing with increase in radial distance along said mean plane outward from said axis of revolution of said array;



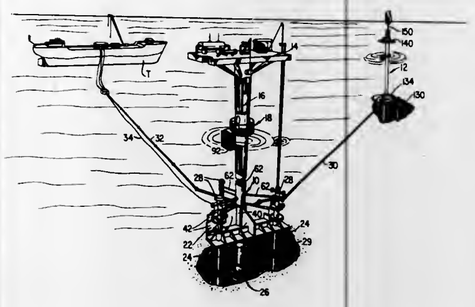
the wave fronts of said wave-like configuration for each of said fins running generally laterally of said axis of revolution of said array to accommodate the flow of coolant fluid along serpentine paths between adjacent ones of said fins parallel to said axis of revolution so that coolant fluid flowing between adjacent fins in proximity to the outer perimeter of said array of fins traverses a flow path which is longer than the flow path for coolant fluid flowing nearer to said axis of revolution of said array.

3,881,548
MULTI-TEMPERATURE CIRCULATING WATER SYSTEM FOR A STEAM TURBINE
Robert J. Budenholzer, Oakland, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 14, 1971, Ser. No. 162,364
Int. Cl. F28b *1/02*
U.S. Cl. 165—110 **2 Claims**



1. A condensing system for condensing steam comprising a condenser having a first heat exchanger through which a circulating fluid flows and being disposed so as to be contacted by influent steam entering said condenser and a second heat exchanger through which a circulating fluid flows, a cooling tower having an upstream and a downstream heat exchange portion disposed to provide series air flow therethrough, said upstream heat exchange portion being contacted by influent air, said first heat exchanger being in fluid communication with said upstream heat exchange portion of the cooling tower and said second heat exchanger being in fluid communication with the downstream heat exchange portion of said cooling tower, whereby the influent steam entering the condenser comes in contact with the heat exchanger portion of the condenser having the coolest circulating fluid to provide efficient condensing without subcooling.

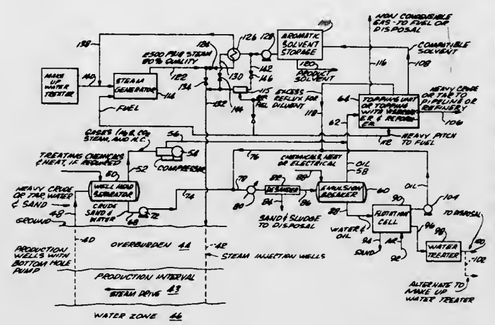
3,881,549
PRODUCTION AND FLARE CAISSON SYSTEM
John P. Thomas, New York, N.Y., assignor to Interseas Associates, New York, N.Y.
Filed Apr. 27, 1973, Ser. No. 354,949
Int. Cl. E21b *43/01*
U.S. Cl. 166—.5 **10 Claims**



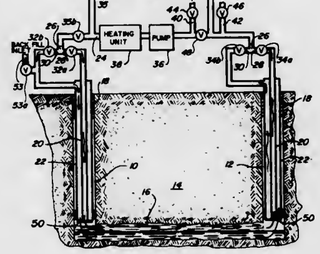
1. A caisson system for offshore oil production comprising:
a. a template positioned on the ocean floor and confined essentially to the mudline thereof, said template being preformed with circumferentially spaced openings around the periphery thereof and a central opening;
b. a plurality of hollow conductor pipes extending through said peripheral openings and firmly anchored in the ocean floor, said pipes serving both as structural support members and as conduits through which the drilling and recovery operations can be performed;
c. means for rigidly interconnecting said conductor pipes to said template for transferring the load on said template to the ocean floor through said conductor pipes;
d. a hollow spud extending through said central opening in said template and into said ocean floor a sufficient depth to distribute loads into the soil and to receive the caisson;
e. means for rigidly connecting said spud to said template so as to effectively transfer load on said spud to said template and said conductor pipes;
f. a hollow production caisson positioned in said spud and extending below the mud line at its bottom end and above the water line at its upper end, and
g. means for rigidly connecting said caisson to said template whereby the forces on said caisson are effectively transferred to said spud, template and conductor pipes which collectively serve to form an integral supporting structure for said caisson.

3,881,550
IN SITU RECOVERY OF HYDROCARBONS FROM TAR SANDS
Charles B. Barry, Houston, Tex., assignor to Ralph M. Parsons Company, Pasadena, Calif.
Filed May 24, 1973, Ser. No. 363,596
Int. Cl. E21b *43/24*
U.S. Cl. 166—272 **4 Claims**

1. In a process for recovering hydrocarbons from a subterranean deposit of hydrocarbons having high viscosities and including tar sands, oil and tar deposits by stimulation through the injection of a solvent into the deposit, the improvement which comprises:
a. producing a solvent from the recovered hydrocarbons close to the recovery area;
b. heating the produced solvent to an elevated injection temperature of from about 200° to about 650°F;
c. injecting the heated solvent into the deposit to demulsify hydrocarbon-water emulsions and cut relatively heavy hydrocarbons; and
d. recovering at least a portion of the stimulated hydrocarbons as field-produced values and at least a portion as solvent for injection into the deposit.



3,881,551
METHOD OF EXTRACTING IMMOBILE HYDROCARBONS
Ruel C. Terry, and Xerxes T. Stoddard, both of Denver, Colo., assignors to Ruel C. Terry and Xerxes T. Stoddard, Denver, Colo.
Filed Oct. 12, 1973, Ser. No. 406,030
Int. Cl. E21b *43/24*
U.S. Cl. 166—272 **13 Claims**

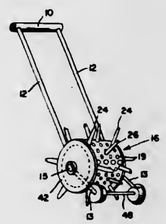


2. A method of extracting gilsonite from a gilsonite formation in the earth with a solvent material comprising the steps of:
establishing an injection passage and a removal passage between a surface location and the gilsonite formation,
establishing subsurface communication in the gilsonite between the passages,
passing a heating fluid through the formation by injecting the heating fluid into the formation through the injection passage and removing the heating fluid through the removal passage until the temperature of the formation is above the melting point of the solvent material, and
passing the solvent material, which has the capability of dissolving gilsonite through the formation to dissolve contacted portions of the gilsonite formation by injecting the solvent into the formation through the injection passage and removing solvent along with the dissolved gilsonite through the removal passage.

3,881,552
SHUTTING OFF WATER IN GAS WELLS
James E. Hessert, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 12, 1973, Ser. No. 350,532
Int. Cl. E21b *33/13*
U.S. Cl. 166—294 **17 Claims**

1. A method for preferentially inhibiting production of water from a subsurface fluid hydrocarbon productive formation, the producing interval of which includes a watered-out portion and a portion capable of producing a substantial percentage of fluid hydrocarbon, comprising the steps of treating the producing interval by introducing into it a nonaqueous treating fluid, which on contact with water forms a water-impermeable gel, thereafter contacting the treating fluid with water then terminating the injection of said treating fluid and thereafter placing the treated formation on production, said treating fluid comprising:
a. at least one water-soluble or at least water-dispersible polymeric material selected from the group consisting of polyacrylamides, cellulose ether and polysaccharides;
b. an oxidizing agent selected from the group consisting of water-soluble compounds of polyvalent metals wherein the metal is present in its highest valence state and is capable of being reduced to a lower polyvalent state upon contact with a reducing agent;
c. a reducing agent effective to reduce the higher valence metal in said oxidizing agent (b) to a lower polyvalent valence state; and
d. at least one polyhydric alcohol selected from the group consisting of glycerol, alkylene glycols, polyoxyalkylene glycols, and mixtures thereof; in amounts of each component identified as (a) to (d) as follows: from 0.001 to 10 parts of component (a) per 100 parts of component (d); an amount of component (b) at least sufficient to yield 3 $\times 10^{-6}$ gram-atoms of said metal (b) per gram of polymeric material (a) present; an amount of component (c) at least sufficient to reduce said metal (b) to a lower polyvalent valence state.

3,881,553
LAWN AERATING AND DRESSING MEANS
Joseph P. Angeski, Monroeville, Pa., assignor to A. I. Co., Altoona, Pa.
Filed Apr. 30, 1973, Ser. No. 355,549
Int. Cl. A01b *45/02*
U.S. Cl. 172—22 **9 Claims**



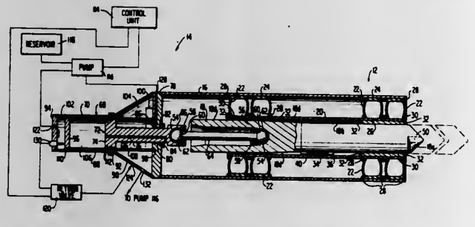
1. Means for the aerating and top dressing of a lawn in a single operation comprising means for receiving plugs of earth from the lawn, a plurality of pluggers mounted on and projecting from said plug receiving means for penetrating into the lawn surface and removing a plug of earth therefrom, said pluggers having a tubular construction for delivering removed plugs through the inner ends thereof to said plug receiving means and breaking means including a surface provided adjacent the inner end of each plugger, extending perpendicular to the axis of each plugger across the inner ends thereof and spaced therefrom a distance less than the length of a removed plug so as to be impinged upon by such plugs for causing plugs

entering said plug receiving means from said pluggers to be broken up, said plug receiving means including a hollow cylindrical member having a plurality of openings throughout the surface thereof through which the broken pieces of earth may pass onto the top surface of the lawn to provide a top dressing, said breaking means including a cylindrical weight means mounted concentrically within said cylindrical member, the periphery of said weight means providing said surface adjacent the inner end of each plugger.

3,881,554
MECHANICALLY ACTUATED HAMMER AND BIT ASSEMBLY THEREFOR

William C. Cooley, 5400 Pooks Hill Rd., Bethesda, Md. 20014, and Franklin L. Beck, 3040 39th St., N.W., Washington, D.C. 20016

Filed May 25, 1973, Ser. No. 363,879
Int. Cl. B25d 9/04
U.S. Cl. 173—13 **22 Claims**



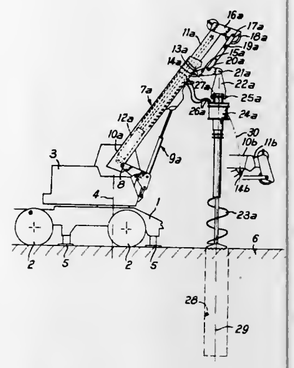
1. In an assembly for mechanical impulse actuators having actuating means, the assembly comprising:
A. a tubular housing;
B. means for connecting said housing to a desired actuator;
C. a percussion bit;
D. means for connecting said percussion bit to the actuating means of the desired actuator; and
E. means supporting said percussion bit for rotational, lateral and axial displacement relative to said housing, said supporting means including:
a. guide means axially guiding said percussion bit during its axial displacement, said guide means being fabricated as a tubular structue which is arranged concentrically between said housing and said percussion bit;
b. spring means; and
c. means mounting said spring means between said guide means and said housing, said spring means exerting, as a result of said mounting means, both axial and lateral reactive forces in response to the axial and lateral displacements of said percussion bit, with said axial reactive force being exerted through said mounting means.

3,881,555
PUBLIC WORKS APPARATUS

Michel M. Cresp, Ormoy Villers, France, assignor to Societe Anonyme: Poclain, Le Plessis-Belleville, France

Filed May 16, 1974, Ser. No. 470,560
Claims priority, application France, May 21, 1973, 73.18363
Int. Cl. E21c 5/11
U.S. Cl. 173—38 **2 Claims**

1. Public works apparatus comprising:
a frame;
a jib mounted on the frame, comprising at least two telescopic sections, of which a first section is mounted on said frame for pivotal movement about a first axis and a second section is slidable relative to said first section;
means for controlling pivotal movement of said jib and connected between said first section of said jib and said frame;
means for controlling relative sliding of said two sections and connected therebetween;
a member mounted on said first section of said jib for pivotal movement about a second axis parallel to said first axis;

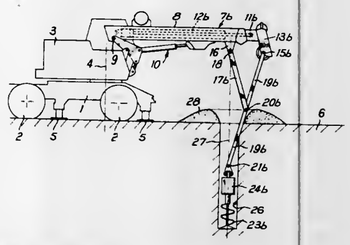


a working tool freely suspended from said member; and
an arm pivotally connected to said second section of said jib and said member;
wherein pivotal movement of said member is controlled by said sliding control means and said arm.

3,881,556
PUBLIC WORKS DEVICE COMPRISES A BODY A TELESCOPIC JIB

Michel M. Cresp, Ormoy Villers (Oise), France, assignor to Societe Anonyme: Poclain, Belleville, France

Filed May 16, 1974, Ser. No. 470,620
Claims priority, application France, May 22, 1973, 73.18585
Int. Cl. E21c 5/11
U.S. Cl. 173—38 **5 Claims**



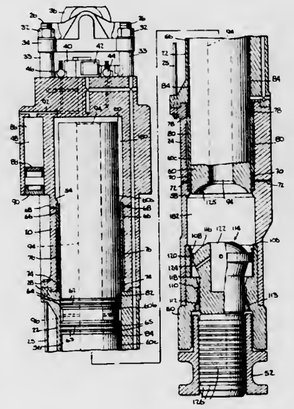
5. A device comprising:
- a body;
- a telescopic jib including at least two sections of which a first section is pivotally mounted on the body and a second section is mounted to slide relative to the first section;
- first control means for controlling relative sliding of the two sections and connected between the two sections;
- second control means for controlling pivoting of the first section relative to the body and which is connected between the first section and the body;
- a first link and a second link, the first link being connected to the first section by a first pivot, the second link being connected to the second section by a second pivot and the two links being connected together by a third pivot;
- a work tool which is freely suspended from the second link at a given point;

- wherein the second pivot, the third pivot and the given point are aligned, the second pivot and the given point being situated to either side of the third pivot, and the distances separating the third pivot from, respectively, the first pivot, the second pivot and the given point are equal.

3,881,557
IMMERSED RAM HYDRAULIC HAMMER

George J. Gendron, and Henry A. Nelson Holland, both of Houston, Tex., assignors to Raymond International Inc., Houston, Tex.

Filed Aug. 27, 1973, Ser. No. 391,569
Int. Cl. E02d 7/10
U.S. Cl. 173—131 **21 Claims**



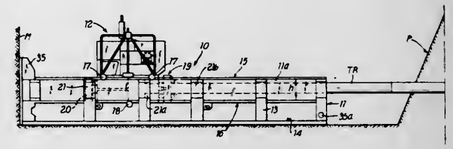
1. In a hydraulic hammer, the combination of a closed casing having first, second and third bores, a ram reciprocally movable in said casing bores and having a central driving region slideable in said second bore and first and second smaller diameter end regions at each side of the central driving region and slideable within the first and third bores of said casing and forming first and second end chambers therein, an anvil having a blow receiving head in said first end chamber and located in the path of ram movement and further having a stem projecting through and closely fitted and sealed in an opening at one end of said casing in a manner permitting limited longitudinal movement of said stem in the direction of ram movement, fluid drive means operative to act on said central driving region for driving said ram reciprocally in said casing to impact against the blow receiving head of said anvil and pressure maintaining means for maintaining a continuous positive fluid pressure within said first and second end chambers to hold said anvil toward said one end with its stem projecting from said one end and in contact with an element to be driven, even during uplift reactions on said casing caused by the driving of said ram, said pressure maintaining means comprising means for supplying a pressurized fluid within said first and second end chambers and a first fluid passageway means connecting said end chambers.

3,881,558
PIPE THRUST MACHINE FOR HORIZONTAL DRILLING

Claudio Dolza, 66 Corso Francia, Turin, Italy

Filed May 29, 1973, Ser. No. 364,297
Claims priority, application Italy, June 9, 1972, 68843/72
Int. Cl. E21c 5/00
U.S. Cl. 173—152 **15 Claims**

1. A horizontal earth boring and pipe laying machine comprising:
a runway bed delimited by two space longituidnal members;
a movable carriage located in the space delimited by the two longitudinal members, the movable carriage having a vertical longitudinal barycentric plane midway between said longitudinal members and being adapted to carry a pipe;
bearing and supporting wheels on said carriage for mounting the carriage so that it is movable along the runway bed;
a pipe thrust head on said carriage for thrusting forward into the earth a pipe located in said barycentric plane;

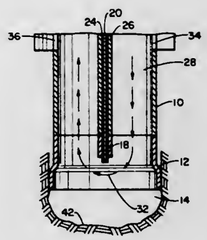


hydraulic driving means coupled to said carriage for advancing said carriage;
tenons lockable against axial movement relative to said runway bed to provide an abutment for the hydraulic driving means, said tenons being positioned to transmit the resultant reaction of the advancing thrust of the pipe to the runway in said barycentric plane; and
a hollow frame for slideably containing said reaction tenons, the pistons of the corresponding hydraulic driving means acting thereonto.

3,881,559
METHOD FOR STRESS WAVE DRILLING

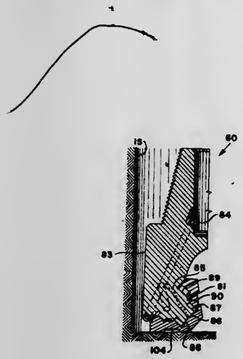
Jay R. Allgood, Camarillo, and Robert J. Odello, Calabasas, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 402,547, Oct. 1, 1973, Pat. No. 3,840,078.
This application July 10, 1974, Ser. No. 487,344
Int. Cl. E21b 7/00
U.S. Cl. 175—67 **1 Claim**



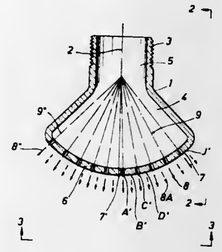
1. A method of drilling a bore hole in a rock comprising the steps of:
a. moving a bifurcated drill stem downwardly into the bore hole at a controlled rate of movement;
b. generating adjacent the bottom of said bore hole stress waves, said stress waves being created by placing a set of three electrodes in said drill stem adjacent to said rock and energizing said electrodes with electrical energy;
c. controlling the magnitude and duration of the generated stress waves such that said stess waves spall the rock at the bottom of said bore hole in the vicinity of said electrodes; and
d. circulating a flow of drilling liquid downward through one section of said bifurcated drill stem and upwards through the the other section of said bifurcated drill stem.

3,881,560
DRILL TOOL
Edward B. Williams, Jr., 103 Mullaney Rd., Greenville, Tex. 75401
Division of Ser. No. 368,755, June 11, 1973, Pat. No. 3,844,363. This application Aug. 19, 1974, Ser. No. 498,745
Int. Cl. E21b 9/10
U.S. Cl. 175—337 5 Claims



1. A drill tool comprising:
a. a body member having a passage therein, said passage being in a pin portion of said body member and extending along a longitudinal axis of said body member and between a fluid receiving end and a closed end;
b. a plurality of circumferentially spaced arms extending from said body member adjacent the closed end of said passage in said body member;
c. a plurality of axle portions each extending from a respective one of said arms and along a respective axis intersecting the longitudinal axis of said body member in a manner to define a respective acute angle between the axis of the respective axle portion and the longitudinal axis of said body member, said axle portions each having an end surface and a shoulder positioned between a first portion and a second portion thereof;
d. a plurality of cutting cones;
e. means mounted on each of said axle portions for rotatably mounting a respective one of said cutting cones thereon for rotation about the axis of the respective axle portion, said means for rotatably mounting said cutting cones on said respective axle portions including a plurality of bearings each in engagement with a respective one of said axle portions and said respective cutting cone thereon, each of said first portions and each of said second portions of said respective axle portions having at least one of said bearings in engagement therewith;
f. a flow passage for each of said arms and communicating with the passage in said body member, certain of said flow passages extending through said respective arms for flow of fluid therethrough and into a drill hole to remove drilling debris from the drill hole; and
g. a fluid passage for each of said axle portions and each extending between said respective flow passage and an exterior surface of said respective axle portion for flow of fluid to the respective exterior surface and communicating with said respective means for rotatably mounting said respective cutting cone thereon for lubricating same and said respective cutting cone thereon, the fluid passage for one of said axle portions communicating with said shoulder thereof, the fluid passage for the other of said axle portions communicating with the respective end surface thereof.

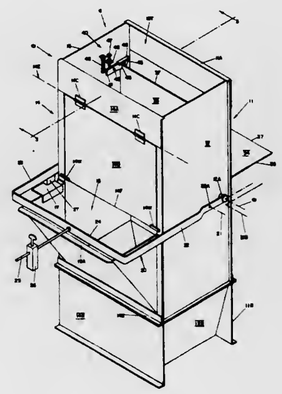
3,881,561
ROTARY BIT FOR HYDRAULICALLY DRILLING HOLES INTO UNDERGROUND FORMATIONS
Albert C. Pols, and Robijn Feenstra, both of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.
Filed Feb. 25, 1974, Ser. No. 445,395
Int. Cl. E21b 7/18
U.S. Cl. 175—393 2 Claims



1. A rotary bit for hydraulically drilling holes into underground formations, said bit comprising a bit body having a central axis and a plurality of nozzles mounted in one end of the bit body, the centres of the outlet openings of the nozzles being arranged on circles concentric to the central axis, the distance between the intersections of adjoining circles with a plane through the central axis being not greater than 3/2 ($d_1 + d_2$), wherein d_1 and d_2 are the outlet diameters of the nozzles on these adjoining circles, each nozzle having a central axis crossing the central axis of the bit body at an angle other than 90° and being arranged tangentially to a separate mathematical cone having a central axis coinciding with the central axis of the bit body, said cone having the apex thereof above the end of the bit body in which the nozzles are mounted, the apex angles of adjoining cones not differing more than 14°, and the largest apex angle being over 90°, and wherein the apices of the mathematical cones line in a common point on the central axis of the rotary bit, said bit having a lower surface arcuate in form, the centres of the outlet openings of the nozzles being arranged in said arcuate lower surface.

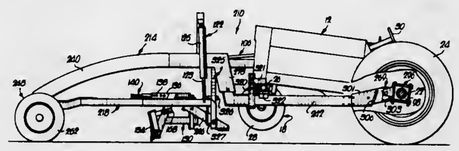
3,881,562
WEIGHING AND MEASURING APPARATUS FOR FODDER AND SIMILARLY COURSE MATERIALS
Myron C. Hesse, 2415 North 92nd St. (Apt. No. 4), Omaha, Nebr. 68114
Filed Sept. 20, 1974, Ser. No. 507,750
Int. Cl. G01g 13/22
U.S. Cl. 177—83 10 Claims

1. A weighing and measuring apparatus especially adapted for heavy batches of fodder, silage, and similarly course material and comprising:
A. An upright chute having an open upright front-end to accommodate the paddles of a revolvable and vertically movable paddle-gate member and open top-end and bottom-end for respectively charging and discharging the material to be weighed, the chute comprising an upright left-panel and an upright right-panel having a fixed transverse distance therebetween, a planar upright door closure along the chute rear-end upper portion and having the door upper part pivotal about a horizontal transversely extending door-axis whereby the door pivotably swings rearwardly during paddle-gate revolvable ejection of a weighed batch, said upright door including a substantially horizontal transversely extending lower-edge, stabilization means for maintaining the door upright during charging of a material batch, and said chute further comprising a rearwardly flared trough spaced below the door lower-edge and converging toward the chute open bottom-end to direct a weighed batch downwardly-forwardly theretoward after having been ejected by the paddle-gate through the rearwardly swinging door;
B. A generally horizontal balancing bail including transversely separated side arms located externally along the left-panel and the right-panel and further including a horizontal intervening bight portion located externally of the chute rear-end, said bail side arms having intermediate portions pivotably attached along a transversely extending horizontal bail-axis to the chute left-panel and right-panel, and a weighing beam member extending rearwardly from the bail bight portion;



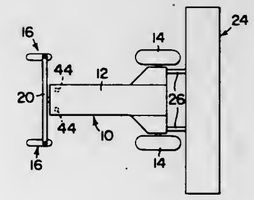
C. A paddle-gate member located within the chute having a transversely extending and vertically reciprocatable paddle-axis that is revolvable secured to the bail side arms forwardly of the bail-axis, said paddle-gate member having more than two spaced apart paddle members extending radially outwardly from the paddle-axis, each paddle having a pair of transversely separated exposed radial free-edges which are spaced a finite-gap inwardly away from the chute left-panel and right-panel; and
D. Stop-means for the uprighted paddles and secured within said chute at a level above said vertically reciprocatable paddle-axle and spaced therefrom a distance approximately equivalent to the radial dimension of the respective paddles.

3,881,563
GRADER BLADE ATTACHMENT FOR TRACTORS
Albert A. Hammersmith, c/o Al Hammersmith & Son Mfg. Co., 5th & Central Ave., Horton, Kans.
Filed July 31, 1972, Ser. No. 276,706
Int. Cl. B60d 7/00
U.S. Cl. 180—14 10 Claims



1. In a mobile assembly:
a single, powered vehicle defining a prime mover having a chassis provided with rear drive wheels and a front wheel and axle structure having a steering mechanism;
an elongated, tool-supporting frame extending forwardly of said axle structure and provided with a front wheel and axle unit having a steering apparatus, said tool-supporting frame being adapted to carry a tool between said axle unit and said drive wheels;
releasable means securing the tool-supporting frame to the chassis in a substantially rigid manner to prevent relative movement between the frame and the vehicle; and
a coupling including a linkage assembly between said steering mechanism and said steering apparatus for rendering the latter responsive to actuation of said steering mechanism,
said tool-supporting frame and said axle unit maintaining said axle structure off the ground for transferring the weight of the front of said vehicle from said axle structure to said axle unit and for rendering the turning movements of the mobile assembly responsive solely to the operation of said steering mechanism.

3,881,564
METHOD OF LOADING AGRICULTURAL MACHINES ON A RAILROAD CAR
Merlyn Duane Bass, and Ralph August Gerhardt, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Apr. 27, 1973, Ser. No. 354,994
Int. Cl. B62d 61/00
U.S. Cl. 180—21 1 Claim



1. In a self-propelled vehicle having a body partly supported on a pair of forward drive wheels and including a pair of side frame members mounted on opposite sides of the body and a rear transverse frame member connecting the rearward ends of the side frame members, the improvement comprising: a longitudinal pivot means mounted on the rearward end of the body; a transverse rear axle structure removable mounted on the pivot means so as to pivot about an axis extending in the direction of motion of said vehicle; a first pair of vertical socket means respectively mounted on the opposite ends of the rear axle structure; a second pair of vertical socket means respectively mounted on opposite sides of the body adjacent the opposite side frame members and adjacent the rear frame member, inwardly and forwardly of the first pair of socket means, and a pair of caster wheel structures respectively having vertical pivot elements rotatably and removably mountable in the first or the second socket means, the caster wheels being mounted in the first pair of socket means when the axle structure is mounted on the vehicle and being mounted in the second pair of socket means when the axle structure is removed.

3,881,565
TAG AXLE EMERGENCY TRACTION DEVICE
Lloyd Parrish, 1036 Ash St., Deerfield, Ill. 60015
Filed Jan. 7, 1974, Ser. No. 431,074
Int. Cl. B62d 61/10
U.S. Cl. 180—24.12 7 Claims

1. An emergency axle traction device intended for use on truck like vehicles having a pair of drive wheels mounted on the vehicle frame and connected by suitable transmission means to the vehicle engine, and a pair of idle wheels mounted

in tandem relationship relative to the drive wheels in close relationship thereto and supported on the vehicle frame for rotation relative thereto, the drive device intended for selective operation in a manner to effect the selective driving of the idle wheels by the drive wheels, the device comprising:

a pair of horizontally spaced apart supporting brackets adapted to be mounted to opposite portions of a vehicle frame intermediate said drive and idle wheels;

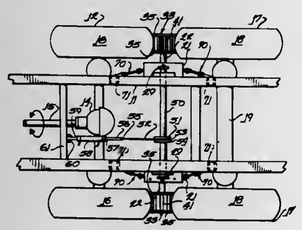
a pair of vertically disposed guide rods mounted on each support bracket and depending vertically downwardly therefrom;

a pair of horizontally spaced apart bearing blocks, each bearing block associated with a pair of guide rods for reciprocal vertical movement in an upwards and downwards movement therealong;

a cylindrical axle extending horizontally between said bearing blocks and projecting outwardly from opposite ends of said bearing blocks, said axle mounted in said bearing blocks for vertical reciprocal movement therewith;

a cylindrically shaped drum member rotatably mounted on each end of said axle for rotatable movement about the axis of said axle, the diameter of said drum being greater than the spacing between the nearest adjacent points of the tread portions of adjacent tandemly disposed drive and idle wheels;

operating means associated with each bearing block to selectively effect the vertical movement of said axle and said associated drums between an operative position where the circumference of said drums frictionally engages the treads of adjacent drive and idle wheels in a manner to effect the driving rotation of said idle wheel, and to an inoperative position where said axle and said



drums are disposed below a horizontal plane passing through the axis of said drive and idle wheels; and

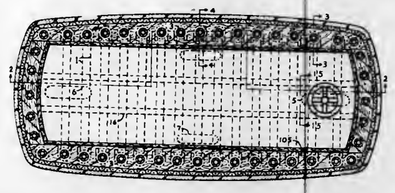
each of said drum members is of a substantially identical construction, each drum comprising an elongated cylindrical hub member adapted to be received over an associated end of said axle for rotation thereabout, a pair of longitudinally spaced apart substantially flat disc members each associated with one end of the hub and affixed thereto in a manner defining a spool in conjunction with the hub, said disc members being of a circular configuration and having a plurality of circumferally spaced apart radially inwardly extending slots disposed completely about the circumference and opening out of the circumferal edge of each disc, the slots in each disc being in alignment with associated slots in the opposite disc, a plurality of substantially flat rectangularly shaped longitudinally extending members each having opposed end edges with each end edge having a rectangularly shaped recess in a top corner thereof, each of said members having a height and thickness corresponding to the height and thickness of said disc slots so as to be snugly received therein, each of said members having a longitudinal length greater than the spacing between the exterior opposed surfaces of said pair of discs such that the opposite ends of each member project outwardly of the exterior surface of each disc when the member is received in said aligned pair of slots, and a pair of ring shaped retaining members each adapted to be disposed adjacent an exterior surface of an associated disc member and each being of a size and configuration adapted to be received in part in the recess defined in each of said rectangular members projecting exteriorly of said associated disc member so as to retain said members in said slots to define the circumference of said drum.

3,881,566

PIPE-FRAMED, INSULATED, LAND-TRAVERSING VEHICLE

Alvin Edward Moore, Manini Way, Diamondhead, Rt. 1, Bay St. Louis, Miss. 39520

Filed Dec. 26, 1973, Ser. No. 427,707
Int. Cl. B62k *17/16*
U.S. Cl. 180—30 **27 Claims**



1. A vehicle, adapted to travel over land, including:

vehicle-strength-providing body framework, comprising a plurality of juxtaposed, quadrilateral, tubular framework members, encompassing a load-containing space, each of said members including: four elongated, end-joined pipes, having axes at angles to each other; a pair of elbow fittings joining ends of one of said pipes to the adjacent ends of two other pipes; two junction fittings, connecting ends of a fourth pipe to the ends opposite to said adjacent ends of said other two pipes; one of the said four pipes, in each of said quadrilateral members, being a substantially horizontal floor pipe; bonding material between and connecting each of said fittings and the pipe-ends associated with it; and tie-members extending across said framework members and means connecting the tie members to said pipes, each of the said pipes having at least a part of its periphery contiguous to portions of at least one of said tie-members;

wheel-supporting means on said body framework, including: a plurality of auxiliary pipes, connected to said floor pipes, junction fittings between said auxiliary pipes and said floor pipes; and bonding material between and connecting each of said fittings and adjacent pipe ends;

exterior, waterproofed skin means, adjacent to said pipes and tie-members, contiguous to said tie-members; and

interior skin means on said pipes and tie-members, contiguous to said tie-members.

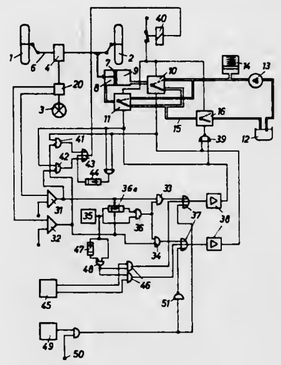
3,881,567

SERVO-ASSISTED STEERING ARRANGEMENT

Heinz Leiber, Leimen, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Filed Dec. 14, 1973, Ser. No. 424,784
Claims priority, application Germany, Dec. 23, 1972, 2263347
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 R **36 Claims**

1. In a servo-assisted steering arrangement for a vehicle including a servo system comprising: piston and cylinder means for actuating the steering gear of said vehicle; a source of pressure medium; a plurality of valves controlling admission and release of said pressure medium to and from said piston and cylinder means to actuate said piston and cylinder means; electrically actuatable control means for controlling operation of said plurality of valves; and sensing means for sensing actuation of a steering wheel of said vehicle and for providing an electrical control signal for controlling said electrically actuatable control means in response to said actuation of said steering wheel; the improvement wherein said electrically actuatable control means includes pulse generation means for providing a train of output pulses, and switch means responsive to said electrical control signal from said sensing means for



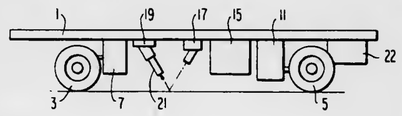
causing said train of output pulses to be applied to said valves for actuating same whereby pulsed operation of said valves occurs upon each actuation of said control means.

3,881,568

UNATTENDED TRAVELLING VEHICLE SYSTEM

Shimon Ando; Koji Kurokawa, both of Hitachi; Shizuo Suzuki, Naka; Isamu Komatsu, Takahagi; Toshitaka Suzuki, Hitachi; Shigeyoshi Kawano, Hitachiohta; Masayoshi Sunada, and Kengi Natsuno, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1972, Ser. No. 310,956
Claims priority, application Japan, Nov. 30, 1971, 46-96875
Int. Cl. B60k *29/00*
U.S. Cl. 180—98 **9 Claims**



1. An unattended traveling vehicle system comprising:

a vehicle having carrying means to carry an object thereon, wheels provided at the underside of said carrying means in order to cause said carrying means to travel on a traveling path surface, steering means to guide said wheels to respective steering angles in fixed increments to either side of a center direction in response to the magnitude of an applied steering signal of proper sense, and driving means for driving at least one of said wheels;

guide means arranged on said traveling path surface to guide said vehicle and having a different reflection factor from said path surface;

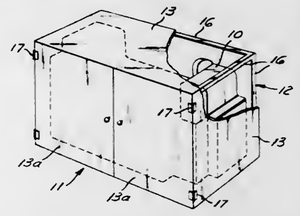
light optical means mounted on said vehicle consisting of means to direct light on said path surface including said guide means and plural detector elements to receive reflected light from said guide means to generate individual guide signals, said light receiving detector elements being juxtaposed at the underside of said carrying means substantially over the width of said carrying means; and control means for producing a steering signal of proper sense having a magnitude varying in fixed increments representing a required steering angle in accordance with the respective guide signals generated by said light receiving detector elements.

3,881,569

SOUNDPROOFING PANEL CONSTRUCTION

William O. Evans, Jr., 218 E. Streetsboro St., Hudson, Ohio 44236

Filed Sept. 6, 1973, Ser. No. 394,833
Int. Cl. E04b *1/86*
U.S. Cl. 181—33 K **19 Claims**



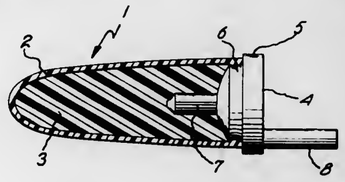
1. A soundproofing panel for covering machinery comprising, in successive laminations, a relatively rigid perforate wall, a thin sound-transmitting membrane, a relatively thick layer of low density void sound-absorbing material, and a layer of acoustically limp material of substantially greater density than said void sound-absorbing material, said membrane being formed of an imperforate, nonporous material that is chemically inert and substantially unaffected by fluids normally encountered in machinery environments, said perforate wall having an effective open area for sound transmission to said sound-absorbing material of at least 30 percent of its total area and having a mechanical strength sufficient to protect the membrane from puncture when struck by inadvertent blows from rigid objects, said membrane preventing passage of machinery fluids through said perforate wall into said void material and thereby avoiding contamination and loss of the sound-absorbing performance of said material.

3,881,570

SELF-FITTING HEARING PROTECTOR

Frederick M. Lewis, Burnt Hills, N.Y., assignor to Marion Health and Safety, Inc., Rockford, Ill.

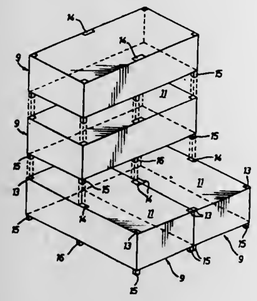
Filed Aug. 6, 1973, Ser. No. 386,146
Int. Cl. A61f *11/02*
U.S. Cl. 181—135 **1 Claim**



1. An ear protector adapted to be inserted into the ear, said ear protector comprising a resiliently yeildable elongated tubular envelope of substantially circular cross-section, said envelope being shaped generally as a bullet and tapering gradually and unidirectionally from a large diameter base end to a smaller diameter and rounded tip end, the base end of said envelope being open and the tip end of said envelope being closed, said envelope being made of a silicone polymer elastomer and being capable of being stretched to a length at least seventy-five percent greater than its original relaxed length and then returning to its original relaxed length, a mass of deformable polymer material filling and sustaining said envelope and conforming substantially to the shape of said envelope, said mass being deformed when said envelope is stretched in length and reduced in diameter for insertion into the ear canal, and then tending to resume its initial shape under the urging of said resiliently yieldable envelope as the latter returns toward its original length and diameter and swells into substantial conformance with the contour of the

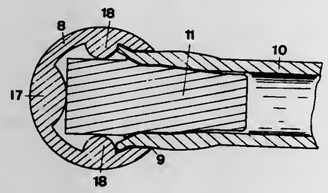
ear canal, a plug telescoped into and bonded to the open base end of said envelope and serving to close said base end to retain said mass within said envelope, and a handle projecting outwardly from said plug to facilitate insertion of the envelope into and removal of the envelope from the ear canal.

3,881,571
BUILDING UNIT FOR SCAFFOLDING OR A TRESTLE
Michael Maidwyn Moulton, Pawteg Road, Aberaeron, England
Filed Oct. 19, 1973, Ser. No. 408,113
Int. Cl. E04g *1/12*
U.S. Cl. 182—178 **6 Claims**



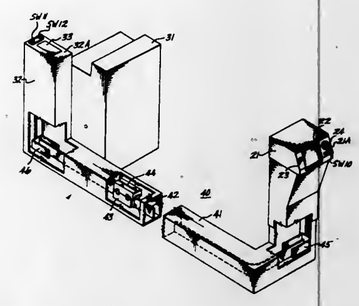
1. A building unit, for scaffolding or a trestle, comprising a hollow rectangular body having a length-to-width ratio which is an integer, and including a top forming a support platform and defining corner apertures at its corners and intermediate apertures at intervals of unit width along its length towards its edges with said intermediate apertures having a length in the longitudinal direction of said hollow rectangular body at least twice the corresponding length of said corner apertures, and a bottom having projections extending vertically downwardly therefrom, each projection in alignment with a respective aperture for engagement in the apertures of at least one other unit to locate said units in horizontal arrangement, the projections aligned with said intermediate apertures being offset from one another longitudinally of said hollow rectangular body so as to be disposed on either side of a transverse plane through said hollow rectangular body centrally of said intermediate apertures with which they are aligned.

3,881,572
TUBE CONNECTION, E. G. FOR A LADDER
Heinrich Zenhausern, Birmensdorferstrasse 134, 8902, Urdorf, Switzerland
Filed Aug. 20, 1973, Ser. No. 389,662
Claims priority, application Switzerland, Aug. 25, 1972, 12703/72
Int. Cl. E06c *7/50*
U.S. Cl. 182—228 **2 Claims**



1. A tube connection comprising a first tube, a second tube substantially perpendicular to the first tube, the tubes having different cross-sections, a bore formed in the second tube for receiving the first tube, a connecting member a part of which is received in the open end of the first tube and the remainder of which abuts, directly or indirectly against the inner wall of the second tube, wherein the connecting member comprises a first, cylindrical portion, a second, frusto-conical portion, a third, cylindrical portion, a fourth, frusto-conical portion, and a fifth, cylindrical portion, the first portion being of greater diameter than the fifth portion, and the second portion, is of greater maximum diameter than the internal diameter of the first tube to assist in deforming the end of the latter against the edge of the bore in the second tube and the inner wall of the second tube.

3,881,573
REMOTE TELLER
John L. Cotter, LaConner; Robert C. Melder, Sedro Woolley; Galen A. Biery, Jr., Bellingham; Dan E. Rothenbuhler, Sedro Woolley, and Howard E. Rothenbuhler, Acme, all of Wash., assignors to Rothenbuhler Engineering, Inc., Sedro Woolley, Wash.
Filed Apr. 19, 1973, Ser. No. 352,617
Int. Cl. E04h *3/04*
U.S. Cl. 186—1 R **18 Claims**

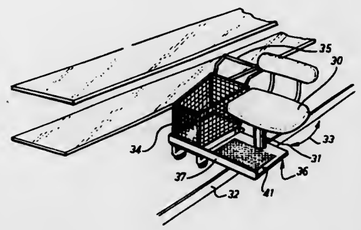


8. A remote teller for providing transmission of documents and other materials between a location in a banking institution and a remote location, comprising:
a. a customer station at the remote location and a teller station at the banking institution location,
b. a transaction box for receiving and carrying documents and other materials,
c. a monorail transportation system adapted for burial between said stations and including carrier means operative to move said transaction box between said stations,
d. at each of said stations, a housing extending from said monorail transportation system to an access point in the location, said housing including an access door at said access point, and
e. elevator means in each of said housings for receiving said transaction box from said carrier means and for moving said transaction box between said monorail transportation system and said access point.

3,881,574
MULTILEVEL SUPERMARKET LAYOUT
Jean-Marie Grange, 36 Les Haute de Marcouville, 95300 Pontoise, France
Filed Mar. 8, 1974, Ser. No. 449,359
Int. Cl. E04h *3/04*
U.S. Cl. 186—1 C **5 Claims**

1. A store arrangement particularly of a supermarket, comprising:
a plurality of seat-carriages, each one comprising a base provided with rolling means, a chassis resting on the base and a pivoting seat resting on said chassis, said seat-carriage being adapted to accommodate at least one customer sitting down;

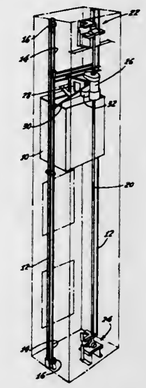
a plurality of basket-carriages each one consisting of a basket provided with rolling means, locking means adapted to removably connect the basket-carriages to the seat-carriages;
guide means in the form of rails located inside the store, adapted to guide the path of the seat-carriages;
a plurality of links for connecting the seat-carriages together, in the form of a continuous chain;
mechanical means adapted to move regularly said chain along the guide means;
shelves for displaying the products offered for sale disposed along said guide means, said shelves being constituted of two superposed planes parallel to the guide means, the shelves being disposed in such a manner with respect to said guide means, that the seat-carriages circulating on



said guide means are at a distance from the shelves enabling the products on the shelves to be taken by the customer on the seat-carriage;
detection means associated with each of said shelves sensitive to the removal of a product displayed on said shelf and suitable for emitting a corresponding signal;
at least one central computer for receiving and memorising the signals emitted by the detection means on each shelf;
at least one means for measuring and checking the displacement of the chain formed by the successive linked seat-carriages, for sending signals corresponding to the instantaneous positioning of the chain of the seat-carriages within the circuit formed by the guide means;
transmitting means for transmitting the signals emitted by the checking means of the chain of carriages and by the detection means on the shelves to said central computer.

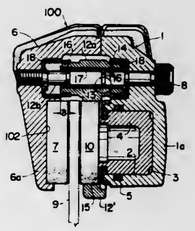
3,881,575
VERTICAL TRANSPORTATION AND ELEVATOR SYSTEM
Carlisle F. Manaugh, 522 Abramar Ave., Pacific Palisades, Calif. 90272
Filed Dec. 11, 1972, Ser. No. 314,178
Int. Cl. B66b *11/04*
U.S. Cl. 187—25 **7 Claims**

1. A vertical transportation and elevator system including: a vertical supporting frame having an upper end and a lower end; an elongated screw member; mounting means for suspending the elongated screw member in a vertical position on said supporting frame, said mounting means including an upper support means mounted at the upper end of said supporting frame and affixed to the upper end of said elongated screw member, and a lower support means mounted at the lower end of said supporting frame for receiving the lower end of said screw member, the lower end of said screw member being free to move in a vertical linear direction, said lower support means including a bracket to receive the lower end of said screw member and tensioning means connected to the lower end of said screw member to maintain said screw member in tension between the upper and lower support means for all load conditions of the system, said tensioning means including a resilient block member mounted coaxially with said screw member and engaging the under side of said bracket, and nut means threaded to the lower end of said screw member and engaging the underside of said resilient block; an assembly including a nut member threadably mounted to said screw member; an elevator cab; means coupling said elevator



cab to said nut assembly; and drive means coupled to one of the aforesaid members for imparting relative rotational movement between said nut member and said screw member to cause said cab member to move vertically in a linear direction.

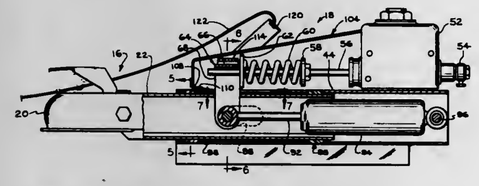
3,881,576
DISK BRAKE UNIT CALIPER MOUNTING
Tetsuo Haraikawa, Funabashi, and Yasuo Karasudani, Yokohama, both of Japan, assignors to Tokico Limited, Kawasaki, Japan
Continuation-in-part of Ser. No. 189,108, Oct. 14, 1971, abandoned. This application Sept. 25, 1973, Ser. No. 400,607
Claims priority, application Japan, Oct. 14, 1970, 45-90226
Int. Cl. F16d *65/00*
U.S. Cl. 188—73.5 **5 Claims**



1. A disk type vehicle wheel brake unit comprising:
a. stationary support plate means having a main part formed with a pair of ear portions each having a substantially T-shaped cross-section;
b. aperture means extending through each of said ear portions;
c. a circular opening formed through said main part in spaced relation to said ears;
d. C-shaped caliper means disposed in straddling relation to said main part and both of said ear portions and comprising first and second legs with actuator means disposed in said first legs;
e. tie bolt means secured to said legs and extending through said aperture means for sliding movement relative to said support plate means;
f. a pair of spaced apart resilient seals disposed between said tie bolt means and said aperture means;
g. a first friction pad stationarily mounted on said second leg;

h. a second friction pad slidably mounted in said circular openings for enegagement by said actuator means;
i. said pair of tie bolt means extending parallel to the axis of said circular opening and having at least a portion thereof positioned inside of the outline of said circular opening as defined by two parallel lines tangent to opposite sides of said opening to act as a tension means opposed against an expanding force applied to said caliper means during brake application;
j. said caliper means acting as a compression means opposed against an expanding force developing in said caliper means during brake application; and
k. said ear portions, tie bolt means and said resilient seals being positioned in a substantially enclosed space defined by said C-shaped calliper means and said friction pads.

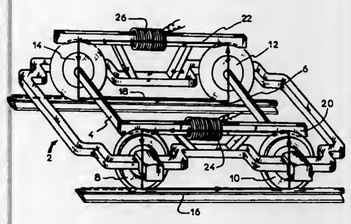
3,881,577
HITCH WITH TRAILER BRAKE ACTUATOR
Joseph L. Wherry, Perryburg, and Eugene DeAngelis, Toledo, both of Ohio, assignors to Toledo Stamping & Manufacturing Company, Toledo, Ohio
Filed Aug. 2, 1973, Ser. No. 385,188
Int. Cl. B60f *7/20*
U.S. Cl. 188—112 **19 Claims**



1. A trailer hitch for connecting a trailer and a towing vehicle, said hitch comprising a forward component adapted to be connected to the towing vehicle, a rear component adapted to be connected to the trailer, means associated with said forward and rear components for providing relative movement between them in a direction toward and away from one another, a brake cylinder carried by one of said components, a brake piston rod extending outwardly from said cylinder toward the other component, a spring connected to said brake rod at a point spaced from said brake cylinder and extending in a direction away from said brake cylinder, an engaging member movable with the other of said components for engaging said spring to resiliently urge the brake rod into said brake cylinder, stop means cooperating with said engaging members for limiting relative movement of said engaging member toward said spring, to establish a predetermined maximum compressive force on said spring, with said spring providing maximum pressure through and brake rod on hydraulic fluid in said cylinder which is less than the bursting pressure on a hydraulic system with which said cylinder communicates, and a break-away lever pivotally mounted on the same component as said brake cylinder, said lever having means being positioned to actuate said brake rod through said spring when said lever is moved by a flexible member attached to the towing vehicle.

15. A trailer hitch for connecting a towed vehicle and a towing vehicle, said hitch comprising a forward component adapted to be connected to the towing vehicle and a rear component adapted to be connected to the towed vehicle, said forward component being substantially tubular throughout a substantial portion of its length, said rear component including a pair of generally horizontally extending flanges and an inverted U-shaped portion structurally integral with the two flanges and of a size and shape to receive the tubular portion of said forward component, said flanges having rear turned up stiffening flanges with inner edges thereof affixed to the legs of said inverted U-shaped portion, and a strip member extending between lower end portions of the legs of said inverted U-shaped portion and affixed thereto below said tubular portion of said forward component.

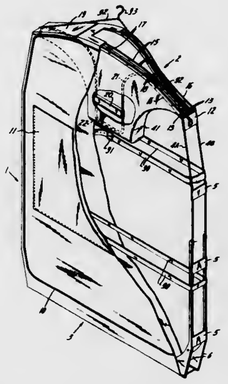
3,881,578
APPARATUS FOR BRAKING RAILWAY VEHICLES
Yvon Dubreucq, 65, rue Faidherbe, Lesquin, Nord, France
Filed Nov. 6, 1973, Ser. No. 413,338
Claims priority, application France, Nov. 10, 1972, 72.40012; May 15, 1973, 73.17489; Sept. 13, 1973, 73.32877
Int. Cl. F16d *65/34*
U.S. Cl. 188—165 **6 Claims**



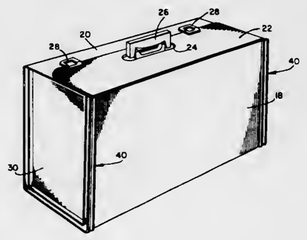
1. A device for the dynamic eddy-current braking of vehicles moving on rails of magnetic metal, and in which the wheels are also of magnetic metal, said device comprising:
at least two pairs of coaxial wheels with axles of magnetic metal;
as many excitation windings as there are coaxial wheels, each of said windings being mounted with a continuous clearance and surrounding the lower half of each of said wheels;
an induced magnetic circuit constituted by said lower halves of said two pairs of coaxial wheels, the portions of rail comprised between said wheels and the two axles of said wheels;
means for creating a magnetic flux through the intermediary of said windings, constituted by a source of electric current and a supply system for said coils with direct current from said source, comprising a switch;
and means for connecting to each other said windings of said two pairs of coaxial wheels, in order that in each vehicle said continuous current always circulates in the same direction in the windings surrounding the diagonally opposite wheels and always circulates in opposite directions in the windings surrounding said coaxial wheels;
whereby a magnetic flux adapted to generate effective retarding eddy-currents in said wheels and said rails is created at the required moment by closing said switch of said supply system for the windings and the various vehicles may be coupled together automatically in any direction whatever.

3,881,579
COMBINED SUITCASE AND HANGING BAG
Juri Keerdoja, 21 River Rd., Apt. A, Nutley, N.J. 07110
Filed Mar. 21, 1974, Ser. No. 453,205
Int. Cl. A45c *7/00*
U.S. Cl. 190—44 **16 Claims**

1. A suitcase having a top and a bottom, said suitcase including,
a handle,
means for mounting said handle in said suitcase between said top and said bottom, within a plane extending through said suitcase,
first and second hanger supports,
means for mounting said first hanger support in said suitcase above said handle, and to a first side of said plane, and
means for mounting said second hanger support in said suitcase above said handle, and to a second side of said plane, said first and second hanger supports being mounted a sufficient distance apart to provide access to said handle.

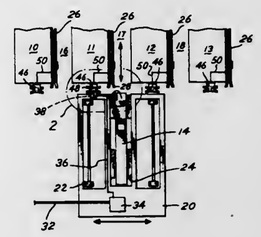


3,881,580
CARRYING CASE
Mandel A. Doppelt, 7218 Kedvale Ave., Lincolnwood, Ill. 60646
Filed May 14, 1973, Ser. No. 360,016
Int. Cl. A45c *3/00, 13/26*
U.S. Cl. 190—48 **4 Claims**



1. A carrying case comprising a body formed from a single integral strip or blank of plastic material which is substantially rigid but is capable of being longitudinally flexed by manual pressure, with said strip having spaced grooves formed in said material to provide fold lines for said strip so that when said strip is folded it forms a bottom, spaced side walls and a pair of top closure flaps with one of said flaps overlapping the other, said grooves between the side walls and the top closure flaps forming the hinge lines for said closure flaps, said body having separate end walls, in which the end walls are each formed of the same plastic material and provided with spaced marginal grooves which form fold lines for forming side end flanges and a bottom flange, said side end and bottom flanges positioned adjacent the margins of the side walls and bottom of said body, an integrally formed channel strip frame formed of metal and substantially rigid and which is of generally U-shaped configuration in end view plan comprising spaced vertical sides connected by a bottom horizontal portion but with an open top, said channel strip also being U-shaped in transverse section with an outer leg and an inner leg and a connecting portion therebetween and securing the side and bottom flanges to the end edges of the side and bottom walls, respectively, and not extending over the top of the end walls, said channel strip having inwardly extending pointed ribs on one of said legs biting into the side flanges to secure said end walls to the side and bottom walls without the use of any stitching or other fastening means and solely by the use of said integrally formed channel strip frame, said outer leg and connecting portion of said U-shaped channel strip being flat and each having a recessed flat central portion in the outer surface thereof.

3,881,581
VEHICLE POWER SYSTEM
Raymond H. Richardson, Chicago, Ill., assignor to Interlake, Inc., Chicago, Ill.
Division of Ser. No. 370,173, June 14, 1973, Pat. No. 3,846,595. This application Aug. 15, 1974, Ser. No. 497,659
Int. Cl. B60l *1/00*
U.S. Cl. 191—2 **6 Claims**



1. A vehicle power system including a plurality of stationary structures spaced from each other to define aisles therebetween and a structure movable across the ends of said aisles and including a vehicle movable in said aisles and to a position beyond said aisles, wherein the improvement comprises in combination therewith:
first power transmission means adapted to be connected to a source of power for transmitting power to said movable structure,
first coupling means mounted on said movable structure for movement with said movable structure in a defined path of movement adjacent the ends of the aisles, said first coupling means and said first power transmission means being connected for receipt of power by said first coupling means,
second power transmission means,
a plurality of second coupling means each stationarily mounted adjacent an end of said structures and adjacent the respective ends of said aisles and spaced in said defined path of movement such that said first coupling means moves into power transmitting engagement with given ones of said second coupling means when said vehicle is at least approximately aligned with a given one of said aisles,
and means associated with said given ones of said aisles connected to said second coupling means by said second power transmission means for energization of said means associated with said given one of said aisles when said first and second given ones of said coupling means are engaged.

3,881,582
PUNCH PRESS CLUTCH AND BRAKE WITH PRESSURE BOOSTER
William A. Conway, Cincinnati, Ohio, assignor to Conway Clutch Company, Cincinnati, Ohio
Filed Aug. 13, 1973, Ser. No. 388,031
Int. Cl. F16d *67/04*
U.S. Cl. 192—12 C **10 Claims**

1. In a punch press of the type including a driving motor, a flywheel connected to be driven by said motor, a punch, a cam shaft for driving the punch, and pneumatically actuated clutch means for selectively engaging said flywheel with said cam

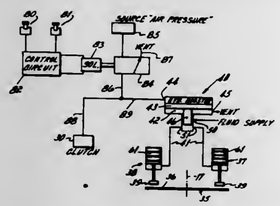
shaft in order to rotate the shaft and drive said punch when pressure air is supplied to said clutch, motion control apparatus comprising:

a braking disk positively secured to said cam shaft and including a braking surface on one side of said disk,

a source of pressurized air,

a pneumatic-hydraulic booster connected to said source of pressurized air and having an hydraulic output,

hydraulically deactivated spring applied brakes hydraulically connected to said booster and disposed to normally engage the side braking surface of said braking disk on opposite sides of the cam shaft to stop said braking disk, said spring applied brakes having braking pads mounted



to move toward and away from the braking surface in a direction parallel to the cam shaft on which the braking disk is mounted,

said hydraulically deactivated spring applied brakes normally braking said disk but being operable to disengage from said disk, in a direction parallel to the cam shaft, when pressure air is applied to said booster to hydraulically deactivate said brakes, and

means for selectively and commonly connecting said source of pressurized air to said pneumatically actuated clutch means and to said booster to engage said clutch and disengage said brake and for selectively and commonly venting said clutch means and booster to that said brake is engaged whenever said clutch is disengaged.

3,881,583

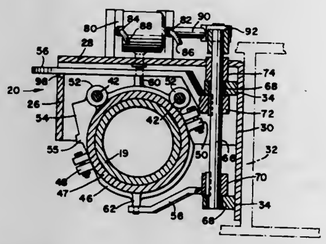
FLUID OPERATED STEERING CLUTCH AND BRAKE

Ben C. Pezdark, and William C. Cleary, both of Butte, Mont., assignors to The Anaconda Company, New York, N.Y.

Filed Aug. 30, 1973, Ser. No. 393,178

Int. Cl. F16d *67/04*

U.S. Cl. 192—13 R **1 Claim**



1. In combination:

a. a power driven machine having

1. a frame,

2. a drive member, and

3. a driven member including ground engaging members, said drive and driven members being supported by said frame in coaxial and in substantial abutting relation;

b. a control mechanism for steering said power driven machine, said control mechanism comprising

1. a housing,

2. means mounting said housing on said frame,

3. clutch means,

4. means supporting said clutch means concentrically of said drive and driven members for movement in opposite directions selectively to positions engaging said drive member with and disengaging said drive member from said driven member and locking said driven member,

5. a pair of guide bars,

6. retainer means within said housing for supporting said guide bars in parallel relation to the axis of said drive and driven members,

7. means mounting said clutch means on said guide bars,

8. means for stabilizing said clutch means against rotation relative to said axis, said stabilizing means including

i. a shaft supported by said housing for rotation about an axis which is normal to said axis of said drive and driven member,

ii. a pair of arms connected to said shaft and extending toward said clutch means, said arms being connected to said shaft at spaced locations such that one arm is disposed above said clutch mounting means and the other arm is disposed below said clutch mounting means, and

iii. means carried by one of said arms and said clutch mounting means for mechanically connecting the same, one of said arms providing an actuator lever extending from the location of said mechanical connection to initiate said selective movement; and

c. power assist means supported by said housing, said power assist means including

1. a cylinder,

2. a piston movable in said cylinder,

3. means to actuate said piston in opposite directions,

4. an actuating rod, said rod connected to said piston at one end, and

5. means for connecting said rod other end to said shaft for translation of piston movement to movement of said clutch means selectively into and out of said positions, said means to actuate said piston being responsive to movement of said actuator lever.

3,881,584

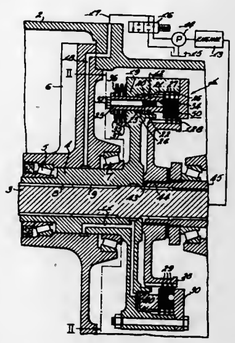
BALANCE SPRING FOR CENTRIFUGAL HEAD IN HYDRAULIC CYLINDER

James E. Marsch, Brookfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 17, 1973, Ser. No. 425,534

Int. Cl. F16d *25/00*

U.S. Cl. 192—85 AA **10 Claims**



1. A hydraulic clutch assembly comprising a rotating clutch drum carrying a plurality of clutch discs and defining an axis of rotation, a hydraulic cylinder defined by said rotating clutch drum radially spaced from said axis of rotation, a clutch hub carrying a plurality of clutch discs for engagement with the clutch discs on said drum, a hydraulic piston in said hydraulic cylinder forming a fluid pressurizing chamber for receiving pressurized hydraulic fluid for frictionally engaging said discs when actuating said hydraulic clutch assembly, retraction means for retracting said hydraulic piston including means defining an opening axially parallel with said axis of rotation extending into said pressurizing chamber through a wall in said hydraulic cylinder, a piston retracting sleeve removably received in said opening and firmly seated on said piston in said pressurizing chamber, a removable fastening member extending axially through said sleeve firmly seating said sleeve on said piston, resilient retracting means including a selective plurality of spring elements in axial adjoining engagement mounted externally on said hydraulic cylinder and compressively engaging a seating surface on said piston retracting sleeve and an external surface of said hydraulic cylinder providing a selective retractive force for retracting said piston and overcoming the effect of residual fluid pressure in the hydraulic fluid pressurizing chamber when the hydraulic clutch assembly is released.

3,881,585

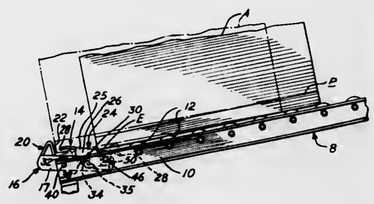
SELF LEVELLING CONVEYOR STOP

Bestor P. Coleman, Willow Springs, and Kennedy McConnell, Riverdale, both of Ill., assignors to Interlake, Inc., Chicago, Ill.

Filed Mar. 30, 1973, Ser. No. 346,571

Int. Cl. B65g *11/20, 13/00*

U.S. Cl. 193—35 A **15 Claims**



1. A stop member for arresting the movement of an article on a conveyor comprising:

a movable arresting member having a substantially flat surface thereon of substantial area, said movable member adapted to be engaged by the article,

mounting means for movably mounting said movable member in the path of movement of the article, said mounting means including pivot means pivotally mounting said movable member intermediate the length of its surface at a location spaced substantially from the ends thereof,

said movable member and said surface being pivotally movable about said pivot means between a first position in which said surface is disposed at an angle to and in the path of movement of the article and a second position substantially simultaneously with engagement of the article with said surface, wherein substantially the entire flat area of said surface frictionally engages a portion of the article in said second position and elevates said portion above the path of movement of said portion before said portion engaged said surface, whereby the movement of the article is substantially arrested.

3,881,586

PRINTING APPARATUS WITH LARGE NUMBER OF CHARACTERS

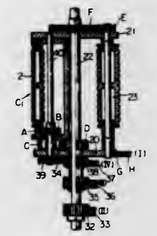
Tibor Arvai, Paris, France, assignor to Tokyo Juki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 11, 1973, Ser. No. 368,588

Claims priority, application France, June 20, 1972, 72.22162

Int. Cl. B41j *7/04*

U.S. Cl. 197—1 A **9 Claims**



1. A typing machine for selectively typing on a sheet a large number of characters, said machine comprising:

I. a printing assembly containing thereon a plurality of characters and mounted to bring a selected one of said characters to a printing position, said printing assembly comprising:

A. a first plate rotatable about a first longitudinal axis, a plurality of printing cylinders mounted on second axes rotatably mounted parallel to said first axis about the periphery of said first plate, said printing cylinders having about the periphery thereof rows of characters extending parallel to said first axis;

B. at least one carrousel including a second plate rotatably mounted about a third axis parallel to said first axis about said first plate between adjacent of said printing cylinders;

C. said at least one carrousel having a plurality of auxiliary printing cylinders rotatable about fourth axes, parallel to said first axis, about the periphery of said second plate, each of said auxiliary printing cylinders having about the periphery thereof rows of characters extending parallel to said first axis;

D. at least one row of characters, extending parallel to said first axis, fixedly mounted to said second plate about the periphery thereof between adjacent of said auxiliary printing cylinders; and

E. at least one row of characters, extending parallel to said first axis, fixedly mounted to said first plate about the periphery thereof between adjacent of said printing cylinders and said at least one carrousel; and

II. hammer means mounted adjacent said printing position for forcing a sheet against a selected one of said characters when said printing assembly has brought said selected character to said printing position.

3,881,587

DEVICE FOR CONTROLLING THE MOVEMENT OF THE PRINTING HEAD IN PRINTERS

Katsuhiko Okabe, Tokorozawa, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Oct. 29, 1973, Ser. No. 410,559

Claims priority, application Japan, Nov. 1, 1972, 47-126456[U]

Int. Cl. B41j *3/20*

U.S. Cl. 197—1 R **1 Claim**

1. A device for controlling the movement of a printing head comprising:

a printing head having a printing portion thereon and movable along a recording surface of a recording paper faced

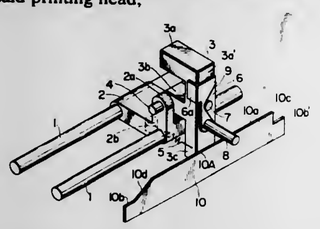
to said printing portion and also rotatable about an axis extending parallel to said recording surface between a first position with said printing portion contacting said recording surface and a second position with said printing portion removed from said recording surface,

an operating lever pivotably mounted on and engageable with said printing head,

a cam plate extending in parallel with said recording surface to engage said operating lever,

a first spring connected to said printing head and urging said printing head to said second position,

a second spring connected between said printing head and said operating lever and urging said operating lever to engage said printing head,



said cam plate having a slope portion at one end thereof engageable with said operating lever for moving said printing head against the bias of said first spring from said second position to said first position,

a low portion at the other end thereof engageable with said operating lever for allowing said first spring to urge said printing head to said second position from said first position, and

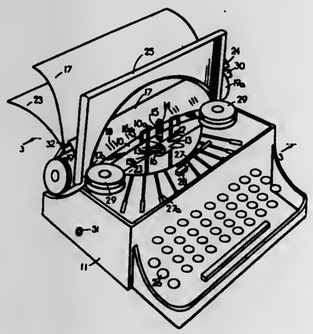
a high portion between said slope and low portions for maintaining said printing head in said first position when said printing head is moved along said recording surface in one direction in order to carry out printing and for maintaining said printing head in said second position when said printing head is moved in the opposition direction.

3,881,588

DEVICE FOR RE-INKING TYPEWRITER RIBBONS

Lester S. Krulwich, 241 Central Park West, New York, N.Y. 10024

Filed Dec. 10, 1973, Ser. No. 423,558
Int. Cl. B41j *31/14*
U.S. Cl. 197—171 **5 Claims**



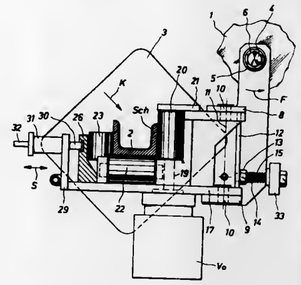
1. A device for re-inking the ribbon of a typewriter provided with ribbon spools, a center type guide and a platen movable back and forth and around comprising a resilient sheet coated on one side with a layer of pressure-releasable inking material, said sheet being sufficiently thin so as to be insertable on the platen with a portion of its ink coating behind and above the level of the center type guide and in back of the ribbon, and a pressure-applying member comprising a rotatable member detachably mounted and positioned so that said rotatable member continuously bears on the ribbon as the ribbon is reeled back and forth to and from one of said spools causing the ribbon to press on the inking surface of the said sheet thereby depositing ink on the back of the ribbon from the sheet.

3,881,589

INDEXING SYSTEM FOR SHEARS, PRESSES AND THE LIKE

Werner Peddinghaus, Bruchhausen 21, 4322 Sprockhovel-Hasslinghausen, Germany

Filed Sept. 7, 1971, Ser. No. 177,982
Claims priority, application Germany, Sept. 4, 1970, 2043868
Int. Cl. B23q *7/00*
U.S. Cl. 198—127 R **14 Claims**



1. In a machine having a frame and elements to act on a work member, a device for feeding an elongated work member predetermined distances along a path to said elements, said device including a support member extending transversely across said path, means mounting said support member on said machine frame comprising pivot means for pivotally supporting said support member on said frame, roll means supported on said support member for supporting and guiding said work member including roll means on opposite sides of said work member in which at least two spaced rolls along one side of said work member guide said work member along said path to said elements of said machine, an adjustable speed-control motor supported on said support member, drive means connecting said motor to at least one of said roll means to advance the work member a predetermined distance, and pressure operable means supported on said support member to urge the roll means on one side of said work member against the roll means on the opposite side to guide said work member along said path, said pivot means having its pivot axis spaced from said path and mounting said support member with said roll means and said pressure operable means on said machine frame for pivotal movement of said support member out of said path to allow access to said machine elements.

3,881,590

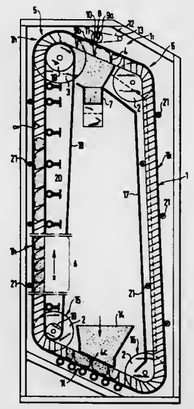
ELEVATOR CONVEYOR

Karl Hartmann, Liebrechtstrasse 37, 4130 Moers-Utfort, Germany

Filed Jan. 22, 1971, Ser. No. 191,929
Int. Cl. B65g *15/14*
U.S. Cl. 198—162 **8 Claims**

1. An elevator conveyor comprising an endless conveying belt, a plurality of driving wheels arranged in spaced relation to one another, said belt engaging said wheel so as to be movably guided thereon, partitions mounted on the interior

surface of the conveyor belt, side walls extending adjacent to marginal edges of the belt and having a substantially corrugated configuration, said partitions being mounted on said conveyor belt so as to form an acute angle with the plane defined by the conveyor belt, the ends of each of said partitions disposed contiguous to the oppositely disposed corrugated side walls without being fixedly joined thereto, said conveyor belt having its longitudinally extending marginal edges being disposed outside said side walls such that the



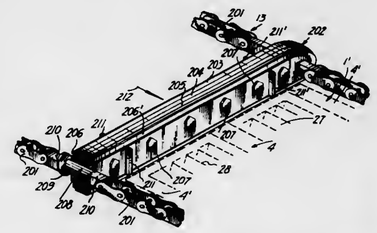
adjacent surfaces thereof operatively engage said driving wheels; the elevator conveyor further comprising a covering belt, at least two driving drums situated coaxially relative to correspondingly positioned driving wheels and being journaled separately thereof, said covering belt positioned to cover the conveyor belt and being co-movable and in engagement with the substantially corrugated side walls, whereby the conveyor is substantially closed by engagement of said covering belt with said side walls.

3,881,591

CONVEYING MEANS FOR A MOLD STRUCTURE

Juan Manuel Abalo, Buenos Aires, Argentina, assignor to Noel y Compania Limitada Sociedad Anonima Argentina de Dulces y Conservas, Buenos Aires, Argentina

Division of Ser. No. 165,065, July 22, 1971, Pat. No. 3,778,018. This application Sept. 13, 1973, Ser. No. 396,773
Int. Cl. B65g *19/24*
U.S. Cl. 198—175 **7 Claims**



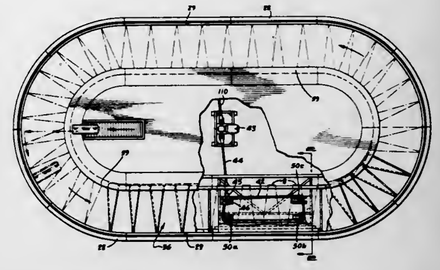
1. Endless conveyor means provided with two spaced apart, flexible drawing members passing through spaced apart carrier partitions, each of said carrier partitions consisting of at least one resilient, wearable, pressure expandable, heat insulating partition member having a front face, a rear face and a periphery, clamping members, hard front and rear backing plates positioned, with the aid of said clamping members passing through said backing plates and said resilient partition member, onto said front and rear faces, said backing plates having peripheries which remain within the periphery of said resilient member, said clamping members being length-wise adjustable to reduce the mutual distance between said backing plates, each heat insulating partition member and its hard front backing plate being shiftable along a portion of said drawing members, an abutment on each said portions adapted to enter in abutting and blocking contact with said rear backing plate, and said drawing members passing through said backing plates adjacent the peripheries thereof.

3,881,592

MODULAR BAGGAGE HANDLING SYSTEM WITH CHAIN DRIVE

Jack E. Stimpson, Plain City, Utah, assignor to Stanray Corporation, Chicago, Ill.

Continuation of Ser. No. 319,622, Dec. 29, 1972, abandoned. This application July 10, 1074, Ser. No. 487,040
Int. Cl. B65g *17/00*
U.S. Cl. 198—181 **6 Claims**



1. A modular baggage handling system comprising:

a. a continuous chain mounted in a plane having elongated links;

b. a guide rail means having substantially vertical flanges defining the configuration of said chain;

c. a plurality of load wheel assemblies each having a substantially vertical stub axle connected to one of said links, a first load carrying wheel coaxially pivotable about the axis of said stub axle, and a guide wheel rotatably mounted on said stub axle in rolling contact with said guide rail flanges;

d. a plurality of pallet carriers mounted on said links, each having a load carrying base positioned at an inclined angle and a substantially vertical flange at the extreme lower end of said base, a bracket connected to said load carrying base, and a second load carrying wheel mounted for rotation at the upper end of said pallet carrier on an elevated track;

e. said first load carrying wheel, said stub axle and said vertical flange of each of said pallet carriers being substantially in vertical alignment to insure negligible separation of said pallets in the plane of said vertical flanges;

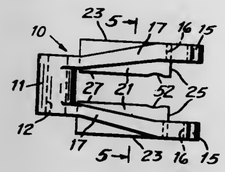
f. drive means including at least a first drive chain member;

g. means associated with each of said pallet carriers for engaging said drive chain member, said means being adjustable relative to said each of said pallet carriers for alignment with said drive chain member, each of said means including a chain dog member independently mounted on each pallet carrier and disposed to engage a portion of said drive chain member such that movement of said drive chain member will impart corresponding movement to each pallet carrier thereby operatively engaged, such that each pallet carrier will be moved relative to said guide rail means;

h. a continuous flexible bumper member coextensive in length with said continuous chain, connected to and substantially covering said pallet carrier flange and spanning the distance between said pallet carriers;

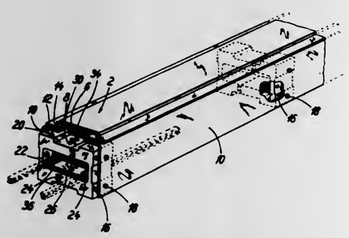
i. sheet plate members mounted on each of said load carrying bases providing a surface overlapping said pallet carriers and adjacent plates for providing a continuous surface for receiving baggage and other articles;
j. each of said sheet plate members carrying a resilient strip on its overlapping edge to prevent galling of the plate surfaces which come in overlapping rubbing contact; and
k. resilient means connecting said plate members to said pallet carriers to permit limited relative movement in a direction normal to the plane of said pallet base members.

3,881,593
CHAIN CONVEYOR LINK AND ATTACHMENT THEREFOR
John N. Mushovic, Simsbury, and Richard M. Bell, Lakeville, both of Conn., assignors to Norton Company, Worcester, Mass.
Filed Jan. 28, 1974, Ser. No. 437,328
Int. Cl. B65g *17/06*
U.S. Cl. 198—189 **12 Claims**



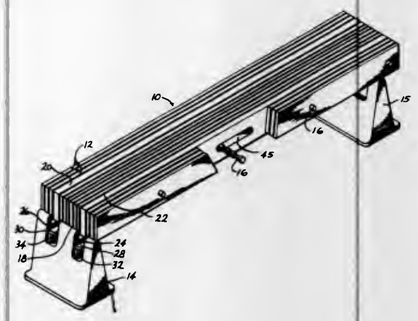
11. An array of conveyor links arranged to be interconnected pivotally each to the adjoining links at opposite ends thereof, and collectively arranged to move in a given direction,
attachment engaging means fixedly secured to at least some said conveyor links
attachment means slidable into engagement with said attachment engaging means in the direction opposite to said given direction, and
stop means operative to limit movement of said attachment means relative to said attachment engaging means.

3,881,594
BELT CONVEYORS
Peder Jorgensen Jepsen, Skovparken 3, Hojen, Vejle, Denmark
Filed Dec. 21, 1972, Ser. No. 317,300
Int. Cl. B65g *15/60*
U.S. Cl. 198—204 **7 Claims**



1. A belt conveyor comprising: a conveyor belt with an upper covering run and a lower run return, said runs being slidably supported on elongated carrier means of a conveyor chassis having means for holding the carrier means, said holding means including a plurality of cross wise arranged block members mounted in spaced relationship along the conveyor and having the conveyor means for the upper run of the conveyor belt mounted adjacent their topside, said block members having a central passage through which the lower return run of the conveyor belt and the carrier means thereof extend, said block members being split into block parts along a longitudinal vertical plane above and below the central passage, and means for releasably connecting said block parts to each other, wherein between two of said block parts there is mounted an intermediate block part having portions projecting to both sides of the vertical middle plane so as to form a double block member together with the outer block parts.

3,881,595
CONVEYOR SYSTEM FOR THE INTERMITTENT FORWARDING OF SAND MOLDS
Vagn Deve, Shaker Heights, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 26, 1972, Ser. No. 318,331
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 **3 Claims**

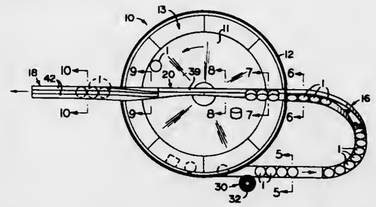


1. A method of operating a conveyor for molds wherein molds are intermittently added to one end of the conveyor, and intermittently removed from the other end thereof, said conveyor having a plurality of stationary, parallel, spaced longitudinal members having flat upper surfaces which lie in a common horizontal plane, and a movable longitudinal means positioned in internesting relationship with the stationary members having a flat upper surface which in a first position lies in the same plane as the upper surfaces of the stationary members, and which in a second position lies beneath the plane of the upper surfaces of the stationary members, both the stationary longitudinal members and the movable longitudinal means extending substantially the entire length of the conveyor, comprising the steps of initially loading the conveyor with molds from one end to the other, applying a predetermined lifting force to the bottom of the movable means, which predetermined lifting force is greater than fifty percent of the weight of the load on the conveyor but less than the total weight of the load on the conveyor so that the molds are not lifted from the upper surfaces of the stationary members, sliding a new mold onto one end of the conveyor, while simultaneously maintaining the predetermined lifting force to the bottom of the lifting means, so that the movable means is moved along with the molds, and thereafter applying a force to move the movable means back to its original position, thereby forcing a mold from the other end thereof.

3,881,596
PARTS FEEDER
Paul Marcus Miller, Seminole, Fla., assignor to Tangen Drives, Inc., Clearwater, Fla.
Filed Oct. 15, 1973, Ser. No. 406,264
Int. Cl. B65g *47/24*
U.S. Cl. 198—276 **9 Claims**

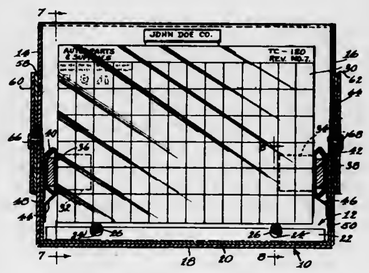
1. A feeder for small parts which oreints the same comprising, in combination,

a feeder
first orienting means interior of the feeder prior to the delivery of parts,
a delivery track in feeding communication secured to the feeder to receive parts from the first orienting means,
said delivery track being oriented upwardly and outwardly and reversedly to pass back over the feeder at a position elevated thereof,
second orienting means in direct feed communication with the delivery track over the feeder,



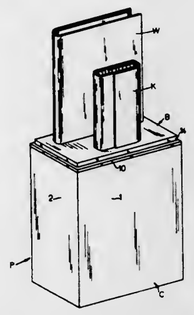
said second orienting means including reject means to discharge unoriented parts back into the feeder,
said reject means including a tilted base having a ledge in combination therewith whereby parts whose center of gravity passes over the vertical axis of the extreme portion of the ledge will be recirculated into the feeder,
and a discharge track in feed communication with the second orienting means to transport the part properly oriented for further processing.

3,881,597
PORTABLE MICROFILM HOLDER
Ernest A. Dahl, Jr., 729 Greenwood Ave., Wilmette, Ill. 60091
Filed Aug. 8, 1973, Ser. No. 386,595
Int. Cl. B65d *5/44*; **G09f** *7/10*
U.S. Cl. 206—44 B **16 Claims**



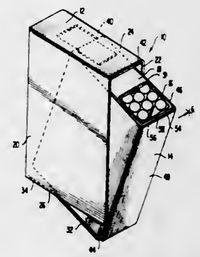
1. A readily portable holder for microfilms and the like including an elongate closure base section, a removable magnet support member superimposed over said elongate closure base section laterally spaced file card supporting rod means adjacently traversing said base section and over said removable magnet support member, a plurality of generally upright file cards traversed and supported by said rod means, magnetic means carried by opposite upright margins of said cards and located in the vicinity of the lower half of said cards, end closure sections extending upwardly from the opposite extremities of said elongate closure base section, magnets supported by said removable magnet support member adjacent said end closure sections in the vicinity of said magnetic means, the area between adjacent file cards serving to accomodate microfilms, and relatively, laterally shiftable closure sections extending upwardly from opposite elongate margins of said base section.

3,881,598
DISPLAY PACKAGE
Alan F. Schwimmer, Evanston, Ill., assignor to Amity Leather Products Company, West Bend, Wis.
Filed July 5, 1973, Ser. No. 376,420
Int. Cl. B65d *5/52, 25/24*
U.S. Cl. 206—45.2 **1 Claim**



1. A display package for an article and comprising a molded plastic cover having an open bottom, a molded plastic base of complementary shape to the cross section of said open bottom of said cover, said base having an outwardly extending flange formed integrally around its periphery and intermediate the height of said base to define an upper base portion above said flange and a lower base portion below said flange, said base also having a series of upwardly extending projections integrally formed with said base for supporting articles thereon and above said base, whereby said cover can be inserted over said articles and be supported on said flange with said upper base portion slipped snugly into said cover, said cover having an integral top and also having integral side walls which extend upwardly beyond said top to form a recessed upper end of said cover whereby said base can be set on top of said cover without reversing said cover and into said recessed upper end of said cover with said lower base portion extending into said recessed top, the base flange resting on the upper said end of said side walls of said cover for display of the articles held by said upwardly extending projection.

3,881,599
CIGARETTE DISPENSING PACKAGE
Kenneth Allen Flaherty, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Jan. 24, 1974, Ser. No. 436,024
Int. Cl. B65d *5/85*
U.S. Cl. 206—273 **19 Claims**



1. A package for cigarettes or other articles comprising:
a. an outer shell having opposed front and rear wall panels and top and bottom panels connecting said wall panels, said panels defining a pair of opposed open sides, said bottom panel having first and second portions;

b. an inner shell containing said cigarettes or other articles, said inner shell being positioned within said outer shell, said inner shell having oppposed front and rear wall panels and side panels connecting said wall panels, at least a portion of at least one of said panels extending substantially between the second portion of said bottom panel and said top panel and having an edge engageable in sliding contect with the under surface of the top panel of said outer shell upon rotation of said inner shell relative to the outer shell, said inner shell being connected to the first portion of the bottom panel of said outer shell;

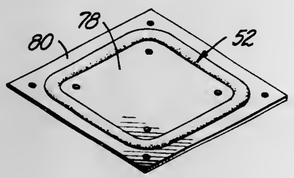
c. hinge means on the bottom panel of said outer shell connecting said first and second portions of the bottom panel of said outer shell to permit swinging movement of said first portion relative to the second portion whereby the inner shell is rotatable to and from a first position within said outer shell, and a second position angularly disposed relative to said outer shell wherein a portion of the top of the inner shell is exposed lateraly of said outer shell so that articles may be removed therefrom;

d. abutment means on the under surface of said top panel for engagement with the portion of the inner shell which extends between the second portion of the bottom panel and the top panel of said outer shell to limit the rotation of the inner shell.

3,881,600
CARPETING INSTALLATION WITH REMOVABLE ACCESS PANEL

Harvey J. Hill, Los Angeles, Calif., assignor to Roberts Consolidated Industries, Inc., City of Industry, Calif.

Division of Ser. No. 162,548, July 14, 1971. This application May 21, 1973, Ser. No. 362,389
Int. Cl. B65d *85/02*
U.S. Cl. 206—303 **3 Claims**



1. In a form and/or package, the combination of:

a. an inner card;

b. an outer card in the same plane as and surrounding said inner card with an endless gap therebetween;

c. an endless, flexible T-shaped strip having a leg and inner and outer flanges;

d. said strip having an initial, unrestrained configuration wherein said leg is in a plane extending inwardly of said strip as a whole;

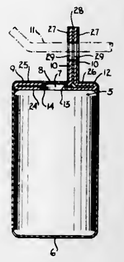
e. said strip having a twisted restrained configuration wherein said leg is substantially perpendicular to the plane of said cards and is disposed in said gap, and wherein said inner and outer flanges respectively overlie said inner and outer cards; and

f. said cards maintaining said strip in said restrained configuration.

3,881,601
RACK DISPLAY PACKAGE FOR DRY CELLS AND THE LIKE

Richard L. Walus, and Peter S. Cartwright, both of Minneapolis, Minn., assignors to Possis Corporation, Minneapolis, Minn.

Filed Sept. 21, 1973, Ser. No. 399,528
Int. Cl. B65d *65/12, 65/16, 73/00*
U.S. Cl. 206—497 **5 Claims**



1. A package containing a group of identical cylindrical articles of merchandise, each having an upper and a lower end, said articles being visible in substantial part in said package and being confined by the package in circumferentially adjacent relationship with their upper ends coplanar, said package further comprising:

A. a substantially rectangular substrate having inner and outer surfaces, a pair of opposite side edges spaced apart by a distance such that the substrate can extend entirely across the entire group of articles at one end thereof, and opposite end edges, said substrate having fold lines extending transversely to said side edges and along which the substrate is folded to have

1. a base panel that overlies the articles at one end thereof and which base panel lies between a pair of adjacent ones of said fold lines, the outer surface of said base panel being adjacent to the articles,

2. a pair of cover panels, each flatwise overlying a portion of the surface of the base panel that is remote from the articles and extending inwardly to the other from one of said pair of fold lines to have an inner edge defined by another fold line, each of said cover panels having its outer surface facing away from the articles, and

3. a pair of flatwise contiguous tabs, each projecting away from the articles from the inner edge of one of the cover panels and defined from its cover panel by said other fold line, said tabs being flatwise adhered to one another, having their outer surfaces remote from one another, and having registering holes in which a display rack hook is receivable; and

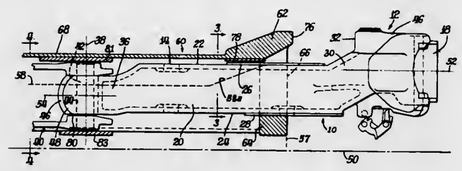
B. a skin-like transparent film snugly embracing the group of articles and flatwise secured to substantial portions of the outer surface of the substrate to thus hold the articles assembled with one another and the substrate.

3,881,602
OFFSET COUPLING

Russell George Altherr, Munster, Ind., and Ralph William Holibaugh, Park Forest, Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Jan. 11, 1974, Ser. No. 432,570
Int. Cl. B61g *3/00*
U.S. Cl. 213—75 R **17 Claims**

1. A railway coupler construction for use with a railway car having a horizontally oriented deck, said coupler construction comprising a head having a horizontal center line at a predetermined height, a shank extending from said head with a horizontal center line below that of the head and at least as

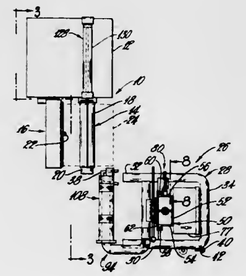


low as the deck, and means securing said shank to the car in pulling relation thereto.

3,881,603
DOFFING MECHANISM

David V. Stotler; Robert J. Gelin, both of Newark, Ohio, and John W. Daugherty, Plymouth, Mich., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 23, 1973, Ser. No. 344,306
Int. Cl. B66c *1/54*
U.S. Cl. 214—1 D **8 Claims**



5. Apparatus for handling a heavy object having a central opening therethrough and positioned on a mandrel or the like, said apparatus comprising an elongate supporting member, resilient means on said supporting member extending thereabout and forming an annular fluid chamber, means for supplying fluid to said chamber through said supporting member, means for supporting said supporting member in a position in alignment with the mandrel and for moving said supporting member to a position spaced from said mandrel, means on an end of said supporting member for aligning said supporting member with the mandrel, positioning means adapted to be positioned in a fixed position relative to said mandrel and engageable with said supporting means for aligning said aligning means transversely with an end of the mandrel, and means for pivotally moving said supporting member between a generally horizontal position and a generally vertical position with said aligning means extending downwardly.

3,881,604
MACHINE LOADER PICKUP DEVICE

William Louis Eggemeier, Florence, Ky., assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 11, 1973, Ser. No. 359,621
Int. Cl. B66c *1/48*
U.S. Cl. 214—1 BC **1 Claim**

1. In a machine loader, a pick-up device comprising:

a. an activator shaft;

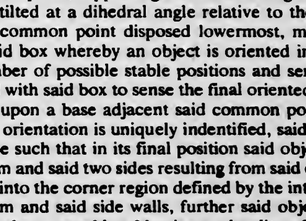
b. means for supporting said shaft for rotation and axial translation;

c. an arm fixed to said shaft and extending radially therefrom;

d. a housing fixed to said arm at the end thereof remote from said shaft and movable through a predetermined path when said shaft is rotated and axially translated;

e. a plurality of balls spaced around one end of said housing and retained therein in a rotatably mounted spindle, said balls movable radially relative to a central axis through said housing parallel to said shaft;

f. a piston and cylinder in said housing, movable relative to one another along the central axis; and

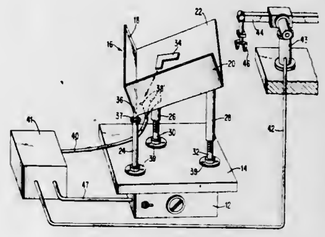


g. a ring affixed to one of said piston and cylinder, whose axis is coaxial to said central axis, and wherein said ring has a conical bore, the surface of which bore acts as a wedge upon the balls to convert axial motion of said piston and cylinder into simultaneous radial motion of said balls to move said balls toward and away from said central axis.

3,881,605
OBJECT ORIENTING DEVICE TO ASSIST ROBOT MANIPULATOR

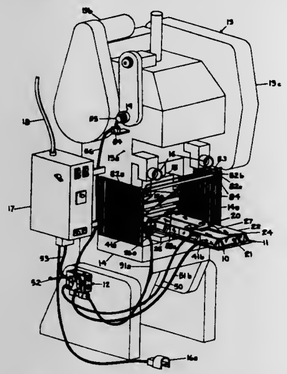
David D. Grossman, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,299
Int. Cl. B65j *3/00*
U.S. Cl. 214—1 CM **6 Claims**



1. An object orienting and position sensing device for orienting an object in one of a plurality of stable positions and sensing which of the positions the object is oriented in comprising a box having at least two sides and a base intersecting at a common point, supporting means mounting said box with said base tilted at a dihedral angle relative to the horizontal with said common point disposed lowermost, means for vibrating said box whereby an object is oriented into one of a small number of possible stable positions and sensing means associated with said box to sense the final oriented position of an object upon a base adjacent said common point whereby the actual orientation is uniquely indentified, said object having a shape such that in its final position said object contacts said bottom and said two sides resulting from said object being conveyed into the corner region defined by the intersection of said bottom and said side walls, further said object having a geometric shape capable of having a plurality of final stable positions which can be uniquely indentified relative to any other final stable position by said sensing means.

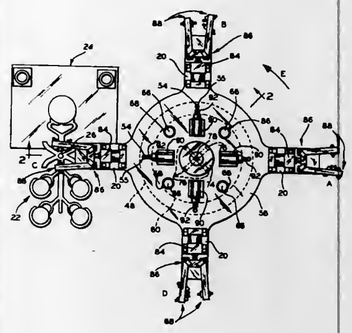
3,881,606
SLIDING NEST FEEDING APPARATUS
Ross P. Swinehart, Oregon, Wis., assignor to Wisco Industries, Inc., Oregon, Wis.
Filed Aug. 22, 1973, Ser. No. 390,578
Int. Cl. B26d 7/06; B65g 47/76; B21d 43/20
U.S. Cl. 214—1 BB **7 Claims**



1. Feeding appartus for engaging a locating nest which horizontally locates a workpiece in a working position within the work area of a press, and for transferring the locating nest between the working position and a loading position remote from said work area, said feeding apparatus comprising:
a. a frame attachable to said press;
b. support plate means attached to the upper side of said frame for slidably supporting a workpiece within said locating nest between said loading position and said work area, said support plate means having a longitudinal slot therein;
c. at least one longitudinally extending support member mounted to said frame beneath said support plate means;
d. a carriage having a lower portion located beneath said support plate means and slidably attached to said support member for longitudinal motion of said carriage, and having an upper portion extending through said slot and above said support plate means to engage and support said locating nest above said support plate means; and
e. drive means for driving said carriage between a first position wherein said locating nest is in said loading position, and a second position wherein said locating nest is in said working position.

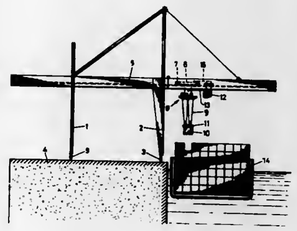
3,881,607
TRANSFER APPARATUS
Dong Sing Lewis, Toledo, Ohio, assignor to Gerity-Schultz Corporation, Toledo, Ohio
Continuation of Ser. No. 202,208, Nov. 26, 1971, abandoned. This application Sept. 14, 1973, Ser. No. 397,398
Int. Cl. B66c 1/66
U.S. Cl. 214—1 BC **11 Claims**

1. Apparatus for transferring objects between stations comprising: a plurality of equally spaced radially extending arms, an indexing table interconnecting said arms within a common plane and having at least one aperture formed therein, a rotating table, means for rotating said rotating table, column means attached to said rotating table and extending through said aperture in said indexing table for interconnecting said rotating table and said indexing table to impart simultaneous unidirectional rotational motion thereto and to permit relative movement between said tables in a direction normal to the axis of rotation thereof, means for elevating said indexing table extending through said rotating means, rotation preventing means coacting with said index table and arranged so as to permt rotation of said indexing table only in the elevated position, means for engaging the objects connected to said arms for supporting the objects during transfer between stations, and means positioned in the path of movement of said



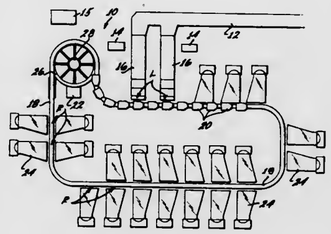
means for engaging the objects to control the means for engaging the objects so that they are engaged at all times when said elevating means is raised and released when said elevating means is lowered.

3,881,608
BRIDGE CRANE
Leonard Hupkes, Heemstede, Netherlands, assignor to Conrad-Stark B.V.
Filed Aug. 6, 1973, Ser. No. 386,096
Claims priority, application Netherlands, Aug. 17, 1972, 7211277; Aug. 17, 1972, 7211280
Int. Cl. B63b 27/12
U.S. Cl. 214—14 **10 Claims**



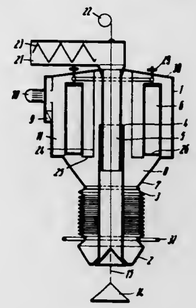
1. A bridge crane for loading and unloading containers or packing crates into and from a vessel, said crane comprising a support structure including a horizontal girder, at least one carriage supported for movement along said girder, hoisting means on said carriage for raising and lowering a load from and into a vessel therebelow, propelling means for advancing the carriage along said girder, a positioning member supported for movement along said girder independently of said carriage and including optical sighting means on said positioning member for determining the position of the positioning member along the girder with respect to the vessel therebelow, and means operatively associated with said carriage and said positioning member for halting the carriage at a predetermined distance from said positioning member.

3,881,609
TILTABLE TRAY SORTING SYSTEM WITH ADJUSTABLE DRIVE MEANS
Peter H. Ellis, 545 Parkway, Chula Vista, Calif. 92010; Allen F. Eastham, 688 Mission Ct., Chula Vista, Calif. 92012; Cecil Bainbridge, 4475 Dale, and Wiley F. Yip, Tangoerod Ln., both of La Mesa, Calif. 92041
Filed May 28, 1974, Ser. No. 473,835
Int. Cl. B65g 43/00
U.S. Cl. 214—11 R **9 Claims**



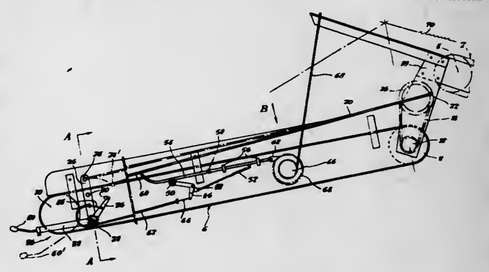
1. A commodity sorting system comprising:
a closed loop chain means,
a closed loop track following the same path as that of said closed loop chain means,
a plurality of carriages riding on said closed loop track and having means connecting said carriages to said closed loop chain means whereby travel of said chain means about its loop causes said carriages to travel around said closed loop track, said carriages each having a tray mounted thereon and having means to allow said trays to be laterally tiltable in either direction,
a first vertical drive shaft, means for driving said chain means about its loop comprising a sprocket gear horizontally oriented on said first vertical drive shaft, first skid means, bearing means, said first vertical drive shaft being rotatably supported in said bearing means that are in turn fixedly supported above said first skid means, a motor, gear drive means, second skid means slidably mounted on said first skid means, said motor being coupled to said gear drive means, means mounting said gear drive means on said second skid, a second vertical drive shaft extending upwardly from said gear drive means in axial alignment with said first vertical drive shaft and coupling means to secure the two vertical shafts together to transmit torque from said motor to said first vertical drive shaft,
base means having sliding pads upon which said first skid means is mounted, said base means having means to adjust the tension in said closed loop chain means,
at least one loading station and a plurality of discharge stations,
carriage tip-up means positioned at each discharge station,
code entry unit means into which destination discharge station code indicia from each commodity package is inserted just prior to its being loaded onto one of said carriage trays at said loading station,
central control unit means for receiving the information fed into the code entry unit means to establish a memory circuit to control the discharge of the commodity package at a destination discharge station by sending an electrical signal to said carriage tip-up means positioned at said discharge station causing it to be actuated as the carriage tray approaches the destination discharge station.

3,881,610
LOADING APPARATUS OR LOADING HEAD FOR LOOSE MATERIAL
Heinz Wilhelm Hessling, Oststr. 41, 472 Beckum, Germany
Filed May 8, 1973, Ser. No. 358,409
Claims priority, application Germany, May 16, 1972, 7218354
Int. Cl. A01f 25/00
U.S. Cl. 214—17 B **8 Claims**



1. A loading head apparatus for charging loose material having dust or fine material associated therewith comprising a vertically extending tube means of adjustable length having an upper inlet end for receiving the loose material and lower discharge end for discharging the loose material,
container means about said tube means providing an air flow path for air and airborne dust therethrough and adjustable with said tube means,
means on said head apparatus for creating a suction to cause air and the airborne dust to flow through said container means
and a dust collection means within said head apparatus for separating the dust from the air and for collecting the dust.

3,881,611
LOADING APPARATUS
Thomas Henry Milbourn, Walby Cottage, Crosby-on-Eden, Carlisle, Cumberland, England
Filed Aug. 29, 1973, Ser. No. 392,452
Int. Cl. A01f 25/00
U.S. Cl. 214—17 CA **8 Claims**



1. In a loading apparatus comprising an endless conveyor having a receiving end and a delivery end, said conveyor being drivable to transfer articles loaded onto the receiving end along the conveyor for delivery to a pile of said articles positioned below said delivery end, said conveyor carrying probe means pivotally mounted thereon adapted to sense the location of said pile and control means operatively connected to said probe means and adapted to raise the delivery end of said conveyor in response to the location of articles in said pile relative to said probe means, the improvement which com-

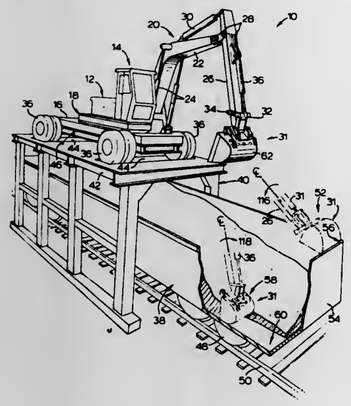
prises connecting rod means reciprocable concurrently with the movement of said conveyor, said connecting rod means being operatively connected to said probe means and adapted to continuously pivot said probe means cyclically upwardly and downwardly through a substantially vertical arc to thereby continuously monitor the distance between the top of the pile of articles and the delivery end of the conveyor, and link means interconnecting said probe and control means in such manner that, once said distance decreases to a pre-set minimum value, the control means are actuated to raise said probe and delivery end of the conveyor to increase said distance to a pre-set maximum value.

3,881,612

BACKHOE BUCKET APPARATUS

William John Wells, Woodstock, Ontario, Canada, assignor to A. E. Joslin Machinery & Equipment Limited, Arnprior, Canada

Filed Aug. 7, 1973, Ser. No. 386,392
Int. Cl. B65g 67/26
U.S. Cl. 214—44 A **10 Claims**



1. In a bucket apparatus for a backhoe and similar apparatus, including a bucket, bucket attachment means and hydraulic power means, the improvement comprising:

first plate means secured to said bucket attachment means;

first hydraulic cylinder means having piston rod means adapted to exert pressure axially in a first direction thereof, and second hydraulic cylinder means adapted to exert pressure in a second direction opposite to said first direction; said first and second hydraulic cylinder means being hydraulically attached to said hydraulic power means;

a first end of said first hydraulic cylinder means being hingedly secured to said first plate means;

a second end of said first hydraulic cylinder means being hingedly secured to said bucket;

hinge means secured to said bucket and hingedly securing said first plate means to said bucket and disposed so that said bucket is rotatable about said hinge means in a first direction of rotation upon operation of said first hydraulic cylinder means, and in a second direction of rotation upon operation of said second hydraulic cylinder means; and

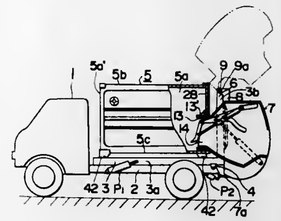
second plate means interposed between said first plate means and said bucket attachment means and substantially parallel to said first plate means; bearing means secured to said first plate means and adapted to accommodate said second plate means at its outer edges; shaft means disposed with respect to said first and second plate means and adapted with said bearing means secured to said first plate means to permit rotation of said first plate means relative to said second plate means about the axis of said shaft; third and fourth hydraulic cylinder means hingedly secured at a first end of each to said first plate means and at a second end of each to said bucket attachment means and disposed so that said first plate means is rotatable about the axis of said shaft in a first direction of rotation upon operation of said third hydraulic cylinder means, and in a second direction of rotation upon operation of said fourth hydraulic cylinder means.

3,881,613

REFUSE COLLECTION VEHICLE

Hideo Torimoto, Akashi; Yoshimitsu Shibayama, Kariya, and Takashi Nakano, Chiryu, all of Japan, assignors to Kyokuto Kaihatsu Kogyo Co., Ltd., Toyota, Japan

Filed Feb. 12, 1974, Ser. No. 441,896
Claims priority, application Japan, Feb. 19, 1973, 48-20538
Int. Cl. B65f 3/02
U.S. Cl. 214—83.3 **14 Claims**



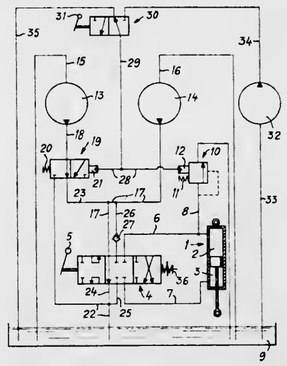
1. A refuse collection vehicle of a rear loading type which generally comprises a dumper frame mounted on the rear of a vehicle chassis, a container of a box shape for packing refuse therein to be interchangeably mounted on said dumper frame and having a refuse receiving opening at the rear thereof, means for locking said container on said dumper frame, a small door provided on said refuse receiving opening for selectively opening or closing the latter and having a sufficient size to cover said refuse receiving opening, means for driving said small door between opened and closed positions, a tailgate loading hopper of a box shape formed with a discharge opening of a corresponding size to said refuse receiving opening and a rear opening opposed to said discharge opening, and supported at the rear of said container for pivotal movement, means for swinging said tailgate loading hopper between raised and lowered positions, said swinging means for said tailgate loading hopper in turn actuating said driving means for said small door which is provided between the rear of said container and the front of said tailgate loading hopper so that said small door is closed when said tailgate loading hopper is in said raised position and the former is opened when the latter is in said lowered position, said discharge opening being adapted to face said refuse receiving opening so as to bring the former in communication with the latter when said tailgate loading hopper is in said lowered position, a packer plate housed in said tailgate loading hopper for forcing refuse dumped in said rear opening into said container through said discharge opening, and means for driving said packer plate for pushing said refuse between a rear position close to said rear opening and a foremost position sufficiently deep in said container through said discharge opening when said refuse receiving opening is in communication with said discharge opening in said lowered position of said tailgate loading hopper.

3,881,614

RECEIVERS IN PUBLIC WORKS MACHINES

Rene F. Jacob, Le Plessis-Belleville, and Pierre C. Fillion, Nanteuil-le-Haudouin, both of France, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 14, 1974, Ser. No. 432,880
Claims priority, application France, Jan. 25, 1973, 73.02665
Int. Cl. E02f 3/28
U.S. Cl. 214—138 **2 Claims**



1. A device for supplying a receiver with pressurised fluid, constituted by: a fluid receiver, at least two sources of pressurised fluid, a selector device having at least two positions, which is interposed between at least one of the fluid sources and the receiver and by means of which this receiver is connected, in a first position of the selection device, only to one of said fluid sources, and in a second position, to at least two of these fluid sources, and an adjusted discharge valve connected in shunt to the supply conduit of the receiver, wherein this discharge valve is provided with a device for regulating its adjustment in the course of operation having at least two pre-adjustments, and the selection device and adjustment regulating device are coupled to a common control device with two positions one of which corresponds to the communication of the receiver with only one of said fluid sources and to the selection of a determined adjustment pressure, and the other to the communication of the receiver with at least two fluid sources and to the selection of another adjustment pressure of value lower than that of the determined adjustment pressure.

3,881,615

TREE STABILIZER FOR TREE HARVESTING APPARATUS

Alva Z. Albright, 2909 Monroe Hwy., Pineville, La. 71360

Filed June 12, 1973, Ser. No. 369,364
Int. Cl. A01g 23/08
U.S. Cl. 214—147 G **1 Claim**

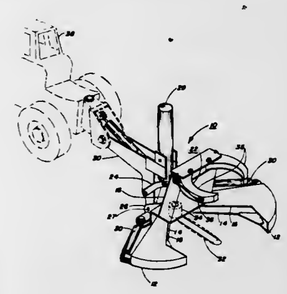
1. A tree stabilizer for a tree harvester having opposing openable and closable clamping jaws, with double edges secured by an attaching boom to a power train having an hydraulic power supply, said stabilizer comprising:

a. box column means having oppositely disposed ends, pivotally connected at one said end to said clamping jaws, said box column means being adapted for pivotally tilting, on a horizontal axis of tilt, with respect to said attaching boom:

b. an hydraulic cylinder, having a piston rod, and pivotaly attached to said attaching boom;

c. an articulated two part linkage having one part pivotally attached by an end to the attaching boom below the pivotal attachment of said hydraulic cylinder, and joined at its other end to one end of the other part and to said piston rod, and the other end of the other part being connected to said box column between the horizontal pivot axis of tilt and said clamping jaws for swinging said clamping jaws and attached box column on both sides of said horizontal pivot axis of tilt without reversing direction of travel of said piston rod;

d. grappling means, having opposing arms openable and closable coaxially with said clamping jaws, mounted on the other of said oppositely disposed ends of the box column and tilting therewith; and



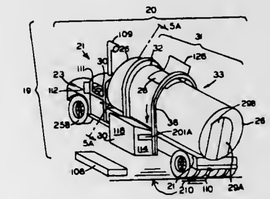
e. Sequence valve means operable connected between said hydraulic power means and said clamping jaws and grappling means and adapted to close said clamping jaws before closing said grappling means for initially securing the harvester to a tree at its most inflexible part, and adapted to open said clamping jaws before opening said grappling means for holding a tree on center while the lower jaws, embedded in the butt, are pulled free.

3,881,616

PROCESS OF REFUSE CONTAINER EMPTYING

Clyde A. Blakeley, and Joe M. Morgan, both of Lubbock, Tex., assignors to Fabit Corporation, Lubbock, Tex.

Division of Ser. No. 308,157, Nov. 20, 1972, Pat. No. 3,773,197. This application Nov. 9, 1973, Ser. No. 414,248
Int. Cl. B65f 3/02
U.S. Cl. 214—152 **7 Claims**



1. Process of handling and emptying refuse containers, comprising the steps of

a. locating the side of a longitudinally elongated receptacle on a vehicle having a receptacle with a top opening to bring said top opening abreast of a container, said container spaced laterally from said vehicle and with a content of refuse; said container having a top opening and a bottom spaced away therefrom;

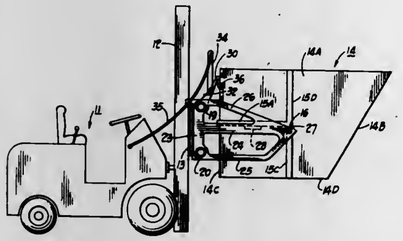
b. moving a rigid frame and a container engaging arm thereof laterally from the vehicle and extending the container engaging arm from a traveling position to a container engaging position;

c. moving the container engaging arm into engagement with the container and supporting the container on said arm;

d. lifting the frame and container in a substantially vertical direction by guiding said frame on a substantially

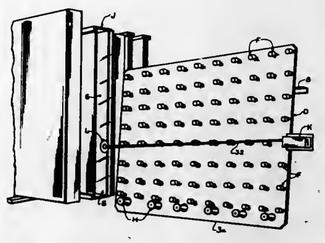
vertical portion of guide tracks and moving said frame and the container thereon centrally toward the vehicle;
e. opening a lid to the receptacle top opening while lifting the frame and the container;
f. pivoting the container and frame in a direction lateral of the receptacle by guiding the frame on a curved portion of the guide tracks so that the container and frame pass centrally over the top of the receptacle and are located adjacent the opening in the top of the receptacle;
g. further pivoting the frame and container relative to the guide tracks and thus moving the top of the container downward as the said bottom of the container is moved upward and above the said container top opening and emptying the contents of the container into the receptacle opening;
h. returning the container to the side of the vehicle in upright condition with its opening at the top thereof and closing the lid over the top receptacle opening; and
i. including the steps of surveillance of the operation of engaging, lifting, pivoting and emptying concurrent with control thereof by an operator within the vehicle.

3,881,617
MATERIAL HANDLING APPARATUS
William T. Miller, Cleveland, and William G. Morgan, Brecksville, both of Ohio, assignors to Apex Welding, Incorporated, Bedford, Ohio
Filed Apr. 2, 1973, Ser. No. 346,842
Int. Cl. B65g *65/34*
U.S. Cl. 214—315 **6 Claims**



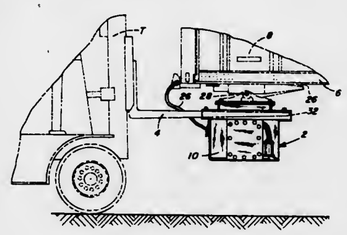
1. For use with an industrial lift truck having a mast assembly having an elevatable load-supporting member movable up and down along the mast assembly, material handling equipment comprising the combination of a hopper-lifting device attachable to said load-supporting member to be carried thereby, and a material-containable hopper (**14**) attachable to and detachable from said device and adapted to be raised and lowered with said device, said hopper having a pair of axially aligned trunnions (**16**) carried by and extending outwardly from opposite sides of hopper, the trunnions and hopper-lifting device being arranged so that said hopper tilts forwardly about the axis of said trunnions (**16**) in the absence of constraint, said hopper also having a first pair of abutment members (**15A**) carried by and extending outwardly from said opposite sides of said hopper at locations spaced rearwardly of said trunnions upon the hopper being in upright position and a second pair of abutment members (**15C**) extending outwardly from opposite sides of said hopper at locations downwardly of said trunnions upon the hopper being in upright position, said device having a transverse cross-member attached to said load-supporting member and having a pair of spaced side arms carried by said cross-member and extending forwardly thereof, each of said side arms adjacent the forward free end thereof having an upwardly opening recess (**27**), said recesses (**27**) being in axial alignment and being arranged to accommodate said trunnions (**16**) therein and to permit said hopper to rotatably tilt about the axis of said trunnions accommodated in the said recesses, respectively, and a stop member (**28**) carried by each said side arms at a location spaced rearwardly from the recess at the forward free end thereof, said stop members (**28**) being disposed to extend toward each other to engage said first pair of abutment members (**15A**) on the opposite sides of the hopper at said spaced locations upon said hopper being in upright position and to engage said second pair of abutment members (**15C**) upon said hopper being tipped forwardly from said upright position, and a latch mechanism having a first engaging part (**30**) carried by said hopper-lifting device and a second engaging part (**36**) carried by said hopper to selectably hold the hopper against tipping upon inter-engagement of said parts and to selectably release the hopper to permit it to tilt forwardly about said axis, the said arrangement permitting the side arms of said device to straddle said hopper when setting on the ground surface traversable by said lift truck to position the said trunnions above said recesses and said stop members (**28**) below said first pair of abutment members (**15A**) when the hopper is in upright position setting on said ground surface, and providing for the engagement of said trunnions by the side arms in said recesses and the engagement of said first pair of abutment members (**28**) by said stop members to permit the raising of the hopper to a higher level by said side arms and held in said upright position by said latch mechanism and providing for the forward tilting of the hopper about the axis of said trunnions and recesses upon the release of the hopper by said latch mechanism to the limit of tilting permitted by the engagement of said second pair of abutment members (**15C**) by said stop member (**28**), radial reference lines from said trunnion axis to the first mentioned pair of abutment members (**15A**) and radial reference lines from said trunnion axis to said second pair of abutment members (**15C**) being generally normal to each other, said second pair of abutment members (**15C**) being disposed to engage said stop members (**28**) upon the forward tilting of the hopper to limit the extent of said tilting to approximately a right angle.

3,881,618
PORTABLE, ONE MAN OPERATED, LARGE SHEET GLASS CUTTING TABLE
Russell W. Tausheck, Hayward, Calif., assignor to Ace Glass Co., Hayward, Calif.
Filed Nov. 15, 1972, Ser. No. 306,720
Int. Cl. B26d *3/08*
U.S. Cl. 214—505 **5 Claims**



1. A portable table top for receiving flat sheet material, comprising:
a. a portable frame;
b. a table top pivotally carried by said frame;
c. means for swinging said table top from a horizontal position into an upwardly slightly inclined position from a vertical plane;
d. a row of flat sheet supporting rollers arranged near the lower edge of said table top when the latter is in a raised position;
e. a winch mounted at one side of said table top and having a cable with a vacuum cup attached to the free end of said cable and being attachable to a flat sheet of material for moving the sheet edgewise in the direction of its plane when said winch is operated;
f. whereby the cable from said winch can be stretched across the front of the upwardly inclined table top and the vacuum cup attached to a flat sheet of material and then the winch can be operated for causing the cable and vacuum cup to pull the flat sheet edgewise onto the table top, the lower edge of the flat sheet riding on the rollers;
g. a plurality of rotatable balls removably mounted on the table top and are spaced the same distance from the table top surface so as to support the flat sheet material a predetermined distance from the table top surface;
h. each ball being rotatably mounted in a cup that has a threaded shank removably received in a threaded bore provided in the table top, the cup being enclosed in a rubber sleeve.

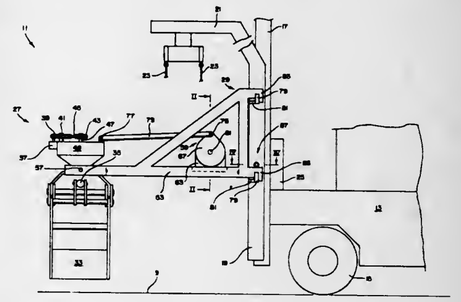
3,881,619
FIFTH WHEEL DEVICE
Wallace T. Morris, 35264 Grover Rd., Eastlake, Ohio 44094
Filed Sept. 27, 1973, Ser. No. 401,389
Int. Cl. B66f *9/12;* **B62d** *53/08*
U.S. Cl. 214—620 **15 Claims**



1. A portable, self-contained fifth wheel device for detachable mounting on a vehicle, such as a fork lift truck or the like, for towing a wheeled container, such as a trailer, comprising, a frame for detachable connection on a wheeled vehicle of the type having at least one support arm,
said frame including a pivotally mounted fifth wheel for detachable connection to a wheeled container,
said frame having at least one interlocking means including a hollow housing for receiving said support arm,
said housing including a fluid actuated lock means for selective locking engagement with said support arm,
said fluid actuated lock means includes a brake member supported by said frame for movement within said housing, and
fluid power means operatively connected to said lock means for selectively moving said brake member into engagement with said support arm within said housing for clamping said support arm to said frame to enable said wheeled container to be connected to said fifth wheel and supportably mounted on said vehicle.

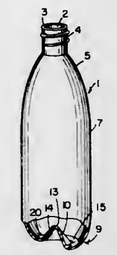
3,881,620
BUMPER, CABLE AND/OR GRAPPLE TYPE PULPWOOD HANDLING MACHINE
Evo Walker, Louisville, Miss., assignor to Taylor Machine Works, Louisville, Miss.
Filed July 12, 1972, Ser. No. 271,627
Int. Cl. B66f *9/06*
U.S. Cl. 214—620 **9 Claims**

1. An improvement in a bumper and cable type pulpwood handling machine having a platelike bumper for engaging and aligning one of the ends of several pieces of pulpwood, and cable means attached to said bumper for circumscribing and slingably supporting s plurality of pieces of the pulpwood; wherein said improvement comprises a grapple which may selectively be used in lieu of said cable for alternately taking hold of and supporting the plurality of pieces of pulpwood said grapple including jaws for engaging the pulpwood, means for operatively opening and closing said jaws; and means for facilitating rapid attachment and detachment of said grapple



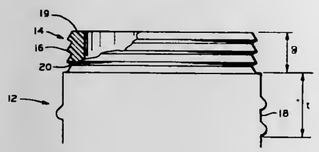
to and from said bumper including a plurality of grapple support members protruding outwardly from said bumper and being fixedly attached thereto, and a plurality of downwardly directed hook means fixedly attached to said grapple, said hook means being positioned on said grapple for respective cooperation with said grapple support members.

3,881,621
PLASTIC CONTAINER WITH NONEVERTING BOTTOM
Domas Adomaitis, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed July 2, 1973, Ser. No. 375,310
Int. Cl. B65d *23/00*
U.S. Cl. 215—1 C **10 Claims**



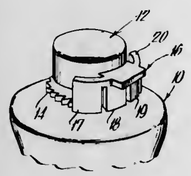
1. In a generally cylindrical thermoplastic container biaxially oriented, at least in the generally cylindrical section, the improvement wherein the bottom configuration comprises essentially of a series of connected geometric curves rotationally symmetrical about the center line of the bottle comprising:
a truncated hemispherical section at the lower end of said bottom;
an inwardly concaved bottom section within said hemispherical section having an upwardly directed apex and a base adjacent to the lower end of said hemispherical section;
an arcuate toroidal juncture section between the base and the lower edge of said hemispherical section; and
a strength-imparting thick annulus located at and integrated with said juncture section and thicker than said sections.

3,881,622
GRIPPING END OF PARISON TO FORM BOTTLE HAVING PLURALITY OF GROOVES AT NECK END
Calvin D. Dockery, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Aug. 20, 1973, Ser. No. 389,735
Int. Cl. B65d *1/02*
U.S. Cl. 215—31 **5 Claims**



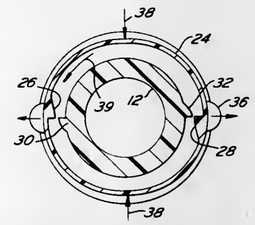
1. A biaxially oriented hollow article of a thermoplastic polymer having a neck portion comprising a smooth top surface, a thread section, and a plurality of annular ridges around the outside of said neck between said top surface and said thread section, a furthermost radial extension of grooves between said ridges being less than a furthermost radial extension of furrows between threads of said thread section.

3,881,623
SAFETY CLOSURE DEVICE
William James Landen, 30 Fairwood Dr., Cheshire, Conn. 06410
Filed May 24, 1974, Ser. No. 473,179
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—216 **9 Claims**



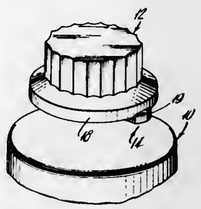
1. In combination, a bottle or the like having a body with an externally threaded neck, and a safety cap with a body having a threaded bore to removably engage said neck, said neck having beneath said threads a circumferentially extending plurality of spaced ratchet serrations, and said cap including a radially outwardly extending tab having compliant integral connection to said body; the underside of said tab including a plurality of angularly spaced finger elements having independent compliant integral connection to said tab at locations radially offset from said cap body, and an arcuate succession of ratchet-tooth formations on said finger elements and positioned for compliant ratcheting interference with said neck serrations in approach to and at the location of fully threaded cap-to-neck engagement, whereby plural independent ratchet-lock relationships are obtained for the fully engaged position and yet a single deflection of said tab against the compliance of its connection to the cap body will disengage all ratchet-lock relationships, to permit cap-unthreading from said neck.

3,881,624
TAMPERPROOF CONTAINER
Frank E. Dougherty, Sr., Mays Landing, N.J., assignor to Dougherty Brothers Company, Buena, N.J.
Filed Jan. 31, 1974, Ser. No. 438,327
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—221 **11 Claims**



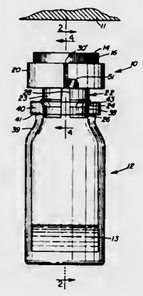
1. An article of manufacture comprising a container having a neck at one end thereof, said neck having an opening, a cap connected to threads on said neck, an elliptical retainer on one of said cap and neck below said threads, the minor diameter of said retainer being greater than the diameter of said cap, diametrically opposite first lugs on the inner peripheral surface of the minor diameter of the retainer, mating second lugs on one of said cap and neck for preventing the cap from being rotated relative to the neck, each first lug having a side face engageable with a side face of its mating second lug and with a cam surface extending outwardly at an acute angle thereto, the side face of each lug face lying essentially along a radius of the neck, said elliptical retainer being sufficiently flexible so that the retainer may be deformed radially inwardly at its major diameter to disengage said first and second mating lugs and permit rotation of the cap relative to the neck, and at least one rigid projection extending radially outwardly at the minor diameter on said retainer adjacent one of said first lugs on the retainer, whereby said projection appears to be the means for manipulating a separation of said lugs but is incapable of doing so.

3,881,625
RATCHET-TYPE SAFETY CLOSURE
William James Landen, 30 Fairwood Dr., Cheshire, Conn. 06410
Filed July 2, 1974, Ser. No. 485,104
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—221 **10 Claims**



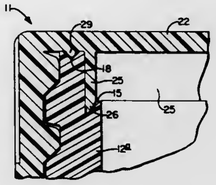
1. In combination, a bottle or the like having a body with an externally threaded neck, and a safety cap with a body having a threaded bore to removably engage said neck, the open end of said cap body having a counterbore comprising a circumferential succession of downwardly exposed axially undulating ratchet-tooth formations within a circumferentially continuous skirt, and said neck being integrally formed with two axially compliant radially outward ratchet wing members at diametrically opposed locations beneath and adjacent the open end of said cap body when the neck is closed by said cap, each wing member extending radially outward of said skirt for manual access and comprising a substantially flat element having a transverse section that is substantially greater in width than in thickness, each wing member being continuously formed with said neck in such orientation that the width dimension of the wing member extends over an arc about the neck axis, whereby axially compliant flexure of the cantilevered outer end of each wing member is the favored mode of wing-member deflection, an upwardly projecting ratchet tooth integrally formed with the upper surface of each wing member at the location of radial registry with ratchet-tooth formations of said cap, the axial extent of upward projection of said ratchet teeth being less than the axial depth of said ratchet-tooth formations, whereby for each ratcheted engagement the associated wing member is stabilized by relatively extensive continuous arcuate contact with said skirt, thus preventing bottoming contact of the ratchet tooth in any of the ratchet-tooth formations of said cap.

3,881,626
CONTAINER CLOSURE FOR LYOPHILIZED PRODUCTS
Ralph A. Bartell, Convent Station, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of Ser. No. 308,096, Nov. 20, 1972, Pat. No. 3,834,571. This application June 5, 1974, Ser. No. 476,509
Int. Cl. B65d *51/16*
U.S. Cl. 215—256 **6 Claims**



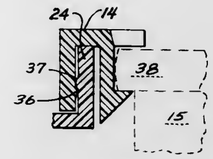
1. An integrally formed closure for a lyophilized product container; wherein said container comprises a neck, an upwardly facing circular opening in said neck and an external radial bead on said neck, said opening having a predetermined diameter; said closure comprising:
a top wall portion;
a stopper portion extending downwardly from said top wall portion;
said stopper portion comprising an upper cylindrical section having an outer diameter greater than said predetermined diameter, a bottom cylindrical section having an outer diameter less than said predetermined diameter, an annular beveled section interconnecting said upper and bottom sections, and port means for venting said container during a lyophilization process;
said beveled section having an upper outer diameter greater than the outer diameter of said upper cylindrical section and providing means for seating said closure in a first position in said neck during the lyophilization process with said port means positioned at least in part above said opening; and
a tear-away skirt portion extending downwardly from said top wall portion, and including means for engaging said bead when said closure is seated in a second position in said neck with said port means positioned below said opening to prevent venting said container.

3,881,627
VIAL CONTAINER AND CLOSURE
Ronald L. Davolt, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed May 9, 1973, Ser. No. 358,481
Int. Cl. B65d *41/04*
U.S. Cl. 215—329 **8 Claims**



1. In a thermoplastic container-closure, the combination comprising:
a. a hollow cylindrical container having a closed end and an open end having a lip thereon, said open end providing
i. threads on its outer surface, and
ii. a cylindrical counterbore on the inner wall thereof extending downwardly from said lip and terminating in an upwardly inclined, inwardly projecting, inner shoulder;
b. an annular closure having a top wall, an outer, integral, depending skirt attached to said top wall, said outer skirt providing threads on its inner surface, an inner, integral, depending cylindrical skirt attached to said top wall, said inner cylindrical skirt being in sealing engagement with said cylindrical counterbore and the lower end of said inner skirt being seated against said inner shoulder when said closure is threadedly attached to said container.

3,881,628
AEROSOL CAN HOLDER
Andrew W. Brainerd; Kent H. Brainerd, and Stuart W. Brainerd, all c/o 1 N. Lasalle St., Winnetka, Ill. 60602
Division of Ser. No. 129,006, March 29, 1971, Pat. No. 3,722,021, which is a continuation-in-part of Ser. No. 39,275, May 21, 1970, abandoned. This application Mar. 21, 1973, Ser. No. 343,544
Int. Cl. B65d *83/14*
U.S. Cl. 220—17 **6 Claims**



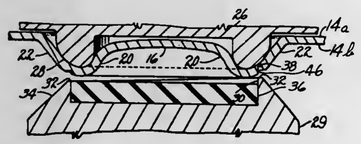
1. An elongate housing device designed to receive an aerosol can or the like, said housing device having at least one open end defined by an axially extending neck portion, permitting an aerosol can to be disposed therein, and means for retaining an aerosol can body in said housing, said means including a ring member capable of being mounted on an upper region of a can body and including means for attachment to said neck portion, which comprises axially extending wall means formed on said ring and having an effective inner diameter greater than the outer diameter of said neck portion, protrusion means on the inner surface of said wall means and corresponding protrusion means on the axial outer surface of said neck portion over which said protrusio means on said outer wall means are engaged in a snap-fit relation thereby retaining said ring on said neck portion.

3,881,629
SELF-ALIGNING RUPTURE DISC
Kenneth R. Shaw, Kansas City, and Franlkin A. Hansen, Raytown, both of Mo., assignors to Continental Disc Corporation, Riverside, Mo.
Filed Sept. 4, 1973, Ser. No. 393,736
Int. Cl. B65d *25/00*
U.S. Cl. 220—89 A **9 Claims**



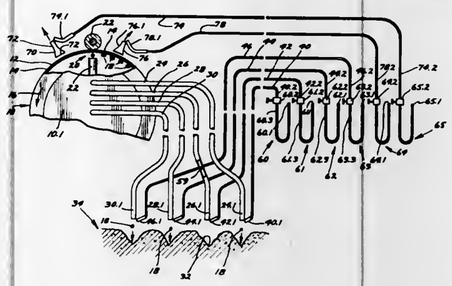
1. In a self-aligning rupture disc assembly adapted to block a flow passageway and having an inlet flange having an inlet passageway, an outlet flange, a pressure relief disc having an inlet surface and an outlet surface, said relief disc being sealed at said outlet surface with respect to said outlet flange, and a perforated vacuum support disc, the improvement comprising:
a. A support disc mounting ring having an outer flange portion sealed with respect to said relief disc inlet surface and an inner centering sleeve portion extending axially of said flange portion and away from said relief disc,
b. said sleeve portion being of lesser outside diameter than said inlet passageway and received thereinto, and
c. a ledge projecting inwardly from said sleeve portion forming therewith a depressed seat receiving said vacuum support disc.

3,881,630
POP-IN CONTAINER CLOSURE
Walter C. Lovell, 348 Mountain Rd., and Frederick G. J. Grise, 12 Maiden Ln., both of Wilbraham, Mass. 01095
Continuation-in-part of Ser. No. 331,844, Feb. 12, 1973, abandoned. This application Apr. 22, 1974, Ser. No. 463,056
Int. Cl. B65d *41/32*
U.S. Cl. 220—268 **16 Claims**



1. A manually disruptable pop-in type of button closure for a planar metal container lid comprising an integral button having inner and outer merging bounding walls generally inclined to the plane of the lid, one of the walls having opposite sides and being longitudinally indented on one side to provide a fracture extending between the bottom of the indentation and the other side of the one wall, and a face of the indentation being dilated relative to the fracture to permit its disruption from outside the container yet effectively resist internal pressure therein.

3,881,631
MONITOR FOR AIR PRESSURE TYPE SEED PLANTER
Leo J. Loesch, and Claude E. Loesch, both of Kimball, Minn. 55353
Filed Aug. 10, 1973, Ser. No. 387,320
Int. Cl. B65g *15/02*
U.S. Cl. 221—6 **13 Claims**

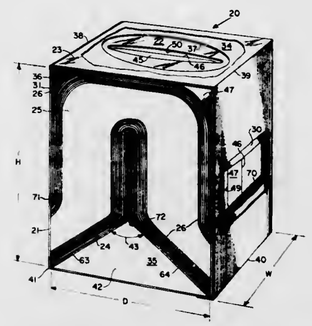


1. In combination, a seed dispenser comprising a rotating drum containing superatmospheric air and a supply of seed, and including stationary seed-carrying tubes each positioned to serially receive seeds from inner peripheral apertures in the drum and each seed-carrying tube having an exterior, seed-delivering end to which the seeds are swept by the superatmospheric air for planting, and
a continuously acting monitor for detecting air flow in the seed-carrying tubes so as to indicate obstructions therein and comprising vacuum indicators and vacuum transfer tubes, the latter each having one end positioned relative to a respective seed-carrying tube as to produce a vacuum in the vacuum transfer tube in response to the sweep of superatmospheric air through the seed-carrying tube, the other end of each transfer tube communicating with a vacuum indicator for continuous visual readout of the vacuum so produced.

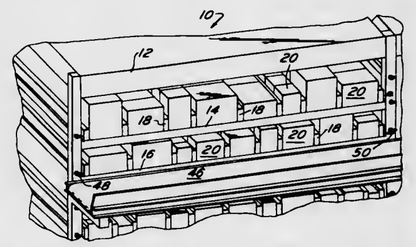
3,881,632
COMPACT DISPENSING PACKAGE
Allen D. Early; Michael D. Danyi; William A. Cox, and Thomas J. Slone, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cinicinnati, Ohio
Filed July 11, 1973, Ser. No. 378,303
Int. Cl. B65h *1/04*
U.S. Cl. 221—50 **2 Claims**

1. A compact dispensing package for sheet material comprising a top-dispensing form-sustaining carton, a Y-shape support member comprising two arms and a stem joined together at a juncture, and a bundle of sheets of flexible material, said support member being inverted in the carton so that it divides said carton into a horizontally extending triangular cross-section tubular space bounded by the arms of said support member and the bottom wall of said carton, and a bundle accommodating space above the arms of said support member, said bundle of sheets being U-folded and draped substantially symmetrically over said inverted Y-shape support member, said carton, said support member, said sheets, and said bundle being so configured that the downwardly extending distal ends of the U-shpae bundle flare outwardly by virtue of resting on upwardly facing surfaces of the arms of the inverted Y-shape support member so that the flared ends of the bundle substantially fill the portions of the lower interior corners of the carton disposed above the arms of said support member

and said bundle substantially fills said bundle accommodating space without substantially compressing or restraining said bundle, and said carton, said stem, said sheets and said bundle being so configured with respect to each other that the ends of the uppermost sheet of said bundle are spaced from said bottom wall a distance at least equal to the elevation of said juncture above said bottom wall whereby the bundle is substantially precluded from shifting during shipping or other handling without substantially impairing the dispensability of said sheets, said sheets being longitudinally U-folded and interleaved to promote pop-up dispensing, said uppermost sheet comprising a top fold and a bottom fold, said top fold being longitudinally folded into a first quarter-fold, a one-half fold, and a second quarter-fold disposed intermediate said first quarter-fold and said one-half fold, said first quarter-fold underlying said second quarter-fold and being contiguous therewith, and said second quarter-fold underlying half of said one-half fold, said quarter-folds and said one-half fold each having an edge extending along an edge of said bundle whereby the distal edge of said one-half fold extends along the longitudinal centerline of said bundle.

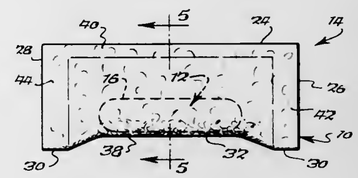


3,881,633
APPARATUS FOR DISPENSING ITEMS FROM SHELVES
Lynn J. Bradt, Easton, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.
Filed Apr. 2, 1973, Ser. No. 347,249
Int. Cl. B65g *47/10*
U.S. Cl. 221—123 **4 Claims**



1. Apparatus for dispensing items comprising a frame, said frame having a plurality of superimposed horizontally disposed shelves, lane dividers supported by said shelves to define parallel lanes, a slider in each lane for pushing against the rear end of a row of items, at least some of said lane dividers including an endless member extending around guides adjacent to an supported by end portions thereof, each endless member being coupled to a slider in an adjacent lane, a carriage mounted on a rear side of the frame for reciprocation in a first direction behind the shelves, motor means for selectively moving an endless member for pushing its associated slider along its lane, said motor means being mounted on said carriage for reciprocation on the carriage in a second direction perpendicular to said first direction, a conveyor means on the front side of the frame for receiving items pushed off the shelf by one of the sliders and for conveying the item to a discharge point, first support means on the rear side of said frame supporting said carriage, second support means on the front side of said frame supporting said conveyor means.

3,881,634
INHALANT DISPERSER
James L. Thrun, Orchard Park, N.Y., assignor to A-T-O Inc., Willoughby, Ohio
Filed July 16, 1973, Ser. No. 379,362
Int. Cl. B67b *7/24*
U.S. Cl. 222—3 **11 Claims**



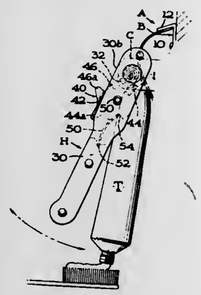
1. An inhalant disperser comprising: an enclosure; a frangible ampoule containing a vaporizable liquid and encapsulated within said enclosure; said enclosure comprising an outer layer of liquid absorbing paper and a protective inner layer of impermeable material; said enclosure being shaped to define a pocket for said ampoule wherein said protective inner layer extends around a major portion of the periphery of said ampoule so as to confine ampoule fragments within said enclosure and prevent egress of such fragments outwardly through said enclosure; said enclosure also being shaped to include an interior region extending from said pocket; said enclosure comprising a pair of opposed wall portions each having said outer layer and said protective inner layer, said wall portions being integrally joined together along a common edge and shaped to form said pocket, the wall portions extending from said pocket in a converging relation to a common juncture; said protective inner layer fitting snugly around said ampoule to maintain the latter in substantially fixed position within said enclosure; the remaining edges of said opposed wall portions being sealed together to complete said enclosure; and at least certain portions of said inner layer in communication with said extending interior region of said enclosure having means for establishing passage of said liquid through said inner layer for impregnating said liquid absorbing paper.

3,881,635
COMPRESSIBLE TUBE SQUEEZING DEVICE
Roberto Canedo-Ramirez, Calle de Isabel Lozan Vda. de Betti No. 116, Mexico 13, D.F., Mexico
Filed Apr. 1, 1974, Ser. No. 456,774
Int. Cl. B65d *35/34*
U.S. Cl. 222—99 **15 Claims**

1. A content-expelling squeezing device for use with compressible tubes having a tapering and flattened distal end portion opposite a removable capped end, said squeezing device comprising the following components in combination:
a. a mounting bracket comprising plate means and having opposite ends terminating in transversely projecting offset portions for retention of a resilient back-up plate member interposed therebetween in a bowed/curved manner;
b. said bracket having shaft-mounting means including rigid laterally spaced shaft-support arms also projecting transversely from and unitarily with said bracket intermediate said offset end portions;

c. an elongated shaft rotatably disposable in said shaft support arms in spaced relation forwardly of said base bracket plate means, said shaft having longitudinal slot means including an elongated slot opening along a major part of one longitudinal side of said shaft for receiving the flattened distal end of a compressible tube therein;

d. a relatively thin semi-rigid resilient back-up plate of a width so as to fit between said shaft-support arms and having a length substantially greater than the distance between the offset end portions of said mounting bracket, said plate adapted to be resiliently interposed in a stressed curved manner between said offset end portions and between said shaft and said bracket plate means; and



e. handle means for rotating said shaft, including a hand-operated lever having one end portion with one-way drive operatively connected to one end of said elongated shaft so as to impart repeating rotation to said shaft in one direction of rotation;

f. said components being proportioned and disposed so that a compressible tube is windable upon said shaft and selectively progressively drawn between said shaft and an adjacent portion of said semi-rigid resiliently mounted back-up plate responsive to selective manual operation of said handle means.

3,881,636

APPARATUS FOR DISPENSING SPARKLING BEVERAGES BY SINGLE DOSES

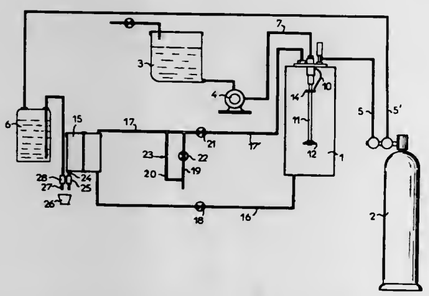
Jean-Pierre A. D'Aubreby, 173 Avenue du 4 Septembre, Douai, France

Filed June 19, 1973, Ser. No. 371,348

Claims priority, application France, June 20, 1972, 72.22207; Mar. 13, 1973, 73.08801

Int. Cl. B67d *5/56*

U.S. Cl. 222—129.4 **10 Claims**



1. Apparatus for dispensing sparkling beverages comprising a carbonator having an enclosure capable of being placed in communication with a source of water and a source of pressurized carbon dioxide, means in said carbonator for causing the carbon dioxide to dissolve in the water by intimate mixing of the two component elements, at least one normally empty dosage size chamber means communicating by first conduit means with the liquid phase of said carbonator, second conduit means connecting the top of said chamber means with the gaseous phase of said carbonator, said first and second conduit means having programmed valves, calibrated gas flow restricting means communicating with both the chamber means and the atmosphere, said restricting means being adapted to maintain in the gaseous phase of said chamber means a slight depression with respect to the pressure prevailing in the gaseous phase of the carbonator so that this difference in pressure enables pressurized water from the carbonator to be rapidly introduced whatever the position of the chamber means with respect to the carbonator.

3,881,637

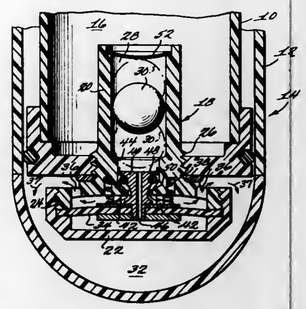
ONE-SHOT METERING VALVE

Kenneth A. Browne, Lexington, Va., assignor to Browne Engineering Company, Staunton, Va.

Filed Sept. 10, 1973, Ser. No. 395,601

Int. Cl. B67d *5/56*

U.S. Cl. 222—136 **21 Claims**



1. A liquid metering valve operated by pressure reductions, said valve comprising:

a cylindrical chamber having a predetermined diameter dimension and connected to continuously and freely receive a supply of said liquid through an upper port,

said chamber having a valve seat formed therewithin about a lower port, and

a free body disposed within the chamber,

said free body having a predetermined specific gravity and predetermined diametral dimensions substantially equal to the predetermined diameter dimension of said chamber to substantially limit the upward floating movement of the free body within the liquid in the chamber to a limited predetermined rate,

a stop means disposed to limit said upward floating movement at a predetermined location thus defining a predetermined quantity of said liquid substantially confined between the free body, the cylindrical chamber walls and the lower port when the free body is at its uppermost location,

said free body also being adapted to move downwardly while also preventing substantial fluid flow therearound because of the substantially equal free body and chamber dimensions thus forcing said predetermined quantity of liquid from the lower port when the fluid pressure is lowered thereat and said free body also being adapted to cooperate with said valve seat when in its lowermost position and thus positively preventing further liquid from leaving said lower port until the fluid pressure at said lower port has been thereafter raised thus permitting the free body to float upwardly within the chamber but only at said limited predetermined rate to recondition the valve for another operation after a predetermined elapsed time.

3,881,638

TAMPERPROOF SECURING DEVICE

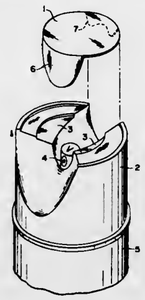
Hans Grothoff, 5882 Meuerzhagen 2 auf der Hardt 20, Meuerzhagen, Germany

Continuation-in-part of Ser. No. 236,700, March 21, 1972, Pat. No. 3,851,803. This application May 15, 1972, Ser. No. 253,161

Claims priority, application Germany, May 13, 1971, 2123796

Int. Cl. B67b *5/00*

U.S. Cl. 222—153 **12 Claims**



1. A tamperproof securing device used in combination with a spray cap for aerosol cans, the cap including a groove-like recess extending along a diameter thereof, an aperture formed in the cap at the approximate center of the recess, whereby a spray nozzle may extend therethrough, the recess increasing in width from the center to both sides and sloping down towards the top of the can; a cover member configured to correspond to the geometric shape of the recess and at last partially enclosing the nozzle, sais cover member comprising at least one dependent flange extending tranversely of the recess length and bent towards the base of the recess, said cover member being wider than the groove-like recess and including peripheral bearing portions bearing on and connected to the spray cap.

3,881,639

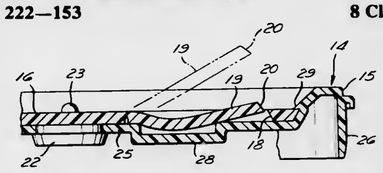
SAFETY CLOSURE FOR CONTAINERS

Walter M. Herip, Cleveland, Ohio, assignor to Weatherchem Corporation, Twinsburg, Ohio

Filed Dec. 5, 1973, Ser. No. 422,013

Int. Cl. B65d *25/44*

U.S. Cl. 222—153 **8 Claims**



1. In combination, a dispensing container and an end closure wherein said end closure comprises a stationary cap secured on one end of said container and a disc rotatably disposed on said cap, said cap including a laterally extending end portion and a recess means in said end portion, said disc being carried on said end portion and extending over said recess means, said disc including a disc opening providing the sole means in said disc for dispensing the contents of said container and a tab movable between an open position for opening said disc opening and a closed position for closing said disc opening, said tab being axially aligned with said recess means only when said disc is rotated to a predetermined position on said cap, said tab being deflectable in said closed position from a normal flat configuration to an inwardly curved configuration into said recess means when said tab is axially aligned with said recess means to open said tab, said cap end portion supporting said tab and preventing said inward deflection whenever said disc is rotated away from said predetermined position, and said recess means providing the sole means in said cap for receiving said inwardly curved tab and said tab being openable only when said disc is rotated to said predetermined position in which said tab is axially aligned with said recess means.

3,881,640

APPARATUS FOR MEASURING LIQUID IN THE RECONSTITUTION OF ANTIBIOTICS

Terrance O. Noble, 1416 E. 72nd St., Minneapolis, Minn. 55423

Filed Dec. 12, 1973, Ser. No. 423,974

Int. Cl. B67d *5/38*

U.S. Cl. 222—158 **7 Claims**



1. A device for dispensing liquid from a source of liquid having a flexible outlet supply tube, comprising:

a. a substantially enclosed vessel having top, bottom and side walls;

b. an inlet tube mounted in said vessel top wall for filling the vessel, said inlet tube having a first end located inside of the vessel adjacent to said side wall and a second end outside the vessel adapted for connection to the supply tube of said source of liquid;

c. inlet valve means for selectively controlling liquid flow through said inlet tube;

d. an air vent tube located in the top wall of said vessel for venting air to and from said vessel;

e. outlet means in the bottom wall of said vessel for dispensing liquid from said vessel;

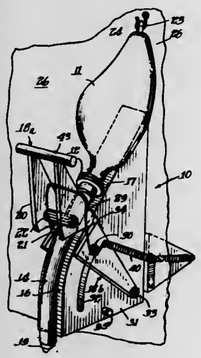
f. a flexible outlet tube having first and second ends, said first end securely attached to said vessel outlet means in fixed spatial relationship with said vessel;

g. outlet valve means fixably located relative to said vessel outlet means for selectively controlling the flow of liquid through said flexible outlet tube; and

h. a rigid positioning tube insertable into the second end of said flexible outlet tube, the upper end of said positioning tube defining an enlarged head portion to frictionally engage the inside of the outlet tube; said positioning tube further including a shoulder portion spaced a predeter-

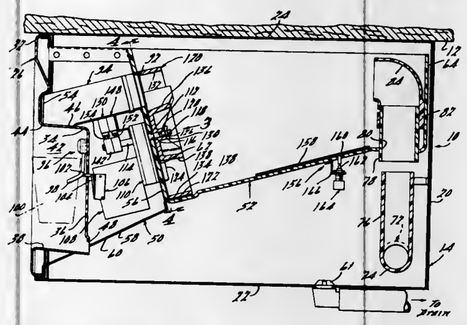
mined distance from the enlarged head portion for abuttable engagement with the second end of said outlet tube to locate the positioning tube in fixed spatial relationship to said flexible outlet tube; and said outlet valve means comprising a finger operated clamp moveable between tube clamping and tube release positions, said clamp having a clamp body with a positioning recess to retainably receive the enlarged head portion of the positioning tube for retaining said clamp.

3,881,641
DISPENSING DEVICE
Frank Victor Pliml, Jr., Arlington Heights, and Ernest William Reinwall, Jr., McHenry, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Oct. 31, 1973, Ser. No. 411,231
Int. Cl. B65d *37/00*
U.S. Cl. 222—207 **9 Claims**



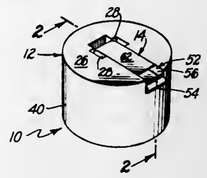
1. A dispensing device for selectively discharging a quantity of flowable material from a container having a fitment to receive a discharge nozzle, including a block member having an arcuately-shaped convex surface positioned beneath said container and extending outwardly therefrom, said arcuately shaped convex surface leading into a support surface which is positioned beneath said container, and the juncture between said support surface and said arcuately shaped convex surface provides a fluid flow control area for directing a quantity of the flowable material within said nozzle toward a dispensing end thereof while substantially preventing the flowable material from being urged upwardly back into said container, said nozzle being formed of a flexible tube communicating with and extending from said container and in contact with said arcuately shaped convex surface to conform substantially to the contour thereof, said flexible tube being resilient to permit collapse thereof and squeeze a quantity of flowable material therefrom, an arm member positioned above said flexible tube and providing spaced-apart flange portions positioned on opposite sides of said flexible tube, said arm member being mounted for in a direction beginning at and along said support surface for progressively squeezing said flexible tube arcuately and downwardly to urge the quanity of flowable material therein through the dispensing end of said nozzle, wherein said block member includes an arcuately shaped slot formed therein, said arcuately-shaped slot being projected from a pivot point which also corresponds to the center of the radius of curvature of said arcuately-shaped surface and wherein said arm member includes a guide extending into said arcuately-shaped slot for travel within said slot through a predetermined distance, and further including means extending from said block member to provide an adjustable stop against which said arm member engages at the end of travel thereof of the flowable material to control volume dispensed.

3,881,642
ICE DISPENSING APPARATUS
Walter Hardold Hoenisch, Albert Lee, Minn., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.
Filed Sept. 10, 1973, Ser. No. 395,659
Int. Cl. F25c *5/16*
U.S. Cl. 222—370 **31 Claims**



1. An ice dispensing apparatus comprising,
an ice storage bin,
conveying means for communicating ice from the apparatus toward an ice receptacle or the like,
a dispensing rotor having a portion thereof in communication with ice within said storage bin and operable upon selective rotation thereof to transmit ice to said conveying means, and control means operable during a vend cycle to rotate said dispensing rotor a predetermined amount and for stopping rotation of said rotor at the end of said cycle, and after said vend cycle rotating said rotor a predetermined additional amount and thereby predeterminately positioning said rotor subsequent to said vend cycle.

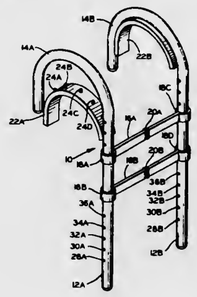
3,881,643
CHILD RESISTANT CLOSURES WITH LEVER OPENING
Donald H. LaVange, Uxbridge, Mass., assignor to Polytop Corporation, Slatersville, R.I.
Filed Nov. 2, 1973, Ser. No. 412,158
Int. Cl. B67d *3/00*
U.S. Cl. 222—505 **9 Claims**



1. In a dispensing closure having a cap which is adapted to be secured to a container and which has an opening extending therethrough and also having a spout rotatably mounted on said cap so as to be capable of being rotated between a closed position in which the spout seals off the opening and an open position in which the spout is in alignment with the opening the improvement which comprises:
said spout being located on said cap so as to be normally incapable of being engaged so as to be rotated from said closed position to said open position,
a first order lever means located on said cap for rotating said spout from said closed position,
said spout and said lever means being separate elements, neither of which performs the function of the other,
fulcrum means located on said closure serving as a fulcrum for said lever means,

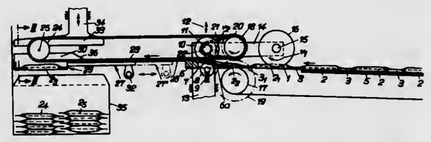
a portion of said lever means being exposed to the exterior of said cap when said spout is in said closed position.

3,881,644
CONVERTIBLE AND COLLAPSIBLE BACKPACK
Donald R. Demaline, 2245 University Hill Blvd. Apt. 205 B, Toledo, Ohio 43606
Filed Feb. 14, 1974, Ser. No. 442,759
Int. Cl. A45f *3/10*
U.S. Cl. 224—25 A **3 Claims**



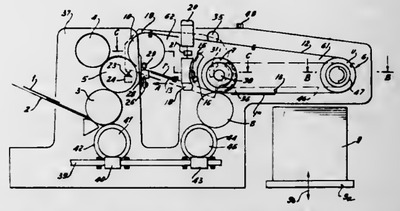
1. A portable knapsack frame supporting interchangeably various carriers comprising:
a. a pair of J-shaped bar members disposed in mutually parallel fashion, a collapsible and hinged bar member having sleeves at the ends thereof, each of said J-shaped bar members being received in a corresponding sleeve, means for attaching said J-shaped bar members in said sleeves, said hinged bar member joining said J-shaped bars so that the J-shaped bar members can be moved towards one another by folding of the hinged bar members, said J-shaped bar members having therein a plurality of apertures for receiving bolt members;
b. a carrier having projecting sleeve members for attachment to the J-shaped members;
c. said sleeve members being slidably received on said J-shaped bars and adapted to be fixed relative to said carrier by a bolt being locked through each sleeve member and a corresponding aligned aperture in said J-shaped bar members.

3,881,645
APPARATUS FOR THE GROUPWISE PACKAGING OF BAGS
Georg Kopp, Neuhausen am Rheinfall, Switzerland, assignor to Sig Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Oct. 4, 1973, Ser. No. 403,672
Claims priority, application Switzerland, Oct. 5, 1972, 14546/72
Int. Cl. B26f *3/00*; B65b *63/00*
U.S. Cl. 225—94 **7 Claims**



1. In an apparatus for the groupwise packing of bags, the apparatus including a conveyor for transporting a coherent bag band of indefinite length, the bag band being formed of interconnected bags arranged in succession along the direction of transport, and further arranged in rows extending transversally to the direction of transport, each bag row containing a plurality of bags connected to one another by a longitudinal weakened portion extending in the direction of transport, each bag row being connected to the adjoining bag row by means of a transversally extending weakened portion, the bag band including, when viewed in the direction of transport, a leading or first bag row and an adjoining or second bag row, the improvement comprising separating means for separating said first bag row from said bag band along the weakened portion between said first and said second bag rows; a slide extending downstream of said conveyor and said separating means for receiving said first bag row separated from said bag band; endless belt means extending immediately adjacent and substantially parallel to said slide for engaging said first bag row and moving it on and along said slide; cutting means affixed to said slide and oriented in alignment with each said longitudinally weakened portions for separating the bags of the first bag row from one another during their movement on said slide by virtue of said second conveyor; ledge means forming part of said slide and disposed downstream of said cutting means for receiving the individual separated bags of said first bag row, said ledge means constituting the sole support of said individual bags by engaging longitudinal edge portions thereof; and stripper means arranged for movement adjacent said ledge means for pushing said individual bags off said ledge means to cause them to fall onto a predetermined location, whereby at least one bag stack is formed during continuing operation of said apparatus.

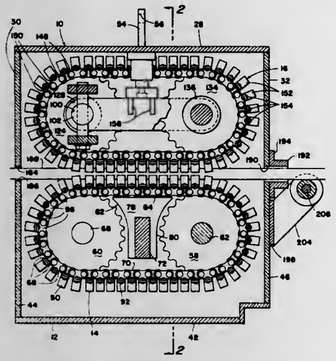
3,881,646
SHEET TRANSPORTING UNIT FOR USE IN PRINTING MACHINES OR THE LIKE
Erhard Nitzsche, Dohna; Peter Zirnstein, Rathmannsdorf; Erwin Schebiella, Heidenau; Siegfried Korner; Joachim Weise, Dresden; Horst Schlaugat, Heidenau, and Wolfgang Richter, Krippen, all of Germany, assignors to Veb Polygraph Leipzig Kombinat für Polygraphische Maschinen und Ausrustungen, Leipzig, Germany
Filed Aug. 14, 1973, Ser. No. 388,233
Int. Cl. B26f *3/00*
U.S. Cl. 225—96 **19 Claims**



1. In a machine for manipulating imprinted sheets, particularly in a machine for providing imprinted sheets with cutouts and for separating the cutouts from the remnants of the respective sheets, a combination comprising a plurality of sheet treating members including a rotary sheet treating member; a sheet transporting unit including at least one endless flexible element, having a stationary portion and a longitudinally spaced movable portion which is pivotal relative to said stationary portion, and said sheet treating member being located where said movable portion pivots relative to the sheet treating member, sheet gripping devices connected with said flexible element, and guide means for said gripping devices, said guide means comprising fixed first portions and movable second portions; and drive means actuatable to move a portion of said flexible element and said second portions of said guide means about a pivot axis which is at least closely adjacent to the axis of said rotary sheet treating member between an operative position in which said first and second portions of said guide means define for said gripping devices an endless

path and an inoperative position in which said path is interrupted.

3,881,647
ANTI-SLACK LINE HANDLING DEVICE
Baron C. Wolfe, Eureka, Calif., assignor to LeBus International, Inc., Longview, Tex.
Filed Apr. 30, 1973, Ser. No. 355,921
Int. Cl. B65h *17/34*
U.S. Cl. 226—172 **10 Claims**

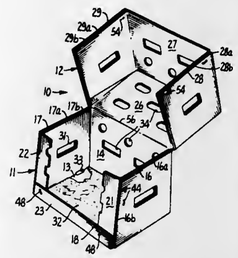


1. An anti-slack line handling device for maintaining constant tension of wire ropes and the like while being unreeled or re-reeled by a standard winch device, the line handling device comprising a lower housing, a stationary carrier assembly secured within said lower housing, said stationary carrier assembly comprising a first drive sprocket wheel rotatably secured to the housing, a second drive sprocket wheel rotatably secured to the housing and spaced from the first drive sprocket wheel, and endless roller chain means disposed around the outer periphery of the said drive sprocket wheels for transmitting rotation therebetween; gripping means secured along the outer periphery of the roller chains means; an upper housing removably connected to the lower housing, a movable carrier assembly vertically reciprocally disposed within the upper housing above the stationary carrier assembly, said movable carrier assembly comprising an elongated frame member, two spaced sprocket wheels one being rotatably secured to each end of the said frame member, a second endless roller chain means disposed around the outer periphery of the movable carrier assembly sprocket wheels and a second gripping means secured to the outer periphery of the second roller chain means; linear actuator means secured to the upper housing and operably connected to the movable carrier assembly elongated frame member intermediate the spaced sprocket wheels thereof said linear actuator means being adaptable to apply pressure directly against the stationary carrier assembly thereby gripping the wire rope therebetween and drive means secured to the lower housing and operably connected to the stationary carrier assembly for applying rotary power to the drive sprocket wheels of the stationary carrier assembly, and line guide means secured to the lower housing for guiding said wire ropes into and out of the anti-slack line handling device.

3,881,648
CONTAINER FOR ASPARAGUS AND THE LIKE
Richard A. Hall, Pleasanton, Calif., assignor to Willamette Industries, Inc., Portland, Oreg.
Filed Oct. 18, 1973, Ser. No. 407,408
Int. Cl. B65d *5/00*
U.S. Cl. 229—6 R **2 Claims**

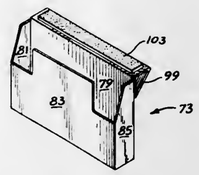
1. A box shaped container for handling asparagus spears and the like, comprising:

a. a single corrugated cardboard blank having; a rectangular front panel, a rectangular top panel, a rectangular rear panel, a rectangular bottom panel,
b. the front, top, rear and bottom panels lie along the central portion of the blank and are attached to adjacent panels along common edge scores,
c. each of said rectangular panels have opposed pairs of end panels attached along edge scores at the margins of the rectangular panels,
d. a series of narrow ledge panels attached along edge scores of the bottom panel and its associated end panels,
e. the container is set up by folding the blank along the edge scores to form a lid section and a base section,



f. the lid section is formed by the front and top panels and by their adjacent end panels secured in overlapping cross ply relation,
g. the base section is formed by the rear and bottom panels and by their adjacent end panels secured in overlapping cross ply relation and by the inwardly folded ledge panels secured together in the opening opposite the rear panel,
h. the edge score common between the top and rear panels forms the hinge between the lid and base sections such that the container may be opened and closed by pivoting the lid section into overlying relation over the base section wherein the ends of the container will be of four ply thickness.

3,881,649
HOLDERS HAVING FOLDABLE SUPPORT
Richard G. Krautsack, Arlington Heights, Ill., assignor to The Cooperative Marketing Co., Elmhurst, Ill.
Filed Apr. 29, 1974, Ser. No. 464,855
Int. Cl. B65d *5/06*
U.S. Cl. 229—38 **9 Claims**



1. A holder or the like for presenting an assemblage of items to be taken therefrom on a one-by-one basis, which holder comprises

a generally planar foldable support sheet having a plurality of parallel fold lines and first and second adhesive attachment means so disposed that said support can be attached to differently oriented surfaces,

said support comprising a main section, a first attachment section, a second linking section and a third connection section which are serially connected to one another at said fold lines,

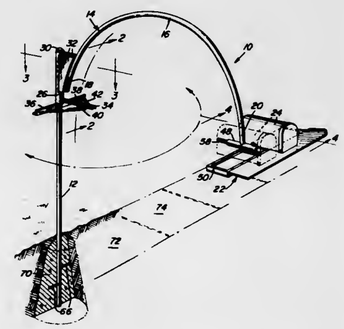
said first and second adhesive attachment means disposed, respectively, upon the front surface of said first and third sections,

said sections being proportioned so that

by folding said first section rearward about 180° and said third section about 180° relative to said second section and by connecting said third section to one location on the rear surface of said sheet via said second adhesive attachment means, said holder is adapted for attachment to a forward-facing surface via said first adhesive attachment means, or alternatively

by folding said second section rearward about 180° to lie generally adjacent the rear surface of said first section and said third section about 180° relative to said second section and by connecting said third section to a second location on the rear surface of said sheet, said holder is adapted for attachment via said first adhesive attachment means to a rearward-facing surface.

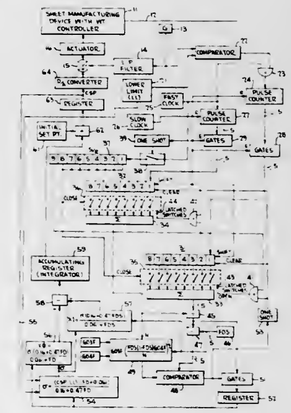
3,881,650
ARCH SWING-AWAY STAND
Cleon A. Schmidt, Box 34, R.F.D. 1, Glidden, Wis. 54527
Filed Sept. 12, 1973, Ser. No. 396,370
Int. Cl. B65d *91/00*
U.S. Cl. 232—39 **1 Claim**



1. A mailbox support stand, comprising, in combination:

a. a pole, at least one projection is provided on the pole and arranged extending therefrom for reinforcing cement in which the pole is disposed;
b. an arm including an arch terminating in a pair of ends;
c. means for mounting a one end of the arch on the pole for permitting swinging movement of the arch with respect to the pole, the means for mounting including a sleeve having an open end and a spaced enclosed end and arranged over the pole open end first, and means for connecting the arch to the sleeve, the means for connecting including a pair of parallel plates arranged affixed to and extending between the sleeve and arch, the plates having a shape in plan that conforms along one edge to the shape of the arch and along another edge to the sleeve, and the means for mounting further including means for biasing the arch toward a predetermined rest position, the means for biasing including a first bracket cantilever mounted on the sleeve and second and third brackets cantilever mounted on the pole and arranged perpendicular to the first bracket and extending coaxially from one another in a plane parallel to the plane of the first bracket, and a pair of coiled tension springs, one spring arranged connected to and extending between free ends of the first and second brackets and the other spring connected to and arranged extending between the free end of the first bracket and a free end of the third bracket;
d. a hollow member forming a socket and affixed to the other end of the arch; and
e. a support connected to the other end of the arch, the support including a planar framework forming a platform, a cover affixed to the framework and having a planar extension arranged extending away from the pole, framework, and arch in a plane parallel to the plane of the framework to extend substantially forwardly of a mailbox to be mounted on said framework for forming a snow guard, and a longitudinal member mounted on the framework and adjustably arranged in the hollow member for attaching the framework to the arm.

3,881,651
CONTROL SYSTEM AND METHOD FOR AVERAGE VALUE SETPOINT
Robert G. Wilhelm, Jr., Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio
Filed Nov. 12, 1973, Ser. No. 414,833
Int. Cl. G06g *7/66*; **G06f** *15/46*
U.S. Cl. 235—151.13 **5 Claims**



1. In a system for controlling the average value of a material property,

means for monitoring the property for deriving a first signal indicative of values of the property,

control means responsive to the comparison of said first signal and a setpoint signal to derive a third signal to control the material average property value, said control means selectively cumulating combinations of said stored signals to derive said setpoint signal,

means responsive to the first signal for deriving separate signals for each of several different time intervals indicative of the statistical spread of values of the first signal during each of said time intervals;

means for separately storing said second signals for at least three of said time intervals;

said control means selectively cumulating combinations of said stored second signals to derive said setpoint signal.

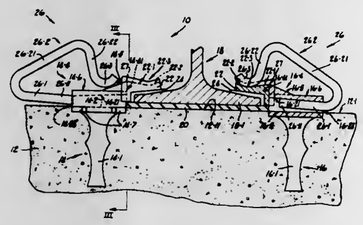
3,881,652
RAIL FASTENING ASSEMBLY
Gerald Jacobson, 53 Northfield Ave., Glenhazel, Johannesburg, Transvaal Province, South Africa
Filed Mar. 20, 1973, Ser. No. 343,153
Int. Cl. E01b *9/04*
U.S. Cl. 238—349 **10 Claims**

1. A rail fastening assembly comprising:

a rail sleeper having at least one rail seat and at least one seating formation associated with each rail seat for the

lower limb of a resilient rail clip, the whole of the seating formation being disposed alongside its rail seat;

a rail clip for clip seating formation, each rail clip having a lower limb engageable with its seating formation and an upper limb which is longer than the lower limb and which is adapted to bear downwardly on the foot flange of a rail on the associated rail seat, the clip being bodily movable lengthwise along the sleeper between an unclamped position in which the upper limb is free of the foot flange of the rail and a clamping position in which it bears downwardly on said foot flange;



clip locating means for each rail clip adapted to force the upper and lower limbs of said clip apart during movement of the clip between its unclamped and clamping positions, each clip locating means being provided by a vertically disposed projection extending laterally relative to the sleeper, and engageable with one of the limbs of the clip;

a gauge adjusting plate for each clip insertable between the upper limb of each clip and the foot flange of the associated rail; and

a ramp provided on the upper surface of the sleeper which slopes upwardly towards the rail seat, the ramp being engageable with the upper limb of the clip, during movement of the clip between its unclamped and clamping positions.

3,881,653

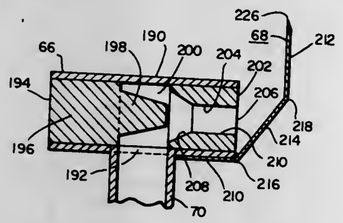
POWDER DEPOSITION SYSTEM

Lennox Birckhead, Rowayton, Conn., assignor to Vitek Research Corporation, Stamford, Conn.

Division of Ser. No. 210,723, Dec. 22, 1971, Pat. No. 3,777,874. This application Nov. 20, 1973, Ser. No. 417,632

Int. Cl. B05b *5/00;* **F23d** *11/28*

U.S. Cl. 239—15 **17 Claims**



1. A spray nozzle through which a gaseous suspension of particulate, thermoplastic material is adapted to be directed onto a substrate surface, said spray nozzle comprising:

A. an elongate, hollow body member;

B. a baffle means within said body member, said baffle means including a transversely continuous, elongate surface tapering in a downstream direction of said body member and being spaced from an inner surface of said body member to define an entrance chamber between the inner surface of said body member and the elongate surface of said baffle means;

C. a discharge outlet chamber in continuous communication with said entrance chamber and terminating in a downstream end thereof in an exit orifice; said entrance chamber and discharge outlet chamber defining a continuous elongate passage;

D. an inlet port disposed in a side wall of said body member, said inlet port having an axis substantially transverse to the direction of elongation of said elongate passage; and

E. the elongate surface of said baffle means being disposed in overlying relationship with said entrance port, whereby a gaseous suspension of particulate material entering said body member through said entrance port will be mixed within said entrance chamber of the elongate passage and directed in a downstream direction through the exit orifice of said discharge outlet chamber.

3,881,654

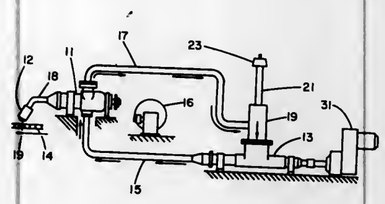
BATTERY PASTE PUMPING AND METERING SYSTEM

Terrance M. Larkin, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 244,485, April 17, 1972, Pat. No. 3,814,628. This application Dec. 3, 1973, Ser. No. 421,304

Int. Cl. B05b *9/00;* **B05c** *1/16;* **H01m** *35/00*

U.S. Cl. 239—127 **22 Claims**



1. A substantially closed loop system for pumping and metering viscous thixotropic electrochemically active paste through a discharge means comprising:

a. inlet means for charging make-up paste to said closed loop system;

b. first pump means for agitating and circulating said paste around the loop;

c. second pump means, downstream of said first pump means, for initiating flow of a portion of the circulating paste away from the closed loop to the discharge means; said second pump means metering a predetermined volumetric flow rate of paste to said discharge means.

3,881,655

SPRINKLER

Robert Mimeur, Sallanches, France, assignor to Carpano & Pons S.A.

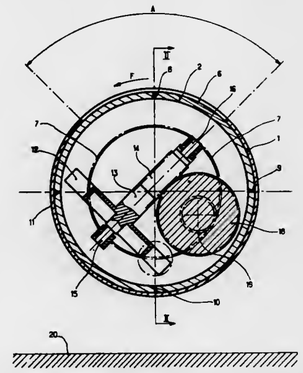
Filed June 19, 1972, Ser. No. 264,345

Claims priority, application France, June 18, 1971, 71.22267

Int. Cl. B05b *3/04*

U.S. Cl. 239—240 **4 Claims**

1. A sprinkling device comprising; a hollow outside cylinder; a hollow inside cylinder coaxially mounted therein and fitted into it so that it can freely revolve against it; housing means associated with said cylinders for providing an enclosure and defining an entrance for liquid into the enclosure; means for continued rotating of the inside cylinder in the outside cylinder; the inside cylinder being perforated by a plurality of arcuately spaced rows each comprising a plurality of relatively small openings; and the outside cylinder having at least one relatively large arcuate opening enabling the liquid to pass through the openings of successive rows of the inside



cylinder and to spurt out through the opening of the outside cylinder.

3,881,656

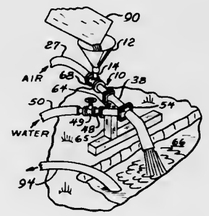
MIXING APPARATUS

Reinhold S. Markfelt; Rueben E. Paulson, both of Minneapolis, and Henry E. Benson, Long Lake, all of Minn., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 15, 1974, Ser. No. 443,047

Int. Cl. B05b *7/14*

U.S. Cl. 239—336 **8 Claims**



1. Apparatus for continuously feeding a supply of powdered material into a liquid stream and mixing it therewith comprising a powder supply portion adapted to receive compressed gas and powdered material and to selectively supply a mixture of compressed gas and powdered material to a molded wye-shaped mixing portion removably attached thereto, said mixing portion comprising a pair of hollow inlet branch portions arranged side by side at an angle of less than 90° to each other and forming a common hollow outlet stem portion, said inlet arm portions each having a smaller cross-sectional area than said outlet portion, said inlet and outlet portions being blended together to define a smooth-walled mixing chamber, said powder supply portion being removably attached to one of said pair of inlet branch portions and the other of said pair of inlet portions being adapted to be removably attached to a source of liquid, an outlet nozzle removably attached to said outlet stem portion, said outlet nozzle including an angled flow path, and bracket means on said apparatus for mounting said apparatus so that said pair of side by side branch portions will lie in a common plane which is positioned at a small angle to the horizontal to facilitate drainage.

3,881,657

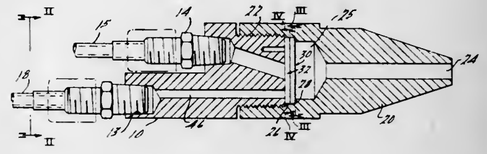
FOAM MIXING HEAD

Fred G. Heimann, Mt. Clemens, Mich., assignor to Fruehauf Corporation, Detroit, Mich.

Filed Feb. 14, 1974, Ser. No. 442,601

Int. Cl. B05b *7/10*

U.S. Cl. 239—413 **7 Claims**



1. In a nozzle structure for discharging at least one fluid whose viscosity increases upon discharge, said nozzle having separate inlet passages for at least two fluids, one of which is a solvent for the other, and having a single outlet, improved means for preventing clogging of the nozzle, comprising, in combination, a mixing chamber of circular cross section interposed in the flow path between said outlet and both of said inlets, check valves between each inlet and the mixing chamber, said valves being located on a wall of the mixing chamber to prevent backflow from the chamber toward the inlets, the valve for the solvent being located near the periphery of the chamber and discharging thereinto with a tangential component to cause the solvent to whirl in the mixing chamber.

3,881,658

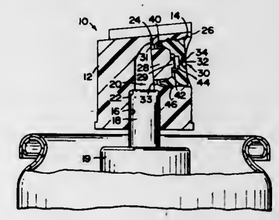
MECHANICAL BREAKUP BUTTON OR ACTUATOR

James E. Greenebaum, II, Highland Park, and Ronald F. Ewald, Rolling Meadows, both of Ill., assignors to Seaquist Valve Company, Cary, Ill.

Continuation of Ser. No. 149,507, June 3, 1971, abandoned. This application May 21, 1973, Ser. No. 358,581

Int. Cl. B05b *1/34*

U.S. Cl. 239—492 **6 Claims**

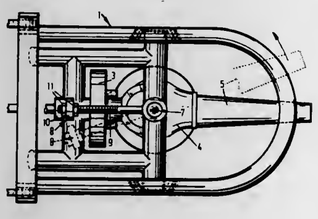


1. A mechanical breakup button or actuator comprising a body with a valve stem recess therein, said recess leading to a depression on the side of said body, a post disposed in said depression, a cup shaped terminal orifice insert including a terminal orifice comprising a plurality of stepped recesses disposed in said depression such that said terminal orifice insert and said post cooperate to form an annular feed groove, said annular feed groove leading to a plurality of passageways, said passageways communicating with the innter most stepped recess of said terminal orifice which forms a swirl inducing chamber between the forward end of said post and the interior of said terminal orifice insert, said chamber communicating with said orifice, said passageways being inclined relative to the outer circumference of said swirl inducing chamber to form chordal passageways such that product is sprayed over product residue in said swirl inducing chamber to minimize potential clogging of said terminal orifice.

3,881,659
SPREADING DEVICE

Pieter Adriaan Oosterling, Nieuw-Vennep, and Johannes Philippus Hooftman, Hoofddorp, both of Netherlands, assignors to H. Vissers, N.V., Nieuw-Vennep, Netherlands

Filed Nov. 28, 1973, Ser. No. 419,673
Int. Cl. A01c 15/00
U.S. Cl. 239—689 8 Claims

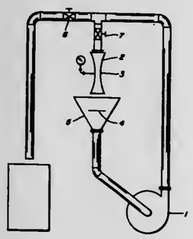


1. A device for spreading distributable material, comprising in combination:
- a frame adapted to be attached by a conventional hitch to a tractor;
- a hopper mounted on said frame and having an open lower end;
- a distribution pipe assembly located at the lower end of said hopper to receive material therefrom, said assembly including a generally horizontal distribution pipe adapted to oscillate about a generally vertical axis thereby to spread the material over a wide swath;
- pivot means mounting said distribution pipe assembly for oscillation relative to said hopper and said frame about said axis;
- drive means for imparting said oscillation to said distribution pipe assembly; and
- counterweight means attached to said distribution pipe assembly and disposed on that side of said axis diametrically opposite said distribution pipe for oscillatory movement in unison with said assembly to balance out reactive forces which tent to impart lateral vibration of the spreading device.

3,881,660
MINERAL BENEFICIATION BY DECOMPRESSION SCALPING

Roger S. Ribas, Decatur, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1973, Ser. No. 396,952
Int. Cl. B02c 19/06
U.S. Cl. 241—5 7 Claims



1. Method of separating porous lateritic weathered ore particles into crust and core portions comprising forming a liquid slurry thereof, subjecting the slurry to a pressure between 25 and 100 psig, and releasing the pressure to the atmosphere through a nozzle.

3,881,661
METHOD OF PREPARING AN ELECTROPHORETIC SUSPENSION OF BETA-ALUMINA PARTICLES

Robert W. Powers, and Robert A. Giddings, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

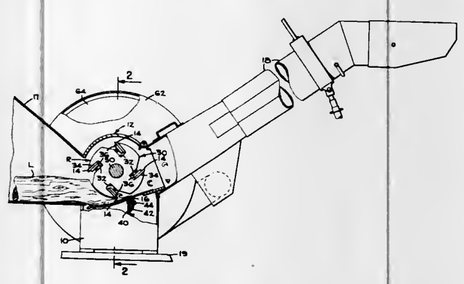
Filed Dec. 6, 1973, Ser. No. 422,435
Int. Cl. B02c 19/12
U.S. Cl. 241—15 3 Claims

1. A method of preparing an electrophoretic suspension of beta-alumina particles comprises providing water free beta-alumina particles of a diameter larger than 20 microns, adding the particles to an organic fluid vehicle having a dielectric constant at 25° C of from 12 to 24, adding zirconia grinding media, vibromilling the beta-alumina particles for a period of 2 hours to develop a negative charge on the particles, continuing the vibromilling for an additional period of from 7 to 16 hours thereby reducing the particle size wherein a majority of the particles have a diameter in the range of from 1 to 2 microns and thereby providing a suspension of the beta-alumina particles in the organic fluid, and removing the suspension from the grinding media.

3,881,662
REDUCED NOISE LEVEL BRUSH CHIPPER

Arne N. Gunnarsson, Pomona, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 21, 1973, Ser. No. 418,006
Int. Cl. B02c 1/08
U.S. Cl. 241—221 2 Claims



1. In a brush chipper of the type comprising a housing having a bed knife therein, a shaft driven cutter head having a diameter of about 11 – 13 inches and a length of about 12 inches, said head mounting cutter blades that project only a short distance from the head, feed and disposal chutes on said housing, means for driving said cutter head; and a flywheel on said cutter head shaft; the improvement wherein said cutter head and said flywheel have a combined kinetic energy of about 200,000 ft. lb. at a rotational speed of about 1,550 rpm, said means for driving said cutter head shaft driving the shaft at a standby speed within the range of about 1,200 – 1,600 rpm for causing the noise level generated at the rear of the chipper as the cutter head blades pass the bed knife to be within a range of about 80 dB-A at 100 feet to about 93 dB-A at 20 feet while providing sufficient stored kinetic energy for effective intermittent chipping.

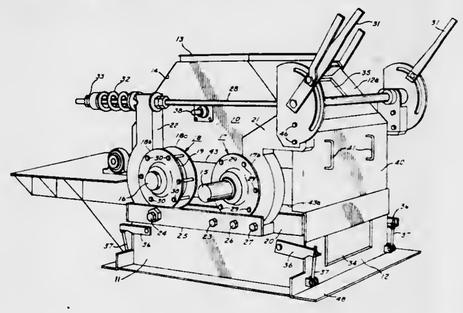
3,881,663
ROLL MILL FOR FLAKING GRAIN AND THE LIKE

Andrew M. Brown, 4535 E. 6th Ave., Denver, Colo. 80220

Filed Feb. 14, 1974, Ser. No. 442,462
Int. Cl. B02c 11/04, 4/38
U.S. Cl. 241—225 8 Claims

1. A dual roll mill for flaking grain or the like comprising: a housing having front, rear and side walls;

the side walls of said housing having horizontal slots opening toward the front wall thereof;
- a pair of mill rolls having shafts extending from the ends thereof;
- roll supporting structure adjacent said slots;
- means for mounting said rolls in said housing with the shafts thereof extending through said slots, said means including bearing assemblies for said shafts and releasable means for locking said bearing assemblies in position on said supporting structure;

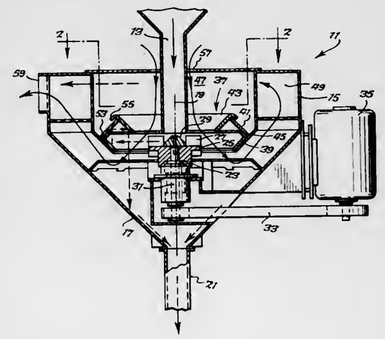


- detachable means for closing said slots;
- removable closure means at one end of said housing for affording when removed an open passage for said rolls; and,
- means providing tracks adjacent the lower sides of said slots for affording rolling movement of said roll shafts whereby upon removal of said locking means and said slot closing means and said front wall closure means said rolls may be rolled forward and out through said front wall.

3,881,664
WEAR PLATE IN AN APPARATUS FOR CONDITIONING A GRANULAR MATERIAL

Joseph E. Bowling, Jr., Waynesboro, Pa., and Robert A. Speilman, Falling Waters, W. Va., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Jan. 31, 1973, Ser. No. 328,171
Int. Cl. B02c 13/09
U.S. Cl. 241—275 11 Claims

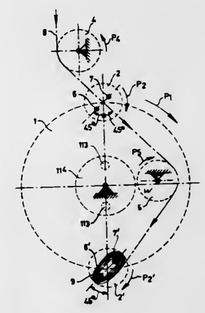


1. An impact surface for an apparatus of the type having a centrifugal throwing wheel mounted for projecting a stream of material against the impact surface, said impact surface comprising a first, second and third closed wall, each wall being spaced from a central axis and shaped like a frustrum with one end being larger than the other end, said first, second and third walls being in coaxial loosely stacked relationship, said first wall having its larger end facing upwardly, said second wall having its larger end facing downwardly, and said third wall having its larger end facing upwardly.

3,881,665
DEVICE FOR PRODUCING ROLL-SHAPED PACKETS OF BAGS OF PLASTIC

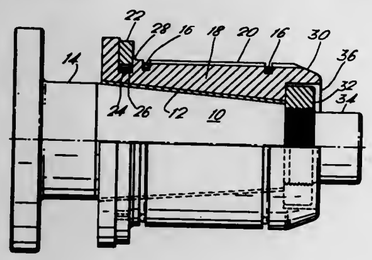
Arnoldus Willem Jan Leloux, Dedemsvaart, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Dec. 28, 1973, Ser. No. 429,116
Int. Cl. B65h 17/02
U.S. Cl. 242—67.3 R 11 Claims



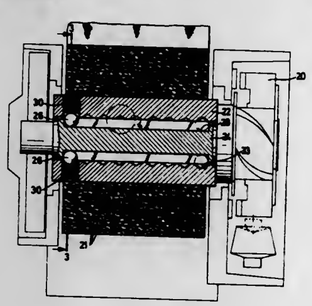
1. A device for producing roll-shaped packets of bags of plastic foil from a continuously supplied web in which the bags are held together through perforations, said device comprising:
- two winding heads, each having a plurality of winding fingers which are lengthwise retractable and extendible between an operative position and a retracted position, and which can be moved towards each other between a spreaded position and an inner position for winding and for disengaging, respectively,
- the web supply guiding and the winding heads being arranged one with respect to the other such that during winding of one head the web runs in between the winding fingers of the other head,
- the spacing between said heads being such that there is at any moment at least one web perforation between them, a counter for indicating the number of bag units supplied and a switch mechanism responsive to said counter to set the non-operative head into rotation and to bring the operative head to a standstill to increase the tension on said web between the heads whereby under the tensile stress thus produced a perforation is caused to break and the winding of the web is taken over by the head just started into rotation.
- said switch mechanism further retracting the fingers of the standstill head out of the wound roll and subsequently, after a relative change of the web direction and the heads, extending again the fingers of this head with the web running in between these fingers,
- both said winding heads are mounted at diametrically opposed locations of a revolvable disc to define two fixed positions with respect to a fixed direction of supply of the foil web,
- supply means for said web comprising a first roller within the line of circulation of the winding head situated at one side with respect to the vertical through the axis of the revolvable disc, and a second roller outside the line of circulation of the winding heads situated at the opposite side of said vertical.

3,881,666
WINDING CORE CHUCK
Eric Greenhalgh, 40 Red House Ln., Chorley, England
Filed Sept. 5, 1972, Ser. No. 286,208
Int. Cl. B65h *17/02*
U.S. Cl. 242—68.2 **12 Claims**



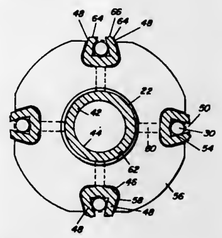
1. A chuck for supporting a roll core comprising a mounting shaft, a tapered section on said shaft, an expandible sleeve axially displaceable on said shaft and having surfaces slidably engageable with said tapered section, and whereby axial displacement of said sleeve in one direction along said tapered section causes the sleeve to expand and displacement of said sleeve in the opposite direction causes the sleeve to contract, and wherein the expandible sleeve includes a thrust ring separate from but axially restrained with respect to the sleeve, and means for maintaining the thrust ring concentric with said shaft and engageable with the end of a roll core when the chuck is inserted into a roll core, said thrust ring serving to cause displacement of the expandible sleeve up said tapered section as the sleeve and shaft are pushed into the roll core.

3,881,667
SAFETY-BELT LOCKING DEVICE
Norbert Karl Albert Tandetzke, Erftstadt-Gymnich, Germany, assignor to Kangol-Teka, Sicherheitsgurt GmbH, Bruhl, Germany
Filed June 20, 1973, Ser. No. 371,938
Claims priority, application Germany, June 24, 1972, 2230994
Int. Cl. A62b *35/00*; **B65h** *63/00*
U.S. Cl. 242—107.4 **8 Claims**



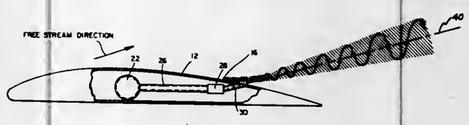
1. A safety-belt apparatus for vehicles comprising:
a drum including an elongate hollow hub member,
a safety-belt wound upon said hub member,
an elongate spindle member positioned interiorly of said hub,
a free-running mechanism operatively associated with the spindle member normally permitting said spindle member to rotate with said hub member to thereby permit extension of the belt, said free-running mechanism when subjected to abnormal acceleration locking the spindle member against rotation with respect to said hub member,
one of said hub and spindle members having threads thereon and the other of said hub and spindle members having an elongate channel therein, one of said hub and spindle members being formed of plastically deformable material,
and a braking element engaging said channel and threads of said hub and spindle members and moving longitudinally of the latter when the spindle member is locked against rotation with respect to the hub member, said braking element deforming said plastically deformable member during the longitudinal movement to thereby brake rotation of the hub member.

3,881,668
SPOOL ASSEMBLY
George A. Poteat, Greensboro, N.C., assignor to Engineered Plastics, Incorporated, Gibsonville, N.C.
Continuation-in-part of Ser. No. 318,515, Dec. 26, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,955
Int. Cl. B65h *75/14*
U.S. Cl. 242—118.6 **34 Claims**



1. A spool assembly comprising a spider-shaped core extending substantially the full length of said spool assembly and having an axially extending center portion and a plurality of longitudinal ribs projecting radially outward from said center portion, each said rib having an outwardly opening longitudinal slot defined by a base and a pair of spaced walls extending from said base along the outer edge of said rib, an exterior tube mounted on and structurally supported by said core throughout substantially its full length at the outer edges of said walls, end plates at each end of said core extending radially outward to said tube for retention of said tube on said core between said plates, means fastening said end plates and said core together and being secured substantially fully in said core rib slots, said walls of each rib converging from said base outwardly to at least partially close said slot over said fastening means.

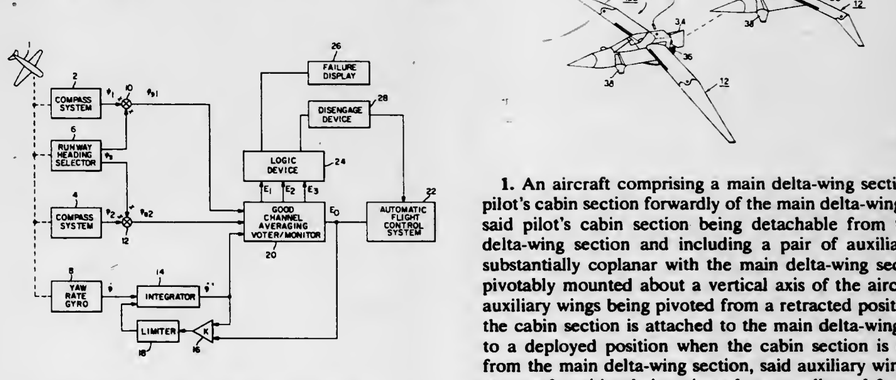
3,881,669
METHOD AND APPARATUS FOR ELIMINATION OF AIRFOIL TRAILING VORTICES
Martin Lessen, 9 Idlewood Rd., Rochester, N.Y. 14618
Filed May 16, 1973, Ser. No. 360,928
Int. Cl. B64c *23/06*
U.S. Cl. 244—40 R **13 Claims**



1. Method for rapidly dissipating the vortex trailing an airfoil in flight, said method consisting of injecting a substantially linear fluid stream substantially coaxially into said vortex (a) in a direction such that there is no more than about four degrees of misalignment between the longitudinal axis of the injected fluid stream and the longitudinal axis of said vortex substantially at the point of entry of the stream into the core of the trailing vortex, and (b) at a substantially linear momentum flux of such magnitude relative to that of the free air stream that said trailing vortex will be rendered hydrodynamically unstable, whereby disturbances and hence turbulence in said vortex will grow rapidly to dissipate said vortex.

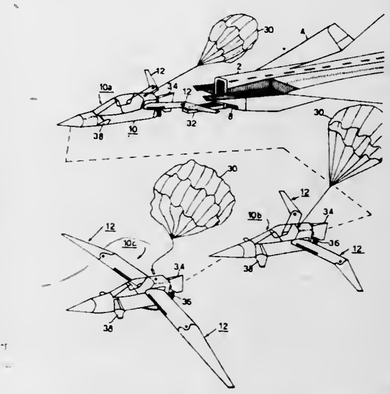
4. An airfoil, said airfoil having an upper surface over which a vortex is formed and from which said vortex trails, said airfoil having a trailing edge, said trailing vortex having a core and defining a curvilinear longitudinal axis, and means mounted on said airfoil and spaced from said trailing edge for injecting a fluid substantially linearly into said trailing vortex in a direction substantially coaxial and colinear with no more than about 4° of misalignment from said axis at the point of entry into the vortex core and at a substantially linear momentum flux of a magnitude relative to the free air stream proximate the airfoil which renders the modified trailing vortex hydrodynamically unstable, whereby disturbances and hence turbulence in said vortex will grow rapidly to dissipate said vortex.

3,881,670
CONTROL SYSTEM WITH DUAL UNMONITORED CONDITION SENSORS AND FAIL OPERATIVE CHARACTERISTICS
Jerry Doniger, Montvale, N.J., assignor to The Bendix Corporation, Teterboro, N.J.
Filed Dec. 7, 1973, Ser. No. 422,824
Int. Cl. B64c *13/50*
U.S. Cl. 244—77 M **5 Claims**



1. A fail operative control system, comprising:
means for providing a first signal corresponding to a condition;
means for providing a second redundant signal corresponding to the condition;
means for providing a reference signal;
means for combining the first signal and the reference signal and for providing a first error signal;
means for combining the second signal and the reference signal and for providing a second error signal;
means for providing a signal corresponding to the rate of change of the condition;
averaging means connected to both of said combining means and to the condition rate signal means and responsive to the first and second error signals and the rate signal for providing an output signal corresponding to the average of the acceptable error and rate signals and for eliminating those of said signals which differ from the average by a predetermined amount;
integrating means connected to the means for providing a signal corresponding to the rate of change of the condition for integrating the signal therefrom and for providing a signal as a pseudo-condition reference;
averaging means connected to both of said combining means and to the integrating means and responsive to the first and second error signals and the pseudo-condition reference signal for providing the output signal corresponding to the average of the acceptable error and pseudo-condition reference signals and for eliminating those of said signals which differ from the average by a predetermined amount and means connected to the last mentioned means and responsive to the output signal therefrom for controlling the condition.

3,881,671
DETACHABLE CABIN AIRCRAFT
Joseph Bouchnik, Moshav Mismeret, Gush Tel Mond, Israel
Filed Apr. 23, 1973, Ser. No. 353,842
Claims priority, application Israel, Apr. 21, 1972, 39260
Int. Cl. B64d *25/08*
U.S. Cl. 244—140 **8 Claims**



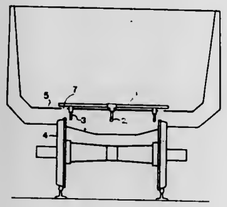
1. An aircraft comprising a main delta-wing section and a pilot's cabin section forwardly of the main delta-wing section, said pilot's cabin section being detachable from the main delta-wing section and including a pair of auxiliary wings substantially coplanar with the main delta-wing section and pivotably mounted about a vertical axis of the aircraft, said auxiliary wings being pivoted from a retracted position when the cabin section is attached to the main delta-wing section, to a deployed position when the cabin section is detached from the main delta-wing section, said auxiliary wings in the retracted position being pivoted rearwardly and forming the apex and leading edge of the main delta-wing section, said auxiliary wings in the deployed position being pivoted forwardly and providing an increased glider wing surface for the detached cabin section.

3,881,672
RAILWAY TRAIN INCLUDING EMERGENCY BRAKING APPARATUS
Roland Gittard, Nouadhibou, Mauritania, assignor to Societe Anonyme des Mines de Fer de Mauritania, F'derik, Mauritania
Filed Jan. 14, 1974, Ser. No. 433,230
Claims priority, application Malagasy Republic, Nov. 28, 1973, 55071
Int. Cl. B61l *3/00*
U.S. Cl. 246—172 **9 Claims**

1. In an apparatus for braking a railway train having at least one wagon, a body of the wagon including a floor, a pair of wheels, an axle extending between and connected to the pair of wheels, a common train pipe and the wagon having a brake

controlled by the pressure in the train pipe, the improvement comprising

at least one branch pipe connected to said train pipe and so located adjacent a wheel of said wagon as to be engaged and fractured by the wheel if the latter shifts abnormally in relation to the body of said wagon, thereby altering the pressure in said train pipe applying said brakes throughout the train,

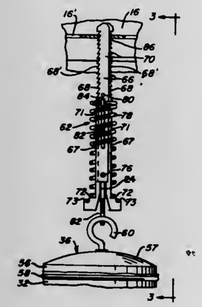


the one branch pipe being situated above a wheel so that upward movement of the wheel will cause the wheel to fracture it,

the one branch pipe extending transversely across the wagon above the axle so as to be capable of being fractured by either one of the pair of wheels, and

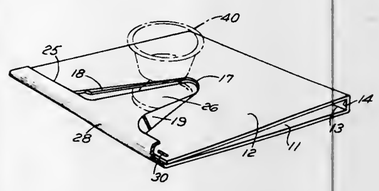
the one branch pipe being above the floor of the wagon, the floor having apertures through which a wheel can project to fracture the one branch pipe without damaging the floor.

3,881,673
TENSIONING DEVICE
Harley G. Peterson, La Crescenta, Calif., assignor to Joy Manufacturing Company, Pittsburgh, Pa.
Filed Feb. 15, 1974, Ser. No. 442,752
Int. Cl. B01d *46/06*
U.S. Cl. 248—94 **9 Claims**



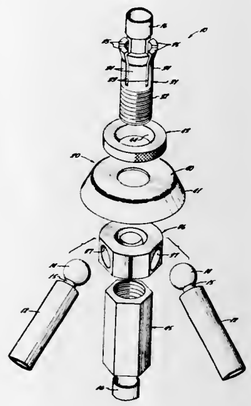
1. An elongated retaining device comprising: a body member having one end portion thereof adapted to support a supported member therefrom and having an outwardly biased bifurcated portion adjacent the other end portion thereof; and each of the legs of said bifurcated portion including retaining means extending longitudinally therealong which are adapted to be cooperable with a seating portion of a supporting member to selectively retain said body member at any of a plurality of locations therealong with respect to such a seating portion by overcoming the bias of said bifurcated portion and seating a selected section of said retaining means on such a seating portion.

3,881,674
FLOWER DELIVERY HOLDER
Oliver Watson Greene, III, 101 Glen Rock Rd., West Kingston, R.I. 02892
Filed Mar. 13, 1974, Ser. No. 450,569
Int. Cl. A47g *7/00, 23/02, 29/00*
U.S. Cl. 248—152 **4 Claims**



1. A floral holder comprising a blank having a base portion and a top wall portion, at least one fold line separating said portions, the top wall portion being foldable over the base portion about the fold line, the top wall portion having a free end with a V recess medially thereof, the bottom wall having a free end with a tongue, a fold line adjacent the tongue, said tongue being folded about its adjacent fold line and received in the V recess juxtaposed to the bottom wall.

3,881,675
CAMERA TRIPOD
John C. Matchett, 2851 Rolling Hills Dr., Space No. 79, Fullerton, Calif. 92635
Filed Jan. 4, 1974, Ser. No. 430,799
Int. Cl. F16m *11/38*
U.S. Cl. 248—170 **6 Claims**



1. A tripod comprising:

a plurality of elongate legs, each of said legs terminating in a ball at the upper end thereof;

an elongate column including a camera-connecting fitting at one end thereof; and

central platform means receiving and supporting said upper ends of said legs and receiving and supporting for movement in an axial direction said elongate column, said platform means including:

a collet surrounding said elongate column and having an externally threaded lower end and a slotted upper end, said collet further having a tapered, increased-thickness upper end;

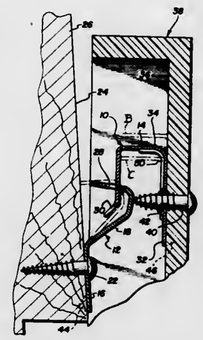
a generally cylindrical trunnion surrounding a central portion of said collet and having a plurality of recesses in the outer surface thereof for receipt of portions of said balls;

a disc-shaped cap surrounding said collet, above said trunnion, and extending radially outwardly and then angularly downwardly to contact said balls on the sides thereof opposite from said recesses in said trunnion;

a cylindrical collar surrounding said collet, between said upper end thereof and said cap, said collar having a tapered inside surface which is identical to and engages the tapered upper end of said collet; and

a nut surrounding said collet, below said trunnion, and engaging the external threads thereon whereby tightening of said nut relative to said collet simultaneously urges said trunnion towards said cap, tightening said balls at said upper ends of said legs between said trunnion and said cap to lock said legs to said trunnion and forces said upper end of said collet into said collar thereby tightening said slotted upper end of said collet around said column to lock said column to said collet.

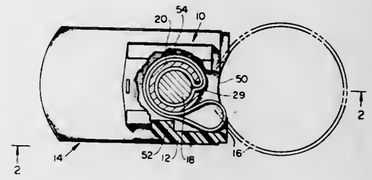
3,881,676
SHUTTER MOUNTING CLIP
Ernest W. Reinwall, McHenry, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 17, 1973, Ser. No. 351,834
Int. Cl. F16m *13/00*
U.S. Cl. 248—224 **4 Claims**



1. Mounting means for hanging a structure subject to expansion and contraction on a wall comprising: a first member having a first section secured to said structure and a second section projecting outwardly from said first section and provided with a depending tongue including a major dependent portion, a second member having a first section secured to said wall and a resilient second section which is shaped in the form of a reverse bend and is provided with a free end portion which contains a slot that receives said tongue for sliding movement therein and which reverse bend is stressed outwardly relative to the first section of said second member away from the wall under influence of the assembled tongue therewith so that it resiliently urges said structure toward said wall when said structure is hung irrespective of expansion and contraction of said structure as the tongue slides in the slot.

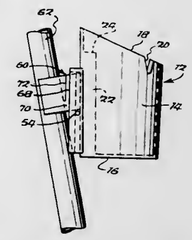
3,881,677
RECEPTACLE MOUNTING MEANS
Francis J. Ihlenfeld, West Seneca, N.Y., assignor to McDonald Products Corporation, Buffalo, N.Y.
Filed July 13, 1973, Ser. No. 379,088
Int. Cl. A47c *7/70;* **F16m** *13/00;* **A47k** *1/08*
U.S. Cl. 248—311 **13 Claims**

1. Mounting means for releasably securing a receptacle to a tubular support member comprising: a body having a clip portion and a receptacle engaging portion; said receptacle engaging portion being joined to said clip portion in a diverging relation thereto; said body being selectively invertable; said clip portion being adapted for snap fit attachment to a tubular support member in either position; said receptacle



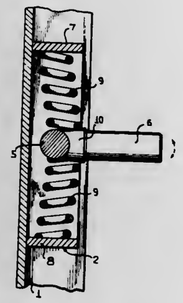
engaging portion having means for detachably mounting a receptacle to said body in either position whereby said receptacle can be mounted on tubular support members of various angles of inclination to position said receptacle in a generally upward disposition.

3,881,678
ATTACHING APPARATUS
Peter T. Quinn, Littleton, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed June 28, 1973, Ser. No. 374,572
Int. Cl. A47g *29/122*
U.S. Cl. 248—360 **1 Claim**



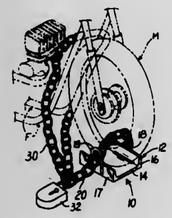
1. An attachment element for including a housing mounting on a support member, comprising a rotatable shaft and a sleeve that encompasses said shaft, said shaft and sleeve being positioned within said housing and mounted for joint frictional rotational movement on said housing, said sleeve being in spaced apart relationship with said shaft, the side of said sleeve and said housing having walls that form openings therein, a resilient band in the form of an elongated closed loop, a first portion of said loop being positioned in loose captured relationship between the outer wall of said shaft and the inner wall of said sleeve, portions of said loop that extend away from said first portion forming two adjacent folded portions thereof, said folded portions being positioned to extend through and beyond said openings in said sleeve and said housing to a position whereat said folded portion may be separated to embrace the support member to which the housing is to be attached, a gripping means connected to at least one end of said shaft and positioned immediately adjacent the exterior of said housing, said rotation of said gripping means in the direction being operable to wind a portion of said loop that extends away from its said first portion in folded form about the outside surface of said sleeve and to thereby simultaneously effect the pulling of said housing into snug mounted engagement against said support member, said gripping means being further operable to rotate said shaft and sleeve in an opposite direction to unwind said folded band portions from said sleeve to a position in which said band is in a loose, readily removable position about said support.

3,881,679
PRESSURE GUIDE FOR USE IN DITCH SUPPORTING ASSEMBLY
Josef Krings, Hans-Bockler-Str. 23, Oberbruch, Germany
Filed June 28, 1973, Ser. No. 374,462
Claims priority, application Germany, Aug. 4, 1972, 7228864; Apr. 10, 1973, 2317872
Int. Cl. E21d *5/00*
U.S. Cl. 248—356 **8 Claims**



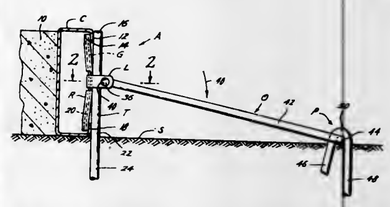
1. A pressure guide for positioning at opposite ends of a tensioning device extending between a pair of aligned vertical supporting posts of a bracing assembly, said pressure guide comprising frame means constructed for mounting on a supporting post, a terminal piece for a tensioning device, pivot means mounting said terminal piece at right angles to the general plane of said frame intermediate the ends thereof for limited movement in a second plane normal to said general plane, and elastically deformable means between opposite ends of said frame and said terminal piece for resisting pivotal movement of said terminal piece from said right angle position.

3,881,680
CYCLE LOCKING SYSTEM
Robert J. Lietaert, Jr., 27545 Wyly Dr., Mount Clemens, Mich. 48043
Filed Apr. 5, 1974, Ser. No. 458,310
Int. Cl. E05b *71/00*
U.S. Cl. 248—499 **6 Claims**



1. Improvement in a cycle locking system for locking a cycle having a cycle locking device having a base member in the form of a doubly opened ended wheel cradle having opposite upstanding side walls and means for fastening said cradle to concrete or the like, said device having a cycle-fastening chain made fast to one of said side walls, said improvement comprising eyelet means on the other of said side walls, said eyelet means and said cycle-fastening chain being so related that the diameter of said eyelet means is greater than that of said chain so that the latter can thread through said cycle and then through said eyelet means from inside to outside thereof and extend beyond said eyelet means so that the said free end thereof is capable of serving as an anchoring means for locking thereto a second cycle-fastening chain, whereby to lock said cycle to said locking device.

3,881,681
FORM ANCHOR
Daniel O. Sumpter, and Don R. Rodriguez, both of P. O. Box 305, Channelview, Tex. 77530
Filed Aug. 22, 1973, Ser. No. 390,488
Int. Cl. B28b *7/00*
U.S. Cl. 249—3 **9 Claims**



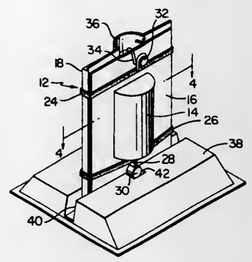
1. An apparatus for anchoring a pouring form, having a forming surface and upper and lower mounting rims formed therewith defining a central opening between them, on a surface for concrete pouring and the like, comprising:

a. gripping means insertable in the central opening of the form, said gripping means having means therewith for releasably engaging the mounting rims of the form for releasably gripping the form; and

b. stake means for insertion into the surface at a position external of the form and adjacent said gripping means; and

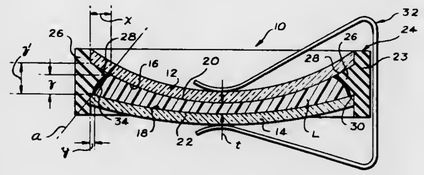
c. means for moving said gripping means into position gripping the mounting rims of the form against said stake means, wherein the form is anchored to the surface.

3,881,682
CANDLE MOLD
Henry Kin, 11442 Southland Rd., Forest Park, Ohio 45240
Filed Aug. 3, 1973, Ser. No. 385,283
Int. Cl. B29d *31/00*
U.S. Cl. 249—94 **4 Claims**



1. A candle mold comprising a plurality of sides, said sides cooperating with one another to define a candle form therebetween, the periphery of said sides having complementally formed flange and flange-receiving grooves respectively therealong wherein said flange and grooves cooperatively engage each other in interlocking fashion when said sides are placed together, a wick receiving chamber and slot formed in one side of one mold side adjacent one end thereof, said chamber and slot opening to the inside of the mold, securing means on the outside of said one side of the mold adjaacent the other end thereof wherein one end of a wick is placed in said chamber and the other end of said wick is secured to said securing means whereby the wick is centered in the resulting candle, and spout means in the other mold side to permit pouring of hot wax into the mold.

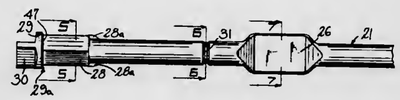
3,881,683
GASKET FOR LENS MOLD
Donald B. Whitney, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Nov. 29, 1973, Ser. No. 420,031
Int. Cl. B29c *1/00;* **B29d** *11/00*
U.S. Cl. 249—117 **4 Claims**



1. In a lens casting mold including a pair of mold halves, one of said pair having a convex surface for molding concave ocular surfaces of lenses and the other of said pair having a concave surface for molding convex object side surfaces of the lenses and a resilient annular gasket for supporting said convex and concave surfaces of said mold halves in a predetermined spaced coaxially aligned relationship, the improvement comprising:

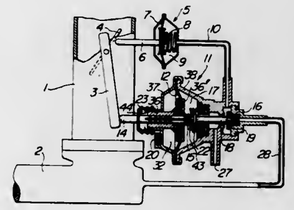
said gasket having an inwardly directed flange providing a seat for one of said mold halves at each of its opposite sides and said flange having an inclined inner rectilinear casting face of a concavely obtusely angled configuration along its extension from one of said seats to the other of said seats, said inclined casting face providing said one of said seats with an appreciably greater width than the other, said one seat of greater width being concavely shaped for receiving said convex molding surface of said one mold half and minimizing the area of contact between said convex molding surface and the ocular surfaces of lenses cast thereby and said other seat of lesser width being convexly shaped for receiving said concave molding surface of said other mold half and maximizing the diametral size of the convex object side surfaces of lenses cast thereby.

3,881,684
TIE ROD FOR CONCRETE FORMS
Ransom J. Daniels, Jr., 93 Brookhaven Drive, Glastonbury, Conn. 06033
Division of Ser. No. 141,576, May 10, 1971, Pat. No. 3,746,297. This application Jan. 26, 1973, Ser. No. 326,598
Int. Cl. E04g *17/06*
U.S. Cl. 249—214 **4 Claims**



1. A tie rod for concrete forms comprising a length of wire of predetermined diameter having adjacent each end thereof a length of substantially square cross-section outwardly subtended by an annular flange, said flanges being integral with said rod, said flanges being of greater diameter than the diameter of said wire and at least as great as the cross-section diagonal of said square length whereby said flanges provide surfaces extending outwardly from each edge of said square section.

3,881,685
DEVICE FOR CONTROLLING THE CLOSURE OF CARBURETOR BUTTERFLY VALVE
Masaru Hase, Toyota; Shinya Ishihara; Mikio Maki, both of Anjo, and Kiyohiko Mizuno, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha, Kariya-shi, Japan
Filed July 27, 1973, Ser. No. 383,054
Claims priority, application Japan, July 31, 1972, 47-77161
Int. Cl. F02d *11/08*
U.S. Cl. 251—48 **3 Claims**



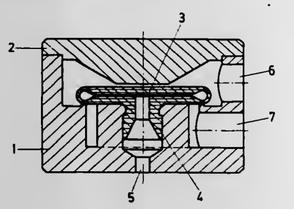
1. A device for controlling the closure of a carburetor butterfly valve of an engine by controlling the pivotal movement thereof comprising:

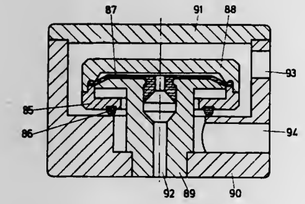
a lever secured to said butterfly valve and being pivotally movable therewith;

a positioner means for limiting the closure of said butterfly valve, said positioning means including a pressure chamber, a diaphragm positioned within said chamber, said diaphragm being reciprocally movable in response to fluid pressure differential in said chamber, and a stopper connected to said diaphragm and being movable between a first closure limiting position and a second closure position, said stopper when in said first closure limiting position limiting the closure of said butterfly valve, and when in said second closure position permitting the complete closure of said butterfly valve; and

a dash pot, said dash pot including a main shaft, a sub-shaft having one end communicating with said main shaft through a first spring means with the other end thereof being biased toward said main shaft by a second spring means, said lever forcing said main shaft against said first spring means when said lever is rotated beyond a predetermined angle in a first butterfly opening direction, said sub-shaft being moved in response to the movement of said main shaft against the bias of said second spring means, a change-over valve mounted to said sub-shaft and being operable to vary the fluid pressure differential in said pressure chamber in response to the movement of said sub-shaft wherein said stopper is moved to said first closure limiting position only when said butterfly valve and said lever is rotated beyond said predetermined angle, means for retarding the reverse movement of said main shaft when said butterfly valve is closed after having been rotated beyond said predetermined angle, said butterfly valve being limited by said stopper for a predetermined time related to the retarding movement time of said main shaft to thereby maintain said butterfly valve at an open angle greater than the closure angle thereof.

3,881,686
VALVE ASSEMBLY
Georg Hirmann, Zurich, Switzerland, assignor to Rudolf Felix Homberger, Schaffhausen and Kurt Meyer, Olten, both of, Switzerland
Filed Aug. 17, 1973, Ser. No. 389,137
Claims priority, application Switzerland, Aug. 24, 1972, 12046/72; Aug. 24, 1972, 12047/72
Int. Cl. F15k *31/12*
U.S. Cl. 251—61.1 **8 Claims**

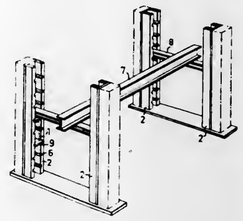




1. A valve assembly comprising a casing having a valve seat therein, inlet and outlet connections communicating through said seat, a valve within said casing being disposed between said inlet and outlet connections for engagement with and displacement from said seat, said valve comprising a pair of leaf members peripherally joined together, at least one of said leaf members being flexibly deformable and defining with the other leaf member an inpervous inflatable chamber, said valve in its relaxed state with said chamber deflated engaging the valve seat and thus closing the valve seat, a control conduit communicating through one of said leaf members with said inflatable chamber, said control conduit being offset from said inlet and outlet, a source of inflating fluid, and means for introducing an inflating fluid under pressure from said source through said conduit into said chamber, whereby the chamber is inflated and the flexible leaf is thereby deformed to displace the valve from the valve seat and thus open the valve seat.

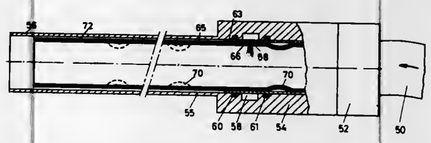
3,881,687
METHOD AND APPARATUS FOR LIFTING LOADS STEP-BY-STEP, ESPECIALLY HEAVY LOADS
Dag Valdemar Henry Johansson, Breviada 8033, S-541 00 Skovde, Sweden
Filed Apr. 27, 1973, Ser. No. 354,936
Claims priority, application Sweden, May 4, 1972, 5885/72
Int. Cl. B66f *1/08*
U.S. Cl. 254—1 **11 Claims**

1. A device for lifting loads in stages comprising
at least one jack having a base portion and an extendable and retractable lifting portion,
a carrying structure for said jack having two opposing side walls spaced from each other and defining a jack receiving channel therebetween, said side walls having inside surfaces,
first and second jack supporting means each extending across the channel between the opposing side walls to alternately support said base portion and said lifting portion of said jack respectively, and
a plurality of generally horizontal abutment surfaces disposed in the opposing side walls and spaced along the length of said carrying structure,
said plurality of abutment surfaces being inclined downwards from the inside surfaces in the opposing side walls,



portions of said jack supporting means selectively engaging and co-acting with said abutment surfaces in the opposing side walls and having an equivalent chamfer to match said inclined abutment surfaces to support said jack centrally within the jack receiving channel of said carrying structure and free from contact therewith.

3,881,688
APPARATUS FOR APPLYING VISCOUS MASSES
Georg Senn, Mutschellen, Switzerland, assignor to Spribag Aktiengesellschaft, CH-8967 Widen-Mutschellen, Switzerland
Filed Feb. 23, 1972, Ser. No. 228,584
Claims priority, application Switzerland, Mar. 4, 1971, 3177/71; Jan. 21, 1972, 884/72
Int. Cl. B01f *5/20*
U.S. Cl. 259—4 **18 Claims**

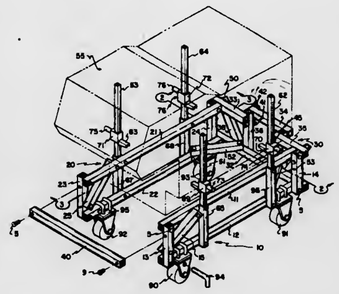


1. Apparatus for continuously mixing and applying a viscous mass to an object, comprising a rigid tube, a flexible hose located co-axially within said tube, said flexible hose being secured to said tube at its rear end and extending substantially freely along the length of said tube radially spaced from the inner wall thereof, means for pneumatically feeding particulate material axially to the rear end of said flexible hose, said flexible hose being swingable and radially distendable under the flow of said material toward its forward end.

3,881,689
CAMPER BODY LIFTING DEVICE
Richard Reed Bury, deceased, late of Salt Lake City, Utah, and Linda John Bury, administratrix, 1577 E. Delaware Ln., Salt Lake City, Utah 84117
Continuation-in-part of Ser. No. 311,320, Dec. 1, 1972, abandoned. This application Apr. 24, 1974, Ser. No. 463,800
Int. Cl. B66f *7/26*
U.S. Cl. 254—45 **10 Claims**

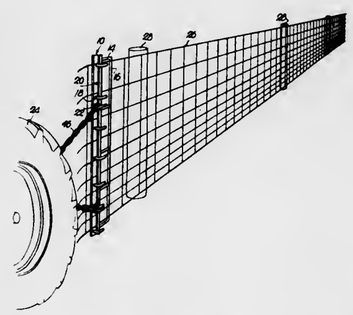
1. A device for lifting camper bodies onto and off a truck bed comprising:
a. a substantially rectangular support member for encompassing a camper body which includes:
1. a pair of elongated side frames,
2. a front connecting member detachably fixed to the front sections of said side frames, and

3. a rear frame detachably connected to the rear sections of said side frames, said rear frame including a locking arm pivotally mounted at one of its ends to permit entrance into said camper body;
b. wheeled means mounted at each lower corner of said support member to permit movement of said support member over a ground surface;
c. a wheel locking means operatively carried by said support member;



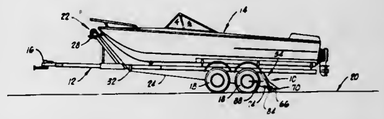
d. vertical lifting means mounted at or near each of the corners of said support member, said vertical lifting means being adapted for independent lifting action;
e. opposed brackets having a protective covering mounted to each of the lifting means for engaging and supporting the undersections of a camper body at or near its corners; and
f. means for actuating said lifting device.

3,881,690
FENCE STRETCHER
James E. Combs, Jr., P.O. Box 81, Farley, Mo. 64028
Filed Feb. 21, 1974, Ser. No. 444,416
Int. Cl. B66f *19/00*
U.S. Cl. 254—83 **6 Claims**



4. In a fence stretcher having an elongated base, a number of projections secured to the base, an elongated, rotatable cam extending longitudinally of the base between the latter and the projections, and a force transmitting means for interconnecting said cam to a draft source, wherein the improvement comprises:
providing said cam with a pair of opposed, transversely arcuate, longitudinally extending, outermost faces, one on each side respectively of its longitudinal axis, with one of said faces offset in one direction relative to said axis and the other of said faces offset in the opposite direction relative to said axis whereby, when the fence is between the cam and said base, rotation of the cam in one direction will clamp the fence against the base with progressively increased force as said one face slides along the projections and said other face slides along the fence,
said cam being provided with a pair of diametrically opposed, oppositely facing, flat lands coextensive in length therewith,
said lands intersecting said faces to form opposite extremities.

3,881,691
ROLL UNDER JACK FOR ELEVATING A FRAME
Eugene D. Colclasure, 519 Campbell, Ardmore, Okla. 73401
Filed Nov. 7, 1973, Ser. No. 413,433
Int. Cl. B66f *7/22*
U.S. Cl. 254—94 **6 Claims**

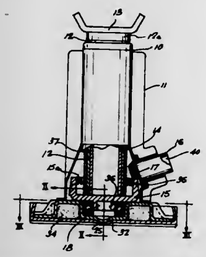


1. A jack for elevating a frame a distance above the ground, comprising:
a jack body having an upper end engageable with a portion of the frame in a jacking position and a lower end;
a wheel rollingly secured to the lower end of the jack body;
means, having a portion attachable to a portion of the jack body, for pulling the jack body in a jacking direction generally toward a vertical position beneath the frame, the jack body being rollingly supported via the wheel and elevating the frame while being pulled in a jacking direction in an engaging position of the upper end of the jack body and a portion of the frame, the frame being elevated via a distance generally corresponding to the height of the jack between the upper end of the jack body and the wheel and the angular position of the jack body in a jacking position thereof; and
means, having a portion secured to the jack body, limiting the movement of the jack body in a jacking direction and positioning the jack body in a predetermined jacking position beneath the frame, said means including a stop flange secured to the jack body and having a ground engaging portion engageable with the ground in a jacking position of the jack body, the stop flange engaging the ground and limiting the movement of the jack body in a jacking direction positioning the jack body in a jacking position beneath the frame.

3,881,692
RESILIENTLY TILTABLE VEHICLE JACK BASE
Bernard S. Clarke, Orillia, Ontario, Canada, assignor to Seeburn Metal Products Limited, Beaverton, Ontario, Canada
Filed June 21, 1974, Ser. No. 481,771
Int. Cl. B66f *13/00*
U.S. Cl. 254—101 **5 Claims**

1. A resiliently tiltable load supporting base for vehicle jacks, comprising (a) a rectangular metallic base member having a substantially flat bottom with upturned peripheral edges and a rounded ridge extending along a central axis thereof, said ridge being bifurcated at a central region to form a central dish-shaped depression in said bottom, (b) a metallic load receiving plate having a substantially flat top with downturned peripheral edges terminating in a narrow peripheral flange, said flange having downwardly directed, rounded projections in mid-points of opposite ends, said projections being adapted to rest on said base member ridge and a socket extending downwardly in a central region of said top, said socket being adapted to receive a jack tube and having in the bottom thereof a downwardly directed rounded projection which mates with said dish-shaped depression in the base member

and (c) elastomeric slab means mounted between said base member and load receiving plate in a region between the



central socket and downturned peripheral edges, whereby the load receiving plate is resiliently tiltable with respect to the base member along a substantially horizontal axis.

3,881,693

CABLE HAULING APPARATUS

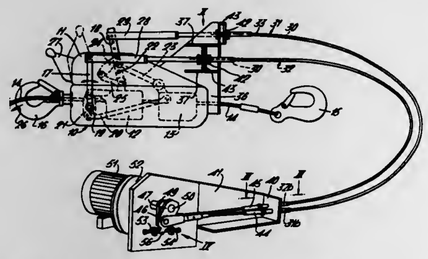
Johannes A. Rinio, Odenthal, Germany, assignor to Greifzug GmbH, Bergisch-Gladbach, Germany

Filed May 7, 1973, Ser. No. 358,050

Claims priority, application Germany, May 16, 1972, 2223743; Mar. 7, 1973, 2311148

Int. Cl. B66d *3/00*

U.S. Cl. 254—135 R **22 Claims**



1. A cable hauling apparatus comprising clamp jaws mounted in two blocks that are movable in opposite directions, the jaws clamping alternately on a cable pulled through the apparatus and taking this cable along as they move, two pivoted operating levers, each being drivingly connected to both said blocks to move said blocks in said opposite directions: the improvement consisting in that both operating levers are connected through a crank drive to a rotary drive, said operating levers being connected with their crank drive at such an angle α in an offset relationship to each other with the rotary drive that in each of the two directions of rotation of the rotary drive in each case one of the two operating levers leads the other lever with such an interval that only the leading operating lever produces an effect over the clamp jaws connected thereto while the other operating lever is taken along loosely.

3,881,694

TIGHTENING SPINDLE FOR MOBILE HOMES

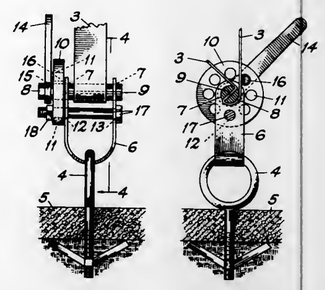
Elmer W. Gardner, General Delivery, Graysville, Tenn. 37338

Filed Aug. 27, 1973, Ser. No. 391,607

Int. Cl. B66f *13/00*

U.S. Cl. 254—164 **1 Claim**

1. A device for tightening and holding an inflexible metal band securing a movable object in a fixed position relative to the ground comprising a U-shaped bracket having aligned first and second pairs of holes through its sides and secured to an anchor fastened in the ground, a rotatable spindle slotted to receive the band and journaled in said first pair of aligned holes in the bracket, a circular disc fixed to the spindle outside of the bracket having a series of concentrically located apertures through it in selective alignment with said second pair of



holes through the bracket, a readily detachable tightening lever having a circular hole at one end through which the spindle fits and a lug adjacent to the hole projecting through one of the concentrically located apertures in the disc to wind continuously the band around the spindle and tighten it and means for locking the disc and spindle in tightened position.

3,881,695

DEVICE FOR MEASURING THE RATE OF PENETRATION OF THE DRILL BIT DURING DRILLING OPERATIONS PERFORMED FROM A FLOATING INSTALLATION

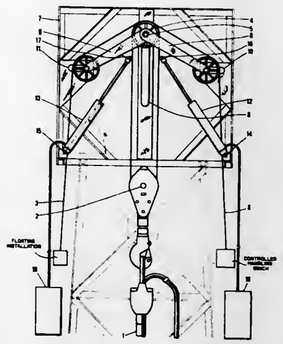
Philippe Joubert, Meudon La Foret, France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants, Ruell-Malmaison, France

Filed Nov. 7, 1972, Ser. No. 304,414

Claims priority, application France, Nov. 8, 1971, 71.40041

Int. Cl. B66d *1/48*

U.S. Cl. 254—172 **11 Claims**



1. A device for measuring drilling speeds of a drill pipe subject to relative movement with respect to a drilling installation, said device comprising:

first signal means for generating a first signal representative of the position of a drill pipe with respect to the drilling installation;

second signal means connected to said first signal means for deriving from said first signal a second signal representative of drilling speeds of said drill pipe, said second signal being a first derivative of said first signal; and

diplay means connected to said second signal means for displaying said second signal such that said drilling speeds are obtained.

8. A device for measuring drilling speeds of drill pipe from a floating drilling installation of the type including an apparatus for preventing drill pipe from vertical movements, said apparatus including a support member for supporting drill pipe, control means for controlling displacement of said drill pipe relative to said floating installation, and compensating means for compensating vertical movements of the drill pipe with respect to the floating installation, said device comprising:

detecting means for detecting an instantaneous relative position of drill pipe with respect to a floating installation, said detecting means generating a first signal representative of said instantaneous position,

first processing means for processing said first signal, said first processing means being connected to said detecting means and generating a second signal representative of a relative position of said drill pipe with respect to said floating installation, said relative position being a function of said instantaneous position,

second processing means for processing said second signal, said second processing means being connected to said first processing means and generating a third signal representative of a relative speed of advancement of said drill pipe with respect to said floating installation, and

display means for displaying values of drilling speed, said display means being connected to said second processing means.

3,881,697

ROADSIDE SAFETY APPARATUS

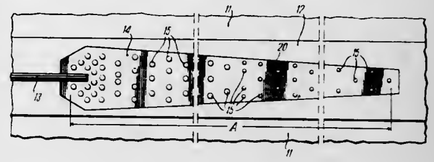
Ernest Glaesener, Dudelange, Luxembourg, assignor to ARBED - Acieries Reunies de Burbach-Eich-Dudelange S.A., Luxembourg, Luxembourg

Filed Oct. 19, 1973, Ser. No. 407,998

Claims priority, application Germany, Oct. 21, 1972, 2251749

Int. Cl. E01f *15/00*

U.S. Cl. 256—13.1 **18 Claims**



1. A road barrier for protection of a vehicle and its occupants in an impact with a stationary object, said barrier comprising a support base widening in the direction of said object, and a correspondingly widening array of a multiplicity of upright elongated impact-absorbing bendable elements having lower ends mounted on said support base and each consisting of an upright bar having a lower end sunk into said support and extending below the grounds, said bars having free upper ends and being of generally continuous cross section throughout their length and being arrayed so as to provide a greater cross-sectional density per unit of surface area close to said object than remote therefrom, said bars being spaced apart and staggered along said support base, the number of bars per unit ground area being greater close to said object than remote therefrom.

3,881,696

CATALYST FOR CLEANING ENGINE EXHAUST GASES

Jean-Michel Lepeytre, Tarbes; Claude Paul; Louis Grandet, both of Toulouse, and Louis Minjolle, Tarbes, all of France, assignors to Azote et Produits Chimiques, S.A., Toulouse and Ceraver, Paris, both of, France

Filed Feb. 23, 1973, Ser. No. 335,125

Claims priority, application France, Feb. 23, 1972, 72.06018

Int. Cl. B01j *11/06, 11/22*

U.S. Cl. 252—455 R **11 Claims**

1. A catalyst suitable for reducing the content of pollutants in engine exhaust gases, said catalyst consisting essentially of in percent by weight:

a. 80 to 95% of a ceramic carrier consisting essentially of a fired intimate mixture of:

i. 55 to 98% of a refractory member selected from the group consisting of alumina, aluminosilicate, magnesium silicate and mixtures thereof,

ii. 2 to 45% of a catalyst member selected from the group consisting of manganese oxide, chromium oxide and mixtures thereof; and

b. 5 to 20% catalyst components lying on the surface of said carrier, said catalyst components consisting essentially of:

i. 0.025 to 1% of platinum

ii. 50 to 99.975% of a metal oxide selected from the group consisting of nickel oxide, cobalt oxide, iron oxide and mixtures thereof; and

iii. 0 to 49% of manganese oxide, chromium oxide and mixtures thereof,

said refractory catalyst member and on an overall basis consisting essentially of in percent by weight:

40–90% of said refractory member to 40% of manganese oxide, chromium oxide, or mixtures thereof,

0.005 to 0.05% of platinum, and

5 to 20% of nickel oxide, cobalt oxide, iron oxide or mixtures thereof.

3,881,698

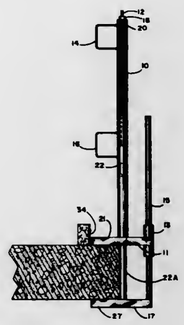
SAFETY HANDRAIL SUPPORT

Jimmy R. Marsh, 1116 Nassau Dr., Las Vegas, Nev. 89108

Filed June 21, 1974, Ser. No. 481,836

Int. Cl. E04h *17/18*

U.S. Cl. 256—59 **7 Claims**



1. A safety guardrail support apparatus comprising:

a first hollow vertical member having means attached thereto for supporting a handrail,

a first clamp member secured to said first vertical member adjacent the lower end thereof,

an upper reinforcing assembly comprising a first rigid arm having one end attached to said first vertical member adjacent the lower end opposite said first clamp member and a sleeve member secured on the other end of said first arm,

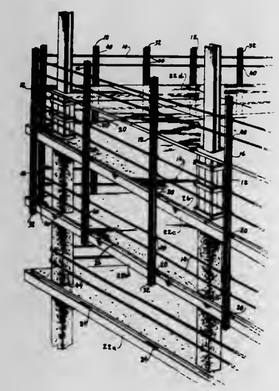
a second hollow vertical member movably received in said first vertical member,

a second clamp member secured to said second vertical member adjacent the lower end thereof,

a lower reinforcing assembly comprising a second rigid arm having one end attached to said second vertical member adjacent the lower end thereof opposite said second clamp member and a brace member secured on the other end of said second arm and extending through said sleeve of said upper reinforcing assembly, and

a threaded rod extending interiorly along at least the upper portion of said first vertical member and threadedly engaging said second vertical member said second vertical member and second clamp member being raised or lowered when said threaded rod is turned.

3,881,699
ELEVATING PERIMETER RAILING
Arthur Nusbaum, 16 Whitewood Rd., Tenafly, N.J. 07670
Filed Apr. 15, 1974, Ser. No. 461,230
Int. Cl. E04h *17/14*
U.S. Cl. 256—59 **5 Claims**



1. A temporary perimeter railing for multi-story building construction, comprising:

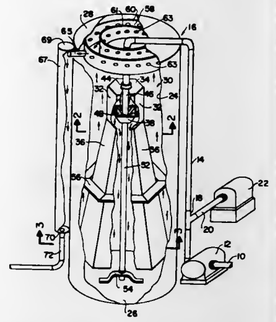
a. a plurality of stanchions, each stanchion being of a length at least sufficient to extend past three adjacent floors of the building under construction;

b. a plurality of floor brackets adapted to slidably secure said stanchions to the floors of the building under construction, at least two of said floor brackets being vertically disposed adjacent the edges of adjacent floors for each of said stanchions whereby each stanchion is vertically slidably constrained such that each stanchion may be raised to extend above an upper floor and to be secured by said floor brackets disposed on at least two lower floors; and

c. safety guards extending from stanchion to stanchion and secured thereto.

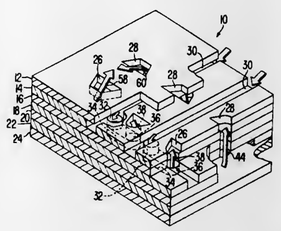
3,881,700
WATER TREATMENT PLANT
Bert C. Bradford, Society St., St. George, S.C. 29477
Filed Nov. 8, 1973, Ser. No. 413,859
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **5 Claims**

1. An apparatus for ensuring mixing of a solution of water with chemicals to produce a more purified mixture comprising: a cylindrical upright vertical tank having a side wall with a top and bottom thereon; a conduit extending through the top of said tank conveying said solution to said tank; a hood carried within said vertical tank; said hood having an upper portion with diverging walls extending downwardly from the bottom of said upper portion; said diverging walls terminating adjacent and above the bottom of said tank with the bottom of said diverging walls being spaced from said side wall of said tank; a cup-shaped member carried in said upper portion of



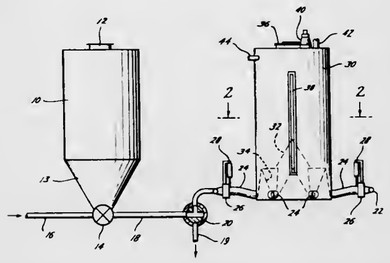
said hood having a bottom and walls extending upwardly therefrom; said conduit terminating in said cup-shaped member, holes provided in said conduit adjacent said bottom of said cup-shaped member for discharging said solution into said cup-shaped member to collide with said cup-shaped member for reversing the direction of flow of said solution creating water turbulence in said upper portion of said hood; whereby additional mixing of said chemical and water takes place in said hood form producing a more purified mixture.

3,881,701
FLUID MIXER REACTOR
Leonard Schoenman, Citrus Heights, and Robert C. Schindler, Fair Oaks, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Filed Sept. 17, 1973, Ser. No. 398,031
Int. Cl. B01f *5/02, 5/18*
U.S. Cl. 259—4 **15 Claims**



1. A fluid mixing device comprising: a plurality of relatively thin plates arranged in a stack to form a platelet assembly, one of the plates being at the end of the stack and provided with an outlet opening, the plate next adjacent to said end plate having an elongated channel for receiving a first fluid and for placing the latter in heat exchange relationship to the end plate, said assembly having first passage means coupled with the channel for directing the first fluid from the latter to said opening, a second passage means for directing a second fluid into mixing relationship to the first fluid, and means defined by said passage means and employing the kinetic energy of the flowing fluid for atomizing at least one of the fluids as it flows through said assembly and prior to its being mixed with the other fluid.

3,881,702
BLENDER
Donald James McIver, Houston, Tex., assignor to Keystone International, Inc., Houston, Harris County, Tex.
Continuation of Ser. No. 242,010, April 7, 1972, abandoned. This application Oct. 12, 1973, Ser. No. 406,012
Int. Cl. B01f *5/04*
U.S. Cl. 259—4 **11 Claims**



1. Apparatus for blending a plurality of diverse dry pulverulent materials, comprising

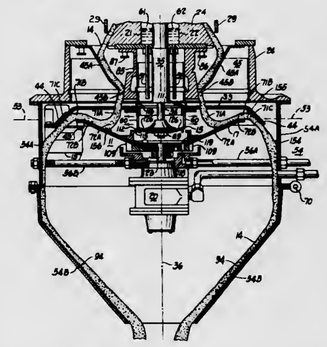
a pressure tight container having a plurality of hoppers forming its bottom, and

means for injecting fluidized dry pulverulent material into the bottom of each hopper, said plurality of hoppers comprising

a central cone having its base substantially at the bottom of the container and

means including the cone and the surrounding will of the container defining a plurality of upwardly diverging fluid passageways having one of said means for injecting material in communication with the lower end of each said passageway.

3,881,703
FOUNDRY MIXING MACHINE
Edward John Rebish, Euclid, Ohio, assignor to Acme-Cleveland Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 305,839, Nov. 13, 1972, Pat. No. 3,850,413, which is a continuation-in-part of Ser. No. 211,925, Dec. 27, 1971, Pat. No. 3,773,229. This application Nov. 19, 1973, Ser. No. 416,948
Int. Cl. B01f *5/24*
U.S. Cl. 259—4 **13 Claims**



1. A foundry machine for mixing a mold material component and a binder component, comprising in combination:

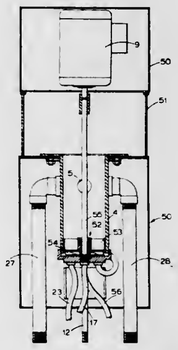
a mixer for dispersing first and second binder components, said mixer dispersing the first binder component in a geometric direction;

means for supplying the binder component to said mixer;

means for establishing the mold material component to traverse said geometric direction to mix with the binder component and to subsequently traverse said geometric direction to enable additional mixing thereby,

said separator means in said mixer to maintain separate said first and second binder components.

3,881,704
WATER TREATMENT APPARATUS
Fred Smith, Norwich, England, assignor to Lord Mayor, Alderman and Citizens of the City of Norwich, City Hall, Norwich, Norfolk, England
Filed June 13, 1972, Ser. No. 262,379
Claims priority, application United Kingdom, June 24, 1971, 29737/71; Mar. 23, 1972, 13644/72
Int. Cl. B01f *7/22*
U.S. Cl. 259—8 **7 Claims**



1. Apparatus comprising a mixing chamber which is an upright cylindrical vessel, at least three separate inlets which lead non-axially into the bottom of the vessel, said inlets being positioned substantially uniformly around the bottom of the vessel at a distance of from about one half to seven eighths of the radius of the bottom of the vessel from the axis of the vessel, an outlet duct leading from the vessel near its top, a hydraulic ejector to which the outlet duct leads, and means for mixing under high shear within the vessel material introduced through the inlets, said mixing means being from 0.5 to 6 mm from the bottom of the vessel between the inlets and the outlet.

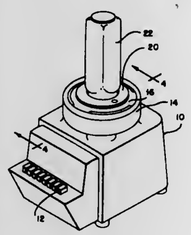
3,881,705
BLENDER ADAPTOR
Robert P. Greenspan, P.O. Box 112, Huntingdon Valley, Pa. 19006
Filed June 20, 1973, Ser. No. 371,894
Int. Cl. B01p *8/1*
U.S. Cl. 259—108 **4 Claims**

1. In a blender adaptor suitable to mount a laboratory bottle having a narrow, threaded neck upon a blender base which is equipped with a jar mounting attachment having a floor and a relatively wide diameter, internally threaded section positioned above the floor, the combination of

A. an adaptor ring having the configuration of an annular ring including a top and a generally planar bottom and defining an inside diameter face and an outside diameter face,

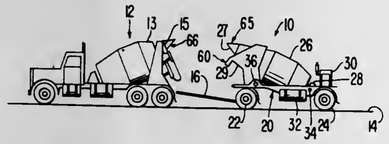
1. said inside diameter face being provided with internal threads,
2. said internal threads being of suitable diameter and pitch to threadedly engage the said narrow bottle, threaded neck,
3. said outside diameter face being provided with external threads,
4. said external threads being of suitable diameter and pitch to threadedly engage the said relatively wide diameter internally threaded of said jar mounting attachment section and

B. connection means between the adaptor ring and the jar mounting attachment to provide a leakproof connection therebetween,



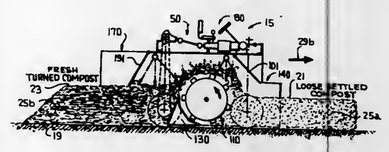
1. said connection means including a resilient gasket, said gasket being interposed between the bottom of the adaptor ring and the floor of the jar mounting attachment,
2. the bottom of the adaptor ring being formed to provide a depending, circular downwardly facing sealing lip,
   a. said lip depending below the general plane of the bottom and terminating downwardly in a sealing surface,
   b. the entire sealing surface of the lip pressing into and compressing the resilient gasket to provide a leakproof seal when the adaptor ring is threadedly engaged into the jar mounting attachment.

3,881,706
TRAILER HAVING CONCRETE MIXER THEREON
William C. Mohrmann, 1030 - 35th Ave., Santa Cruz, Calif. 95060
Filed June 28, 1973, Ser. No. 374,739
Int. Cl. B28c *5/28*
U.S. Cl. 259—162 **6 Claims**



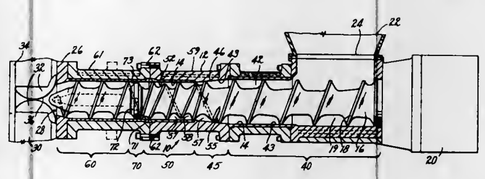
1. A concrete hauling unit comprising: a truck having a concrete mixer mounted thereon for rotation about a first inclined axis and provided with an opening near the rear end thereof for permitting concrete to be received therein; a trailer having a concrete mixer mounted thereon and rotatable relative thereto about a second inclined axis, the mixer on the trailer having an opening near the front end thereof for permitting concrete to be removed therefrom and being pivotal relative to the trailer from a lowered, stabilized position to an upper position at which the opening thereof is in alignment with the opening of the mixer of the truck, whereby concrete can be transferred therebetween, means on the trailer for rotating the mixer thereof, and means carried by the trailer for raising and lowering the last-mentioned mixer; and means releasably interconnecting the truck and the trailer.

3,881,707
SCOOP MEANS AND ARRANGEMENTS THEREOF FOR VEHICULAR COMPOSTING MACHINE
Louis R. Toto, Box 78, Penn Green Rd., Landenberg, Pa. 19350
Continuation-in-part of Ser. No. 241,129, April 5, 1972, Pat. No. 3,776,528. This application Dec. 3, 1973, Ser. No. 420,865
Int. Cl. B01f *7/04*
U.S. Cl. 259—183 **13 Claims**



1. In a vehicular composting machine, a scoop means, for liftingly detaching clumps from an upstanding endwise wall of a compacted rick, having a compaction control means which comprises a pressure means and a dewatering means for selectively densifying and dewatering said detached clumps during impact and curvilinear acceleration thereof.

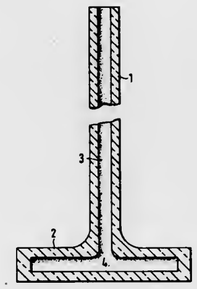
3,881,708
MIXING EXTRUDERS
George E. Carle, Derby, Conn., assignor to USM Corporation, Boston, Mass.
Filed June 15, 1972, Ser. No. 263,118
Int. Cl. B29b *1/10*
U.S. Cl. 259—191 **1 Claim**



1. A mixing extruder for the processing of rubber, plastics and like materials having a housing with a generally cylindrical bore therein and a rotor rotatably mounted in the bore, the bore having a feed opening and a discharge opening at opposite ends thereof, comprising:
   a. a primary helical flight fixed to said rotor and substantially coextensive therewith, said primary flight forming a helical channel for the movement of material in the bore;
   b. a portion of the extruder forming a feed section which communicates with the feed opening and in which the bore and rotor are of relatively enlarged diameter;
   c. a portion of the extruder forming a compression section which communicates with the feed section and in which the diameter of the bore and rotor linearly diminishes as the material progresses from the feed section;
   d. a portion of the extruder forming a mixing section which communicates with the compression section and in which a secondary helical flight is fixed to the rotor intermediate the primary flight, said secondary flight being shaped to mix the material as it passes through the helical channel of the primary flight;
   e. a portion of the extruder forming a shearing section which communicates with the mixing section and in which a shear collar is removably secured to the rotor to create a shearing force on the material as it progresses through the channel of the primary flight; and

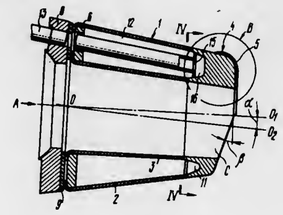
   f. a portion of the extruder forming a discharge section which communicates with the shearing section and with the discharge opening and which is of sufficient length to avoid the transmission of back pressures through the extruder.

3,881,709
DIFFUSER CASTINGS
William John Steen, Wirral, England, assignor to Morgan Refractories Limited, Wirral, England
Filed Mar. 12, 1973, Ser. No. 340,199
Claims priority, application United Kingdom, Mar. 13, 1972, 11590/72
Int. Cl. C22b *21/06*
U.S. Cl. 266—34 T **6 Claims**



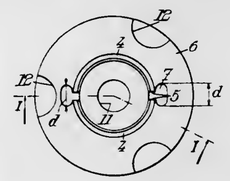
1. A diffuser for feeding gas into molten aluminum or other fluid material at high temperatures, comprising a cast refractory having a tubular inlet stem integral with a hollow, gas-permeable outlet head which extends sharply laterally from the stem and has an unbroken wall around a cavity extending from the bore of the inlet stem, said gas-permeable outlet head being an integrally cast branch of said tubular inlet stem, and said unbroken wall being constituted by as-cast refractory surfaces devoid of joints or joined refractory components or like discontinuities.

3,881,710
BLAST-FURNACE TUYERE
Lev Dmitrievich Jupko, prospekt Lenina, 232, kv. 48, Zaporozhie, U.S.S.R.
Filed Mar. 14, 1974, Ser. No. 451,155
Int. Cl. C21b *7/16*
U.S. Cl. 266—41 **2 Claims**



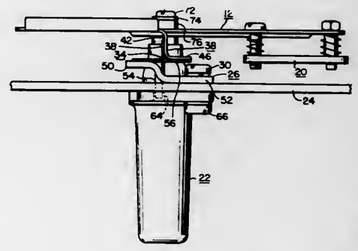
1. A blast-furnace tuyere comprising: a closed, hollow, annular housing; a transverse annular partition dividing the annular space of the housing into a head portion (adjoining the melting chamber of the furnace) and a tail portion; a coolant inlet opening and a coolant outlet opening provided in the end of said housing tail portion; a coolant inlet opening provided at the top of said transverse annular partition and a coolant outlet opening provided at the bottom thereof; a coolant supply pipe fitting through said inlet opening in the end of the housing tail portion, passing longitudinally through said housing tail portion and fitting into said housing head portion through said inlet opening in the transverse annular partition; said pipe supplying coolant into the housing head portion from where it passes through said outlet opening in the transverse annular partition into the housing tail portion and thence flows away through said outlet hole in the end of the housing tail portion; a longitudinal partition mounted in the housing head portion so as to divide said inlet opening in the transverse partition into two parts for the coolant entering the housing head portion through said supply pipe to be divided into two streams, which streams simultaneously pass over the walls of the two halves of the housing head portion to cool them and subsequently join at said outlet opening in the transverse partition, the coolant flow passing into the housing tail portion through this opening.

3,881,711
ELASTIC SUPPORTS
Jean-Claude Lemaitre, Verneuil, Seine, France, assignor to Paulstra, Levallois-Perret, France
Filed Jan. 3, 1974, Ser. No. 430,387
Claims priority, application France, Jan. 12, 1973, 73.01135
Int. Cl. F16f *1/16*
U.S. Cl. 267—57.1 R **8 Claims**



1. Elastic support of the type comprising at least one rubber cushion between two tubular reinforcements or coaxial bushes, the inner bush being in at least two elements spaced from one another on mounting by a central mandrel so as to provide a separation between the edges of said elements, the major portion of the cross-section of the elastic cushion facing the respective edges of the two elements of the inner bush defining gaps whose cross-section extends, in the tangential direction, over a distance of the order of two to three times the separation between said edges.

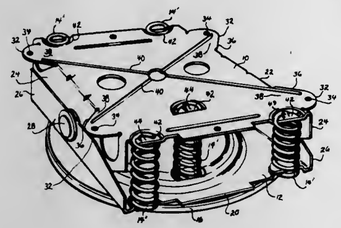
3,881,712
DAMPER MECHANISM
Paul T. Metzger, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed Jan. 11, 1974, Ser. No. 432,520
Int. Cl. F16f *1/16*
U.S. Cl. 267—154 **14 Claims**



1. A damper comprising:

a rigid housing formed with a cavity and an opening to the cavity;
a fluid contained within the cavity;
a post extending through the opening into the fluid in the cavity, and
a flexible seal extending from the opening in said enclosure supporting said post in said fluid, said flexible seal providing a pivot for controlling the pivotal movement of the post within the cavity.

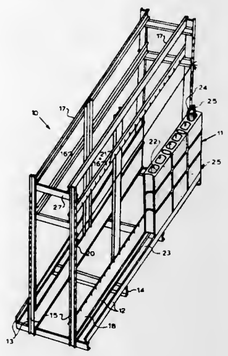
3,881,713
ROCKER SPRING UNIT
T. Bob Joyce, Mansfield, Ark., assignor to Hickory Springs Manufacturing Company, Hickory, N.C.
Filed May 23, 1973, Ser. No. 363,032
Int. Cl. F16f *3/04*
U.S. Cl. 267—131 **8 Claims**



1. In a rocker spring unit comprising a top plate member having opposed depending side flanges, a bottom plate member having opposed upstanding side flanges extending into face-to-face relation to said top plate member side flanges, means pivotally connecting said top plate member side flanges to said bottom plate member side flanges at a centrally disposed horizontal pivot axis, rocker springs extended between and attached to said plate members, and bosses displaced in said plate members adjacent front and rear edge portions thereof to form attaching seats for said rocker springs, the improvement which comprises angled seat portions in said bosses adjacent said rear edge portion of said top plate member, said seat portions being angled downwardly and forwardly for straight line bottoming of the rocker springs attached thereto upon downward rocking of said top plate member rear edge portion.

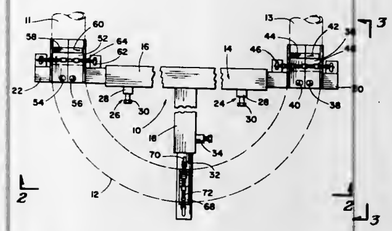
3,881,714
APPARATUS FOR BUILDING CONCRETE BLOCK WALLS
John A. Wilnau, P.O. Box 1308, Orlando, Fla. 32802
Filed Nov. 16, 1973, Ser. No. 416,359
Int. Cl. E04g *21/18, 21/22*
U.S. Cl. 269—13 **1 Claim**

1. An apparatus for manufacturing concrete block walls upon, the walls having vertical openings passing therethrough, comprising in combination:
a. base frame portion having two pairs of parallel elongated base members each pair spaced apart from end to end by an unobstructed space for building a pair of concrete block walls upon while allowing cement to fall from the inside of the blocks through the block and through the space between said pair of base members and allowing lifting members to be extended under a portion of said wall for lifting said wall;
b. said base frame having vertical frame members attached thereto;
c. said base frame having horizontal frame members attached to said vertical frame members and providing support for said vertical members, at least two horizontal support members acting as ground support members supporting said pairs of parallel elongated base members to provide space there=between when said apparatus is placed upon a surface, the base frame providing an unobstructed slot under the central area of the walls for most of the length of the walls;
d. spacing marks located on at least two vertical frame members to locate a levelling line between for aligning tiers of concrete block wall;



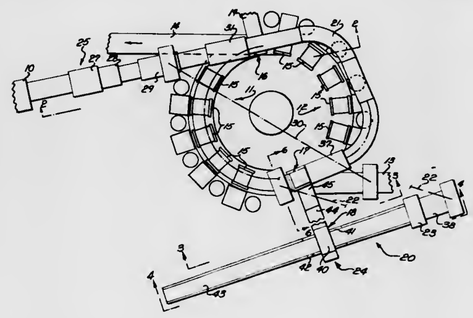
e. said spacing marks on said vertical frame members having means for attaching a line at predetermined points on said vertical frame members, and said vertical frame members being spaced to mark the most common wall lengths; and
f. at least one horizontal frame member having markings thereon for locating the length of a wall section being built upon said apparatus whereby a concrete block wall can be built upon said apparatus and removed for transportation and anchoring to a foundation for forming the walls of a building.

3,881,715
FIXTURE FOR HOLDING TUBE TURNS
Ellis E. Creek, 1100 North Sixth, Broken Arrow, Okla. 74012
Filed Sept. 7, 1973, Ser. No. 395,369
Int. Cl. B25b *1/20, 11/02*
U.S. Cl. 269—45 **5 Claims**



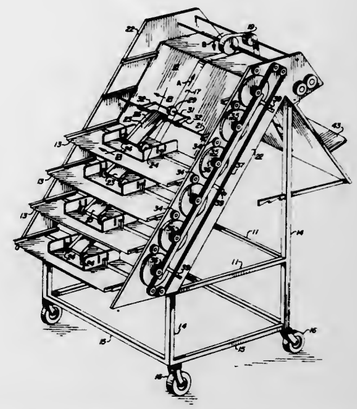
1. A fixture for holding tube turns during "fix up" prior to welding thereof to complementary tube means and comprising support bracket means, longitudinally adjustable substantially V-shaped tube receiving means secured to the support bracket means for receiving the tube means therein, clamping means secured to the tube receiving means for clamping the tube receiving means to the tube means therein, longitudinally adjustable substantially V-shaped tube turn receiving means secured to the support bracket means and cooperating with the tube receiving means for supporting the tube turn with the opposite ends thereof simultaneously in end to end abutment with the tube means, and clamping means provided on the tube turn receiving means for clamping the tube turn on the apparatus in said abutting relationship with the tube means, each of said V-shaped tube receiving members having shim members provided in the proximity of one end thereof for receiving a tube thereagainst, and each of said V-shaped tube receiving members having adjusting means provided at the opposite end thereof for engagement with the tube turn for adjusting the relative position thereof with respect to the respective tube member disposed in said V-shaped tube receiving member.

3,881,716
COMBINED NEWSPAPER PRESS AND STUFFER, AND METHOD OF FORMING NEWSPAPERS THEREWITH
Robert Andrew Bryson, and James C. Wise, both of Easton, Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed Feb. 17, 1972, Ser. No. 227,184
Int. Cl. B41f *13/64*
U.S. Cl. 270—12 **18 Claims**



1. A method of associating sheet material articles in a continuous operation by freshly printing first selected sheet material articles and assembling at least one of the first articles with a second preprinted sheet material article, said method comprising the steps of:
printing and conveying first sheet material articles in an overlapped, shingled stream along a first path,
forming a stack of said first sheet material articles at a first station,
feeding the first sheet material articles individually from the stack at said first station to a continuous conveyor and conveying it toward a first delivery station,
combining a second preprinted sheet material article with the freshly-printed first sheet material article while being conveyed toward the first delivery station,
diverting first freshly-printed sheet material articles in the overlapped stream out of said first path and into a second path, conveying the first freshly-printed sheet material articles in an overlapped shingled stream along said second path to a second station,
forming another stack of the first freshly-printed sheet material articles at said second station whenever an adequate supply of the first freshly-printed sheet material articles exists at said first station,
feeding the first sheet material articles individually from the other stack at said second station to a continuous conveyor and conveying it toward a second delivery station, combining a second preprinted sheet material article with the freshly-printed sheet material article while being conveyed to said second delivery station, and
alternating the conveying of the first freshly-printed sheet material articles along said first and second paths as required to maintain an adequate supply of the first freshly-printed sheet material articles in the respective stacks at said first and second stations.

3,881,717
PAPER SHEET DISPENSER
Bonnie L. Dean, Lexington, Ky., assignor to Grable Printing Co., Lexington, Ky.
Filed Oct. 1, 1973, Ser. No. 402,040
Int. Cl. B65h *31/02*
U.S. Cl. 270—58 **2 Claims**



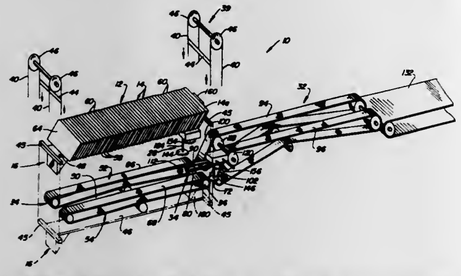
1. In a collating machine for withdrawing single sheets of paper from a plurality of stacks thereof and for assembling said withdrawn sheets in registry to form a plurality of packets, the sheets in each packet being assembled in a predetermined sequence, said collating machine having
a frame,
a plurality of paper stack storage stations mounted on said frame,
dispensing roller means associated with each storage station for periodically dispensing single sheets of paper from the forward end thereof,
an activating mechanism carried by said frame for sequentially driving each of said dispensing roller means to dispense said single sheets forwardly from said storage stations in a predetermined sequence,
conveyor means on said frame for gathering said single sheets of paper sequentially dispensed forwardly from said storage stations and assembling them into said packets, and
power means to drive said activating mechanism and conveyor means,
the improved dispensing roller means and activating mechanism therefor, comprising, in combination:
a. a rotatable shaft journaled in said frame and supported transversely and spaced above each said storage station;
b. a dispensing-roller support member depending rearwardly from said rotatable shaft, said shaft being journaled for rotation within the upper end of said support member;
c. a belt-driven free-wheeling dispensing roller rotatably mounted on the bottom end of said support member, positioned to continuously bear upon the top sheet of paper in the paper stack in said storage station;
d. driving belt means for periodically driving said dispensing roller in a rotational direction to pull said top sheet forwardly from said stack and dispense it forwardly from said storage station, in response to periodic rotation of said transverse rotatable shaft;
e. a driven gear fixed upon said rotatable shaft;
f. rotatable sector gear means carried on said frame, the teeth of which are engageable with said driven gear on said rotatable shaft, to periodically rotate said shaft in response to continuous rotation of said sector gear means;

g. sprocket gear means coaxially rotatable with said sector gear means; and
h. drive chain means carried on said frame, engageable with said sprocket gear means and continuously driven by said power means.

3,881,718
UNSTACKING AND SHINGLING OF SHEET MATERIAL ARTICLES

Victoriano Fernandez-Rana, and Carlton V. Hageman, both of Easton, Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Mar. 19, 1973, Ser. No. 342,739
Int. Cl. B65h *1/02, 3/32*
U.S. Cl. 271—10 **25 Claims**



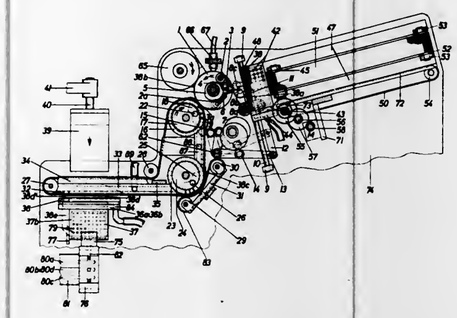
1. An apparatus for receiving an on-edge series of folded sheet material articles from a support tray and for moving the sheet material articles into an overlapping stream, said apparatus comprising first conveyor means for receiving the series of sheet material articles in an on-edge orientation from the tray and for moving the series of sheet material articles forwardly with first end portions of the sheet material articles uppermost, said first conveyor means including first surface means for engaging second end portions of the sheet material articles disposed opposite from the first end portions of the sheet material articles and for supporting the sheet material articles in an on-edge orientation with side surfaces of the articles disposed in abutting engagement, means for engaging a forwardmost article in the series of sheet material articles at a location intermediate its end portions to hold the series of sheet material articles in an on-edge orientation and for sequentially separating a forwardmost sheet material article from the series, and second conveyor means for receiving each of the released sheet material articles in turn from said first conveyor means and for transporting the sheet material articles in an overlapped stream with the first end portions of adjacent sheet material articles spaced apart and the first end portions of the sheet material articles leading their respective second end portions, said second conveyor means including second surface means for engaging the side surfaces of the sheet material articles and supporting them in an overlapped relationship.

3,881,719
SHEET FEEDING ARRANGEMENT

Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsberg, Germany

Filed Oct. 26, 1973, Ser. No. 410,158
Claims priority, application United Kingdom, Oct. 31, 1972, 50092/72
Int. Cl. B65h *5/08*
U.S. Cl. 271—12 **4 Claims**

1. A sheet processing device comprising, in combination:
an elongate storage magazine for storing a plurality of individual sheets of wrapping material with their adjacent flat faces in contact;
mounting means for mounting said magazine with the elongate dimension thereof inclined at a small angle to the horizontal and thereby to position said magazine with one end portion thereof at a lower level than the respective other end portion thereof;
frictionally operative means to act against at least one edge of each sheet for urging said sheets towards said lower end portion of said magazine;
orifice means disposed next adjacent said lower end portion, whereby compressed gas may be applied through said orifice means to loosen sheets located in said lower end portion of said magazine;
a rotary suction device to remove successive single ones of said sheets from said magazine, said rotary suction device comprising at least one suction roller rotably mounted on a slidable carriage, said carriage being mounted to be rectilinearly reciprocatable, said suction roller being

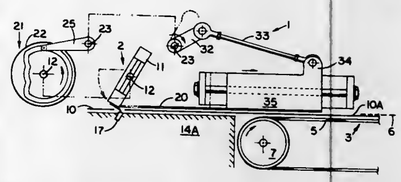


provided with an orifice in the periphery thereof to apply suction to each individual said sheet in turn, thereby to remove said sheet from said magazine;
suction conveyor means comprising at least one permeable endless belt and suction chambers located next adjacent one surface of said permeable belt to apply suction to sheets through said permeable belt thereby to maintain said sheets in contact with the surface of said permeable belt opposite to said one surface thereof, said permeable belt being constrained into a generally L-shaped configuration and being displaceable to convey said sheets successively removed from said storage magazine by said rotary suction device along at least part of a sheet path; and
a gripper cylinder to transfer said sheets from said rotary suction device to said suction conveyor means.

3,881,720
GRIPLESS SHEET GUIDING APPARATUS

James A. Benzing, Hamilton, Ohio, assignor to Champion International Corporation, Hamilton, Ohio

Continuation of Ser. No. 343,309, March 21, 1973, abandoned. This application Feb. 14, 1974, Ser. No. 442,322
Int. Cl. B65h *7/00;* **B23d** *25/16*
U.S. Cl. 271—63 **10 Claims**



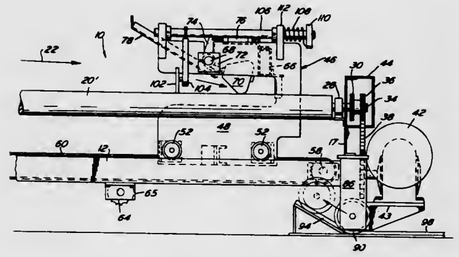
1. A non-gripping sheet feeding means for receiving a sheet from an infeed device such as a cutter or the like having sheet feeding means and guiding it to an outfeed device such as a

layboy or the like having an infeed conveying means, and which comprises:
a fixed horizontal table member extending substantially between said infeed and outfeed devices for serving as a bottom guide or sheet support;
a reciprocatable non-gripping sheet guide; and
means for supporting and reciprocably moving said sheet guide in a path substantially parallel to and above said table member and to and from between said infeed and outfeed devices in timed relationship to at least one of said devices;
said sheet being fed from said infeed device between said table member and said sheet guide, thence to said outfeed device.

3,881,721
SHEET TAKE OFF APPARATUS

Thomas R. Hitch, Aldan, Pa., assignor to Molins Machine Company, Inc., Camden, N.J.

Filed Jan. 28, 1974, Ser. No. 437,124
Int. Cl. B65h *29/20*
U.S. Cl. 271—184 **12 Claims**



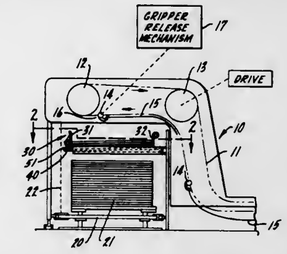
1. Apparatus for handling sheets discharged successively from a processing machine comprising a transfer conveyor for conveying sheets in a first horizontal direction, a carriage, means supported by said carriage above the elevation of the conveyor for arresting the motion of discharged sheets, means supporting the carriage for movement in a second horizontal direction which is substantially perpendicular to said first direction, and means for moving said arresting means in said second direction while simultaneously changing the elevation of both said arresting means and said conveyor.

3,881,722
SHEET DELIVERY ARRANGEMENT FOR PRINTING PRESSES

Friedrich Preuss, Sprendlingen, Germany, assignor to Roland Offsetmaschinenfabrik Faber and Schleicher AG

Filed June 11, 1974, Ser. No. 478,304
Claims priority, application Germany, June 12, 1973, 2329767
Int. Cl. B65h *31/32*
U.S. Cl. 271—218 **3 Claims**

1. A sheet delivery arrangement for sheet-fed printing presses comprising, in combination, a frame, a delivery platform mounted in the frame, a conveyor for conveying sheets seriatim from the printing press and for depositing them one by one upon the delivery platform to form a pile, horizontally spaced front edge and rear edge sheet guides mounted in the frame below the conveyor for arresting forward movement and for positioning the sheets as the sheets fall from the conveyor onto the platform to form a uniform pile on the platform, means for lowering the platform as the pile builds up, a pair of horizontal guide rails on the frame, said guide rails being spaced outwardly from and a short distance below the sheet guides and serving to support an auxiliary pile board which is inserted into the descending stream of sheets passing through the sheet guides for temporarily intercepting and accumulating such sheets thereby permitting removal of a filled delivery platform and substitution of an empty delivery

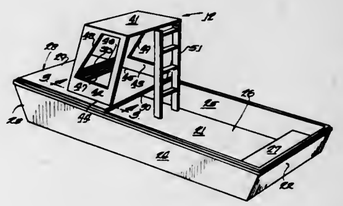


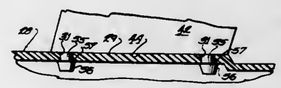
platform, the guide rails including means for camming the auxiliary pile board upwardly into close proximity to the rear edge sheet guides incident to the final portion of its insertion movement so that sheets are deposited in accurate position upon the auxiliary pile board.

3,881,723
SANDBOX WITH SUPERSTRUCTURE DEFINING A PLAY STRUCTURE DETACHABLY ATTACHED THERETO

Vaughn E. Boynton, P.O. Box 423, Layton, Utah 84041

Filed Jan. 7, 1974, Ser. No. 431,573
Int. Cl. A63g *31/00*
U.S. Cl. 272—1 A **8 Claims**

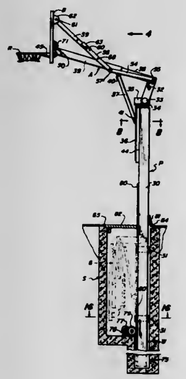




1. A super sandbox comprising a basic shell base having a horizontal bottom surface, upright back and front wall surfaces, and upright opposed side wall surfaces, said surfaces defining therebetween a compartment adapted to contain a layer of sand therein; a substantially horizontal platform permanently affixed to the top edges of said opposed side wall surfaces at the front end portion of the shell base in a manner extending transversely of the shell base and overlying said compartment defined therein; a plurality of spaced apart apertures defined in said platform and extending vertically therethrough; a superstructure adapted to be detachably attached to said basic shell base and project above the horizontal platform thereof in a manner defining a play structure for children to use in conjunction with the sandbox of the basic shell base, said superstructure consisting of a housing of any desired size and configuration having a top member, side wall

members depending downwardly from the top member and terminating in bottom edges, said bottom edges lying coplanar at opposite sides of said housing and adapted to rest said housing on said horizontal platform, each of said terminal edges provided with boss members projecting downwardly therefrom and each of said boss members adapted to be detachably received in one of said apertures of said platform to detachably retain said superstructure mounted on said platform.

3,881,724
RETRACTABLE BASKETBALL GOAL
James F. Beveridge, Box 491, Ulysses, Kans. 67880
Filed Oct. 19, 1973, Ser. No. 408,581
Int. Cl. A63b *63/04*
U.S. Cl. 273—1.5 R **14 Claims**



7. In combination with a well in the floor of a gymnasium or like arena, a retractable basketball structure mounted upon a post extendable from the well and comprising in combination therewith:

means to raise the post from a shaft of the well to upstand from the gymnasium floor above the well and to lower the post into the shaft to retract the same, said shaft being of a depth sufficient to receive the post and permit it to be lowered below the floor;

a pocket in the floor of the gymnasium alongside and contiguous with the shaft to receive the goal structure when the post is lowered into the well whereby the post and goal structure will be below the gymnasium floor when the same is at its retracted position;

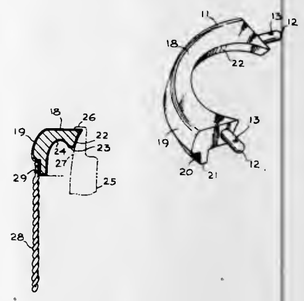
a telescoping arm pivotally mounted on the upper end of said post;

a backstop and a goal ring pivotally mounted at the end of said arm;

means extending and retracting said arm and moving said arm between a telescoped retracted position along side said post and an extended position extending from the end of said post; and

means for pivoting said backstop and goal ring about the end of said arm is extended or retracted, in order to position said backstop in an upright position and said goal ring in a horizontal position when said arm is fully extended and to position said backstop and goal ring in a folded position against said arm when said arm is retracted to a position alongside said post.

3,881,725
POOL IRON AND POOL TABLE POCKET THEREFOR
Raul Rubalcava, 3218 W. Teranimar, Anaheim, Calif. 92804
Filed Jan. 4, 1973, Ser. No. 320,887
Int. Cl. A63d *15/00*
U.S. Cl. 273—12 **4 Claims**

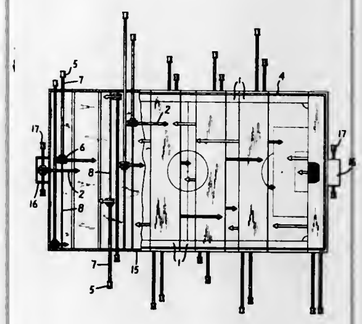


1. In combination with an arcuate pool table iron having a generally horizontal upper face and a generally vertical inner face, said iron having a generally outward and downward curved outer face having a recess in the lower portion thereof forming a vertical wall;

a ball pocket having its upper end formed by an annular flange fitted on said upper face; and

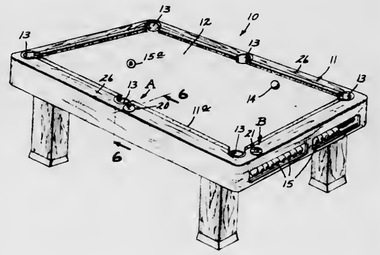
a fringe fitted against said vertical wall and substantially flush with said outer face.

3,881,726
TABLE SOCCER APPARATUS WHEREIN FIGURINES ARE MOUNTED ON METAL TAPES
Glauco Serafini, Via Pippo Tamburri 4, Rome, Italy
Filed Dec. 28, 1973, Ser. No. 429,684
Claims priority, application Italy, Jan. 3, 1973, 47509/73
Int. Cl. A63f *7/05*
U.S. Cl. 273—85 F **5 Claims**



1. A mechanical miniature table soccer game for playing a game of miniature soccer comprising, means defining a miniature soccer playing field, actuation means mounting a plurality of miniature soccer players individually in positions for playing in respective zones, said actuation means comprising a plurality of individually manually actuated actuators spaced between the goals of said playing field and underlying the playing field, guide means mounting the actuators individually for movement transversely of the playing field and rotationally, each actuator having a coilable tape movable forwardly longitudinally and backwardly relative to said goals in a corresponding one of said zones on said playing field and movable transversely thereof, a plurality of figurines defining said soccer players each mounted on the free end portion of a corresponding one of the tapes for movement forwardly and rearwardly and transversely of a corresponding zone, and a playing ball kicked and thrown by the individual players when actuated by the respective actuators and tapes.

3,881,727
MARKING DISC FOR POOL GAMES
Michael L. Olson, 34 Pines Edge Mobile Pk., Eau Claire, Wis. 54701
Filed Sept. 17, 1973, Ser. No. 397,888
Int. Cl. A63d *15/00*
U.S. Cl. 273—14 **2 Claims**



1. A pool table including a set of balls for playing the game of pool and a pair of markers for indicating given positions relative to the peripheral edge of the pool table, in combination, comprising:

a. said pool table having a playing surface, a plurality of pockets positioned at spaced points peripherally of the playing surface, and a peripheral edge portion surrounding the playing surface;

b. said set of balls including a first group of pool balls provided with indicia of a first design on the surface of each pool ball thereof to designate said first group as the solid color group and a second group of pool balls provided with indicia of a second design on the surface of each pool ball thereof different from said indicia of said first group of pool balls to designate said second group as the striped color group;

c. said pair of markers comprising a pair of relatively thin plate-like body members each having opposite surface areas;

d. retainer means associated with one of said opposite surface areas of each body member for maintaining the position of said body members at a given location on said peripheral edge of the pool table;

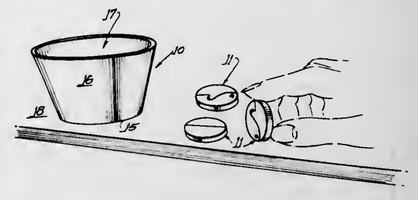
e. identification means associated with the other of said opposite surface areas of each body member for differentiating one of said body members from the other of said body members;

f. the identifcation means of one body member simulating the design of said first group of pool balls;

g. the identification means of the other body member simulating the design of said second group of pool balls; and

h. said retainer means of each body member having a relatively thin thickness dimension substantially equal to that of respective body members whereby said body members and respective retainer means cooperate to present a relatively low profile when supported on the peripheral edge of the pool table.

3,881,728
MATHEMATICAL TIDDLY-WINK APPARATUS
Emerson F. Martyn, 1807 Prospect St., LaSalle, Ill. 61301
Filed May 13, 1974, Ser. No. 469,336
Int. Cl. A63b *71/02*
U.S. Cl. 273—95 E **1 Claim**



1. An add and multiply in a wink game of the tiddly-wink type comprising, in combination:

a receptacle of an inverted truncated conical configuration having a flat bottom surface, an open top surface, and conical side walls;

a compartment defined interiorly of said side walls above said bottom surface and having access thereto through said open top end of said receptacle;

a plurality of identically shaped and configured sets of flat circular disc members, each set of disc members having a like number of disc members provided therein;

each of said sets of disc members are of a different color to clearly differentiate the sets from each other to distinguish the set of one player from the set of any other player;

each of said disc members consisting of a first member and a second member which is pivotally connected to said first member and movable relative thereto between a closed position defining with said first member a circular flat shaped disc, and an open position pivoted away from said first member and exposing an otherwise hidden portion of said first member;

said first and second members being defined generally along a diametric line of said disc member;

said first member including a semi-circular section having the full thickness of said disc member and terminating at said diametric edge;

said hidden portion of said first member formed integrally with said semi-circular section and being of a lesser thickness than said first section and a lesser diameter than said first section to form a semi-circular projection disposed within the plane of said first section having its base formed at said diametric edge of said first section and projecting outwardly therefrom;

said second member being of a semi-circular configuration and terminating along a diametric edge disposed in abutting juxtaposition with said diametric edge of said first member when said second member is in the closed position;

said second member provided interiorly thereof with a semi-circular recess opening out of said diametric edge, said recess lying in the plane of said first member hidden portion and being of a size and configuration to completely receive said semi-circular hidden portion of said first member therein to completely cover the same when said second member is in a closed position relative to said first member;

a rivet extending through adjacent corner edges of said second member and said hidden portion of said first member to pivotally join said first and said second members together for relative rotation thereabout between said disc open position and said disc closed position;

a diagonally outwardly projecting flange member formed integrally with said first section of said first member along the diametric edge thereof on both sides thereof and projecting outwardly therefrom and co-planar with said

diametric edge in a manner to overlie a segment of said hidden portion;

a complementary shaped recess extending diagonally into said second member from each of said diametric edges thereof and adapted to be brought into registration with said diagonal projection to engage the same for retaining the disc member in said closed position while permitting manual manipulation of the disc in a manner to separate said projections from said recesses to open the disc member pivotally about said rivet pin to expose said hidden portion;

indicia representing a mathematical formula imprinted on both a face surface and a back surface of said hidden portion of said first member and visibly only when said second member is open to expose said hidden portion;

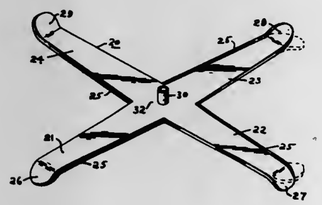
said disc members of each set of disc members having the same mathematical formulas imprinted thereon as the disc members of each other set of disc members so that each player is provided with a set of disc members having the same set of mathematical formula indicia thereon;

whereby said disc members in the closed position may be slipped into said receptacle and then opened for the player to solve the mathematical formula thereon, after which the disc members may again be closed for later use thereof in a manner not adversely effecting or destroying said disc member.

3,881,729
FLYING TOY

Milton L. Block, 68 N. Main St., Sellersville, Pa. 18950; David D. Goldberg, 1032 Bloomfield Ave., Philadelphia, Pa. 19115, and Kenneth S. Douthit, 5130 Butler Pk., Plymouth Meeting, Pa. 19462

Filed Jan. 9, 1974, Ser. No. 431,681
Int. Cl. A63b *65/08*; A63h *27/00*
U.S. Cl. 273—106 D **11 Claims**



1. A flying toy comprising in combination,

a. a hub provided with an air permeable aerodynamic resistance comprising a cylindrical tube affixed to and extending orthogonally upward from the top surface of said hub, the tubular central bore being extended through the said hub from the top surface to the bottom surface thereof, whereby a controlled flow of air is passable therethrough when said toy is in flight,

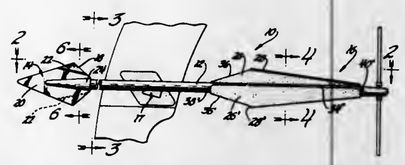
b. at least three equiangularly spaced arms extending radially outward from said hub and each terminating in a tip at a free end,

c. at least one of said tips being turned upward at a first predetermined angle to the plane of its arm, and at least another of said tips being turned downward at a second predetermined angle to the plane of its arm.

3,881,730
ARROWHEAD

Richard F. Carella, 35572 Stratchcona Dr., Mt. Clemens, Mich. 48043

Division of Ser. No. 442,419, Feb. 14, 1974. This application Sept. 4, 1974, Ser. No. 502,937
Int. Cl. F41b *5/02*
U.S. Cl. 273—106.5 B **6 Claims**

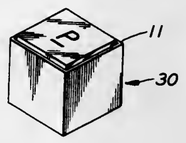


1. An arrowhead comprising first and second identical halves, each of said halves having a pair of planar sections which abut a pair of planar sections of the other half, one of said planar sections of each of said pairs having an outward extremity thereof extending laterally outwardly from the adjacent planar section of the other half to define a fin, said fins of said halves being diametrically oppositely disposed and inclined inwardly toward each other in a direction from front to rear.

3,881,731
CHESS PIECES

Laurence E. Droney, 429 Hess Ave., Erie, Pa. 16507

Filed Dec. 14, 1973, Ser. No. 424,858
Int. Cl. A63f *3/02*
U.S. Cl. 273—137 R **1 Claim**



1. A chess set comprising

a plurality of identical chess pieces,

each said chess piece comprising a cube shaped member having six equal sides,

each said side of a said cube having a different symbol thereon, each symbol representing one of the chess pieces of a chess set,

a plurality of boxes,

each said box having five equal sides and an open top,

the inside dimensions of each said box being substantially equal to the outside dimensions of said cubes,

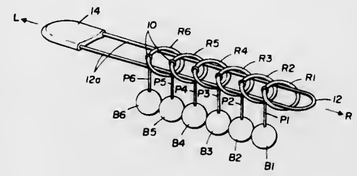
each said cube fitting snugly into a said box with one side of each said cube exposed.

3,881,732
RING, POST AND LOOP PUZZLE WITH INDIVIDUAL POST ANCHORS

Louis M. Winslow, Rt. 2, Belle Plaine, Iowa 52208

Filed May 17, 1974, Ser. No. 471,000
Int. Cl. A63f *9/08*
U.S. Cl. 273—158 **5 Claims**

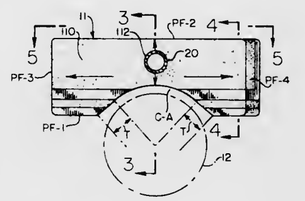
1. In a puzzle of the type described including a number of post-like members having respective first and second corresponding ends and an equal number of ring-like members, the ring-like members being articulately attached adjacent the first corresponding ends of the post-like members, and an elongated, closed loop-like member in interlocking engagement with respective pairs of the post-like and ring-like members so that the loop-like member can normally be disengaged from the post-like and ring-like members only by a series of prescribed manipulations of all of the members, the improvement comprising: individual members attached to the second corresponding ends of the post-like members, the individual members and the post-like members being otherwise unconnected to each other, each of the individual members having an overall exterior dimension sufficient to prevent its passage through the interiors of the ring-like members and the interior of the loop-like member.



3,881,733
MULTI-FACED GOLF BALL PUTTERS

Elmer L. Csernits, 31192 Sunset Ct., Birmingham, Mich. 48009

Filed Mar. 27, 1974, Ser. No. 455,228
Int. Cl. A63b *53/04*, *53/14*
U.S. Cl. 273—168 **3 Claims**



1. A multi-faced golf ball putter comprising

a. a generally rectangular putter head having a flat top and bottom, vertically disposed rectangular elongated putter side faces, and substantially square putter end faces,

b. the longitudinally central portion of one putter side face is vertically arcuately cut-away to a lateral depth slightly greater than approximately one-half the radius of a conventional golf ball, said cut-away terminating into a pair of relatively narrow laterally spaced vertical outwardly and angularly directed tangent portions permitting the stroking of said golf ball centrally of said putter side face,

c. a vertically disposed round tapered shaft fixed at its lower end vertically into the top of the said putter head longitudinally central thereof and laterally midway between the center of the vertical arcuate cut-away portion of said one putter side face and the opposite putter side face,

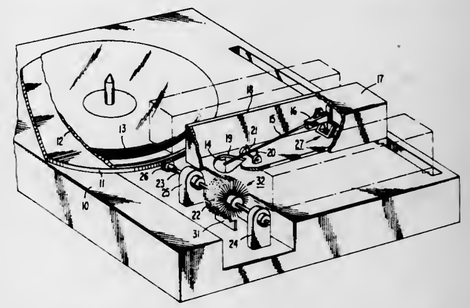
d. a substantially square tapered hand grip element telescoped at its lower end portion over and fixed to the upper end portion of said round tapered shaft with each side of said tapered hand grip being oriented in general parallelism with respect to one side or one end of said putter head, and

e. a non-slip covering fixed firmly on said square tapered hand grip.

3,881,734
ROTARY STYLUS CLEANER

Marvin Allan Leedom, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 30, 1974, Ser. No. 437,963
Int. Cl. G11b *3/58*
U.S. Cl. 274—1 R **5 Claims**



1. In a disc playback system including a board, a turntable mounted for rotation relative to said board and having a turntable surface adapted to receive a disc having a spiral groove with information recorded therein; a stylus subject to placement in said groove for recovering said information while in a play position; and a light stylus-arm carrying said stylus, said stylus-arm being mounted with respect to said board in a manner permitting movement of said stylus between rest and play positions substantially radially of said disc; a rotary stylus cleaner comprising:

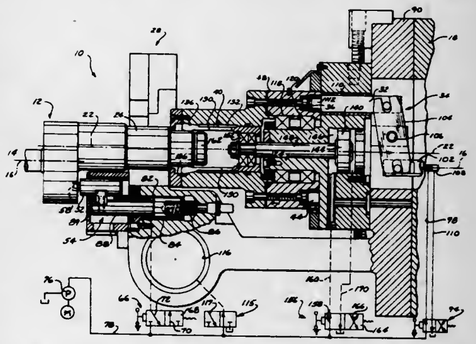
a rotatable brush, having an axis of rotation substantially perpendicular to the longitudinal axis of the light stylus-arm mounted on said board, said brush including bristles with axes ordinarily disposed in planes substantially parallel to the stylus-arm longitudinal axis and substantially perpendicular to the axis of rotation of said brush, and said brush being located in the path of movement of said stylus between the rest position and the play position radially of said disc; and

drive means secured to said board and coupled to said brush for causing rotation of said brush for the purpose of cleaning said stylus.

3,881,735
WORKHOLDER

Glover C. Joyce, Worcester, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Mar. 13, 1974, Ser. No. 450,666
Int. Cl. B23b *5/34*
U.S. Cl. 279—5 **16 Claims**



1. A workholder for supporting a crankshaft with one of a plurality of crankpins in axial alignment with the axis of rota-

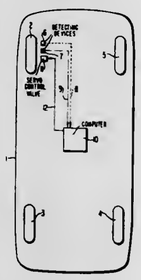
tion of a spindle, said workholder comprising a base adapted to be connected with the spindle for rotation therewith, main chuck means connected with said base for holding the crankshaft with one of the crankpins in axial alignment with the axis of rotation of the spindle, said main chuck means being operable between an engaged condition in which said main chuck means is effective to hold the crankshaft against rotation relative to said base and a released condition in which said main chuck means is ineffective to hold the crankshaft against rotation relative to said base, first actuator means for effecting operation of said main chuck between said engaged and released conditions, a body connected with said base, means for supporting said body for rotation relative to said base about an index axis which is offset from and extends parallel to the axis of rotation of the spindle, second chuck means connected with said body for holding the crankshaft against rotation relative to said body during rotation of said body relative to said base about said index axis, said second chuck means being operable between an engaged condition in which said second chuck means is effective to hold the crankshaft against movement relative to said body and a released condition in which said second chuck means is ineffective to hold the crankshaft against movement relative to said body, second actuator means for effecting operation of said second chuck means between the engaged and released conditions, said body and second chuck means being rotatable relative to said base and first chuck means about said index axis with said second chuck means in the engaged condition and said first chuck means in the released condition to move said body from a first position in which one of the crankpins is in axial alignment with the axis of rotation of the spindle toward a second position in which another of the crankpins is in axial alignment with the axis of rotation of the spindle, and index means for accurately locating said body in the second position with the other crankpin in axial alignment with the axis of rotation of the spindle.

3,881,736

EQUALIZATION INSTALLATION FOR THE CHASSIS OF MOTOR VEHICLES

Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft

Continuation-in-part of Ser. No. 98,240, Dec. 15, 1970, abandoned. This application June 5, 1973, Ser. No. 367,191
Claims priority, application Germany, Feb. 28, 1970, 2009489; May 2, 1970, 2021474
Int. Cl. B60g *21/08*
U.S. Cl. 280—6.1 **10 Claims**



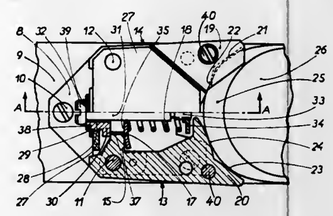
1. Equalization installation for the chassis of motor vehicles, comprising electronic computer means operatively connected with servo-control means arranged at least at one of the two parts consisting of chassis and body of the vehicle, said servo-control means being controlled by signals transmitted from the computer means, and detecting means forming transmitter means for detecting at least one of the movements and force changes of at least one of the two parts consisting of chassis and body, said detecting means being operatively connected with said computer means for feeding the signals detected by said detecting means to said computer means, said computer means being responsive to the signals of said detecting means for processing the signals and for transmitting output signals to the servo-control means to effect an equalization of the chassis, said detecting means including acceleration responsive means for detecting and feeding signals indicative of the positioning of one of the parts consisting of chassis and body to said computer means for processing thereby.

3,881,737

SKI BINDING

Bernard Sentou, Cluses, France, assignor to Mitchell S.A.

Filed June 29, 1973, Ser. No. 374,993
Claims priority, application France, July 3, 1972, 72.24209
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **5 Claims**



1. Safety ski binding comprising a frame, a pair of jaw members pivotally mounted on the frame for movement of boot-engaging parts of the members together and apart, a stop member constituting an abutment for extremities of the jaw members which limits movement of the boot-engaging parts together, elastic means for urging said extremities of the jaw members towards the stop member to tend to hold said boot-engaging parts together in a boot-holding position, a screw mounted for rotation but against longitudinal movement relative to the stop member, the elastic means being disposed along the screw, a nut threadably engaged on the screw and constituting a support against which the elastic means bears, means for fixing the nut against rotation but allowing movement thereof along the longitudinal direction of the screw to enable adjustment of the force of the elastic means by rotation of the screw, and adjustment means for screwably mounting the stop member on the frame to enable adjustment of the position of the stop member in the longitudinal direction of the screw and thereby adjustment of the separation of said boot-engaging parts in said boot-holding position independently of any adjustment of the force of the elastic means by the screw and nut.

3,881,738

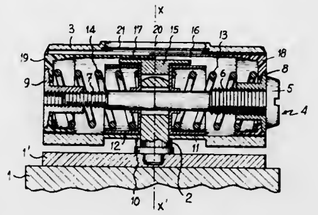
REGULATING DEVICE FOR AN ELASTIC SYSTEM WITH ADJUSTMENT INDICATOR ESPECIALLY FOR SAFETY FIXING DEVICE FOR SKIS

Georges Pierre Joseph Salomon, Annecy, France, assignor to S.A. Etablissements Francois Salomon & Fils, Annecy, France

Filed Sept. 21, 1973, Ser. No. 399,749
Claims priority, application France, Sept. 27, 1972, 72.34232
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **4 Claims**

1. A safety binding for a ski boot comprising:
a binding body mounted on a ski and provided with a jaw for retention of said boot on said ski,
an elastic locking system housed inside said binding body and adapted to maintain said boot on the ski in a determined position, said locking system comprising two springs disposed in series and two parts movable in translation inside said body and fixed against rotation, each said part having a central threaded bore, each of said

spring bearing, at one extremity, on a portion of said binding and, at the other extremity, on one of said two moving parts;
a screw extending axially into said springs in series, said screw having two threaded portions of opposite pitch engaged respectively in the corresponding central threaded bore of said moving parts, the actuation of said screw causing the simultaneous bringing together or moving apart of said moving parts;



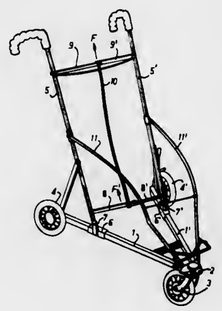
two blades fixed respectively to one of said moving parts, said blades extending substantially parallel to said regulating screw in the direction of each other, their free extremities overlapping in a centnral zone of said binding body;
and a window formed in said binding body at the level of the overlapping zone of said blades.

3,881,739

CHILD'S COLLAPSIBLE STROLLER

Pierre Laune, Attiches, France, assignor to Unilando, Attiches, France

Filed Aug. 13, 1973, Ser. No. 387,656
Claims priority, application France, Jan. 12, 1973, 73.01008
Int. Cl. B62b *7/08*
U.S. Cl. 280—42 **7 Claims**



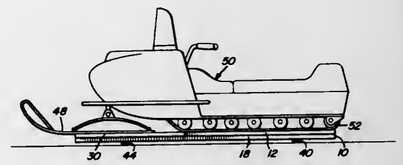
1. A child's stroller of the type comprising a frame formed of foldable elements, a support seat made of supple material resting on said frame and a plurality of bearing wheels mounted on said frame, wherein said frame is constituted by a median support plate,
rolling means mounted on said support plate
two side elements articulated on said support plate, said side elements thus forming a pair of compasses
two lateral bearing wheels, each mounted on one end of each of said side elements opposite said support plate
a foldable connecting means adapted, when put in active position, to cause said side elements to form a triangular chassis resting on said rolling means and two wheels
two lateral uprights, each resting on one side element and being articulated on the respective side element
two side arms articulated at one end of the median support plate, the opposite end of each side arm being articulated substantially at the center of a respective upright.

3,881,740

WHEELED SNOWMOBILE STORAGE PALLET

Bruce A. Johnson, 1165 128th Avenue N.E., and Marvin D. Webster, 12957 Pierce St. N.E., both of Blaine, Minn. 55433

Filed May 2, 1973, Ser. No. 356,285
Int. Cl. B62b *5/00*
U.S. Cl. 280—79.1 **4 Claims**



1. In combination with a snowmobile of the type including forward opposite side longitudinal skis and a centrally disposed longitudinally extending endless drive track whose forward end is spaced appreciably rearward of the forward ends of said skis, a storage pallet comprising an elongated low profile horizontal body having a first end portion of a width less than the distance between the forward opposite side skis of said snowmobile, said body including opposite side outwardly projecting lateral extensions spaced from the free end of said first end portion and disposed adjacent the other end of said body, said extensions extending longitudinally of the other end portion of said body, the remote outer portions of said extensions being spaced apart a distance greater than the distance between the outer side marginal edges of said skis, the distance between said free end of said first end portion of said body and the adjacent portions of said extensions being greater than the distance between the forwardmost point of contact of said track with a flat support surface upon which said snowmobile is resting and the forwardmost point of contact of said skis with said support surface, the opposite end portions of said body including sets of dependingly supported opposite side low silhouette ground engaging support wheels spaced from the corresponding terminal ends of said body a distance whereby the body, when inclined and supported from a flat surface by only one set of said wheels and the corresponding terminal end of said body, will be inclined only slightly relative to said surface at an angle represented by an incline of less than one unit of measure rise per ten units of length.

3,881,741

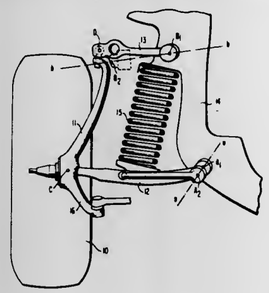
INDEPENDENT SUSPENSION OF FRONT WHEELS OF MOTOR VEHICLES

Alf Muller, Bittenfeld, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Aug. 15, 1973, Ser. No. 388,657
Claims priority, application Germany, Nov. 14, 1972, 2255679
Int. Cl. B62d *7/20*
U.S. Cl. 280—96.2 A **32 Claims**

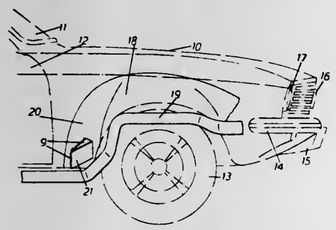
1. An independent wheel suspension for the front wheels of motor vehicles, comprising:
wheel carrier means;
two guide means arranged one above the other and with pivot axes intersecting in the center position of the wheel, on the one hand, as viewed in side view, at a relatively large distance to the rear of the front wheel below the

wheel center and, on the other hand, as viewed in plan view, at a relatively large angle;
joint means connecting the guide means with the wheel carrier means;
a steering axis being determined by the straight line passing through the joint means;
the pivot axis of the upper guide means, as viewed in plan view, extending rearwardly outwardly;



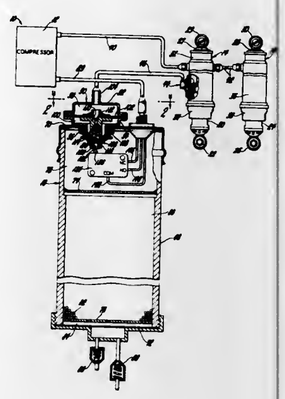
the pivot axis of the lower guide means, as viewed in plan view, extending at least nearly parallel to the vehicle longitudinal axis and the pivot axis of the upper guide means extending rearwardly outwardly approximately diagonally;
the steering axis, as viewed in side view, intersecting the road surface in front of the point of contact of the wheel, thereby defining a positive caster;
wherein said caster has a minimum within the main spring deflection range.

3,881,742
MOTOR VEHICLE ENERGY-ABSORBING FORWARD STRUCTURE
Bertold Felzer, Russelsheim, Main, Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 5, 1973, Ser. No. 403,849
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 R **2 Claims**



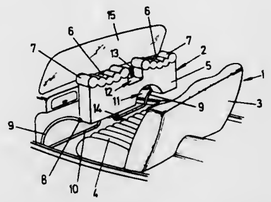
1. A motor vehicle comprising, in combination, a forward vehicle structure collapsible upon impact of the vehicle with an obstacle and including a frame, a pair of front wheels mounted on the forward vehicle structure, and a deflector element on the vehicle respective to each front wheel and located rearwardly thereof, each element being independent of the frame and including a deflector surface extending angularly and outwardly of the vehicle structure and lying in a horizontal plane including the wheel center, collapse of the forward vehicle structure moving the wheels into engagement with the deflector surfaces of the respective deflector elements to force the wheels angularly and outwardly of the vehicle.

3,881,743
AUTOMOTIVE LEVELING SYSTEM
James E. Whelan, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 2, 1974, Ser. No. 466,157
Int. Cl. B60g *17/04*
U.S. Cl. 280—124 F **3 Claims**



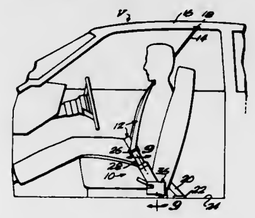
1. In an automatic vehicle leveling system of the semi-closed loop type including an air compressor operable continuously during operation of said vehicle to supply pressurized air to a leveling unit disposed between a sprung mass portion and an unsprung mass portion of said vehicle, a height-control valve disposed between said sprung and said unsprung mass portions and connected to an exhaust port of said leveling unit for closing said exhaust port when said sprung mass portion is below a predetermined height relative to said unsprung mass portion and for opening said exhaust port when said sprung mass portion at least achieves said predetermined height, and an air drier assembly disposed in a conduit extending between an exhaust port of said height-control valve and an inlet port of said compressor and including a system inlet and exhaust assembly, an improvement comprising pressure-sensing means disposed in said conduit between said height-control valve exhaust port and said air drier and including a movable control element assuming a first position when said conduit is pressurized to a predetermined superatmospheric level corresponding to the open position of said leveling unit exhaust port and a second position when the pressure in said conduit is below said predetermined level corresponding to the closed position of said leveling unit exhaust port, electrical circuit means including a source of electrical potential and a pair of electrically energized indicator means for signalling respectively when said sprung mass portion is below and at least achieves said predetermined height, and electrical switch means operatively connected to said control element and disposed in said circuit means between said source and said indicator means for energizing respective ones of said indicator means when said control element is in a corresponding one of said first and said second positions.

3,881,744
AUTOMOBILE PASSENGER RESTRAINT
Earl Silas Tupper, Panama, Panama, assignor to TUPI (Panama) S.A., Panama City 5, Panama
Filed Dec. 26, 1972, Ser. No. 318,327
Claims priority, application United Kingdom, Dec. 22, 1971, 59542/71
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 B **4 Claims**



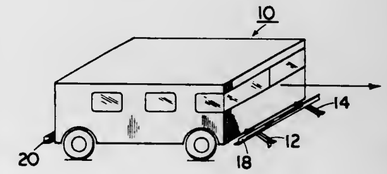
1. In an automobile, a passenger restraint means comprising: a substantially continuous frame extending transversely within said automobile, a pivot axis for said frame also extending transversely within said automobile, whereby said frame can be pivoted between a raised position and a lowered position overlying a seat of said automobile, two upstanding arms, each providing a pivot at an upper end located one at each end of said pivot axis, a torsion bar clamped to said automobile intermediate its ends and holding at said ends the lower ends of said upstanding arms, and a substantially vertical resilient concave restraint region extending transversely across, and carried upon, said frame to restrain a seated person at the waist, whereby said seat cannot be occupied until the frame is pivoted upwards therefrom, and driver vision is obscured until said frame is again pivoted downward and lowered over the occupant's legs to restrain him at the waist.

3,881,745
VEHICLE OCCUPANT RESTRAINT DEVICE
Evelio F. Chavez, Jr., 211 S.W. 55th Ave., Miami, Fla. 33134
Filed June 19, 1974, Ser. No. 480,691
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **17 Claims**



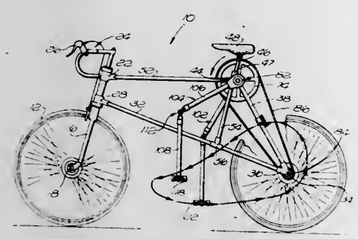
1. A vehicle occupant restraint device for use in combination with a vehicle body defining an occupant compartment providing a seat therein, accessible through a side opening and a side door having a forward, generally vertical edge, pivoted to the vehicle body to mount the door for movement between open and closed positions relative to the side opening, said restraint device comprising;
A. a first belt having a first end, fixed relative to an inboard portion of the vehicle roof and a second end, fixed relative to an inboard portion of the vehicle floor;
B. a second belt having a first end, fixed relative to a slide buckle, slidable engaged along an intermediate portion of said first belt, and a second end fixed to a belt retractor reel of the type which locks the belt against retraction upon rapid deceleration of the vehicle, said first belt being positioned to normally pass over the inboard shoulder of the occupant and said second belt being positioned to engage over the lap of the occupant;
C. a main housing providing an interior chamber rotatably mounting said retractor reel;
D. rail means, fixed longitudinally along the bottom portion of the door for engagement by follower means, carried by said housing, to cause said housing to move longitudinally to a position adjacent the lower front, pivoted edge of the door when said door is open to disengage said first and second belts, respectively, from the shoulder and lap areas of the occupant to provide unobstructed exit from the vehicle, and to cause said housing to move rearwardly to a position to re-engage said first and second belts, respectively, with the shoulder and lap areas of an occupant when said door is closed;
E. a first safety means to automatically prevent accidental disengagement of said first and second belts from the occupant in the event of an accident resulting in the door being opened; and
F. a second safety means, controllable by the vehicle occupant to disengage said first and second belts to provide for an emergency exit from the vehicle.

3,881,746
VEHICLE LEVELER SYSTEM
C. Lewis Newcomb, Jr., 520 11th Ave., Haddon Heights, N.J. 08035
Filed Dec. 19, 1972, Ser. No. 316,472
Int. Cl. B60s *9/02*
U.S. Cl. 280—150.5 **5 Claims**



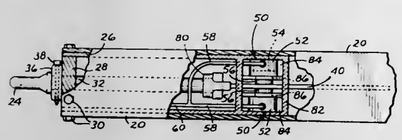
1. A leveler system for an over-the-road vehicle having a spring suspended frame comprising, in combination with said vehicle: a plurality of jack devices each having an adjustable length, said jack devices each including a plurality of telescoping members,
a lower ground-engaging portion on each said device,
said ground engaging portion on the lower of said jack members having an edge for frictionally engaging the ground during rotation of the jack device to the vertical condition,
and means for pivotally securing the upper portion of each said jack device to the spring suspended frame of the vehicle adjacent a different corner thereof,
said pivot securing means including means attachable to the bumper of the vehicle for suspending the upper of said telescoping members to rotate around a horizontal and vertical axis,
so that said vehicle can be partially elevated for leveling various amounts at each corner by driving the jack devices in the direction of movement of said vehicle for rotation of the lengths thereof to a vertical condition with a partial extension of the spring frame of said vehicle, and said vehicle can be restored to normal over-the-road condition by driving said jack devices for rotation of the lengths thereof to be inclined to the vertical.

3,881,747
VARIABLE MOTION BICYCLE PEDAL DRIVE SYSTEM
Allan V. Abbott, 708 Calle Arboles, Redondo Beach, Calif. 90277
Filed June 19, 1974, Ser. No. 480,656
Int. Cl. B62m 1/04
U.S. Cl. 280—255 4 Claims



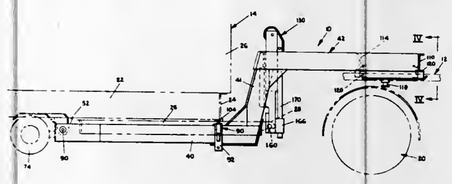
1. In a bicycle having a frame, a variable motion bicycle pedal drive mechanism comprising:
a drive wheel on said frame having a first drive mechanism secured to said wheel for transmitting motion thereto;
a second drive mechanism on said frame;
a coupling member for coupling said first drive mechanism to said second drive mechanism;
said second drive mechanism secured to said frame; and
means mounting at least one foot pedal to be freely positionable in a plane intersecting the axis of the second drive mechanism and movable to transmit one-way rotational power to said second drive mechanism.

3,881,748
ANTI LOAD STRIPPING ATTACHMENT FOR LOGGING TRUCK-TRAILER COMBINATIONS
Jack D. Donaldson, Rt. 4, Box 73, Chehalis, Wash. 98532
Filed July 26, 1973, Ser. No. 383,439
Int. Cl. B62d 53/00
U.S. Cl. 280—404 4 Claims



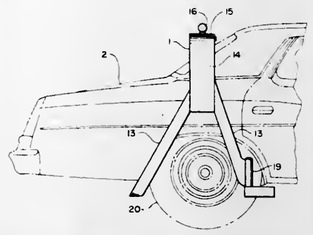
3. In an anti-load stripping logging truck-trailer unit the combination of:
a. a truck frame,
b. a hollow trailer reach,
c. a compensator shaft mounted for longitudinal sliding movement in the trailer reach,
d. releasable compensator shaft lock means engaging the compensator shaft for releasably locking it against longitudinal sliding movement,
e. latch means releasably interconnecting the truck frame and the compensator shaft,
f. a case mounted entirely within the forward end of the trailer reach and receiving the compensator shaft,
g. securing means securing the case to the trailer reach,
h. elongated friction plate means attached to the compensator shaft as a rearward longitudinal extension thereof,
i. friction clamp means mounted in the case and positioned for releasable frictional clamping engagement with the friction plate means, and
j. clamp control means connected to the clamp means and operable from a remote station.

3,881,749
TOWING COUPLER ASSEMBLY FOR FACTORY MADE HOMES
Howard P. Berends, Fruitport, Mich., assignor to Holland Hitch Company, Holland, Mich.
Filed Feb. 1, 1974, Ser. No. 438,870
Int. Cl. B62d 53/06
U.S. Cl. 280—415 B 21 Claims



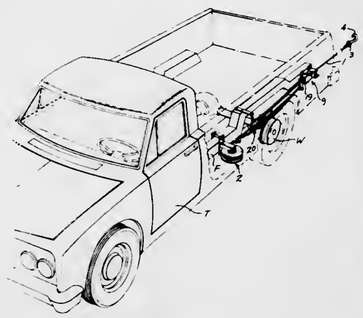
1. An attachable-detachable towing coupler assembly for mounting to and towing of, from the front end, a parallelepiped structure having supporting under-girders and a wheeled undercarriage, comprising:
a bifurcated frame having a front portion and rear portions; said rear portions being shaped to extend beneath the structure front end, being spaced from each other and including attachment zones connectable to under-girders of the structure spaced rearwardly from the front end of the structure; said frame front portion being upwardly offset relative to said frame rear portions and having cooperative coupling means thereon connectable with complementary coupling means on a towing vehicle to enable a stable elevated coupling thereto; and compression-load, structure-engagement means on said frame between said front and rear portions, to selectively engage the structure front end, thereby affording a multiple point securement for the structure while towed on its wheeled undercarriage.

3,881,750
TRAILER HITCH
Merdith John Shatto, 3615 Brandon St. S.E., Calgary, Alberta, Canada (T2G 4A7)
Filed Nov. 8, 1973, Ser. No. 413,893
Claims priority, application Canada, Aug. 14, 1973, 178795
Int. Cl. B62d 53/00
U.S. Cl. 280—423 R 3 Claims



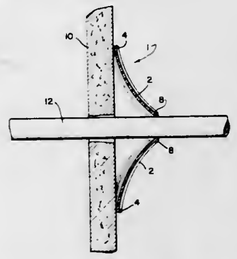
1. A trailer hitch for operable connection with a towing vehicle having a body, a frame and wheels connected to the frame, said hitch comprising:
a first lateral frame member for extending generally upright on one side of the vehicle body and including first and second means connected to one end of said first lateral member for extending beneath the vehicle body for attaching said first lateral frame member to the frame of the vehicle at longitudinally spaced points on the vehilce frame;
a second lateral frame member for extending generally upright on the other side of the vehicle body and including first and second means connected to one end of said second lateral frame member for extending beneath the vehicle body for attaching said second lateral frame member to the frame of the vehicle at longitudinally spaced points on the vehicle frame;
transverse means interconnecting the other ends of said first and second lateral frame members and operably extending over a portion of the vehicle body;
means carried by said transverse means for attachment to a trailer or other vehicle to be towed;
at least one of said first and second means for extending beneath the vehicle body of said first lateral frame and said first and second means for extending beneath the vehicle body of said second lateral frame being provided with adjustment means for permitting lateral adjustment of at least one of said first and second lateral frame members with respect to the other of said first and second lateral frame members at said one of the ends thereof;
means connected to said transverse means and at least one of the other ends of said first and second lateral frame members for permitting lateral adjustment of at least one of said first and second lateral frame members with respect to the other of said first and second lateral frame members at said other of the ends thereof; and
means for pivotally connecting at least one of said first and second means connected to each of said first and second lateral frame members to a corresponding part of each of said first and second lateral frame members.

3,881,751
AUTOMATICALLY STOWABLE TOWLINE FOR VEHICLE
Raymond Lee Colby, Star Rt.; Box 4, Quincy, Wash. 98848
Filed Mar. 4, 1974, Ser. No. 447,998
Int. Cl. B60d 1/18
U.S. Cl. 280—480 3 Claims



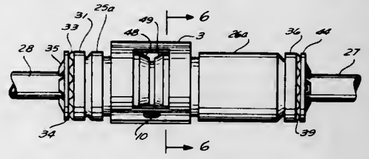
1. An automotive vehicle comprising a wheel-supported vehicle chassis, a towline, storage means for said towline mounted on said chassis, abutment means fixedly mounted on said vehicle chassis independently of and at a location spaced from said storage means for transmitting pulling stress from said towline to said chassis separate from and independently of said storage means, and stop means carried by said towline at a location between said storage means and said abutment means and engageable with said abutment means by paying out said towline from said storage means to limit the extent to which said towline can be paid out from the vehicle, said storage means including automatic tension-producing towline-retrieving means always exerting tension on said towline irrespective of the position of said stop means for maintaining said towline taut between said abutment means and said storage means and for moving said stop means away from said abutment means and toward said storage means when the tension in said towline at the side of said abutment means and said stop means remote from said storage means slackens below the tension exerted by said towline-retrieving means on the portion of said towline between said abutment means and said storage means.

3,881,752
FLANGE
George S. Fujishima, 1713 Kaumulii St., Honolulu, Hawaii
Filed Sept. 24, 1973, Ser. No. 399,684
Int. Cl. E04b 5/48
U.S. Cl. 285—46 7 Claims



1. A wall hole and pipe sealing flange comprising a relatively thin flexible laterally resilient plastic body having a generally round circumferential edge and having a central generally round opening for receiving and tightly gripping a pipe whereby when the central opening is placed over a pipe and slid toward a wall slightly spaced from a wall, only the outer circumferential edge portion automatically presses tightly against the wall, and the body portion between the outer circumferential edge and the central opening assumes a uniform smooth curve.

3,881,753
FASTENER MECHANISM
Michael E. Bochory, 5000 Centinela Ave., Los Angeles, Calif. 90066
Filed June 4, 1973, Ser. No. 366,299
Int. Cl. F16j 15/00
U.S. Cl. 285—92 10 Claims



1. A fastener assemby for joining pipe ends, comprising a female member adapted to accommodate one pipe end, a male member adapted to accommodate another pipe end and insertable into said female member; at least two axially spaced abutment means respectively provided on said female and male members; and springy retaining means adapted to be snapped onto said members in contact with said abutment means, so as to prevent axial separation of said male and female members.

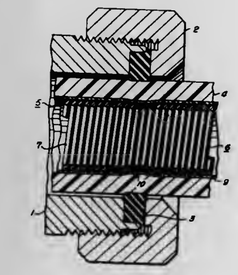
3,881,754
RESILIENT INTERNAL SUPPORT FOR PLASTIC PIPE
Joe William Christie, 1118 E. Main St., Frisco, Tex.
Continuation of Ser. No. 140,689, May 6, 1971, abandoned.
This application Sept. 26, 1973, Ser. No. 400,721
Int. Cl. F16l 13/04
U.S. Cl. 285—114 2 Claims

1. In combination, a pressure coupling, a plastic pipe one end of which is clampingly confined in said pressure coupling,

and an internal support within the confined end of the pipe, the support including

a helical resilient member having contiguous convolutions and an external diameter slightly less than the internal diameter of said pipe,

a sheath of semi-elastic thin material encasing the helical member and having its interior snugly engaging the exterior of the convolutions of said member so as to reduce the resiliency of the member only to the extent sufficient to prevent undue deformation thereof and of said pipe adjacent the coupling as well as excessive separation of said convolutions which might cause damaging of the sheath,

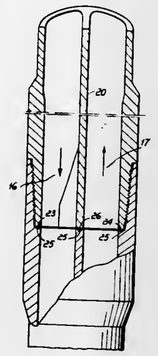


said sheath being film-like and having a radial thickness much less than the wall thickness of said member,

the sheath being free from attachment to said member and both said sheath and member being free from attachment to said pipe whereby said sheath and member may undergo restricted movement relative to each other and to said pipe, as may the convolutions of said member with respect to one another, and thereby amplify the area of deformation longitudinally of said support and pipe so as to prevent the creation of stress and flexures of small amplitude in said support and pipe adjacent said coupling.

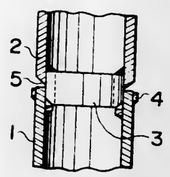
3,881,755
DRILLSTRING STRUCTURE
Siro Brunato, Via G. Galli 23, Melegnano, Italy (20071)
Filed June 26, 1972, Ser. No. 266,085
Int. Cl. F16l *39/00*
U.S. Cl. 285—137 A **1 Claim**

1. A two-way flow tube for a drillstring comprising a longitudinal partition wall within the interior of the tube, extending over the length of the tube and separating the tube into two longitudinal tubular compartments, the tube having a female inner screwthread at one end thereof and a mating male screw thread at the other end thereof, said partition wall having abutment surfaces at both extremities thereof for sealing engagement with partition walls of corresponding two-way flow tubes, said partition wall extending according to a diametral plane and having at, at least one end thereof a seat for a sealing gasket, wherein the tube ends have circular abutment surfaces, at least one of said surfaces having circular seats for sealing gasket means, and wherein the partition wall has enlargements at, at least one end thereof thereby to increase the abutment surfaces thereof, said enlargements tapering from



the periphery towards the center of the tube at least at the abutment surfaces thereof.

3,881,756
JOINTS FOR WELDING STEEL PIPE PILES
Ken Takatori, Kawasaki; Tetsuzo Hirose, Yokohama, and Tsuyoshi Nakamata, Hiratsuka, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed May 16, 1973, Ser. No. 360,913
Int. Cl. F16l *13/02*
U.S. Cl. 285—22 **10 Claims**



1. A joint structure for steel pipe piles comprising:

a short tubular joint metal piece including:

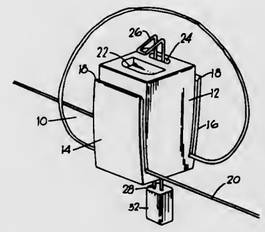
a guide portion comprised of a reduced diameter portion formed on the lower periphery thereof, the diameter of said reduced diameter guide portion being gradually decreased radially; and

a straight-cylindrical portion formed on an upper periphery adjacent to said reduced diameter guide portion, the outer diameter of said straight-cylindrical portion being substantially equal to the inner diameter of a pile pipe to be joined;

an upper pile pipe, said joint metal piece being secured to the inner periphery of said upper pile pipe such that said straight-cylindrical portion and said reduced diameter portion of said joint metal piece project from a joint end of said upper pile pipe, said straight-cylindrical portion being adjacent said joint end of said upper pile pipe and said reduced diameter portion being remote from said joint end;

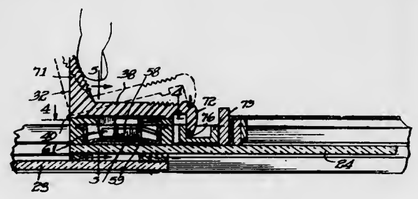
a lower pile pipe adapted to receive said upper pile pipe at a joint end thereof so as to be joined with said upper pile pipe by welding, said outer diameter of said straight-cylindrical portion being substantially equal to the inner diameter of said joint end of said lower pile pipe, said projecting portion of said joint metal piece being inserted into said joint end of said lower pile pipe with at least a portion of said straight-cylindrical portion inserted in said joint end of said lower pile pipe so as to join said upper and lower pile pipes together.

3,881,757
KNOT TYING IMPLEMENT
Rudolph Guinther, Clifton, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed May 13, 1974, Ser. No. 469,285
Int. Cl. D03j *3/00*
U.S. Cl. 289—17 **5 Claims**



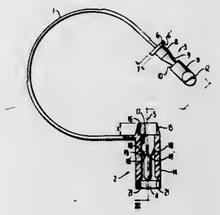
1. Knot tying implement comprising a body having a longitudinal bore therethrough; a cavity formed axially in the upper part of said body for receiving the center portion of a knot; gripper means attached to the opposite sides of said body and forming strand receiving slots for holding a strand of leader against said body and for forming a loop from said strand around said body; a hook member axially movable in said bore and having a hook portion extending above said upper part of said body for holding said center portion of said knot in said cavity while said knot is being tightened and finished by pulling on the ends of said strand.

3,881,758
WINDOW OPENER AND LATCH
George E. Gross, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jan. 14, 1974, Ser. No. 433,110
Int. Cl. E05c *3/04*
U.S. Cl. 292—87 **12 Claims**



1. A latch for a multi-panel window or the like having a movable panel comprising; a stationary base element adapted for attachment to the movable panel, a latch member including a stationary mounting platform element attachably secured to said stationary base, a swing arm secured to said mounting platform for overlapping the mounting platform, hooked stop means mounted on the swing arm for engaging a stationary element of said stationary mounting platform to limit swinging motion of the swing arm relative to the stationary elements, and means interconnecting the swing arm and said stationary element to urge the spring arm into a locking position for engaging a fixed catch member.

3,881,759
PLASTIC SEAL
Charles Fuehrer, Scarsdale, N.Y., assignor to Stoffel Seals Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 89,542, Nov. 16, 1970, Pat. No. 3,712,655. This application Jan. 2, 1973, Ser. No. 320,175
Int. Cl. E05c *10/18*; B65d *33/34*
U.S. Cl. 292—321 **53 Claims**

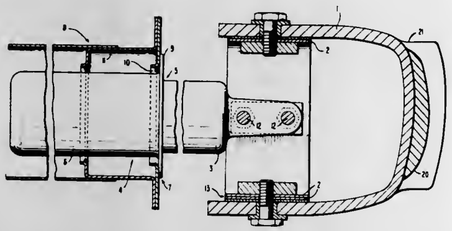


1. A seal comprising: housing means, a bore extending completely through said housing means with first and second bore ends opening to the outside of said housing means, locking socket means arranged in said bore in said housing means, a tie member having a free end and an end operatively connected to said housing means, and a locking head means at the free end of said tie member, said locking head means being insertable into the socket means by way of said first bore end to lock the seal, the socket means including at least one inwardly projecting locking element and the head means including a head portion with a locking shoulder formed between the head portion and an adjoining section with smaller cross-section, said head portion being dimensioned to elastically deflect the at least one locking element during insertion thereof so that the locking shoulder snaps in behind locking surface portions of the at least one locking element when the head portion is inserted into said socket means, the extreme free end of said head portion being positioned inside said bore at a spacing from said second bore end with said head means in a seal locking position, the extreme free end of said head portion which faces said second bore end when said head means is in a seal locking position including portions which are angularly inclined with respect to a centerline through said head portion, said angularly inclined head portions being arranged to provide a non-symmetrical spacing of points of the surface of said extreme free end of said head portion from said second bore end with respect to said centerline.

3,881,760
BUMPER FOR MOTOR VEHICLES
Hubert Hutai, Grafenau-Datzingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany
Filed Feb. 15, 1974, Ser. No. 443,098
Claims priority, application Germany, Feb. 15, 1973, 2307330
Int. Cl. B60r *19/06*
U.S. Cl. 293—99 **16 Claims**

1. A bumper for motor vehicles which in case of impact is retractable under energy-absorption by means of shock absorber means extending generally in the vehicle longitudinal direction and fixedly connected with a relatively fixed vehicle part, characterized in that the mounting of the bumper means takes place at least at one shock absorber means having shafts and guide tube means and includes an approximately bipole

shaped, substantially upright flat spring means yielding in the vehicle cross direction, and fastening means for the shock

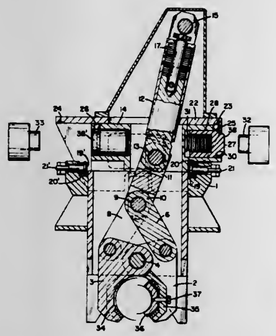


absorber means in the open area of the shock absorber guide tube means to provide a support at the fixed vehicle part.

3,881,761
AUTOMATIC MECHANICAL TONGS WITH OPEN AND CLOSED STABLE POSITIONS

Andre Meyer, Chatenay-Malabry, and Roger Gerard, Chevilly-Larue, both of France, assignors to Groupement Atomique Alsacienne Atlantique, Le Plessis, Robinson, France

Continuation-in-part of Ser. No. 193,266, Oct. 28, 1971, abandoned. This application Dec. 3, 1973, Ser. No. 421,184
Claims priority, application France, Oct. 29, 1970, 70.39013
Int. Cl. B25b
U.S. Cl. 294—88 **2 Claims**



1. An assembly for locking mechanical tongs at open and closed stable position, said assembly comprising:

a framework;

a pair of clamping jaws mounted for pivoting between open and closed positions above a fixed axis within said framework;

a pair of connecting rods operatively coupled to said jaws and to an intermediate rod, and forming with said intermediate rod, a first knuckle joint slidable with respect to said framework;

a spring jack rotatable about a second fixed axis within said framework;

a sliding rod connected operatively on one side to said spring jack and on the other side to said intermediate rod forming with said intermediate rod, a second knuckle joint;

a slide operatively coupled to said second knuckle joint and transversally movable within said framework between stops on either side of a straight line defined by said first fixed axis and said second fixed axis; and

ball detent means carried by said slide for engaging said framework at positions defined by said stops to lock said slide with said second knuckle joint maintaining said jaws respectively in open and closed stable positions.

3,881,762
GRIPPER

Anthony T. Zappia, Indianapolis, Ind., assignor to Ball Brothers Service Corporation, Muncie, Ind.

Division of Ser. No. 321,003, Jan. 4, 1973, Pat. No. 3,826,382. This application Jan. 10, 1974, Ser. No. 432,408
Int. Cl. B66c *1/46*
U.S. Cl. 294—93 **6 Claims**

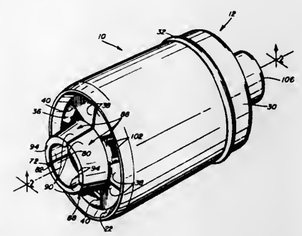


1. A bottle gripper element comprising a closed-perimeter frame defining an open region therein and formed to provide opposite, substantially parallel faces, each face defining an imperforate region extending perimetrally about said open region, a closure member spanning the open region of each such frame face and sealingly bearing upon the perimetral region of such face, at least one of said closure members being a rubberoid, elastic diaphragm, said closure members cooperating with the open region of said frame to define a chamber with said diaphragm being inflatable to expand outwardly from the plane of its respective face when fluid under pressure is injected into said chamber, said chamber having a port opening through a point in said frame perimeter, and a perimetral ring for securing said diaphragm in sealing engagement with its respective frame face, said perimetral ring having a rigid, non-yielding outer surface for engaging and guiding bottles for movement along said gripper element before inflation of said diaphragm.

3,881,763
CHUCK

Norman E. Benson, Naugatuck, Conn., assignor to Electrostatic Equipment Corporation, New Haven, Conn.

Filed June 3, 1974, Ser. No. 475,523
Int. Cl. B26f *3/00*
U.S. Cl. 294—116 **9 Claims**

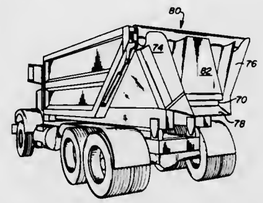


1. A chuck-like device comprising, in combination: a body; an outwardly biased actuating member mounted for reciprocation relative to said body between outward and inward positions, and having outwardly disposed article-engaging means thereon; at least one gripping member mounted on said body for pivotable movement about an axis generally perpendicular to the axis of reciprocation of said actuating member, said gripping member having a gripping element thereon disposed outwardly of said axis of pivoting for movement between an open position away from said article-engaging means and a closed position adjacent thereto, and also having a follower element thereon spaced inwardly of said axis of pivoting, said gripping member being biased toward said open position of said gripping element; an outwardly biased positioning member mounted for reciprocation between outward and inward positions and having an outwardly tapered first camming surface thereon, said first camming surface being disposed to engage said follower element of said gripping member and to urge said gripping element into said closed position thereof, when said positioning member is in said outward position thereof; a setting member mounted outwardly of said positioning member for inward and outward reciprocation, said setting member having an outwardly tapered second camming surface thereon disposed to engage said follower element of said gripping member and being generally contiguous to said first camming surface when said positioning and setting members are adjacently disposed, said actuating member having means for engaging and moving inwardly said positioning member and said setting member upon inward movement thereof, and said camming surfaces being adapted, when contiguously disposed, to permit said follower element to pass readily from said second surface to said first surface; so that, with said positioning member in said outward position thereof and said gripping element in said closed position thereof, inward movement of said actuating member to a first position from said outward position thereof causes engagement and inward movement of said positioning member and said setting member, in turn permitting said gripping member to pivot to said open position of said gripping element, and so that further inward movement of said actuating member to a second position causes further inward movement of said positioning member and said setting member, and thereby causes said follower element to engage and bear upon said second camming surface, whereupon outward movement of said actuating member will permit said positioning member to return to said outward position thereof, with said follower element passing from said second to said first camming surface, and with said gripping element returning to said closed position thereof.

3,881,764
DUMP BED

John H. Holland, Norman, Okla., assignor to The J. H. Holland Company, Norman, Okla.

Filed Apr. 12, 1973, Ser. No. 350,638
Int. Cl. B62d *33/00*
U.S. Cl. 296—28 D **13 Claims**



1. In a dump bed of the type including a floor, opposed side walls, and a front wall which cooperate to define the front portion of the dump bed, the improvement comprising:

a pair of downwardly, inwardly, and forwardly tapering rear corner panels extending between upwardly tapered rear ends of the side walls and inwardly tapered side portions of the rear end of the floor to define the inner portion of a discharge chute located at the rear portion of the dump bed;

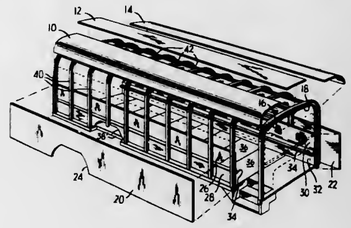
said panels extending to spaced apart inwardly tapered rear edges positioned substantially inwardly from the side walls and aligned with the central portion of the rear end of the floor for cooperation therewith to define a discharge opening of the discharge chute; and

a tailgate substantially identical in shape to the discharge opening and supported at the upper rear ends of the side walls for selective pivotal movement to open and close the discharge chute.

3,881,765
BUS BODY

Anthony M. Cerra, and Robert B. Kurre, both of Richmond, Ind., assignors to Indian Head, Inc., New York, N.Y.

Filed Dec. 4, 1972, Ser. No. 311,694
Int. Cl. B62d *31/02*
U.S. Cl. 296—28 A **11 Claims**



1. A bus body comprising at least two elongated one-piece exterior roof panels extending substantially the entire length of the bus body and defining an exterior body roof, at least two elongated one-piece interior roof panels extending substantially the entire length of the bus body and defining an interior body roof, at least two elongated one-piece exterior side panels extending substantially the entire length of the bus body, one on either side thereof, and defining exterior body walls, at least two elongated one-piece interior side panels extending substantially the entire length of the bus body, one on either side thereof, and defining interior body walls, at least one floor panel defining an elongated body floor, at least three generally U-shaped one-piece rib members spaced at intervals along the length of the body and coupled adjacent the ends of said rib members to the body floor in an inverted position, the rib members being located between the interior and exterior side panels and between the interior and exterior roof panels and being joined to said panels, a gusset secured to each upper corner of each rib where the roof portion of the rib meets the respective side wall portion of the rib, each gusset having a right angle flange portion along an inwardly disposed edge thereof and each interior roof panel being shaped to match the shape of said flange portion of the respective gusset and being joined thereto, and upper side wall stringers installed between adjacent ribs, each stringer being generally U-shaped in cross section to define an inwardly open space and having a flange portion joined to a corresponding interior roof panel adjacent the outward margin thereof, the rib members and elongated panels affording a minimal number of body joints and presenting a minimal number of member and panel edges, thereby increasing the safety of passengers in the bus body in the event of a collision or upset.

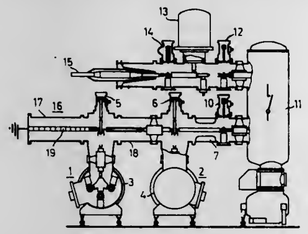
3,881,766
VOLTAGE OVERLOAD ARRESTER FOR A HIGH-VOLTAGE SWITCHING SYSTEM

Rudolf Pratsch, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 20, 1973, Ser. No. 399,351
Claims priority, application Germany, Sept. 28, 1972, 2248117
Int. Cl. H02h *7/22*
U.S. Cl. 317—58 **4 Claims**

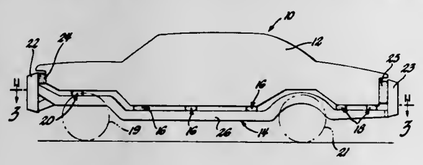
1. In a high-voltage switching system of the type including a switching housing containing a gaseous insulating medium, and an overload arrester housing, communicative with the

switching housing and containing a gaseous insulating medium having a dielectric strength the same as said medium contained in said switching system housing, a voltage overload arrester comprising only discharge current resistance means,



disposed in said arrester housing, and constructed of an electrically conductive material having a zinc oxide base, for discharging current surges flowing through said switching system.

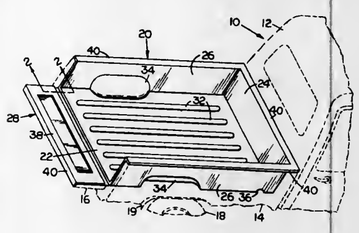
3,881,767
VEHICLE IMPACT ENERGY ABSORPTION AND SUSPENSION SYSTEM
Gerard T. Klees, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 12, 1973, Ser. No. 396,391
Int. Cl. B60r *19/00;* **B62d** *23/00;* **F16f** *16/08*
U.S. Cl. 296—35 R **6 Claims**



1. An impact energy absorption system for vehicles comprising a vehicle body, frame means for said vehicle body, said frame means comprising steel side rail means extending beneath said vehicle body, said frame means having front and rear end portions, laterally extending bumper means rigidly and directly connected to said front end portion of said frame means and in front of said vehicle body, first body mount means operatively connecting a front end of said body to said front end of said frame means to permit said body to move longitudinally relative to said frame after impact of said bumper means, second body mount means operatively connecting the rear end of said body to the rear end portion of said frame means, said second body mount means having resilient vibration damping means to dissipate vibratory energy in said frame means and said body, said second body mount means further having mechanical connector means operatively connecting said body and said frame means for positively limiting the longitudinal movement of said rear end of said body relative to said frame means after impact of said bumper means to compressively load said frame means from one end thereof to thereby effect the resilient deflection of said side rail means which absorbs and stores impact energy.

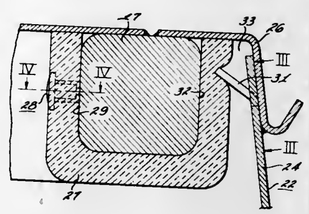
3,881,768
PICKUP TRUCK BED LINER AND PROTECTOR
Edwin Lee Nix, 733 Tahlena Ave., Madison, Tenn. 37115
Filed Aug. 10, 1973, Ser. No. 387,459
Int. Cl. B62d *33/02*
U.S. Cl. 296—39 R **4 Claims**

1. For use as a liner (**20**) to protect the bed of a conventional pickup truck (**10**), the improvement comprising a readily removable and replaceable one piece molded self-contained somewhat rigid liner (**20**) of inherently cushioning material integrally contoured complementary to the truck bed, tailgate (**16**) and the front and side walls of the pickup truck body (**14**), an integral outwardly extending flange portion (**40**) at the top of said liner front (**24**) and side wall portions (**26**) to extend over and protect the top edges of the truck front and side walls and a rearwardly extending tailgate



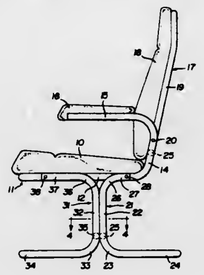
panel portion (**28**) integrally hinged (**30**) to the liner bed bottom portion (**22**) complementary to the pickup truck tailgate (**16**), hinging means (**30**) integrally connecting said tailgate panel portion (**28**) to the liner bed bottom portion (22) comprising a thin web integrally extending between the bed bottom portion and said tailgate panel portion, said hinged tailgate panel portion (**28**) having an outwardly upstanding flange portion (**40**) to overlie the top edge of the truck tailgate (**16**).

3,881,769
MEANS FOR SECURING INSULATION TO A VEHICLE ENCLOSURE
William R. Metzke, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.
Filed Sept. 6, 1973, Ser. No. 394,916
Int. Cl. B62d *33/00*
U.S. Cl. 296—39 A **7 Claims**



1. In a vehicle enclosure of the type having a frame to which panels are secured, the combination comprising:
an elongated frame member comprising a first surface,
a panel defining a side of said enclosure and having a portion in juxtaposed relation to but spaced from said first surface of said frame member, said portion of said panel including a plurality of spaced apart lugs projecting in the direction of and at an angle to said first surface of said frame member, and
a pliable insulation member having an edge portion disposed between said first surface of said frame member and said lugs, the insulation member being compressed to a reduced thickness in the area of contact with said lugs whereby said insulation member is releasably held in place.

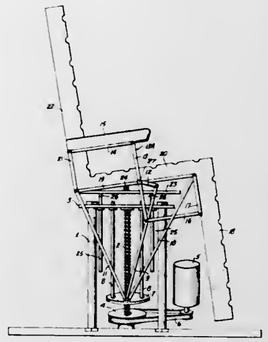
3,881,770
FOLDING CHAIR
Antonio Luis Cardenas, North Miami Beach, Fla., assignor to Hoover Industries, Inc., Miami, Fla.
Filed July 29, 1974, Ser. No. 492,785
Int. Cl. A47c *4/20*
U.S. Cl. 297—51 **12 Claims**



1. A folding chair comprising:
a seat unit presenting a horizontal seat and opposite arms extending up from the back of the seat and then forward substantially horizontally on opposite sides of the seat;
a back unit having its lower end received between the upwardly extending arms and pivoted to the latter for adjustment between an upright position in which it extends up from the back of the seat and a folded-down position in which it extends forward across the top of the seat between the arms;
a rear leg unit pivotally connected to the opposite sides of the seat unit toward the back end of the latter on the outside for adjustment between a floor-engaging support position extending down from the seat unit and a folded-up position extending up around the outside of said arms and forward across the folded-down back unit;
and a front leg unit pivotally connected to the opposite sides of the seat unit toward the front end of the latter on the outside for adjustment between a floor-engaging support position extending down from the seat unit in front of said rear leg unit and a folded-up position extending up around the outside of the seat unit at the front and back across the folded-down back unit.

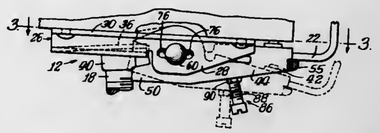
3,881,771
CONVERTIBLE CHAIR
Daniel Amstutz, Domaine de Peyvideau, 33 Garignan, France
Filed Apr. 27, 1973, Ser. No. 355,082
Claims priority, application France, Apr. 27, 1972, 72.15780
Int. Cl. A47c *1/02*
U.S. Cl. 297—71 **3 Claims**

1. Convertible chair comprising a seat, a back pivotally connected to the rear of said seat, and a leg rest pivotally connected to the front of said seat, double parallelogram linkage supporting said seat, back, and leg rest, said linkage comprising a first main bar supporting said seat and common to two parallelograms of said linkage, a second main bar pivotally connected near the center of said first main bar, and also common to both parallelograms of said linkage, a first shorter bar pivotally connected to one end of said first main bar and supporting said back, a second shorter bar pivotally connected to one end of said second main bar and one end of said first shorter bar to form a first parallelogram, a third shorter bar pivotally connected to the other end of said first main bar and supporting said leg rest, and a fourth shorter bar pivotally connected at one end to the other end of said second main bar and at the other end to said third shorter bar, a stationary platform, a movable platform mounted to slide vertically relative to said stationary platform, said seat being pivotally attached to said movable platform, motor driven screw means, and a crank connected to be driven by said screw means and to turn one of said main bars relative to the other between a first position in which said linkage supports said back and leg rest in a generally upright attitude and a second position in which said linkage supports said leg rest



and back in a substantially horizontal attitude when said screw means is driven in a first direction, said crank being also connected to lift said linkage and seat vertically when said screw means continues to turn in said first direction after said crank has reached said second position.

3,881,772
CHAIR CONTROL MECHANISM
Harry L. Mohrman, Weatogue, Conn., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Oct. 3, 1973, Ser. No. 403,013
Int. Cl. A47c *3/00*
U.S. Cl. 297—300 **23 Claims**

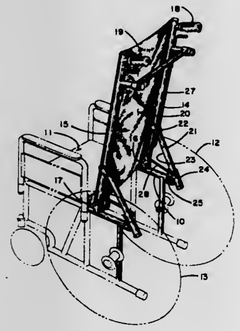


1. A chair control mechanism comprising: a first frame member extending forwardly and rearwardly and having a pair of parallel elongated vertical side wall portions, laterally outwardly extending upper flange portions integral with said side wall portions for attachment to the underside of a chair seat, and a lower transverse web portion interconnecting only the forward sections of said side wall portions and forming a U-shaped frame member, said web portion defining a laterally extending abutment; a second frame member; a transverse shaft extending through said second frame member and said side wall portions of said first frame member rearwardly of said web portion of the latter whereby to tiltably position said first and second frame members, said second frame member has at least one pair of vertically spaced, forwardly projecting are segments engageable with opposed sides of said web portion abutment of said first frame member for limiting relative tilting movement between said first and second frame members in both directions, the axis of said transverse shaft lying substantially in the same horizontal plane as said web portion, and spring means connected with said transverse shaft and extending between said first and second frame members in one direction.

3,881,773
RECLINING BACK WHEELCHAIR

Keith S. Rodaway, Culver City, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.

Filed June 3, 1974, Ser. No. 475,524
Int. Cl. A47c *1/026*
U.S. Cl. 297—377 **6 Claims**



1. In combination with a frame structure supporting a seat, a reclining back assembly including:

a. back rest means pivoted at a first pivot point to said frame structure for movement from a generally upright position to a reclining position;

b. an adjusting tube pivoted at one end at a second pivot point to the back rest means intermediate its lower and upper ends;

c. a guide means in slidable engagement with the other end of the adjusting tube and pivoted at a third pivot point to the frame structure at a spaced point to the rear of said first pivot point;

d. actuating linkage means coupled to said frame structure and manually movable to lock said back rest means relative to the seat, said guide means comprising a cylinder receiving said adjusting tube, said adjusting tube having a plurality of openings alone one longitudinal side, said actuating linkage means including a bell crank type bracket pivoted coaxially with said first pivot point and including fourth and fifth pivot points defining the vertices of a triangle with said first pivot point;

e. a pawl member pivoted at said third pivot point and including a pawl juxtaposed the adjusting tube in a position to be received in and removed from a selected one of said openings upon rocking movement about said third pivot point and further including a sixth pivot point defining with said third pivot point and pawl the vertices of a second triangle; and

f. a tie rod pivoted to said fifth and sixth pivot points,

whereby rocking movement of said bell crank type bracket member moves said tie rod to thereby rock said pawl member in a direction to remove the pawl from an opening in said adjusting tube and permit the back rest means to be moved to a desired reclining position and locked in said position by rocking said bell crank type bracket member in an opposite direction to insert the pawl in a juxtaposed opening, the ratio of the distances between said first and fifth pivot points and the distance between said third and sixth pivot points being inversely proportional to the ratio of the angle through which said back rest means moves and and the angle through which said adjusting tube moves, so that the relationship between the pawl member and the guide cylinder remains substantially constant throughout reclining movements of said back rest means.

3,881,774
OXIDATION OF SULFIDE DEPOSITS CONTAINING COPPER VALUES

Hendrik Karel Van Poolen, Littleton, Colo., and Ray Vincent Huff, Acton, Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

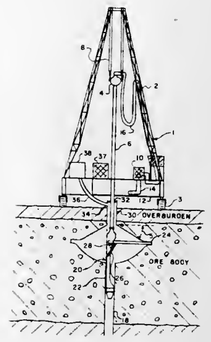
Filed Apr. 18, 1974, Ser. No. 461,902
Int. Cl. E21c *41/00*; **C01g** *3/10*
U.S. Cl. 299—4 **10 Claims**

1. In a process for recovering metal values by in-situ mining of same, the steps comprising: drilling at least one wellbore in an ore body having metallic sulfide values; injecting mixture of steam and oxygen in said wellbore in proportions of at least 25:1 ratio by weight of steam to oxygen as a gas whereby the gas is at least at the hydrostatic but below the rock parting pressure required for gas injection and the temperature, depending on the composition, is consistent with the injection pressure, said in-situ mining being carried out at a depth preferably beneath the water table; maintaining a mixture of steam and oxygen in an intimate contact in said ore body adjacent said wellbore; oxidizing said metal sulfides in said ore body whereby sulfur, sulfur dioxide and/or trioxide are formed and subsequently converted to sulfuric acid with said steam, said sulfur dioxide and/or trioxide thereby forming an acid lixiviant solution in said wellbore; maintaining said lixiviant solution in intimate contact with said metal values in said ore formation, and recovering said metal values together with said lixiviant and condensed steam.

3,881,775
MINING METHOD AND APPARATUS THEREFOR

Frank Alfred McPherson, Moore, Okla., and Homer Charles Reed, Newport Beach, Calif., assignors to Kerr-McGee Coal Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 400,378, Sept. 24, 1973, abandoned. This application Apr. 8, 1974, Ser. No. 458,467
Int. Cl. E21b *3/12*; **E21c** *41/00*
U.S. Cl. 299—18 **16 Claims**



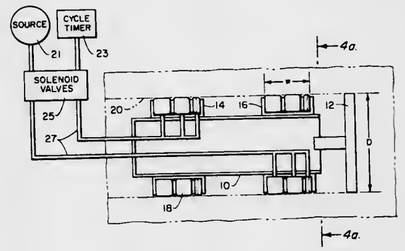
10. A method of mining a subterranean body of coal from a surface station comprising the steps of:

1. providing a bore hole extending from the surface into the body of coal;
2. introducing a rotatable member, having a fluid passageway therethrough and an elongated powered cutting member near its lower end, into the bore hole until the elongated cutting member is in the body of coal;
3. pivoting the elongated cutting member outwardly to contact the coal, applying power to the elongated cutting member and rotating the rotatable member and elongated cutting member whereby coal is cut from the body;
4. circulating a fluid having a specific gravity of from about 1.1 to about 2.5 and an API funnel viscosity of from about 35 to 80 seconds per quart into the area being mined and forming an aqueous suspension of the cut coal; and
5. recovering the aqueous suspension of coal at the surface station.

3,881,776
VERMICULATING POLYTOROIDAL THRUSTER

Richard H. Fashbaugh, Oxnard; Howard A. Gaberson, Camarillo; Philip L. Stone, Camarillo; Donald E. Williams, Camarillo, and John M. Stephenson, Camarillo, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1973, Ser. No. 418,332
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 **12 Claims**



1. A vermiculating polytoroidal thruster assembly comprising:

a. a spool having a cylindrical center and a pair of disc-shaped end plates;

b. a plurality of adjacently mounted, toroidal-shaped bladders held between the end plates on the cylindrical center of the spool;

c. means for selectively inflating and deflating certain bladders simultaneously in a predetermined sequence; and

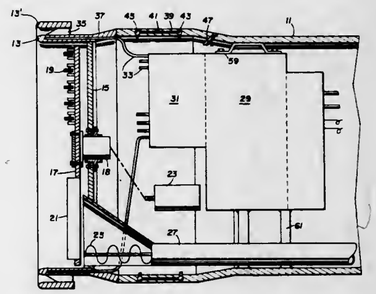
d. means for confining the axial expansion of each bladder during inflation.

3,881,777
APPARATUS AND METHOD FOR LARGE TUNNEL EXCAVATION IN SOFT AND INCOMPETENT ROCK OR GROUND

John H. Altseimer, and Robert J. Hanold, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 25, 1974, Ser. No. 436,402
Int. Cl. E21c *9/04*
U.S. Cl. 299—33 **3 Claims**

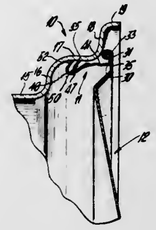
1. An earth tunneling machine comprising an elongated structural hull having a forward portion and a rearward portion, a closure plate affixed to the front end of the forward portion at right angles to the longitudinal axis of the hull, a peripheral segmented earth kerf melting penetrator of elongated plates affixed in adjacent relationship at the front end of the hull, a nuclear reactor supported in the hull, a plurality of heat pipes each thermally coupled at one end to the nuclear reactor core and at least one of such heat pipes being coupled at the other end to each of the earth kerf melting penetrator plates and adapted to maintain the kerf melting penetrator plates at a temperature above the melting temperature of earth materials, a rotary rock and earth cutting plate rotatably supported on the axis of the closure plate, motor means supported in the hull and coupled to the cutting plate for rotating the same, means for transporting the earth debris loosened by the cutter plate away from the cutter plate, said kerf melting penetrator having an outwardly flared skirt on the rearward portion thereof whereby melted earth is trowelled outward against and into the tunnel walls, a peripheral band portion at the front end of the hull constituting a tunnel liner forming band, liquid coolant means for thermally cooling the tunnel liner forming band, whereby said tunnel liner forming band supports the molten earth against the tunnel walls while simultaneously solidifying said molten earth into a tunnel wall initial supporting liner.



3,881,778
WHEEL TRIM LOCKING RINGS

Herbert Buerger, Walton, N.Y., assignor to Del-Met Corporation, Walton, N.Y.

Filed Sept. 13, 1973, Ser. No. 396,708
Int. Cl. B60b *7/06*
U.S. Cl. 301—37 B **2 Claims**



1. A locking ring comprising an annular flange, spring fingers extending from one side of the annular flange, said fingers each having a pair of transversely extending ribs, said fingers having bent back lips at their outer ends, flange means extending radially outwardly from the other side of said annular flange, and a wheel trim attached to said flange means, said spring fingers each having axially inwardly convergent side edges and said ribs of each finger converging axially inwardly, and said ribs of each finger being parallel to the side edges of said finger, said converging ribs being radially inwardly depressed, each finger having a peripheral rib between said pair of converging ribs, said peripheral ribs extending radially outwardly.

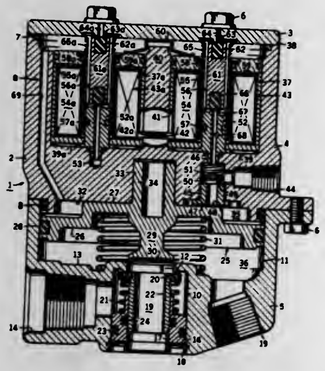
3,881,779
BRAKE ANTI-LOCK MECHANISM

John A. Machek, Creve Coeur, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.

Continuation-in-part of Ser. No. 218,293, Jan. 17, 1972, Pat. No. 3,758,167. This application May 21, 1973, Ser. No. 362,018

Int. Cl. B60t 8/08

U.S. Cl. 303—21 F 4 Claims



1. A control valve for an anti-lock brake system comprising:
a housing;
relay means movable in the housing and operable generally in response to control fluid pressure subjected thereto to effect a metered application through the housing of fluid pressure supplied thereto;
means for controlling the control fluid pressure subjected to the relay means comprising an electric solenoid valve energized in response to a preselected condition to isolate the control fluid pressure acting on the relay means and vent the isolated control fluid pressure, the relay means being responsive to the reduction of the control fluid pressure upon the venting thereof to effect a proportional reduction of the applied fluid pressure;
a flow passage in the housing for the flow therethrough of the control fluid pressure upon the subjection thereof to the relay means;
exhaust passage means in the housing corresponding to the flow passage for exhausting the control fluid pressure prior to energizing the solenoid valve;
a valve seat in the housing about the flow passage;
valve means for engagement with the valve seat, the valve means being movable into engagement with the valve seat to close the flow passage and isolate the control fluid pressure acting on the relay means upon the energization of the solenoid valve;
other exhaust passage means in the housing for communication with the isolated control fluid pressure;
another valve seat in the housing about the other exhaust passage means, the solenoid valve including other valve means for engagement with the other valve seat, the other valve means movable toward a position disengaged from the other valve seat to vent the isolated control fluid pressure through the other exhaust passage means upon the energization of the solenoid valve to engage the first named valve means with the first named valve seat;
recess means in the housing constituting a portion of the flow passage, the exhaust passage, and the other exhaust passage; and
a chamber connected with the recess means.

3,881,780
BRAKE HYDRAULIC PRESSURE CONTROL SYSTEM FOR VEHICLES

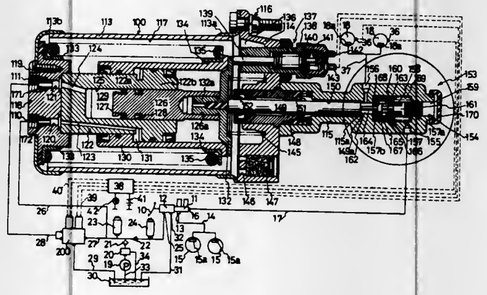
Mizuo Nyunoya, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha

Filed Apr. 30, 1973, Ser. No. 355,324

Claims priority, application Japan, May 13, 1972, 47-047463

Int. Cl. B60t 8/08

U.S. Cl. 303—21 F 6 Claims



1. A brake actuating hydraulic pressure control system for a vehicle comprising;
a master cylinder,
a wheel cylinder of at least one wheel of the vehicle,
a hydraulic circuit communicating said cylinders,
a pressure control valve device disposed within said circuit for controlling the relative hydraulic pressure supplied to said wheel cylinder after the master cylinder pressure exceeds a predetermined value,
said pressure control valve device including a housing having a bore, a stepped piston slidably mounted within said bore and having a first effective area portion exposed to the master cylinder pressure to urge said piston in one direction and said piston having a second portion of a greater effective area than that of said first portion, said second portion being exposed to the hydraulic pressure in said wheel cylinder to move said piston in opposition to the master cylinder pressure, a spring means for biasing said piston in said one direction, and a valve member for on-off controlling said hydraulic circuit in response to the movement of said piston,
means for sensing a substantial wheel skidding condition and delivering an instructive signal as a result of the sensing,
a change-over valve means movable in response to said instructive signal,
a skid control device for relieving the hydraulic pressure of the brake in said wheel cylinder through said change-over valve means, and
said skid control device including a plunger movable within said hydraulic circuit and operatively contacted with said valve member of said pressure control valve device and said plunger has a portion which normally holds said valve member of said pressure control valve device in the open position, whereby under skid condition said valve member is closed and said stepped piston is contacted with said housing in response to the movement of said plunger so as to interrupt the hydraulic communication between said master cylinder and said wheel cylinder, and the effective volume of said hydraulic circuit between said valve member and said wheel cylinder is varied in response to the movement of said plunger and a control piston operatively connected with said plunger for effecting the movement of said plunger through said change-over valve means to reduce the brake pressure.

3,881,781
ANTI-LOCK VEHICLE BRAKE SYSTEMS

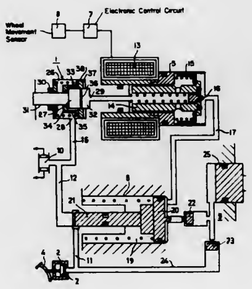
Derek Robert Skoyles, Salfords, Near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 1, 1973, Ser. No. 366,189

Claims priority, application United Kingdom, June 19, 1972, 28585/72

Int. Cl. B60t 8/00, 17/18

U.S. Cl. 303—21 AF 8 Claims



1. In an anti-lock vehicle brake system of the character referred to which includes a master cylinder, a wheel cylinder in fluid communication therewith, a relief connection in fluid communication with said wheel cylinder and an anti-lock control valve in fluid communication with said relief connection, said anti-lock control valve selectively modulating pressure in said wheel cylinder the fail-safe improvement comprising, means for inhibiting fluid flow from said relief connection to said anti-lock control valve, said means for inhibiting including mechanical biassing means providing a force for biassing said means for inhibiting to an inhibiting position, said means for inhibiting being responsive to fluid pressures in said relief connection such that with said anti-lock control valve closed, fluid pressure in said relief connection due to a braking action and above a certain minimum value determined by the force of the biassing means causes displacement of said fluid inhibiting means to an unhibiting position at which it cannot impede flow of fluid through said anti-lock control valve when the latter is actuated while said fluid pressure exists, and with said anti-lock control valve actuated in the absence of said fluid pressure, a fluid pressure drop across said fluid inhibiting means arising from a subsequent braking action causes said fluid inhibiting means to remain in said inhibiting position in which it severely restricts flow of fluid through the actuated anti-lock control valve.

3,881,782
ANTI-LOCK VEHICLE BRAKE SYSTEMS

Derek Robert Skoyles, Salfords, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,910

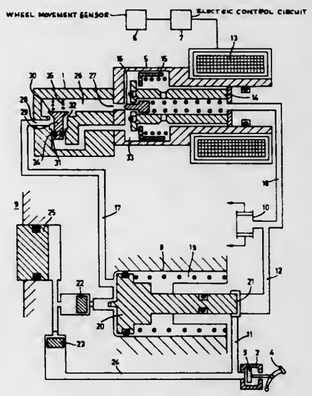
Claims priority, application United Kingdom, Sept. 18, 1972, 43228/72

Int. Cl. B60t 8/02, 13/16

U.S. Cl. 303—21 F 4 Claims

1. An anti-lock vehicle brake system of the type used 2the a vehicle wheel and an associated wheel brake including a fluid pressure sourse which in response to a braking action provides fluid under pressure by a fluid pressure connection to the brake, the fluid under pressure being effective to produce braking pressure at the brake to cause the letter to apply a braking force at the wheel, a solenoid anti-lock control valve having an inlet in fluid communication with the brake, wheel movement sensing means producing an output signal causing the anti-lock control valve to open when a predetermined relationship exists which signifies when wheel locking is imminent, and a relief connection in fluid communication with the brake and the outlet of the anti-lock control valve, opening of (the anti-lock control valve reducing fluid pressure in said brake by allowing displacement of fluid away from the brake into the relief connection, the improvement which comprises in said relief connection at the outlet side of said anti-lock control valve a fail-safe arrangement for comparing the fluid pressure at the outlet side of the anti-lock control valve with the fluid pressure at the brake, said fail safe arrangement comprising:

a. means responsive to fluid flow at the outlet of the anti-lock control valve due to the anti-lock control valve being at least partially unsealed at the onset of brake pressure



application when the anti-lock control valve is unactuated whereby there is pressure build-up at the outlet of said anti-lock control valve, the fail-safe arrangement sealing the outlet of the anti-lock control valve and

b. if there is no fluid pressure build-up at the outlet of said anti-lock control valve at the onset of brake pressure application, said fail-safe arrangement being responsive to the fluid pressure at the brake to unseal said relief connection and thereafter maintain it unsealed notwithstanding subsequent build-up of fluid pressure at said outlet side due to actuation of the anti-lock control valve responsive to the wheel sensor.

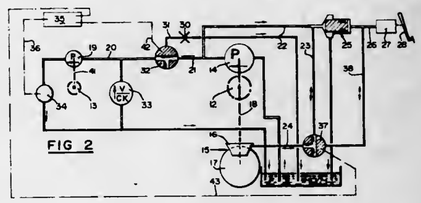
3,881,783
FIXED SLIP HYDRAULIC ANTI-LOCK BRAKING SYSTEM

Samuel Shiber, Mundelein, Ill., assignor to Benjamin Ron, New York, N.Y.; Royce H. Husted, Wheaton and Samuel Schiber, both of, Ill.

Filed Feb. 8, 1974, Ser. No. 440,860

Int. Cl. B60t 8/06, 13/16

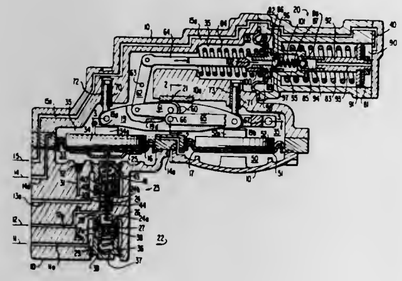
U.S. Cl. 303—21 F 7 Claims



1. In an airplane landing gear of the type having a first, braked wheel, and a second, less than fully braked wheel, an anti-lock braking system comprising in combination;

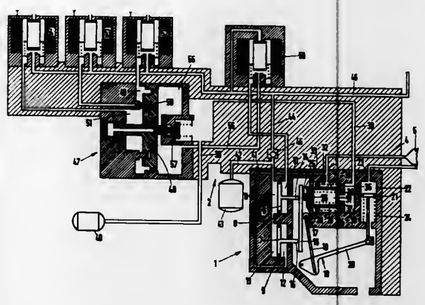
a first positive displacement hydraulic pump driven by said first wheel,
a hydraulically actuated brake means for braking said first wheel,
a second positive displacement hydraulic pump driven by said second wheel, the output of said second pump being less than the output of said first pump when said wheels are rotating at equal peripheral speeds, and
conduit means connecting an output port of said first pump with the input port of said second pump and with said brake means,
wherein said first wheel's braking is regulated by said system so as to cause said first pump's output to substantially equal to said second pump's input.

3,881,784
VARIABLE PROPORTIONING RELAY VALVE
Thomas Engle, Cape Vincent, N.Y., assignor to General Signal Corporation, Rochester, N.Y.
Filed Nov. 9, 1973, Ser. No. 414,479
Int. Cl. B60t *8/18*
U.S. Cl. 303—22 A **6 Claims**



1. In a variable ratio relay valve of the type including a relay valve portion having inlet and outlet ports and a movable valve element actuable to permit fluid flow from said inlet port to said outlet port in response to a control means; and control means for actuating said valve element, said control means comprising means responsive to a first input control pressure for providing an actuating force, means for applying an actuating force to said valve element and means operably connecting said force providing means and said force applying means for adjustably varying the proportionality between the force provided by said force providing means and the force applied to said valve element by said force applying means in response to a servo mechanism, an improved servo mechanism comprising:
an input diaphragm responsive to second input control pressure and mounted for reciprocating movement against a first resilient biasing means;
an output diaphragm response to said second input control pressure, mounted for reciprocating movement against a second resilient biasing means and operatively connected to said proporitonality varying means; and
valve means linking said input and output diaphragms for transferring fluid from the pressurized side of said input diaphragm to the pressurized side of said output diaphragm in response to movement of said input diaphragm due to a rise in said second input control pressure and/or movement of said output diaphragm due to mechanical feed-back from said proportionality varying means.

3,881,785
LOAD RESPONSIVE AIR BRAKE SYSTEM FOR VEHICLES INCLUDING A SPRING-LOADED CYLINDER
Hans Pollinger, Munich, and Karlheinz Splanemann, Grobenzell, both of Germany, assignors to Knorr-Bremse GmbH, Munich, Germany
Filed Apr. 3, 1974, Ser. No. 457,641
Claims priority, application Germany, Apr. 3, 1973, 2316587
Int. Cl. B60t *8/22*
U.S. Cl. 303—22 R **6 Claims**

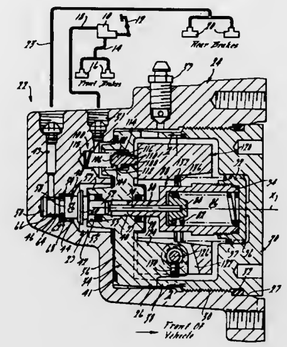


1. In a load responsive air brake system for vehicles, particularly railway vehicles, comprising a main air line connected to a source of compressed air, a spring-loaded cylinder having a piston actuatable by a load responsive release pressure against the force of said spring, a load brake valve connected to said main air line so as to be operable thereby and having air passage means communicating with said cylinder, first and second control pistons in said load brake valve, a beam acted upon by said control pistons, a fulcrum upon which said beam is balanced, means for deplacing said fulcrum in response to the load on the vehicle, a control reservoir connected to said main air line and acting upon one side of said control pistons, means connecting the other side of said second piston to said spring-loaded cylinder, and a pressure reducing valve connected between said main air line and the other side of said first piston is subjected to a pressure proportional to the degree of braking.

3,881,786
INERTIA RESPONSIVE PROPORTIONING VALVE
William Stelzer, Milford and Edward J. Hayes, Ann Arbor, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.
Continuation of Ser. No. 124,214, March 15, 1971, abandoned. This application July 23, 1973, Ser. No. 381,598
Int. Cl. B60t *11/34, 8/18*
U.S. Cl. 303—24 F **14 Claims**

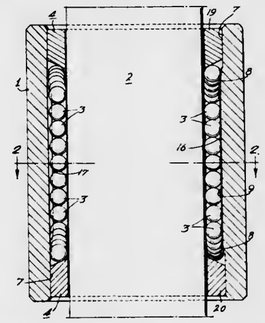
7. In an automotive vehicle having front and rear brake systems operated by fluid pressure, the improvement comprising: brake pressure proportioning means for modulating the brake pressure to provide a relatively lower pressure in the rear brakes and a relatively higher pressure in the front brakes to compensate for weight transfer during braking, said proportioning means comprising a proportioning valve having an open condition and a closed condition, spring means for keeping said proportioning valve open with a preselected bias, fluid pressure operated means responsive to said fluid pressure to increase the bias of said spring means to increase the resistance to actuation of said closed condition of said proportioning valve, control valve means actuable to a closed position for interrupting communication of said fluid pressure to said fluid pressure operated means to prevent further increasing of said bias of said spring means, vehicle deceleration sensing means for actuating said control valve means to said closed position

in response to vehicle deceleration, and means responsive to the increase in bias of said spring means to resist actuation of



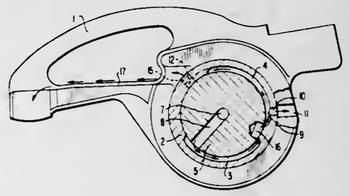
said control valve means to said closed position until a higher vehicle deceleration is attained.

3,881,787
BALL BUSHING
Sven Walter Nilsson, Partille, Sweden, assignor to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands
Filed Feb. 12, 1973, Ser. No. 331,515
Claims priority, application Sweden, Feb. 14, 1972, 1715/72
Int. Cl. F16c *17/00*
U.S. Cl. 308—6 C **7 Claims**



1. The combination comprising a shaft member, and an elongated tubular sleeve member adapted for longitudinal movement relative to one another, said sleeve member circumscribing said shaft member, and spaced therefrom to define an annular space therebetween, a plurality of ball elements in the annular space between said shaft member and sleeve member and a cage for guiding said ball elements comprising first and second cage sections each including an annular portion having a plurality of axially directed fingers, the fingers of each cage section being interdigitated so as to form a continuous ball path for the ball elements about the periphery of the shaft member, the circumferential distance between confronting side walls of adjacent fingers being larger than the diameter of the balls when measured adjacent the sleeve member but smaller than the diameter of the balls when measured adjacent the shaft member, means defining on the inner surface of said sleeve member confronting the peripheral surface of said shaft member, a series of axially extending, circumferentially spaced grooves having a cross sectional radius of curvature conforming closely to the radius of curvature of the ball elements to obtain good osculation therebetween, the grooves of a first series being recessed deeper into said sleeve member than the grooves of a second series disposed intermediate said first series and the cage fingers being of a predetermined configuration with respect to the ball elements and the shaft member so that the ball elements are in bearing contact with the shaft member and sleeve member when in said second groove series and move in one direction during relative movement of said shaft member and sleeve member and are free to rotate without contacting both the sleeve member and shaft member when in said first groove series and move in said first groove series in a direction opposite movement in said second groove series.

3,881,788
ARRANGEMENT FOR LUBRICATING A BEARING
Fritz Kotauczek, Schanbach, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany
Filed Feb. 6, 1974, Ser. No. 440,009
Claims priority, application Germany, Feb. 7, 1973, 2305834
Int. Cl. F16c *13/00*
U.S. Cl. 308—21 **19 Claims**

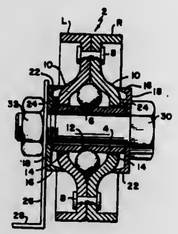


1. An installation for the lubrication of a bearing which includes a bearing sleeve means with a first oil supply groove means extending in the circumferential direction and provided at the inner surface of the bearing sleeve means, a pin provided with a radial oil supply bore terminating in said oil supply groove means, characterized in that the bearing sleeve means is provided with a second oil supply groove means extending substantially in the same direction as the first-mentioned oil supply groove means and at a distance therefrom, the pin which is relatively fixedly arranged and on which the bearing sleeve means is rotatably supported, being provided with a recess means which, in the starting position of the bearing sleeve means, overlaps only one of the oil supply groove means and which, upon slight rotary movement of the bearing sleeve means, so connects the two oil supply groove means with each other that the previously interrupted oil flow is lifted and the lubricating oil which is under pressure is conducted to lubricating oil places by way of the second oil supply groove means.

3,881,789
CONVEYOR ROLLER AND BEARING SEAL
Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio
Division of Ser. No. 128,081, March 25, 1971, abandoned. This application June 8, 1973, Ser. No. 368,133
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.1 **4 Claims**

1. In combination, a roller comprising a rim, a hub having a central bore therein, said hub extending through and projecting beyond the ends of the rim, a bearing assembly rotatably mounting the rim on the hub with a clearance space therebetween, and means sealing said space on opposite sides of the rim, said sealing means each comprising a disc of elasto-

meric material having an opening of a diameter less than the outer diameters of the ends of the hub, a flexible annular lip having a greater diameter than the hub extending laterally from the periphery of the disc, at least three fingers extending from the wall of the disc in the same direction as the lip and being of a shorter length than the lip but of a length to extend along the projecting end of the hub and bear against the rim



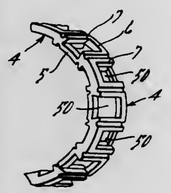
when the disc wall lies against the end of the hub, said fingers being equiangularly spaced concentrically about the axis of the bore on a radius slightly smaller than the outer periphery of the hub for gripping the hub when flexed outwardly, said fingers each being a short arc of elastomeric material with the concavity toward the axis and of a circumferential extent less than the spacing between adjacent fingers.

3,881,790

ONE PIECE MOLDED PLASTIC RETAINER FOR CYLINDRICAL ROLLER BEARINGS AND METHOD OF MANUFACTURE

Robert M. Ryanen, Commerce Township, Oakland County, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Aug. 6, 1973, Ser. No. 385,859
Int. Cl. F16c *33/49*
U.S. Cl. 308—217 **10 Claims**



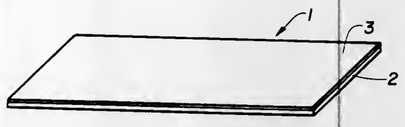
1. In a bearing assembly including a plurality of rollers retained in circumferentially-spaced relationship, the improvement comprising a one-piece molded plastic retainer defining a plurality of pockets within which the rollers are disposed, said retainer comprising a pair of spaced circular side rails interconnected at circumferentially-spaced intervals by axially extending cross bars, each side rail comprised of a plurality of alternating arcuately-shaped upper side rail sections and lower side rail sections, each side rail section extending circumferentially between two adjacent cross bars and integrally connected thereto, said upper and said lower side rail sections disposed in alternating sequence circumferentially around each side rail and said upper side rail sections of one side rail disposed axially opposite to a lower side rail section of the other said side rail and vice versa.

3,881,791

DRY JOURNAL BEARING

Georg Hentschel, Schweinfurt, Germany, assignor to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands

Filed Feb. 22, 1974, Ser. No. 444,832
Claims priority, application Germany, Mar. 2, 1973, 2310592; Sept. 21, 1973, 2347548; Oct. 4, 1973, 2349952
Int. Cl. F16c *27/00*
U.S. Cl. 308—237 R **19 Claims**



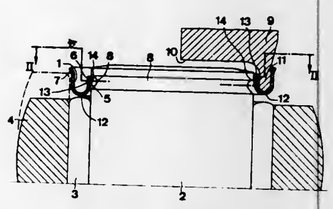
1. A dry journal bearing for a shaft comprising a housing having a bore adapted to receive said shaft and a bearing strip adapted to be interposed between the shaft and said bore, said bearing strip comprising a planar member in its normal state capable of being flexed to fit said bore and conform thereto on insertion of said shaft while maintaining its restorative force.

3,881,792

COMPACT AXIAL RETAINER SAFETY DEVICE FOR ROTATABLE MEMBERS

Michel Orain, Conflans-Sainte-Honorine, France, assignor to Societe Anonyme dite: Glaenzer Spicer, Poissy, France

Filed Apr. 8, 1974, Ser. No. 458,890
Claims priority, application France, Apr. 27, 1973, 73.15501
Int. Cl. F16c *19/24*
U.S. Cl. 308—237 R **6 Claims**



1. A resilient retainer ring for axially retaining at least one member for rotation on a spindle member having a groove in its outer surface, said retainer ring being generally U-shaped in cross-section and having a radially inner wall adapted to be clicked into and resiliently bear against the groove in the spindle member and a radially outer wall, the radially inner wall having corrugations, formed therealong, the mean circle of the corrugations being parallel to the general plane of the retainer ring, the radially innermost portions of the corrugations being tangent to a circle having a diameter less than that of the spindle member.

3,881,793

ANTI-TILT MECHANISM

Kenneth M. Anderson, Jamestown, N.Y., assignor to AVM Corporation, Jamestown, N.Y.

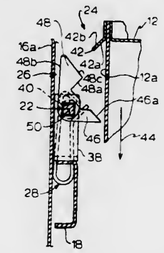
Filed Jan. 2, 1974, Ser. No. 429,750
Int. Cl. E05b *65/46*; E05c *15/04*; A47b *81/00*
U.S. Cl. 312—217 **15 Claims**

1. In a file cabinet of the type having a plurality of drawers supported by said cabinet in linear alignment with each other for horizontal movements between closed and open positions and an anti-tilt mechanism for preventing opening of other

drawers after a first drawer has been opened, the improvement wherein said anti-tilt mechanism comprises:

a plurality of latch means carried one on each of said drawers, each said latch means including abutment means and stop means, each said abutment means having leading and trailing surfaces relative to its path of travel as its associated drawer is moved towards open position;

an elongated rod mounted in and by said cabinet to extend perpendicular to an immediately adjacent said drawers for rotary movements about its own longitudinal axis; and a plurality of cam members fixed for simultaneous rotation with said rod and spaced therealong one in operative association with each of said latch means, each said cam member having an operator finger and an interlock-return finger, said cam members having a first drawer unlatched condition when all of said drawers are closed wherein their operator fingers are disposed in operative alignment with said path of travel of said abutment means of said latch means with which said cam members are operatively associated and their interlock-return fingers are removed from such alignment and a second drawer latched condition wherein their interlock-return fingers are disposed in operative alignment with said path of



travel of said abutment means of said latch means with which said cam members are operatively associated and their operator fingers are removed from such alignment, said cam members being movable from said first condition into said second condition upon movement of said first drawer into open position by driving surface engagement of said leading surface of its associated abutment means with its operatively aligned operator finger, said cam members being returned to said first condition from said second condition upon return movement of said first drawer to closed condition by driving surface engagement of said trailing surface of its associated abutment means with its operatively aligned interlock-return finger, said other drawers being prevented from being opened while said first drawer is in open position due to surface engagement of said leading surface of their associated abutment means with their operatively aligned interlock-return fingers and said interlock-return fingers of said cam members operatively associated with said latch means carried by said other drawers surface engaging with said stop means of said other drawers to prevent movement of said interlock-return fingers from operative alignment with said abutment means in a direction away from said first condition.

3,881,794

CABINET

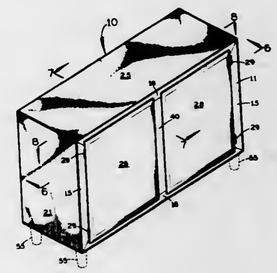
Walter Henning, Miami Lakes, Fla., assignor to Regal Wood Products, Inc., Miami, Fla.

Filed Oct. 16, 1973, Ser. No. 406,796
Int. Cl. A47b *47/04*
U.S. Cl. 312—259 **15 Claims**

1. A cabinet comprising, in combination, a single blank formed of a substrate and at least one laminated face by grooving the same to define a living hinge of laminate between ones of a first sidewall, a bottom adjoining the first said sidewall, a second sidewall adjoining said bottom, and a top joining said second sidewall for closing into rectangular enclosure, a pair of stiles extending from the vertical front edge of each of said first sidewall and second sidewall and joined thereto by a living hinge,

a top rail extending downwardly from said top and joined thereto by a living hinge,

a bottom rail extending upwardly from said bottom adjoined thereto by a living hinge,



each of said top rail, bottom rail, and stiles having complementary ends proportioned for abutting relationship with the adjacent rails and stiles whereby the front portion of the cabinet is framed,

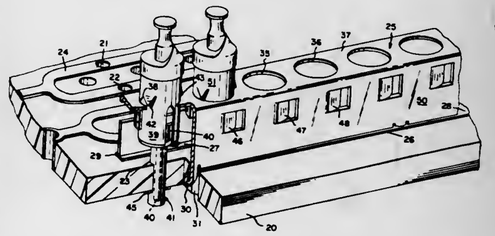
each of said top rail, bottom rail, and stiles having a double groove and double plate to define a reversely folded back part abutting its adjacent sidewall and masking all raw edges.

3,881,795

MOUNTING MEANS FOR DIODE MATRIX

Robert Franklin Cobaugh, Elizabethtown, and James Ray Coller, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 2, 1974, Ser. No. 466,101
Int. Cl. H05k *1/12*
U.S. Cl. 339—17 C **20 Claims**



1. Mounting means for mounting a plurality of diodes upon a substrate comprising the combination of:

a plurality of apertures formed in said substrate;

a plurality of female contact receptacles individually positioned in each of said apertures;

an elongated channel-shaped element having a generally U-shaped cross-sectional configuration formed by side walls and a transverse section and positioned over said apertures in an inverted manner, with at least portions of the open edges of said side walls of said channel resting upon the surface of said substrate and electrically insulated from said female contact receptacles at all points;

a plurality of second apertures formed in the transverse section of said channel, with each of said second apertures being substantially concentric with respect to one of said first apertures;

said female receptacles each being constructed to receive a first terminal of a diode inserted in the associated concentric aperture in said channel element; and

said associated concentric aperture being of a size to receive and make physical contact with the diode inserted therethrough to both mechanically support said diode and also to make electrical contact with the second terminal of said diode.

3,881,796

TERMINAL FOR FLAT CONDUCTOR

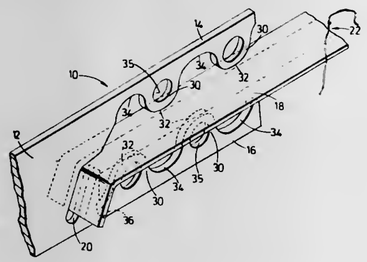
Laurie A. Saunders, Fleet, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,108

Claims priority, application United Kingdom, Mar. 23, 1973, 14077/73

Int. Cl. H01r

U.S. Cl. 339—97 C **10 Claims**



1. A terminal for a flat electrical conductor which may have insulation on the opposed surfaces thereof comprising:

a pair of jaws adapted to receive said flat electrical conductor therebetween;

means on said jaws for making an electrical connection with said flat electrical conductor;

said means comprising longitudinally spaced projections on each said jaw extending toward the other jaw, the projections on one jaw being alternately disposed with respect to the projections on the other jaw, said projections having curved convex outer surfaces;

the spaces between said projections on each said jaw defining concave surfaces, said spaces being dimensioned so as to be able to receive said projections whereby clamping of said jaws together brings said convex and concave surfaces into mating relationship whereby the insulation on a flat electrical conductor disposed therebetween is deformed to produce electrical contact between said jaws and said conductor; and

each said projection being formed with an aperture whereby said projection may deform when said jaws are clamped together.

3,881,797

ARRANGEMENT OF REPLACEABLE CORD FOR ELECTRICAL APPARATUS

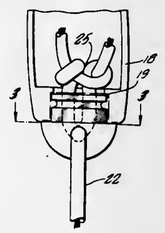
Edward M. Grandinetti, 2815 Los Flores Blvd., Lynwood, Calif. 90262

Filed Aug. 16, 1973, Ser. No. 388,823

Int. Cl. H01r *13/58*

U.S. Cl. 339—106 **1 Claim**

1. A replacement cord assembly for an electrical appliance comprising a pair of insulated wires for conducting electricity from a source to an appliance, the inner end of each of said wires carrying a male plug receivable in a female socket in the handle of said appliance; a plug adapted to be carried by said appliance, said plug having an external flange receivable in a groove formed in the interior of said handle, said flange and said groove cooperating to retain said plug in said handle, a pair of electrical wire inlet apertures, a pair of electrical wire outlet apertures, and a pair of channels, each of said channels communicating one of said inlets with one of said outlets, said inlets being disposed on opposite sides of said plug from one



another and said outlets being disposed on a third side of said plug; said electrical wires entering said plug through said inlet apertures, exiting said plug through said outlet apertures and being tied together in an underwriters knot between said outlet apertures and said male plugs.

3,881,798

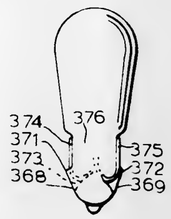
SNAP-IN ELECTRIC LAMP

John J. Horan, 420 Quigley Ave., Willow Grove, Pa. 19090

Continuation of Ser. No. 883,854, Dec. 8, 1969, abandoned, which is a division of Ser. No. 584,031, Sept. 7, 1966, Pat. No. 3,523,274. This application Dec. 2, 1971, Ser. No. 204,376

Int. Cl. H01r *13/62*

U.S. Cl. 339—144 R **21 Claims**



1. An electric lamp adapted for snap-latching into substantially simultaneous mechanical and electrical engagement with a holder having a conforming, elastically constricting portion that is provided with inwardly facing, lamp-compressing electrical contacts,

said lamp having a non-metallic body and comprising:

a sealed head formed at the upper end of said body,

said head containing a source of radiant energy and having a wall at least partly transmissive of the energy emitted by said source;

a laterally extending camming means formed at the lower end of said body,

said camming means having an insulative, laterally outermost surface,

said camming means being shaped to interfere with and dilate such portion during forcible downward insertion of said lamp into such holder;

a holder-engagement section positioned between said head and said camming means and joined to them; and

a plurality of conductive electrical terminals located on said section,

said terminals having generally laterally facing outer surfaces aligned to receive inward lamp-clamping force and electrical power from respective such contacts when said section is engaged to such holder,

said surfaces of said terminals being located inwardly of the lateral extent of said insulative laterally outermost surface of said camming means,

said terminals being connected to said source via respective electrical leads passing into said body,

said camming means having its upper teminus located and configured to pass through and cease interfering with such portion when said section has followed said camming thereinto, said camming means thereby releasing such portion to deliver said force and power through such contacts to said aligned terminals,

said upper terminus of said camming means being shaped to constitute a latch for subsequent retention of such elastically constricting portion thereabove.

3,881,799

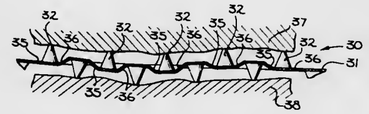
RESILIENT MULTI-MICRO POINT METALLIC JUNCTION

George H. Elliott, 16501 Knollwood Dr., Granada Hills, Calif. 91344, and Leonard F. Roman, 11018 Moorpark, North Hollywood, Calif.

Filed Sept. 11, 1972, Ser. No. 287,593

Int. Cl. H01r *13/24, 13/02*

U.S. Cl. 339—252 R **10 Claims**



1. An electrical contact disposed between opposing irregular surfaces for making electrical connection therebetween, the combination comprising:

a pliable sheet of electrically conductive metallic material;

a plurality of raised contact means outwardly projecting from opposite sides of said pliable sheet;

means formed in said pliable sheet associated with each of said raised contact means to permit separate and individual deflection of said raised contact means in response to engagement with the opposing irregular surfaces;

said last mentioned deflection means constructed to permit outward movement of said contact means substantially normal to said sheet and in parallel direction with respect to each other; and

said deflection means comprise a pair of U-shaped slots formed about each of said contact means so as to define a bridge on opposite sides of each contact means solely and flexibly interconnecting said contact means with said pliable sheet.

3,881,800

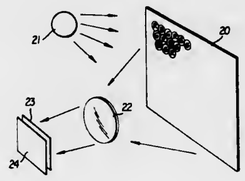
MULTICOLOR IMAGE MEMORY

Albert A. Friesem, Rehovot, Israel, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Division of Ser. No. 239,594, March 30, 1972, Pat. No. 3,823,412. This application May 30, 1974, Ser. No. 474,782

Int. Cl. G02b *27/02;* **G03b** *21/00;* **G02b** *27/00*

U.S. Cl. 350—3.5 **3 Claims**



1. A method comprising the steps of:

providing an array of a plurality of groups of interleaved photoluminescent segments each group emitting a different one of a plurality of colors,

focusing the emitted light to an image location,

providing at the image location a partially transparent multicolor original image which is to be recorded, and modulating the emitted light in accordance with the intensity of each of the colors of the image to be recorded by passing the radiated light through said partially transparent image,

recording the modulated light pattern on a photosensitive recording surface proximate said original image,

producing a second recording from the photosensitive recording surface and having information content based upon the original image to be recorded,

illuminating the second recording with a readout light to cast an image modulated in accordance with the second recording upon an array of photoluminescent segments similar in color emission properties and arrangement to the first mentioned array so that all of the portions of the second recording which contain information about the same color in the original image transmit light to photoluminescent segments all of which emit the same color.

3,881,801

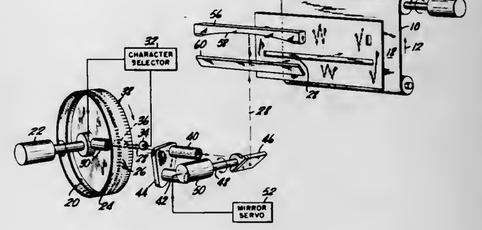
OPTICAL SCANNING SYSTEM

Edwin W. Bechtold, Plandome Manor, N.Y., assignor to Eltra Corporation, New York, N.Y.

Filed Sept. 19, 1973, Ser. No. 398,693

Int. Cl. G02b *17/00*

U.S. Cl. 350—6 **9 Claims**



1. An optical scanning system for arrangement between an object and a light-sensitive medium, said optical system comprising, in combination:

a. an objective for forming an image of the object on the light-sensitive medium, the route of projected light from said object to said image defining an optical path having two ends;

b. first mirror means arranged in said optical path between one end thereof and said objective, said first mirror means being selectively movable about a pivot axis for changing angularly the direction of the portion of said optical path between said one end and said first mirror means, the distance between said one end and said first mirror means thereby defining a radius of scan; and

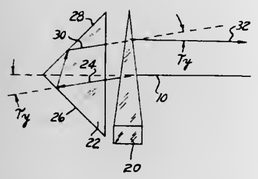
c. second mirror means arranged in said optical path between said one end thereof and said first mirror means, said second mirror means having a curved reflecting surface with a radius of curvature that is substantially twice said radius of scan;

whereby the optical system satisfies the Petzval condition for a flat image surface so that movement of said first mirror means causes said one end of said optical path to move linearly.

3,881,802
WEDGE-PRISM OPTICAL SCANNER

Uuno V. Helava, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 18, 1974, Ser. No. 461,823
Int. Cl. G02b 17/00
U.S. Cl. 350—6 21 Claims



1. An optical scanner for angularly deflecting an incident beam of light in a direction parallel to a determinable plane comprising:

a single refractive member, having an entrance surface, an exit surface angularly disposed to said entrance surface and a longitudinal axis passing through said entrance and exit surfaces, for angularly deflecting the incident beam of light incident on said entrance surface in a straight line through said single refractive member to said exit surface in a direction to generate a deflected beam angularly disposed to the direction of said incident beam, said deflected beam having a first angular component in a direction parallel to a first predetermined plane containing said longitudinal axis and a second angular component in a direction parallel to a second predetermined plane containing said longitudinal axis and perpendicular to said first predetermined plane;

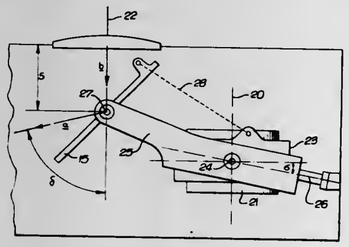
means for rotating said single refractive member about said longitudinal axis;

means disposed adjacent to said exit surface for reflecting said deflected beam back through said single refractive member, said means for reflecting retro-reflecting said first angular component and specularly reflecting said second angular component.

3,881,803
STABILIZED OPTICAL VIEWING DEVICE

Guy Malcolm Parker, 57 Old Rd., Headington, Oxford, OX 3 7 JZ, England

Filed May 22, 1973, Ser. No. 362,799
Claims priority, application United Kingdom, May 25, 1972, 24561/72
Int. Cl. G02b 23/02
U.S. Cl. 350—16 9 Claims



1. An optical viewing device having a line of sight and a parallel viewing direction and comprising

a. an objective lens system having spaced lens elements,

b. a mirror element located to reflect light passing along an optical path between the lens elements,

c. stabilizing means having a frame, an outer gimbal pivotally carried by the frame and carrying the mirror to pivot about a first axis, an inner gimbal carried by the outer gimbal to pivot about a second axis substantially parallel to said first axis, and a body carried by the inner gimbal, said body tending to maintain an alignment in space parallel to the line of sight,

d. a link between the mirror element and the inner gimbal such that their respective angular movements relative to the outer gimbal are in the ratio $1 : r$, the arrangement being such that $1 - (2/r) + (2s/fr) = 1/m$

where

s is the distance along the optical axis between the reflecting surface and that part of the objective lens system that lies in front of the reflecting surface;

f is the focal length of that part of the objective lens system that lies in front of the reflecting surface; and

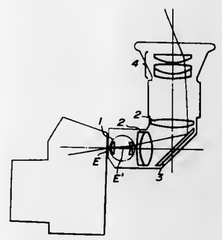
m is the overall magnification of the complete optical system of the device;

whereby the image produced by the device is stabilized in space against vibration leading to movement of the device about an axis perpendicular to the line of sight.

3,881,804
COMPACT ANGLE FINDER WITH ADJUSTABLE MAGNIFYING LENS SYSTEM

Yoshitsugu Ikeda Hachioji, Tokyo, Japan, assignor to Olympus Optical Company Limited

Filed May 16, 1973, Ser. No. 360,949
Claims priority, application Japan, May 23, 1972, 47-50985
Int. Cl. G02b 23/14
U.S. Cl. 350—49 3 Claims

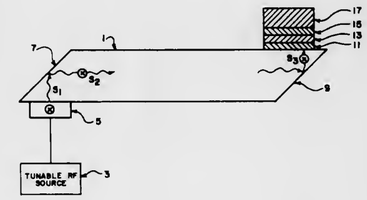


1. A compact angle finder for single-lens reflex cameras comprising a single-lens reflex camera and an angle finder arranged at the rear of an eyepiece of said single-lens reflex camera and consisting of a Galilean type rotatably adjustable magnifying lens system, an objective lens system divided into two positive components bounding an air space therebetween, a reflecting member disposed in said air space, and an eyepiece lens system composed of two positive components, both said objective lens system and said eyepiece lens system being arranged at the rear of said magnifying lens system, and in which an entrance pupil of said adjustable magnifying lens system substantially coincides with an exit pupil of said eyepiece of the single-lens reflex camera finder, an exit pupil of said adjustable magnifying lens system is located within a range which is about one-half the overall length of said adjustable magnifying lens system from the center of rotation thereof and at the same time said exit pupil coincides with an entrance pupil of a lens system consisting of said objective lens system and said eyepiece lens system.

3,881,805
ACOUSTIC TERMINATIONS FOR ACOUSTICALLY TUNED OPTICAL FILTERS

John D. Larson, III, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 18, 1974, Ser. No. 434,530
Int. Cl. G02f 1/24
U.S. Cl. 350—149 3 Claims



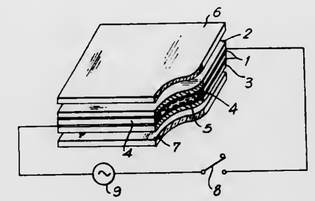
1. An acoustic terminator for an acousto-optic filter comprising:

a metallized adhesive layer on the surface of the filter; and a mass of lead/gold alloy on the adhesive layer, the alloy having a composition by weight of lead to gold in the range 50/50 to 100/0.

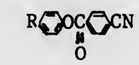
3,881,806
ELECTRO-OPTICAL DISPLAY DEVICE

Toshihiro Suzuki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 13, 1973, Ser. No. 378,852
Claims priority, application Japan, July 13, 1972, 47-69526
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 9 Claims



1. In an electro-optical display device, the combination comprising a liquid crystal composition including at least one compound having the formula

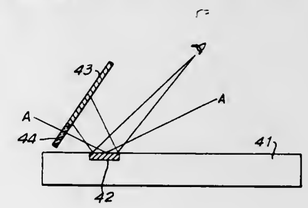


where R is a radical selected from the group consisting of alkyl, alkoxy and acyloxy radicals, each radical containing from 1 to 10 carbon atoms; a pair of opposed transparent plates each having a transparent conductive film on the interior surface thereof, between which said composition is held as a thin layer, said conductive films being connectable to a voltage source; and a pair of light-polarizing members disposed proximate the exterior surfaces of each of said transparent plates, the optical axes of said light-polarizing members being so related to each other that imposition and removal of an electric field across said liquid crystal composition substantially alters the transmission of light through said device.

3,881,807
LIQUID CRYSTAL DISPLAY FOR SMALL-SIZED ELECTRONIC CALCULATOR

Minoru Hosokawa, and Kouji Kakizawa, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 197,379, Nov. 10, 1971, abandoned. This application Dec. 3, 1973, Ser. No. 421,315
Claims priority, application Japan, Nov. 12, 1970, 45-111928
Int. Cl. G02f 1/28; G08b 23/00
U.S. Cl. 350—160 LC 3 Claims

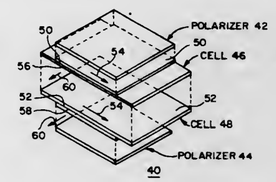


1. In a small-sized electronic calculator, the improvement which comprises liquid crystal display means having a display surface disposed on said calculator; and cover means pivotally mounted on said calculator for displacement between a first position in which said cover overlays said liquid crystal display surface, the second position in which said cover is positioned to intercept light reflected from said liquid crystal display surface relative to the eye of the observer, said cover further including a transparent plate proximate the viewing surface of the calculator to provide light from behind the cover to thereby enhance the contrast of said display device to the eye of the observer.

3,881,808
LIQUID CRYSTAL LIGHT CONTROL DEVICE HAVING A HIGH TRANSMISSION EFFICIENCY

Richard W. Gurtler, Mesa, and Reuben Wechsler, Phoenix, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Dec. 7, 1973, Ser. No. 422,953
Int. Cl. G02f 1/28
U.S. Cl. 350—160 LC 14 Claims



1. A light control device including in combination:

first polarizer means polarized in a predetermined direction;

first twisted nematic liquid crystal cell with a first surface juxtapositioned along said first polarizer means and a second surface, said first liquid crystal cell having liquid crystal material with selectively oriented molecules interposed between said first and second surfaces thereof;

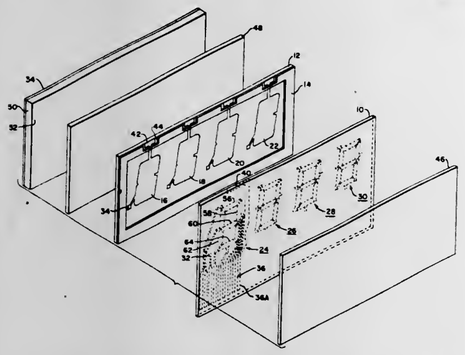
second twisted nematic liquid crystal cell with a first surface juxtapositioned along said second surface of said first liquid crystal cell and a second surface, said second liquid crystal cell having liquid crystal material with selectively oriented molecules interposed between said first and second surfaces thereof; and

second polarizer means juxtapositioned along said second surface of said second liquid crystal cell, said second polarizer means being polarized in another predetermined direction.

3,881,809
REFLECTION SYSTEM FOR LIQUID CRYSTAL DISPLAYS

James L. Fergason, Kent, and Thomas B. Harsch, Stow, both of Ohio, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 233,678, March 10, 1972, abandoned. This application May 25, 1973, Ser. No. 364,027
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 9 Claims

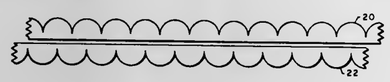


1. A liquid crystal display comprising a layer of liquid crystal material disposed between first and second transparent parallel plates to provide a sandwich structure through which light can pass, said plates being coated on only selected areas thereof with films of transparent conductive material, means for polarizing light passing through said transparent plates and said liquid crystal layer, means for establishing a potential difference between films on the respective plates such that some areas of the sandwich structure will transmit light while others will not to thereby form an optical image, and reflector means adjacent one of said plates and adapted to reflect polarized light which has passed through the liquid crystal material back through the liquid crystal material, said reflector means comprising a third transparent plate having a diffuse surface on one side adjacent said one plate and a reflective surface on its other side.

3,881,810
LARGE FIELD LIGHT MODULATOR

Angelo A. Colao, Bedford, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 12, 1973, Ser. No. 415,048
Int. Cl. C02f 1/30
U.S. Cl. 350—285 9 Claims

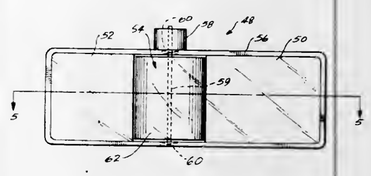


1. A modulator for an extended radiation source, comprising:
- a lens array disposed outside the radiation source to concentrate the radiation to form a predetermined energy distribution pattern, the curved surface of said lens array facing the radiation source;
- means disposed outside said lens array for modulating said energy distribution pattern said modulated energy distribution pattern being radiated through said modulating means at certain positions thereof relative to said lens array; and
- means for causing relative motion between said lens array and said modulating means.

3,881,811
WIDE-ANGLE REAR VIEW MIRROR WITH ROTARY CENTER PIECE

Bruce K. French, 850 San Pascual Ave., Los Angeles, Calif. 90042

Continuation-in-part of Ser. No. 119,388, Feb. 26, 1971, abandoned. This application Aug. 8, 1974, Ser. No. 495,634
Int. Cl. G02b 5/08
U.S. Cl. 350—289 7 Claims

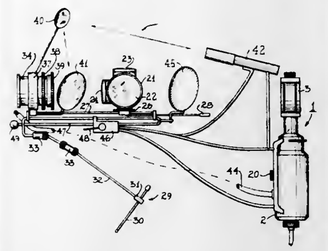


1. A rear view mirror for vehicles comprising:
- first, second, and third reflective portions forming an essentially continuous reflective surface, the first and third portions being flat planar surfaces, the second portion having a cylindrically curved surface of a predetermined length, the second portion being located intermediate the first and third portions, but closely spaced relative thereto so as to form the equivalent of a continuous reflective surface;
- means for rotating the second portion of the mirror about an axis located between and generally parallel to the ends of the flat first and third portions of the mirror, the second portion of the mirror being rotatable at such a speed of rotation that the second portion, in combination with the first and third portions, provides an essentially continuous, unbroken reflection to a viewer in the vehicle; and
- means for mounting the mirror defined by the first, second, and third reflective portions in a vehicle.

3,881,812
MANUALLY HELD INDIRECT OPHTHALMOSCOPE ESPECIALLY ADAPTED FOR VIEWING THE PERIPHERY OF THE FUNDUS OCULI

Nathan Ben-Tovim, 16, Pney-Hagiva St., Ramath Gan, Israel

Filed Mar. 13, 1972, Ser. No. 234,178
Int. Cl. A61b 3/12
U.S. Cl. 351—6 8 Claims

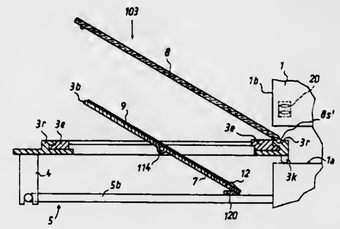


1. An indirect ophthalmoscope comprising:
- a tubular portion to be held in the physician's hand containing a light source for projecting a beam of light;
- a head portion attached to said tubular portion containing an observation hole through which the eye of the patient is examined and a movable reflecting means for reflecting the light beam from the light source into the eye of the patient being examined, the path of movement of said reflecting means being constrained to a rectilinear path perpendicular to the line of sight of the physician to the eye of the patient, said movement not affecting the direction and angular inclination of the projected light rays which remain parallel to the line of sight;
- an attachment means secured at one end to said tubular portion, the opposite end being free for resting on the face of the patient to be examined;
- a track disposed upon said attachment means;
- a convex lens disposed in said line of sight for viewing the fundus of the examined eye, said convex lens being movable on said track along the long of sight; and,
- mirror means positioned between the free end portion of said attachment means and said convex lens for receiving the reflected light from the periphery of the fundus and for transmitting said reflected light along said line of sight.

3,881,813
HOLDER FOR MICROFORMS IN MICROIMAGE RETRIEVING APPARATUS

Albert Maier, Munich; Günther Lüder, Taufkirchen, and Josef Pfeifer, Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 20, 1973, Ser. No. 353,134
Claims priority, application Germany, Apr. 28, 1972, 2220923
Int. Cl. G03b 21/11, 23/08
U.S. Cl. 353—27 8 Claims



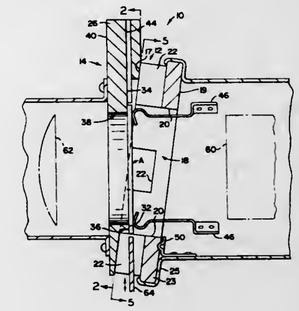
1. In an apparatus for retrieving microimages which are stored on sheet-like microforms, a combination comprising a housing for at least one projection lens; and at least one microform holder including a carriage mounted in said housing for movement in at least one direction, and a flat receptacle separably supported by said carriage, said receptacle including a microform supporting light-transmitting base plate, a frame and an apertured bottom wall mounted in said frame for pivotal movement about an axis located in the general plane of said base plate, said base plate being mounted in and being pivotable with said bottom wall.

3,881,814
SLIDE ORIENTING DEVICE

Frank J. Madison, II, R.D. 1, Box 285, Trafford, Pa.

Filed June 12, 1972, Ser. No. 261,625
Int. Cl. G03b 1/48, 23/00, 23/14
U.S. Cl. 353—95 12 Claims

1. A slide orienting device of the type primarily used with a slide projector, said device comprising: a movably mounted slide support bracket means, a slide retainer means, said slide retainer means and said slide support bracket means cooperatively engaging a slide transparency in viewing alignment with the lens and light source of the slide projector, said slide support bracket means including an aperture formed therein and configured to cooperatively engage in supporting relation thereto at least a portion of the slide transparency such that said transparency is properly oriented for viewing; orienting means to move said slide support bracket means relative to the slide projector to selectively orient the slide transparency, and

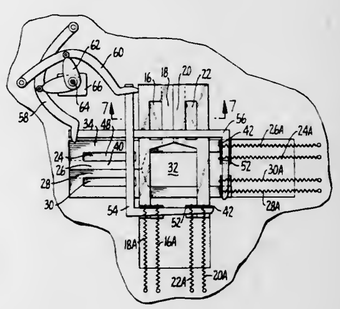


removal means disposed to remove the slide transparency from said device.

3,881,815
PROJECTION TEACHING MACHINE

Thomas K. McGourty, 16440 Cox Rd., Aptos, Calif. 95005

Filed Dec. 11, 1972, Ser. No. 313,867
Int. Cl. G03b 21/14
U.S. Cl. 353—97 5 Claims

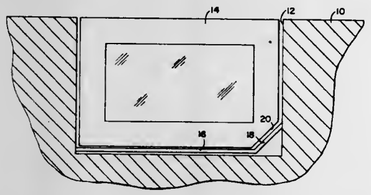


1. A focal plane shutter, said shutter comprising in combination:
- a. means defining a focal plane,
- b. a first pair of leaves, each leaf of which is mounted in side-by-side sliding relationship at one side of the means for defining the focal plane, each of which leaves is capable of occulting a rectangular area of the focal plane when in an extended position, and permitting light to pass through said focal plane when in a retracted position,
- c. a second pair of leaves of substantially the same configuration as said first pair, said second pair being mounted at right angles to said first pair and also at one side of the means defining the focal plane,
- d. means for selectively activating leaves of said first and second pairs of leaves to reveal a desired area of said focal plane, and
- e. each of said leaves having a sliding member mounted on one edge thereof and having a light obscuring member extending from said sliding member including means whereby said leaves are supported throughout their entire lengths by said sliding member.

3,881,816
SLIDE PROJECTOR KEYING DEVICE

Andrew H. Jenkins; Robert L. Morgan; Raymond P. Bennett, and Charles E. Dugas, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 21, 1974, Ser. No. 435,346
Int. Cl. G03b *21/00*
U.S. Cl. 353—122 **1 Claim**



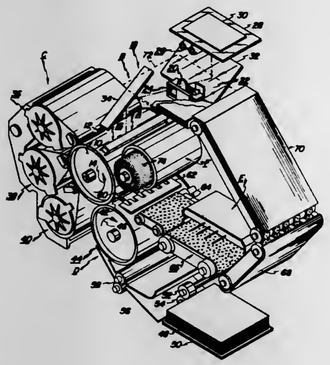
1. In combination with a slide projector having a slide slot into which slides to be projected are inserted the improvement which comprises,

a metal strip adapted to be placed in the bottom of said slot, one end of said metal strip being turned up at an angle to the remainder of said strip whereby only slides having a corner clipped and properly oriented can be fully inserted into said slide slot.

3,881,817
OPTICAL ALIGNMENT SYSTEM FOR AN ORIGINAL DOCUMENT

Wayne L. Kidd, Fairport, and Theodore W. Thomas, Henrietta, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 23, 1974, Ser. No. 435,789
Int. Cl. G03b *27/62*
U.S. Cl. 355—12 **12 Claims**



1. An optical system, including:

a support member arranged to hold an original document;

means for projecting a grid light image onto said support member so that the original document may be aligned on said support member relative to the grid light image projected thereon;

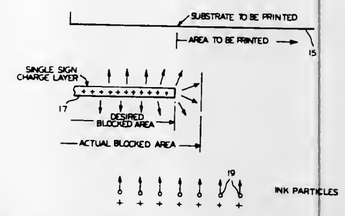
means for creating a light image from the aligned original document disposed on said support member after deenergizing said grid light image projecting means; and

at least one substantially non-light absorbing strip adapted to be positioned on said support member in a selected region of the grid projected thereon to mask a predetermined portion of the original document, said opaque strip having additional indicia thereon adapted to be inserted into the original document.

3,881,818
APERTURE-CONTROLLED ELECTROSTATIC PRINTING SYSTEM AND METHOD EMPLOYING ION PROJECTION

Samuel B. McFarlane, Jr., 11 Twombley Dr., Summit, N.J. 07901; Joseph Burdige, 17 Nansen Ct., Spring Valley, N.Y. 10977, and Norman E. Alexander, 24 Morris Ln., Scarsdale, N.Y. 10583

Continuation of Ser. No. 167,011, July 28, 1971, which is a division of Ser. No. 709,578, March 1, 1968, Pat. No. 3,645,614. This application Dec. 12, 1973, Ser. No. 423,984
Int. Cl. G03g *17/00*
U.S. Cl. 355—17 **19 Claims**

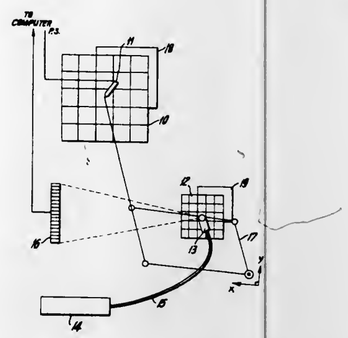


1. Apparatus for electrostatic reproducing comprising in combination composite screen means supported for movement along a predetermined path, said screen means comprising an insulative screen layer and a conductive screen layer; means for electrically charging the insulative layer with substantially equal and opposite charges; means for modifying the charges in accordance with an image to be reproduced; means for directing ions toward the screen means; means for locating print receiving material across an air gap in the direction of projection of the ions to receive a charge pattern in the form of said image; and means for developing the image.

3,881,819
CASSETTE-TYPE HOLOGRAM GRAPHIC TABLET

Isamu Hirabayashi; Mitsuhito Sakaguchi, and Masahiro Moriwaki, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 14, 1973, Ser. No. 415,516
Claims priority, application Japan, Nov. 22, 1972, 47-133920
Int. Cl. G03b *27/00*
U.S. Cl. 355—2 **3 Claims**



1. Mounting apparatus for holding a demountable plate in a predetermined position within a housing including

a frame comprising a thin member having two substantially parallel major surfaces and an aperture extending therethrough in a direction perpendicular to said major surfaces,

means for fixedly mounting said plate within said aperture in a plane parallel to said major surfaces of said member, a housing for holding said member having a slot-like aperture extending into said housing, said slot-like aperture being configured so that said member is insertable into said housing in a direction parallel to said major surfaces,

guide means for guiding said member along a predetermined path within said housing,

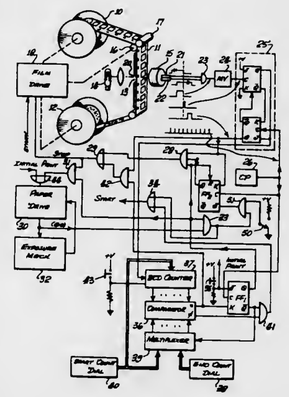
positioning means including at least one reference surface mounted within said housing so that said member contacts said at least one reference surface when said member is inserted into said housing, and

locking means for holding said member firmly against said at least one reference surface to maintain said plate in said predetermined position, said locking means including at least one electromagnet and means to activate said electromagnet in response to pressure exerted by said member against said at least one reference surface.

3,881,820
CONTROL SYSTEM FOR AUTOMATIC REEL-FILM ENLARGER PRINTER

Max K. Muir, Calabasas, Calif., assignor to Information International, Inc., Los Angeles, Calif.

Filed June 17, 1974, Ser. No. 479,875
Int. Cl. G03b *27/52*; B65b *23/18*
U.S. Cl. 355—41 **3 Claims**



1. In a control system for automatically printing a sequence of frames stored on a reel of film in response to marks sensed on the film, said sensed marks producing mark pulses, one for each frame, said mark pulses stopping a film drive mechanism and actuating a mechanism for printing a frame, said printing mechanism emitting a go signal to automatically restart said film drive mechanism to advance film to the next frame, means for causing only alternate frames to be printed comprising

a gate means for transmitting said mark pulses to said film drive mechanism and printing mechanism,

a bistable means for enabling said gate means while in a first of two stable states,

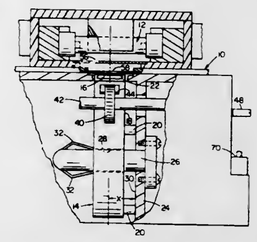
means for transmitting said go signal to said bistable means to set it in a second state, thereby causing said gate means to block the next mark pulse, and

means for transmitting said mark pulses to said bistable means for resetting said bistable means to said first state.

3,881,821
APPARATUS AND METHOD ESPECIALLY USEFUL IN LABEL MAKING

Roby Byron White, Cumberland, R.I., and Frederic Samuel Tobey, Hyde Park, Mass., assignors to W. H. Brady Co., Milwaukee, Wis.

Continuation-in-part of Ser. No. 122,764, March 10, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 346,880
Int. Cl. G03b *27/72*
U.S. Cl. 355—115 **6 Claims**



1. Imaging apparatus for delivery of light energy at a predetermined continuing rate (joules/unit time) for a predetermined length of time to produce images of a predetermined density at a predetermined rate which comprises:

means to position an imaging medium responsive to light, to produce an image of density dependent upon the quantity of light to which said medium is exposed,

a source of light including a flashtube positioned for exposing said imaging medium, said flashtube being of energy rating low relative to the energy required to produce said images,

an imaging master located relative to said imaging medium and said flashtube so that light energy emanating from said flashtube amd impinging on said imaging medium is modified by said imaging master to produce an image in said imaging medium responsive to said imaging master and said flashtube, and

circuitry control means for providing a series of lower energy level pulses to said flashtube for each said image, to produce a corresponding number of flashes of said light energy, the total quantity of light energy delivered to said imaging medium in said series being sufficient to produce said density, said circuitry control means being further characterized in that successive series may be initiated rapidly enough to produce further heat buildup from one series to the next.

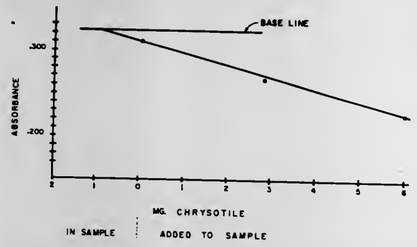
3,881,822
METHOD FOR DETERMINING CHRYSOTILE (ASBESTOS) IN THE TALC

Harry A. Rose, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 26, 1973, Ser. No. 427,778
Int. Cl. G01n *21/22*
U.S. Cl. 356—36 **12 Claims**

1. A method for determining the chrysotile content of talc comprising: first, contacting said chrysotile containing talc with a solution of a sulfonphthalein dye selected from the class consisting of bromphenol blue, bromthymol blue, bromcresol green, bromcresol purple, cresol red, and thymol blue, and measuring the optical absorbance of said solution both before and after contact with said talc; second, contacting at least two additional samples of said talc, to which additional differing accurately weighted quantities of chrysotile have been added, with a solution of said sulfonphthalein dye, and measuring the absorbance of each of said dye solutions after said contact; third, graphically relating on an arithmetic scale the quantity of chrysotile added to said talc to the absorbance thus measured; and fourth, extrapolating a negative regression line

through the points located on said graph to an intersection with a baseline representing the optical absorbance of said dye



solution before contact with such talc, said intersection point indicating the chrysotile content of the talc.

3,881,823
APPARATUS FOR MEASURING THE VARIATION OF AN OPTICAL PATH LENGTH WITH THE AID OF AN INTERFEROMETER

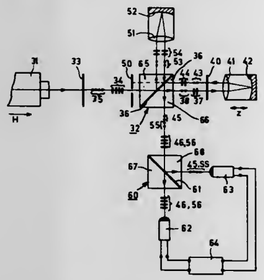
Hendrik De Lang, Delft, and Eric Tapley Ferguson, Emmasingel, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 733,341, May 31, 1968, abandoned. This application Nov. 12, 1970, Ser. No. 89,090

Claims priority, application Netherlands, June 2, 1967, 6707681

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 R **3 Claims**



1. A device for measuring the variation of a variable optical path length, comprising optical generating means for producing two orthogonally polarized coherent beams of electromagnetic radiation having different frequencies, a substantially isotropic beam splitting surface for dividing said beams into first and second partial beams each containing both oo said different frequencies, first reflecting means in the path of the first partial beam for redirecting said first partial beam, second reflecting means movable in the direction of the second partial beam and positioned in the path of the second partial beam for redirecting said second partial beam, a phase anisotropic element in the path of at least one of said partial beams for rotating the plane of polarization of the corresponding partial beam by an angle equal to an odd multiple of 90°, a first photodetector, and a polarization-sensitive beam splitter in the path of both redirected partial beams for transmitting at least part of each sub-beam to the first photodetector and for directing a further portion of the radiation from the polarization-sensitive beam splitter to the second photodetector, the portion of the radiation directed to the second photodetector having a plane of polarization substantially orthogonal with respect to the radiation directed to the first photodetector, the radiation directed to each photodetector containing both frequencies produced by the optical generating means.

3,881,824
ALIGNMENT AND CONTROL SYSTEM

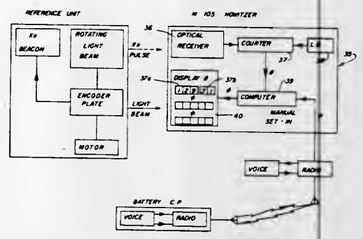
John Higgins, Arlington, Va., assignor to Minister of National Defence, Ottawa, Canada

Filed Mar. 2, 1973, Ser. No. 337,370

Claims priority, application Canada, Mar. 17, 1972, 137317

Int. Cl. G01b *11/26*

U.S. Cl. 356—141 **12 Claims**



1. An azimuth alignment system comprising a reference unit adapted to be aligned in a known orientation; a revolving means on said reference unit for providing a highly collimated light beam; a beacon for emitting pulsed radiation; an angular encoder connected with said revolving means for causing the beacon to signal incremental angular movement of, and the passing of a datum position by, the revolving means;; a receiver means for mounting on an element to be aligned in azimuth, said receiver means having means to detect the highly collimated light beam and to receive and interpret the pulsed radiation from the beacon, and therefrom to provide azimuth information whereby said element may be aligned.

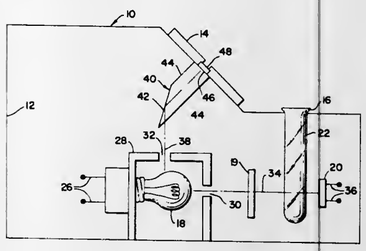
3,881,825
PILOT LIGHT SIMULATOR

James J. Chisholm, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,720

Int. Cl. G01j *1/44*

U.S. Cl. 356—227 **1 Claim**



1. An operating indicator used in a photometer, comprising:
a housing for encompassing the elements of a photometer;
a light source disposed within said housing for providing the necessary illumination for a photometric test;
means for supplying electrical power to said light source and capable of activating and deactivating said photometer simultaneously with said light source;
switching means for activating and deactivating the electrical power when supplied by said power supplying means;
a cover enclosing said light source having first and second apertures provided therein, a first light path for taking the photometric test being formed by light passing through the first aperture and a second light path for indicating the activation of said light source being formed by light passing through the second aperture; and

a bezel located on said housing, a colored translucent element disposed in said bezel for aiding in observing the activation of said light source and a prism connected to said bezel for reflecting light from said second light path to impinge on said colored translucent element.

3,881,826
PHOTOMETER CHAMBER UNIT

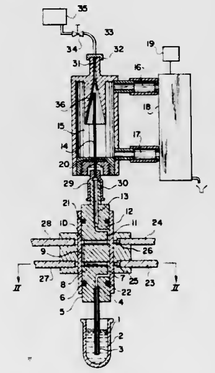
Jan De Leeuw, Akersberga, Sweden, assignor to Auto Chem Instrument Aktiebolag, Lidiago, Sweden

Filed Dec. 20, 1973, Ser. No. 426,588

Claims priority, application Sweden, Dec. 20, 1972, 16663/72

Int. Cl. G01n *1/14*

U.S. Cl. 356—246 **9 Claims**



1. In a photometer chamber unit in which a liquid to be analyzed is sucked into a photometer chamber, said unit comprising a channel system with a pipette tube for insertion into a liquid, and at least one photometer chamber which is to be passed by light, the improvement wherein the channel system is one single unbranched channel from the pipette through the photometer chamber, and at the end of the unbranched channel system remote from the pipette tube the channel system ends with a vertical damping capillary tube which extends into and opens into a chamber and constitutes a continuation of said single unbranched channel, and means are provided for achieving a first lower pressure difference between the pressure in the chamber and the pressure on the liquid around the pipette tube for sucking liquid into the channel system only until it reaches the upper end of said capillary tube in said chamber, and for achieving a second higher pressure difference between the pressure in the chamber and the pressure on the liquid around the pipette tube for emptying the liquid from the channel system and into the chamber.

3,881,827
FLOW CELL

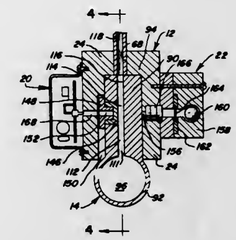
Saul R. Gilford, Oberlin; Gary M. Freeman, Grafton, and John H. Bauman, Berea, all of Ohio, assignors to Gilford Instrument Laboratories, Inc., Oberlin, Ohio

Division of Ser. No. 332,929, Feb. 16, 1973, Pat. No. 3,820,530. This application Jan. 11, 1974, Ser. No. 432,476

Int. Cl. G01n *1/10*

U.S. Cl. 356—246 **3 Claims**

1. A cuvette for use in dye-dilution techniques requiring densitometry and comprising:
A. a block of transparent material,
B. a cavity formed in said block in the center thereof and opening to the side of said block and configured to form a cuvette for passage of light in a path from side to side of the block and passage of fluid from end to end of the block transverse of said path,
C. passageways from opposite ends of said block connected to the cuvette to transport fluid through said cuvette,
D. a plug of transport material in said cavity and having its inner surface defining one surface of said cuvette normal to said path, said plug having a cylindrical bore therethrough stopping short of said inner surface, and



E. a button of opaque material having a disc-like head and stem with a central axial light passageway through the head and stem, the stem being engaged in the bore of the plug with the head overlying the side around said cavity with the light passageway aligned with said path.

3,881,828
PENS AND NIBS THEREFOR

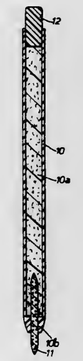
Frederick O. Jones, Bracknell, England, assignor to Wilkinson Sword Limited, High Wycombe, Buckinghamshire, England

Filed July 12, 1973, Ser. No. 378,619

Claims priority, application United Kingdom, July 18, 1972, 33436/72

Int. Cl. B43k *5/00*

U.S. Cl. 401—199 **9 Claims**

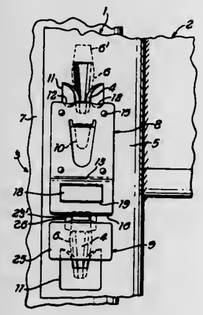


1. A pen nib composed of a relatively rigid, ink-permeable metal foam material, said foam material having an open-cell structure, said structure having apertures between the cells, said apertures constituting the pores of the structure.

3,881,829
CONNECTIONS BETWEEN STRUCTURAL COMPONENTS

John Brian James, Wembley, England, assignor to Dexion-Comino International Limited, Wembley, Middlesex, England

Filed Nov. 27, 1973, Ser. No. 419,470
Claims priority, application United Kingdom, Nov. 27, 1972, 54723/72
Int. Cl. A47f 5/10
U.S. Cl. 403—27 **5 Claims**

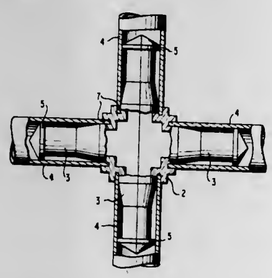


1. Locking means for interconnecting structural members comprising in combination:
- means on a first of said members detachably engaging a recess in another of said members for supporting a load acting between said members in a predetermined direction,
- a U-shaped projecting member formed of a frangible material on one of said members and detachably engaging with a cooperating means on the other of said members,
- said cooperating means exerting a force against the legs of said U-shaped member acting in a direction tending to bend at least one leg portion thereof against the other, whereby at least one leg portion of said U-shaped member fractures.

3,881,830
COMBINATION PIPE JOINT STRUCTURE

Katsumi Kato, Kyoto, and Naoaki Sato, Shiga, both of Japan, assignors to Takiron Co., Ltd., Osaka-shi, Osaka, Japan

Filed Sept. 26, 1973, Ser. No. 400,989
Claims priority, application Japan, Sept. 26, 1972, 47-114119[U]; Mar. 12, 1973, 48-32190[U]; Mar. 12, 1973, 48-32191[U]
Int. Cl. F16b 7/00
U.S. Cl. 403—171 **1 Claim**

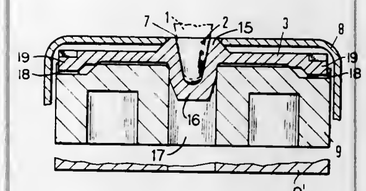


1. A combination pipe joint structure comprising:
- a pair of complementary pipe joint half units, each having a joint surface for being joined thereat to each other to form a unitary structure, each of said pipe joint units including a base portion and a plurality of foot portions extending from said base portion on said joint surface and angularly spaced from each other,
- complementary foot portions forming cylindrical feet, each of said foot portions having an outer peripheral surface sized and shaped to fixedly hold thereon a pipe when its corresponding halves are joined to each other and when it is subsequently fitted into the pipe, so that a plurality of pipes of the same number as that of the foot portions may be joined to each other,
- at least one of said pipe joint units further including at least one other foot extending from the base portion at an angle from the joint surface, each foot of said combination pipe joint structure being cylindrical in form including a first outer peripheral surface portion near the base of a diameter substantially equal to the inner diameter of the pipe and adapted to receive the same and having a tapered portion extending axially outwardly therefrom, and further having a tip portion with a diameter substantially equal to the inner diameter of said pipe, whereby said pipe is fitted onto said foot with contact therebetween at longitudinally spaced positions, and wherein said base portion at each foot location is provided with an annular projection which extends radially outward therefrom concentrically about the foot and forming with said foot, an annular groove within which the end of a corresponding pipe is fittedly received.

3,881,831
COUPLING FOR THE CONNECTION OF ROTARY PARTS

Egon Reithmaier, Gauting, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 7, 1974, Ser. No. 448,875
Claims priority, application Germany, Mar. 7, 1973, 2311296
Int. Cl. F16d 1/00
U.S. Cl. 403—180 **6 Claims**

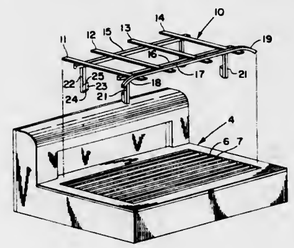


6. An adjustable pot core arrangement including two core halves having a common concentric axis, and means for adjusting the inductance of the pot core arrangement by relative rotation of the two core halves about that common axis, each of said core halves including an aligned central bore therein, a rotatable pressure disc disposed adjacent a first of said core halves, said pressure disc and said first core half having cooperable means constructed for interlocking engagement whereby rotation of said disc is transmitted to said first core half, a spring clip embracing said core halves and said pressure disc and arranged to bear on said pressure disc to retain said core halves and said disc in operative positions, said pressure disc including a shoulder extending axially therefrom and engaging said spring and said shoulder having a shaped recess therein to receive a correspondingly shaped adjusting shaft, said shoulder responsive to depression of the shaft in the recess to disengage from said spring clip and permit rotation of said first cup core half with respect to the other cup core half upon rotation of the shaft.

3,881,832
LOW PROFILE PROTECTIVE INSERT FOR SEWERS

Harry A. Maguire, 37343 Carleen Ave., Avon, Ohio 44011

Filed May 16, 1974, Ser. No. 470,389
Int. Cl. E01c 11/22
U.S. Cl. 404—4 **14 Claims**

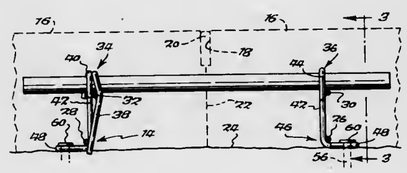


1. A protective insert for sewer gratings, which include a plurality of substantially parallel interstitial wall dividers being substantially coplanar at the upper edges thereof and defining a plurality of longitudinal openings therebetween, comprising:
- a plurality of cross members, said cross members being substantially coplanar and parallel with respect to each other for positioning in overlying relation on the upper edges of the wall dividers of such a sewer grating for support thereby;
- means for connecting said cross members together in such substantially coplanar and parallel relation, said means for connecting including at least one longitudinal member positioned between said cross members, extending perpendicularly thereto, and adapted for positioning completely within one of said longitudinal openings; and
- means for attaching said insert to a sewer grating.

3,881,833
LOAD TRANSFER ASSEMBLY

Richard G. McMullen, Fayetteville, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.

Filed June 24, 1974, Ser. No. 482,331
Int. Cl. E01c 11/14
U.S. Cl. 404—60 **10 Claims**

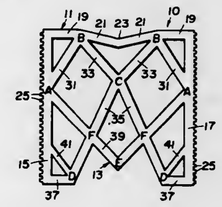


1. A load transfer support means comprising: a frame including at least one pair of opposed, spaced apart generally upright members; one of said upright members having means for gripping an end portion of a dowel against axial movement relative thereto; the other end of said upright members having means for gripping the other end portion of a dowel in one position thereof; said other member releasing the dowel for guided movement relative thereto in another position thereof; said frame normally biasing said other member into said one position.

3,881,834
JOINT SEALS

Thomas C. Bowman, 49 Arkansas St., Buffalo, N.Y. 14213

Continuation of Ser. No. 171,157, Aug. 12, 1971, abandoned. This application May 10, 1973, Ser. No. 359,140
Claims priority, application Australia, Aug. 20, 1970, 2263/70; Aug. 20, 1970, 2264/70
Int. Cl. E04c 11/10
U.S. Cl. 404—64 **2 Claims**



1. An elongated, flexible, resilient, hollow sealing member for sealing an expansion or contraction joint comprising: a pair of spaced, substantially parallel side walls, a top wall, a bottom wall, and an internal network of reinforcing webs, said walls and network being integral; said top wall being joined to said side walls and having adjacent its ends plural straight, continuous, inwardly extending portions substantially normal to said side walls and downwardly sloping central portions connected to the inner ends of said straight portions and forming a single, central trough; said internal network including (1) a first V-shaped web terminating at its respective ends in said side walls intermediate the ends thereof and substantially below the junction of said side wall with said top wall and extending downwardly with the apex of said V located midway between said side walls and above the lower ends of said side walls, (2) a pair of outwardly diverging webs extending downwardly from a junction located midway between said side walls and between said apex and said top wall and intersecting said first V-shaped web, and (3) a pair of outwardly diverging webs extending upwardly from said junction and connected to said top wall between said trough and said side walls; and said bottom wall comprising (1) a pair of supporting webs, each connected to one of said side walls at the lower ends of the latter, each of said supporting webs extending inwardly at right angles from said side walls to a junction with one of said downwardly and outwardly extending webs, (2) the portions of said downwardly and outwardly extending webs below their intersections with said first V-shaped web, and (3) the portion of said first V-shaped web lying between the intersections thereof with said downwardly and outwardly extending webs; there being no vertical web tying together the junction of said downwardly and outwardly extending webs and said first V-shaped web.

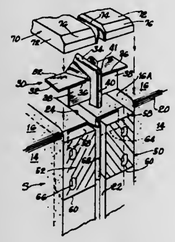
3,881,835
SIDEWALK-CURB SEALING MEMBER, ASSEMBLY AND METHOD

John C. Moerk, Jr., Buffalo Grove, and Donald W. Malina, Des Plaines, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

Filed June 6, 1973, Ser. No. 367,464
Int. Cl. E01c 11/10
U.S. Cl. 404—64 **20 Claims**

1. A corner sealing member for sealing a portion of a gap between adjacent roadway slabs at the intersection of curb and sidewalk portions thereof, said member being formed of a thin, flexible elastomeric material, and comprising a pair of

first, generally flat coplanar expansive sealing flaps, one extending sidewardly from each side of a first central, flexible membrane which is adapted to overlie a portion of a said gap, a pair of second, generally flat expansive sealing flaps, formed with said first flaps at front edges of said first flaps and extending downwardly and away from said first flaps, one of said second flaps extending sidewardly from each side of a second flexible membrane which is adapted to overlie a portion of a said gap, said first and second membranes being continuous



and merging into each other to form a corner, each of said membranes terminating forwardly in an end face, the end faces closing the forward ends of the membranes, respectively, and with said membranes forming said corner, said end faces being disposed to promote movement of the end faces toward and away from each other when the gap portion widens and narrows, whereby when a said corner member is sealingly secured to roadway slab portions to overlie a portion of a gap adjacent the intersection of curb and sidewalk portions of said slabs, a seal will be provided at a said gap portion.

3,881,836

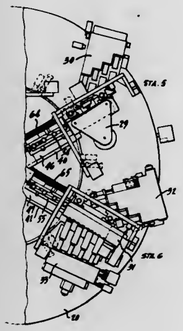
APPARATUS FOR SIMULTANEOUSLY DRILLING AND TAPPING A PLURALITY OF WORK PIECES AT EACH OF A PLURALITY OF POSITIONS

Nils Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation, Berkeley Heights, N.J.

Continuation of Ser. No. 247,572, April 26, 1972, which is a division of Ser. No. 118,218, Feb. 24, 1971, which is a division of Ser. No. 763,043, Sept. 9, 1968, abandoned. This application Sept. 10, 1973, Ser. No. 395,760

Int. Cl. B23b *39/16*

U.S. Cl. 408—42 **1 Claim**



1. An assembly for supporting a plurality of parallel tool supporting spindles including:

a. a base;

b. a housing slidably mounted on said base, said housing comprising a tool housing which is slidably mounted on said base and a support plate mounting a guide bushing for each tool, said support plate mounted on the base independently of the tool housing;

c. mechanical means connected between said base and said housing for moving said housing along said base, said mechanical means comprising:

i. selectively operable means for advancing the tool housing and support plate under an applied force along the base toward the work piece to a predetermined position spaced from the work piece and for retracting the drill housing and support plate to their initial position;

ii. motion limiting means for stopping movement of the support plate toward the work piece at said predetermined position;

iii. lost motion means connecting the housing to the support plate for advancement as a unit between said initial and predetermined position but permitting movement of the drill housing relative to the support plate between said predetermined position and the work piece; and

iv. cam stop means disposed in the path of movement of the tool housing at said predetermined position for imparting reciprocal movement to the drill housing to move the tool contained therein into and out of operative engagement with the work piece;

d. a plurality of parallel tool holding spindles on said tool housing;

e. driving pulleys mounted at one end of each of said spindles;

f. idler pulleys spaced from and intermediate said driving pulleys;

g. a main pulley on said housing;

h. a common continuous belt engaging all of said pulleys; and

i. a reversible hydraulic motor connected to said main pulley.

3,881,837

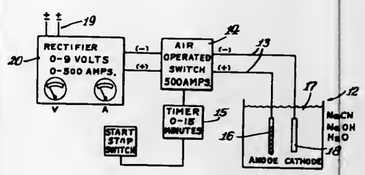
HIGH SPEED STEEL METAL CUTTING TOOL WITH INTEGRAL WORKING SURFACES SUBSTANTIALLY FREE OF CARBIDE PARTICLES

Thomas A. Novosel, East Burke, and Donald O. Erskine, Lyndon Center, both of Vt., assignors to Vermont American Corporation, Louisville, Ky.

Division of Ser. No. 177,338, Sept. 2, 1971, Pat. No. 3,767,544. This application Mar. 6, 1973, Ser. No. 338,602

Int. Cl. B23b *27/14*

U.S. Cl. 408—144 **5 Claims**



1. A metal cutting tool having a body composed of high speed tool steel comprising carbide particles of minute size dispersed through said body, said body having working surface portions comprising a cutting edge portion and an integral chip-raising surface portion extending from the cutting edge portion, said cutting edge portion being adapted to sever a chip from a metal workpiece, and the chip-raising surface portion being adapted to raise the severed chip from the workpiece, said cutting edge portion and said chip-raising surface portion both being parts of the body off the tool and containing distributed carbide particles and having their abovesaid working surface portions substantially free of exposed carbide particles.

3,881,838

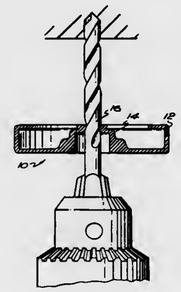
DRILL ATTACHMENT

George C. Derbyshire, Sheffield, England, assignor to The Jacobs Manufacturing Company, Limited, Sheffield, England

Filed Oct. 25, 1973, Ser. No. 409,578

Int. Cl. B23b *45/00*

U.S. Cl. 408—67 **4 Claims**



1. A device removably attachable to the shank of a drill bit carried by a chuck of a rotary tool and serving to catch and thereby guard against dust and swarf falling upon the chuck or upon the operator when using the tool in an overhead drilling operation, the device comprising a circular container having a bottom wall, a side wall, a circumferential lip offset radially inward from the top end of the side wall forming a cavern with said bottom and side walls to receive and retain said dust and swarf being swept therein by centrifugal force during said overhead drilling operation and said lip defining an opening in the top end of the container for receiving said dust and swarf, and a bush of flexible resilient material forming a portion of the bottom wall and extending upwardly in the container, the bush having an axially extending hole therethrough of slightly less diameter than the shank of the drill bit with which the device is to be used enabling fitting of the bush upon the shank of the drill bit in gripping relation to the latter, the opening in the top of the container being of a greater diameter than the outer diameter of the bush, and the axial dimension of the container being substantially less than the extent of axial projection of the shank of the drill bit from the chuck.

3,881,839

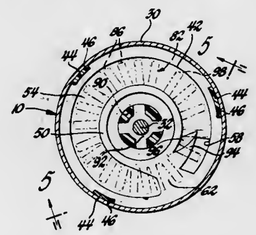
FUEL PUMP

Daniel C. MacManus, Owosso, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 7, 1974, Ser. No. 431,288

Int. Cl. F04d *5/00, 29/70*

U.S. Cl. 415—53 T **2 Claims**



1. In a peripheral fluid pump; the combination of a housing formed in two parts, including a cylindrical casing member and a cylindrical cover member which together define a raceway with a radially outward annular fluid passage means and having confronting side and perpheral stripper abutments in the annular fluid passage means; inlet and outlet ports in said casing member and said cover member, respectively, and positioned on opposite sides of the side peripheral stripper abutments and communicating with the annular fluid passage means to define a fluid flow path from said inlet port to said outlet port; an impeller within the raceway including a hub portion provided with a series of radially extending vanes attached thereto at a base portion; said hub portion having a central drive shaft guideway and drive slots therein spaced circumferentially around the guideway; the casing member having at least two vent openings communicating with the annular fluid passage means near the base portion of the vanes; the first of said vent openings being positioned diametrically opposite from said inlet port and the other vent opening being spaced in a circumferential direction downstream from said inlet port and upstream from said first vent opening whereby a portion of vaporous fluid in said fluid passage means passes through said other vent opening and another portion subsequently passes through said first vent opening; said side stripper abutment adjacent said outlet and on said cover member having partition means extending upstream from said outlet and from said stripper abutment to radially separate fluid flow in said annular fluid passage means into an inward stream adjacent to said base portion of said vanes and a radially outward stream therefrom; said outlet port being located radially outward from said partition to mostly discharge said radially outward stream of fluid in said annular fluid passage means; said side stripper abutment having inclined fluid directing means located radially inward from said partition means for diverting the inner stream of fluid back between said vanes for discharge of vaporous fluid through said vent openings.

3,881,840

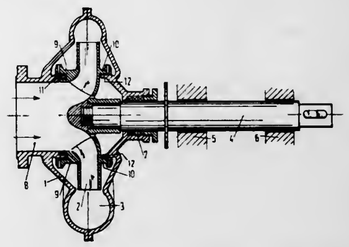
CENTRIFUGAL PUMP FOR PROCESSING LIQUIDS CONTAINING ABRASIVE CONSTITUENTS, MORE PARTICULARLY, A SAND PUMP OR A WASTE-WATER PUMPER

Johan Henri Bunjes, Hengelo, Netherlands, assignor to Neratoom B.V., The Hague, Netherlands

Filed Sept. 5, 1973, Ser. No. 394,490

Int. Cl. F04d *29/08, 29/70*

U.S. Cl. 415—109 **8 Claims**



6. In a centrifugal pump assembly, the combination of:

a housing having an inlet opening and an annular delivery chamber; an impeller having an inlet eye aligned with said inlet opening and a peripheral portion discharging to said delivery chamber, said impeller and said housing defining an intermediate chamber therebetween leading to said delivery chamber; and

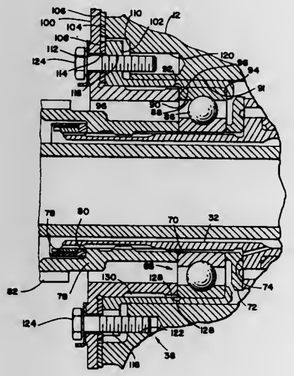
sealing means formed between said housing and said impeller between said inlet opening and said delivery chamber for bleeding liquid from said intermediate chamber to said inlet opening, said sealing means including opposed surface portions of said impeller and said housing defining a sealing slot having an outer end communicating with said intermediate chamber and an inner end communicating with said inlet opening, an annular chamber defined between said surface portions adjacent said outer end of

the sealing slot, and duct means in said impeller leading from said annular chamber to said intermediate chamber for redirecting sediment entering said outer end of the sealing slot back into said intermediate chamber, and wherein said surface portions are defined by an outer sleeve on said impeller and an inner sleeve on said housing, said annular chamber being formed in said outer sleeve.

3,881,841
DAMPED COMPRESSOR BEARING MOUNTING ASSEMBLY

Salvatore Straniti, Orange, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 29, 1973, Ser. No. 420,202
Int. Cl. F01d *25/16;* **F04d** *29/04*
U.S. Cl. 415—131 **9 Claims**

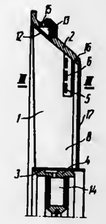


1. In a compressor comprising:
an annular outer housing;
a rotor assembly including a bladed hub, said housing having a portion defining an annular shroud for said hub;
a bearing mounting assembly comprising:
an inner race secured over said rotor assembly
and an outer race;
an outer sleeve receiving the outer race of said bearing, said outer sleeve having an inwardly directed lip defining a first axial face and an outer extending flange;
an inner sleeve telescoped into said outer sleeve and having an end defining a second axial face, said inner sleeve having an outwardly extending flange adjacent the flange on said outer sleeve, said outer race being positioned between said first and second faces;
the improvement comprising:
an assembly for mounting said outer race of said bearing, said assembly including a first annular shim positioned between said flanges, said shim having a given axial thickness for positioning said outer race in said assembly with a predetermined clearance between said first and second axial faces in said assembly, and a second annular shim also having a given axial thickness coaxial with said first shim for positioning said bearing mounting assembly in a predetermined axial position relative to said housing thereby maintaining a predetermined clearance between said shroud and said hub.

3,881,842
DIAPHRAGM FOR STEAM TURBINE STAGE

Jury Fedorovich Kosyak, prospekt Moskovsky 202, kv. 85; Sergei Petrovich Sobolev, pereulok Molchanovsky 7, kv. 5; Ary Fedorovich Rudkovsky, ploschad Tevelva, 2/2, kv. 9; Viktor Vasilievich Ugolnikov, ploschad Teveleva 2/2, kv. 28; Yakov Lvovich Iglinsky, ulitsa Mezhlauka, 9/2, kv. 39; Nikolai Artemovich Babadzhanian, ulitsa Gamy, 44, kv. 3; Semen Iosifovich German, ulitsa Mayakovskogo, 11, kv. 21; Ivan Fedorovich Ochkovsky, ulitsa Kleimenovskaya 15, and Teodor Markovich Zilber, ulitsa Danilevskogo, 22, kv. 100, all of Kharkov, U.S.S.R.

Filed Apr. 10, 1973, Ser. No. 349,813
Int. Cl. F01d *25/32*
U.S. Cl. 415—168 **2 Claims**

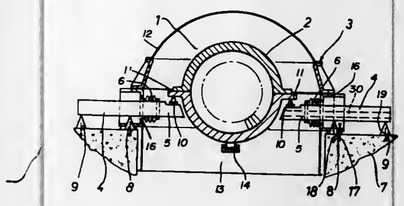


1. A diaphragm for a steam turbine stage comprising hollow guided blades having concave and convex surfaces for directing the main wet steam flow onto turbine rotor blades; a diaphragm rim having one end of each guide blade being fixed thereto; and a diaphragm body having the other end of each said guide blade fixed thereto, each said guide blade having a flat surface portion on the convex surface proximate the wet steam inlet side thereof, a plurality of radially spaced slots in said flat surface portion extending along the upstream side of each said blade and communicating with the interior of said blade, and a radially extending recessed portion forming a groove common to all of said slots on respectively each of said blades for collecting the liquid phase formed on said flat surface portion of each blade.

3,881,843
LOW-PRESSURE STEAM TURBINE CASING

Pierre Meylan, Neuenhof, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Oct. 31, 1973, Ser. No. 411,220
Claims priority, application Switzerland, Nov. 28, 1972, 17221/72
Int. Cl. F01d *25/24, 25/26, 25/28*
U.S. Cl. 415—219 R **5 Claims**

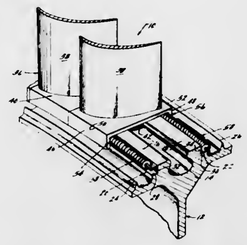


1. A foundation supported turbine structure wherein the turbine casing is of the double-shell type comprising an inner casing within which is mounted the rotor and stationary guide blading and an outer casing spaced from said inner casing, central guide means for said inner casing for accommodating thermal expansion thereof, support means for said inner casing comprising cantilever arms carried by the foundation and extending laterally inward therefrom through openings provided in said outer casing to corresponding support points for said inner casing at opposite sides thereof, each said support point for said inner casing on said cantilever arm including a bearing structure mounted for omni-directional sliding movement on said arm in a horizontal plane, and means for supporting said outer casing at least indirectly by said foundation.

3,881,844
BLADE PLATFORM VIBRATION DAMPERS

John D. Hennessey, West Chester, and Richard Beal, Loveland, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed May 28, 1974, Ser. No. 473,680
Int. Cl. F01d *5/10*
U.S. Cl. 416—145 **13 Claims**

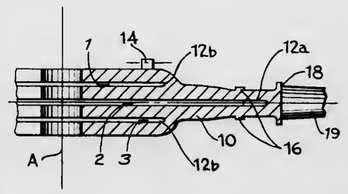


1. In a turbomachinery assembly including a fluid flow path, generally cylindrical support means, a plurality of radially extending blades attached to said support means, each of said blades comprising an airfoil, mounting means for attaching said blade to said support means, and a platform disposed in a spaced relationship with said support means and positioned between the airfoil and the mounting means for partially defining the flow path, vibration damping means comprising:
encasing means disposed between said support means and said blade platform, being in frictional contact with and capable of exerting radial pressure on said blade platforms during operation in the fluid flow path, for damping blade platform movement; and
a flexible core element cooperating with and movable with respect to said encasing means, and in frictional contact therewith.

3,881,845
CERAMIC TURBINE WHEEL

Eldon W. Hauck, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Filed July 2, 1973, Ser. No. 375,347
Int. Cl. F01d *5/28*
U.S. Cl. 416—241 **3 Claims**

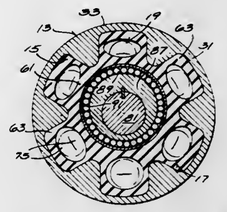


1. A turbine wheel comprising a unitary hub-blade assembly formed of reaction bonded silicon nitride so that its radial cross section transversely between opposing surfaces thereof includes a relatively wide cross-sectional area extending substantially more than one-fourth inch between its opposing outside surfaces and including mutually spaced but interconnected individual portions thereof, wherein
the outside and inside surfaces of said relatively wide cross-sectional area are so shaped and relatively disposed that every part of each individual portion of the relatively wide cross-sectional area has at least one transverse dimension extending between the opposing surfaces thereof which is no greater than one-fourth inch.

3,881,846
FLUID PUMP WITH RESILIENT PUMPING MEMBRANE

Gerald E. Kashmerick, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 6, 1973, Ser. No. 385,853
Int. Cl. F04b *43/08, 45/06*
U.S. Cl. 417—478 **4 Claims**



1. A fluid pump comprising a hollow housing including means defining a series of radially inwardly open, elongated pockets arranged in a circular array with the axis of said array being generally parallel with the elongation of said pockets, a pumping membrane of resilient material including a series of elongated pumping cavities respectively located in said housing pockets, a series of one-way inlet valves respectively connected with said pumping cavities, a series of one-way outlet valves respectively connected with said pumping cavities, rotary means located within said housing in excentric relation to said array of pockets for periodically squeezing said membrane within said pockets to reduce the volume of said cavities and thereafter permitting resilient expansion of said cavities within said pockets so as thereby to induce fluid outflow from said cavities through said outlet valves in response to squeezing of said membrane and to induce fluid inflow into said cavities through said inlet valves in response to said resilient expansion of said cavities.

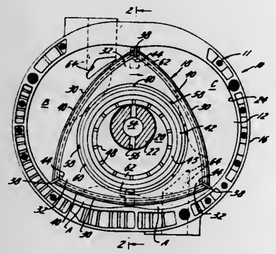
3,881,847
ROTARY EXPANSION ENGINE OF THE TYPE HAVING PLANETATING ROTOR

Hsin S. Chen, Hasbrouck Heights, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Nov. 30, 1973, Ser. No. 420,445
Int. Cl. F01c *1/02;* **F04c** *17/02*
U.S. Cl. 418—61 A **8 Claims**

1. A rotary expansion engine comprising:
a. a housing having opposite end walls spaced apart by a trochoidal peripheral wall and defining therebetween a multi-lobe trochoidal shaped cavity;
b. said lobes meeting each other at lobe junctures;
c. a rotor having opposite side wall surfaces interconnected by a plurality of peripheral flank surfaces;
d. the rotor supported for eccentric rotation within said cavity and disposed therein with one of each of the side wall surfaces lying adjacent an end wall of the housing;
e. seal means disposed in the interstices between each of the end walls and adjacent side wall surfaces of the rotor;
f. the rotor and housing defining therebetween a plurality of working chambers which successively expand and contract as the rotor eccentrically rotates within the housing cavity;

g. a first passageway means in said rotor communicating with a source of pressurized fluid to receive the latter;
h. port means in said rotor communicating with said first passageway means and the interstices between the end wall of the housing and the adjacent side wall surface of the rotor;
i. second passageway means in at least one of the end wall surfaces located adjacent each of the lobe junctures for

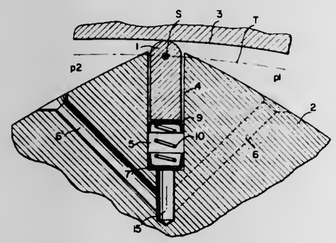


bypassing pressurized fluid around said seal means and located and sized so as to intermittently communicate the port means with a fluid tight working chamber as the rotor rotates thereby delivering pressurized fluid to such working chamber for effecting expansion of the pressurized fluid and rotation of the rotor; and
j. exhaust means communicating with the working chambers for passing spent pressurized fluid from the working chambers following expansion of the pressurized fluid.

3,881,848
PACKING STRIP ARRANGEMENT FOR HIGHLY SUPERHEATED GASES IN ENGINES AND OTHER WORKING MACHINES

Franz Huf, Constance, Germany, assignor to Dornier System GmbH

Continuation of Ser. No. 274,726, July 24, 1972, abandoned. This application Dec. 21, 1973, Ser. No. 427,235
Claims priority, application Germany, Aug. 4, 1971, 2138988
Int. Cl. F01c *19/02*; **F04c** *27/00*
U.S. Cl. 418—123 **6 Claims**

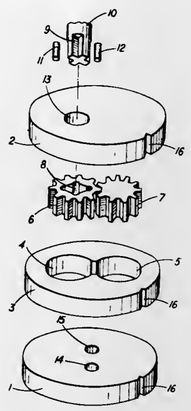


1. In a sealing strip arrangement for a rotary piston engine of trochoidal construction with an inner or outer envelope curve and having a plurality of working chambers, radial grooves in the periphery of that one of the housing and piston of said engine which corresponds to said envelope curve, sealing strip means mounted in said grooves, smaller in radial dimension than said grooves to form a groove space beneath said sealing strip means and having arch-shaped domes on the edge thereof facing the other of said housing and piston, and a pair of bores connecting said groove space with first and second working chambers, respectively, of said engine, the improvement comprising, said domes having their center of curvature positioned on the exact point of intersection of the trochoid and said envelope curve, said sealing strip means having both sides thereof in sufficiently tight contact with the corresponding side walls of said grooves to prevent said sealing strip means from moving transversely in said grooves throughout operation of said engine and thereby maintain said center of curvature of said domes on said point of intersection at all times and maintain an essentially gas tight relation between both sides of said sealing strip means and said side walls of said grooves, a pair of second bores radially extending from said grooves and each connecting said groove space with a respective one of the first-mentioned bores, sealing element means mounted in said grooves at the base of said sealing strip means and resting against said side walls of said grooves, sealing cuff means mounted in said groove space and adapted to close off said second bores and spring means mounted in said groove space between said sealing element means and said sealing cuff means to simultaneously act against said sealing cuff means and said sealing element means and thereby urge said sealing strip means outwardly.

3,881,849
GEAR PUMPS

Roger Commarmot, Rhone, and Michel Pequignot, Hauts de Seine, both of France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed Dec. 7, 1972, Ser. No. 311,716
Claims priority, application France, Dec. 7, 1971, 71.43880
Int. Cl. F04c *15/00*
U.S. Cl. 418—182 **2 Claims**

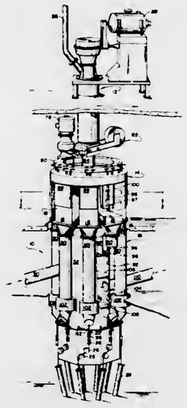


1. In a gear pump comprising two intermeshing cylindrical gear wheels located in two part cylindrical communicating seats of the body of the pump provided with inlet and outlet orifices for the fluid, and with an orifice for the passage of the drive shaft for driving the driven gear wheel, each of said orifices being located in an end wall of the body of the pump, the improvement which consists in that:
a. the said body of the pump, the drive shaft, and the gear wheels are formed entirely of a ceramic material;
b. the axial clearance between each gear wheel and its seat is less than 20 microns and the diametral clearance between each gear wheel and its seat is less than 50 microns;
c. each gear wheel is mounted effective to be guided solely by the walls of its seating, which directly enclose at least 80 percent of the total number of gear teeth of the respective gear wheel; and
d. the drive shaft engages freely and with play in a non-circular cross-section recess in an end face of the driven gear wheel and passes through the body of the pump through an orifice, the diametral clearance between the drive shaft, and the orifice being between 2 and 10 microns.

3,881,850
MELT SPINNING TOWER MODULE AND CIRCULAR MELT SPIN BLOCK THEREFOR

Bruce W. Stockbridge, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1974, Ser. No. 430,121
Int. Cl. D01d *5/08*
U.S. Cl. 425—72 **7 Claims**



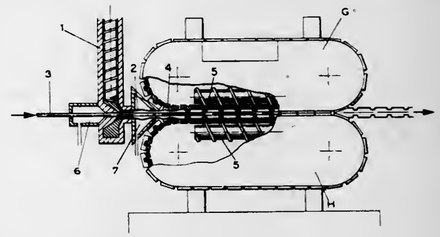
1. A melt spinning tower module for melt spinning of polymers into textile filaments, the tower module comprising:
an upstanding central core;
a circular spin block positioned at the top of the central core, and having inlet means for receiving melted polymer within the spin block from a source of supply and having a plurality of spin packs through which the melted polymer is spun from the spin block into a plurality of hot, plastic filaments; and
a plurality of quench cabinet-take-up assemblies connected to, extending around and down the outside of the central core for receiving from respective spinning packs in each assembly the hot, plastic filaments;
each quench cabinet-take-up assembly including a vertically extending quench cabinet within which the hot, plastic filaments are quenched; a vertically extending quench stack below and following the quench cabinet for continued quenching and curing the hot, plastic filaments into textile filaments; and means below the quench stack for processing the textile filaments as they emerge from the quench stack;
said upstanding central core being cylindrical and hollow, and its cylindrical wall forming a back wall for each of the respective quench cabinets; each said back wall defining therethrough an opening; and means for introducing through each of the openings into the quench cabinets a quenching medium directed against the hot, plastic filaments being spun into the quench cabinets.

3,881,851
MACHINES FOR FORMING INSULATION FOR HIGH FREQUENCY TRANSMITTING COAXIAL LINES

Jacques Allanic, Sceaux; Philippe Beraudy, Riom, and Louis Guillon, Paris, all of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Nov. 5, 1973, Ser. No. 413,023
Claims priority, application France, Dec. 13, 1972, 72.44276
Int. Cl. B29d *23/00*
U.S. Cl. 425—113 **8 Claims**

1. In a machine for forming the between-conductor insulation of a coaxial conductor pair for the transmission of high frequency electric signals, means for extruding around said inner conductor a thin tube of thermoplastic material and for constricting said tube at periodically spaced points along said inner conductor, said means including a succession of substantially identical small dies forming at least one endless chain driven at a constant linear speed by endless screws, part of said dies being pressed against said tube up to contact thereof with said inner conductor, the improvement consisting in that the successive dies in each chain freely contact each other and

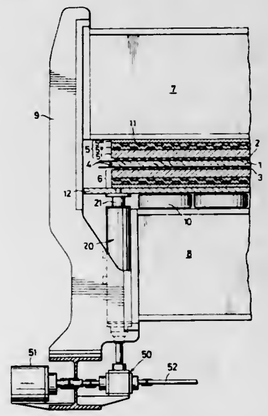


are mechanically independent of each other and move in endless slides, and in that said machine includes in each chain an exchange mechanism for replacing at random time intervals a small number of succeeding dies by an equal number of similar dies taken out from a reserve magazine, the exchanging being effected without stopping the operation of the machine and being controlled by electric pulses generated at random times by a random pulse generator.

3,881,852
MEANS FOR MAINTAINING SPACING IN A CONTINUOUS PRESS

Karl-Heinz Ahrweiler, Krefeld, Germany, assignor to Eduard Kusters, Krefeld, Germany

Filed Aug. 27, 1973, Ser. No. 391,585
Claims priority, application Germany, Aug. 29, 1972, 2242399
Int. Cl. B29c *3/06*
U.S. Cl. 425—149 **5 Claims**



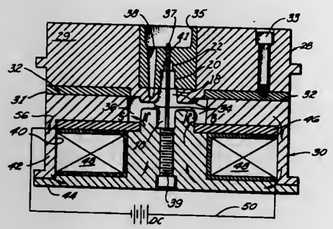
1. In a press having two press platens, each of which is supported on an external support construction wherein the force from one press platen is transmitted to its corresponding support construction through a pressure fluid within a pressure element positioned between the platen and its corresponding support construction, apparatus for maintaining constant spacing between the two press platens comprising:
a. means rigidly coupling the support constructions associated with each of said two press platens;

b. means for sensing deviations of one press platen from a predetermined position and for regulating the pressure elements so as to maintain said one press platen at said predetermined position during a pressing operation so as to maintain said predetermined position throughout the pressing operation.

3,881,853
APPARATUS FOR FABRICATING AN INTEGRAL ROTOR ASSEMBLY

Robert J. Loubier, 3111 Covington Rd., Ft. Wayne, Ind. 46704

Division of Ser. No. 244,130, April 14, 1972, Pat. No. 3,842,148. This application Apr. 12, 1974, Ser. No. 460,338
Int. Cl. B29f *1/00*
U.S. Cl. 425—174.8 **8 Claims**

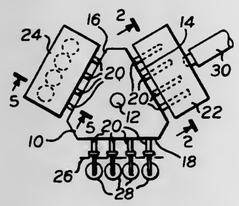


1. Apparatus for molding an integral rotor assembly for a dynamoelectric machine comprising two engageable mold sections which define a mold cavity therebetween, a first part of said cavity being in one of said sections and a second part in the other, said cavity havingh a cylindrically shaped peripheral portion defining inner and outer coaxial peripheral surfaces and an axially extending portion, means for conducting molten thermoplastic material to said cavity, said mold sections having engageable parting surfaces that generally define a plane normal to the axis of said cavity, magnetic means for producing a magnetic field providing unidirectional flux lines radially through the peripheral portion of said cavity between said inner and outer peripheral surfaces during the molten phase of plastic in said cavity, and means for providing a high reluctance path between said axially extending and peripheral portions.

3,881,854
MOLDING APPARATUS WITH NECK-GATED MOLD

Dewey Rainville, Westfield, N.J., assignor to Rainville Company, Inc., Middlesex, N.J.

Filed May 10, 1973, Ser. No. 358,922
Int. Cl. B29f *3/04*
U.S. Cl. 425—242 B **10 Claims**

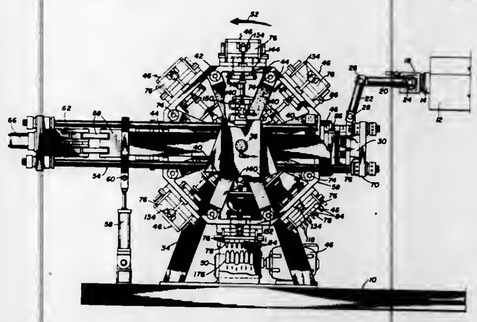


1. Apparatus for making molded plastic articles including an injection mold having a cavity therein, a core rod, an opening at one end of the cavity through which the core rod extends into the cavity, the core rod having a neck portion fitting firmly around said opening to close the open end of the cavity against escape of plastic from the cavity during injection of a parison around the portion of the core rod that extends into the cavity, the core rod having a free end remote from said neck portion and spaced from the end of the cavity that is remote from said opening through which the core rod extends into the cavity, a passage in the mold opening at one end through a side of the mold and leading to the cavity at a location adjacent to the end of the cavity through which the neck portion of the core rod extends into said cavity, an extruder for forcing plastic into the end of the passage that opens through the side of the mold, and a blowing mold to which the core rod is transferred after injection of the parison.

3,881,855
INJECTION BLOW MOLDING APPARATUS

Francis Farkas, c/o Clearplass Container Inc., Phelps, N.Y. 14532

Filed Jan. 16, 1973, Ser. No. 324,148
Int. Cl. B29d *23/02*, *23/03*
U.S. Cl. 425—342 **15 Claims**



1. An injection molding machine comprising a series of molds, a core for each mold, means constantly traveling said molds in a closed path, a plastic injection device, means to travel the latter in synchronism with each mold successively for a portion only of said path, means to actuate the plastic injection device to cause the same to inject plastic material onto the core of each mold during the period of mutual travel of each mold and the plastic injection device,

a cavity in the plastic injection device, said cavity receiving each core in turn, said cavity forming the plastic on each core in turn, the plastic injection device injection plastic into said cavity,

a pair of cavity forming members on each mold, means to open and close said members about the core on the respective mold, and

means to blow air into the plastic on each core upon closing of the cavity forming members on each mold.

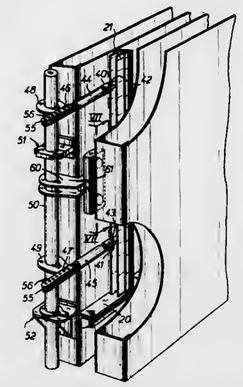
3,881,856
PLANT FOR THE FABRICATION OF PARALLEL MOLDED CONSTRUCTION ELEMENTS

Edouard Maire Fougea, Paris, France, assignor to Constructions Edmond Coignet, Paris, France

Filed Nov. 27, 1972, Ser. No. 309,815
Claims priority, application France, Dec. 6, 1971, 71.43664
Int. Cl. B28b *1/08*
U.S. Cl. 425—432 **11 Claims**

1. A plant for molding construction elements comprising a frame, a plurality of form panels serially connected together, lateral and lower flanges provided on one face of each form panel for defining molding cavities with the other face of adjacent form panels, a stationary end wall fixed to the frame, and a mobile end wall displaceable along the frame for moving said plurality of form panels therewith, means permanently connected to the lateral flanges for displacement parallel to the associated form panel, the means for displacing the lateral flanges comprising a control mechanism including rods con-

nected to the flanges and adjustably connected to pivot arms mounted for rotation on an operating shaft supported on one form panel of each pair forming a molding cavity, and locking means including locking arms rotatably mounted on the oper-

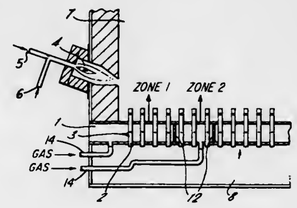


ating shaft and adapted to be held between the adjacent panels of each pair, vibrator devices mounted in fluidtight recesses in the form panels, and damping means arranged between the panels and the frame for reducing the transmission of vibrations from the panels to the frame.

3,881,857
COMBUSTOR

Herbert Raymond Hoy, Leatherhead; Alan Gregson Roberts, Dorking, and Dennis Malcolm Wilkins, Chipstead, all of England, assignors to BP Trading Limited, London, England

Filed Mar. 6, 1974, Ser. No. 448,489
Claims priority, application United Kingdom, Mar. 20, 1973, 13283/73
Int. Cl. F23d *19/02*
U.S. Cl. 431—7 **13 Claims**



1. A distributor plate for igniting a fluidized bed furnace comprising: a chamber having fuel gas inlets; a plurality of air tubes passing through the chamber, the interior of the air tubes being in communication with the chamber by means of holes, one end of the air tubes terminating in heads having outlets; dividing means in the chamber adapted to allow fuel gas to be supplied to a progressively increasing number of air tubes and fuel gas ignition means substantially adjacent to the plate.

3,881,858
RADIANT GAS BURNER

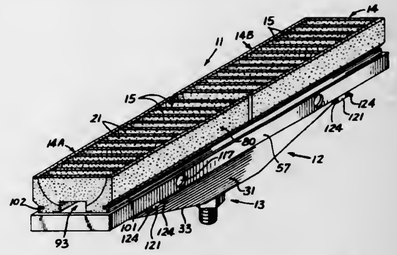
Carl E. Fitzgerald, 8901 Manyo Ave., Morton Grove, Ill. 60053

Filed Apr. 19, 1974, Ser. No. 462,390
Int. Cl. F23d *13/12*
U.S. Cl. 431—348 **13 Claims**

1. A radiant gas burner comprising an elongated upper refractory ceramic body having a series of transversely extending vanes spaced longitudinally from each other and defining therebetween separated combustion chambers,

a manifold body disposed beneath and supporting said refractory body, said manifold body comprising a metal stamping having an elongated manifold chamber and a separate metallic burner vent bar mounted on said metal stamping, means providing a fuel inlet port into said manifold body,

a refractory means covering a portion of said vent bar exposed to said combustion chambers to protect said metallic vent bar and to provide combustion chambers of substantially all refractory material,



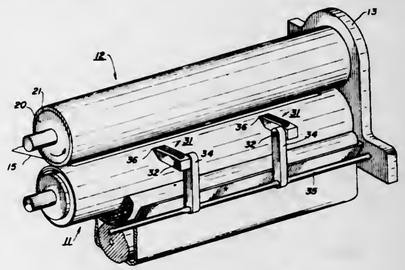
a series of burner vent slots of narrow width spaced longitudinally in said vent bar and aligned with and beneath said transversely extending vanes in said refractory body, said slots being in fluid communication with said manifold chamber to discharge the fuel mixture therefrom directly against said vanes for flowing thereabout and into said combustion chambers,

said vent bar having a cross-sectional thickness greater than said cross-sectional thickness of said metal stamping and being supported in said metal stamping, said vent bar being cast of a scale resistant metal to retard closing of said vent slots with oxidation of said cast metal of said vent bar.

3,881,859
STRIPPER FINGER DESIGN TO PREVENT "OIL-ON-THE-COPY"

Willard C. Hamilton, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1973, Ser. No. 418,538
Int. Cl. B05c *11/00*
U.S. Cl. 432—60 **7 Claims**

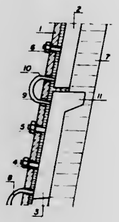


5. Mechanism for removing substrate material from a heated roll adapted to fuse toner particles thereto wherein the surface of the heated roll is provided with material for preventing adherence of the toner particles thereof, said mechanism comprising:

at least one pickoff finger pivotally supported relative to said heated roll such that a leading edge thereof contacts the surface of the heated roll; and

means associated with said at least one pickoff finger for absorbing excessive amounts of adherence-preventing material and conveying said excessive amounts away from said leading edge.

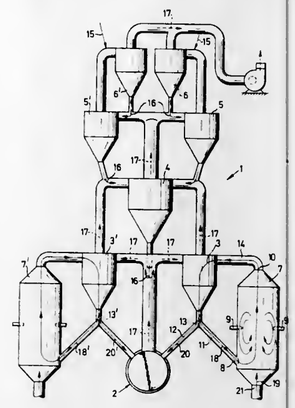
3,881,860
COOLED SHAFT-FURNACE AND STAVE-COOLER TO BE USED THEREFOR
Jan Hendrik Brandenburg, Julianaplein, Netherlands
Filed Dec. 18, 1973, Ser. No. 425,853
Claims priority, application Netherlands, Dec. 19, 1972, 7217255
Int. Cl. F27b *1/24*
U.S. Cl. 432—83 **12 Claims**



1. Stave-cooler for a lined shaft furnace, suited for being provided as one of a series of aligned members in horizonal rows to be cooled, the members of the horizontal rows being aligned to provide vertical rows, vertical pipes for passing a coolant accommodated by each member and with external pipes connecting the pipes of the cooling members of one horizontal row with the vertical pipes of the cooling members vertically aligned therewith in the horizontal row thereabove, having a projection on its face which is inwardly directed in use for supporting the furnace lining, a plurality of passages for cooling fluid extending through the cooler in directions having at least a vertical (in use) component, at least some of the said passages extending for at least a substantial part of the vertical extent of the projection through that portion of the cooler which lies outwardly (in use) of the projection and a further fluid passage extending through the projection which has an inlet and an outlet in the outwardly directed (in use) face of the cooler and lies in a substantially horizontal plane.

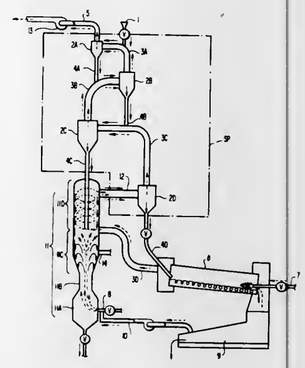
3,881,861
APPARATUS FOR THE MANUFACTURING OF CEMENT
Horst Ritzmann, Neubeckum, Germany, assignor to Polysius AG, Neubeckum, Germany
Filed Aug. 14, 1973, Ser. No. 388,196
Claims priority, application Germany, Sept. 26, 1972, 2247172
Int. Cl. F27b *7/02*
U.S. Cl. 432—106 **7 Claims**

1. Apparatus for the manufacture of cement, lime, alumina and the like from raw material, said apparatus comprising preheater means; means for delivering raw material to said preheater means; a furnace; means for discharging raw material from said preheater means to said furnace; means establishing a heated idling zone; means for diverting from said furnace to said idling zone a portion of raw material discharged from said preheater means; and means connecting



said idling zone to said preheater means for returning to the latter raw material diverted to said idling zone.

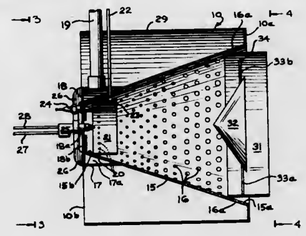
3,881,862
APPARATUS FOR CALCINATION OF CEMENT-CLINKER
Toyomi Nishida; Hiroshi Sohma, and Hayami Ito, all of Hyogo, Japan, assignors to Kawasaki Jukogyo K.K., Hyogo, Japan
Filed Sept. 4, 1973, Ser. No. 394,017
Claims priority, application Japan, Sept. 4, 1972, 47-88536
Int. Cl. F27b *15/00*
U.S. Cl. 432—106 **3 Claims**



1. An apparatus for calcination of cement clinkers comprising a substantially cylindrical vertically disposed calcining furnace having in series from bottom to top a combustion chamber portion providing with burner means, a reduced diameter throat portion, a spouted bed portion provided with additional burner means and an uppermost heat exchange chamber portion; a suspension type raw material preheating means having inlet means for receiving raw material and outlet duct means extending into said furnace for supplying preheated material to the upper portion of said spouted bed portion; a rotary kiln means having burner means at one end and exhaust gas outlet means at the opposite end thereof, duct means connecting the exhaust gas outlet means to the upper portion of said spouted bed portion of said furnace, said duct means extending into said cylindrical furnace substantially tangentially thereto, outlet duct means disposed substantially tangentially with respect to said cylindrical furnace at the top

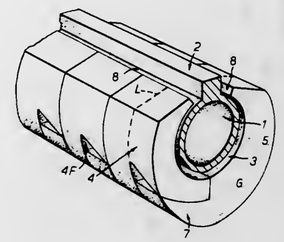
of said uppermost heat exchange chamber for removing heated gases and calcined material from said furnace, cyclone separator means having an inlet connected to said outlet duct means, a first outlet connected to said suspension type preheating means for supplying hot gases thereto and a second outlet connected to said rotary kiln for supplying calcined material thereto.

3,881,863
DUAL FUEL BURNER
Walter R. Creuz, Chatham, N.J., assignor to Aero-Flow Dynamics, Inc. (The Wing Co. Division), Linden, N.J.
Filed July 9, 1973, Ser. No. 377,538
Int. Cl. F23d *11/02*
U.S. Cl. 432—222 **22 Claims**



1. A dual fuel airstream type burner having a high turndown ratio characteristic when burning gas or oil, comprising an elongated conical burner cone having a plurality of longitudinally spaced apart, circumferential rows of air apertures disposed along substantially its length, said apertures being smaller in diameter in said rows thereof towards the small end of said burner cone and being larger in diameter in said rows thereof towards the large end of said burner cone whereby the sequential rows of said apertures introduce increasing amounts of combustion air in the correct proportions for progressively increasing firing rates of the burner, an oil fuel nozzle mounted centrally of the small end of said burner cone, said oil fuel nozzle having means for atomizing fuel oil fed therethrough to a particle size smaller than about 25 microns, gas port aperture means adjacent to said small end of said burner cone, and gas manifold means on said small end of said cone and communicating with said gas port aperture means.

3,881,864
SHEATHING FOR METAL FURNACE MEMBERS
Peter John Nicol, Eastham, England, assignor to Morgan Refractories Limited, Neston, Wirral, Cheshire, England
Filed Apr. 29, 1974, Ser. No. 465,342
Claims priority, application United Kingdom, May 3, 1973, 21104/73
Int. Cl. F27b *9/14*
U.S. Cl. 432—234 **23 Claims**



1. A refractory tile for sheathing a horizontal metal furnace member and consisting of a substantially C-shaped block with a hollow side to embrace one lateral side portion of a furnace member of appropriate size, an upper end to engage over the furnace member and a lower end designed to swing, under gravity, beneath the furnace member so as to extend more than half-way thereunder in engagement with a complementary tile, characterised thereby that the lower end of the block includes means for interengaging with a complementary tile to form a collar around the furnace member and oppose axial separation of the tile from its complementary tile, said means comprising a circumferentially projecting terminal portion with a reduced cross-sectional dimension and with circumferential surfaces facing respectively with a component in both axial directions and so constructed, arranged and oriented that when said terminal portion of the tile is interengaged with a complementary tile to form a collar around the furnace member, said circumferential surfaces provide abutments to oppose axial separation of the tile from its complementary tile.

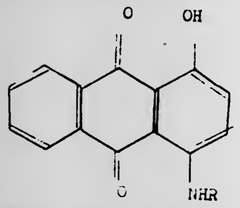
3,881,865
ANTHRAQUINONE DYESTUFF MIXTURES

Colin William Greenhaigh, and David Francis Newton, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

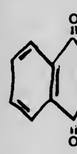
Filed Apr. 26, 1973, Ser. No. 354,913
Claims priority, application United Kingdom, June 2, 1972, 25859/72
Int. Cl. C09b ; D06p *1/00, 3/00, 5/00, 7/00*
U.S. Cl. 8—25 **2 Claims**

1. A disperse dyestuff composition which comprises

a. from 65 to 95 percent by weight (based on the total weight of dyestuffs in the mixture) of a disperse anthraquinone dyestuff of the formula

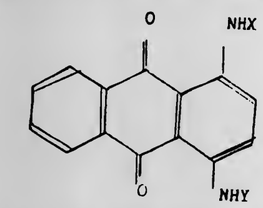


which can contain up to 30 percent of its own weight of a disperse anthraquinone dyestuff of the formula



wherein R represents a phenyl radical which can be substituted by one or more chlorine or bromine atoms or by hydroxy, amino, lower alkyl, lower alkoxy, hydroxyloweralkoxy, N-lower alkylamino, N:N-di(lower alkyl) amino, carbo lower alkoxy, lower alkoxycarbonyloxy or lower alkylcarbonyloxy groups;

b. from 5 to 35 percent by weight (based on the total weight of dyestuffs present in the mixture) of one or more disperse anthraquinone dyestuffs of the formula:



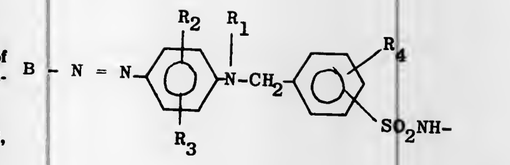
wherein X and Y each independently represent a lower alkyl, hydroxy lower alkyl or lower alkoxy lower alkyl radical.

3,881,866
POLYESTER OR POLYACRYLONITRILE FIBERS DYED BY QUATERNIZED OR UNQUARTERNIZED AZOANILINO-TOLUENE SULFONAMIDOALKYLENEAMINE

Edgar E. Renfrew, Lock Haven, Pa., assignor to American Aniline Products, Inc., Paterson, N.J.

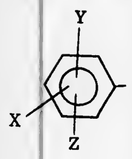
Filed Nov. 3, 1972, Ser. No. 303,429
Int. Cl. D06p *3/54, 3/76*
U.S. Cl. 8—41 A **14 Claims**

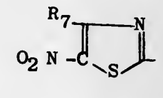
1. A polyester textile material dyed with a compound of the formula:



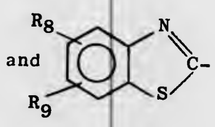
in which:

B is a member selected from the group consisting of





and



wherein

X, Y, and Z are members selected from the group consisting of hydrogen, nitro, chlorine, bromine, lower alkoxy, lower alkyl, cyano, sulfamyl, N-(lower alkyl)-sulfamyl, N,N-(dilower alkyl)-sulfamyl, lower acrylamido, trifluoromethyl, lower alkyl sulfonyl, carbamyl, N-(lower alkyl)carbamyl and N,N-(dilower alkyl) carbamyl; hydrogen or methyl; and

R_7 is hydrogen or methyl; and

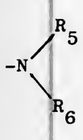
R_8 and R_9 are members selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, chlorine, bromine, nitro, sulfamyl, N,N-(dilower alkyl) sulfamyl, cyano, and lower alkyl sulfonyl;

R_1 is lower alkyl, cyano lower alkyl, and hydroxy lower alkyl;

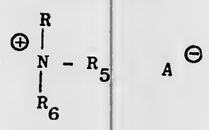
R_2, R_3 and R_4 are hydrogen, lower alkyl, lower alkoxy, chlorine and bromine;

n is an integer having a value of 2-4;

Q is a member selected from the group consisting of



and



R_5 and R_6 are methyl or ethyl;

R is hydrogen, methyl, or ethyl; and

$A^{\ominus}$ is a water soluble anion.

3,881,867
DISPERSE DYEING WITH POLYMERIC FATTY NITRILE SOLUTION

Gerardus Johannes van Veersen, Goude, Netherlands, assignor to Emery Industries, Inc., Cincinnati, Ohio

Filed Jan. 29, 1973, Ser. No. 327,287
Claims priority, application United Kingdom, Jan. 28, 1972, 4179/72
Int. Cl. D06p *5/04*
U.S. Cl. 8—169 **2 Claims**

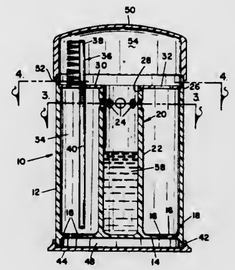
1. A method for dyeing polypropylene or polyester materials in the form of sheets, foils, monofilaments, or fibers comprising treating said materials containing an effective amount

of a polymerized fatty acid nitriles containing 20-75 carbon atoms and having 2-4 nitrile groups with an aqueous medium containing a dyestuff.

3,881,868
TOOTHBRUSH HOLDER AND STERILIZER

Edna Mae Duke, P.O. Box 3431, South Gate, Calif. 91744

Filed Mar. 6, 1974, Ser. No. 433,388
Int. Cl. A611 *3/00*
U.S. Cl. 21—83 **4 Claims**



1. A toothbrush holder and sterilizing device comprising:

a wall defining a holder body; a bottom wall fixedly attached to said holder body wall at the lower end of said body, said bottom wall having a plurality of perforations therethrough;

a substantially imperforate tubular reservoir means for holding sterilizing liquid extending upwardly from the bottom wall and closed at the lower end by said bottom wall, the upper end of said reservoir being open, the reservoir being defined by a tubular wall of smaller cross-sectional area than the interior cross-sectional area of the body, the space between the wall of the body and the wall of the reservoir defining a sterilizing chamber therebetween;

an annular disk having a plurality of spaced apart toothbrush handle receiving openings through said annular disk, said disk having a central opening therethrough for accommodating the upper end of said tubular reservoir, said holder body having means for supporting said disk adjacent the upper end of the body, the perforations in said bottom wall acting to drain any liquid which would otherwise accumulate within said chamber; a drainage cup mounted at the lower end of said holder body below said perforations in said bottom wall for collecting liquid draining through said perforations; and

a removable cap for the upper end of the body.

3,881,869
CHEMILUMINESCENT DETECTION OF OZONE

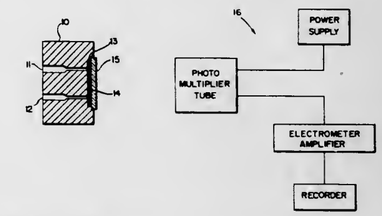
Radhakrishna Murty Neti, Brea, and George I. Reeves, Fullerton, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed July 2, 1973, Ser. No. 375,481
Int. Cl. G01n *31/10*
U.S. Cl. 23—232 E **7 Claims**

1. A method of quantitatively measuring the concentration of ozone in a gas sample, which method comprises:

contacting a bed of solid particles of an organic polymer having a backbone chain consisting of carbon atoms with an ozone containing gas sample to produce chemiluminescence, and

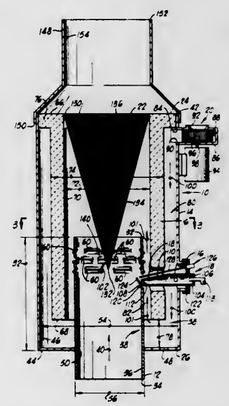
measuring the intensity of the chemiluminescent light.



3,881,870
EFFLUENT CONTROL APPARATUS

Lonnie P. Hatfield, P.O. Box 237, Oklahoma City, Okla. 73101

Filed July 13, 1973, Ser. No. 378,983
Int. Cl. F23c *9/04*; **F23g** *7/06*
U.S. Cl. 23—277 C **9 Claims**



1. An effluent control apparatus for receiving an effluent contaminated with a pollutant, comprising:

an inlet conduit, having an upper end, a lower end, and an effluent inlet passageway formed therethrough;

a baffle having baffle openings and a portion disposed near the upper end of the inlet conduit;

means engaging the baffle and supporting the baffle, a portion of the baffle being supported generally near the upper end portion of the inlet conduit;

a burner assembly, having a portion disposed near a portion of the effluent inlet passageway and near a portion of the baffle discharging a flame in an operating position of the burner assembly, the flame heating a portion of the effluent inlet passageway and a portion of the baffle to a predetermined temperature level, and the contaminated effluent moving through the effluent inlet passageway in a direction generally from the lower end toward the upper end of the inlet conduit and being discharged through the baffle openings in an operating position of the effluent control apparatus;

an outer casing, having an upper end, a lower end and an opening extending therethrough, a portion of the inlet conduit near the upper end thereof being disposed within a portion of the outer casing opening near the lower end of the outer casing, the lower end portion of the inlet conduit being connected to the outer casing and the upper end of the inlet conduit being spaced a distance below the upper end of the outer casing;

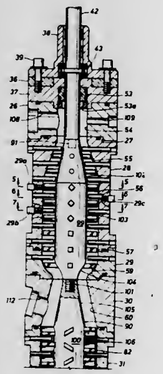
means having a portion disposed between the upper end portion of the inlet conduit and the outer casing and spaced a distance from the inlet conduit forming an air passageway between the upper end portion of the inlet conduit and said means for receiving air or the like and discharging the received air or the like generally near the upper end of the inlet conduit in a direction generally parallel with the direction of flow of the effluent through the effluent inlet passageway; and

means in communication with the air passageway discharging air or the like into the air passageway, the air or the like moving through the air passageway and being discharged generally near the upper end of the inlet conduit, the air and the effluent discharging through the baffle openings in an operational position of the effluent control apparatus.

3,881,871
MIXER FOR CONTINUOUS MIXING OF FOAM MATERIALS

Lawrence C. Porter, Palos Verdes Peninsula, Calif., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 85,580, Oct. 30, 1970, abandoned.
This application Mar. 27, 1973, Ser. No. 345,253
Int. Cl. B02f 7/04; B01j 1/00; C08g 22/44
U.S. Cl. 23—252 R **18 Claims**



17. Apparatus for continuous manufacture of polyurethane by mixing of components comprising

elongated mixer means having a continuous flow passage and lower discharge nozzle,

said mixer means being comprised of upper and lower sections, the major portion of said flow passage in said upper and lower sections having substantially uniform cross-section,

means coupling said upper and lower sections to one another and having a flow path therethrough of a reduced cross-section relative to that of said flow path in said upper and lower sections,

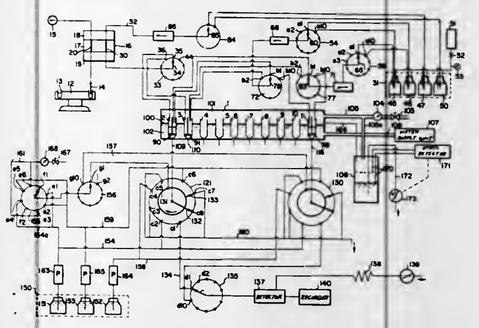
transverse agitating means along the major portions of said flow passage for transversely shearing liquid passing therethrough, and

inlet means for supplying liquid reaction components to said flow passages at at least two locations in the upper section of said mixer means and at at least one location in the lower section of said mixer means.

3,881,872
AUTOMATIC ANALYZING DEVICE

Toyohiko Naono, Akishima, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1973, Ser. No. 387,965
Claims priority, application Japan, Aug. 15, 1972, 47-81708; Aug. 15, 1972, 47-81715; Aug. 15, 1972, 47-81721
Int. Cl. G01n 1/14
U.S. Cl. 23—253 R **6 Claims**



1. An apparatus for automatically analyzing a plurality of liquid samples comprising:

a. a turntable in which sample container tubes are accomodated and means for intermittently rotating the turntable;

b. a reaction bath composed of a lower chamber associated with means to maintain it at a constant temperature and an upper chamber associated with means to pressurize it with inert gas;

c. a plurality of reaction tubes installed in the said reaction bath vertically positioned in both the upper and lower chambers and opening into said upper chamber;

d. means for drawing samples to be analyzed from said sample tubes rotated thereunder by the turntable;

e. means for delivering the sample to said reaction tubes;

f. means for supplying reagents to said reaction tubes by pressurizing the said reagents with inert gas;

g. means for delivering the contents of the reaction tube through an opening in the bottom of the reaction tube to an analytical instrument for detecting; and,

h. means for cleaning the reaction tubes and said analytical instrument and the instrument delivering means with at least one kind of cleaning solution, such that all the flow lines comprising the drawing means, reagent supply means, sample delivery means, and cleaning means, are isolated from the atmosphere and pressurized with inert gas at a constant pressure to prevent the oxidation of solutions, formation of air bubbles, or the rise of noxious fumes.

3,881,873
MOISTURE INDICATING PROBE AND METHOD OF USE

Iris B. Klowden, 1146 Center Ct., Homewood, Ill. 60430

Filed Apr. 29, 1974, Ser. No. 465,106
Int. Cl. G01n 33/18, 21/06
U.S. Cl. 23—253 TP **7 Claims**

1. A moisture indicating single-element device adapted for forced insertion directly into the soil of a potted plant and moisture-sensitive to undergo a visible color change in response to moisture present in said soil, thereby to provide an indication of the moisture condition of the soil,

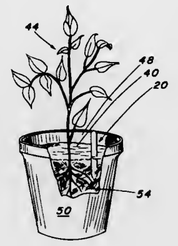
said device comprising, in combination,

an elongated, longitudinally-rigid probe of wood and similar compositions including fiber board and other cellular-structured materials,

said probe being further characterized by mechanical strength sufficient to permit forced manual insertion of said probe downwardly into the soil of a potted plant and the like to a region near the roots thereof,

a chemical agent deposited on and carried by said probe in a perimetric base zone thereof for direct contact with the soil of a potted plant,

said agent being adhered to said probe so as to resist premature physical dislodgment of said agent from said probe when the probe is thrust into the soil,



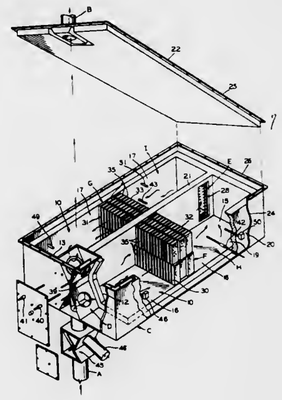
said chemical agent being sensitive to moisture to undergo color change, and characterized in assuming one color when dry and a different color when moistened,

whereby, upon insertion of said probe and said agent carried thereby into and withdrawl of said probe and probe-carried agent from the soil of a potted plant, there is provided a visual indication to denote, for either existing condition, the presence of and the need for added water.

3,881,874
THERMAL INCINERATION AIR POLLUTION CONTROL DEVICE

Howard Edward Shular, North Olmsted, and John Sellors, Jr., Shaker Heights, both of Ohio, assignors to Pyronics, Inc., Cleveland, Ohio

Filed May 7, 1973, Ser. No. 358,146
Int. Cl. B01j 9/02
U.S. Cl. 23—277 C **3 Claims**



1. A thermal incineration air pollution control device for heating a mixture of air and gaseous hydrocarbons to the auto-ignition temperatures of the hydrocarbons comprising:

a. a housing

b. a member having an opening at one end dividing the length of said housing into an elongated U-shaped passageway having a base and leg portions extending therefrom, said passageway adapted to be communicated at both ends with an inlet and a discharge duct through which said gases flow;

c. first valve means in said housing directing said gases from said inlet duct alternately into either end of said passageway and alternately from the opposite end of said passageway into said discharge duct;

d. a heat source in said opening midway of the length of said passageway and dividing said passageway into first and second chambers;

e. heat absorbing means at the ends of each chamber and substantially spaced from said heat source to provide a combustion chamber on each side of said heat source between said heat source and the adjacent ends of said heat-absorbing means;

f. means for periodically actuating said valve means and reversing the direction of flow of gases from said ducts to said passageway whereby gases moving toward said heat source are preheated from heat from said heat-absorbing means and gases flowing from said heat source heat the other heat-absorbing means to an elevated temperature;

g. said actuating means comprising at least one temperature sensing probe in each said passageway and drive means to actuate said valve means when said temperature probe reaches a predetermined temperature whereby the direction of flow of gases through said passageway is reversed and

h. pressure sensing means in working relationship with said temperature probes, said pressure sensing means including means overriding said temperature sensing means when the flow of hydrocarbons through said heat-absorbing means reaches a predetermined pressure drop thereby temporarily preventing reversal of flow through said passageway.

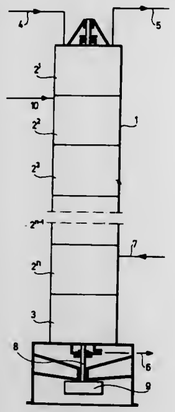
3,881,875
EQUIPMENT FOR THE CONTINUOUS PRODUCTION OF SYNTHETIC RESINS FOR THE VARNISH INDUSTRY

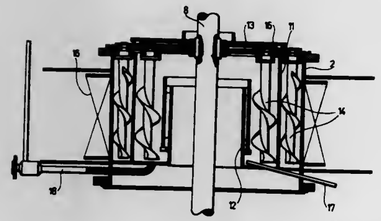
Lajos Brieger, Tiszaszederkeny; Karoly Doktor, Leninvaros; Geza Szekely, Budapest; Tibor Szenas, Miskolc; Gabriella Bekefi, Budapest, and Dezso Zoranyi, Miskolc, all of Hungary, assignors to Tiszai Vegyi Kombinat, Leninvaros, Hungary

Filed Aug. 27, 1973, Ser. No. 391,876
Int. Cl. C08f 1/98
U.S. Cl. 23—283 **4 Claims**

1. Equipment for the continuous production of synthetic resins, comprising an upright fixed cylindrical reactor having a plurality of superposed trays therein, means for heating said trays, a central vertical shaft extending through said trays within said reactor, means for rotating said shaft, mixing elements on said shaft for stirring the material on said trays, each tray having an upstanding cylindrical dividing element thereon, an outer wall radially outwardly of said dividing element and extending from each said tray to a height greater than the height of said dividing element, and radially inwardly of said dividing element an upstanding overflow element of a height less than said dividing element, a spray disc over the mixing element of each tray for directing material to the radially outer side of said dividing element and to the radially inner side of said outer wall so that material flows from the outer side of said dividing element over said dividing element to the inner side of said dividing element and then over said overflow element to the tray below, means for introducing reaction material into the top of the reactor, means for remov-

ing synthetic resins from the bottom of the reactor, means for introducing gas into the reactor below at least some of the





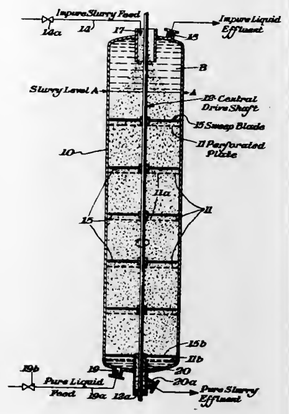
trays of the reactor, and means for removing gas from the top of the reactor.

3,881,876
APPARATUS FOR SINK-FLOAT LIQUID CONTACTING OF SOLIDS

Harold Felton Porter, Hockessin; Foster Wilson Rennie, Wilmington, both of Del., and Addison Heaton Williamson, Beaumont, Tex., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 197,445, Nov. 10, 1971, Pat. No. 3,801,370. This application Nov. 21, 1973, Ser. No. 417,808
Int. Cl. B01d *11/02*
U.S. Cl. 23—270 R **1 Claim**

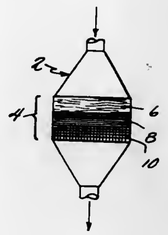
1. Apparatus for contacting two distinct miscible liquid inputs with solids using the sink-float technique comprising, in combination, a substantially vertical contacting column provided with a plurality of superposed transverse plates each having a multiplicity of apertures in the size range of about ¼ to 1⅛ inches distributed substantially uniformly across the entire areas of said plates, the free area of said plates being approximately 5 to 25% and the minimum aperture dimension being in the range of about 5 to 200 times the average particle screen size of said solids, first inlet means for introduction of solids mixed with a first of said liquids disposed at a first preselected level in said column effecting sink-float transit of said solids lengthwise of said column and through said apertures of said plates, powerdriven slow-speed rotary sweep arms disposed at a clearance of about 0.25 to 1.5 inches with respect to the solids inlet sides of said plates, second inlet means for introduction of the second of said liquids disposed at a second preselected level spaced lengthwise of said column from said first preselected level in the direction of said sink-float transit of said solids, a first exit means for drawing off said solids mixed with liquids constituting the bulk of said second liquid together with a relatively minor portion of said first liquid as a first discharge stream from the solids sink-float progression end of said column and a second exit means for simultaneously drawing off the bulk of said first liquid together with the remainder of said second liquid as a second discharge stream from the end of said column opposite lengthwise from said solids sink-float progression end.



3,881,877
CATALYST SUPPORTING SCREEN

James B. Hunter, Newton Square, Pa., assignor to Matthey Bishop, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 186,630, Oct. 5, 1971, Pat. No. 3,776,701. This application Aug. 23, 1973, Ser. No. 383,103. The portion of the term of this patent subsequent to Dec. 4, 1990, has been disclaimed.
Int. Cl. B01j *1/00, 9/04*
U.S. Cl. 23—288 R **6 Claims**



1. A catalyst supporting structure comprising a pad of heat-resistant wire elements wherein the wire elements are composed of knitted wire, said elements being placed in lateral contacting relationship with each other to provide a pad of substantially uniform thickness and having flat top and bottom surfaces and a woven sheet of heat-resistant material, in addition to said heat-resistant wire elements, positioned directly on the top and bottom surfaces of said pad, said wire being composed of an alloy consisting essentially of aluminum, chromium and iron.

3,881,878
LARGE-SIZED AND LARGE THICKNESS COMPOSITE SLEEVES

Kenzi Maruta, 11-51, Nakahata-cho, Wakamatsu-ku; Atsushi Yamada, 13-2, Kamiharamachi, Wakamatsu-ku, both of Kitakyushi-shi, and Tsunemi Tsuji, 200-1-2, Hirowatari, Ongamachi, Onga-gun, Fukuoka, all of Japan, assignors to Hitachi Metals, Ltd.

Filed Mar. 18, 1974, Ser. No. 452,269
Claims priority, application Japan, Mar. 30, 1973, 48-35681
Int. Cl. B32b *15/02, 15/18*
U.S. Cl. 29—191 **9 Claims**

1. A large-size and large thickness composite sleeve produced by centrifugal casting and having a diameter of over 900 millimeters, said composite sleeve comprising an outer layer of high carbon cast alloy steel having a carbon content of about 1.6 to 2.2 percent by weight and a Shore hardness of over 55, and an inner layer of high carbon cast steel in which crystallization of graphite has taken place, said inner layer having a Shore hardness of about 35 to 42, the ratio of the thickness of said outer layer to the thickness of said inner layer being about 0.5 to 2.6.

3,881,879
AL-SI-MG ALLOY

Ogle R. Singleton, Jr., and Bennie R. Ward, Jr., both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 186,632, Oct. 5, 1971, Pat. No. 3,788,824, which is a continuation-in-part of Ser. No. 18,255, March 10, 1970, abandoned. This application Oct. 15, 1973, Ser. No. 406,351
Int. Cl. C22c *21/02, 23/00*
U.S. Cl. 29—193 **7 Claims**

7. A brazing component in the form of an O-ring, strip, disc, wire or the like, adapted for use as an insert between parts to be joined by brazing, said component being composed of an aluminum base alloy consisting essentially of aluminum, about 9–14.5 percent Si, about 0.2–0.8 percent Fe, and about 0.25–0.7 percent Mg by weight in amounts effective to achieve a melting range of about 20° to about 40°F. and a liquidus temperature of about 1065–1085°F.

3,881,880
ALUMINUM COATED STEEL

David W. Gomersall, Valparaiso, Ind., assignor to Inland Steel Company, Chicago, Ill.

Continuation-in-part of Ser. No. 205,569, Dec. 7, 1971, abandoned. This application Feb. 1, 1974, Ser. No. 438,791
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.2 **19 Claims**

1. An aluminum coated low alloy steel article which has good formability and has good subsurface oxidation resistance and tensile properties when heated at an elevated temperature in an oxidizing atmosphere consisting essentially of an aluminum killed low carbon steel base which has titanium added to the said low carbon steel as the essential added alloy element with the titanium being uniformly distributed throughout the steel in an amount which combines with all of the carbon and nitrogen in the steel and providing an excess of between about 0.1 and about 0.3 weight percent of uncombined titanium throughout the steel, and a uniform thin coating of metallic aluminum directly on a surface of said steel base which is free of surface oxides and non-metallic material, said low alloy steel article in the as-coated condition exhibiting good formability and when heated in an oxidizing atmosphere at an elevated temperature of 1,500°F exhibiting good subsurface oxidation resistance and tensile properties.

3,881,881
ALUMINUM COATED STEEL

Yong-wu Kim, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Apr. 3, 1974, Ser. No. 457,439
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.2 **15 Claims**

1. An aluminum coated low alloy steel article having good formability and resistance to oxidation at elevated temperatures consisting essentially of a low alloy low-carbon steel base having incorporated therein as essential alloying elements a quantity of silicon and aluminum with each being present in an amount ranging between about 0.5 percent to about 2.0 percent by weight of said steel and the ratio of aluminum to silicon being between about 0.5 and about 1.5, and said base having on the surface thereof a coating of aluminum.

3,881,882
ALUMINUM COATED STEEL

Ian F. Hughes, Munster, and David William Gomersall, Valparaiso, both of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Apr. 19, 1973, Ser. No. 352,597
Int. Cl. B32b *15/18, 15/20;* C23c *1/08*
U.S. Cl. 29—196.2 **11 Claims**

1. An aluminum coated low alloy mild steel article adapted for service at an elevated temperature comprising, a low-alloy aluminum killed low carbon steel sheet which contains uniformly distributed throughout as an essential combination of alloy elements titanium in an amount up to a maximum of 1% by wt. which combines with all the carbon and nitrogen and leaving uncombined titanium throughout the steel and molybdenum in an amount between about 0.10 percent and 0.70 percent by wt. of said steel, a uniform thin coating of metallic aluminum directly on a surface of said steel sheet which is free of surface oxides and non-metallic impurities, said article in the as coated condition exhibiting good formability at room temperature and high creep resistance and rupture strength at an elevated temperature of 1300°F – 1500°F, and said article after heating in an oxidizing atmosphere at a temperature of 1500°F and said article having aluminum uniformly diffused into the surface of steel sheet with only discrete particle of metallic oxide formed below the surface of said steel as a discontinuous subsurface stratum; whereby said aluminum coated low alloy mild steel article exhibits increased oxidation resistance, high creep resistance and increased rupture strength on heating the said elevated temperature in an oxidizing atmosphere.

3,881,883
CLAD COMPOSITES AND ALUMINOUS METAL COMPOSITIONS FOR CLADDING

Thomas L. Fritzlen, Richmond, Va., assignor to Reynolds Metal Company, Richmond, Va.

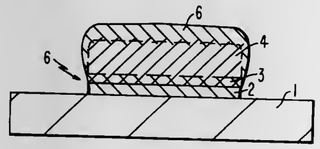
Division of Ser. No. 148,868, June 1, 1971, Pat. No. 3,824,083, which is a continuation of Ser. No. 838,013, June 17, 1969, abandoned, which is a continuation of Ser. No. 609,707, Dec. 23, 1966, abandoned, which is a continuation-in-part of Ser. No. 538,085, March 14, 1966, Pat. No. 3,418,090. This application Nov. 16, 1973, Ser. No. 416,694The portion of the term of this patent subsequent to Dec. 24, 1985, has been disclaimed.
Int. Cl. B32b *15/00*
U.S. Cl. 29—197.5 **5 Claims**

1. An article comprising a clad composite having a core of aluminum alloy 7001, and a cladding composed of an alloy consisting essentially of aluminum, about 4–5.5% zinc and about 1–1.6% magnesium, by weight; said core alloy consisting essentially of aluminum, 6.8–8.0% zinc, 2.6–3.4% magnesium, 1.6–2.6% copper and 0.18–0.35% chromium.

3,881,884
METHOD FOR THE FORMATION OF CORROSION RESISTANT ELECTRONIC INTERCONNECTIONS

Herbert Carl Cook, Georgia; Paul Alden Farrar, South Burlington, and Robert Lee Hallen, Essex, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1973, Ser. No. 406,125
Int. Cl. H01l *19/00*
U.S. Cl. 29—590 **10 Claims**

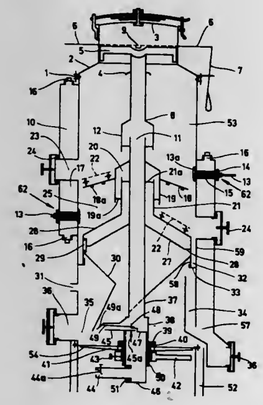


1. In an integrated circuit fabrication process the steps of depositing on a partially fabricated integrated circuit substrate a composite conductive film structure by sequentially forming a first conductive film and superimposing thereon a second conductive film through a transistory layer made of material of both of said first and second films and forming thereon a third noble metal conductive metal film followed by subtractively etching a portion of said composite film to form a given pattern having exposed edges of said second film and heating the etched structure to an elevated temperature in a selected atmosphere to flow by surface diffusion a portion of said noble metal film over the exposed edges of said second film.

3,881,885
GAS GENERATOR

Johann Wagner, Sandstrasse 1/V, 8500 Nurnberg, Germany

Filed Oct. 9, 1973, Ser. No. 404,738
Claims priority, application Germany, Oct. 9, 1972, 2249444
Int. Cl. C10j *3/68*
U.S. Cl. 48—76 **8 Claims**

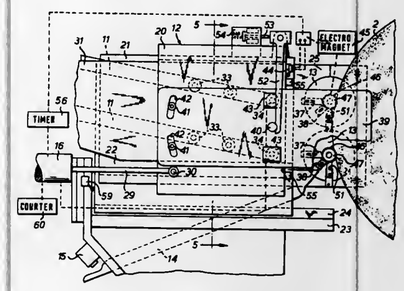


1. A gas generator for both upward and downward gasification, comprising: a housing defining a combustion space, a cinder bath space below the combustion space, and a zone formed by a space in the housing below the cinder bath space, the space below the cinder bath space being arranged in communication with the combustion space; nozzles arranged for feeding air into the combustion space and the cinder bath space; a vertical main pipe in communication with the combustion space, the main pipe having an air inlet and a gas outlet above the air inlet, the gas outlet, when open, opening into the space below the cinder bath space; means for opening and closing the air inlet; means for opening and closing the gas outlet, and means defining a serpentine passageway arranged around the housing and in communication with the space below the cinder bath space; the above gas generator permitting downward and upward gasification, the gas outlet being closed and the air inlet open during downward gasification to allow air to be drawn by suction through the air inlet and up the main pipe into the combustion space and gas generated in the combustion space flowing into the space below the cinder bath space and thence through the serpentine passageway, and the gas outlet being open and the air inlet closed during upward gasification and air introduced into the combustion space and the cinder bath space, gas generated in the combustion space flowing down the main pipe and through the gas outlet into the space below the cinder bath space and thence through the serpentine passageway.

3,881,886
GRINDING MACHINES AND LOADING MECHANISM THEREFOR

Stanley William Hoare, Peterborough, England, assignor to The Newall Engineering Company Limited, Peterborough, England

Filed Oct. 30, 1973, Ser. No. 411,030
Int. Cl. B24b *5/22, 5/34, 49/20*
U.S. Cl. 51—5 D **11 Claims**



1. A loading mechanism for a grinding machine comprising: a magazine for delivering a series of components to a loading station;
a slidable component carrier;
pneumatic means for applying pneumatic pressure to said series of components to transfer a component at the loading station from the magazine to the carrier;
means for moving the carrier from the loading station to a grinding station;
means on the carrier for receiving said component from the magazine at the loading station and for supporting the component during said movement of the carrier;
a rotary head disposed at the grinding station;
and a controllable magnet positioned for attracting said component from the carrier into engagement with the rotary head for rotation therewith.

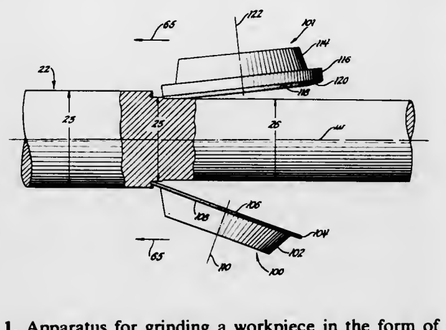
9. A grinding machine including:
a grinding wheel disposed at a grinding station;
a grinding wheel dresser mechanism adjacent the grinding wheel;
a loading mechanism comprising a magazine for delivering a series of components to a loading station;
a slidable component carrier;
pneumatic means for applying pneumatic pressure to said series of components to transfer a component at the loading station from the magazine to the carrier;
means for moving the carrier between the loading station and the grinding station;

means on the carrier for receiving a component from the magazine at the loading station and for supporting the component during movement of the carrier from the loading station to the grinding station.
a rotary head disposed at the grinding station;
a controllable magnet positioned at the grinding station for attracting a component from the carrier into engagement with the rotary head for rotation therewith;
and means for advancing the grinding wheel dresser mechanism towards the grinding wheel by a predetermined distance to compensate for grinding wheel wear and for simultaneously advancing the loading mechanism towards the grinding wheel by the same predetermined distance.

3,881,887
APPARATUS AND METHOD FOR GRINDING AN ELONGATED WORKPIECE

Harold A. McMaster, 707 Riverside Dr., Woodville, Ohio 43469

Continuation-in-part of Ser. No. 426,389, Dec. 19, 1973, abandoned. This application Apr. 1, 1974, Ser. No. 456,915
Int. Cl. B24b *5/04*
U.S. Cl. 51—49 **24 Claims**



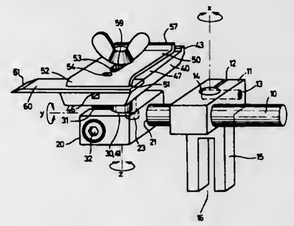
1. Apparatus for grinding a workpiece in the form of an elongated cylindrical roll from a rough diameter to a finish diameter comprising: support means for rotatably supporting the workpiece; and rotatable grinding means supported for movement in a path parallel to the axis of rotation of the workpiece, said grinding means including a rough-cutting grinding surface engageable with the workpiece in an undercutting relationship said grinding means being operable at least during the rough cutting operation to impose forces on the workpiece in a substantially axial direction only.

3,881,888
FIXTURE FOR HOLDING BLADES DURING GRINDING

Martin Schwab, Effretikon, Switzerland, assignor to Wilhelm Maier & Sohne oHG, Kongen, Switzerland

Filed July 2, 1973, Ser. No. 375,718
Claims priority, application Switzerland, July 27, 1972, 11237/72
Int. Cl. B23g *3/04*
U.S. Cl. 51—218 R **9 Claims**

1. A fixture for positioning the cutting element of a sewing machine for grinding on a grinding machine comprising an attachment body having a base adapted to be secured in a fixed position on said grinding machine, a first shaft fixed thereon, a separable block securable in selected angular and axial positions on said first shaft, a first bolt carried by said block extending along an axis perpendicular to said shaft, a clamping plate securable in selected angular and axial positions on said first bolt, a chuck for holding said cutting element, a second bolt integral with said chuck securable in said clamping plate in selected angular and axial positions along an axis perpendicular to the axis of said first bolt, said chuck comprising a bottom portion having a plurality of stepped planar surfaces perpendicular to said second bolt, each adapted to receive a cutting element, said stepped surfaces having transverse stop edges for locating said cutter element

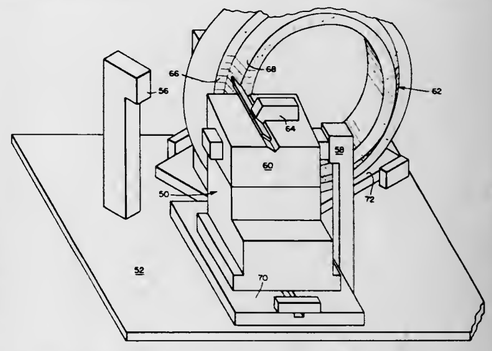


thereon and a separable top member having a depending edge adapted to contact the surface of the cutting element and means for securing said top member to said bottom portion to clamp the cutting element therebetween.

3,881,889
METHOD FOR RESHARPENING CUTTING BLADES AND CUTTER

Ernst J. Hunkeler, Fairport, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Dec. 27, 1973, Ser. No. 428,989
Int. Cl. B24b *3/36*
U.S. Cl. 51—288 **1 Claim**



1. A method for resharpening a cutting blade having (a) a front face **10**, (b) an end face **12**, (c) a first side face **14**, and (d) a second side face **16**, without removing a layer of stock from said front face **10**, said method being characterized by the steps of
moving said cutting blade relative to said abrading surface to remove stock from said end face **12** to form an end radius and a top relief angle E on the end face of the cutting blade,
relatively advancing said first side face **14** of the cutting blade into contact with an abrading surface so as to remove stock to form a pressure angle A and a side relief angle B on said first side face **14** of the cutting blade, this step also serving to define a cutting edge **18** between the first side face **14** and said front face **10** of the cutting blade, and
relatively advancing said second side face **16** into contact with an abrading surface so as to remove stock to form a clearance angle C and a side relief angle D on said second side face **16**, whereby critical angular relationships between front, end, and side faces of the cutting blade are maintained without removing a layer of stock from the front face.

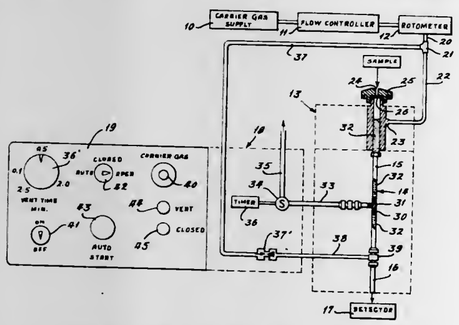
3,881,890
ABRASIVE BORON NITRIDE PARTICLES CONTAINING PHOSPHORUS
John David Birle, Galloway, Ohio, assignor to General Electric Company, Columbus, Ohio
Filed Apr. 20, 1973, Ser. No. 352,884
Int. Cl. B24d 3/14, 3/28
U.S. Cl. 51—307 8 Claims

1. Abrasive cubic boron nitride particles substantially saturated with about 0.042 weight percent of phosphorus.

3,881,891
METHOD FOR PREPARATION OF SUPER-HIGH PURITY HYDROGEN
Viktor Alexeevich Goltsov, ulitsa Belinskogo, 8/10, kv. 7; Pavel Vladimirovich Geld, ulitsa Mira, 36, kv. 78; Genrikh Efimovich Kagan, ulitsa Komsomolskaya, 50, kv. 77, and Nikolai Ivanovich Timofeev, prospekt Lenina, 62, korpus 5, kv. 17, all of Sverdlovsk, U.S.S.R.
Filed Feb. 12, 1973, Ser. No. 331,705
Int. Cl. B01d 53/22
U.S. Cl. 55—16 3 Claims

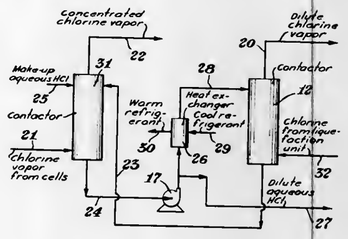
1. A process for the preparation of super-high purity hydrogen comprising adding water vapor to a gaseous mixture containing hydrogen to produce a partial pressure of water vapor between 5 and 760 mm of mercury in said gaseous mixture, and diffusing said gaseous mixture containing water vapor at a total pressure from 1 atmosphere to 300 atmospheres through a diaphragm made of palladium or its alloys heated to a temperature of 200°–900°C, wherein the pressure of the diffused pure hydrogen is maintained less than its partial pressure in the original mixture.

3,881,892
CHROMATOGRAPH SYSTEM AND METHOD
Charles W. Gehrke, 708 Edgewood; Robert Zumwalt, 17 Mobile Village; Kenneth Kuo, 4 Sugar Tree Hill, R No. 5, and David L. Stalling, 2505 Shepard Blvd., all of Columbia, Mo. 65201
Filed Apr. 28, 1972, Ser. No. 248,384
Int. Cl. B01d 15/08
U.S. Cl. 55—67 9 Claims



1. In combination, a gas chromatographic system having a pre-column with a flow regulated carrier gas supply and injection means through which a sample solution is injected for separation into solvent and sample compounds and movement thereof through said pre-column, and an analytical column adapted to receive sample compounds from said pre-column for analysis in a detection unit; a chromatograph accessory device comprising solvent venting means connected intermediate of the pre-column and analytical column, said solvent venting means being adapted to vent from the pre-column a substantial portion of the carrier gas and the solvent from said sample solution during conversion of the sample compounds into a detectable form in the precolumn, said solvent venting means including means for controlling said venting operation prior to movement of the sample compounds from the precolumn and past said accessory device to the analytical column.

3,881,893
CHLORINE RECOVERY WITH AQUEOUS HYDROCHLORIC ACID
Ravinder K. Badhwar, Sarnia, Ontario, Canada, assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 4, 1972, Ser. No. 311,458
Int. Cl. B01d 53/02
U.S. Cl. 55—71 15 Claims



15. A method of concurrently recovering at least a portion of the chlorine content of a gaseous mixture containing less than about 60 weight percent chlorine vapor and scrubbing with an aqueous hydrochloric acid solution a product stream containing greater than about 60 weight percent chlorine vapor supplied from an electrolytic cell at a predetermined superatmospheric pressure which comprises:

a. feeding said aqueous hydrochloric acid solution into a contacting device concurrently with said product stream, which aqueous hydrochloric acid solution (1) has previously absorbed a substantial portion of the chlorine content of said gaseous mixture by having contacted it while said gaseous mixture was at a pressure not less than that of said acid solution, and (2) is under a pressure higher than said predetermined pressure,

b. scrubbing, in said contacting device at substantially said predetermined pressure, impurities from said product stream, which impurities enter into said aqueous hydrochloric acid solution,

c. releasing at least a portion of the chlorine content of said aqueous hydrochloric acid solution as a vapor by exposure of said aqueous hydrochloric acid solution to pressure reduction within said contacting device, which reduction is due to the difference between said predetermined pressure of the chlorine vapor in the contacting device and the higher pressure of said aqueous hydrochloric acid solution admitted thereto,

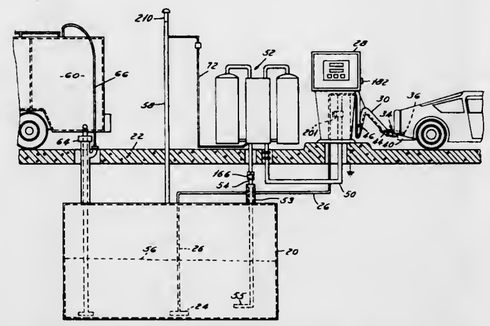
d. separating said scrubbed product stream vapor from said aqueous hydrochloric acid solution containing said impurities, and

e. reusing said aqueous hydrochloric separated acid solution to recover chlorine from said gaseous mixture.

3,881,894
VAPOR EMISSION CONTROL SYSTEM AND METHOD
George R. Onufer, 8317 Woodcrest Dr. Apt. 4, Westland, Mich. 48184
Filed Oct. 5, 1972, Ser. No. 295,284
Int. Cl. B01d 53/04
U.S. Cl. 55—88 4 Claims

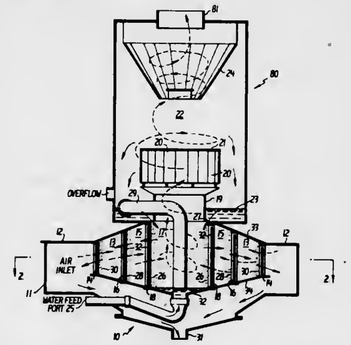
1. The method of recovering fuel vapors emanating from refueling of a tank with volatile liquid fuel and returning them to stored liquid fuel for subsequent refueling use, comprising: entraining the vapors in an atmospheric air stream as they are generated during refueling of the tank,

collecting the vapor-entrained air stream,



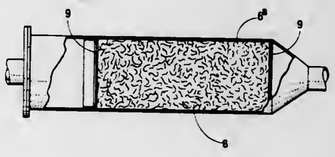
separating the vapors from the atmospheric air stream, and passing the vapors through a labyrinth of microscopic passageways immersed in stored liquid fuel to dissolve substantially all the vapors therein.

3,881,895
MULTISTAGE VORTICAL MASS CONTACT BETWEEN MEDIA
Gurdon B. Wattles, North Haven, Conn., assignor to Entoleter, Inc., New Haven, Conn.
Filed Dec. 26, 1972, Ser. No. 318,683
Int. Cl. B01d 53/14
U.S. Cl. 55—87 13 Claims



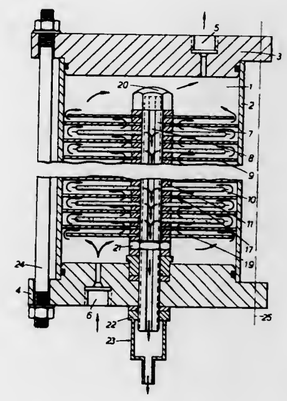
1. A multistage vortical mass contactor comprising at least first and second vortical contact stages, each of said stages comprising a vaned louvered wall arranged in overall circular configuration with the vanes thereof oriented at an angle between tangential and orthogonal to said circular configuration, the two louvered walls being substantially concentric and being substantially coplanar with one being located inside the other end spaced radially inward therefrom defining an annular space between said walls, housing means at the axial ends of said walls closing the axial ends of said annular space, the inner wall defining a cylindrical space, additional housing means closing one axial end of said cylindrical space, said cylindrical space having an opening at the other axial end thereof, the vanes of both said walls extending substantially the full axial length of the respective walls and being spaced from each other circumferentially about said walls to provide openings therebetween that extend uninterruptedly for substantially the full axial length of the respective walls, said vanes having apertures therein, means for forcing a first, continuous phase medium to flow from the exterior of said outer louvered wall therethrough and into said annular space and thence through the inner louvered wall into said cylindrical space and thence through said opening, whereby a vortical flow of said medium is established in each of said stages, and means for introducing a second medium into the flow of said first medium, whereby said second medium is suspended in particulate form in said first medium and is caused to circulate as an annular cloud in each of said stages with larger particles migrating radially outwardly in said clouds and smaller particles migrating radially inwardly in said clouds, and with a portion of said larger particles migrating radially outwardly from said clouds and through said apertures in said vanes of said louvered walls and a portion of said smaller particles migrating radially inwardly from said clouds entrained in the flow of said first medium.

3,881,896
APPARATUS FOR FILTERING GASEOUS FLUIDS
Willy Rothmayr, La Tour De Peilz, and Jaroslav Dasek, Yverdon, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland
Filed Oct. 18, 1972, Ser. No. 298,554
Claims priority, application Switzerland, Oct. 19, 1971, 15207/71
Int. Cl. B01d 46/00
U.S. Cl. 55—97 2 Claims



1. Process for sterilizing a microorganism-containing gaseous fluid which comprises passing the fluid through a gas-permeable non-compacted mass of quartz fibers, said fibers having a diameter of between 5 and 15 microns.

3,881,897
APPARATUS FOR SEPARATING FLUIDS
Alphonse Faure, Bron, and Jacques Baudet, Roussillon, both of France, assignors to Rhone-Poulenc, S.A., Paris, France
Filed Nov. 23, 1973, Ser. No. 418,200
Claims priority, application France, Nov. 24, 1972, 72.41821
Int. Cl. B01d 53/22
U.S. Cl. 55—158 15 Claims



1. Apparatus for separating fluids, said apparatus comprising, in combination:

a. a jacket;

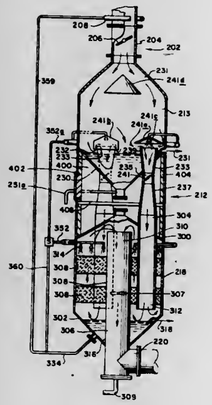
b. an inlet for feeding a fluid to be treated to said jacket;

c. an outlet for removing treated fluid from the jacket;
d. a stack of spaced apart elementary cells located within said jacket, between said inlet and outlet, each said cell including a porous support, a membrane wall of a polymeric material on each plane face of said support and means defining an aperture through said cell;
e. means defining a flow passage for fluid at the edge of each cell;
f. at least one baffle in contact with the internal wall of said jacket and extending thereacross between said cells, the said baffle being held, in a detachable manner, in the jacket by the stack of spaced apart elementary cells;
g. at least one conduit for the recovery of the fluid which has passed through the membrane walls, said conduit passing through said apertures in said cells, the cells being held in a leakproof manner onto the conduit, the conduit discharging exteriorly of the jacket; and
h. means defining at least one aperture in each said baffle in the vicinity of said conduit.

3,881,898
GAS TREATMENT

Kenneth Darby; Bernard Tate, and Charles Graham Smith, all of Birmingham, England, assignors to Lodge-Cottrell Limited, Birmingham, England

Filed Jan. 18, 1973, Ser. No. 324,696
Int. Cl. B01d
U.S. Cl. 55—223 **8 Claims**

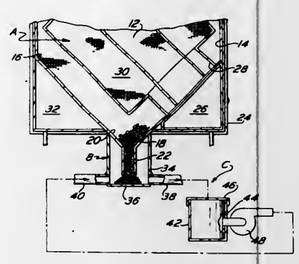


1. Gas treating apparatus including an upright tower having a top, a bottom and a generally cylindrical side wall extending therebetween comprising:
a first generally conical member spaced from said top and connected to said side wall to define a high pressure chamber with said top and providing a first reservoir for collection of moisture;
a second generally conical member located below said first conical member connected to said side wall defining a region between said conical members and spaced from said bottom defining a low pressure chamber with said bottom;
said bottom being of generally conical shape providing a second reservoir for collection of moisture;
a gas inlet member extending through said top into said high pressure chamber;
conduit means having an inlet located in said high pressure chamber, extending through said first and second conical members interiorly of said side wall, and having an outlet in said low pressure chamber proximate said second reservoir;
gas pressure reducing means located in said conduit means;
spray means for spraying liquid into said conduit means;
cooling means in said low pressure chamber for reducing the temperature of the gas;
a gas outlet member extending from said low pressure chamber through said bottom and through said second reservoir, said outlet member having an inlet end located proximate said second generally conical member and an outlet end located exteriorly of said bottom; and,
a door in said side wall between said conical members providing access to said region.

3,881,899
PNEUMATIC APPARATUS FOR EMPTYING PARTICULATE FILTERS

Ivars Sigurds Spulgis, Columbus, Ohio, assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 346,522, March 30, 1973, abandoned. This application Apr. 8, 1974, Ser. No. 459,154
Int. Cl. B01d *53/04*
U.S. Cl. 55—387 **3 Claims**

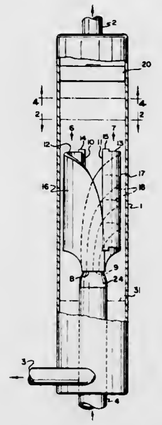


1. A particulate filter for adsorption of radioactive contamination in a gas stream comprising, in combination:
a closed housing including an inlet therein for introducing the contaminated gas stream, at least one filter bed interposed in said housing transverse to the path of the contaminated gas stream, and an outlet through which decontaminated gas is discharged,
each filter bed comprising (i) spaced perforate walls arranged within said housing and defining a chamber for receiving particulate absorptive material, (ii) a hopper at the upper portion of said chamber into which the particulate material is loaded, and (iii) evacuation means at the lower portion of said chamber for draining the particulate material therefrom when the adsorptive efficacy of said material is expended,
said evacuation means including (a) a funnel downwardly projecting from said chamber and terminating in a vertically disposed spout, (b) a well enclosing at least the lower portion of said spout and having a floor spaced from the lower end thereof, (c) first and second conduits in communication with said well, (e) a closed tank coupled with said first conduit, (f) blower means coupling said second conduit with said tank in a closed path, and (g) a porous receptacle in said tank interposed in the path of travel through said conduits for collecting the spent particulate material,
whereby the particulate material will fall to the floor of said well in a pile until the angle of repose thereof effects closure of the lower end of the spout, said evacuation means upon actuation of said blower means pneumatically sweeping the particulate material up from the pile in an entirely closed circuit such that radioactive contaminants are always retained in encapsulated disposition and never released into the environment.

3,881,900
GAS LIQUID SEPARATOR

Douglas B. Campbell, Deep River, and Edward A. Reeves, Downsview, Ontario, both of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Oct. 6, 1972, Ser. No. 295,603
Claims priority, application Canada, Oct. 6, 1971, 124538
Int. Cl. B01d *45/16*
U.S. Cl. 55—416 **5 Claims**



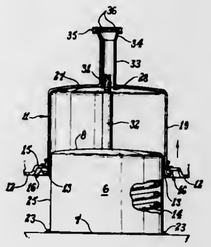
1. A gas-liquid separator comprising an elongated substantially vertically disposed cylindrical chamber having an upper gas outlet and a lower liquid outlet, an inlet conduit extending coaxially upwardly into the chamber through a lower wall thereof for directing a gas-liquid mixture upwardly into said chamber, at least one flow diverter disposed within said chamber, each diverter comprising an inlet portion communicating with said inlet conduit, a curvilinear transitional tubular portion curving smoothly radially outwardly from a substantially vertical orientation at the inlet portion and terminating with a horizontally oriented outlet portion that extends circumferentially around a substantially vertically extending axis and wherein said outlet portion is vertically elongated such that the mixture leaves in a sheetlike configuration against an inner surface of the chamber thereby inducing a circular flow of gas in a given direction in said chamber, each diverter having a substantially constant cross-sectional area throughout its length, and a plurality of spaced vanes disposed within and extending substantially throughout the total length of each diverter for dividing said diverter into a plurality of channels, said channels being disposed substantially vertically with respect to one another at said outlet.

3,881,901
LIQUID COOLING APPARATUS

Patrick Robert Williams, Mt. Eliza, Victoria, Australia, assignor to Heine Brothers (Sales) Pty. Ltd., Melbourne, Victoria, Australia

Filed Nov. 16, 1973, Ser. No. 416,447
Claims priority, application Australia, Nov. 21, 1972, 1310/72
Int. Cl. B67d *5/62*
U.S. Cl. 62—392 **5 Claims**

1. Liquid cooling apparatus including a liquid container having a plurality of walls; a sleeve secured to one of said walls and projecting into said container to define a cavity within said container; a heat transfer element located in said cavity and being operable during a cooling phase of said apparatus to draw heat from said liquid container; said sleeve and said heat transfer element being relatively dimensioned so that a space is defined between their adjacent surfaces; and a liquid contained within said space to form a jacket about said heat transfer element; said jacket liquid being such as to form a heat conduction path between said sleeve and said heat transfer element during at least part of said cooling phase, and said

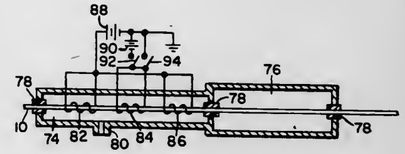


jacket liquid being such that it will freeze near the end of said cooling phase and in the absence of liquid freezing within said container so as to inhibit transfer of heat between said heat transfer element and said liquid container.

3,881,902
APPARATUS FOR TREATING GLASS OPTICAL WAVEGUIDE FIBERS

Robert D. DeLuca, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 215,319, Jan. 4, 1972, Pat. No. 3,788,827. This application Sept. 20, 1973, Ser. No. 399,089
Int. Cl. C03b *25/00*
U.S. Cl. 65—12 **18 Claims**



1. Apparatus for treating a glass optical waveguide fiber comprising
a first chamber having fiber input and output openings in opposing ends thereof, said fiber being adapted to pass through said fiber input opening into said chamber and thereafter pass from said chamber through said fiber output opening,
means for providing said first chamber with a first controlled atmosphere,
means for providing a gaseous discharge in said first chamber to remove surface contaminants from said fiber, and means disposed at said fiber output opening for treating said fiber before the surface thereof can become recontaminated.

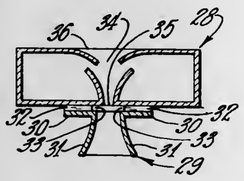
3,881,903
APPARATUS FOR PRODUCING GLASS FIBERS

Charles J. Stalego, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 4, 1974, Ser. No. 457,883
Int. Cl. C03b *37/06*
U.S. Cl. 65—16 **11 Claims**

1. Apparatus for producing curly fibers from a thermoplastic fiber forming material comprising feeder means for holding a molten body of the material, said feeder means having a plurality of orifices formed therein for issuing at least one row of streams of molten material, blower means including a housing disposed beneath said feeder means having a pressure chamber formed therein and having an elongated walled vertical slot closed by end walls extending through the housing and

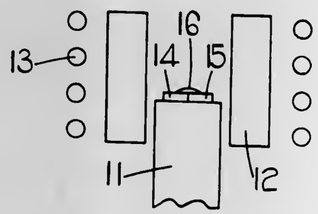
defining inlet and outlet openings for receiving and discharging such streams of material, said housing having means formed along said slot for the issuance of jets of gaseous fluid from said pressure chamber into said slot, said last named means being so positioned with respect to said slot as to induce an augmented flow of air through said slot inlet by such fluid jets and discharged through said slot outlet with such fluid jets, such fluid jets and augmented air flow attenuating the streams of molten material into fibers, and gaseous fluid expansion means for appreciably decreasing the velocity of and imparting turbulence to gaseous fluid discharged from said slot outlet before the entrained fibers have set, said gaseous fluid expansion means comprising skirt means having two sidewalls curving downwardly and outwardly from adjacent elongated sides of said slot outlet to cause a decrease in the velocity of the attenuated fibers and the fluid discharged from said slot outlet and to impart turbulence to the gaseous fluid discharged from said slot outlet whereby the attenuated fibers take on a random curly configuration as such fibers harden, said skirt means being spaced below said blower means whereby ambient air is induced by the expanding fluid to flow through such spacing and along said skirt sidewalls, such induced ambient air flow preventing the attenuated fibers from striking said skirt sidewalls.



3,881,904
METHOD OF JOINING A PAIR OF SILICON NITRIDE PARTS

Roger Francis Stokes, Birmingham, and Brian John Hunt, Solihull, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Division of Ser. No. 234,620, March 14, 1970. This application Feb. 13, 1974, Ser. No. 441,994
Claims priority, application United Kingdom, Mar. 24, 1971, 7874/71; May 21, 1971, 16452/71
Int. Cl. C03c 27/00
U.S. Cl. 65—43 4 Claims



1. A method of joining a pair of silicon nitride parts comprising the steps of:

a. providing on at least one of the parts to be joined a powdered glass consisting of between 50 and 80 percent by weight silica, between 10 and 40 percent by weight alumina, and between 10 and 25 percent by weight magnesium oxide, and

b. heating the powdered glass so as to produce molten glass between the parts whereby, on cooling, the glass provides a joint between the parts.

3,881,905
METHOD OF MANUFACTURE OF METAL OXIDE-CONTAINING COLORED GLASS

Deane G. Cramer, Festus; Paul W. Kopp, and Manuel J. Riolo, both of Crystal City, all of Mo., assignors to PPG Industries, Inc., Pittsburgh, Pa.

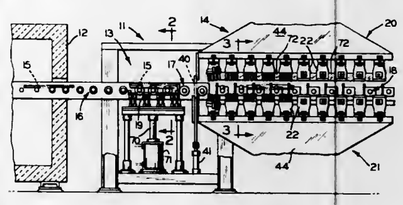
Filed Feb. 21, 1974, Ser. No. 444,438
Int. Cl. C03b 18/02
U.S. Cl. 65—65 A 10 Claims

1. In the method of making flat glass comprising the steps of melting and refining glass, delivering molten glass onto a pool of molten tin containing metal in an enclosed chamber to form a body of glass on the pool of molten metal and cooling the body of glass on the pool of molten metal to form a dimensionally stable continuous sheet of glass therefrom and removing the continuous sheet of glass from the pool of molten metal and from the enclosed chamber, the improvement wherein the glass contains at least about 0.03 percent by weight (analyzed) of a reducible metal oxide selected from the group consisting of nickel oxide, cobalt oxide, copper oxide, silver oxide and mixtures thereof, and comprising the step of feeding an atmosphere gas containing nitrogen to the enclosed chamber containing the pool of molten metal at a rate and nitrogen content sufficient to maintain an atmosphere within the enclosed chamber comprising sufficient oxygen to substantially prevent the formation of a visually observable metal-containing material on the surface of the glass.

3,881,906
HEAT TREATING GLASS SHEETS

George F. Ritter, Jr., Toledo; Frank J. Hymore, Oregon, and Donald D. Rahrig, Toledo, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Aug. 20, 1973, Ser. No. 390,110
Int. Cl. C03b 27/00
U.S. Cl. 65—104 11 Claims



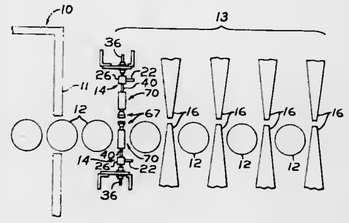
1. In a method of bending and tempering glass in which a succession of flat glass sheets are supported in substantially horizontal position and moved along a predetermined path through a heating area in which the glass is heated to substantially its point of softening, a bending area in which the heated sheets are shaped to a final desired contour, and a chilling area in which streams of cooling fluid are directed against opposite surfaces of the heated and bent glass sheets to temper them; the improvements which comprise providing a passageway for bent glass sheets between said bending and said chilling areas, opening said passageway during movement of heated and bent sheets from the former to the latter area, and maintaining said passageway closed at all other times; and angling certain of said streams of cooling fluid that are at the entrance end of said chilling area by directing the same through tubes toward and in the direction of travel of said glass sheets, and directing subsequent streams of cooling fluid from openings in trap-free surfaces toward and against the surfaces of said sheets.

5. In apparatus for bending and tempering glass comprising means for supporting a succession of flat glass sheets in substantially horizontal position and for moving the same along a predetermined path through a heating area which includes means for heating the glass to substantially its point of softening, a bending area which includes means for shaping heated sheets to a desired final contour, and a chilling area which includes upper and lower blast heads for directing cooling fluid against opposite surfaces of heated and bent sheets moving along said path; the improvement in which said blast heads include means adjacent the entrance end of said chilling area comprising a plurality of tubes that vary in length from side to side of said path in substantial conformance with the transverse curvature of the glass sheets being tempered for directing said fluid in a plurality of streams angled toward a surface and in the direction of travel of said heated and bent sheets to direct and draw said sheets into the space between said upper and lower blast heads.

3,881,907
METHOD OF TEMPERING GLASS SHEETS

Eugene W. Starr, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 30, 1974, Ser. No. 438,070
Int. Cl. C03b 27/00
U.S. Cl. 65—114 2 Claims



1. A method of tempering a glass sheet comprising,
heating said glass sheet to an elevated temperature sufficient for tempering,
cooling a gas in a vortex tube,
supplying said cooled gas to a first stage of tempering,
conveying said heated glass sheet through said first stage of tempering,
cooling said heated glass sheet with said cooled gas as it traverses said first stage of tempering at a rate of flow sufficient to at least temporarily harden and increase the resistance of the surface of said sheet to deformation,
supplying additional tempering gas without cooling to a second stage of tempering that immediately follows said first stage, and
further cooling said glass sheet with said additional tempering gas as it traverses said second stage of tempering at a rate of flow and for a period of time sufficient to effect a tempered condition in said glass sheet.

3,881,908
HERBICIDAL N-HALOACYL (2-SPIROCYCLOALIPHATIC) OXAZOLIDINES

Kenneth P. Dorschner, Jacksonville, Fla., and James A. Albright, St. Louis, Mich., assignors to SCM Corporation, Cleveland, Ohio

Division of Ser. No. 280,836, Aug. 15, 1972. This application July 27, 1973, Ser. No. 383,348
Int. Cl. A01n 9/22
U.S. Cl. 71—88 12 Claims

1. A process for controlling undesirable growth of vegetation which comprises applying to the locus thereof a herbicidally effective amount of an N-haloacyl (2-spirocycloaliphatic) oxazolidine wherein the haloacyl is C_{2-4} acyl, the 4 and 5 carbon atom valences are satisfied by hydrogen atoms or C_{1-6} alkyl groups, and said spirocycloaliphatic group is cyclopentyl, cyclohexyl, cyclohexenyl or cycloheptyl.

3,881,909
ALPHA-BROMOACRYLIC-ACID-ANILIDE FRUIT ABSCISSION AGENTS

Henry Martin, Basel, Switzerland, and Georg Pissiotas, Loerrach, Germany, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 166,575, July 27, 1971, Pat. No. 3,758,579. This application Dec. 7, 1972, Ser. No. 313,049
Claims priority, application Switzerland, July 31, 1970, 011589
Int. Cl. A01n 9/20
U.S. Cl. 71—118 6 Claims

1. A composition for the regulation of citrus fruit and olive abscission comprising an effective amount of α-bromoacrylic-acid-2-methyl-anilide together with a suitable inert carrier.

3,881,910
CHROMIUM-CHROMIUM CARBIDE POWDER

John Franklin Pelton, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 15, 1973, Ser. No. 388,434
Int. Cl. B22f 1/00
U.S. Cl. 75—.5 R 2 Claims



1. A powder for deposition by a process taken from class consisting of plasma and detonation-gun type processes consisting essentially of a mixture of chromium and at least one chromium carbide taken from the class consisting of $Cr_{23}C_6$; Cr_7C_3 and Cr_3C_2 wherein said chromium carbides are present in the range of from 3 to 30 volume percent of said mixture.

3,881,911
FREE FLOWING, SINTERED, REFRACTORY AGGLOMERATES

Richard F. Cheney, Towanda; David J. Port, Athens, and James R. Spencer, Sayre, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 1, 1973, Ser. No. 411,663
Int. Cl. C22c 1/04, 1/05; C04b 35/52, 35/58
U.S. Cl. 75—.5 BB 4 Claims

1. A free flowing flame spray powder consisting essentially of particle agglomerates, characterized in that the agglomerates consist essentially of subparticles of at least one inorganic material having a melting point above 1,800°C, the inorganic material selected from the group consisting of the refractory metals W, Mo, Cr, Ta, Nb, their alloys, and the oxide, boride, carbide and nitride compounds of these refractory metals, the subparticles held together by diffusion bonds to one another and having diameters up to 1/5 the diameters of the agglomerates, and at least 80% of the agglomerates having sizes within a range of 30 microns.

3,881,912
WELDING FILLER MATERIAL

John Mikurak, Darby, Pa., assignor to Hoeganaes Corporation, Riverton, N.J.

Filed Dec. 28, 1973, Ser. No. 429,184
Int. Cl. C22c 39/30; B23k 35/02
U.S. Cl. 75—.5 BA 15 Claims

1. An atomized welding filler material for submerged arc welding consisting essentially of by weight: (a) from 0.01 percent to 0.05 percent carbon; (b) 0.15 percent to 2.0 percent manganese; (c) from 0.01 percent to 0.15 percent silicon; (d) less than or equal to 0.020 percent sulphur; (e) less than or equal to 0.015 percent phosphorus; (f) less than or equal to 0.25 percent chromium; (g) from 0.01 percent to 2.0

percent nickel; (h) from 0.01 to 1.00 percent molybdenum and (i) the balance being iron, said atomized filler material having particle sizes less than about No. 20 sieve, with less than 5.0 percent by weight of said filler material particles having a particle size less than a No. 200 sieve.

12. An atomized alloy iron filler matieral for submerged arc welding consisting essentially of a multiplicity of discrete, spheroidally contoured particles, each of said particles having a substantially equal chemical composition, said particles having particle sizes less than about No. 20 sieve and has been inserted to overcome the rejections of record; and a size distribution anaylsis wherein less than 5.0 percent by weight of said filler material particles have a particle size less than a No. 200 sieve said filler material having a chemical composition of said particles consisting essentially by weights of: (a) from 0.01 percent to 0.05 percent carbon; (b) from 0.15 percent to 2.0 percent manganese; (c) a predetermined weight percentage of alloying constituents selected from the group consisting of silicon, sulphur, phosphorus, chromium, nickel and molybdenum and mixtures thereof; and the balance being iron.

3,881,913
METHOD OF PRODUCING GRANULES OF MAGNESIUM AND ITS ALLOYS

Ivan Andreevich Barannik, ulitsa Lenina, 182a, kv. 22, Zaporozhie; Ivanovich Belkin, ulitsa Kaliinaya, 7, kv. 13, Solikamsk; Viktor Ivanovich Borodin, ulitsa Fersmana, 18, kv. 13, Apatity Murmanskoi oblasti; Natalya Alexandrovna Voronova, pereulok Uritskogo, 11, kv. 4, Dnepropetrovsk; Oleg Nikolaevich Romanenko, ulitsa Sevastopolskaya, 6, kv. 46, Kalush Ivano-Frankovskoi oblasti; Alexandr Petrovich Bogdanov, bulvar Tsentralhy, 3, kv. 44, Zaporozhie; Valery Sergeevich Belosludtsev, ulitsa Kaliinaya, 114, kv. 13; Vladimir Dmitrievich Marfin, ulitsa Kaliinaya, 153, kv. 153, both of Solikamsk; Nikolai Yakovievich Shish, ulitsa Gryaznova, 88 kv. 3, Zaporozhie; Anatoly Filippovich Shevchenko, ulitsa G. Pushkina, 1b, kv. 52; Ivan Yakovlevich Emelyanov, ulitsa, G. Pushkina, 1b, kv. 58, both of Dnepropetrovsk; Jury Nikolaevich Boiko, prospekt Lenina, 155, kv. 10, Zaporozhie; Mikhail Nikolaevich Kljuchnik, ulitsa Kalinovaya, 94, kv. 46, Dnepropetrovsk; Nikolai Vasilievich Khaber, ulitsa Sevastopolskaya, 4, kv. 6, Kalush Ivano-Frankovskoi oblasti; Viktor Georgievich Raskatov, ulitsa Khimikov, 14, kv. 18, Kalush Ivano-Frankovskoi oblasti; Alexandr Fedorovich Trukhin, ulitsa Zhdanova, 11, kv. 32, Kalush Ivano-Frankovskoi oblasti; Anatoly Borisovich Kondratenko, ulitsa Sevastopolskaya, 4, kv. 6, Kalush Ivano-Frankovskoi oblasti; Vladimir Dmitrievich Yazev, ulitsa Bogdana Khmelnitskogo, 66, kv. 59, Kalush Ivano-Frankovskoi oblasti; Viktor Stephanovich Alontsev, ultisa Kaliinaya, 124, kv. 15; Valery Alexeevich Startsev, ulitsa Kaliinaya, 124, kv. 4, both of Solikamsk, and Jury Alexandrovich Sergeev, prospekt Lenina, 182a, kv. 23, Zaporozhie, all of U.S.S.R.

Filed Feb. 19, 1974, Ser. No. 443,845
Int. Cl. B22d *23/08*
U.S. Cl. 75—.5 C **11 Claims**

1. A method of producing granules of magnesium or its alloys including: heating liquid magnesium or its alloy to a temperature within the range of 670°–720°C; preparing a salt addition which is a mixture of magnesium chloride and at least one component selected from the group consisting of alkali and alkaline-earth metal chlorides taken in such combination and in such quantitative composition that the initial crystallization temperature of the salt addition is below that of magnesium, and its density at 670°–730°C is equal to 0.95–1.20 of the density of liquid magnesium or its alloy; heating said salt addition to a temperature within the range of 670°–730°C; simultaneously delivering said liquid magnesium or its alloy and the salt addition in continuous streams into a centrifugal granulator; breaking the mixture of liquid magnesium or its alloy and the salt addition into discrete liquid particles by the action of the centrifugal force; cooling in air the discrete liquid particles until their solidification in the form of granules of magnesium or its alloy, coated with a shell of said salt addition, and granules of the same salt addition.

3,881,914
PREPARATION OF ELECTRONIC GRADE COPPER

Eric X. Heidelberg, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

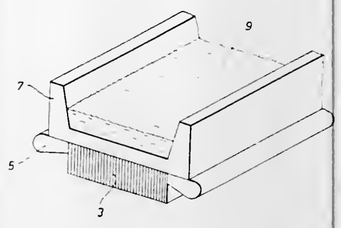
Filed Apr. 26, 1974, Ser. No. 464,356
Int. Cl. C22b *15/12*; B22f *9/00*
U.S. Cl. 75—.5 A **17 Claims**

12. The process for producing small particle size, pure, elemental copper suitable for use in manufacturing thick film conductive circuits which comprises: reacting a system consisting essentially of copper sulfate or copper acetate, hypophosphorous acid and water so as to form elemental copper, the amount of hypophosphorous acid being at least about 2 moles per mole of sulfate or acetate; separating said elemental copper from said reacted system; washing said separated copper with a water miscible inert organic solvent; vacuum drying said washed copper and introducing, upon completion of said vacuum drying, an inert gas into said drier to release the vacuum.

3,881,915
METHOD FOR ENHANCING REDUCTION OF ORES, OXIDES AND MELTING OF METALS BY MAGNETIC FORCES

Sam Proler, 5106 Contour Pl., Houston, Tex. 77035

Continuation-in-part of Ser. No. 161,905, July 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 29,325, March 30, 1970, abandoned. This application Nov. 14, 1972, Ser. No. 306,429
Int. Cl. C21c *5/52*
U.S. Cl. 75—11 **46 Claims**



1. The method for continuously processing metal particles having magnetic characteristics comprising the steps of:

providing a moving molten metal stream,

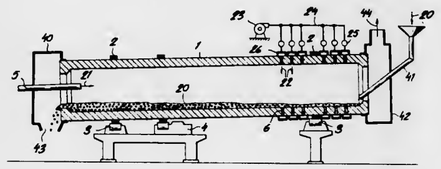
disposing a magnetic field substantially with lines of flux extending through the surface of the stream, said lines of flux extending substantially perpendicular to the surface of the said stream,

introducing into the stream a substantially continuous charge of metal particles which have magnetic characteristics so that the magnetic field forces said particles into and beneath the stream surface and continues to draw said particles downwardly and hold them beneath the stream surface so long as their magnetic characteristics exist, thereby enhancing exposure of the particles to the surrounding heat of the stream and facilitating their ultimate reduction.

3,881,916
PROCESS FOR THE PRODUCTION OF SPONGE IRON

Harry Serbent, Schoneck; Wilhelm Thumm, Frankfurt am Main, and Horst Nagel, Bergen-Enkheim, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 15, 1973, Ser. No. 388,353
Claims priority, application Germany, Aug. 22, 1973, 2241168
Int. Cl. C21b *13/08*
U.S. Cl. 75—36 **12 Claims**



1. A process for producing sponge iron in an elongated rotary furnace having a charging end and a discharging end, said process comprising the steps of:

introducing iron oxide and substantially all of the solid carbonaceous reducing agent required to reduce said iron oxide into said furnace at said charging end to form a solid charge in said furnace;

displacing said charge in said furnace from said charging end to said discharging end while reacting it with said solid carbonaceous reducing agent between said ends;

heating said charge between said ends to a temperature sufficient to sustain reduction of the iron oxide but below the melting point of the charge by combustion of part of said solid carbonaceous reducing agent to produce furnace gases traversing said furnace substantially from one of said ends to the other of said ends; and

injecting a stream of oxygen-containing gas into said furnace at said one end cocurrently to the flow of the kiln atmosphere substantially parallel to the axis of the furnace with a velocity of at least 50 m/sec and sufficient that no impingment upon said charge occurs and said stream maintains its identity over at least a major portion of the length of said furnace whereby the oxygen of said stream is consumed continuously in the successive furnace zones.

3,881,917
METHOD OF REFINING STEEL

Crawford B. Murton, 1906 Brushcliff Rd., Pittsburgh, Pa. 15221

Filed Jan. 21, 1974, Ser. No. 435,093
Int. Cl. C21c *7/00*; C22b *9/10*
U.S. Cl. 75—52 **9 Claims**

1. A steel refining process for facilitating the solution of solid lime by inhibiting the formation of dicalcium silicate, comprising the steps of

a. heating and oxidizing a molten iron-base metal,

b. adding solid burnt lime to the molten iron-base metal, and

c. adding material of high basicity and of a melting point lower than that of solid burnt lime together with a mixture of fluorspar and oxides of iron, manganese, silicon, magnesium, and calcium, which oxides have melting points of from about 2,000° to 2,800°F, to provide a slag devoid of encapsulated solid bodies of burnt lime.

3,881,918
COBALT-BASE SUPERALLOY

Darryl J. Costin, and James B. Ford, both of Columbus, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 9, 1974, Ser. No. 468,360
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **8 Claims**

1. High temperature, load-bearing oxidation resistant apparatus in the form of vacuum investment castings, said apparatus being fabricated from an alloy consisting essentially of:

Element	Percent by Weight
Chromium	22.5 – 29.0
Nickel	8.0 – 10.5
Tungsten	6.0 – 9.0
Zirconium	0.8 – 2.0
Silicon	0.8 – 1.5
Iron	0.35 – 0.50
Carbon	0.25 – 0.45
Yttrium	0.10 – 0.15
Dysprosium	0.05 – 0.15
Cobalt	Balance

wherein the alloy possess high temperature stress rupture strength and oxidation resistance.

3,881,919
TERNARY ALLOYS

Jacob Hyner, and Robert A. Michelson, both of Waterbury, Conn., assignors to Whyco Chromium Company Inc., Thomaston, Conn.

Filed Jan. 7, 1974, Ser. No. 431,025
Int. Cl. C22c *13/00*
U.S. Cl. 75—175 R **3 Claims**

1. A bright, tarnish resistant and color stable ternary alloy consisting essentially of about

40 – 90 wt. % tin

10 – 50 wt. % cobalt

1 – 28 wt. % third metal

wherein said third metal is antimony or a metal of Periodic Group II_B, III_A or VI_B.

3,881,920
PHOTOELECTROPHORETIC IMAGING PROCESS

Leonard M. Carreira, Penfield, and Vsevolod Tulagin, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

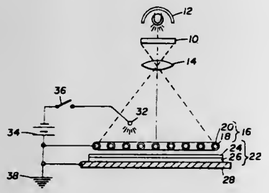
Continuation-in-part of Ser. No. 863,106, Oct. 2, 1969, abandoned. This application Aug. 6, 1971, Ser. No. 169,664
Int. Cl. G03g *13/22*; B01k *5/02*
U.S. Cl. 96—1 PE **2 Claims**

1. In the method of photoelectrophoretic imaging wherein a layer of an imaging suspension comprising electrically photosensitive yellow particles, magenta particles and cyan particles dispersed in an insulating carrier liquid and being responsive mainly to blue light, green light and red light, respectively, is provided between a transparent conductive electrode and a second electrode having an insulating surface in contact with said suspension and the suspension is exposed to a pattern of electromagnetic radiation containing wavelengths to which particles of at least two differing colors are sensitive and a potential difference is applied beween said first and said second electrodes until an image is formed, the improvement which comprises removing from said pattern of electromagnetic radiation wavelengths of radiation in the infrared spectral region.

3,881,921
ELECTROPHOTOGRAPHIC PROCESS EMPLOYING IMAGE AND CONTROL GRID MEANS

Lee F. Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 185,647, Oct. 1, 1971, abandoned, which is a division of Ser. No. 492,988, Sept. 27, 1965, Pat. No. 3,680,954. This application July 23, 1973, Ser. No. 381,839
Int. Cl. G03g *13/00*
U.S. Cl. 96—1 R **18 Claims**



1. An electrographic process for producing a reproducible electrostatic charge image corresponding to an image to be recorded, on a radiation responsive image grid means comprising an electrically conductive core coated on one side with a layer of photoconductive insulating material sensitive to radiant energy and on the other side with an electrically insulating material, said process comprising the steps of:

uniformly charging the photoconductive layer on said image grid means by directing a flow of ions from an ion generating source through an electrically conductive control grid means onto the photoconductive layer while maintaining said control grid means at a predetermined potential relative to said source for limiting the charge level on said photoconductive layer; and

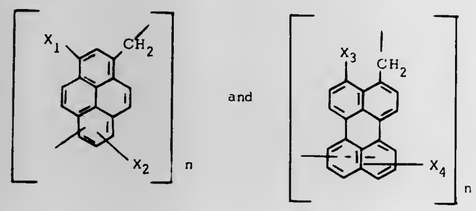
subsequently exposing said uniformly charged photoconductive layer through said control grid means, while maintaining said charge level, to a radiation image for producing a corresponding electrostatic image on said photoconductive layer, the image grid means and control grid means modulating any subsequent flow of ions directed thereto.

3,881,922
PHOTOCONDUCTOR AND PROCESS FOR THE PREPARATION THEREOF

Bernd Löhr, Wiesbaden, and Heinz Hermann, Wiesbaden-Biebrich, both of Germany, assignors to Hoechst Aktiengesellschaft

Division of Ser. No. 274,725, July 24, 1972. This application Apr. 19, 1973, Ser. No. 352,498
Claims priority, application Germany, July 26, 1971, 2137288; June 10, 1972, 2228446
Int. Cl. G03g *7/00*
U.S. Cl. 96—1.5 **4 Claims**

1. A photoconductive polymer condensation product, of formaldehyde or para-formaldehyde and at least one multinuclear, carbocyclic aromatic compound, composed of recurrent, non cross-linked units of at least one of the following formulae



wherein

X_1 and X_2 are selected from the group consisting of hydrogen, alkyl or alkoxy with 1 to 4 carbon atoms each, or halogen,

X_3 and X_4 are selected from the group consisting of alkyl or alkoxy with 1 to 4 carbon atoms each, or halogen, and

n is an integer between about 6 and 10,

said product being soluble in tetrahydrofuran at room temperature, and containing 0.1 to 0.4 mole of activator per mole of monomer unit.

3,881,923
ELECTROPHOTOGRAPHIC SENSITIVE PLATE

Susumu Tanaka, and Katsutoshi Konishi, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan

Continuation of Ser. No. 152,569, June 14, 1971, abandoned. This application June 12, 1973, Ser. No. 369,134
Claims priority, application Japan, June 15, 1970, 45-51335
Int. Cl. G03g *5/02*
U.S. Cl. 96—1.5 **5 Claims**

1. An electrophotographic sensitive plate for improving the fidelity of half-tone image reproduction, comprising:

a conductive substrate;

a first photoconductive selenium layer having a thickness of less than 1 micron deposited on said substrate for forming a rectifying barrier preventing the injection of charges from said substrate;

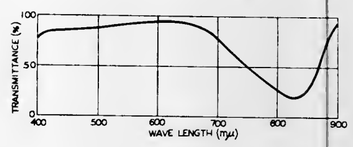
a second photoconductive layer formed on said first photoconductive layer in a reticulated pattern having a thickness no greater than 1 micron and comprising a mixture of selenium with an element selected from the group consisting of Te, As and Sb and containing between 10 and 30 percent of said element by weight;

a transparent organic semiconductor layer formed on said second photoconductive layer and comprising polyvinyl carbazole for maintaining electric charges on its surface and for transporting photo-charge carriers generated within said first and second photoconductive layers.

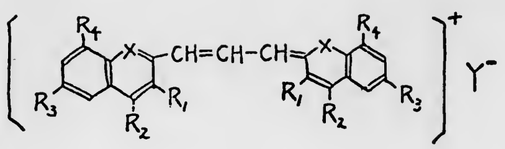
3,881,924
ORGANIC PHOTOCONDUCTIVE LAYER SENSITIZED WITH TRIMETHINE COMPOUND

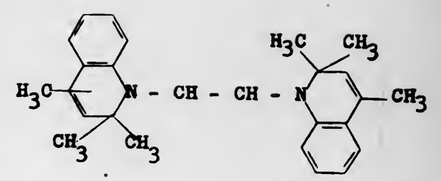
Yoshinobu Murakami, Katano, and Kazuhisa Morimoto, Settsu, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co. Ltd.

Filed Aug. 23, 1972, Ser. No. 282,970
Claims priority, application Japan, Aug. 25, 1971, 46-65318; Oct. 4, 1971, 46-78075
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6 **5 Claims**



1. An organic photoconductive layer comprising a combination of an organic photoconductor and a sensitizer having the following chemical formula.





wherein

R_1 is hydrogen or phenyl;

R_2 is hydrogen, phenyl, 4-methoxyphenyl, naphthyl, 2-methoxynaphthyl(1) or 4-methoxynaphthyl(1);

R_3 is hydrogen, methoxy, nitro or phenyl;

R_4 is hydrogen or methoxy;

X is oxygen or sulfur atom;

and Y^- is a perchlorate radical, said combination comprising 100 weight parts of an organic photoconductor and 0.01 to 5.0 weight parts of a sensitizer.

3,881,925
BI-CHARGEABLE ELECTROPHOTOGRAPHIC MATERIALS INCLUDING ZINC OXIDE AND A BINDER RESIN

Koji Uchida; Shigeyoshi Suzuki, and Sadao Kuriu, all of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed July 17, 1973, Ser. No. 380,027
Claims priority, application Japan, July 17, 1972, 47-71490
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.8 **5 Claims**

1. A bi-chargeable electrophotographic photosensitive material containing photoconductive zinc oxide and a binder resin comprising a mixture of:

1. 50 to 90% by weight, based on the weight of said binder resin, of an acrylic copolymer comprising:

a. 50 to 90% by weight of at least one lower alkyl acrylate,

b. 1 to 5% by weight of at least one organic acid having a vinyl group copolymerizable with said at least one lower alkyl acrylate, and

c. 0 to 49% by weight of at least one other compolymerizable vinyl monomer, and

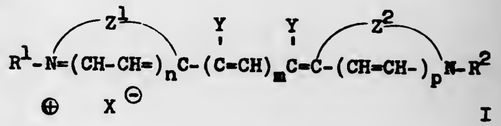
2. 10 to 50% by weight, based on the weight of said binder resin, of a polystyrene having a molecular weight of less than 5,000.

3,881,926
SENSITIZED ELECTROPHOTOGRAPHIC LAYERS WITH A POLYMETHINE SENTIZING DYE

Hans Ohlschlager, Cologne; Oskar Riester, Leverkusen, both of Germany; Theofiel Hubert Ghys, Kontich; Karel Eugeen Verhille, Hoboken, and Johannes Josephus Vanheertum, Halle-Zand-Hoven, all of Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, 509 Leverkusen-Bayerwerk, Germany

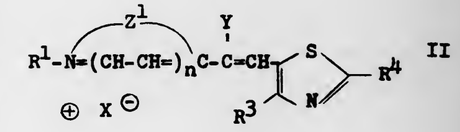
Filed Mar. 19, 1973, Ser. No. 342,872
Claims priority, application Germany, Mar. 23, 1972, 2214055
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.6 **2 Claims**

1. An electrophotographic recording material having a layer support and at least one sensitized photoconductive layer containing a photoconductor, a sensitizing dye, wherein the improvement comprises a photoconductor selected from the group consisting of zinc oxide, 1-ethyl-3-phenyl-7-diethylamino-2-(1H)-quinoline, the photoconductor compound of the following formula:

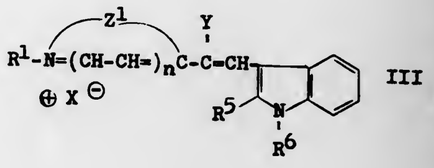


I

and in the photoconductor a sensitizing dye compound represented by one of the following formulae:



II



III

in which

Y is (1) a nitrile group, (2) a nitro group or (3) hydrogen; at least one of the groups Y having the meaning given as (1) or (2);

R^1, R^2 is a saturated or unsaturated aliphatic group which may be substituted with phenyl, hydroxyl, halogen, carboxyl, esterified carboxyl, carbamoyl, sulfonic acid or esterified sulfonic acid;

R^3 is hydrogen, a saturated or unsaturated aliphatic group or aryl;

R^4 is $-SR^7$ or NR^8R^9;

R^5 is a phenyl group which may be substituted with alkyl, aryl, alkoxy or halogen;

R^6 is a saturated or unsaturated aliphatic group;

R^7, R^8, R^9 is a saturated or unsaturated aliphatic group or an aryl group or R^8 and R^9 together denote the members required for completing a heterocyclic group containing a 5-membered or 6-membered heterocyclic ring;

n, *p* are 0 or 1;

m is 0, 1, 2 or 3;

X^- is any anion;

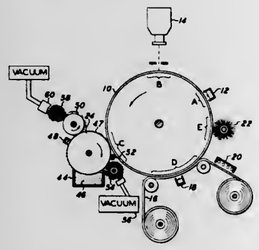
Z^1, Z^2 are the ring members required to complete a 5- or 6-membered heterocyclic ring, which heterocyclic ring may contain a condensed benzene or naphthalene ring or other substituents.

3,881,927

HALF TONE DEVELOPMENT PROCESS FOR TOUCHDOWN SYSTEM IN ELECTROSTATIC IMAGING

Joseph Fantuzzo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 16, 1973, Ser. No. 351,221
Int. Cl. G03g *13/08*
U.S. Cl. 96—15 D **3 Claims**



1. A method for developing latent electrostatic images carried by a substrate; said method comprising the steps of
loading a donor member with a layer of toner,
imparting a uniform electrical charge of predetermined polarity to said donor layer,
subjecting the charged toner to an electrostatic field having an intensity varying in accordance with a predetermined grid-like pattern to create a corresponding pattern of hills and valleys in said layer of toner, and
presenting the patterned toner layer of said doner member to said substrate for developing said images, whereby any gray scale content of said images tends to be preserved.

3,881,928

METHOD OF MANUFACTURING A LUMINESCENT SCREEN FOR A COLOUR TELEVISION TUBE

Jacobus Cornelis Gravesteijn, and Gerardus Antonius Wilhelmus Vermeulen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 184,268, Sept. 27, 1971, abandoned.
This application July 20, 1973, Ser. No. 381,014
Claims priority, application Netherlands, Oct. 2, 1970, 7014481
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **7 Claims**

1. A method of producing a cathode ray tube color luminescent screen including a transparent support element and discrete color luminescing areas that are responsive to electron excitation and are separated by light absorbing material, said method comprising the steps of:
a. providing on a surface of said support element a first layer comprising filter material and a first photosensitive material, said filter material being characterized as being substantially permeable to a first wave length radiation range and substantially impermeable to a second wave length radiation range, said filter material being further characterized as being substantially insoluble in a first solvent and substantially soluble in a second solvent, said photosensitive material being characterized in that it is rendered substantially insoluble in said first solvent at certain portions of said first layer exposed to radiation in said first wave length range and is substantially soluble in said first solvent at other portions of said first layer unexposed to said first wave length radiation range,
b. selectively exposing said first layer to radiation in said first wave length range so as to render said certain portions of said first layer insoluble in said first solvent;
c. removing with said first solvent the unexposed said other portions of said first layer so as to provide said support element partially covered by said certain portions containing said filter material;
d. providing at least at the areas of said support element surface located between said certain portions a second layer comprising said light absorbing material and a second photosensitive material, said second photosensitive material being characterized in that it is rendered substantially insoluble in a third solvent at first parts of said second layer exposed to radiation in said second wave length range and is substantially soluble in said third solvent at second parts of said second layer unexposed to said radiation in said second wave length range;
e. exposing said second layer to said radiation in said second wave length range passed through said support element;
f. removing with said third solvent said unexposed second parts of second layer and the light absorbing material contained in said second parts;
g. removing said filtering material with said second solvent; and
h. providing said luminescing areas at portions of said support element surface located between said first parts of said second layer.

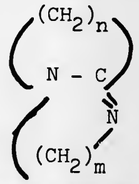
3,881,929

STABILIZING A PHOTOSENSITIVE COMPOSITION CONTAINING AN N-VINYL HETEROCYCLIC COMPOUND AND AN ORGANIC HALOGEN COMPOUND WITH AN AZABICYCLOENE COMPOUND

Shirow Asakawa, Kawasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 29, 1973, Ser. No. 364,315
Claims priority, application Japan, May 31, 1972, 47-54670
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 R **7 Claims**

1. A process of stabilizing image and background areas produced by exposure to light of a photosensitive composition containing an N-vinyl heterocyclic compound and an organic halogen compound, the process comprising the steps of:
wetting the image and background areas with an aqueous solution of 0.5 to 20% weight of an azabicycloene compound of a cyclic amidine represented by the formula



where *m* and *n* are each an integer ranging from 2 to 6; and drying the wet image and background areas at a temperature ranging from room temperature to 50°C.

3,881,930

2H-BENZIMIDAZOLE PHOTOREDUCTIVE IMAGING

William R. Schleigh, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1973, Ser. No. 403,374
Int. Cl. G03c *5/24, 1/72, 1/52*
U.S. Cl. 96—48 R **26 Claims**

1. In a photographic element having a support and coated thereon at least one radiation-sensitive image-recording layer comprised of a source of labile hydrogen atoms, an image-recordng means for registering an absorption change upon reduction by a photoreductant, said means being selected from the group consisting of aminotriarylmethane dyes, azo dyes, xanthene dyes, triazine dyes, nitroso dye complexes, indigo dyes, phthalocyanine dyes, tetrazolium salts, and triazolium salts; and a photoreductant in intimate association with said image-recording means, said photoreductant being capable of forming a reducing agent in the presence of said hydrogen atoms; the improvement in which said photoreductant is a 2H-benzimidazole.

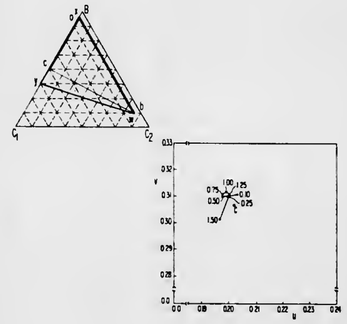
22. An image-recording process comprising
converting a 2H-benzimidazole within a selected areal portion of a radiation-sensitive layer of a photographic element to a dihydrobenzimidazole by imagewise exposing the 2H-benzimidazole to actinic radiation in the presence of labile hydrogen atoms,
reducing an image-recording compound capable of changing its radiation-absorption characteristic upon reduction with the dihydrobenzimidazole generated within the selected areal portions of the layer, said compound being selected from the group consisting of aminotriarylmethane dyes, azo dyes, xanthene dyes, triazine dyes, nitroso dye complexes, indigo dyes, phthalocyanine dyes, tetrazolium salts, and triazolium salts; and
heating the layer to convert residual 2H-benzimidazole not exposed to actinic radiation to 1H-benzimidazole.

3,881,931

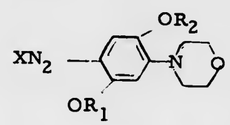
METHOD FOR DEVELOPING BLACK DIAZOTYPE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Motohiko Tsubota; Taiichi Nishimura, and Kinji Ohkubo, all of Minami Ashigara, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Kanagawa, Japan

Filed May 22, 1973, Ser. No. 362,722
Claims priority, application Japan, May 22, 1972, 47-50539
Int. Cl. G03c *1/58, 5/34, 1/54*
U.S. Cl. 96—49 **41 Claims**

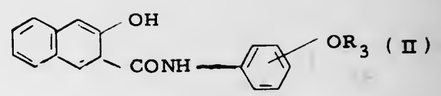


1. A method for developing a diazo-type photographic light-sensitive material to form a neutral black image substantially showing no dichroism wherein said material contains a coating on a support of at least one light-sensitive diazonium compound designated Component A selected from the compounds represented by the general formula:



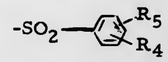
(I)

wherein R_1 and R_2 each represents an alkyl group having 1–6 carbon atoms or a cycloalkyl group having 5–6 carbon atoms, and X represents an anion, which method comprises imagewise exposing the light-sensitive material and then developing the light-sensitive material in an alkaline environment to form a dye image in the unexposed areas in the presence of at least one compound selected from the compounds represented by the general formula:

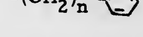


(II)

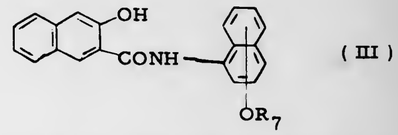
wherein R_3 is selected from the group consisting of



R_4 and R_5 each representing a hydrogen atom, a halogen atom or an alkyl group having 1–4 carbon atoms, —COR_6 wherein R_6 represents an alkyl group having 1–4 carbon atoms or a substituted or unsubstituted phenyl group and



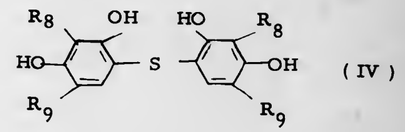
wherein *n* represents 1 or 2
or from the compounds represented by the general formula:



(III)

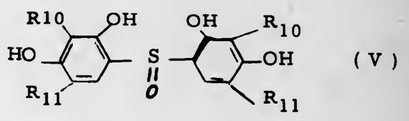
wherein R_7 represents a hydrogen atom, an alkyl group having 1–4 carbon atoms or

wherein *n* represents 1 or 2, as a coupler designated Component B capable of coupling with said light-sensitive diazonium compound Component A to form a blue dye;
and, as a coupler designated Component C_1 capable of forming a yellow dye, at least one compound selected from the compounds represented by the general formula:



(IV)

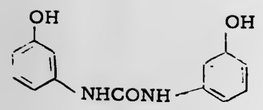
or



(V)

wherein R_8 and R_{10} each represents an alkyl group having 1–4 carbon atoms, and R_9 and R_{11} each represents a hydrogen atom or a halogen atom;
wherein the molar ratio of diazonium compound A to the total of coupler Components B and C_1 is about 10^{-2} to about 10^2 of A to 1 of B plus C_1; the molar ratio of Component B: Component C_1 is 95.0 : 5.0 – 37.5:62.5 and the amount of Component A coated is at least 0.001m mol/m².

2. A method for developing a diazo-type photographic light-sensitive material as described in claim 1, wherein at least one compound selected from the compounds:

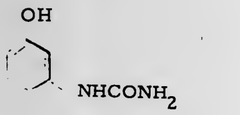


(VI)



(VII)

and



(VIII)

as a coupler designated Component C_2 capable of coupling with said light-sensitive diazonium compound Component A to form a yellow dye is present in addition to the Components B and C_1,

wherein the molar ratio of diazonium Compound A to the total of coupler Components B, C_1 and C_2 is about 10^{-2} to about 10^2 of A to 1 B plus C_1 plus C_2; Components B, C_1 and C_2 are present in a molar ratio within the triangular area formed by coordinants W, X and Y of the triangular diagram of FIG. 1 of the drawing, the molar ratios of B: C_1: C_2 at each point W, X and Y being for W12.5: 5.0: 82.5, for X 95.0: 5.0: 0.0 and for Y 37.5: 62.5:0.0, and the amount of Compound A coated is at least 0.001m mol/m².

3,881,932

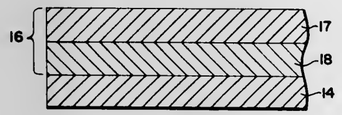
PHOTOGRAPHIC PRODUCTS WITH STRIPPABLE OPAQUE LAYERS

Richard W. Young, Wellesley Hills, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 239,582, March 20, 1972, abandoned. This application Oct. 3, 1973, Ser. No. 403,037

Int. Cl. G03c *1/48, 1/90, 1/84*

U.S. Cl. 96—76 R **17 Claims**



0000/000/008

1. A photosensitive element which comprises a photosensitive silver halide layer coated on a pellucid plastomeric layer and an opaque plastomeric sheet material having an optical density of at least about 6.0 adhered to said plastomeric layer on the said opposite said silver halide layer, said sheet material comprising a substantially water-insoluble fluid swellable polymeric material adapted to lose adhesive capability upon swelling, thereby separating from said pellucid layer.

3,881,933

LIGHT-SENSITIVE MATERIAL UNDERGOING LITTLE CHANGE OF LATENT IMAGE FORMED THEREIN

Akira Kumai; Keisuke Shiba, and Nobuo Yamamoto, all of Minami Ashigara, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Kanagawa, Japan

Continuation of Ser. No. 254,720, May 18, 1972. This application Sept. 17, 1973, Ser. No. 397,490

Claims priority, application Japan, May 18, 1971, 46-33429

Int. Cl. G03c *1/30, 1/14*

U.S. Cl. 96—111 **11 Claims**

1. A method for preventing fading of a latent image in an exposed gelatino-silver halide photographic emulsion which comprises adding to said photograhic emulsion (1) at least one of a monomethine or a trimethine cyanine dye having a cathode polarographic half wave potential ranging from −0.9 and −1.8 volt and an anode polarographic half wave potential lower than 1.3 volt and capable of forming J-aggregate, and (2) an organic compound which causes bridging to effect a hardening action by reation with gelatin and, at the same time, reacts with gelatin releasing an organic or an inorganic acid.

3,881,934

REMOVAL OF DISSOLVED PRODUCTS FROM A PRECIPITATE

Frans Henri Claes, Mortsel, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed June 4, 1971, Ser. No. 150,030

Claims priority, application United Kingdom, June 5, 1970, 27325/70

Int. Cl. G03c *1/02*

U.S. Cl. 96—114.7 **12 Claims**

1. In a method of preparing a photographic silver halide emulsion comprising the steps of:

1. forming an emulsion of silver halide by reacting a water-soluble silver salt and a water-soluble halide in an aqueous solution of a protective hydrophilic colloid to produce silver halide grains suspended in said colloid solution,
2. treating the thus formed emulsion with an inorganic flocculating salt to produce a curd-like flocculate of the colloid around the silver halide grains,
3. separating the flocculate from a substantial portion of the solution containing the water-soluble salts present after the initial emulsion-forming step and the dehydrating or precipitating agent used for said flocculation step,

the improvement of effecting the flocculate separation by:

a. introducing at least one stream of said flocculate-containing solution under pressure into a zone defined by a wall having the shape of a body of revolution, each such stream being introduced through a generally tangentially extending inlet port in said wall, wherein said solution is subjected to vortical flow in said zone,
b. withdrawing as a stream from said zone at a locus in the interior thereof spaced away from said wall a liquid fraction being substantially free of said flocculate, and
c. removing a stream of flocculate-containing solution from a locus adjacent said wall.

3,881,935

PHOTOSENSITIVE POLYMER COMPOSITION

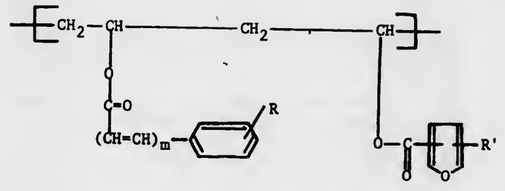
Joseph E. Apellaniz, Glen Cove, N.Y., assignor to Powers Chemco, Inc., Glen Cove, N.Y.

Division of Ser. No. 104,803, Jan. 7, 1971, Pat. No. 3,749,699. This application June 26, 1973, Ser. No. 373,617

Int. Cl. G03c *1/68, 5/00*

U.S. Cl. 96—115 R **5 Claims**

1. A composition consisting essentially of a light-sensitive organic solvent-soluble film-forming polymer capable of forming a continuous coating on a base which comprises recurring units of benzoate- and furoate-esterified polyvinyl alcohol having the structure:



wherein R and R′ are each H, alkyl or alkenyl of up to 12 carbon atoms, aryl, alkaryl or aralkyl of from 6 to 9 carbon atoms, halogen (F, Cl, Br, I), nitro, cyano, hydroxy, acetylamino amino alkoxy, carboalkoxy, alkylthio mono- or di-alkylamino, n-alkylcarbamyl, N,N-dialkylcarbamyl, alkylsulfonyl, said alkyl groups containing from 1 to 4 carbon atoms, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, methoxymethyl, carbamyl, alkanoyloxy containing up to 4 carbon atoms, phenyl, p-chlorophenyl, p-methylphenyl or p-aminophenyl; *m* is a whole number from 0 to 1; said polyvinyl alcohol having a molecular weight of from 14,000 to 115,000 and esterified to the extent of from 60 to 100 percent, from 10 to 58 percent thereof comprised of benzoate moiety and a sensitizer therefor.

3,881,936

SILVER HALIDE PHOTOGRAPHIC EMULSION CONTAINING THREE SENSITIZING DYES

Yoshihide Hayakawa; Masaji Yoshida; Yoshiyuki Nakazawa; Yashuharu Nakamura, and Akira Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

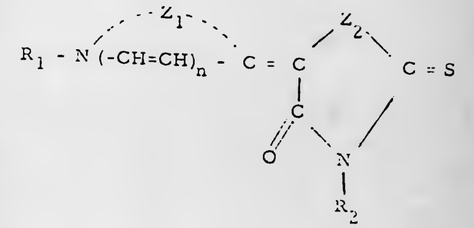
Continuation of Ser. No. 202,556, Nov. 26, 1971, abandoned. This application Jan. 23, 1974, Ser. No. 435,816

Int. Cl. G03c *1/14*

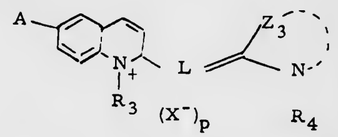
U.S. Cl. 96—216 **6 Claims**

1. A black-and-white silver halide emulsion suitable for a three-color separation process, having the improved blue-to-green and red-to-green gamma balance, which contains at least one sensitizing dye represented by Formula II and at least one sensitizing dye represented by Formula III in combination with at least one apomerocyanine dye represented by the Formula I:

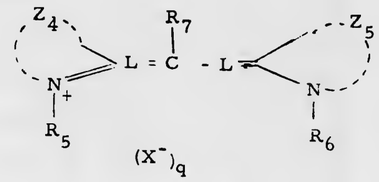
Formula (I)



Formula (II):



Formula (III):



wherein

Z_3 represents the atoms necessary to form a benzothiazole nucleus, a naphthothiazole nucleus, a benzoselenazole nucleus, a naphthoselenazole nucleus or a 2-quinoline nucleus;

A represents a hydrogen atome, a lower alkyl group, an alkoxy group or a hydroxy group;

Z_4 and Z_5 each represent the atoms necessary to form a benzimidazole nucleus, benzoxazole nucleus, naphthoxazole nucleus, benzothiazole nucleus, naphthothiazole nucleus, benzoselenazole nucleus or naphthoselenazole nucleus, or Z_5 can represent the group of atoms necessary to form an indolenine nucleus when Z_4 represents a bonzimidazole nucleus;

R_3, R_4, R_6 each represent a lower alkyl group or a substituted alkyl group; wherein the substituted alkyl group represented by R_3, R_4, R_5 and R_6 is selected from the group consisting of hydroxyalkyl, acetoxyalkyl, alkoxyalkyl, carboxyalkyl, alkoxycarbonylalkyl, sulfoalkyl, allyl and aralkyl

R_7 represents a lower alkyl group or an aralkyl group with the proviso that R_7 represents a hydrogen atom when at least one of Z_4 and Z_5 forms a benzimidazole nucleus;

L represents a methine group or may link to R_4, R_5 and R_6 by a polymethylene group;

p and *q* each represent 0 or 1 with the proviso that *p* and *q* are 0 when the dye forms an inner salt; and

X represents an acid anion,

wherein:

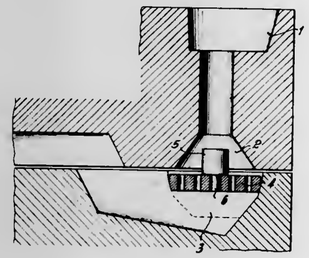
Z_1 represents the atoms necessary to form a heterocyclic nucleus selected from the group consisting of a thiazoline nucleus, a thiazole nucleus, a benzolthiazole nucleus, an alpha-naphthothiazole nucleus, a beta, beta-naphthothiazole nucleus, a beta-naphtholthiazole nucleus, an oxazole nucleus, a benzolxazole nucleus, an alpha-naphthoxazole nucleus, a beta, beta-naphthoxazole nucleus, a beta-naphthoxazole nucleus, a selenazole nucleus, benzoselenazole nucleus, a naphthoxazole nucleus, a selenazole nucleus, a benzoselenazole nucleus, a naphthoselenazole nucleus, a quinoline nucleus, a pyridine nucleus, a benzimidazole nucleus and a naphthoimidazole nucleus;

Z_2 represents an oxygen atom or a sulfur atom, R_1 and R_2 represent an alkyl group, a substituted alkyl group selected from the group consisting of a hydroxyalkyl group, an acetoxyalkyl group, an alkyloxyalkyl group, an allyl group, a carboxyalkyl group, a sulfoalkyl group and an aralkyl group, or an aryl group, and further wherein R_2 may be hydrogen atom, and *n* represents an integer of 0 or 1.

3,881,937
SHAPED INOCULATION MEANS FOR IRON CASTING MELTS

Konrad Teufel, Neunkirchen, Germany, assignor to Stettner & Co., Pegnitz, Germany

Filed Feb. 1, 1974, Ser. No. 438,651
Claims priority, application Germany, Feb. 27, 1973, 2309654
Int. Cl. C22c 37/02; C21c 7/00; C22b 9/12
U.S. Cl. 75—130 R 4 Claims



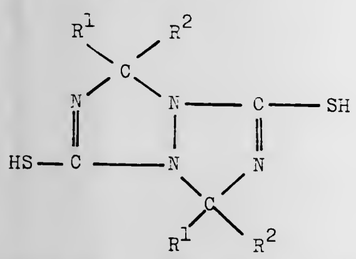
1. Shaped body inoculation means for introducing a silicide additive into an iron casting melt consisting of grains of said silicide embedded in a metal having a melting point lower than that of iron and shaped in a main body and peg-like projection means extending outward therefrom for positioning said body on a perforated strainer grate core with said projection in a perforation of said core.

3,881,938
THERMALLY DEVELOPABLE LIGHT-SENSITIVE MATERIAL WITH DIMERCAPTO SUBSTITUTED TETRAZAPENTALENE TONERS

Takao Masuda; Kinji Ohkubo; Mitsunori Sugiyama, and Tadao Shishido, all of Minami Ashigara, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Kanagawa, Japan

Filed Apr. 26, 1973, Ser. No. 354,583
Claims priority, application Japan, Apr. 26, 1972, 47-41969
Int. Cl. G03c 1/10, 7/00, 1/02
U.S. Cl. 96—96 12 Claims

1. A thermally developable light-sensitive material comprising a support having thereon a layer comprising: (1) silver salt of benzotriazole; (2) silver halide formed by reacting an inorganic halide with said silver salt of benzotriazole: (3) a compound selected from the group consisting of ascorbic acid, derivatives thereof and 3-pyrazolidone derivatives, as a reducing agent; (4) a binder; and (5) one or more compounds represented by the general formula:



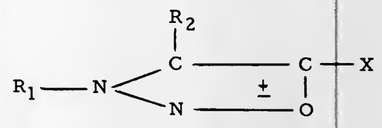
wherein R^1 and R^2 each represents hydrogen, an alkyl group a halogen substituted phenyl group or a phenyl group.

3,881,939
PHOTOGRAPHIC SILVER HALIDE EMULSIONS CONTAINING SYDNONES OR SYDNONE IMINES AS STABILIZERS

Touru Noda, and Norio Kobayashi, both of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed May 17, 1973, Ser. No. 361,086
Claims priority, application Japan, May 17, 1972, 47-48094
Int. Cl. G03c 1/34
U.S. Cl. 96—109 2 Claims

1. A photographic silver halide emulsion containing in an amount of 0.1 to 2 g. per mol of the silver halide in the emulsion at least one compound represented by the formula



wherein R_1 represents a hydrogen atom, an allyl group, a heterocyclic ring, an unsubstituted alkyl group or an alkyl group substituted with a halogen atom or a alkylamino group, an unsubstituted aryl group or an aryl group substituted with an alkyl or an alkoxy, or an unsubstituted aralkyl group or an aralkyl group substituted with an alkoxy group; R_2 represents a hydrogen atom, a halogen atom, an amino group, a carboxyl group, a formyl group, a nitro group, an acetyl group, an unsubstituted carbamoyl group or a carbamoyl substituted with a cycloalkyl or a phenyl group, a lower alkyl group or a lower alkyl group substituted with a phenyl or a hydroxyl group, or an unsubstituted phenyl group or a phenyl group substituted with a halogen atom or a nitro group and X represents an oxygen atom, or an unsubstituted imino group or an imino group substituted with an acyl, a carboxyl or a carbamoyl group; and the sign ± represents a resonance structure.

3,881,940
COMPOSITION FOR TREATING WOOD

Joseph Amundsen; William H. Wetzel, both of Federal Way; Norman Naimy, Seattle, and Robert J. Goodwin, Puyallup, all of Wash., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

Division of Ser. No. 244,877, April 17, 1972, abandoned. This application July 12, 1973, Ser. No. 378,583
Int. Cl. C09d 5/14
U.S. Cl. 106—15 AF 3 Claims

1. The wood preservative composition useful in pressure vacuum techniques for treating heavy timbers consisting essentially of a blend of (I) a blend of (A) from about 1% to about 50% by weight of pentachlorophenol and (B) from about 99% to 50% by weight of a petroleum hydrocarbon oil and (II) from about 0.005% to about 100% by weight, based upon the total weight of (A) and (B), of a member of a group consisting of the metals titanium, lead, tungsten, iron, chromium, tin, silver and cobalt and the oxides thereof added to prevent accumulation of sludge.

3,881,941
ALKALI METAL POLYTUNGSTATE PHOSPHORS CONTAINING EUROPIUM

John A. Kernohan, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,158
Int. Cl. C09d 11/10
U.S. Cl. 106—20 8 Claims

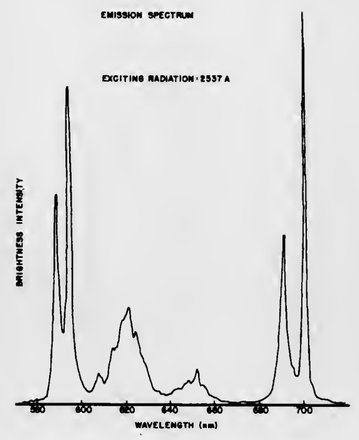
1. Use of an alkali metal polytungstate phosphor as a photodetection means comprising water-soluble crystals essentially according to the general formula:

$M_7EuW_{10}O_{35}\cdot xH_2O$

wherein

M is an alkali metal ion

x is an integer from 0 to about 24



to exhibit phosphorescence when excited by 2537A. radiation characterized by continuous emission in the orange-red region of the visible spectrum, which use comprises exposing an object marked with said phosphor to said excitation radiation.

5. A phosphorescent marking ink which comprises a liquid dispersion of the phosphor in claim 1.

3,881,942
FAST DRYING, SOLVENT-FREE PRINTING INK

Geoffrey R. Buckwalter, Cincinnati, Ohio, assignor to Borden, Inc., Columbus, Ohio

Division of Ser. No. 211,754, Dec. 23, 1971, Pat. No. 3,804,640. This application Oct. 1, 1973, Ser. No. 402,418
Int. Cl. C09d 11/02
U.S. Cl. 106—22 3 Claims

1. In a fast drying, solvent-free printing ink containing 5–45 weight percent of pigment and a printing ink vehicle comprising a film-forming resin; the improvement comprising, as vehicle components,

an ester of an aliphatic alcohol and a C_{12} to C_{20} unsaturated fatty acid

and

a metal salt of peroxydiphosphoric acid.

3,881,943
COMPOSITION FOR INHIBITING LEAKAGE OF AIR PRESSURE FROM PNEUMATIC TIRES AND THE LIKE

John C. Fuller, 5221 S.E. Naef Rd., Milwaukie, Oreg. 97222; Gordon W. Fuller, 7320 S.W. Landeau St., Portland; Ralph A. Fuller, 12220 S.W. Grant, Tigard, both of Oreg. 97223, and William I. Fuller, P.O. Box 123, Wilsonville, Oreg. 97070

Filed Sept. 13, 1973, Ser. No. 396,748
Int. Cl. B60c 5/14, 21/08; C09k 3/10
U.S. Cl. 106—33 6 Claims

1. A composition for inhibiting the leakage of air pressure from pneumatic tire assemblies and the like, comprising an aqueous solution consisting essentially of about 2% to about 25% by weight of at least one of the alkali metal salts of benzoic acid.

3,881,944
POROUS GLASS-CERAMIC BODIES FOR CATALYST SUPPORTS

George H. Beall; Donald E. Campbell, both of Big Flats; John F. MacDowell, Painted Post; David M. Miller, Elmira; Richard F. Reade, Corning; Hermann L. Rittler, Horseheads, and Harry J. Watkins, Ithaca, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,992
Int. Cl. C03c 3/22, 3/30, 3/04
U.S. Cl. 106—39.7 1 Claim

1. A glass-ceramic article having a use temperature of at least 1,200°C., a coefficient of thermal expansion (25°–900°C.) less than 40×10^{-7}/°C., and at least a surface portion of relatively uniform porosity with pore diameters ranging between about 0.1–40 micrometers to provide a surface area of about 1–100 meters²/gram, said glass-ceramic being selected from the group:

a. consisting essentially, by weight on the oxide basis, of 2.5–5% Li_2O, 2.5–8% BaO and/or MgO, 14–22% Al_2O_3, 60–75% SiO_2, and 3–8% RO_2, wherein RO_2 consists of 3–8% TiO_2 and 0–3% ZrO_2, and wherein the principal crystal phase is celsian and/or cordierite;

b. consisting essentially, by weight on the oxide basis, of 2–15% Li_2O, 12–36% Al_2O_3, 55–75% SiO_2, and 3–7% TiO_2, and wherein the principal crystal phase is beta-spodumene;

c. consisting essentially, by weight on the oxide basis, of 10–21% MgO, 24–38% Al_2O_3, 48–60% SiO_2, and 8–12% TiO_2, and wherein the principal crystal phase is cordierite; and

d. consisting essentially, by weight on the oxide basis, of 35–70% Al_2O_3, 10–64% SiO_2, at least one modifying oxide in the indicated proportion selected from the group consisting of 1–20% P_2O_5, 1–5% Li_2O, 4–10% Na_2O, 1–15% K_2O, 4–25% Rb_2O, 4–15% Cs_2O, 4–10% CaO, 4–10% SrO, 4–40% BaO, and 4–20% La_2O_3, the total of said modifying oxides not exceeding 40%, and up to 40% total of refractory oxides in the indicated proportions selected from the group consisting of 0–25% ZrO_2, 0–30% ThO_2, 0–20% MgO, and 0–10% BeO, and wherein the principal crystal phase is mullite.

3,881,945
GLASS FIBER OF HIGH MODULUS OF ELASTICITY AND PROCESS FOR MANUFACTURING IT

Felix J. Trojer; Grahame P. O'Connor, both of Grand-Lancy/Geneva, and Helmut Tannenberger, Geneva, all of Switzerland, assignors to Battelle Memorial Institute

Filed Dec. 3, 1973, Ser. No. 420,883
Claims priority, application Switzerland, Dec. 4, 1972, 17638/72
Int. Cl. C03b 37/02; C03c 3/22; C03b 29/00
U.S. Cl. 106—50 2 Claims

1. Process of manufacturing a glass fiber comprising:

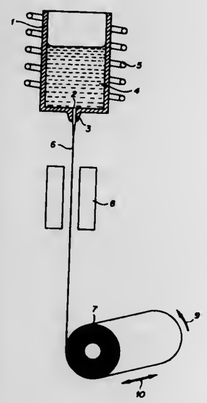
forming a mixture of inorganic compounds in proportions corresponding to the composition of a glass having, above a temperature T_d which is included within the range of temperatures within which the viscosity of the glass has a value suitable for the drawing of fibers, a range of existence of a single vitreous phase which is decomposable, by cooling below T_d, into two vitreous phases, said decomposition manifesting itself by the formation of vitreous inclusions dispersed in a vitreous matrix, the composition of said glass being selected from a system comprising at least one range of existence of a crystalline phase capable of forming in said vitreous inclusions by heating within the temperature range below T_d,

melting said mixture and then bringing it to a temperature above T_d and maintaining it at such a temperature at least for a time sufficient to obtain its homogenization, then

maintaining it at a value, still greater than T_d, corresponding to that at which the viscosity is suitable for the drawing of fibers,

continuously stretching at least one fiber from the homogeneous mass thus obtained, regulating the temperature of this mass and the speed of drawing of the fiber in such a manner that the mass remains at a temperature above T_d and the temperature of the fiber is equal to T_d in the vicinity of the portion of the fiber where it originates from the mass,

passing the fiber thus produced into a first zone in which it is maintained, for a period of time sufficient to cause the formation of vitreous inclusions therein, at a temperature



below T_d but sufficient for the value of its viscosity to be suitable for a separation of phases in vitreous state,

then passing the fiber into a second zone in which its temperature assumes, by cooling over its entire cross section, a value close to room temperature,

then passing the fiber into a third zone in which the fiber is heated, in a portion of its thickness from its surface, to a value less than T_d but sufficient to cause the crystallization of the said crystalline phase, and maintaining the fiber in said third zone for a period of time sufficient to obtain a desired degree of crystallization, and

finally passing the fiber into a fourth zone in which its temperature resumes the value of room temperature.

3,881,946
PLATINUM-FREE GLASS

Robert J. Ginther, Temple Hills, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 228,293, Feb. 22, 1972, abandoned. This application May 30, 1973, Ser. No. 365,320
Int. Cl. C03c *3/04, 3/30*
U.S. Cl. 106—52 **1 Claim**

1. A glass composition consisting of the following ingredients in approximate molar percentages:

Ingredients	Mole Percent
SiO_2	79.6
Al_2O_3	3.2
Li_2O	3.4
Na_2O	10.3
MgO	1.2
CaO	2.3.

3,881,947
BONDED PARTICULATE MATERIAL

Graham Eastwood Palmer, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

Filed Apr. 2, 1973, Ser. No. 346,791
Claims priority, application United Kingdom, Apr. 4, 1972, 15443/72; Aug. 9, 1972, 37218/72
Int. Cl. C04b *35/16*
U.S. Cl. 106—84 **7 Claims**

1. In a process for the production of bonded refractory particulate material which comprises mixing together a major proportion of the particulate material, a bonding quantity of aqueous alkali metal silicate and sufficient hardener to harden the alkali metal silicate, the improvement comprising using sodium silicate of $SiO_2 : Na_2O$ ratio 2.2 – 3.5 : 1 as the alkali metal silicate and using as the hardener a mixture consisting essentially of a liquid polyhydric alcohol capable of forming a stable solution with the alkali metal silicate and a fully esterified ester of a polyhydric alcohol.

3,881,948
METHOD FOR REMOVING ORGANIC ACID SOIL FROM SURFACES

Daniel Schoenholz, Basking Ridge; Arthur W. Petersen, Florham Park, and Marcus Allen Northup, Jr., Morristown, all of N.J., assignors to Church & Dwight Co., Inc., New York, N.Y.

Filed July 20, 1973, Ser. No. 381,053. The portion of the term of this patent subsequent to Apr. 30, 1991, has been disclaimed.
Int. Cl. B08b *3/10*
U.S. Cl. 134—2 **10 Claims**

1. A method of removing soils containing free or combined organic acids comprising contacting the said soil with a weakly alkaline composition consisting essentially of at least one polyhydric alcohol compound having at least two free hydroxyl groups in which the numerical ratio of carbon atoms to hydroxy groups is not greater than 15, and 0.01 to 2 percent by weight of an alkaline acting catalyst capable of accelerating alcoholysis reactions, heating the soil and cleaning composition to at least 250° F to 550°F to form water soluble or water dispersible compounds, and then removing the residues remaining.

3,881,949
VAPOR DEGREASER PROCESS EMPLOYING TRICHLOROTRIFLUOROETHANE AND ETHANOL

Carl Martin Brock, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Feb. 27, 1973, Ser. No. 336,223
Int. Cl. B08b *5/00*
U.S. Cl. 134—31 **2 Claims**

1. In a method of cleaning articles in a vapor degreaser which is open to the atmosphere and comprises:

a. a boil sump containing a boil sump liquid;

b. at least one rinse sump which contains a rinse sump liquid and has an overflow means so that overflow rinse sump liquid gravitationally flows into the boil sump;

c. a means for condensing vapors of the boil sump liquid;

d. a means for diverting condensed vapors to the rinse sump; and

e. a vapor space between the condensing means and the boil and rinse sumps,

said boil and rinse sump liquid consisting essentially of 1,1,2-trichloro-1,2,2-trifluoroethane and ethanol and said method comprising:

a. boiling the boil sump liquid;

b. introducing articles to be cleaned into the degreaser and passing the articles through at least the vapor space of the degreaser;

c. condensing the vapors of the boil sump liquid;

d. adding 1,1,2-trichloro-1,2,2-trifluoroethane and ethanol as necessary to maintain the liquid volume of the system; and

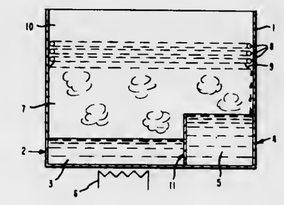
e. removing the articles from the degreaser,

the improvement whereby the vapors of the boil sump liquid are maintained in a nonflammable condition by:

a. employing a boil sump liquid consisting essentially of 35–85 weight percent of 1,1,2-trichloro-1,2,2-trifluoroethane and 15–65 weight percent of ethanol;

b. employing a rinse sump liquid consisting essentially of 88–100 weight percent of 1,1,2-trichloro-1,2,2-trifluoroethane and 0–12 weight percent of ethanol;

c. adding to maintain the liquid volume of the system a make-up liquid mixture consisting essentially of 90–97 weight percent of 1,1,2-trichloro-1,2,2-trifluoroethane and 3–10 weight percent of ethanol in such amount that the volume of the boil sump liquid is at least the volume calculated from the equation



$$\frac{v_i}{100}\left[(11.44\,c_b + 2.30\,c_r - 22.1)\right]$$

wherein

v_m = minimum permissible volume of boil sump liquid,

v_i = initial volume of boil sump liquid,

c_b = initial weight percent concentration of ethanol in the boil sump liquid, and

c_r = initial weight percent concentration of ethanol in the rinse sump liquid; and

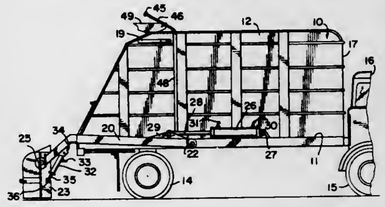
d. maintaining the liquid volume in the rinse sump and condensate diverting means at least equal to the initial liquid volume in the boil sump.

3,881,950
MULTIPLE DRUM WASHING APPARATUS FOR VEHICLES

Bruce Harold Pettit, 210 S. Main St., La Rose, Ill. 61541

Filed Feb. 19, 1974, Ser. No. 443,332
Int. Cl. B08b *3/02, 9/08*
U.S. Cl. 134—115 R **7 Claims**

1. A drum washing apparatus for vehicles including a truck having an open top body for top loading of refuse therein defined by vertically disposed spaced side walls connected at the front by an end wall and having a floor, an upwardly open overhead trough extending between and mounted on said side walls at the top of the truck body adjacent the rear of the body, flushing apparatus on said trough including a plurality of nozzles directed upwardly at a rearward angle from the trough, lift mechanism at the rear of the truck body having a bucket for supporting a plurality of drums, said bucket being pivotally mounted in a pair of lift arms disposed at respectively opposite sides thereof, said lift arms being pivotally mounted at respectively opposite side walls of the truck body and having hydraulic mechanism for swinging said arms to raise and lower said bucket, a hydraulic cylinder on each lift arm connected to said bucket for pivoting the bucket in the lift arms,

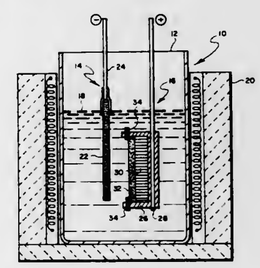


said lift arms being movable to a position to dump the contents of said drums into said body and to a second position relative to said trough and flushing nozzles for washing the drums, said hydraulic cylinders pivoting said bucket to dump said drums in the first-named position and pivoting the bucket in said second position to align the drums with said angle of said flushing nozzles for drum washing, and means to retain said drums in said bucket.

3,881,951
LITHIUM ELECTRODE AND METHOD OF PRODUCING THE SAME

Lowell R. McCoy, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed July 5, 1974, Ser. No. 485,852
Int. Cl. H01m *35/02*
U.S. Cl. 136—20 **15 Claims**



1. A lithium electrode comprising:

a foraminous metal substrate having an apparent density of from about 5 to 80 percent, a median pore size of from about 5 to 500 microns and a determined volumetric capacity; and

a mixture of (a) liquid lithium, and (b) a metal additive selected from the group consisting of copper, zinc and mixtures thereof disposed in the metal substrate, said mixture being present in an amount sufficient to fill at least 20 percent of the volumetric capacity of the metal substrate, and said metal additive comprising from at least 10 wt. percent up to about 45 wt. percent of said mixture.

8. A method of forming a lithium electrode comprising:

providing a foraminous metal substrate having an apparent density of from about 5 to 80 percent, a median pore size of from about 5 to 500 microns and a determined volumetric capacity,

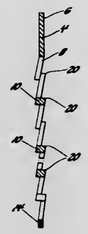
contacting the foraminous metal substrate with liquid lithium in the presence of a metal additive selected from the group consisting of copper, zinc and mixtures thereof, and

filling at least 20 percent of the volumetric capacity of the foraminous substrate with a mixture of said liquid lithium and metal additive, said metal additive being provided in an amount sufficient to comprise from at least 10 wt. percent up to about 45 wt. percent of the mixture.

3,881,952
LEAD-ACID BATTERY PLATES WITH EXPANDED LEAD SHEET GRIDS

Ellis G. Wheadon, and Norman L. Willmann, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 20, 1973, Ser. No. 398,975
Int. Cl. H01m *35/04*
U.S. Cl. 136—26 **3 Claims**



1. A lead-acid storage battery plate of the Faure-type comprising:

a paste-supporting skeleton of lead material defining a flat, top current-collecting header of sheet lead having a predetermined thickness and an upstanding connector lug, a reticulated portion depending from the header over substantially the entire length thereof and including a plurality of nodes from which skeletal elements project to define a plurality of nearly equiaxed polygonal, paste-retaining cells, said nodes angling from one face of the reticulated portion to the other face thereof and having a polygonal cross-section in the vertical transverse plane with two opposing sides of each polygon in planes substantially parallel to the faces of the pasted plate and spaced one from the other by a distance greater than said predetermined thickness but substantially less than twice said predetermined thickness, and said skeletal elements angling from one side of each node to the opposite side of the adjacent node to which it connects; and

a leady active material paste embedding the reticulated portion of the skeleton and together therewith defining a substantially flat plate having substantially parallel faces and a thickness at least equal to the distance between said opposing sides of said nodes whereby the skeletal elements angle through and are substantially covered by the paste and support the same over substantially the entire thickness thereof without substantially interrupting continuity of the paste from one polygonal paste-retaining cell to the next.

3,881,953
BATTERY ELECTRODE GRIDS AND METHOD OF MAKING SAME FROM A LEAD-CALCIUM-LITHIUM-TIN ALLOY

Lawrence Edward Turowski, New Kensington, Pa., assignor to St. Joe Minerals Corporation, New York, N.Y.

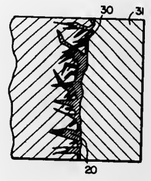
Filed Nov. 26, 1973, Ser. No. 418,947
Int. Cl. H01m *35/02*
U.S. Cl. 136—26 **3 Claims**

1. In a lead-acid battery cell, an electrode grid composed of an alloy of about 0.05 to 0.70 percent lithium by weight, calcium in the range of about 0.005 to 0.15 percent by weight, tin in the range of about 0.1 to 2 percent by weight, and the balance lead.

3,881,954
METHOD OF PRODUCING A LEAD DIOXIDE BATTERY PLATE

Nicholas J. Maskalick, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 18, 1974, Ser. No. 452,295
Int. Cl. H01m *39/00*
U.S. Cl. 136—27 **10 Claims**



1. A method of making a lead dioxide battery plate comprising the steps of:

A. heating a current collector comprising lead and up to 3 weight percent antimony in an oxidizing atmosphere, to form an interlocking porous layer at least about ¼ mil thick consisting essentially of PbO on the current collector surface;

B. applying a porous layer of positive active material paste onto the PbO;

C. contacting the porous layers with sulfuric acid having a specific gravity between about 1.05 to about 1.15, at a temperature between about 15° to 35°C, to penetrate the porous layers and to sulfate the PbO and active material layers, forming a homogeneous intermediate active material mass comprising tetrabasic lead sulfate interlocking with the current collector;

D. anodizing the current collector with the interlocked intermediate active material mass in sulfuric acid having a specific gravity between about 1.05 to about 1.15, at a temperature between about 15° to 35°C, to produce a porous, homogeneous final active material mass comprising lead dioxide firmly interlocked to the current collector.

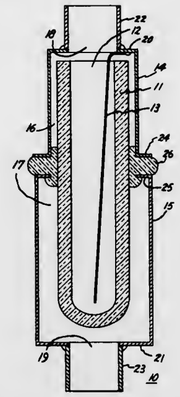
3,881,955
WALL-SEALED BATTERY CASING AND SEALED PRIMARY SODIUM-HALOGEN BATTERY

Robert R. Dubin; William L. Mowrey, and William A. Gilhooley, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 239,890, March 31, 1972. This application May 28, 1974, Ser. No. 474,036
Int. Cl. H01m *21/00*
U.S. Cl. 136—83 R **1 Claim**

1. A wall-sealed battery casing comprises an open ended inner vessel of a solid crystalline ionconductive material, an electronic conductor within the interior of the inner vessel and extending outwardly through the open end of the vessel, two outer opposed open ended metallic vessel portions each with an additional opening surrounding the inner vessel, each outer vessel portion has an oppositely extending flange at its open end, and a sodium and halogen resistant glass seals the adjacent flanges together and seals the outer vessel portions to the outer vessel portions to the outer wall of the inner vessel, a fill

tube affixed to each additional opening, the electronic conductor affixed to the associated outer metallic vessel portion,

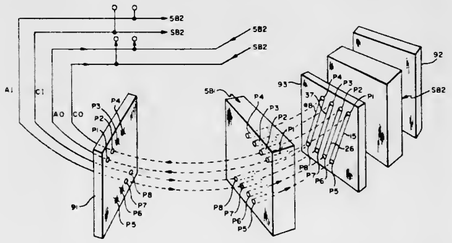


and the two outer metallic vessel portions sealed together and to the outer wall of the inner vessel.

3,881,956
FUEL CELL CONSTRUCTION

Thomas S. Williams, Newton, Mass., assignor to General Engineering Laboratories, Inc., Westford, Mass.

Filed July 28, 1972, Ser. No. 276,149
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 R **17 Claims**



1. In a parallel electrolyte feed, parallel electrolyte drain stacked array of fuel cells with a common electrolyte supply and common electrolyte drain electrically connected in series, the improvement comprising,

means defining a plate at an end of the stack with transverse conduits therein,

means forming a first imperforate electrolyte feed conduit running along a marginal edge of said stacked cells essentially parallel to the direction of stacking and interconnecting said common electrolyte supply with an end of a first one of said transverse passages to define therewith an elongated electrolyte feed passage bypassing the cells in said stack,

means defining a branched electrolyte feed channel running along a marginal edge of said stacked cells and having a feed end connected to an end of said first transverse conduit to define a branched passage receiving electrolyte from said first transverse conduit and supplying said electrolyte to said cells in parallel,

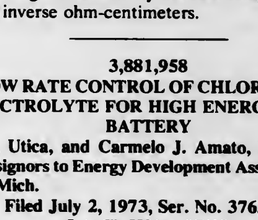
means forming a second imperforate electrolyte drain conduit running along a marginal edge of said stacked cells essentially parallel to the direction of stacking and interconnecting said common electrolyte drain with a second one of said transverse passages to define therewith an elongated electrolyte drain passage bypassing the cells in said stack,

means defining a branched electrolyte drain channel running along a marginal edge of said stacked cells and having a drain end connected to an end of said second transverse conduit and draining electrolyte from said cells in parallel.

3,881,957
ELECTROCHEMICAL CELL COMPRISING A CATALYTIC ELECTRODE OF A REFRACTORY OXIDE AND A CARBONACEOUS PYROPOLYMER

Rudolf H. Hausler, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 235,772, March 17, 1972, abandoned. This application July 2, 1973, Ser. No. 375,984
Int. Cl. Ho1m *27/04*
U.S. Cl. 136—86 D **16 Claims**

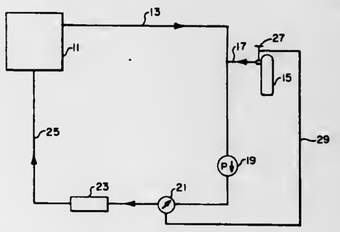


1. In an electrochemical cell, an electrode therefor comprising a refractory oxide having a surface area from 1 to 500 square meters per gram, and a carbonaceous pyropolymer forming at least a monolayer on said refractory oxide, said electrode having a conductivity at room temperature of from 10^{-8} to 10^{0} inverse ohm-centimeters.

3,881,958
MASS FLOW RATE CONTROL OF CHLORINE CONTENT OF ELECTROLYTE FOR HIGH ENERGY DENSITY BATTERY

Peter Carr, Utica, and Carmelo J. Amato, Livonia, both of Mich., assignors to Energy Development Associates, Madison Heights, Mich.

Filed July 2, 1973, Ser. No. 376,019
Int. Cl. H01m *27/12*
U.S. Cl. 136—86 B **11 Claims**



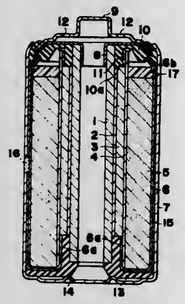
1. An improved method for controlling the addition of chlorine to an electric energy storage device of the metalchlorine type, having an electrode compartment with an inlet means and an outlet means wherein chlorine laden aqueous metal halide electrolyte is passed into the electrode compartment inlet and electrolyte having lower chlorine content than that passing into said inlet is passed out of the electrode compartment outlet while a pumping means circulates the electrolyte from said outlet to said inlet through a means for sensing the chlorine to aqueous electrolyte ratio, then comparing said

ratio to a desired ratio of chlorine to aqueous electrolyte wherein the improvement comprises sensing the chlorine to aqueous electrolyte ratio by measuring the mass flow rate of said circulating electrolyte and controlling the addition of chlorine to said circulating electrolyte in response to the sensed mass flow rate.

3,881,959
AIR CELL

Takashi Tsuchida, Kosai; Kenichi Shinoda, Toyohashi; Kohei Yamamoto, and Tomoya Murata, both of Kosai, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1973, Ser. No. 385,179
Int. Cl. H01m 27/00
U.S. Cl. 136—86 A **3 Claims**

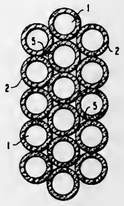


1. An air cell comprising an outer metal casing constituting an anode terminal of the cell, an anode inner casing containing anode active mass therein and electrically connected to said outer metal casing, a porous carbon tube disposed inside of said anode casing, a separator disposed between said anode active mass and said carbon tube, upper and lower sealing insulators, and a perforated metal cover constituting a cathode terminal of the cell, the improvement of which comprises an alkali-resistance electrolyte-impervious insulative synthetic resin thin film covering over the outer vertical side surface of said anode casing, a conductive metal member penetrated through the vertical center portion of said insulative thin film, said conductive metal member electrically and liquid-tightly connecting said anode inner casing with said outer metal casing, and an annular foamed plastic plate directly upon said anode active mass, said annular foamed plastic plate being pressed against said anode active mass by a marginal portion of said anode inner casing, said upper sealing insulator having a downward extension which abuts against an upper periphery of said porous carbon tube, said lower sealing insulator having an upward extension which abuts against a lower periphery of said porous carbon tube, wherein said cell contains an air space between a bottom end of said porous carbon tube and a bottom of said outer metal casing, and said outer metal casing has apertures which are in communication with said air space.

3,881,960
ELECTRODE FOR GALVANIC CELLS

Friedrich Haschka; Rolf Linkohr, both of Stuttgart, and Heinz G. Plust, Neuhausen, all of Germany, assignors to Deutsche Automobilgesellschaft mbH

Filed Feb. 19, 1974, Ser. No. 443,194
Claims priority, application Germany, Feb. 17, 1973, 2307851
Int. Cl. H01m 27/04
U.S. Cl. 136—120 FC **17 Claims**

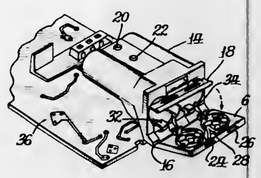


1. A hydrogen storage electrode comprising a body formed of particles of an active, hydrogen-storing material, said particles being enveloped by and in surface contact with $TiNi_3$ which is inactive with respect to the hydrogen storage but has a high hydrogen permeation.

3,881,961
BATTERY HOUSING

Melvin Stanley Nation, Twin Lakes, Wis., assignor to Motorola, Inc., Chicago, Ill.

Filed Aug. 2, 1973, Ser. No. 385,118
Int. Cl. H01m 1/04
U.S. Cl. 136—173 **10 Claims**

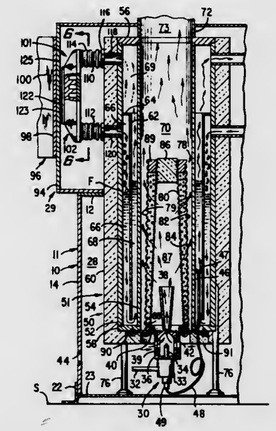


1. A housing for a battery having first and second terminals, said housing comprising:
a body portion having an opening defined therein for receiving the battery;
a door having an open and a closed position attached to said body portion by means of a hinge, said door being positioned for covering said opening for retaining the battery within said body portion placed in the closed position, and for allowing removal of the battery when placed in the open position;
first and second contacts, said first contact being mounted to said door and said second contact being mounted to said body portion and positioned to make an electrical contact with said first contact when the door is in the closed position;
first battery contact means for making electrical contact to the first terminal of the battery attached to said door and electrically connected to said first contact, said first battery contact means being positioned to make electrical contact to said battery when said door is closed;
second battery contact means mounted within said body portion for making electrical contact to the second terminal of said battery when the battery is received in said opening; and
first and second output terminals mounted to said body portion in parallel spaced outwardly projecting relationship and forming mounting means for securing said housing to a mounting board, said first output terminal being electrically connected to said second contact and said second output terminal being electrically connected to said second battery contact means, said first and second output terminals thereby providing electrical contact to said first and second battery terminals when said door is in the closed position.

3,881,962
THERMOELECTRIC GENERATOR INCLUDING CATALYTIC BURNER AND CYLINDRICAL JACKET CONTAINING HEAT EXCHANGE FLUID

Martin A. Rubinstein, La Jolla, Calif., assignor to General Atomic Company, San Diego, Calif.

Continuation-in-part of Ser. No. 167,212, July 29, 1971, abandoned. This application Feb. 6, 1973, Ser. No. 330,017
Int. Cl. H01v 1/00
U.S. Cl. 136—209 **8 Claims**



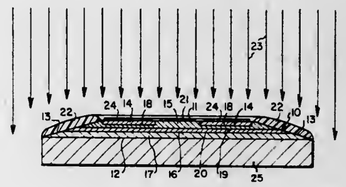
1. A thermoelectric generator comprising, burner means for combusting a fuel in the presence of oxygen, a boiler including a cylindrical jacket containing a fluid to be heated and being disposed about a hollow center area for accommodating said burner means for heating of the fluid thereby, a plurality of thermoelectric devices for converting thermal to electrical energy, a plurality of conduit means for channeling the heated fluid from said jacket into thermal proximity of said devices and returning said fluid to said jacket, and heat absorbing means disposed in thermal contact with said conduit means for conducting heat therefrom to said devices, said cylindrical jacket including an inner chamber extending about said center area for heating of said fluid within the inner chamber, an outer chamber extending about the inner chamber in communication therewith, said conduit means including a series of loops individual to the several thermoelectric devices and extending generally radially from said jacket, and said burner means including a catalytic reactor extending within said center area of said boiler and incorporating an outer reaction surface disposed to complete combustion in close proximity to said jacket.

4. A thermoelectric generator comprising, a generally cylindrical inner wall defining a combustion chamber, an outer wall surrounding said inner wall and forming with said inner wall an annulus surrounding said combustion chamber, said annulus having a closed lower end and containing a quantity of vaporizable heat transfer fluid therein, a plurality of pipes extending from the upper end of said annulus and arranged to conduct vapor of said heat transfer fluid upwardly from said annulus, a plurality of condensers, each in communication with a respective one of said pipes at the end thereof opposite said annulus, each of said condensers having a heat exchange surface to cause condensation of said vaporizable heat transfer fluid with said condensed fluid returning downwardly to said annulus via said pipes, a plurality of thermoelectric devices, each said thermoelectric device being in contact with a separate one of said condensers for receiving heat therefrom, a plurality of vent pipes extending from said condensers, and pressure relief means coupled to said vent pipes for relieving internal pressure when such pressure exceeds a predetermined level.

3,881,963
IRRADIATION FOR FAST SWITCHING THYRISTORS

Chang K. Chu; John Bartko, both of Pittsburgh, and Patrick E. Felice, Jeannette, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1973, Ser. No. 324,718
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 **8 Claims**

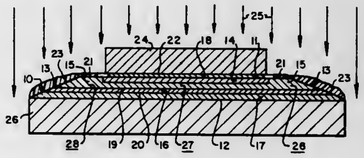


1. A method of decreasing the turn-off time of thyristor without significantly effecting other electrical characteristics thereof comprising the steps of:
a. positioning a thyristor semiconductor body with a major surface thereof to be exposed to a radiation source; and
b. thereafter irradiating the thyristor semiconductor body with the radiation source to a dosage level corresponding to less than 2×10^{14} electrons/cm² with 2 Mev electron radiation.

3,881,964
ANNEALING TO CONTROL GATE SENSITIVITY OF GATED SEMICONDUCTOR DEVICES

Michael W. Cresswell, and Richard J. Fiedor, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 5, 1973, Ser. No. 337,967
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 **9 Claims**



1. A method of decreasing gate sensitivity of a gated semiconductor device without significantly affecting other electrical characteristics of the device comprising the steps of:
a. masking conducting portions of a gated semiconductor device with a first given gate sensitivity against radiation from a radiation source;
b. thereafter decreasing the gate sensitivity to a second gate sensitivity value below a desired value by selectively

irradiating gating portions of the semiconductor device with the radiation source; and

c. thereafter increasing the gate sensitivity to a third desired gate sensitivity value below said first gate sensitivity value by annealing at least irradiated gating portions of the semiconductor device.

3,881,965

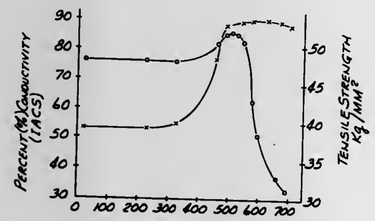
WIRE PRODUCT AND METHOD OF MANUFACTURE

Yoshio Matsuda, and Yoshio Maeda, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 879,102, Nov. 24, 1969, abandoned. This application Aug. 15, 1972, Ser. No. 280,813

Int. Cl. C22f *1/08*

U.S. Cl. 148—12.7 **2 Claims**



1. A method of manufacturing heat-resistant copper alloy of high ductility to provide for the production of electrical wire therefrom adaptable for electrical wiring and wire wrapping connections characterized by the steps of providing a four-element alloy consisting of 0.2 – 0.5 wt-percent cadmium, 0.03 – 0.2 wt-percent silver, 0.2 – 0.7 wt-percent chromium and the remainder copper wherein in producing the alloy, chromium, then silver, and then cadmium are added in the named order to the molten copper, subjecting the copper alloy to a solution heat treatment for 0.5 to 2 hours at a temperature of 900°C to 1000°C and thereafter rapidly cooling the alloy, cold working the copper alloy to provide a cold draft of 50 percent or more to draw the same into a fine wire, and thereafter age treating the wire for 0.5 to 2.5 hours at a temperature of 450°C to 550°C.

3,881,966

METHOD FOR MAKING ALUMINUM ALLOY PRODUCT

James T. Staley, Lower Burrell; Harold Y. Hunsicker, New Kensington, and Robert H. Brown, Natrona Heights, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

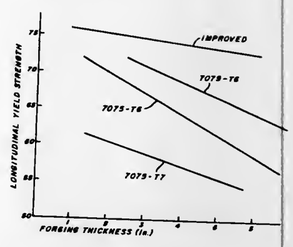
Continuation of Ser. No. 121,056, March 4, 1971, abandoned, which is a division of Ser. No. 60,343, Aug. 3, 1970, abandoned. This application June 14, 1973, Ser. No. 370,159

Int. Cl. C22f *1/04*

U.S. Cl. 148—12.7 **8 Claims**

1. A method of producing an improved aluminum alloy product comprising

1. providing a body composed of an alloy consisting essentially of 4.5 to 8 percent Zn, 1.7 to 3.25 percent Cu, 1.4 to 2.6 percent Mg, the total of Zn + Cu + Mg being from 8.75 percent to 12.25 percent, Cu + Mg being 5.4 percent maximum with 0.2 Cu + Mg being 2 percent minimum, the Cu/Mg ratio being at least 0.85, and 0.05 to 0.25 percent Zr, chromium not to exceed 0.04 percent, the balance being aluminum and impurities and incidental elements,
2. working said body to produce said product,
3. solution heat treating said product,
4. quenching said product,



5. subjecting such product to an artificial aging treatment which includes an exposure at an elevated metal temperature to develop resistance to stress corrosion cracking.

3,881,967

HIGH SATURATION COBALT-IRON MAGNETIC ALLOYS AND METHOD OF PREPARING SAME

Alexander W. Cochardt, deceased, late of Washington, Ind.; by Hildegard Cochardt, administratrix, Bad Mergenstheim, Germany, and Karl Foster, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 228,320, Feb. 22, 1972. This application Jan. 2, 1974, Ser. No. 430,114

Int. Cl. C04b *35/00*

U.S. Cl. 148—31.55 **36 Claims**

1. A worked and heat treated alloy having a substantially flat surface and which alloy member is suitable for use as a transformer core material, consisting essentially of from about 4 to about 6% cobalt, up to about 1.5% silicon, up to about 0.3% aluminum, up to about 0.8% chromium, up to about 0.3% manganese, up to about 0.03% sulfur, up to about 0.05% nitrogen, less than about 0.03% carbon and the balance essentially iron with incidental impurities, the alloy having an orientation in which over 50% by volume of the grains have a unit cube orientation selected from the group consisting of (110) and (100) in which the selected plane is parallel to within 15° of the plane of the surface of the alloy and in which two of the cube edges of the selected plane are aligned parallel to within 15° of the working direction, the alloy also having a resistivity in excess of 30 microohm-centimeters.

3,881,968

INCENDIARY COMPRISING NAPHTHALENE AND MG-ETRAFLUOROETHYLENE

Willard F. Simpson, and John N. Sichra, both of China Lake, Calif. 93555

Filed June 22, 1973, Ser. No. 372,554

Int. Cl. F24j *1/04*; **F42b** *25/14*

U.S. Cl. 149—2 **4 Claims**

1. An article of manufacture fabricated by pressing a mixture consisting essentially of naphthalene and of magnesium-polytetrafluoroethylene powder into a suitable shape.

3,881,969

SOLID PROPELLANT WITH HYDROXY-TERMINATED BUTADIENE-FERROCENYL METHYL ACRYLATE COPOLYMER BINDER

Mart G. Baldwin, Newtown, Pa., and Samuel F. Reed, Jr., Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 25, 1969, Ser. No. 886,605

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.2 **2 Claims**

1. A propellant composition comprised of a plasticizer, a metal additive, inorganic oxidizer, and the hydroxy-terminated copolymers of butadiene and ferrocenyl methyl acrylate prepared by reacting ferrocenyl methyl acrylate and a suitable polymerization initiator in an inert organic solvent with butadiene at a reaction temperature and for a reaction time period sufficient for said reaction to take place after which solvent removal is effected and said copolymers are dried at a suitable drying temperature while under reduced pressure; said initiator being selected from azo-bis-(2-methyl-5-hydroxy-valeronitrile), azo-bis-(2-methyl-3-hydroxypropionitrile), and azo-bis-(hydroxyethyl-2-methyl propionate); said inert organic solvent being selected from toluene, dioxane, and dimethyl formamide; said reaction temperature being in the range of about 60°C to about 80°C; said reaction time being from about 24 hours to about 120 hours; said drying is accomplished at a suitable temperature in the range of about 70°C to about 75°C and said reduced pressure is in the range of about 1 millimeter; said copolymers being characterized by a molecular weight in the range from about 1000 to about 10,000, hydroxy-end group content of about 0.1 weight percent to about 2.5 weight percent, and an iron content of about 0.74 weight percent to about 12.0 weight percent.

3,881,970

EXPLOSIVE COMPOSITION HAVING A LIQUID HYDROXYALKYL NITRATE AS SENSITIZER

Errol Linton Falconer, Mont Saint-Hilaire, Quebec, and Harold William Holden, St. Hilaire, Quebec, both of Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada

Continuation-in-part of Ser. No. 305,337, Nov. 10, 1972, abandoned. This application Nov. 28, 1973, Ser. No. 419,678

Int. Cl. C06b *1/04*

U.S. Cl. 149—47 **7 Claims**

1. A substantially non-aqueous explosive composition having a water content of less than 3% by weight and having as a sensitizer at least one liquid hydroxyalkyl nitrate.

3,881,971

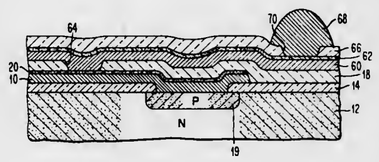
METHOD FOR FABRICATING ALUMINUM INTERCONNECTION METALLURGY SYSTEM FOR SILICON DEVICES

Stuart E. Greer, Poughkeepsie; Randolph H. Schnitzel, Newburgh, and David P. Waldman, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,318

Int. Cl. C23b *3/04*; **C23f** *1/02*

U.S. Cl. 156—11 **8 Claims**



1. A method of fabricating an improved aluminum metallurgy system of conductive stripes on a monocrystalline silicon semiconductor device that makes electrical contact with the body of the device through at least one opening in an insulating layer comprising:

forming a blanket layer of aluminum over said insulating layer which makes contact with the monocrystalline body of the silicon device through at least one of said openings, depositing a thin blanket layer of silicon over said layer of aluminum, the thickness of said layer of silicon being such that the ratio of the thickness of said aluminum layer to the thickness of said silicon layer is in the range of 50 to 1 to 120 to 1,

removing selected portions of said aluminum and silicon layers to define an interconnection metallurgy system,

forming a passivating layer of insulating material over said metallurgy system in direct contact with said layer of silicon, and

said semiconductor device capable of withstanding heating for prolonged periods at temperatures up to 577° C without undergoing significant aluminum penetration into the silicon body.

3,881,972

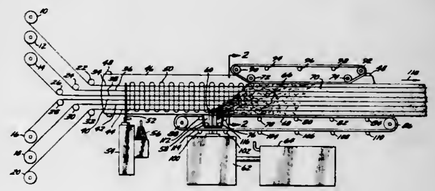
CONTINUOUS PROCESS AND MACHINE

Richard L. Long, Rowland Heights, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Oct. 2, 1973, Ser. No. 402,721

Int. Cl. B32b *5/18*, *31/14*

U.S. Cl. 156—79 **7 Claims**



1. The method of making three-dimensional fiber reinforced insulation comprising the steps of:

1. positioning several layers of reinforcing material in predetermined vertically stacked and spaced relationship with the layers being in substantially horizontal planes,
2. passing multiple rows of fibers vertically through said layers with loops under the lowermost layer and over the uppermost layer to form a three-dimensional matrix,
3. injecting a foamable insulation material into said matrix and allowing it to foam around and through said matrix, and
4. thereafter cure the resulting composite into a self-supporting structure suitable for adhering to a container.

3,881,973

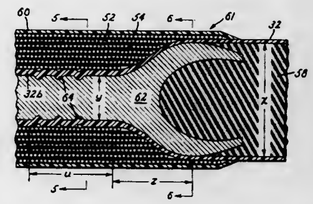
JOINT CONSTRUCTION AND METHOD OF FABRICATION

Robert L. Pinckney, Glen Mills, Pa., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 78,727, Oct. 7, 1970, Pat. No. 3,725,981. This application Dec. 7, 1972, Ser. No. 313,030

Int. Cl. B29c *27/00*

U.S. Cl. 156—86 **8 Claims**



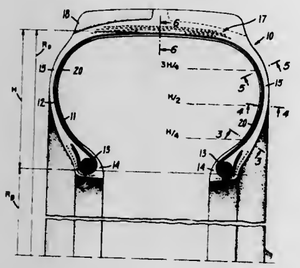
1. A method of forming a structural joint comprising the steps of providing first and second members having an end-to-end relationship wherein the first member is a composite material having a first filamentary material extending therefrom and a second member wherein the first filamentary material overlaps the second member, heating an expansible second filamentary material to a temperature significant

enough to affect an expansion of the second filamentary material, winding the said second filamentary material in a transverse direction around the overlapped first filamentary material of the composite first member and second member, securing the second filamentary material so as to prevent the second filamentary material from unwinding, and allowing the second filamentary material to cool, thereby contracting to form a solid joint.

3,881,974
TIRE HAVING TWO-PLY CARCASS MERGING INTO ONE PLY

Yves Jacques de Zarauz, Gergovie, France, assignor to Compagnie Generale des Etablissments Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Pug-de-Dome), France

Division of Ser. No. 247,780, April 26, 1972, Pat. No. 3,983,926. This application Sept. 4, 1973, Ser. No. 393,785
Int. Cl. B29h *17/26, 17/28*
U.S. Cl. 156—123 **4 Claims**



1. A method of manufacturing a tire with a desired shaping ratio τ by the building of a cylindrical blank and subsequent shaping of the blank, comprising the steps of forming at least one ply comprising two superimposed layers of cords having the same orientation and the same pitch e, for the purpose of constituting a carcass for the tire, the carcass when shaped including a pair of sidewalls, staggering the cords of each layer by half the pitch $e/2$ with respect to those of the other layer, the pitch e being between $4d/(\tau + 1)$ and $2d$, where d is the diameter of the cords, and then shaping the blank in accordance with the shaping ratio τ, so that, in the region of the carcass between the middle of the two sidewalls, successive cords of one layer are inserted, during and as a result of said shaping, between adjacent cords of the other layer, and the cords of both layers are substantially at the same distance from the inner wall of the tire.

3,881,975
POLYAMIDE HOSE AND PREPARATION THEREOF

Robert B. Koch, Reading, Pa., assignor to Rilsan Corporation, Glen Rock, N.J.

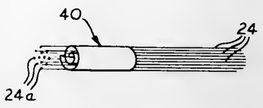
Filed Apr. 26, 1973, Ser. No. 354,301
Int. Cl. B32b *1/08, 1/10*
U.S. Cl. 156—149 **25 Claims**

1. A process for the preparation of a reinforced hose construction which comprises contacting a polyamide or copolyamide tubing with a solution of a solid organic compound in a volatile solvent said organic compound being crystalline at ambient temperatures and being capable of solvating the surface of said polyamide or copolyamide having a solubility of at least about 20% by weight in said volatile solvent and a melting point between about 40° and 180° C, said organic compound also having an acidic hydrogen atom and being selected from the group consisting of
   1. a mono or poly functional carboxylic acid, said mono-acid having up to eight carbon atoms and said poly functional acid having up to 12 carbon atoms, including halogenated derivatives thereof,
   2. a mono or poly functional acidic hydroxyl-containing aromatic compound,
   3. a non-carboxylic aromatic acid, and
   4. mixtures of the aforesaid materials, including a mixture containing resorcinol, forming crystals of said organic compound on said tubing by drying said volatile solvent, reinforcing said tubing with at least one layer of a synthetic or natural fiber and then subjecting the reinforced tubing thus obtained to a temperature of at least about 150° F.

3,881,976
FIBER BUNDLES FOR ORNAMENTAL DISPLAY DEVICES AND METHOD OF MAKING SAME

James A. Jones, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 16, 1973, Ser. No. 333,439
Int. Cl. B32b *17/04;* **G02b** *5/16*
U.S. Cl. 156—180 **8 Claims**



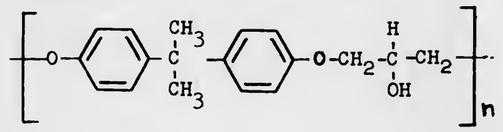
1. The method of making an ornamental bouquet of flared light-conducting fibers comprising the steps of:
   forming a ribbon of a plurality of juxtaposed light-conducting fibers;
   securing said fibers together with a strip of material extended across said ribbon;
   cutting across said ribbon through said juxtaposed fibers along two lines, one spaced away from each of respectively opposite sides of said strip, one of said lines being oblique to the longitudinal direction of said fibers at least throughout a substantial portion of its extension across said ribbon to produce fibers of progressively varying lengths according to the ornamentation desired of said bundle;
   removing the section of said ribbon extending between said two lines of cutting;
   rolling said section of ribbon from an edge adjacent the shortest of said varying lengths of fibers toward its opposite edge in a direction generally perpendicular to axial directions of the juxtaposed fibers to form at least some of said fibers into a bundle;
   securing said bundle against unrolling; and
   orienting said bundle generally vertically with said fibers extending from one side of said strip directed generally upwardly and ornamentally flared outwardly of said bundle.

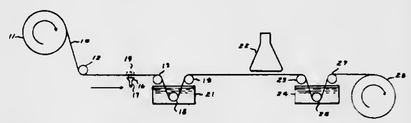
3,881,977
TREATMENT OF GRAPHITE FIBERS

Richard J. Dauksys, Bellbrook, Ohio, assignor to United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 15, 1972, Ser. No. 306,648
Int. Cl. B29g *3/00*
U.S. Cl. 156—242 **11 Claims**

7. A method for fabricating a composite reinforced with graphite yarn which comprises heating the yarn in 1000°at a temperature in the range of 100° to 4500°F for a period ranging from about 0.10 to 12 seconds; passing the heated yarn through a solution of a thermoplastic polymer, thereby coating the yarn with the polymer; evaporating solvent from the coating on the graphite yarn; passing the coated yarn through a solution of a thermosetting resin; thereby coating the thermoplastic polymer coated yarn with thermosetting resin; evaporating solvent from the coated yarn; and molding portions of the coated yarn under heat and pressure to form a composite.
10. The method according to claim 9 in which the thermoplastic polymer is a polyhydroxy ether having the following structural formula:



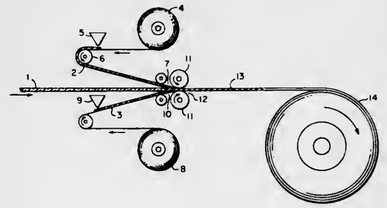


wherein n has a value such that the polymer has a molecular weight of about 35,000; the thermosetting resin is an epoxy resin; and stacked plies of the coated yarn are molded at a temperature in the range of about 175° to 450°F under a pressure of about 100 to 1000 psi for a period of about 1 to 8 hours.

3,881,978
METHOD OF FORMING A POLYESTER PREIMPREGNATED FIBERGLASS SHEET

Everett L. Livingston, Easley, and James M. Kring, Hampton, both of S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 11, 1974, Ser. No. 450,274
Int. Cl. B32b *31/00*
U.S. Cl. 156—247 **9 Claims**

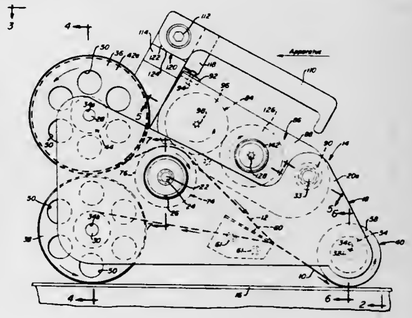


1. A method of forming a non-flowable, filled, resinous, flame resistant sheet, comprising the steps of:
   A. homogeneously admixing
      1. about 30 to 50 weight percent of unsaturated polyester resin,
      2. about 2 to 10 weight percent of reactive diluent, selected from the group consisting of styrene, methyl methacrylate, vinyl toluene, diallyl phthalate, vinyl acetate, cyclopentadiene and allyl maleate,
      3. about 30 to 65 weight percent filler comprising alumina trihydrate, and
      4. an effective amount of hardener, effective to catalyze the admixture only at temperatures above about 100°C; and then
   B. adding to the admixture, about 0.2 to 5 weight percent of a thickener selected from the group consisting of calcium oxide, magnesium oxide and mixtures thereof, to provide a resinous composition having a viscosity between about 18,000 to 30,000 cps at 25°C; and then
   C. immediately coating the composition at about room temperature onto at least one surface of a fibrous mat of substantially fixed fibers; and then
   D. compacting the coated mat at about room temperature, to cause the composition to flow around the fibers of the mat and completely fill the mat; and then
   E. semi-curing the composition within the mat at about room temperature, by allowing the composition to thicken to a viscosity over about 10,000,000 cps at 25°C, said filled polyester composition having a weight ratio of resin composition to fiber of between about 3:1 to 1:1, to form a filled, resinous, flame resistant mat, containing a non-flowable, filled, polyester composition.

3,881,979
METHOD OF PRINTING AND DISPENSING LABELS

Calvin E. Kelly, Franklin Township Westmoreland, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 117,601, Feb. 22, 1971, Pat. No. 3,715,262. This application Sept. 14, 1972, Ser. No. 289,014
Int. Cl. B44c *1/00*
U.S. Cl. 156—249 **8 Claims**

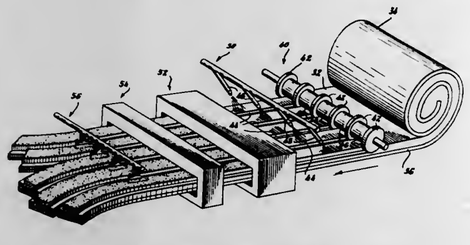


1. A method of printing and dispensing pressure-sensitive adhesive labels maintained in spaced relation on a continuous label-bearing carrier strip and for applying said labels onto an elongated member, said method comprising the steps of:
   a. storing the unused portion of said label-bearing carrier strip on a supply reel for subsequent advancement toward said elongated member, while storing the used portion of said carrier strip on a take-up reel commonly supported with said supply reel and which is rollably engageable with said elongated member;
   b. passing the intermediate portion of said label-bearing carrier strip, lying between said supply reel and said take-up reel, through the nip of a back-up roll and a co-operating printing roll driven thereby, for frictionally engaging and rotating said back-up roll and thereby rotating said printing roll to successively print predetermined indicia on a label upon the advancement of said carrier strip; then
   c. passing the intermediate portion of said carrier strip having indicia printed on said labels over one side of a peel-off member so that advancement of said carrier strip from said supply reel and onto said take-up reel successively separates the spaced labels from the carrier strip and advances each successive label away from the carrier strip and onto the elongated member;
   d. moving said take-up reel and said elongated member relative to one another to rotate said take-up reel by an amount sufficient to print at least one intermediate label with indicia and to separate the leading label from said carrier strip by passage of the strip over said peel-off member and advance said leading label onto said elongated member; and
   e. rolling said separated label against said elongated member by a roll movable with said take-up reel to secure said label to said member.

3,881,980
METHOD FOR MAKING WEATHERSTRIPPING HAVING A FOAM PLASTIC CORE, A TOUGH OUTER SKIN, AND A SEALING SURFACE COVERED WITH FLOCKED FIBERS OR THE LIKE

Harold G. Olson, Westport, Conn., assignor to H. G. Olson & Company, Incorporated, Amesbury, Mass.

Continuation-in-part of Ser. No. 186,237, Oct. 4, 1971, Pat. No. 3,758,992, which is a continuation-in-part of Ser. No. 44,977, June 10, 1970, abandoned. This application July 20, 1973, Ser. No. 380,945
Int. Cl. B32b *31/00*; B29c *17/14*
U.S. Cl. 156—268 **7 Claims**



1. A method of making sealing elements in the form of weatherstripping for use in closures such as windows, doors, and the like, said weatherstripping comprising an elongate substrate formed with a core of foamed material providing flexibility and resilient compressibility and having a tough outer skin on the substrate core providing structural integrity therefor and resistance to damage due to abrasion during weatherstripping installation;

said substrate carrying a surface sealing contact material attached to and projecting outwardly away from the substrate for engaging a surface to be sealed by effecting a desirably tight, water-and-air resistant joint at the closure, said method comprising the steps of:

supplying a sheet of plastic foam material with the bottom of said sheet having a relatively stiff backing layer laminated thereto to provide rigidity to the foam sheet;

forming the top of said sheet with a series of parallel grooves presenting intergroove lands defining substrate portions the top surfaces of which are at least approximately parallel to said sheet bottom;

applying to at least said top surfaces of said substrate portions and the side wall surfaces of said grooves a tough outer skin having substantially greater strength than said foam core;

attaching a surface sealing contact material to the top surfaces of said substrate portions to project outwardly away therefrom to effect sealing contact with the surface to be sealed; and

dividing said foam plastic sheet along said parallel grooves so as to form individual parallel strips including said substrate portions and defining a plurality of sealing elements for use as weatherstripping.

3,881,981
DEVICE AND METHOD FOR PREFABRICATING WALL PANELS FROM BLOCK-LIKE ARTICLES

Hans Lingl, Fasanenweg 14, 7910 Neu-Ulm, Ludwigsfeld, Germany

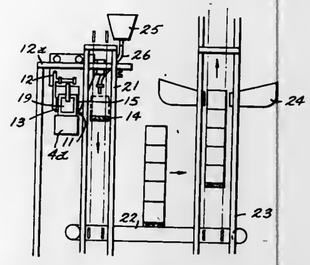
Division of Ser. No. 186,628, Oct. 5, 1971, Pat. No. 3,790,428. This application Nov. 7, 1973, Ser. No. 413,459
Claims priority, application Germany, Oct. 6, 1970, 2048944; Jan. 19, 1971, 2102291; June 11, 1971, 2129010
Int. Cl. B32b *31/00*; E04b *1/00*
U.S. Cl. 156—297 **11 Claims**

1. Process for mechanically constructing a vertical wall section from blocks and mortar, wherein said process comprises the steps of:

a. placing a row of said blocks onto a horizontal conveying means, with said blocks having their top surface pointing upwardly and horizontally conveying said rows of blocks;

b. inserting further blocks into spaces between said rows, said further blocks having different horizontal dimensions than said first-mentioned blocks;

c. applying mortar to the top surface of said blocks by a mortar applying means disposed at a predetermined height above said first horizontal conveying means;



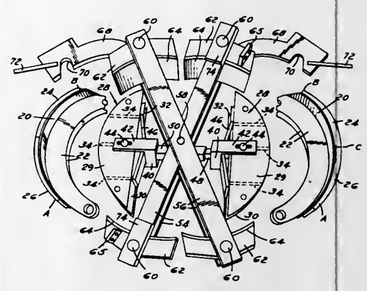
d. transporting rows of said blocks having overall lengths corresponding to a course of blocks in said wall section to a location; and

e. placing said lengths of blocks, one length on top of another onto a descending support means and descending said lengths stepwise between each successively received length of blocks whereby a vertical wall section is mechanically formed from said first-mentioned blocks and said further blocks on descending support means.

3,881,982
METHOD FOR BONDING BRAKE LININGS

Thomas E. Morgan, Sr., and Thomas E. Morgan, Jr., both of Detroit, Mich., assignors to Leonard Friedman, Beverly Hills, Calif.

Division of Ser. No. 139,005, April 30, 1971, Pat. No. 3,752,062. This application June 4, 1973, Ser. No. 366,744
Int. Cl. C09j *5/00*; B23p *15/18*; F16d *69/04*
U.S. Cl. 156—309 **4 Claims**



2. A method of bonding brake linings to brake shoe tables which comprises:

a. supporting one or more brake shoe tables circumferentially,

b. disposing a brake lining to be bonded on the outer surface of a brake shoe table,

c. providing a heat curable bonding material on the mating surfaces of said lining and table,

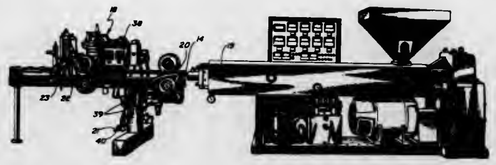
d. applying a pressure to the lining and the table to urge the table toward the lining in a range of 1500 to 3000 pounds per square inch, and

e. maintaining said pressure while subjecting the lining and the table to a heat of a curing furnace.

3,881,983
RING FORMING MACHINE

Bruce N. Smith, Seabrook, N.H., assignor to Spherex, Inc., Seabrook, N.H.

Filed Nov. 13, 1972, Ser. No. 305,991
Int. Cl. B29h *11/00*
U.S. Cl. 156—404 **30 Claims**



1. Apparatus for the production of annular articles from elongated workpieces of thermoplastic material, the elongated workpiece having a first and a second end, comprising:

a. a base,

b. a first clamp movably attached to the base and adapted to grasp the first end of the workpiece,

c. a second clamp movably attached to the base and adapted to grasp the second end of the workpiece,

d. a heating plate movably mounted on the base and having first and second opposed, parallel surfaces,

e. positioning means for presenting the first end of the workpiece to the first surface of the plate, and

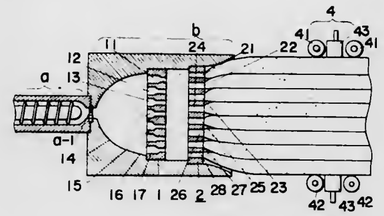
f. a manipulator which causes the second clamp to present the second end to the second surface of the plate,

the elongated workpieces having a longitudinally-directed concave groove and each of the clamps including a protuberance of shape corresponding to the groove and positioned to engage the groove when the ends of the workpiece are held by the clamps.

3,881,984
APPARATUS FOR PREPARATION OF SYNTHETIC WOOD

Shigenari Soda, Kyoto; Tatsujiro Seki; Shigeru Daiguji, and Motoshige Hayashi, Nara, all of Japan, assignors to Sekisui Kaseihin Kogyo K.K.

Division of Ser. No. 61,247, Aug. 5, 1970, Pat. No. 3,720,572. This application Jan. 9, 1973, Ser. No. 322,130
Claims priority, application Japan, Aug. 7, 1969, 44-62749
Int. Cl. B29b *5/00*
U.S. Cl. 156—500 **33 Claims**

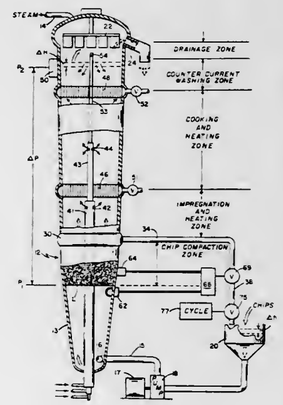


1. In an apparatus for preparing synthetic wood which includes an extruding means for extruding softened thermoplastic resin containing expanding agents, die means disposed at the discharge end of said extruding means adapted to permit the extruded thermoplastic resin to pass therethrough to form a plurality of expanded strands, said die means including a first chamber and at least one plate having a plurality of apertures therethrough disposed on the outlet side of said chamber, and coalescing means disposed at the outlet side of said die means for coalescing said plurality of expanded strands into a microporous article having a desired cross-sectional area while said strands are still in a softened state, the improvement comprising at least one of said die and said coalescing means being constructed to restrict the space in which each individual strand is allowed to expand to provide each of said strands with a higher density outer surface.

3,881,985
CONTINUOUS DIGESTER WITH STRAINER VALVE CYCLING

Frederick William Simmons, Amherst, and Karl Edwin Vogel, Hollis, both of N.H., assignors to Improved Machinery, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 196,391, Nov. 8, 1971, abandoned, which is a continuation of Ser. No. 37,436, May 14, 1970, abandoned, which is a continuation of Ser. No. 641,935, May 29, 1967, abandoned. This application Nov. 30, 1973, Ser. No. 420,669
Int. Cl. D21c *3/24*
U.S. Cl. 162—17 **1 Claim**



1. In a process for the continuous pulping of a mass of wood chips in an upright elongated reaction vessel

having an entrance end and an exit end, wood chip-liquid infeed means including a pump adjacent the entrance end of said vessel for feeding wood chips and liquid into the entrance end of said vessel and onto the entrance end of said mass, wood chip discharge means adjacent the exit end of said vessel for discharging said wood chips, propelling liquid strainer means including a strainer valve, said strainer means being positioned in a wall of said vessel spaced between said infeed means and said discharge means for removal of liquid from said vessel, and liquid recirculating means connected between said strainer valve and said infeed means,

feeding substantially continuously said wood chips and a liquid into said reaction vessel through said infeed means thereof to maintain a columnar mass of compacted wood chips therein, advancing the wood chip mass to move it throughout the length of said vessel, meanwhile treating the same in liquid submergence, and substantially continuously discharging said wood chips from the output end of said column at said discharge means,

that improvement which consists of:

cyclically operating said strainer valve to generate liquid propelling pulses, wherein said valve cyclically opens to recirculate liquid from said strainer means to said infeed means, and alternately cyclically closes to cause liquid propelling pulses to be generated throughout the submerged mass of wood chips to cause the rate of move-

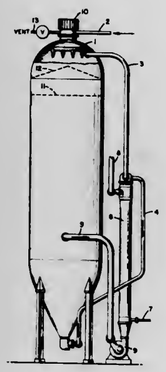
ment of said submergence liquid relative to said wood chips in said mass to vary cyclically to produce a cyclic advancing movement of said liquid effective to advance the wood chips throughout the length of said column from said infeed to said discharge means.

3,881,986

METHOD OF PRODUCING HOMOGENEOUSLY DELIGNIFIED PULP FROM FIBROUS MATERIAL, CONTAINING LIGNOCELLULOSE, IN A DIGESTER PARTIALLY FILLED WITH LIQUOR

Sture Olof Erik Backlund, Sundsvall, Sweden, assignor to Svenska Cellulosa Aktiebolaget, Sundsvall, Sweden

Continuation-in-part of Ser. Nos. 56,121, July 2, 1970, abandoned, and Ser. No. 857,620, Aug. 29, 1969, abandoned, and Ser. No. 529,887, Feb. 24, 1966, abandoned. This application June 4, 1971, Ser. No. 150,017
Claims priority, application Sweden, Feb. 25, 1965, 2468/65
Int. Cl. D21c *1/02*
U.S. Cl. 162—19 **8 Claims**



1. In a method of impregnating lignocellulose fibrous material in the cooking of pulp from wood chips in a digester, the improvement which comprises

1. introducing wood chips and a cooking liquor into a digester with the volume of cooking liquor being less than the volume of the digester whereby there is a vapor space above the liquor;

2. circulating liquor from the bottom of the digester to the top thereof and through at least one centrifugal nozzle thereby spraying liquor substantially uniformly over the chips throughout substantially the entire cross-sectional area of the digester;

3. stopping circulation of liquor; and

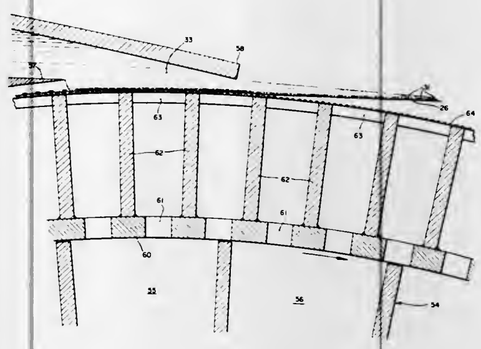
4. thereafter introducing steam into the space above the liquor and chips while the digester is closed thereby elevating the pressure in the digester above atmospheric pressure while simultaneously heating the chips and liquor to cooking temperature thereby impregnating liquor wet chips with liquor.

3,881,987

METHOD FOR FORMING APERTURED FIBROUS WEBS

Charles S. Benz, Glen Mills, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. Nos. 1,945, Dec. 31, 1969, abandoned, and Ser. No. 1,947, Dec. 31, 1969, abandoned, and Ser. No. 1,948, Dec. 31, 1969, abandoned, which is a division of Ser. No. 671,800, Sept. 29, 1967, Pat. No. 3,549,742. This application Dec. 6, 1971, Ser. No. 204,928
Int. Cl. D21f *11/06*
U.S. Cl. 162—116 **3 Claims**



1. A method for forming an apertured fibrous web, said method comprising the steps of:

a. preparing a stock mixture comprising liquid and fibers;

b. delivering said stock mixture in the form of a slice substantially parallel to an upper surface of a moving drainage member and at a speed which is different from the speed of said drainage member for creating eddy currents in said stock mixture on said drainage member, said drainage member having an upper surface and a lower surface and a plurality of apertures connecting said upper and lower surfaces, said apertures being substantially uniformly dispersed throughout said drainage member, said drainage member including flow control means affixed thereon adapted to prevent flow of liquid from said stock mixture through the apertures in predetermined areas of said drainage member, the number of said predetermined areas being from about 100 to about 1,300 per square inch of said member, whereby flow of liquid from said stock mixture through said predetermined areas of said drainage member is prevented; and

c. applying suction to the lower surface of said drainage member to draw liquid through said drainage member while said eddy currents exist in said stock mixture, said eddy currents sweeping away fibers from areas in said stock mixture which overlie flow control means to form apertures in overlying relationship with said flow control means, said suction applying a force against the fibers in areas other than said predetermined areas for holding the fibers on said drainage member in said other areas for forming substantially continuous fibrous web portions, whereby an apertured fibrous web is formed upon said drainage member, said web having a number of apertures substantially corresponding to the number of said predetermined areas.

3,881,988

ANTISTATIC PAPER

Toshitaka Yasuda, Suita, Japan, assignor to Tatsuta Electric Wire & Cable Co., Ltd., Higashi-Osaka, Japan

Filed Mar. 13, 1973, Ser. No. 340,896
Claims priority, application Japan, Mar. 17, 1972, 47-28329. The portion of the term of this patent subsequent to Aug. 8, 1989, has been disclaimed.
Int. Cl. D21h *3/66*
U.S. Cl. 162—181 A **3 Claims**

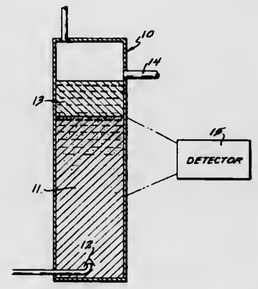
1. An antistatic printing paper comprising paper fibers and a paper filler characterized in that an antistatic agent of HLB ranging from above 9 to 17 is absorbed or caused to adhere to the entirety or part of the paper filler in greater density than to the paper fiber, the amount of antistatic agent being less than 5 percent based on the weight of the filler, the amount of the filler being up to 30 percent by weight of the paper.

3,881,989

METHOD OF DETECTING A FUEL ELEMENT FAILURE

Paul Cohen, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 23, 1973, Ser. No. 381,633
Int. Cl. G21c *17/04*
U.S. Cl. 176—19 LD **4 Claims**



1. A method of identifying small quantities of radioactive iodine in the presence of large quantities of radioactive sodium comprising equilibrating the radioactive sodium with a molten mixture of barium iodide and strontium iodide whereby the radioactive iodine present therein exchanges with the iodine present in the molten mixture, removing the radioactive sodium and monitoring the molten mixture for the presence of radioactive iodine.

3,881,990

METHOD OF TRANSPORTING AND STORING ORGANS WHILE RETAINING THE ORGANS IN A VIABLE CONDITION

Thomas A. Burton, Rochester, and Allen W. Moberg, Minneapolis, both of Minn., assignors to Waters Instruments, Inc., Rochester, Minn.

Division of Ser. No. 201,739, Nov. 24, 1971, Pat. No. 3,777,507. This application Sept. 26, 1973, Ser. No. 400,713
Int. Cl. C12k *9/00*
U.S. Cl. 195—1.7 **10 Claims**

1. In the method of preserving and maintaining an organ in a viable state in a cassette that has a perfusate circulatory system that includes an organ chamber, a venous reservoir, an oxygenator, a heat exchanger, and an arterial reservoir, placing the cassette in a manually portable transport module that has a cooling fluid source for supplying cooling fluid to the cassette heat exchanger and an oxygen source for supplying oxygen to the cassette, transporting the combination of the cassette and transport module to the site of a donor organ, placing the donor organ in the organ chamber, and connecting the organ in the circulatory system to perfuse the organ, transporting the combination of the cassette and transport module to an organ transplant site that is remote from said site of the donor organ, removing the cassette with the organ therein from the transport module at the transplant site, and while the organ is connected in the circulatory system, manually transferring the cassette from the transport module to an in-hospital support unit that has sources for supplying cooling fluid and oxygen to the heat exchanger and oxygenator respectively.

3,881,991

PROCESS FOR PRODUCING AMYLOSE POWDERS HAVING A MEAN DEGREE OF POLYMERIZATION BETWEEN 20–30

Masashi Kurimoto, and Kaname Sugimoto, both of Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan

Continuation of Ser. No. 5,907, Jan. 26, 1970, abandoned. This application Aug. 24, 1972, Ser. No. 283,392
Claims priority, application Japan, Jan. 24, 1969, 44-5125
Int. Cl. C10d *13/04*; C13l *1/08*
U.S. Cl. 195—31 R **7 Claims**

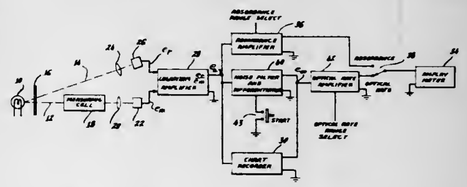
1. A process for producing amylose powders of crystalline helical structure and low water content having a mean polymerization degree of 20 – 30 and having good solubility and flavor-retaining properties, comprising gelatinizing a starch slurry, hydrolyzing the branches of amylopectin with an enzyme that hydrolyzes the alpha-1,6-glucoside bonds of amylopectin until an amylosic starch having a mean polymerization degree of 20 – 30 is obtained, precipitating the amylose to the form of a helical cyrstalline precipitate having a low water content and a mean polymerization degree of 20 – 30, partially dehydrating the precipitate, and thereafter, with a material temperature of less than 45°C., spray drying the partially dehydrated precipitate to a powdery form.

3,881,992

OPTICAL RATE MEASUREMENT METHOD

Wilson Ralston, 99 Prospect St., Stamford, Conn. 06901

Filed July 2, 1973, Ser. No. 375,418
Int. Cl. C12k *1/00*; G01j *3/42, 3/48*
U.S. Cl. 195—103.5 R **5 Claims**



1. A method for kinetic enzyme analysis for rapidly providing an indication of the linearity of enzyme reaction comprising:

combining a reagent with a sample composition for causing an enzyme catalyzed reaction thereof;

said reaction exhibiting a lag phase, an intermediate reaction phase and a terminating substrate exhaustion phase;

projecting a light beam at the composition as the reaction progresses;

detecting the absorbance of said light beam and providing a first electrical signal which is proportional to the absorbance of the light by the composition undergoing reaction;

applying said first signal to signal filtering and differentiating means for providing a second electrical signal which is substantially proportional to the first derivative of the first absorbance signal;

causing reactive elements of a signal filtering and differentiating means to equilibrate to a zero rate condition prior to analysis;

continuously averaging the second signal for a predetermined interval of time from said zero rate condition in order to suppress undesired randomly occurring noise components; and,

applying the second signal to an indicating means and providing a continuous visual display which, after said interval of time, is representative of the rate of change of the reaction.

3,881,993

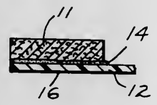
TESTING DEVICE FOR MICROORGANISMS

Ronald Freake; Leon Francis Strenkoski; Daniel Glen Aitken, all of Elkhart, Ind., and Billy Harper Haden, Rochester, N.Y., assignors to Miles Laboratories, Inc., Elkhardt, Ind.

Continuation-in-part of Ser. No. 124,671, March 16, 1971, abandoned. This application May 7, 1973, Ser. No. 357,933

Int. Cl. C12k *1/00*

U.S. Cl. 195—139 **12 Claims**



1. A test device for analyzing a sample for microorganisms, said device being adapted to be inoculated with the sample and incubated in a sealable container, the device comprising: an absorbent matrix impregnated with a nutrient medium, a reagent, and a water soluble culture-fixing agent capable of forming a viscous suspension in an aqueous solution to localize the microorganisms on said matrix.

3,881,994

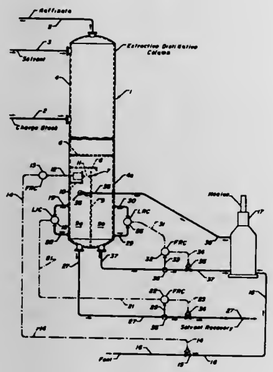
DISTILLATION COLUMN REBOILER CONTROL SYSTEM

R. Gene Fickel, Roselle, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 11, 1974, Ser. No. 459,975

Int. Cl. B01d *3/42;* **C10g** *7/00*

U.S. Cl. 202—160 **5 Claims**



1. A control system for regulating the heat input to the reboiler section of a distillation column which comprises, in cooperative combination:

a. a chamber in said reboiler section for receiving liquid bottoms material from the fractionation section of said column;

b. a reboiler heater having feed input means thereto connected to said chamber, flow regulating means for controlling the flow of said liquid bottoms from said chamber to said reboiler heater in accordance with the liquid level in said chamber;

c. conduit means in interconnection with said reboiler heater for passing heated, mixed-phase bottoms material from said heater into a partitioned and segregated portion of said chamber in said reboiler section;

d. fuel-varying means in a fuel input means in interconnection with said heater for adjusting the fuel input to said heater;

e. vapor flow-measuring means in said reboiler section responsive to the total quantity of upward flowing vapor from said mixed-phase bottoms material passing from said segregated portion of said reboiler section upwardly into the fractionation section of said distillation column, said flow measuring means being internally disposed within said segregated portion of said reboiler section; and

f. signal-generating means in said segregated portion of said reboiler section for establishing a signal representative of the volumetric flow rate of vapor from said segregated portion passing into said fractionation section, and signal transmitting means for modifying and transmitting the resulting signal to said fuel varying means, whereby fuel input through said fuel input means to said heater is decreased in response to increasing flow rates of said vapor and increased in response to decreasing flow rates of said vapor; said control system being further characterized in that said reboiler section is partitioned to provide two inventory chambers of said liquid bottoms material, the first of which is said segregated portion which has said vapor flow measuring means disposed therein and the second of which is connected to said freed input means.

3,881,995

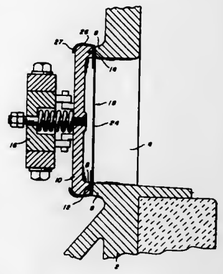
METHOD AND APPARATUS FOR SEALING A COKING CHAMBER

Herbert A. White, Jr., 2516 Collin Rd., Pittsburgh, Pa. 15235

Filed Dec. 17, 1973, Ser. No. 425,303

Int. Cl. C10b *1/06, 25/06, 25/24*

U.S. Cl. 202—248 **10 Claims**



1. In a coke oven or the like having an elongated heating chamber for receiving coal to be coked, a door opening at an end of said chamber, a door jamb surrounding the door opening and having a flat sealing surface extending around its periphery, and a door having a sealing edge extending around the periphery thereof and adapted to engage said sealing surface, said sealing edge being at the end of a metal strip arranged generally normal to said sealing surface; the improvement comprising a detachable relatively thin high temperature resistant, deformable and compressible sealing member adapted to be received between said sealing surface and said sealing edge for the full extent of the edge, said sealing member including a plurality of contacting layers with one outer layer adapted to rest on said sealing surface and the other outer layer adapted to bear against said sealing edge.

3,881,996

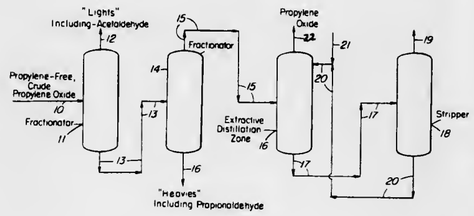
RECOVERY OF PROPYLENE OXIDE BY PLURAL STAGE DISTILLATION

John P. Schmidt, Princeton, N.J., assignor to Oxirane Corporation, Princeton, N.J.

Filed Nov. 21, 1973, Ser. No. 417,809

Int. Cl. B01d *3/00*

U.S. Cl. 203—71 **6 Claims**



1. In a process for recovering propylene oxide in a high state of purity from a crude propylene oxide product obtained by the catalytic epoxidation of propylene with an organic hydroperoxide, said product including propylene, propylene oxide, acetaldehyde, propionaldehyde, and other material having a higher boiling point than that of propylene oxide, the improvement consisting of the sequential steps of

a. removing propylene by distillation from said product to obtain a substantially propylene-free crude propylene oxide product, followed by

b. charging the said substantially propylene-free, crude propylene oxide product into a first fractionator, withdrawing therefrom a first distillation overhead containing acetaldehyde, and withdrawing therefrom a first distillation bottoms containing propylene oxide, propionaldehyde, and said material having a higher boiling point than that of propylene oxide, followed by

c. charging the said first distillation bottoms to a second fractionator, withdrawing therefrom a second distillation overhead containing propylene oxide substantially free of aldehydes and of said higher boiling material, and withdrawing therefrom a second distillation bottoms containing said higher boiling material.

3,881,997

METHOD FOR VOLTAMMETRIC DETERMINATION OF NITRATE AND NITRITE

Dennis C. Johnson, and Ronald J. Davenport, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Mar. 27, 1974, Ser. No. 455,292

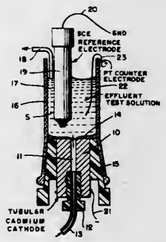
Int. Cl. G01n *27/46*

U.S. Cl. 204—1 T **10 Claims**

1. The voltammetric method of determining the concentration of small amounts of nitrate and/or nitrite in water, characterized by the steps of:

a. maintaining a cadmium electrode at a negative potential in the range of −0.80 to −1.15 volts with reference to a saturated calomel electrode;

b. contacting an aqueous test solution with said cadmium electrode, said solution containing up to about 15 ppm nitrogen as an unknown concentration of nitrate and/or nitrite, said solution having a hydrogen ion concentration in the range of 0.001 to 5 molar favoring the reduction of said nitrogen oxide ion to hydroxylamine; and



c. detecting the current flow between said cadmium electrode and a counter electrode in contact with said test solution.

3,881,998

METHOD OF AFTER-TREATMENT FOR LITHOGRAPHIC PRINTING PLATES

Yushiaki Miyosawa, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Hiratsuka, Japan

Filed July 23, 1973, Ser. No. 382,026

Claims priority, application Japan, July 27, 1972, 47-75277; July 27, 1972, 47-75276

Int. Cl. B41c *3/08;* **B41n** *1/04;* **C23b** *9/02*

U.S. Cl. 204—17 **13 Claims**

1. A method of after-treatment for lithographic printing plates having an aluminum substratum for producing a hydrophilic chemical conversion coating on the non-image areas thereof, wherein said printing plates have an oleophilic and electrically non-conductive image areas on the surface of said aluminum substratum, which comprises passing electric current through the surface of the non-image area of said aluminum substratum by applying an electric voltage between said aluminum substratum and a counter electrode in an aqueous solution of at least one water-soluble oxyacid salt selected from the group consisting of silicates, chromates, stannates, molybdates, phosphomolybdates, tungstates, vanadates, borates and phosphates of lithium, sodium, potassium, ammonium and aluminum, $(NH_4)_4W_5O_{17}$, $(NH_4)_6W_7O_{24}$, $Na_3PO_4 \cdot 12WO_3$, $Ba[B(W_2O_7)_6]$, $Na_2B_{10}O_{16}$, $NaBO_2 \cdot H_2O_2$, $NaH_2BO_3 \cdot 2HCOOH$ and $(NH_4)HB_4O_7$.

3,881,999

METHOD OF MAKING ABRASION RESISTANT COATING FOR ALUMINUM BASE ALLOY

Julius Toth, Beaver, and Edward M. Walker, Industry, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,173

Int. Cl. C23b *5/50;* **C23f** *17/00*

U.S. Cl. 204—33 **17 Claims**

1. A method for applying an abrasion resistant coating on the surface of an aluminum-base alloy member comprising the steps of:

1. cleaning the surface of the member;
2. rinsing the surface of the member;
3. applying an aqueous deoxidizing solution to the surface of the member;
4. rinsing the surface of the member;
5. applying a coating of tin by immersing the member in an aqueous solution consisting essentially of, for each gallon of water, from about 8 to about 14 ounces of at least one tin-containing compound selected from the group consisting of sodium stannate and potassium stannate, and of from about 1 to 10 ounces of a chelating agent;
6. electroplating a coating of a copperbase alloy on the tin coating by immersing the member in an electrolyte consisting essentially of, for each gallon of water, from about

3.5 to about 5.5 ounces of at least one compound selected from the group consisting of sodium stannate and potassium stannate, from about 1.5 to about 2.5 ounces of copper cyanide, from about 2.5 to about 3.5 ounces of potassium cyanide, and from about 0.5 to about 1.3 ounces of potassium hydroxide;

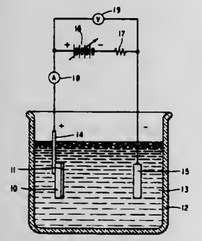
7. rinsing the surface of the member;
8. electroplating a first coating of copper on the copper-base alloy coating by immersing the member in an electrolyte consisting essentially of, for each gallon of water, from about 3 to about 4 ounces of copper cyanide, of from about 6 to about 7 ounces of at least one compound selected from the group consisting of sodium cyanide and potassium cyanide, and of from about 4 to about 6% of potassium-sodium tartrate;
9. electroplating a second coating of copper on the first coating of copper by immersing the member in an electrolyte consisting essentially of, for each gallon of water, from about 8 to about 10 ounces of copper cyanide, of from about 14 to about 16 ounces of at least one compound selected from the group consisting of sodium cyanide and potassium cyanide; and
10. electroplating an outer coating of a metal selected from a group consisting of silver and tin to the second coating of copper.

3,882,000

FORMATION OF COMPOSITE OXIDES ON III-V SEMICONDUCTORS

Bertram Schwartz, Westfield; Stuart Marshall Spitzer, Berkeley Heights, and Gregory Dyett Weigle, Green Brook, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 9, 1974, Ser. No. 468,423
Int. Cl. C23f 17/00; H01l 7/18
U.S. Cl. 204—38 A **12 Claims**



1. A method of forming a composite oxide on a structure comprising a III-V compound semiconductor comprising the steps of:

forming on said structure over a major portion of the surface of said semiconductor a layer of a conducting metal of uniform thickness which is oxidizable in an electrolytic system wherein the electrolyte comprises a material selected from the group consisting of H_2O adjusted to a pH in the range 1-5 or 9-13, H_2O in a pH range of 5-9 including a material for supplying ions to add conductivity, and an H_2O_2 solution;

making the structure the anode in said electrolyte system; and

passing a direct current through said system of sufficient magnitude such as to oxidize the entire thickness of said conductor and a portion of the underlying semiconductor over all of the area of said semiconductor surface covered by said conductor to form said composite oxide.

11. A method of forming a composite oxide on a structure comprising a III-V compound semiconductor comprising the steps of:

forming on said structure over a major portion of the surface of said semiconductor a layer comprising Zn to a non-uniform thickness so that said layer includes relatively thick portions and thin portions;

making the structure the anode in an electrolytic system wherein the elctrolyte comprises a material selected from the group consisting of H_2O adjusted to a pH in the range 1–5 or 9–13, H_2O in the pH range 5–9 including a material for supplying ions to add conductivity, and an H_2O_2 solution; and

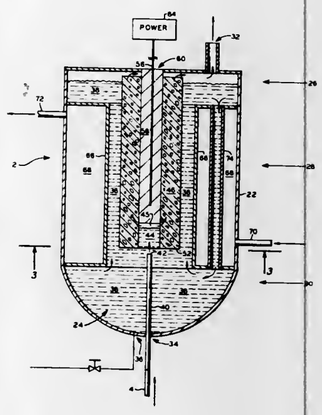
passing a direct current through said system of sufficient magnitude such as to oxidize the entire thickness of said Zn layer only in the thin portions of said layer and a portion of the underlying semiconductor over the area of semiconductor covered by said thin portions to form a composite oxide in said area.

3,882,001

METHOD FOR ELECTROCHEMICALLY FORMING FLUOROCARBON COMPOUNDS

King L. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 30, 1973, Ser. No. 420,529
Int. Cl. B01k 3/04
U.S. Cl. 204—59 **7 Claims**



1. A method for forming a fluorocarbon compound, comprising:

injecting a vaporized recycle feed stream comprising a mixture of a fluorinatable organic compound and a partially unreacted fluorinated compound, said recycle feed stream containing 5–50 weight percent hydrogen fluoride, into an electrolyte of an electrochemical fluorination cell at a location within said electrolyte and adjacent a plenum chamber within an anode;

passing all of said hydrogen fluoride-containing recycle feed through the electrolyte and into contact with said anode of the cell for fluorinating at least a portion of the fluorinatable organic compound and the partially unreacted fluorinated compound of said mixture;

recovering resultant gases from the cell;

separating said fluorinatable organic compound and said partially unreacted fluorinated compound from said resultant gases for said recycle; and

separating and recovering said fluorocarbon compound from said resultant gases.

3,882,002

ANODE FOR ELECTROLYTIC PROCESSES

Edward H. Cook, Jr., Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Aug. 2, 1974, Ser. No. 494,110
Int. Cl. C01d 1/06; C01b 7/06; B01k 3/06
U.S. Cl. 204—98 **9 Claims**

1. An electrolytic anode comprising a valve metal substrate, a coating thereon of conductive tin oxide, and an outer coating of at least one of a noble metal or noble metal oxide.

3,882,003

VINYL ESTER RESIN AND PROCESS FOR CURING SAME WITH IONIZING RADIATION IN THE PRESENCE OF AMINES

Inder Mani, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 142,853, May 13, 1971, Pat. No. 3,816,283. This application Aug. 27, 1973, Ser. No. 391,108
Int. Cl. C08d 1/00; C08f 1/00
U.S. Cl. 204—159.16 **8 Claims**

1. A process for curing a mixture of a polymerizable vinyl ester resin and a nonvolatile vinyl monomer selected from the group consisting of vinyl carboxylic acids, vinyl nitriles, vinyl amides, alkyl and hydroxyalkyl esters of vinyl carboxylic acids wherein the alkyl group contains from 1 to 8 carbons, and mixtures thereof, said process comprises exposing said mixture in an inert atmosphere to ionizing radiation, said mixture having added thereto about 2 to 5 weight percent based on the weight of the mixture of an amine having the formula $R_1R_2R_3N$ where R_1 is an alkyl or aralkyl group, R_2 is hydrogen and R_3 may be hydrogen or an alkyl group or R_1 and R_3 together may be a cyclic alkylene radical or an oxydialkylene radical; and wherein said vinyl ester resin is prepared by reacting essentially equivalent amounts of a polyepoxide of a polyhydric phenol having more than one epoxide group per molecule with an unsaturated acid having the formula



where R_1 is chlorine, bromine, hydrogen or phenyl and R_2 is hydrogen, chlorine, bromine or a loweralkyl group of 1 to 4 carbon atoms.

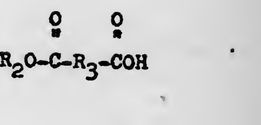
3,882,004

VINYL ESTER RESIN AND PROCESS FOR CURING SAME WITH IONIZING RADIATION IN THE PRESENCE OF AMINES

Inder Mani, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 143,266, May 13, 1971, Pat. No. 3,810,825. This application Aug. 27, 1973, Ser. No. 391,112
Int. Cl. C08d 1/00; C08f 1/00
U.S. Cl. 204—159.16 **4 Claims**

1. A process for curing a mixture of an alkenyl aromatic monomer and a polymerizable vinyl ester resin, said process comprises exposing said mixture in an inert atmosphere to ionizing radiation said mixture having added thereto about 1.5 to 5 weight percent based on the weight of the mixture of an amine having the formula $R_1R_2R_3N$ where R_1 is an alkyl or aralkyl group, R_2 is hydrogen and R_3 may be hydrogen or an alkyl group or R_1 and R_3 together may be a cyclic alkylene radical or an oxydialkylene radical; and wherein said vinyl ester resin is prepared by reacting about equivalent amounts of a polyepoxide of a polyhydric alcohol having more than one epoxide group per molecule with a dicarboxylic acid half ester having the formula



where R_1 is hydrogen or an alkyl group of 1 to 4 carbons, R_2 is an alkylene group of 2 to 6 carbons and R_3 is phenylene, cyclohexylene, alkylene or an unsaturated bivalent hydrocarbon radical.

3,882,005

PROCESS FOR PREVENTING DISCOLORATION IN HYDROLYZED ETHYLENE-VINYL ACETATE COPOLYMERS BY EXPOSURE TO RADIATION

John M. Hoyt; Karl Koch, and Mathew Williams, Jr., all of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed July 10, 1973, Ser. No. 377,997
Int. Cl. B01j 1/10, 1/12
U.S. Cl. 204—159.14 **16 Claims**

1. A process for the hydrolysis of a solid interpolymer of an α-olefin of 2–10 carbon atoms and about 1–25 mole percent vinyl ester of a 2–6 carbon atom saturated aliphatic carboxylic acid to a product having a low yellowness index (ASTM D-1925-63T) of less than 30 which comprises contacting said solid interpolymer with a substantially anhydrous alcoholizing agent for a time sufficient to reduce the residual vinyl ester content to 0.1–15 weight percent and subjecting at least one of said interpolymer and said hydrolyzing agent to irradiation of wave lengths in the range of about 3000–8000 Angstrom units.

3,882,006

METHOD FOR CURING ALKYD RESIN COMPOSITIONS BY APPLYING IONIZING RADIATION

Tadashi Watanabe; Koichiro Murata, and Tsutomu Maruyama, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd.

Continuation of Ser. No. 91,204, Nov. 19, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,977
Claims priority, application Japan, Nov. 27, 1969, 44-94679
Int. Cl. B01j 1/10, 1/12
U.S. Cl. 204—159.15 **7 Claims**

1. A method for curing alkyd resin compositions which comprises applying ionizing radiation in a total radiation dose of from 0.1 to 50 M rad to an alkyd resin composition comprising

a. styrene; and

b. an alkyd resin product consisting essentially of the half-esterification product of (1) a conjugated unsaturated fatty acid or conjugated unsaturated fatty oil, selected from the group consisting of tung oil, linseed oil, linolic and dehydrated castor oil, modified alkyd resin, said alkyd resin of ingredients comprising phthalic anhydride, pentaerythritol, and trimethylol ethane or glycerine having an oil length of from 10 to 50 percent and a hydroxyl equivalent of 300–2000, and (2) maleic anhydride or citraconic anhydride, said anhydride being in an amount sufficient to react with at least 30 percent of the hydroxyl groups of said modified alkyd resin.

3,882,007
PHOTOHARDENABLE FATTY ACID-MODIFIED VINYLATED POLYESTER RESIN COMPOSITION

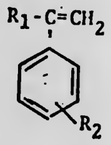
Tadashi Watanabe; Koichiro Murata, and Kenjiro Tsubouchi, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd.

Continuation of Ser. No. 221,076, Jan. 26, 1972, abandoned. This application Nov. 5, 1973, Ser. No. 412,978
Claims priority, application Japan, Feb. 1, 1971, 46-3322
Int. Cl. B01d *1/10, 1/12;* **C08d** *1/00*
U.S. Cl. 204—159.15 **8 Claims**

1. A photohardenable fatty acid-modified vinylated polyester resin composition comprising

A. from about 10 to about 60 percent by weight of a vinyl monomer selected from the group consisting of

1. styrene and its derivatives

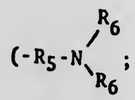


in which R_1 is hydrogen or methyl group and R_2 is hydrogen, methyl group or chlorine

2. acrylic or methacrylic monomers

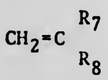


in which R_3 is hydrogen or methyl group and R_4 is hydrogen, alkyl group having one to 16 carbon atoms, hydroxyalkyl group having two to three carbon atoms, glycidyl group and dialkylamino alkyl group



R_5 is alkylene group having one to two carbon atoms and R_6 is alkyl group having one to two carbon atoms)

3. vinylidene monomer



in which R_7 is hydrogen or methyl group and R_8 is nitrile group, carbamoyl group, N-methylolcarbamoyl group, alkylether-N-methylolcarbamoyl group (—$CONHCH_2OR_9$; R_9 is alkyl group having one to four carbon atoms) or acetoxy group, or a mixture thereof;

B. from about 40 to about 90 percent by weight of a fatty acid-modified vinylated polyester resin selected from the group consisting of

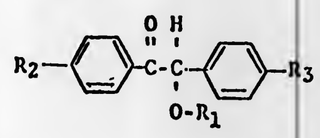
1. a fatty acid-modified vinylated polyester resin prepared by reacting 1.0 mole of a diisocyanate selected from the group consisting of toluene diisocyanate and hexamethylene diisocyanate with 0.7 to 1.3 moles of 2-hydroxyethylmethacrylate to provide an isocyanate-terminated adduct and then reacting 0.4 to 1.2 moles of said isocyanateterminated adduct per mole of a pendant hydroxyl of a linseed oil fatty acid or highly conjugated linoleic acid modified polyester resin of ingredients comprising isophthalic acid, neopentyl glycol, trimethylolpropane, and adipic acid, and

2. a fatty acid-modified vinylated polyester resin prepared by reacting 1.0 mole of a diisocyante selected from the group consisting of toluene diisocyanate and hexamethylene diisocyanate with 0.7 to 1.3 moles of 2-hydroxyethylmethacrylate to provide an isocyanate-terminated adduct and then reacting 0.4 to 1.2 moles of said isocyanate-terminated adduct per mole of pendant hydroxyl of a linseed oil fatty acid-modified polyester resin of ingredients comprising isophthalic acid, neopentyl glycol, trimethylolpropane and fumaric acid, said fatty acid-modified vinylated polyester resin having from 0.2 to 3.0 units of alpha, beta-olefinic unsaturation per 1,000 units molecular weight of said resin, a number average molecular weight of about 800 to about 5,000, a fatty acid content of about 5 to 35 percent by weight based on the total weight of the fatty acid and unmodified polyester resin, a number of hydroxyl groups of about 0.5 to 3.0 units per 1,000 units molecular weight, and an acid value of about 5 to about 30,

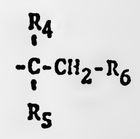
C. metal salt-dryer selected from cobalt, manganese, calcium, zinc, iron, zirconium, lead or copper salt in amount of about 0.1 to 2.0 percent by weight based on the total amount of the fatty acid-modified vinylated polyester resin and vinyl monomer, and

D. a photosensitizer of about 0.05 to about 10 percent by weight based on the total amount of the fatty acid-modified vinylated polyester resin and vinyl monomer in which said photosensitizer is one selected from the group consisting of the following formulas:

1. benzoin and its derivatives



in which R_1 is hydrogen, alkyl group having from one to 18 carbon atoms, methylcyclohexyl group, benzyl group or ethylether derivative groups represented by the general formula

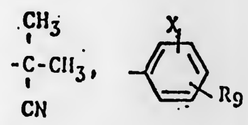


in which R_4 or R_5 is hydrogen or methyl group and R_6 is alkoxy group having one to four carbon atoms, acetyl group having one to four carbon atoms or alkoxyalkyl group having one to six carbon atoms,

2. azo compounds

$$R_7—N=N—R_8$$

in which R_7 is

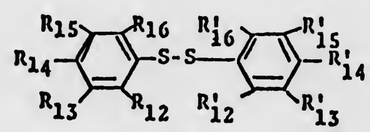


(R_8 is hydrogen, chlorine or alkyl group having one to three carbon atoms and X is hydrogen, chlorine or bromine),



(R_{10} is hydrogen, methyl group or methoxy group, and R_{11} is hydrogen or nitrilo group), and

3. diphenyl disulfide and its derivatives



in which R_{12} and R_{12}' are hydrogen, methyl group or chlorine, R_{13} and R_{13}' are hydrogen or methyl group, R_{14} and R_{14}' are hydrogen, chlorine, alkyl group having one to four carbon atoms or methoxy group, R_{15} and R_{15}' are hydrogen, chlorine or methyl group, and R_{16} and R_{16}' are hydrogen or methyl group.

3,882,008
WATER-SOLUBLE AND/OR WATER-DISPERSIBLE COATING MATERIAL AND COMPOSITION

Michio Hiraoka, Tokyo, and Hisao Nakada, Niigate, both of Japan, assignors to Nippon Soda Kabushiki Kaisha, Tokyo-to, Japan

Division of Ser. No. 668,202, Sept. 15, 1967, abandoned. This application Mar. 11, 1971, Ser. No. 123,406
Claims priority, application Japan, Sept. 20, 1966, 41-61666
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **7 Claims**

1. A method of coating a substrate, comprising arranging the substrate as the anode of an electrolytic cell having an anode, a cathode and an electrolyte, the electrolyte comprising an aqueous solution or dispersion of a butadiene homopolymer or copolymer having at substantially each end of substantially each polymeric chain a carboxyl or carboxylate group and wherein number average molecular weight is in the range of 200 to 10,000, carboxylic equivalent is less than 5,000, butadiene unit in the polymeric chain is more than 50 weight percent, 1,2-butadiene bonding in the butadiene unit is more than 80 weight percent, at least 80% of the total of the carboxyl and carboxylate groups are carboxylate groups, and the carboxylate is alkali metal, ammonium or organic ammonium carboxylate and applying an electromotive potential across the cell whereupon the butadiene homopolymer or copolymer deposits on the anodic substrate.

3,882,009
ELECTRODEPOSITION OF ISOTHIOURONIUM STABILIZED LYOPHOBIC COLLOIDS

Earl H. Wagener, Concord, Calif.; Ritchie A. Wessling, and Dale S. Gibbs, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 29, 1973, Ser. No. 392,700
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **10 Claims**

1. A method for applying a coating to an object having an electroconductive surface comprising

1. immersing the object in a coating bath comprising a latex having a pH in the range from about 2 to about 12 of cation-active particles of water-insoluble, essentially electrically non-conductive, organic, film-forming polymer wherein a substantial portion of the cation-activity is provided by isothiouronium cations; said latex having a conductivity of from about 300 micromhos to about 3,500 micromhos per centimeter;

2. passing an electric current through said bath sufficient to effect deposition of a coating of said polymer on the object by providing a difference of electrical potential between the object and an electrode that is

a. spaced apart from said object

b. in electrical contact with said bath

c. electrically positive in relation to said object.

3,882,010
METHOD OF ELECTROPHORETICALLY FORMING FOUNDRY MOULDS

Ervin I. Szabo, Manotick, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Aug. 13, 1974, Ser. No. 497,039
Claims priority, application Canada, Oct. 26, 1973, 184329/73
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **7 Claims**

1. A method of electrophoretically forming a foundry mould, comprising:

a. coating a meltable mould former, which is electrically non-conductive, with graphite and refractory particles and a binder to form an electrically conductive coating thereon containing graphite to refractory particles in the range 1:10 to 1:1 by volume,

b. applying additional refractory particles electrophoretically to said electrically conductive coating,

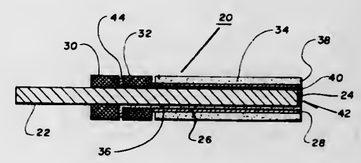
c. applying further refractory particles to said electrically conductive coating to form a foundry mould, and

d. heating said mould former to melt it and then removing the molten mould former material from the foundry mould.

3,882,011
ELECTRODE FOR ELECTROANALYTIC STUDIES

Theodore G. Hines, Grove City, Pa., and Dennis C. Johnson, Ames, Iowa, assignors to Pine Instrument Company, Grove City, Pa.

Filed Dec. 26, 1973, Ser. No. 427,471
Int. Cl. G01n *27/30*
U.S. Cl. 204—195 R **18 Claims**

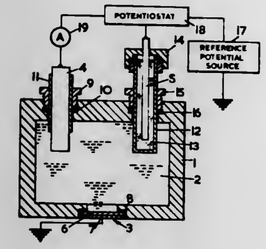


1. A rotatable electrode construction for electroanalysis of a fluid, said construction comprising a first contact and a second contact spaced therefrom, conductive members electrically engaging said first and said second contacts respectively for establishing conductive paths thereto, means for electrically isolating said first and said second contacts from one another and said conductive members from one another, brush members mounted respectively on said conductive members and spaced from said contacts, and means for sealing said contacts and said conductive members against the entry of said fluid so that said fluid is prevented from contacting said conductive members and non-contact surfaces of said first and said second contacts, at least one of said contacts being fabricated from glassy-carbon.

3,882,012
OXYGEN SENSORS

Thomas Dickinson, Newcastle-upon-Tyne, and Lynden John Greenley, Tonbridge, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom and Northern Ireland, London, England

Filed Nov. 26, 1973, Ser. No. 419,048
Claims priority, application United Kingdom, Nov. 24, 1972, 54329/72
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 P 26 Claims



1. An oxygen sensor comprising an electrochemical cell having a salt electrolyte which is molten at the temperature of operation of the sensor, a gas diffusion electrode as cathode, the gas diffusion electrode includiing a porous metal layer and a barrier layer substantially non-porous to the electrolyte but porous to oxygen interposed between the porous metal layer and the environment of the sensor, a counter electrode as anode, measuring means to determine the electrical current which flows between the anode and cathode of the electrochemical cell due to oxygen in the environment and wherein the electrochemical cell includes an electrode constituting either the anode or a reference electrode of the electrochemical cell, the said electrode comprising either (A) a soluble product electrode immersed in a salt electrolyte which is molten at the temperature of operation of the sensor or (B) a reactive electrode and the said electrode being separated from the salt electrolyte of the electrochemical cell by a membrane of ionically conducting solid through which cations of the salt electrolyte or cations of the reactive electrode respectively can be transported and provided that when a separate reference electrode is included a means is provided by which a constant potential is maintained between the gas diffusion electrode and the said separate reference electrode.

3,882,013
METHOD OF PRODUCING HIGHLY AROMATIZED LOW-SULPHUR HYDROCARBON PETROLEUM STOCK

Yakov Rafailovich Katsobashvili, ulitsa Vavilova, 49, kv. 43, and Anatoly Sergeevich Serenko, 44 kvartal, ulitsa Volgina, korpus 2, kv. 135, both of Moscow, U.S.S.R.

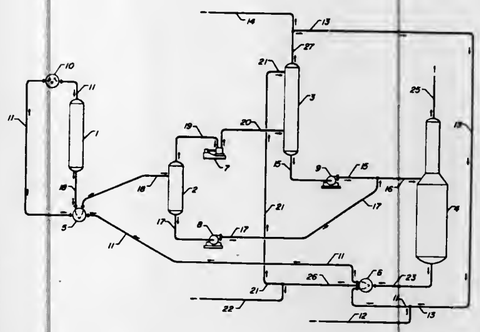
Filed Mar. 15, 1973, Ser. No. 341,592
Int. Cl. C10g *13/02*
U.S. Cl. 208—60 18 Claims

1. A method of producing highly aromatized low-sulfur hydrocarbon petroleum stock, comprising destructive catalytic hydroaromatization of a straight run vacuum distillate boiling between 300° to 450°–560°C at a temperature of from 500° to 620°C, under a pressure of from 5 to 50 atm and at a space velocity of stock feed from 1 to 10 hr^{-1}, the hydrogen-stock ratio ranging from 500 to 3000 nm^3/t; isolating from the resultant hydroaromatizate a fraction boiling between 200° to 300°–400°C, and a residue that boils at a temperature over 300°–400°C; and isolating an aromatic concentrate from said hydroaromatizate fraction boiling between 200° to 300°–400°C wherein the catalysts comprise the oxides of the metals of Groups VI and VIII of the Periodic System, on solid carriers.

3,882,014
REACTION ZONE EFFLUENTS SEPARATION AND HYDROGEN ENRICHMENT PROCESS

Richard D. Monday, Houston, Tex., and Norman H. Scott, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 301,009, Oct. 26, 1972, abandoned. This application June 24, 1974, Ser. No. 482,304
Int. Cl. C10g *35/04*
U.S. Cl. 208—134 7 Claims

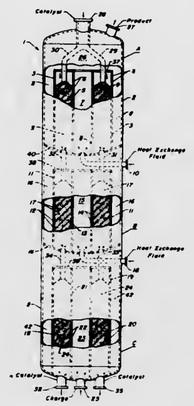


1. In a hydrocarbon conversion process wherein (1) a hydrocarbon charge stock and hydrogen are contacted in a catalytic reaction zone, (2) a hydrogen-containing hydrocarbon effluent stream is withdrawn from said zone, (3) said effluent is separated to provide a principally liquid phase and a principally vaporous phase, and (4) at least a portion of said vaporous phase is recycled to said reaction zone, the improvement comprising separating said effluent and increasing the hydrogen concentration of said recycled vaporous phase by the steps of:
   a. partially condensing said hydrocarbon reaction zone effluent at a temperature from about 150°F to about 300°F and introducing the same into a vapor-liquid separation zone, therein effecting separation into a first hydrogen-containing vaporous phase and a first liquid phase;
   b. introducing said first vaporous phase upwardly into a contacting-condensing zone and therein countercurrently contacting the same with a downwardly flowing, cooled fractionation bottoms material, at contacting conditions selected to effect condensation and selective absorption of a portion of said first vaporous phase;
   c. recovering, from said contacting-condensing zone, a second vaporous phase enriched in hydrogen and a second liquid phase of said liquid bottoms material and the condensed-absorbed portion of said first vaporous phase;
   d. recycling at least a portion of said second varporous phase to combine with said hydrocarbon charge stock;
   e. fractionating a mixture of said first and second liquid phases, in a fractionation zone, at conditions selected to vaporize light components therefrom, and recovering the same as a third vaporous phase;
   f. recovering a liquid bottoms material from said fractionation zone; and,
   g. cooling said liquid bottoms material and passing at least a portion of the cooled material downwardly into said contacting-condensing zone to countercurrently contact said first vaporous phase therein.

3,882,015
COUNTERCURRENT CATALYTIC CONTACT OF A REACTANT STREAM IN A MULTI-STAGE PROCESS AND THE APPARATUS THEREFOR

Don B. Carson, Mt. Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 29, 1973, Ser. No. 365,396
Int. Cl. B01j *9/12*; C10g *13/16*
U.S. Cl. 208—169 9 Claims



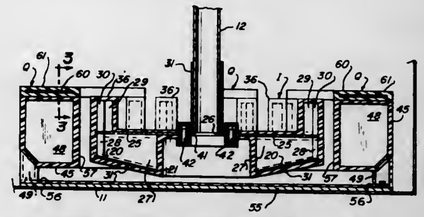
3. A process for effecting the multiple-stage, countercurrent contact and conversion of a reactant stream with catalyst particles movable through said stages via gravity-flow, which process comprises the steps of:
   a. introducing said reactant stream into a central, lower portion of an elongated reaction chamber containing said multiple stages;
   b. passing said reactant stream laterally, in radial flow, through a first annular-form catalyst bed in which the catalyst particles are movable via gravity-flow, and into a mixing zone above said first catalyst bed;
   c. introducing a heat-exchange fluid into said mixing zone and passing the same upwardly, in admixture with the reactant stream effluent, into the lower portion of a center reactant stream conduit, and flowing said mixture laterally through a second annular-form catalyst bed in which the catalyst particles are movable via gravity-flow; and,
   d. withdrawing the resulting converted reactant stream from an upper portion of said second annular-form catalyst bed.

3,882,016
FLOTATION MACHINE AND IMPELLER THEREFOR

Charles A. Green, Apartado 82, Chihuahua, Parral, Mexico

Continuation-in-part of Ser. No. 430,073, Jan. 2, 1974, abandoned, which is a continuation-in-part of Ser. No. 301,883, Oct. 30, 1972, Pat. No. 3,843,101. This application June 17, 1974, Ser. No. 479,749
Int. Cl. B03d *1/14*
U.S. Cl. 209—169 14 Claims

1. A rotatable impeller for a flotation machine having a tank, comprising:
   a circular lower plate;
   a circular upper plate concentric with and spaced from said lower plate, said plates each having a circular central opening therein;
   a series of vanes extending generally radially and disposed between said plates, said vanes being constructed and arranged to pump pulp and the like from said central opening of said first plate and discharge the same from the periphery of the space between said plates;
   a series of radial fingers spaced around the periphery of said upper plate and extending upwardly therefrom, said fingers having free upper ends and a radial extent less than that of said vanes; and

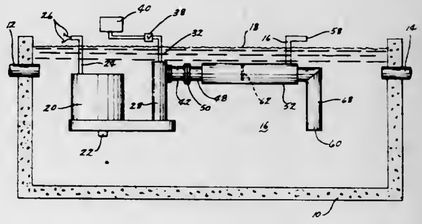


means connected to said lower plate at said central opening for supplying fluid under pressure to the underside of said impeller and for supporting said impeller above the bottom of said tank.

3,882,017
METHOD AND APPARATUS FOR AERATION OF BIODEGRADABLE WASTE MATERIAL

Norman R. Wittrup, Lakewood, Colo., assignor to Ren Vand, Inc., Webster City, Iowa

Filed Apr. 10, 1974, Ser. No. 459,847
Int. Cl. C02b *3/08*; C02c *1/12*
U.S. Cl. 210—15 14 Claims



1. A method of pressure aeration of biodegradable waste material to enhance the rate of degradation by aerobic bacteria present in the waste material, said method comprising:
   introducing under conditions of high velocity a waste material slurry taken from a reservoir of biodegradable waste material into a confining zone to create a pressure greater than atmospheric, and to create high velocity turbulent flow,
   introducing air under pressure into said confining zone to further increase turbulence therein and to provide an aerated slurry,
   withdrawing the aerated slurry from said confining zone, and introducing said aerated slurry into a mixing and separating zone, having a mixing area and a separating area with said mixing area separated from said separating area by a back pressure creating means, wherein further turbulent mixing occurs in said mixing area, and withdrawing from said separating area and discharging downstream of said back pressure creating means, excess air and undissolved gases from said separating area, and
   discharging under conditions of high velocity said aerated slurry from said separating area into said reservoir of said waste material below the surface thereof.

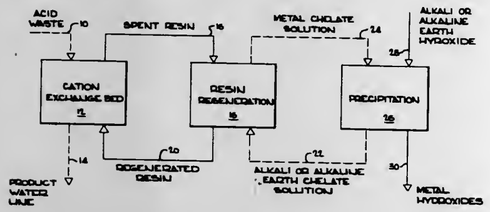
9. A waste treatment system comprising:
   a pump means to pump sewage material at high velocity,
   a riser means in communication with said pump means to receive sewage material at high velocity from said pump,
   an air introduction means to introduce air under condi-

tions of pressure and turbulence into said riser means and to aerate sewage material within said riser means,
a conveying means,
a mixing and separating means,
said conveying means being in communication with said riser means
at a first end and in communication with said mixing and separating means at a second end,
said mixing and separating means having a mixing area and a separating area separated by a back pressure valve means,
said separating area having a gas discharge outlet and an aerated sewage outlet.

3,882,018
PROCESS FOR RECOVERY OF MINERALS FROM ACIDIC STREAMS

David O. Depree, Loomis, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Continuation-in-part of Ser. No. 95,252, Dec. 4, 1970, Pat. No. 3,725,259. This application Jan. 15, 1973, Ser. No. 323,500. The portion of the term of this patent subsequent to Apr. 3, 1990, has been disclaimed.
Int. Cl. B01d *15/06*; C02b *1/76*
U.S. Cl. 210—20 **21 Claims**

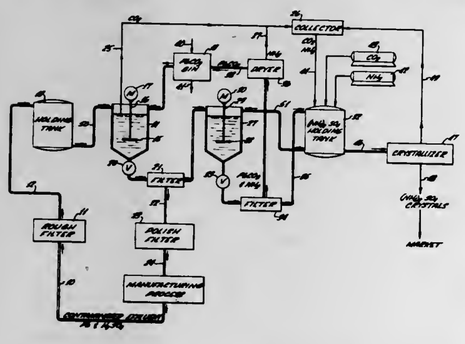


1. A method for the removal of water soluble Group Ib, IIb, Vb, VIb, VIIb, and VIIIb metallic ions from highly acidic water solutions containing said ions which comprises initially contacting the solution with a cation exchange resin, which resin is present as the alkali or alkaline earth form thereof, depositing the water soluble metallic ions on said resin, providing a neutral effluent, and regenerating the cation exchange resin by contacting same with a regenerating solvent solution of an alkali or alkaline earth chelate.

3,882,019
PROCESS FOR EFFLUENT WATER RECOVERY

Zane L. Burke, Whittier, Calif., assignor to Hill Brothers Chemical Co., Inc., City of Industry, Calif.

Filed Jan. 2, 1974, Ser. No. 430,060
Int. Cl. C02b *1/20*
U.S. Cl. 210—45 **15 Claims**

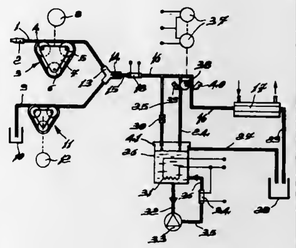


1. A process for converting effluent water, contaminated with lead and sulfuric acid as a result of a manufacturing process, into water suitable for reuse comprising the steps of:
adding lead carbonate to the effluent water in a first agitated enclosure in an amount approximately equal to or greater than the amount of total dissolved solids in said effluent water to form water, carbon dioxide, and insoluble lead sulfate;
filtering the contents of said first enclosure to separate the water from the lead sulfate;
conducting the filtered water back to the manufacturing process for reuse;
adding the filtered lead sulfate to a solution of ammonium sulfate, ammonia, carbon dioxide, and water in a second agitated enclosure in an amount sufficient to form ammonium sulfate and insoluble lead carbonate;
filtering the contents of said second enclosure to separate the ammonium sulfate solution from the lead carbonate;
conducting the filtered ammonium sulfate solution to a holding tank for reuse in said second enclosure; and
drying the filtered lead carbonate to remove residual ammonia therefrom.

3,882,020
CONCENTRATE DILUTER FOR PREPARING DIALYSIS LIQUID IN ARTIFICIAL KIDNEYS

Sergio Cere, Mirandola, Italy, assignor to Bellco S.p.A., Mirandola-Modena, Italy

Filed May 13, 1974, Ser. No. 469,573
Claims priority, application Italy, May 25, 1973, 3415/73
Int. Cl. B01d *31/00*
U.S. Cl. 210—85 **8 Claims**

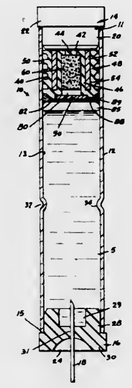


1. Concentrate diluter for preparing dialysis liquid in artificial kidneys, comprising a flexible duct for feeding water which has been previously degassed and heated to a predetermined temperature, and a flexible duct for feeding the concentrate, means for the peristaltic pumping of the degassed water and the concentrate along said ducts, a connector for said ducts arranged to mix the water with the concentrate and convey the preparation so obtained towards the dialyser through a duct along which is disposed a conductivity cell on which depend the means for regulating the dilution of concentrate in the degassed water, a container provided with an overflow and connected to the feed duct for the dialyser by a pair of ducts, one of which feeds a constant fraction of the preparation to the container, and a flow deviator arranged to block the flow of the preparation towards the dialyser, leaving simultaneously open the second of said pair of ducts or vice versa, there being also provided means for measuring the temperature and conductivity of the liquid in the container, and which govern said deviator.

3,882,021
SEALED ASSEMBLY FOR SEPARATION OF BLOOD WITH ANTI-RED CELL BARRIER

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Feb. 27, 1974, Ser. No. 446,365
Int. Cl. B01d *33/00*
U.S. Cl. 210—136 **6 Claims**

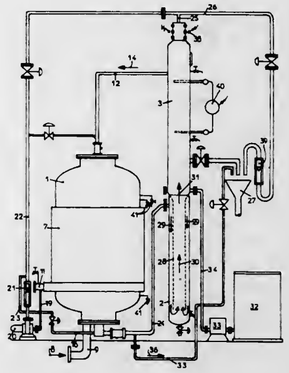


1. A self-contained fluid separator assembly capable of separating blood into its component phases of light phase plasma or serum and heavy phase cellular portion comprising:
a. a container having a first open end which is adapted to receive blood for subsequent separation into a light phase and a heavy phase and a second open end for removing the separated light phase;
b. closures sealing the open ends of the container, the closures being formed of a self-sealing elastomeric material which is penetrable by a cannula;
c. a piston having a specific gravity relatively greater than the heavy phase portion of the blood and slidably mounted in the container and having means on an outer surface in sealing engagement with an inner surface of the container;
d. pressure responsive valve means associated with said piston, said valve means being normally closed when there is a minimum of pressure differential on different portions of the valve means and which automatically opens in response to a substantial pressure differential so that when said container is subjected to moderate centrifugal force the blood separates into its light phase and heavy phase but the piston stays in the upper portion of the container, and subsequently when increased centrifugal force is used the valve means automatically opens with the lighht phase passing up through the valve means enabling the piston to move down through the light phase while retaining sealing engagement with the inner surfaces of the container;
e. frangible seal means in a position opposite to the first end for receiving blood and between said first end and said piston to isolate said piston from contact with the blood;
f. means for breaking said frangible seal, said seal and said means for breaking said seal being constructed and arranged so that when the centrifugal force reaches a predetermined value, the seal is broken by said seal breaking means; and
g. mechanical stop means on the container whereby the piston when moving through the light phase will stop a predetermined distance from one of the ends of the container followed by termination of the different pressure with permits the valve means to automatically shift from an open position to a closed position to provide an impervious barrier between the separated light phase and heavy phase of the blood.

3,882,022
APPARATUS FOR THE PERMUTATION OF MOVABLE BED FLUIDS

Pierre Lagoutte, Carraire du Grand Cabries, Le Tholonet (Bouches-du-Rhone), France

Filed Apr. 29, 1973, Ser. No. 353,191
Claims priority, application France, Apr. 20, 1972, 72.14938
Int. Cl. B01d *23/10*
U.S. Cl. 210—189 **5 Claims**

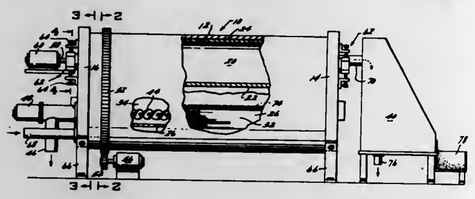


1. An ion exchange plant for softening water comprising:
a. a softener tank, inlet means on the upper portion of said tank into which resins are supplied in their regenerated state, outlet means for removing the spent resins from the lower part of said tank, the circulation of the resins thus taking place from top to bottom, a vertical central distributor having a porous wall disposed in said tank, peripheral collector means disposed outside said tank opposite said distributor, fluid supply means for supplying a fluid to be treated in its crude state into said central distributor for radially outward passage through the thickness of the resin bed into the peripheral collector, conduit means for supplying a portion of said fluid through the lower part of said softener tank to carry along the spent resins;
b. a regeneration column for receiving spent resins and regenerating them by contact with a regeneration fluid, means for supplying said regeneration fluid to said regeneration column in a counterflow direction to the spent resins so that the regenerated resins come out of the upper part of said column; and
c. a rinsing column disposed above said regeneration column for receiving into the lower part thereof the resins coming from the regeneration column, said conduit means supplying a portion of the softened water to the upper portion of said rinsing column whereby the regenerated resins will be rinsed by the counterflowing water, and pipe means for returning the regenerated and rinsed resins from the upper portion of said rinsing column back to the upper portion of said softener tank.

3,882,023
APPARATUS FOR CONTINUOUSLY SEPARATING LIQUID AND SOLID FROM A LIQUID-SOLID MIXTURE

Vernon I. E. Wiegand, Sr., deceased, late of Cincinnati, Ohio, and by Florence Elliott Wiegand, executrix, 1943 Green Pine Dr., Cincinnati, Ohio 45231

Filed Nov. 21, 1972, Ser. No. 308,420
Int. Cl. B01d 17/00
U.S. Cl. 210—294 3 Claims



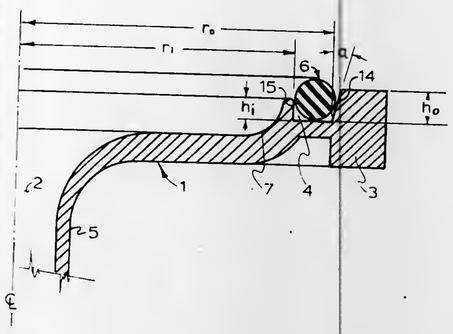
1. Improved apparatus for continuously separating liquid and solid from a flowable solid-liquid mixture comprising:
a housing having a hollow interior defined by a liquid impervious, continuous, non-variant lateral inner wall of cylindrical cross section and a pair of end members each having a liquid impervious inner end wall;
the housing rotatably connected with each end member respectively through a first pair of liquid seal members;
means to rotate the housing inner wall about its longitudinal axis in a selected direction;
an inner member having a liquid impervious, continuous, non-variant outer surface of cylindrical cross section smaller in diameter than the cross section of the housing inner wall and unyieldingly mounted within the housing hollow interior, eccentrically with respect to the longitudinal axis of the housing inner wall, and having a longitudinal axis substantially parallel to the longitudinal axis of the housing inner wall so that the inner member outer surface approaches the housing inner wall at a horn angle across a substantially non yielding compression nip substantially parallel to the longitudinal axes of the housing inner wall and of the inner member;
the inner member extending between the end members and rotatably connected with each end member through a second pair of liquid seal members;
means to rotate the inner member about its longitudinal axis in the selected direction;
a baffle including first and second edges secured between the end members within the hollow interior and projecting between and biased to press the first and second edges into liquid sealing relationship with the inner member outer surface and with the housing inner wall thereby separating the housing hollow interior into a wet material section and a dried material section;
an inlet port through an end wall in the wet material section;
means to introduce the solid-liquid mixture into the wet material section through the inlet port;
a liquid outlet port through an end wall in the wet material section;
liquid filtering means connected with the liquid outlet port;
a dried material outlet port in an end wall in the dried material section; and
means to remove dried material from the dried material section through the dried material outlet port.

3,882,024
HEADER FOR STAGNATION-SENSITIVE LIQUIDS

George W. Holmes, Walnut Creek, and Charles E. Savage, Concord, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 19, 1974, Ser. No. 462,275
Int. Cl. B01d 33/00
U.S. Cl. 210—321 10 Claims

1. A header having the general shape of a cup, pierced by at least one fluid passageway and having a generally cylindrical rim comprising outer and inner wall members, W_o and W_i, projecting generally parallel to the axis of the rim in a direction such as to increase the volume of fluid containable by the header and having concentric, opposed, generally cylindrical faces of greater and lesser radii, r_o and r_i, respectively, defining an annular land having a bottom width equal to $(r_o - r_i)$ and of greater and lesser heights, h_o and h_i, respectively,
said inner wall member W_i having a tapered cross section

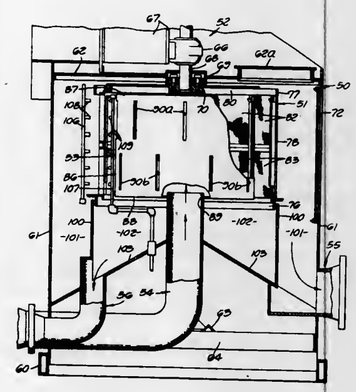


and comprising a rounded uppermost portion having a thickness t_i measured along a radius through any point in the circle of juncture between the cylindrical and non-cylindrical surfaces of W_i,
the ratio of h_o to $(r_o - r_i)$ being from about 0.6 to about 0.8, the ratio of h_i to $(r_o - r_i)$ being from about 0.45 to about 0.65 and the ratio of t_i to $(r_o - r_i)$ being from about 0.2 to about 0.3.

3,882,025
WASTEWATER CONCENTRATOR WITH SLOTTED DISTRIBUTOR

Walter J. Talley, Jr., Brentwood Park, Calif., assignor to Sweco, Inc., Los Angeles, Calif.

Filed June 16, 1972, Ser. No. 263,540
Int. Cl. B01d 33/06
U.S. Cl. 210—354 4 Claims



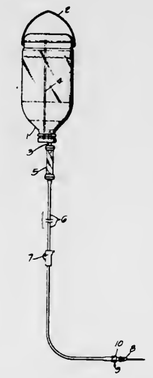
1. Screen apparatus comprising
substantially cylindrical screening means for screening an influent applied thereto,

support means for supporting said screening means for rotation substantially about the axis of said screening means,
stationary distributor means disposed in said screening means for receiving influent and providing at least a stream of influent toward the inner surface of said screening means, said stationary distributor means imparting a velocity component to at least one said stream of influent which is tangential relative to said substantially cylindrical screening means in the direction of rotation of said substantially cylindrical screening means, said tangential velocity component providing the sole means for rotating said screening means said distributor means includes a peripheral wall, a top and a bottom thereby defining a substantially cylindrical enclosure, said peripheral wall being close to the inner surface of said screening means and having associated therewith the means for imparting the velocity component, and
feed means for supplying influent into said distributor means.

3,882,026
HYDROPHOBIC FILTER DEVICE FOR MEDICAL LIQUIDS

Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 14, 1972, Ser. No. 280,542
Int. Cl. B01d 35/02
U.S. Cl. 210—446 8 Claims

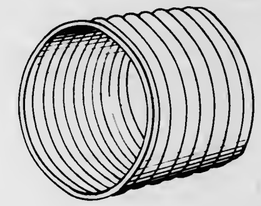


1. A liquid filter assembly for filtering at parenteral solution head-pressures immediately at the site for administering the solution to a patient at flow rates used in conventional parenteral therapy comprising: an elongated hollow housing having a liquid inlet opening; a rigid tubular inlet adapter at one end surrounding the inlet opening for connecting the housing to a tubular administration set leading from an elevated parenteral liquid source; said housing having a liquid outlet opening spaced from the inlet opening; a rigid tubular outlet needle adapter in axial alignment with the inlet adapter and surrounding the outlet, said needle outlet adapter including a tapered annular surface for wedgingly connecting to a tapered annular surface hub of a venous needle for dispensing filtered liquid immediately at the needle site of a patient's anatomy; and a "depth" filter membrane of hydrophobic homogenous material with randomly communicating interconnected axially stacked passages of from 10 to 40 micron size and communicating between said liquid inlet opening and liquid outlet opening, said filter membrane fitting transversely inside the housing and peripherally sealed thereto between the liquid inlet and outlet openings whereby all liquid passing through the assembly must pass through the stacked passages, said housing includes at least one support prong on a downstream side of the filter membrane, said support prong having a rounded contact surface terminally engaging a central portion of the membrane, said membrane being relatively flexible and the prong absorbing shock of pressure surges to protect it from rupturing under a high pressure surge, said rounded prong contact surface covering less than 5 per cent of the effective filter area of the filter membrane when in contact therewith, said filter membrane being a porous normally hydrophobic structure impervious to at least 90 per cent of all particulate matter of 5 micron size and greater from a parenteral solution passing through its randomly interconnected 10 to 40 micron size passages, the filter membrane being from 0.003 and 0.016 inches thick and having an effective filter area equivalent to a 0.250 inch diameter disc, the housing including a central section which contains said filter membrane, said central section comprising essentially an axial projection between said adapters.

3,882,027
RANDOM PACKING MEDIUM

John Lunt, Alderley Edge, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 17, 1973, Ser. No. 352,037
Claims priority, application United Kingdom, Apr. 24, 1972, 18823/72
Int. Cl. B01d 39/16
U.S. Cl. 210—500 9 Claims



1. A packing for biologically treating waste water in a percolating filter comprising randomly packed extruded hollow cylindrical pieces of an organic polymeric material, the wall of each cylindrical piece being provided, throughout its length, as a plurality of corrugations which lie in planes which are transverse to or oblique to the main axis of the cylindrical piece, each of said corrugations in the wall of each cylindrical corrugated piece having a depth in excess of the thickness of the wall.

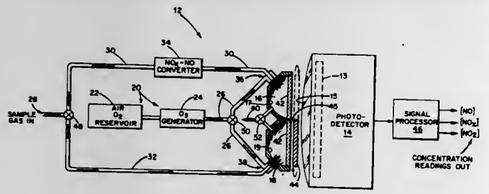
3,882,028
MULTIPLE CHAMBER CHEMILUMINESCENT ANALYZER

William J. Zolner, Westford, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed May 17, 1974, Ser. No. 470,876
Int. Cl. G01n 21/22
U.S. Cl. 250—361 20 Claims

1. Apparatus for observing chemiluminescent reaction comprising:
a plurality of reaction chambers having optical openings therein;
concentric feed means for supplying reagents and samples to each of said reaction chambers;
a photodetector spatially arranged to observe sites of reaction in each of said chambers for detecting radiant energy given off as a result of chemiluminescent reaction in said chambers and for generating an output responsive to said detected energy; and

means periodically coupling and uncoupling radiant energy from each of said chambers to said photodetector for



forming in said output a sequence of discrete time-wise interlaced signals.

3,882,029

WELL COMPLETION AND WORKOVER FLUID

Paul W. Fischer, Whittier; David S. Pye, Brea, and Julius P. Gallus, Anaheim, all of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Sept. 29, 1972, Ser. No. 293,388
Int. Cl. E21b *21/04*; C09k *3/00*
U.S. Cl. 252—8.55 R **8 Claims**

1. An aqueous well completion and workover fluid comprising a dispersion of about 4 to 10 pounds per barrel of finely divided, oil-soluble, water-insoluble solid particles in an aqueous salt solution containing about 1 to 5 pounds per barrel of chrome lignite, about 0.1 to 2 pounds per barrel of xanthan gum, about 0.1 to 1 pound per barrel of hydroxyethyl cellulose, and at least about 1 weight percent of a water-soluble inorganic alkali metal or ammonium salt, said particles comprising a homogeneous solid solution of (1) wax, (2) an oil-soluble surface active glyceryl or sorbitan partial ester of a saturated higher fatty acid, (3) a water-dispersible surface active polyethylene glycol monoester of a saturated higher fatty acid, (4) an ethylene/vinyl acetate copolymer, and (5) a fatty alcohol.

7. An aqueous well completion and workover fluid comprising a dispersion of about 4 to 10 pounds per barrel of finely divided, oil-soluble, water-insoluble solid particles in an aqueous salt solution containing about 1 to 5 pounds per barrel of chrome lignite, about 0.1 to 2 pounds per barrel of xanthan gum; about 0.1 to 1 pound per barrel of a hydroxyethyl cellulose having about 1 to 3 moles of substituent ethylene oxide per anhydroglucose unit of the cellulose and that is characterized by a viscosity of about 1,500 to 5,000 centipoises for a 1 weight percent solution thereof; and at least about 1 weight percent of an alkali metal or ammonium halide or nitrate; said particles comprising a homogeneous solid solution of (1) about 45 to 55 weight percent of paraffin wax, (2) about 15 to 20 weight percent of glyceryl or sorbitan monostearate, (3) about 25 to 30 weight percent of polyethylene glycol monostearate, (4) about 1 to 4 weight percent of an ethylene/vinyl acetate copolymer containing about 10 to 30 weight percent vinyl acetate and exhibiting a Melt Index of less than 20 grams/10 minutes, and (5) a saturated fatty alcohol containing about 10 to 14 carbon atoms, said particles having average diameters in the range of about 0.1 to 50 microns.

3,882,030

SELF-LUBRICATING BEARING ELEMENTS

Mahlon E. Campbell, Overland Park, Kans., and William D. Walker, Independence, Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 15, 1974, Ser. No. 443,083
Int. Cl. C10m *7/40*, *7/06*, *7/02*
U.S. Cl. 252—12 **10 Claims**

1. A self-lubricating polymeric composition consisting essentially of an arylene sulfide polymer and a solid lubricating component consisting of a mixture of molybdenum disulfide and antimony trioxide in a weight ratio of molybdenum disulfide to antimony trioxide ranging from 35:65 to 75:25.

5. A method of forming a solid self-lubricating composite consisting essentially of an arylene sulfide polymer and at least one solid lubricating component selected from the group consisting of molybdenum disulfide, molybdenum diselenide, graphite, antimony trioxide, tungsten disulfide, tungsten diselenide, and mixtures thereof which comprises the steps of:
a. admixing said polymer and at least one of said solid lubricating components;
b. heating the resulting admixture at a first temperature for a first interval;
c. thereafter heating said admixture at a second, higher temperature for a second interval;
d. thereafter cooling and grinding said thus-heated admixture;
e. compressing the thus-ground admixture of step (d) in a mold at a first pressure;
f. heating the thus-compressed composition at a third temperature for a third interval;
g. thereafter, molding the composition of step (f) at a second pressure;
h. cooling the thus-molded composition under said second pressure to a fourth temperature; and
i. thereafter removing from the mold the finished self-lubricating composite.

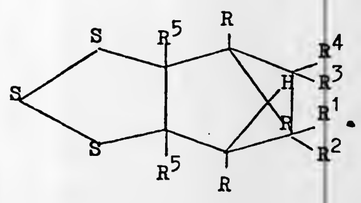
3,882,031

LUBRICANT COMPOSITIONS

Herbert Frank Askew; Gerald John Joseph Jayne, and John Scotchford Elliott, all of Bracknell, England, assignors to Edwin Cooper & Company Limited, Bracknell, England

Filed Apr. 11, 1974, Ser. No. 459,938
Claims priority, application United Kingdom, Apr. 12, 1973, 17728/73
Int. Cl. C10m *1/38*, *1/34*, *3/32*
U.S. Cl. 252—45 **13 Claims**

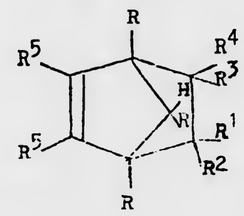
1. A lubricating composition containing a major amount of lubricating oil and a minor anti-oxidant or load-carrying amount of a sulphur-containing additive selected from the group consisting of (1) sulphurised norborneyl compound having the general formula:



(A)

wherein:
a. each of R, R^2 and R^4 when taken singly is selected from the group consisting of a hydrogen atom, an alkyl group containing from 1 to about 15 carbon atoms, an aryl group containing from 6 to about 15 carbon atoms and a cycloalkyl group containing from 4 to about 10 carbon atoms;
b. each of R^1 and R^3 when taken singly is selected from the group consisting of a hydrogen atom, an alkyl group containing from 1 to about 15 carbon atoms, an aryl group containing from 6 to about 15 carbon atoms, a cycloalkyl group containing from 4 to about 10 carbon atoms and an alkenyl group containing from 2 to about 10 carbon atoms;
c. R^1 and R^3 when taken together from the group —CHY-.CY = CY— in which Y is a hydrogen atom or a methyl group;
d. R^1 when taken together with R^2 forms an alkylidene group containing from 1 to about 6 carbon atoms; and

e. R^5 is selected from the group consisting of a hydrogen atom and an alkyl group containing from 1 to about 15 carbon atoms; and (2) an oil-soluble sulphurised norbornenyl product resulting from sulphurising a compound having the general formula:



(B)

wherein R, R^1, R^2, R^3, R^4 and R^5 are as hereinbefore defined at a temperature of up to 180°C., said sulphurisation being carried out in the absence of a solvent or in the presence of a non-polar solvent.

4. A lubricating composition according to claim 1 which incorporates a minor amount of benzotriazole therein.

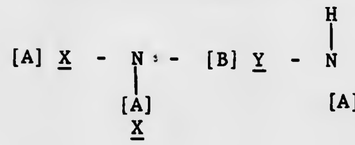
3,882,032

SYNERGISTIC MIXTURE OF ADIAMINE AND ALKALIMETALAMIDE AS AN ANTIOXIDANT COMPOSITION AND LUBRICANTS CONTAINING SAME

Michael Gavin Bird, Weybridge, and Keith Aled Wyn Parry, Camberley, both of England, assignors to The British Petroleum Company Limited, London, England

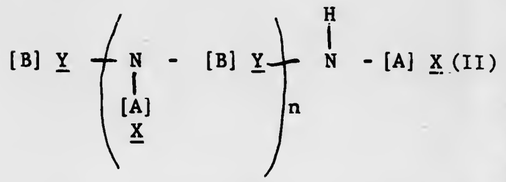
Filed Jan. 5, 1972, Ser. No. 215,646
Claims priority, application United Kingdom, Jan. 18, 1971, 2350/71; Aug. 12, 1971, 37868/71; Sept. 7, 1971, 41589/71
Int. Cl. C10n *1/10*
U.S. Cl. 252—49.7 **14 Claims**

1. An antioxidant composition comprising
a. a diamine of the formula



(I) and

b. an alkali metal amide of an amine of the formula



(II)

where X is a benzene nucleus substituted in the para position to the nitrogen atom with a tertiary alkyl group having 4 to 9 carbon atoms and Y is selected from the group consisting of a benzene nucleus substituted in the para position with a tertiary alkyl group having 4 to 9 carbon atoms, an alpha naphthyl group and a beta naphthyl group, and *n* is 0, 1, or 2, the weight ratio of the diamine of Formula I to the alkali metal amide being 1:1 to 12:1.

3,882,033

SILICONE GREASE FOR SEMICONDUCTORS

John H. Wright, Elnora, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 160,163, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 764,999, Oct. 4, 1968, abandoned. This application Jan. 5, 1973, Ser. No. 321,388
Int. Cl. H01b *3/46*
U.S. Cl. 252—63.5 **9 Claims**

1. A silicone grease composition consisting essentially of on a weight basis:
1. from 15 to 97.9 percent of a polysiloxane fluid of the formula:

$$(R)_nSiO_{4-n/2}$$

where
R represents a member selected from the class consisting of alkyl radicals having from one to 22 carbon atoms, lower alkenyl radicals having two to eight carbon atoms, cycloalkyl radicals having from five to seven carbon atoms; mononuclear and binuclear aryl radicals; mononuclear aryl lower alkyl radicals; cyano lower alkyl radicals and up to 50 percent of the R radicals can also be hydrogen; and *n* has a value of from 0.002 to 3.0,
2. from 0.1 percent of a neutral, dielectric desiccant being at least one selected from the class consisting of anhydrous calcium sulfate and synthetic zeolites being at least one selected from the class consisting of:

$$0.95+0.25M_{2/m}O.Al_2O_3:2.175+0.825SiO_2:YH_2O$$

wherein
m represents at least one of the materials in the groups consisting of hydrogen, ammonium, metals in Groups I and II of the periodic table and the transition metals of the periodic table, *m* represents the valence of M, and *Y* may be any value up to about 6, and

$$0.9+0.2M'_{2/m}O:Al_2O_3:2.5+0.5SiO_2Y'H_2O$$

wherein
M′ represents at least one cation having a valence of not more than 3, *m′* represents the valence of M′, and *Y′* may be any value up to about 8, and
3. from 2 percent to 84.9 percent of a grease thickening agent being at least one selected from the class consisting of finely divided, non-conducting inert oxides of metallic and glass-metallic materials and inert organic thickening materials and mixtures thereof substantially free of interfering water.

3,882,034

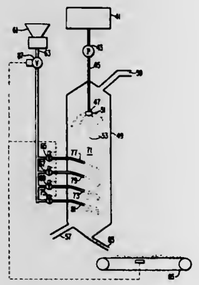
SIMULTANEOUS FORMATION OF EXPANDING BORAX PARTICLES AND SPRAY DRIED DETERGENTS

Edward James Gibbons, Fanwood, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 885,079, Dec. 15, 1969, abandoned. This application Feb. 11, 1974, Ser. No. 441,302
Int. Cl. C11d *3/04*, *7/18*, *11/02*
U.S. Cl. 252—99 **7 Claims**

1. A method for producing a non-stratifying, borax-containing detergent composition wherein the proportion of borax in the which comprises passing particles is from **10-50%** of feed hydrated borax having a particle size within the range of 20 to 200 mesh downwardly through a hot drying gas moving countercurrently at a speed of 0.05 to 5 ft./sec. in a drying zone defined by an enclosing wall, the temperature of said drying gas being from 120° to 600°C., the pressure in said drying zone ranging from atmospheric to 1 m.m. of mercury vacuum, the dwell time of said borax particles in the drying zone being from 0.1 to 10 seconds so that the temperature of the borax particles does not exceed 100°C., whereby to produce a product borax particles having a moisture content of 1 to 10% and a bulk density about 0.1 to 0.8 times the bulk density of the feed borax particles, concurrently spraying into said drying zone a detergent slurry at a point above the point

of introduction of the hydrated borax particles blending the spray dried particles of detergent composition with the parti-



cles of borax being decrepitated and removing the mixed detergent borax composition from the dehydrating zone.

3,882,035
IMINODIACETONITRILE DERIVATIVES AS PEROXYGEN BLEACH ACTIVATORS

Frank Fred Loffelman, Somerville, and Thomas Eugene Brady, Piscataway, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 21, 1973, Ser. No. 343,314
Int. Cl. C11d 7/54
U.S. Cl. 252—95 **13 Claims**

1. A bleaching composition comprising hydrogen peroxide or a hydrogen peroxide releasing compound of the group of organic peroxides and inorganic peroxygen salts and an activating amount of an iminodiacetonitrile compound represented by the formula:

$$A—N(CH_2CN)_2$$

wherein A is an acyl group selected from aroyl, substituted aroyl, lower alkanoyl and the residue of a heterocyclic carboxylic acid halide; or a 4,6-disubstituted-s-triazinyl group in which the substituent groups are selected from amino, diethylamino and bis(cyanomethyl)amino groups.

3,882,036
CONTACT LENS CLEANING AND STORING COMPOSITION INCLUDING NONIONIC SURFACTANT, BENZALKONIUM CHLORIDE AND Na_2EDTA

Joseph Z. Krezanoski, and John C. Petricciani, both of Los Altos, Calif., assignors to Flow Pharmaceuticals, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 148,993, June 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 724,600, April 26, 1968, abandoned. This application Aug. 11, 1972, Ser. No. 279,800
Int. Cl. C11d 1/66, 3/48
U.S. Cl. 252—106 **11 Claims**

1. A cleaning and storage solution for hard contact lenses consisting essentially of: from 0.002 to 0.2% of benzalkonium chloride for inhibiting microbial growth in the solution; from 0.01 to 2% trisodium ethylenediaminetetraacetate; from 0.1 to 10% of a physiologically-acceptable nonionic surfactant selected from the group consisting of polyoxyethylene fatty acid ethers, polyoxyethylene fatty acid esters, and polyoxypropylene-polyoxyethylene block polymers; and water.

3,882,037
STABILIZED BORANE-TETRAHYDROFURAN SOLUTIONS

Herbert C. Brown, West Lafayette, Ind., assignor to Aldrich-Boranes, Inc., Milwaukee, Wis.

Filed Feb. 22, 1973, Ser. No. 334,642
Int. Cl. C01b 35/00
U.S. Cl. 252—188 **15 Claims**

1. A method for stabilizing a solution of diborane in tetrahydrofuran which comprises incorporating in said solution an effective concentration of an alkyl, alicyclic, or cyclic sulfide.

3,882,038
CLEANER COMPOSITIONS

Eugene Thomas Clayton, Mt. Kisco; Ruth Elinor Johnston, Briarcliff Manor, both of N.Y., and James M. Rector, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

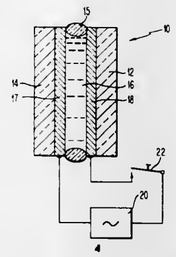
Filed June 7, 1968, Ser. No. 735,169
Int. Cl. C11d 1/72, 3/44
U.S. Cl. 252—164 **5 Claims**

1. A cleaner composition consisting essentially of from about 1 to about 10 percent by weight of a monobutyl or monoamyl ether of propylene glycol, dipropylene glycol or tripropylene glycol; from about 0.01 to about 5 percent by weight of polyethoxylated linear long chain alcohol surfactant and from about 98.99 to about 85 percent by weight water wherein all percents are based on the total weight of the cleaner composition.

3,882,039
ADDITIVE FOR LIQUID CRYSTAL MATERIALS

Gerard J. Sprokel, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 21, 1973, Ser. No. 372,120
Int. Cl. C09k 3/00; G01n 31/00, 33/00; G02f 1/28, 1/36
U.S. Cl. 252—299 **12 Claims**



7. An electro-optical display device comprising
two parallel members, at least one of which is transparent, spaced apart from 10 to 100 microns,
electrodes on the facing surfaces of said members,
a nematic liquid crystal material interposed and filling the space between said electrodes having a resistivity in the range of 10^8 to 5×10^9 ohm-cm., said nematic liquid crystal material having a threshold electrical field which when exerted causes scattering of incident light, said nematic liquid crystal material comprising a nematic material with a negative dielectric anisotropy having dissolved therein an additive to provide electrical conductivity having the formula $(R)_2(R_2)_2N^+X^-$ wherein R is a benzyl group, R_2 is selected from the group consisting of methyl and ethyl groups, and X^- is selected from the group consisting of Cl^-, Br^- and I^-, and
means for applying an electric field across the nematic liquid crystal material through said electrodes that exceeds said threshold electric field.

12. A nematic liquid crystal composition having an increased frequency response comprising
a nematic liquid crystal material with a negative dielectric anisotropy having dissolved therein choline chloride.

3,882,040
SILICON REMOVAL FROM INCINERATOR ASH BY REACTION WITH NOF.3HF

Robert G. Auge, and Robert P. DeGrazio, both of Boulder, Colo., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed June 21, 1973, Ser. No. 372,134
Int. Cl. G21c 11/42
U.S. Cl. 252—301.1 W **5 Claims**

1. In the recovery of plutonium, americium, and the like, the method for removing silicon from ash containing silicon comprising contacting said ash with a solution containing from about .75 milliliters (ml) to about 1.0 ml of nitrosyl fluoride trihydrogen fluoride and from about 3.2 ml to about 5.0 ml of water for each gram of said ash, heating to from about 75°C to about 100°C, agitating while maintaining said temperature for from about 75 minutes to about 100 minutes to effect reaction of said nitrosyl fluoride trihydrogen fluoride with said silicon forming thereby silicon tetrafluoride gas, and removing said silicon tetrafluoride gas.

3,882,041
EUROPIUM-ACTIVATED ALKALINE-EARTH PYROPHOSPHATE PHOSPHORS

Martin Robert Royce, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 26, 1973, Ser. No. 401,030
Int. Cl. C09k 1/36
U.S. Cl. 252—301.4 P **6 Claims**

1. A phosphor whose empirical formula is

$$M^{+2}{}_2P_2O_7{:}aEu^{+2}{:}bR$$

wherein:
M is at least one of calcium, strontium, barium, and magnesium,
a equals 0.001 to 0.100 mole, and
b equals 0.00001 to 0.00020 mole.

3,882,042
ANTIOXIDANT COMPOSITION OF A REARRANGEMENT PRODUCT OF A TETRA-ARYL HYDRAZINE WITH AN ALKALI METAL COMPOUND

Brian McGuigan, Timperley; Richard John Dellar, Bolton, and William David Phillips, Poynton, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,454
Claims priority, application United Kingdom, Oct. 16, 1971, 48237/71
Int. Cl. B01j 1/16
U.S. Cl. 252—400 R **8 Claims**

1. An antioxidant composition which is a rearrangement product obtained by a process which comprises heating at a temperature of from 80° C to 300° C in a non-oxidising atmosphere, a compound of the formula



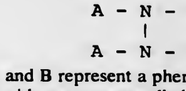
in which A and B represent a phenyl group or a phenyl group substituted with one or more alkyl groups having one to 12 carbon atoms or a phenyl group substituted with one or more α, α-dimethyl benzyl groups, and combining the rearrangement product with from 0.01 to 1% of an alkali metal compound.

3,882,043
ANTIOXIDANT COMPOSITION OF A REARRANGEMENT PRODUCT OF A TETRA-ARYL HYDRAZINE AND A THIAZINE OR AMINE

Brian McGuigan, Timperley; Richard John Dellar, Bolton, and William David Phillips, Poynton, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,452
Claims priority, application United Kingdom, Oct. 16, 1971, 48239/71
Int. Cl. B01j 1/16
U.S. Cl. 252—402 **5 Claims**

1. An antioxidant composition obtained by a process which comprises heating at a temperature of from 80°C to 300°C in a non-oxidising atmosphere, a compound of the formula



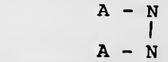
in which A and B represent a phenyl group or phenyl groups substituted with one or more alkyl groups containing 1 to 12 carbon atoms or phenyl groups substituted with one or more α,α-dimethyl benzyl groups, in the presence of a radical acceptor selected from thiazines and amines in the ratio of from 0.25:1 to 2:1 of the radical acceptor to the above compound.

3,882,044
ANTIOXIDANT COMPOSITION OF A REARRANGEMENT PRODUCT OF A TETRA-ARYL HYDRAZINE AND SULFUR OR A SULFURIZING AGENT

Brian McGuigan, Timperley; Richard John Dellar, Bolton, and William David Phillips, Poynton, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,453
Claims priority, application United Kingdom, Oct. 16, 1971, 48238/71
Int. Cl. B01j 1/16
U.S. Cl. 252—402 **5 Claims**

1. An antioxidant composition obtained by a process which comprises heating at a temperature of from 80°C to 300°C in a non-oxidising atmosphere, a compound of the formula



in which A and B represent a phenyl group, a phenyl group substituted with one or more alkyl groups having 1 to 12 carbon atoms or with one or more α, α-dimethyl benzyl groups, and then heating the rearrangement product with 0.1 to 4 moles of sulphur or a sulphurising agent per mole of rearrangement product.

3,882,045
CATALYST COMPOSITION AND PRODUCTION OF 2,2-ICHLOROPROPIONIC ACID THEREWITH

Mike Mehdi Fooladi, Apt. 4-B, Oakmont Manor Apts., Vicksburg, Miss. 39180

Filed Feb. 28, 1974, Ser. No. 446,745
Int. Cl. B01j 11/74, 11/78
U.S. Cl. 252—429 R **8 Claims**

1. A catalyst composition consisting essentially of a mixture of elemental iodine and at least one compound selected from the group consisting of a phosphorus halide and bis (dimethyl thio carbamoyl) disulfide wherein the catalyst may consist of 70 to 75% iodine and 20 to 25% of bis (dimethyl thio carbamoyl) disulfide or it may consist of one part of iodine and either from about 5 to about 100 parts phosphorus halide or a mixture of from 0.20 to 0.8 parts bis (dimethyl thio carbamoyl) disulfide and from about 5 to about 100 parts phosphorus halide.

3,882,046
CATALYST FOR POLYMERIZATION AND COPOLYMERIZATION OF OLEFINES AND A METHOD FOR PREPARING SAME

Anatoly Dmitrievich Pomogailo, ulitsa Pervaya, 33, kv. 15, Moskovskaya Oblast; Urakbai Alimbaevich Mambetov, ulitsa Abaya, 16, kv. 10, Guriev; Dmitry Vladimirovich Sokolsky, prospekt Abaya, 31, kv. 38, Alma-Ata; Alexandr Avraamovich Bolshov, ulitsa Ukrainskaya, 68 kv. 2, Guriev; Moisei Kharitonovich Gluzman, ulitsa Danilevskogo, 20, kv. 40, Kharkov; Gerta Gennadievna Kochurovskaya, ulitsa Bezdonnaya, 2, kv. 2, Kharkov; Evgeny Moiseevich Gluzman, ulitsa Danilevskogo, 20, kv. 40, Kharkov; Petr Evgenievich Matkovsky, ulitsa Pervaya, 16, kv. 26, Moskovskaya Oblast; Galina Albertovna Beikhold, Noginsky raion, p/o Chernogolovka, Obschezhitie, Moskovskaya Oblast; Irina Ivanovna Afanasieva, ulitsa Abaya, 7, kv. 10, Guriev; Mikhail Ivanovich Burymchenko, ulitsa 80/1, kv. 35, Odessa, and Esengeldy Baishiganov, ulitsa Abaya, 9, kv. 14, Guriev, all of U.S.S.R.

Filed Jan. 3, 1973, Ser. No. 320,710
Int. Cl. B01j *11/84*
U.S. Cl. 252—429 C **13 Claims**

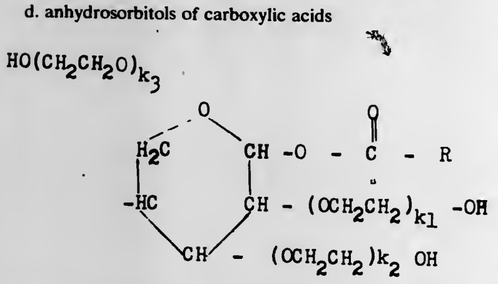
1. A catalyst for polymerization and copolymerization of olefins which is a binary system consisting of a complex compound having the general formula (D—O—MX_{n-1}), mMX_n, formed by the interaction between MX_n and D, where M is a metal of variable valency belonging to Groups IVA–VA of the periodic system, X is a halogen or an oxyhalogen, n is the number characterizing the valency of the M, m is a whole number from 1 to 50, and D is a modifying ligand of the electron-donor type selected from the group consisting of

a. polyglycolic ethers of monofunctional alcohols R—$(OCH_2CH_2)_k$—OH, where R is C_6H_{13}—C_9H_{19} and k is 3—9;

b. polyglycolic ethers of polyfunctional alcohols (R—$COOCH_2)_2$ C $[CH_2\ (OCH_2CH_2)_k$—$OH]_2$ where R is C_4H_9—C_6H_{13} and k is 2.5–29

c. polyglycolic esters of carboxylic acids R—CO $(OCH_2CH_2)_k$ OH, where R is $C_{11}H_{23}$—$C_{17}H_{35}$ and k = 10–160

d. anhydrosorbitols of carboxylic acids



where R = $C_{11}H_{23} - C_{17}H_{35}$; $k_1+k_2+k_3$ = 20–85, in combination with an aluminum-organic compound having the general formula AlR_pY_{3-p} where R is a lower alkyl or isoalkyl, Y is chlorine or hydrogen and p is from 1 to 3.

3,882,047
OXIDATION CATALYST COMPOSITION OF UNSATURATED CARBOXYLIC ACID

Akihiko Niina; Kiyomori Qura, and Kuniyoshi Tashiro, all of Takaoka, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Division of Ser. No. 309,962, Nov. 28, 1972, Pat. No. 3,795,703. This application Aug. 27, 1973, Ser. No. 391,668
Claims priority, application Japan, Nov. 30, 1971, 46-95949
Int. Cl. B01j *11/82*
U.S. Cl. 252—435 **4 Claims**

1. An oxidation catalyst composition for use in the vapor phase catalytic oxidation of unsaturated aldehydes selected from the group consisting of acrolein and methacrolein to a corresponding unsaturated carboxylic acid which consists essentially of a catalytic oxide of molybdenum, phosphorus, at least one element selected from the group consisting of thallium, rubidium, cesium, and potassium, and at least one element selected from the group consisting of chromium, silicon, aluminium, germanium and titanium, the catalytic oxide having the following formula

$$Mo_aP_bQ_cR_dO_e$$

wherein Q is at least one element selected from the group consisting of Tl, Rb, Cs and K; R is at least one element selected from the group consisting of Cr, Si, Al, Ge and Ti; and a, b, c, d and e each represent the number of atoms of each element; the atomic ratio of a:b:c:d is 1:1–0.01:1–0.01:2–0.01; and e is the number of oxygen atoms determined by the valence requirement of the other elements present.

3,882,048
SUPPORTED VANADIUM-PALLADIUM-CONTAINING CATALYST

Hermann Thelen; Kurt Halcour, both of Krefeld-Bockum; Wulf Schwerdtel, Leverkusen, and Wolfgang Swodenk, Odenthal-Globusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 4, 1973, Ser. No. 321,111
Claims priority, application Germany, Mar. 23, 1972, 2214056; Sept. 9, 1972, 2244401
Int. Cl. B01j *11/12*
U.S. Cl. 252—464 **4 Claims**

1. Supported catalyst comprising from about 0.1 to about 10 percent by weight of palladium and from about 0.1 to about 5 percent by weight of vanadium or a vanadium compound selected from the group consisting of inorganic vanadium salt and vanadium oxide supported on an alumina at least 20 percent of which has been converted into lithium-aluminum spinel.

3,882,049
CATALYST FOR HYDROTREATING PETROLEUM HYDROCARBON OILS AND CATALYST EMPLOYED THEREIN

Ralph J. Bertolacini, Chesterton; Paul Donald Hopkins, and Roland L. Menzl, both of Hammond, all of Ind., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 183,615, Aug. 24, 1971, abandoned. This application June 12, 1973, Ser. No. 369,402
Int. Cl. B01j *11/08*
U.S. Cl. 252—466 PT **4 Claims**

1. An improved catalytic composition for the hydrotreating of a petroleum hydrocarbon to produce a colorless mineral oil, which catalytic composition consists essentially of a Group VIII noble metal deposited upon a large-pore-diameter alumina having a surface area of about 200 square meters per gram to about 500 square meters per gram and an average pore diameter of about 120 A to about 200 A.

3,882,050
METHOD OF DEPOSITING A NOBLE METAL ON A SURFACE OF A NICKEL SUPPORT

Leonard R. Niebylski, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 211,730, Dec. 23, 1971, abandoned. This application July 24, 1973, Ser. No. 382,069
Int. Cl. B01j *11/12, 11/22*
U.S. Cl. 252—472 **1 Claim**

1. A method of depositing a noble metal on a surface of a nickel support, said method comprising contacting said surface of said nickel support with an aqueous solution of a palladium salt having a pH less than 7 until palladium deposition on said surface has substantially ceased;

subsequently contacting the surface thereby produced with nitric acid until said surface is activated, and thereafter

contacting the activated surface thereby produced with an aqueous solution of palladium salt, whereby additional palladium is deposited on said surface.

3,882,051
LIQUID DETERGENT COMPOSITION

Kenneth R. Hansen, Staten Island, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 90,152, Nov. 16, 1970, Pat. No. 3,723,357. This application July 12, 1972, Ser. No. 271,195
Int. Cl. C11d *3/26*
U.S. Cl. 252—545 **4 Claims**

1. A liquid detergent composition having enhanced foam stability which consists essentially of (I) 5 percent to 35 percent by weight of a water-soluble foaming detergent selected from the group consisting of N-alkyl amino carboxylates having the formula R—$N(H)C_2H_4COOM$, N-alkyl imino dicarboxylates having the formula $RN(C_2H_4COOM)_2$, alkyl sulfates having the formula $R(OC_2H_4)_mOSO_3M$, N-alkyl sulfobetaines having the formula R—$N(R_1)(R_2)(CH_2)_nSO_3$, C alkyl imidazolines and alkyl betaine detergents having the formula Z(N)-$R_1R_2CH_2CO_2$ wherein R is an alkyl group of 10 to 16 carbon atoms, m is 0 to 5, R_1 and R_2 are C_1–C_3 alkyl or C_1–C_2 hydroxyalkyl, n is 1–3, Z is selected from the group consisting of R, $RC(O)NC_2H_4$ or $RC(O)NC_3H_6$, and M is selected from the group consisting of sodium, potassium, ammonium, and mono, di, and triethanolammonium; (II) 3 percent to 20 percent by weight of a water-soluble drainage-time extender having the formula R—$CH(OH)CH_2N(CH_2CH_2OH)_2$ wherein R is an alkyl group having from 8 to 16 carbon atoms; the sum of (I) and (II) being 10 per cent to 40 per cent by weight of the composition; the ratio of said detergent to drainage-time extender being in the range of from 9:1 to 1:1 and sufficient to improve foam stability; and (III) an aqueous vehicle.

3,882,052
ON-SITE GENERATION OF NON-FROTH POLYURETHANE FOAM

Robert J. Raynor, North Branford, and Wade T. Petroskey, West Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 17, 1973, Ser. No. 425,597
Int. Cl. C08g *22/46*
U.S. Cl. 260—2.5 BD **18 Claims**

1. In a process for producing, by means of a portable foaming apparatus having a static mixer, a polyurethane foam from a reaction mixture comprised of a polyol, an organic isocyanate, a foaming agent and a reaction catalyst, the improvement of producing non-froth foam by blending into said mixture a sufficient proportion of an inert gas to bring about nucleation of said mixture, said inert gas having an atmospheric boiling point below about −80°C.

3,882,053
ANION EXCHANGE RESINS

Herbert Corte, Opladen; Harold Heller, Cologne, and Otto Netz, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft

Continuation of Ser. No. 313,534, Dec. 8, 1972, abandoned. This application July 1, 1974, Ser. No. 484,393
Claims priority, application Germany, Dec. 11, 1971, 2151628; Apr. 1, 1972, 2215956
Int. Cl. C08f *27/08*
U.S. Cl. 260—2.1 E **15 Claims**

1. A process for the preparation of a synthetic resin which has anion-exchanging properties which comprises condensing a crosslinked copolymer which contains aromatic nuclei and is a copolymer of at least one monovinyl compound and at least one polyvinyl compound, with at least one bis-(dicarbonimidomethyl)-ether in the presence of a catalytic amount of a Friedel-Crafts catalyst and hydrolyzing resulting condensation product.

3,882,054
METHOD FOR MANUFACTURING FLEXIBLE, VAPOR-PERMEABLE, HYDROLYSIS-STABLE POLYURETHANE ELASTOMERS AND THE PRODUCTS PRODUCED THEREFROM

Fritz Hostettler, Freehold, N.J., assignor to IPRC Corporation, Farmington, N.J.

Filed Feb. 6, 1973, Ser. No. 330,102
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AY **6 Claims**

1. A method for manufacturing flexible, vapor-permeable, hydrolysis-stable polyurethane elastomers which comprises:

a. distributing at least one finely-divided non-hygroscopic solid pore-forming material substantially uniformly throughout a hydrolysis-stable polyurethane forming reaction mixture, the pore-forming material being insoluble or only sparingly soluble in the polyurethane forming reaction mixture and inert with respect thereto and the polyurethane forming reaction mixture providing a polymerizate which is substantially free from solvent therefor;

b. reacting the polyurethane forming reaction mixture in a mold to provide a polymerizate of desired form, the polymerizate being unassociated with any substrate or support therefor when removed from the mold; and

c. leaching the polymerizate with a substance which dissolves or decomposes the pore-forming material but does not dissolve or significantly affect the polymerizate to provide a flexible, vapor-permeable, hydrolysis-stable polyurethane elastomer.

3,882,055
PROCESS OF PRODUCING FOAMS FROM UNSATURATED POLYESTERS

Gotz Koerner, Essen, and Gerd Rossmy, Essen-Werden, both of Germany, assignors to Th. Goldschmidt AG

Continuation-in-part of Ser. No. 201,103, Nov. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 836,987, June 26, 1969, Pat. No. 3,634,344. This application Apr. 4, 1973, Ser. No. 347,875
Claims priority, application France, July 4, 1968, 157859
Int. Cl. C08g *22/44, 53/10*
U.S. Cl. 260—2.5 N **8 Claims**

1. In a process of producing polyester foams on the basis of hardenable unsaturated polyesters in the presence of surface active foam stabilizers, the improvement which comprises using as foam stabilizer a polyoxyalkylene-polysiloxane mixed block polymer, said block polymer being characterized in that a. the polyoxyalkylene blocks of the polymer have an average mole weight of about between 500 to 3,000 and essentially consist of 40 to 100 percent by weight of ethylene oxide, the remainder being propylene oxide and/or higher alkylene oxides, with the proviso that when the proportion of ethylene oxide is 40–60 percent by weight, the molecular weight of the polyoxyalkylene blocks is > 2000, and

b. the polysiloxane blocks of the polymer contain on the average 3 to 35 silicon atoms of which 2 through 30 are present in the form of dimethylsiloxy groups while the remaining silicon atoms form trifunctional siloxy units.

3,882,056
SLIDE SWITCH ASSEMBLY WITH FIXED TERMINAL ARRAY PREVENTING GENERATION OF POP NOISES

Hiroyuki Nakasone, Tokyo, Japan, assignor to Toko Incorporated, Tokyo, Japan

Filed Nov. 8, 1973, Ser. No. 414,168
Claims priority, application Japan, Nov. 11, 1972, 47-113227
Int. Cl. H01h *15/08*
U.S. Cl. 200—16 C **14 Claims**

1. In a slide switch of the class comprising a hollow elongated casing, three juxtaposed main terminal members secured on the inner wall of said casing, a slide member adapted

to be reciprocated in said casing, and a first contact member carried by said slide member whereby the switching of a pair of circuits is effected by moving said slide member so as to cause said first contact member to bridge the center main terminal member and either one of the outer main terminal members, the improvement which comprises a pair of transition terminal members secured on the inner wall of said casing and a second contact member mounted on said slide member to cooperate with said transition terminal members, said three



main terminal members, said transition terminal members and said first and second contact members being positioned with respect to each other such that said transition terminal members and said second contact member cooperating therewith maintain a circuit in a closed state from an instant immediately prior to the disengagement of said first contact member from one of the outer main terminal members to an instant immediately after the engagement of said first contact member with the other outer main terminal member.

3,882,057

ADHESIVE COMPOSITION CONTAINING AS A BINDER A GRAFT POLYMER ON A WATER-SOLUBLE CELLULOSE ETHER OF AN UNSATURATED CARBOXYLIC ACID, ALKYL ACRYLATE AND VINYL ACETATE; AND PROCESS FOR PREPARING THE SAME

Sven Lindenfors, Domsjoverken, and Nils Johan Lundberg, Ornskoldsvik, both of Sweden, assignors to Mo och Domsjo, Ornskoldsvik, Sweden

Filed Aug. 29, 1973, Ser. No. 392,835

Claims priority, application Sweden, Sept. 14, 1972, 11878/72

Int. Cl. C08b *21/32*

U.S. Cl. 260—17 A **11 Claims**

1. An adhesive composition comprising as a binder a graft polymer of

a. an unsaturated carboxylic acid having the formula

$$R' - CH = \underset{\displaystyle R''}{\overset{|}{C}} - COOH$$

where R′ and R″ independently of each other are selected from the group consisting of hydrogen and alkyl groups having from one to two carbon atoms;

b. an alkyl acrylate having from one to eight carbon atoms in the alkyl; and

c. vinyl acetate;

graft polymerized on a graft polymer backbone of a water-soluble ether; the amount of unsaturated carboxylic acid being within the range from about 0.2 to 5 parts per part of cellulose ether; the amount of alkyl acrylate being within the range from about 0.2 to 5 parts per part of cellulose ether; and the amount of vinyl acetate being within the range from 0.2 to 5 parts per part of cellulose ether.

3,882,058

PHOTODEGRADABLE POLYMERIC COMPOSITIONS CONTAINING A MIXTURE OF AN IRON SALT AND SULFUR OR A DIALKYL POLYSULFIDE

Geneviève Le Brasseur, nee Nicoud, Bully-les-Mines, and Adrien Nicco, Bethune, both of France, assignors to Ethylene Plastique, Courbevoie, France

Filed Sept. 14, 1973, Ser. No. 397,272

Claims priority, application France, Sept. 20, 1972, 72.33361

Int. Cl. C08f *45/36, 45/46*

U.S. Cl. 260—23 H **3 Claims**

1. A photodegradable composition which comprises an admixture of (i) a polymer of a monoethylenically unsaturated hydrocarbon monomer, (ii) 10 to 200 mg per kg of the polymer of at least one iron salt selected from the group consisting of ferric naphthenate, a ferric salt of an aliphatic carboxylic acid of 2 to 22 carbon atoms and ferric salicylate and (iii) 10 to 1,000 mg of an additive selected from the group consisting of sulphur and dialkyl polysulphides per kg of the polymer.

3,882,059

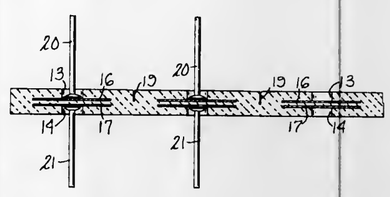
METHOD OF MAKING CERAMIC CAPACITOR

Gilbert J. Elderbaum, Clinton, Conn., assignor to Technical Ceramics, Inc., Clinton, Conn.

Filed May 11, 1973, Ser. No. 359,229

Int. Cl. H01g *13/00*

U.S. Cl. 29—25.42 **14 Claims**



1. A method of making single layer capacitors in multiple which comprises providing a first thin flat sheet of ceramic greenware, defining a multiplicity of conductive patterns on either side thereof in alignment to form a multiplicity of opposed individual capacitors, providing second and third sheets, laminating said second and third sheets to either side of said first sheet, thereafter scoring said lamination to define individual capacitors between but not extending to said score marks, firing said laminations to produce a cured ceramic assembly of a multiplicity of single layer capacitors, and thereafter breaking capacitors from said assembly along the score marks.

3,882,060

OIL RESISTANT RUBBER COMPOSITION

Raymond L. Guzy, Morton Grove, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 14, 1973, Ser. No. 415,572

Int. Cl. C08g *51/04, 51/08;* **E21b** *17/14*

U.S. Cl. 260—37 AL **3 Claims**

1. An epichlorohydrin homopolymer rubber composition capable of being cured and then capable of withstanding 4,000 psi pressure at 275°F. for at least 7 days with less than about 5% volume swell from brine exposure and less than about 5% volume change from oil exposure, said composition comprised of about 100 parts by weight of an epichlorohydrin homopolymer rubber having a molecular weight in excess of 200,000; about 1–2 parts by weight of nickel dibutyl dithiocarbamate; about 10–15 parts by weight of basic lead phosphite; about 1 part by weight phenothiazine; about 4–6 parts by weight of an aliphatic dicarboxylic acid; about 0.125 to 0.2 parts by weight of a dimethyl dithiocarbamate selected from

the group consisting of copper dimethyl dithiocarbamate and cadmium diethyl dithiocarbamate; about 1–2 parts by weight of an imidazole; and from about 10 to about 50 parts by weight of a filler selected from the group consisting of silica and carbon black.

3,882,061

METHOD OF MANUFACTURING AN ARTIFICIAL PAPER

Walter Bontinck, Engelhoekstraat, 30, 9852 Saint Martens-Leerne, and Willy De Coster, Mageleinstraat, 15, 9000 Gent, both of Belgium, assignors to UCB, Societe Anonyme

Division of Ser. No. 158,060, June 29, 1971. This application Dec. 27, 1973, Ser. No. 428,743

Claims priority, application Belgium, July 3, 1970, 752917

Int. Cl. C08f *29/12, 45/04*

U.S. Cl. 260—23.7 M **8 Claims**

1. A composition for the manufacture of artificial paper requiring neither calendering nor biorientation, which comprises

40 to 80 percent by weight of at least one rigid polyolefin (A) selected from the group consisting of homopolymers and copolymers of ethylene, propylene, and butylene, and also mixtures thereof, and having a melt index of at most 1 dg./min.;

5 to 30 percent by weight of at least one polymer (B) which is incompatible with the rigid polyolefin (A) and which when extruded by itself produces a brittle film which has a melt index lower than 10 dg./min., the polymer (B) being selected from the group consisting of homopolymers and copolymers containing a preponderant amount of styrene, an amount within the range of 20 to 25 percent by weight of a macromolecular material (C), said amount being sufficient to produce compatibility between (A) and (B), selected from the group consisting of copolymers of at least one monomer selected from the group consisting of ethylene, propylene, and butylene, and at least one monomer selected from the group consisting of isobutylene, butadiene, and isoprene, and said macromolecular material having a melt index of at most 2 dg./min.;

5 to 45 percent by weight of an inorganic filler (D) having a granulometry lower than 50 microns;

0 to 10 percent by weight of adjuvants (E) selected from the group consisting of antioxidizing agents, thermal stabilizers, optical bleaching agents, pigments, coloring materials, antistatic agents, and lubricants.

3,882,062

NOVEL PROCESSING AIDS FOR NATURAL AND SYNTHETIC RUBBER COMPOUNDS

Erwin Aron, Clifton, N.J., assignor to Technical Processing, Inc., Paterson, N.J.

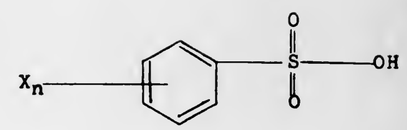
Continuation-in-part of Ser. No. 421,689, Dec. 4, 1973, which is a continuation-in-part of Ser. No. 411,975, Nov. 1, 1973, abandoned. This application Jan. 3, 1974, Ser. No. 430,566

Int. Cl. C08c *11/72*

U.S. Cl. 260—23.7 M **17 Claims**

1. An improved rubber processing aid comprising:

a. an alkali or amine salt of an aromatic sulfonic acid having the general formula:



wherein X can be either hydrogen or branched or straight chain alkyl group having from 4 to 14 carbon atoms, and n has a value of from 1 to 5; and

b. a long chain fatty acid having a maximum of about 22 carbon atoms in the chain, wherein the amount by weight of said fatty acid present is at least equal to the amount by weight of said sulfonic acid salt, the improvement wherein said processing aid includes a thioether in an amount sufficient to catalyze the peptizing action of said salt.

3,882,063

METHOD OF PRODUCING UNIFORM FIBEROUS WEBS BY DRAWING PARTLY FUSED PARTICLES

Lam H. Gouw, Delft, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 184,561, Sept. 28, 1971, abandoned. This application June 4, 1973, Ser. No. 367,019

Claims priority, application United Kingdom, Oct. 1, 1970, 46766/70

Int. Cl. B29f *5/00;* **B29c** *17/02*

U.S. Cl. 264—24 **11 Claims**

1. The process for the manufacture of uniform fiberous webs which essentially consists of;

a. depositing particles of thermoplastic resin on a surface which is heated to a temperature and for a time sufficient to melt the particles to form a discontinuous sheet of partly fused particles, and

b. drawing the sheet of partly fused particles to spontaneously convert to a uniform fiberous web.

3,882,064

EPOXY RESIN POWDER COATING COMPOSITION

Walter Pregmon, Broomall, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

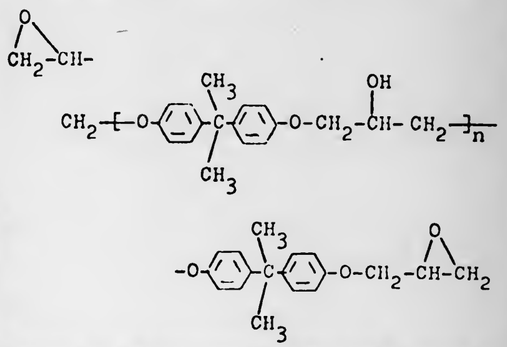
Filed Dec. 27, 1973, Ser. No. 428,724

Int. Cl. C08g *51/52*

U.S. Cl. 260—28 **5 Claims**

1. A powder coating composition comprising finely divided particles having a particle size of 1-100 microns; wherein the powder particles are an intimately mixed blend of a binder consisting essentially of

A. 72.6–90.0 percent by weight of an epoxy resin of the formula



wherein n is a positive integer sufficiently large to provide a Gardner Holdt Viscosity of R-V measured at 40 percent poly-

mer solids in diethylene glycol n-butyl ether at 25°C. and having an epoxide equivalent of 875–975;

B. 5.6–20.0 percent by weight of a second epoxy resin of said formula wherein n is a positive integer sufficiently large to provide a Gardner Holdt Viscosity of K-P measured as above and having an epoxide equivalent of 660–810;

C. 0.3–1.0 percent by weight of polyethylene wax having a molecular weight of 1000–3000;

D. 0.1–0.4 percent by weight of a catalyst of tri(dimethyl aminoethyl)phenol; and

E. 4.0–6.0 percent by weight of dicyandiamide.

3,882,065

HOT MELT ADHESIVES OF IMPROVED MELT VISCOSITY STABILITY

Austin Matthew Snow, Jr., Wilmington, Del., and Ronald Earl Uschold, Beaumont, Tex., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 346,832, April 2, 1973, abandoned. This application June 27, 1973, Ser. No. 373,914

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 B **17 Claims**

1. A hot melt adhesive composition comprising, in parts by weight, about:

1. 100 parts of petroleum wax;
2. 40 to 200 parts of a tackifying resin;
3. 15 to 100 parts of at least one of
   a. an elastomeric linear EPDM copolymer,
   b. an elastomeric branched copolymer of ethylene, at least one C_3 to C_{18} alpha-olefin, and at least one direactive nonconjugated diene, and
   c. an elastomeric branched copolymer of ethylene, at least one C_3 to C_{18} alpha-olefin, at least one direactive nonconjugated diene, and at least one monoreactive nonconjugated diene, said copolymer having a Mooney viscosity of about 10 to 70;
4. at least 2.2 parts of a boric additive per 100 parts of elastomeric copolymer; and
5. at least 2.2 parts of phenolic antioxidant per 100 parts of elastomeric copolymer;

said boric additive being at least one of boric acid, and boric anhydride.

3,882,066

ADHESIVE COMPOSITION COMPRISING COAL-TAR PITCH AND OLEFINIC COPOLYMERS

Wayne E. Smith, Jr., Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 714,456, March 20, 1968, abandoned. This application Apr. 30, 1971, Ser. No. 139,196

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 AS **12 Claims**

1. A composition comprising in percent by weight between about 20 and 50 percent of coal-tar pitch and between about 80 and 50 percent of a copolymer consisting essentially of ethylene and an ethylenically-unsaturated carboxylic acid containing from 3 to 8 carbon atoms, said resin having an acid content of between about 0.1 and about 75 percent by weight.

3,882,067

FLOOR POLISH

Robert G. Petrella, Glenolden, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 17, 1971, Ser. No. 144,254

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 R **12 Claims**

1. A floor polish composition comprising a crosslinkable modified acrylic copolymer, a wax, a leveling agent, a plasticizer, a coalescent and a fluorochemical, wherein the fluorochemical is selected from the group consisting of an amine salt of a fluorinated cyclic hexyl carbinol reacted with phosphorus pentoxide and an amine salt of undecafluorocyclohexane carbinol acrylate-methacrylic acid copolymer.

3,882,068

SIZING COMPOSITION FOR GLASS FIBERS OF POLYPROPYLENE EMULSION AND SILANE COUPLING AGENT

Paul Russel Swartz, Perrysburg, Ohio, assignor to Johns-Manville Corporation, Denver, Colo.

Filed Dec. 1, 1972, Ser. No. 311,065

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 XA **1 Claim**

1. A sizing composition for glass fibers used for reinforcing thermoplastic resin systems which consists of, in weight percent based on the composition:

2 to 30 percent polypropylene emulsion film former having a solids content of about 30 percent;

0.01 to 2.5 percent silane coupling agent; and the balance being water.

3,882,069

STABILIZED DISPERSIONS OF CHLOROPRENE POLYMERS

Edward M. Banta, Baytown, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Aug. 21, 1972, Ser. No. 282,429

Int. Cl. C08d *7/10, 7/18*; C07c *141/00*

U.S. Cl. 260—29.7 SQ **7 Claims**

1. A stable aqueous dispersion of a polymer of chloro-2-butadiene-1,3 comprising said polymer and a stabilizing agent selected from the group consisting of ammonium salts of alkyl ethoxylate sulfates and sodium and ammonium salts of sulfated alkyl phenoxy poly (ethyleneoxy) ethanol.

3,882,070

PERSULFATE STABILIZED LATICES

Gary W. Ceska, Coraopolis, Pa., assignor to Arco Polymers, Inc., Glenolden, Pa.

Filed May 23, 1973, Ser. No. 363,252

Int. Cl. C08d *1/22*; C08g *53/18*

U.S. Cl. 260—29.7 T **4 Claims**

1. A process for preparing surfactant-free latex from a total monomeric mixture comprising 30–80 parts per 100 parts of mixture of a conjugated diolefin, 20–70 parts per 100 parts of mixture of aryl vinyl monomer, and 0–10 parts per 100 parts of mixture of one or more monomers copolymerizable therewith, said process comprising:

a. forming an aqueous acidic emulsion of about 30–50 percent by weight of the monomeric mixture in water containing 0.4 to 1.5 parts of a persulfate polymerization initiator and 0.5 to 2.0 parts of N-methylolacrylamide per 100 parts of monomer; said water being used in an amount such that the total solids content of the resulting latex will be 20–30 percent;

b. polymerizing said aqueous acidic emulsion at a temperature of 50°–100° C. to essentially complete conversion to form a latex;

c. adding to said latex the remaining 50–70 percent by weight portion of the monomer mixture, an additional 0.4 to 1.5 parts of persulfate initiator, and 0.5 – 2.0 parts of N-methylolacrylamide per 100 parts of monomer; and

d. polymerizing the resulting mixture in aqueous emulsion at a temperature of 50°–100° C. to complete conversion to form a latex having from 35–55 percent solids, said latex being stable to mechanical shear and multivalent cations at pH 2.0 – 6.0.

3,882,071

RAPID SETTING NON-ELASTOMERIC POLYURETHANE COMPOSITIONS PREPARED IN THE PRESENCE OF AN ORGANIC PHOSPHATE, PHOSPHITE OR PHOSPHONATE

Franciszek Olstowski, Freeport, and Donald B. Parrish, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 366,835, June 4, 1973, which is a continuation-in-part of Ser. No. 179,149, Sept. 9, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,464

Int. Cl. C08g *22/04*

U.S. Cl. 260—30.6 R **31 Claims**

1. A non-elastomeric, non-cellular, solid polymer having a density of at least about 1 gram/cc and an elongation value of less than about 80 percent resulting from admixture of the components of a composition comprising:

A. a polyether polyol having from 3 to about 8 hydroxyl groups and a hydroxyl equivalent weight between about 75 and about 230,

B. an organic polyisocyanate,

C. a liquid modifier compound having a boiling point above about 150°C selected from the group consisting of organic phosphates, organic phosphites and organic phosphonates and mixtures thereof, and

D. a non-amine-containing catalyst for urethane formation, which is an organo metal compound;

wherein components (A) and (B) are present in amounts so as to provide an NCO:OH ratio of from about 0.8:1 to about 2:1, component (C) is present in quantities of from about 20 to about 50 percent with the proviso that when component (B) is an NCO-containing prepolymer containing less than aobut 40 percent NCO groups by weight, component (C) is present in quantities of from about 10 to about 50 percent by weight of the sum of components (A), (B) and (C); and component (D) is present in quantities of from about 0.01 to about 10 percent by weight of the sum of the weights of components (A), (B) and (C); and wherein said polymer can be demolded within less than about 5 minutes, without the application of an external source of heat, after admixture of said composition.

3,882,072

RAPID SETTING NON-ELASTOMERIC POLYURETHANE COMPOSITIONS PREPARED IN THE PRESENCE OF NON-HYDROXYL CONTAINING POLYOXYALKYLENE COMPOUNDS

Franciszek Olstowski, Freeport, and Donald B. Parrish, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 366,385, June 4, 1973, which is a continuation-in-part of Ser. No. 179,149, Sept. 9, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,369

Int. Cl. C08g *22/04*

U.S. Cl. 260—33.2 R **19 Claims**

1. A non-elastomeric, non-cellular solid polymer having a density of at least about 1 gram/cc and a percent elongation of less than about 80, resulting from admixture of the components of a composition comprising:

A. a polyether polyol having from 3 to about 8 hydroxyl groups and a hydroxyl equivalent weight between about 75 and about 230,

B. an organic polyisocyanate,

C. a liquid modifier compound having a boiling point above about 150°C selected from the group consisting of non-hydroxyl-containing polyoxyalkylene compounds and mixtures thereof, and

D. a non-amine-containing catalyst for urethane formation, which is an organo metal compound;

wherein components (A) and (B) are present in amounts so as to provide an NCO:OH ratio of from about 0.8:1 to about 2:1, component (C) is present in quantities of from about 20 to about 50% with the proviso that when component (B) is an NCO-containing prepolymer containing less than about 40% NCO by weight, component (C) is present in quantities of from about 10% to about 50% by weight of the sum of components (A), (B) and (C); and component (D) is present in quantities of from about 0.2 to about 10 percent by weight of the sum of the weights of components (A), (B) and (C); and wherein said polymer can be demolded within less than about 5 minutes, without the application of an external source of heat, after admixture of said composition.

3,882,073

THERMOSETTING COMPOSITIONS CONTAINING POLY(ARYLACETYLENES)

Lawrence C. Cessna, Jr., Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 18, 1972, Ser. No. 316,332

Int. Cl. C08f *45/28, 45/44, 45/48*

U.S. Cl. 260—33.6 UA **15 Claims**

1. A thermosetting composition comprising a blend of (1) a prepolymer of at least one polyacetylenically substituted aromatic compound, said prepolymer having a number average molecular weight from about 900 to about 12,000, a ratio of aromatic protons to olefinic protons greater than about 2.4 and containing from about 5 to about 20% acetylenic groups by weight of the prepolymer, with (2) from about 2 to about 200%, by weight of the prepolymer, of at least one aromatic organic compound containing at least two six-membered aromatic rings, said rings being condensed with each other or coupled with each other directly or through a methylene, dimethylmethylene, ethylene or vinylene group, said compound or mixtures thereof containing no crystalline organic phase at 220°C., having a viscosity of less than 20 centipoises at 220°C. and containing no more than 5% of material volatile at 240°C.

3,882,074

PROCESS FOR THE PREPARATION OF POLYVINYL CHLORIDE MOULDING COMPOSITIONS

Antoine Di Settembrini, 4 Avenue Alfred de Vingy, Soisy-sous-Montmorency, France

Filed July 19, 1972, Ser. No. 273,124

Claims priority, application France, July 22, 1971, 71.26905

Int. Cl. C08f *29/24, 47/00*; C08d *9/08*

U.S. Cl. 260—34.2 **6 Claims**

1. Process for preparing an improved powdered polyvinyl chloride (PVC) composition capable of being shaped on heating, said composition comprising a PVC base, and additives including at least one anti-shock additive, lubricants and stabilizers, said process comprising:

a. pre-mixing in the dry stage said anti-shock additive, in the form of a powder, with said lubricant and stabilizer additives at a temperature in the range of 40° to 120°C, to form a premixture,

b. cooling the dry pre-mixture obtained in step (a),

c. mixing, in the cold state, said PVC base, in the form of a powder, with the cooled mixture obtained in step (b).

3,882,075

PREPARATION OF POLYMERS CONTAINING ADDITIVES BY INTERFACIAL POLYCONDENSATION

Rudolf August Victor Raff, Pullman, Wash., assignor to Research Corporation, New York, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,878

Int. Cl. C08g *69/04, 63/18, 18/08*

U.S. Cl. 260—37 N **12 Claims**

1. In a method of forming a polymer by condensation at the interface of plural immiscible solvent solutions, each containing at least one monomer requisite for forming the polymer, the improvement comprising uniformly incorporating a compatible additive in said polymer by providing the reactants necessary to form the additive under the polymerization conditions separately in the monomer solutions whereby the

additive is formed in situ with and uniformly dispersed in the polymer at the interface.

3,882,076

METHOD FOR IMPROVING FLAME RETARDANCY OF POLYAMIDE COMPOSITIONS AND RESULTANT PRODUCT

Theodore Largman, Morris Twp.; Leon J. Schmehl, Lincoln Park, both of N.J., and Herman Stone, Andover, Mass., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 15, 1973, Ser. No. 341,632

Int. Cl. C09k *3/28*

U.S. Cl. 260—37 N **16 Claims**

1. A method of increasing the flame retardancy of a polyamide composition comprising a polycarbonamide having recurring —CONH— groups along the polymer chain and an effective amount of red or black phosphorus as a flame retardant additive which comprises heating said polyamide composition in the presence of molecular oxygen to a temperature of at least about 100°C for at least about 5 days.

3,882,077

PROCESS FOR PREPARING CARBON FIBER-REINFORCED POLYAMIDE RESINS

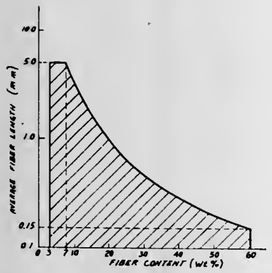
Hitoshi Takita, Tokyo, and Katsuo Take, Otsu, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan and Kureha Chemical Industry Co., Nihonbashi, Japan

Filed Oct. 23, 1973, Ser. No. 408,880

Claims priority, application Japan, Oct. 23, 1972, 47-105324

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 N **4 Claims**



1. A process for preparing a carbon fiber-reinforced polyamide resin which comprises incorporating carbon fibers of about 0.1 to 5mm in average length into the polymerization system of monomeric components capable of forming a polyamide resin prior to or in the course of the polymerization and then accomplishing the polymerization, said carbon fibers being incorporated in an amount of about 3 to 60% by weight of the total weight of the monomeric components and the carbon fibers, and the relationship between the amount of the carbon fibers to be incorporated and the average length of the carbon fibers to fall within the hatched area of FIG. 1 in the accompanying drawings.

3,882,078

FIBER REINFORCED POLYESTER RESIN HAVING A LOW SURFACE PROFILE AND IMPROVED IMPACT STRENGTH

Hideo Kubota, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 13, 1973, Ser. No. 424,574

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **4 Claims**

1. A fiber reinforced molded article formed by heating under pressure a mixture comprising by weight:

25 to 60 parts of an unsaturated polyester formed from a linear aliphatic alpha, beta-unsaturated dicarboxylic acid and/or anhydride having from four to six carbon atoms and a polyhydric alcohol, said polyester having an acid number of from 5 to 40; and

5 to 20 parts of a polymer composition consisting of, by weight, 0 to 50 parts of a thermoplastic polymer having a glass transition temperature above 30° C. and 50 to 100 parts of an ABA type block copolymer having A and B segments with said A segments being repeating mer units of a material which if homopolymerized would produce a rigid thermoplastic polymer having a glass transition temperature above 30° C. and said B segments being repeating mer units of a material which if homopolymerized would produce a flexible elastomeric polymer having a glass transition temperature below 10° C.; and

40 to 60 parts of a monomeric copolymerizable diluent selected from the group consisting of tertiary butyl styrene, and mixtures comprising at least 50% by volume tertiary butyl styrene and the balance of a said mixture being any of styrene, monochlorostyrene, or vinyl toluene, and

50 to 100 parts of a fibrous reinforcement filler; and

100 to 180 parts of a mineral filler, said polyester and said polymer composition being initially uniformly dispersed in said diluent.

3,882,079

METHOD FOR PREPARING PIGMENTED POLYETHYLENE TEREPHTHALATE

Terence E. Winters, Mogadore, and Andrew P. Venditto, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 327,373, Jan. 29, 1973, abandoned. This application Jan. 14, 1974, Ser. No. 432,914

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 P **2 Claims**

1. In a process for incorporating from 0.01 to 3.0 weight percent of a pigment into polymerizing polyethylene terephthalate prepared by reacting terephthalic acid with ethylene glycol under esterification conditions to give an esterification product and then polymerizing the esterification product under conditions of reduced pressure and elevated temperature with the elimination of glycol the improvement which comprises adding said pigment, to said polymerizing esterification product at a point in the polymerization of said esterification product when the reduced pressure ranges from 100 to 0.1 millimeters of mercury pressure and the elevated temperature ranges from 245° to 285° C. and wherein said pigment is added to said polymerizing esterification product in the form of a pigmented polyethylene terephthalate masterbatch said masterbatch being prepared by adding a pigment/ethylene glycol slurry to a transesterification reaction mixture of dimethyl terephthalate and ethylene glycol or the transesterification product thereof and then polymerizing said transesterification reaction product.

3,882,080

SELF-HARDENING COMPOUND, PARTICULARLY FOR DENTAL-MEDICAL APPLICATION

Werner Schmitt; Robert Purrmann, both of Starnberg; Peter Jochum, and Wolf-Dieter Zahler, both of Hechendorf, all of Germany, assignors to Espe Fabrik Pharmazeutischer Preparate GmbH, Seefeld, Oberbay, Germany

Continuation-in-part of Ser. No. 215,139, Jan. 3, 1972, Pat. No. 3,804,794. This application Feb. 26, 1974, Ser. No. 445,827

Claims priority, application Germany, Jan. 15, 1971, 2101939

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.29 **7 Claims**

1. A pre-mixed dental preparation for the preparation of a self-hardening composition when mixed with water consisting

essentially of zinc oxide and a polymer of an unsaturated alpha, beta-dicarboxylic acid selected from the group consisting of homopolymers of unsaturated alpha, beta-dicarboxylic acids of four to five carbon atoms and copolymers of said acids with each other and with less than 10 mol percent of an unsaturated monocarboxylic acid, acrylamide, methacrylic ester or methacrylic amide wherein the weight ratio of zinc oxide to said polymer is 20:1 to 0.6:1.

3,882,081

PROCESS FOR STABILIZING VINYLIDENE CHLORIDE POLYMERS AGAINST METAL-INDUCED DEGRADATION

Alvin W. Baker, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 262,693, June 14, 1972, abandoned. This application Oct. 3, 1973, Ser. No. 403,148

Int. Cl. C08f *45/56, 45/58*

U.S. Cl. 260—45.75 V **3 Claims**

1. In the process of stabilizing vinylidene chloride polymer against metal-induced degradation, the improvement consisting of admixing with said vinylidene chloride polymer (1) from about 0.2 to about 2 percent by polymer weight of dibasic lead phosphite and (2) from about 0.2 to about 2 percent by polymer weight of 1,4-benzoquinone.

3,882,082

STABILIZATION OF PROPYLENE POLYMERS

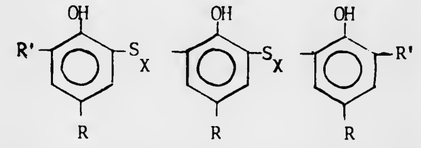
Michael Robin, Colonia, N.J., and Sheldon R. Schulte, Columbus, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed May 8, 1972, Ser. No. 251,165

Int. Cl. C08f *45/58;* **C08g** *51/58*

U.S. Cl. 260—45.95 C **15 Claims**

1. A polymer composition of increased stability against oxidative degradation comprising a propylene polymer having an effective stabilizing amount of compound of the general formula:



wherein x is an integer of from 1 to 2, R′ is tertiary butyl and each R individually is an alkyl radical of 1–4 carbon atoms.

3,882,083

LATENT ADDITION CURABLE ORGANOPOLYSILOXANE COMPOSITIONS

Abe Berger, Schenectady, and Bruce Bertolette Hardman, Mechanicville, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Nov. 21, 1973, Ser. No. 417,786

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 UA **15 Claims**

1. A latent curable composition stabilized against premature gelation comprising:

a. an olefinorganopolysiloxane having units of the structural formula

$$R_aR'_bSiO_{4-a-b/2}$$

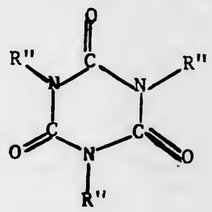
b. an organohydrogenpolysiloxane having units of the structural formula

$$R_aSiH_bSiO_{4-a-b/2}$$

wherein R is selected from the group consisting of a monovalent hydrocarbon radical, a halogenated monovalent hydrocarbon radical, a cyanoalkyl radical and mixtures thereof, R′ is an olefinic hydrocarbon radical, wherein a has a value of from 0 to 3, inclusive, b has a value of from 0.005 to 2.0, inclusive, and the sum of a and b is equal to from 0.8 to 3, inclusive,

c. a sufficient amount of a platinum catalyst to cause the co-reaction of (a) and (b) and

d. an ethylenically unsaturated isocyanurate corresponding to the structural formula



wherein R″ is the same or different and is selected from the group consisting of hydrogen, alkyl, aryl, aralkyl, polynuclear aryl, heteroaryl, monofunctional lower-alkenyl and non-interfering substituted derivatives thereof with the proviso that at least one R″ is lower-alkenyl, said ethylenically unsaturated isocyanurate being present in an amount sufficient to inhibit premature gelation but insufficient to prevent cure at elevated temperature.

3,882,084

OPTICALLY CROSS-LINKABLE POLYMER

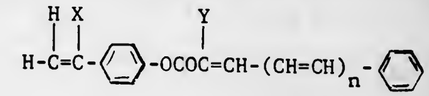
Masao Tato, Yokohama; Masaki Hasegawa, Tokyo, and Taro Ichijyo, Kamakura, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation-in-part of Ser. No. 46,836, June 16, 1970, abandoned. This application June 8, 1972, Ser. No. 272,930

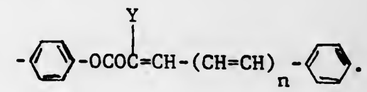
Int. Cl. C08f *3/42, 15/02*

U.S. Cl. 260—47 UA **4 Claims**

1. A photosensitive homopolymer having a chain formed by polymerizing the CH_2=CX group of a monomer of the formula



wherein X is H or a lower alkyl, Y is one member selected from the group consisting of H and CN group, n is 0 or 1, and the phenyl in the styrylacrylic acid group or cinnamic acid group is one member selected from the group consisting of unsubstituted groups, substituents of chlorine, fluorine, nitro group, cyano group, methoxy group, and methyl group which are inactive to phenolic hydroxy group and carboxylic acid-chlorides, said homopolymer having repetitive units each having the formula



3,882,085
POLYAMIDE POLYMERS FROM AMINO POLYAMIDE REACTANTS

Karl Schmitt, Herne; Fritz Gude, Wanne-Eickel, and Siegfried Brandt, Herne, all of Germany, assignors to Veba Chemie Aktiengesellschaft, Wanne-Eickel, Germany

Continuation of Ser. No. 24,854, April 1, 1970, abandoned. This application June 5, 1972, Ser. No. 259,643

Claims priority, application Germany, Apr. 3, 1969, 1917274

Int. Cl. C08g *20/32*

U.S. Cl. 260—65 **4 Claims**

1. Polyamide-precursors for polyamide polymers, the precursors being condensates or mixtures of condensates of a tetracarboxylic acid, anhydride or ester thereof with at least one aminopolyamide which comprises the condensate of $n+1$ mols of a diamine of the formula $H_2N\text{-}R\text{-}NH_2$, said diamine selected from the group consisting of 2,2,4-trimethylhexamethylene diamine, 2,4,4-trimethylhexamethylene diamine and 1-amino-3-aminomethyl-3,5,5-trimethylcyclohexane with n mols of at least one acid selected from the group consisting of a dicarboxylic acid and an amino acid.

3,882,086
POLYMERS FROM HYDRAZINE AND TRICARBOXYLIC ACID ANHYDRIDES

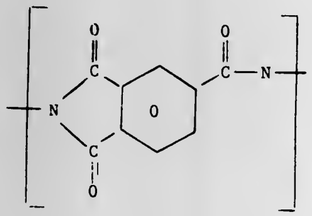
Karl F. Schimmel, Verona, and Marco Wismer, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 13, 1973, Ser. No. 369,629

Int. Cl. C08g *20/32*

U.S. Cl. 260—65 **4 Claims**

1. An organic condensation polymer consisting essentially of the reaction product of a benzenetricarboxylic monoanhydride and hydrazine, being further characterized by the repeating structural formula:



3,882,087
ORGANIC PHOTOCONDUCTIVE MATERIAL

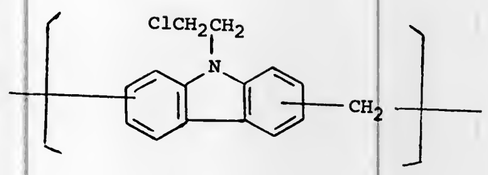
Syu Watarai, Tokyo, and Hisatake Ono, Asaka, both of Japan, assignors to Rank Xerox, Ltd., London, England

Division of Ser. No. 174,272, Aug. 23, 1971, Pat. No. 3,770,428. This application Apr. 6, 1973, Ser. No. 348,779

Int. Cl. C08g *9/24*

U.S. Cl. 260—67.5 **1 Claim**

1. A solid, resinous reaction product of N-beta-chloroethylcarbazole and formaldehyde comprising the recurring unit:



3,882,088
POLYESTERS BEARING POLYETHYLENIMINE TERMINAL GROUPS

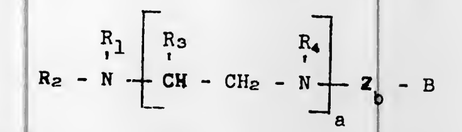
Darrell R. Thompson, Somerville, N.J., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 776,822, Nov. 18, 1968, abandoned, and Ser. No. 120,770, March 3, 1971, abandoned. This application Apr. 5, 1972, Ser. No. 241,401

Int. Cl. C08g *17/14*

U.S. Cl. 260—75 N **3 Claims**

1. A polymeric material of the formula



where

R_1, R_2 and R_4 are hydrogen, alkyl radicals of 1 through 4 carbon atoms, $-CH_2CH_2NH_2$, or $-CH_2CH_2OH$;

R_3 is hydrogen or an alkyl radical of 1 through 4 carbon atoms;

$Z_{(b)}$ is a dicarbamoyl radical;

B is a lactone, dicarboxylic acid/diol or hydroxycarboxylic acid polyester or copolyester segment;

a is a number 1 through 2000; and

b is 1.

3,882,089
VULCANIZING NATURAL OR SYNTHETIC RUBBER WITH A DIURETHANE DECOMPOSABLE TO DIISOCYANATE

Crispin Stuart Leworth Baker, Stapleford; Douglas Barnard, Welwyn, and Maurice Read Porter, Aston, all of England, assignors to The Malaysian Rubber Producers Research Association

Continuation-in-part of Ser. No. 172,589, Aug. 17, 1971. This application Apr. 5, 1974, Ser. No. 458,450

Claims priority, application United Kingdom, Aug. 18, 1970, 39804/70

Int. Cl. C08g *53/00*, *22/16*, *22/32*

U.S. Cl. 260—77.5 CR **8 Claims**

1. A method of vulcanizing a natural or synthetic rubber having an unsaturated carbon chain which method comprises heating at from 100°C to 200°C for from 6 hours to 10 seconds a mixture of the rubber with from 1 to 20 pphr of a compound having the general formula (I)

$$R(.NH.CO.O.N{=}Q{=}O)_m\ (.NCO)_n\ (.NH.CO.Y)_p \qquad (I)$$

where

$m \geq 1$

$n \geq 0$

$p \geq 0$

$(n+p) \geq 1$

Q is an aromatic group in the quinonoid form,

R is an aromatic or saturated aliphatic group having a functionally of $(m+n+p)$, and

Y is an organic group joined to (.NH.CO.) through oxygen or nitrogen.

3,882,090
WATER-SOLUBLE POLYAMIDES FROM ALKYLENEOXY BIS(PROPYL-AMINE)

David R. Fagerburg; Burns Davis, and Charles J. Kibler, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 367,039, June 4, 1973, abandoned. This application Mar. 20, 1974, Ser. No. 452,889

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **8 Claims**

1. A polyamide consisting essentially of the polymeric condensation product of components (A), (B) and (C) as follows:

A. a dicarboxylic acid selected from the group consisting of adipic acid, pimelic acid, suberic acid and combinations thereof,

B. a modifying amount of (1) up to 25 mole percent of a nine carbon atom aliphatic dicarboxylic acid, or (2) up to 15 mole percent of 1,12-dodecanedioic acid, said mole percents being based upon the total amount of dicarboxylic acid; and

C. an aliphatic diamine at least 95 mole percent of which is an (alkyleneoxy)bis(propylene) having the formula: $H_2N\text{—}C_3H_6\text{—}OR\text{—}_n\text{—}O\text{—}C_3H_6\text{—}NH_2$ wherein R is ethylene, 1,2-propylene or 1,3-propylene and n is an integer of 2 to about 13, or combinations thereof,

said polyamide having an inherent viscosity of from 0.15 to about 1.0 as measured at 25°C. at a concentration of 0.5 grams of said polyamide per 100 ml. of a solvent consisting of 60 percent by weight phenol and 40 percent by weight tetrachloroethane, said polyamide having a ratio of alkyleneoxy to amide linkages in the range of from at least about 3:2 to about 14:2.

3,882,091
EPOXY TERMINATED POLYSULFIDE POLYMERS AS ADHESIVE ADDITIVES FOR LIQUID POLYSULFIDE POLYMER-BASED ADHESIVE COMPOSITIONS

Jose L. Villa, Heightstown, N.J., assignor to Thiokol Corporation, Bristol, Pa.

Division of Ser. No. 252,646, May 12, 1972, Pat. No. 3,813,368. This application July 6, 1973, Ser. No. 377,159

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **3 Claims**

1. An epoxy terminated polysulfide polymer prepared by reacting a liquid polythiol polymer having a molecular weight of 500 to 4,000 and vinyl cyclohexane diepoxide in an organic solvent at a temperature of from 50°C to 113°C. with a catalyst consisting of para-toluene sulfonic acid in a closed vessel equipped with refluxing apparatus and a stirrer.

3,882,092
ARYLENE SULFIDE POLYMERS

Charles W. Moberly, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,822

Int. Cl. C08g *23/00*

U.S. Cl. 260—79.1 **20 Claims**

1. A method of producing a polymer which comprises:

a. contacting at least one polyhalo-substituted aromatic compound wherein the halogen atoms are attached to aromatic ring carbon atoms, at least one base selected from the hydroxides of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium and barium and the carbonates of sodium, potassium, rubidium and cesium, at least one organic amide and at least one thiocarbamate having the formula

wherein each R is selected from hydrogen and R'', R' is selected from alkali metals and R'', and R'' is a monovalent hydrocarbyl radical selected from alkyl, cycloalkyl and aryl, and combinations of said radicals, the number of carbon atoms in said hydrocarbyl radical being within the range of 1 to about 12, and each X is selected from oxygen and sulfur, at least one X being sulfur, to form a composition; and,

b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer.

3,882,093
SULFONYL-CONTAINING FLUOROCARBON VINYL ETHERS AND ION EXCHANGE MEMBRANE FORMED THEREFROM

Robert John Cavanaugh, and William H. Calkins, both of Wilmington, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Jan. 2, 1974, Ser. No. 430,050

Int. Cl. C07c *143/68*, *143/70*; C08f *15/02*

U.S. Cl. 260—79.3 MU **2 Claims**

2. The process of claim 1 wherein the sulfuryl fluoride and said divinyl ether are initially present in the reaction in essentially equimolar amounts.

3,882,094
HYDROGENATION OF RUBBERS

Adel Farham Halasa, Bath, and Richard Gutierrez, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 21, 1973, Ser. No. 410,870

Int. Cl. C08d *5/02*

U.S. Cl. 260—85.1 **4 Claims**

1. The process of hydrogenating a rubber containing olefinic unsaturation which comprises treating the rubber in solution in an inert solvent containing as a hydrogenation catalyst $Co(Pyridine)_2\ (AlR_3$ or H. $AlR_2)_3$ in which each R is an alkyl group containing 1 to 8 carbon atoms, at a temperature of −20° C. to 500° C. and a pressure of 1 atmosphere to 15,000 psig.

3,882,095
PROCESS FOR FORMING POLYOLEFIN FIBERS

Robert W. Fowells; Robert A. Damon, and James G. Coma, all of Vancouver, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 69,194, Sept. 3, 1970, abandoned. This application Mar. 16, 1972, Ser. No. 235,416

Int. Cl. C08f *47/00*, *1/88*, *1/92*

U.S. Cl. 260—88.2 R **17 Claims**

1. A process for preparing polyolefin fibers comprising forming a solution of a polyolefin in a solvent at a temperature above the melt dissolution temperature of the polyolefin, subjecting the polyolefin solution to a shear stress of greater than about zero pounds (force)/ft² up to about 6.25 pounds (force)/ft² while cooling the polyolefin solution to a temperature below the melt dissolution temperature of the polyolefine, the magnitude of said shear stress being sufficiently great to precipitate the polyolefin as a fibrous gel having interconnecting capillary spaces filled with solvent intertwined within a fibrillar structure of fibrous polyolefin, and subsequently subjecting the fibrous gel formed during cooling to a shear stress of greater than about 0.1 pound (force/ft² thereby producing discrete, directly recoverable, polyolefin fibers without requiring further processing steps.

3,882,096
CATALYST FOR AND METHOD OF PREPARING ULTRA HIGH MOLECULAR WEIGHT POLYOLEFINS

Mitsuzo Shida, Barrington; Thomas J. Pullukat, Hoffman Estates, and Raymond E. Hoff, Palatine, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Sept. 4, 1973, Ser. No. 394,330
Int. Cl. C08f *1/66, 3/06*
U.S. Cl. 260—94.9 D **13 Claims**

1. A catalyst active for polymerizing ethylene to an ultra high molecular weight polymer, prepared by forming a hydrogel mixture of a porous support of the class consisting of silica, alumina, zirconia, thoria and mixtures thereof, about 1–200 weight percent of water, and chromium oxide in an amount to give about 0.1–50 weight percent of chromium on said support of which at least about 0.1 weight percent is hexavalent chromium, adding to said mixture an alkyl ester of titanium in an amount to give about 1–130 weight percent of titanium, said ester containing 1–7 carbon atoms in the alkyl group, and activating the resulting mixture with a dry gas that contains oxygen.

3,882,097
α-METHYL GLUTATHIONE, ANALOGS THEREOF, INTERMEDIATES THEREFORE AND PROCESSES FOR THEIR PREPARATION

Karl Pfister, III, Westfield, N.J.; Daniel F. Veber, Ambler, and Ralph F. Hirschmann, Blue Bell, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 856,878, Aug. 13, 1969, abandoned, which is a continuation of Ser. No. 605,958, Dec. 30, 1966, abandoned. This application May 10, 1972, Ser. No. 252,139
Int. Cl. C07c *103/52*; A61k *17/02*; C07a *7/00*
U.S. Cl. 260—112.5 **1 Claim**

1. A process for the preparation of γ-(α-methyl-glutamyl)-L-cysteinyl-glycine and the aspartyl analog thereof which comprises reacting under aqueous alkaline conditions, at a pH of about 7.5 to 9.5, at a temperature of about 20° to 30°C., and for a period of about 10 min. to about 2 hours, S-benzyl-L-cysteinyl-glycine with an N-carbobenzoxy-α-methyl glutamic acid anhydride or an aspartic acid anhydride analog thereof, the reactants being in the proportion of equimolar quantities of each up to about 25 percent molar excess of either reactant, adjusting the pH to about 1.5 to 3.5 thereby decarboxylating the resulting carbamate, and reacting the resulting γ-(N-carbobenzoxy-α-methyl-glutamyl)-S-benzyl-L-cysteinyl-glycine or aspartyl analog thereof with sodium in liquid ammonia thereby removing the S-benzyl and N-carbobenzoxy protecting groups.

3,882,098
SYNTHESIS OF DES-ALA¹, GLY², ASN⁵-SRIF AND INTERMEDIATES

Dimitrios Sarantakis, Audubon, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jan. 3, 1974, Ser. No. 430,441
Int. Cl. C07c *103/52*; C07g *7/00*
U.S. Cl. 260—112.5 **6 Claims**

3. An undecapeptide of the formula:

R-Cys(R¹)-Lys(R²)-Phe-Phe-Trp-Lys(R³)-Thr(R⁵)-Phe-Thr(R²)-Ser(R⁴)-Cys(R¹)-OR⁵

wherein:

R is selected from the group consisting of hydrogen or an α-amino protecting group;

R¹ is a protecting group for the sulfhydryl group on the cysteinyl amino acid residue selected from the group consisting of benzyl, trityl, benzyloxycarbonyl, benzhydryl, tetrahydropyranyl, acetamidomethyl, benzoyl, benzylthiomethyl, ethylcarbonyl, thioethyl, p-methoxybenzyloxycarbonyl, sulfate salt and substituted benzyl wherein said substituent is selected from the group consisting of methyl, methoxy and nitro;

R² is selected from the group consisting of hydrogen and a protecting group for the side chain amino substituent of the lysine residue selected from the group consisting of benzyl, chlorobenzyloxycarbonyl, tosyl, 2,4-dinitrophenyl, t-amyloxycarbonyl, t-butyloxycarbonyl and benzyloxycarbonyl;

R³ and R⁴ are protecting groups for the alcoholic hydroxyl group of the threonine and serine residues selected from the group consisting of acetyl, tosyl, benzoyl, tert-butyl, trityl, benzyl and benzyloxycarbonyl; and

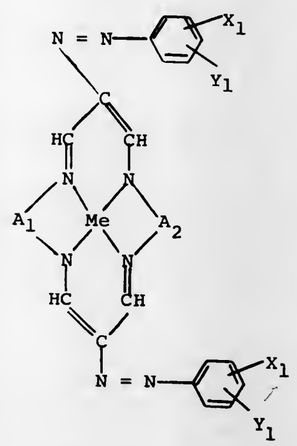
R⁵ is a α-carboxyl protecting group selected from the class consisting of C_1–C_6 alkyl, benzyl, substituted benzyl, phenacyl, phthalimidomethyl, 3-methylthioethyl, 4-picolyl and 4-(methylthio) phenyl, said substituent on benzyl being selected from at least one of methyl, methoxy and nitro; and the acid addition salts thereof, said amino acid residues in said undecapeptide having an asymmetric α-carbon atom being of the L-configuration.

3,882,099
PHENYL-AZO-(POLYCYCLIC)HETEROCYCLIC METAL COMPLEXES

Francois L'Eplattenier, Therwil, and Andre Pugin, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

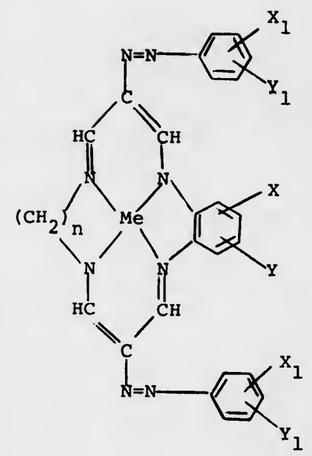
Filed Dec. 12, 1972, Ser. No. 314,493
Claims priority, application Switzerland, Dec. 15, 1971, 18357/71
Int. Cl. C09b *45/48*
U.S. Cl. 260—146 R **8 Claims**

1. A polycyclic metal complex of the formula



wherein A_1 is alkylene of two to three carbon atoms, 1,2-lower-cycloalkylene, 1,2-phenylene, or 1,8-naphthalene; A_2 is a lower alkylene of two to three carbon atoms, 1,2-lower-cycloalkylene, or 1,8-naphthalene; Me is Zn, Cu, Co or Ni; X_1 and Y_1 is hydrogen, chloro, lower alkyl, lower alkoxy, phenoxy, phenylazo, lower alkanoyl, lower alkanoylamino, carbonamido, lower alkoxycarbonyl, trifluoromethyl, nitro, cyano, lower alkylsulphonyl, carboxylic acid group or sulphonic acid group.

2. A polycyclic metal complex of the formula



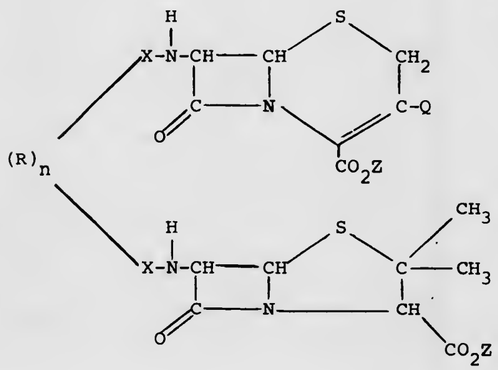
wherein X_1, and Y_1 is hydrogen, chloro, lower alkyl, lower alkoxy, phenoxy, phenylazo, lower alkanoyl, lower alkanoylamino, carbonamido, lower alkoxycarbonyl, trifluoromethyl, nitro, cyano, lower alkylsulphonyl, carboxylic acid or sulphonic acid; *n* is 2 or 3; X and Y is hydrogen, chloro, lower alkyl, alkoxycarbonyl, alkylsulphonyl, phenyl, phenoxy, carbonamido, or lower alkanoylamino; and Me is Cu, Zn, Ni or Co.

3,882,100
DERIVATIVES OF 6-AMINO PENICILLANIC ACID

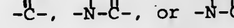
Donald J. Perrella, Princeton Junction, and Joseph E. Dolfini, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Sept. 22, 1972, Ser. No. 291,443
Int. Cl. C07d *99/16*; C07g *99/24*
U.S. Cl. 260—239.1 **11 Claims**

1. A compound of the formula



wherein R is an aliphatic hydrocarbon group of from two to 10 carbon atoms, a monocyclic alicyclic group of five or six carbon atoms in the ring; a bicyclic alicyclic group of eight to 10 carbon atoms; benzyl, chlorophenyl, phenyl or tolyl, the phenyl or tolyl groups optionally may be joined to a second phenyl or tolyl group directly or through a methylene group; or a five- or six-membered monoheterocyclic group wherein the heteroatom is N, O or S, or a five- or six-membered diheterocyclic group wherein each heteroatom is N; X is



n is 0 or 1, but may be zero only when X is

Q is $-CH_3$ or $-CH_2OCOCH_3$, and Z is hydrogen, a physiologically acceptable metal, NH_4, a physiologically acceptable organic amine selected from triethylamine, procaine, dibenzylamine, N-benzyl-β-phenethylamine, N,N'-dibenzylethylenediamine or N-ethylpiperidine or an alkyl group of from one to seven carbon atoms.

3,882,101
2-HALO-5-ARYL-3H-1,4-BENZODIAZEPINES

John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,701
Int. Cl. C07d *53/06*
U.S. Cl. 260—239 BD **1 Claim**

1. A compound which is 2,7-dichloro-5-(o-chlorophenyl)-3H-1,4-benzodiazepine.

3,882,102
PROCESS FOR THE PURIFICATION OF CAPROLACTAM

Otto Immel, and Hans-Helmut Schwarz, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 197,514, Nov. 10, 1971. This application Oct. 24, 1973, Ser. No. 409,046
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A **4 Claims**

1. A process for the treatment of the crude product resulting from the catalytic rearrangement of cyclohexanone oxime, in the gas phase, to ε-caprolactam in the presence of a boron trioxide-containing catalyst which comprises the steps of:

a. dissolving said crude produce in benzene or an alkyl benzene having seven to eight carbon atoms;

b. stirring and cooling said solution and precipitating ε-caprolactam at about 0° to 50°C;

c. filtering the resultant crystal sludge from said solution; and

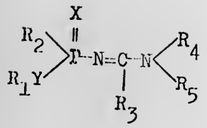
d. recovering substantially pure ε-caprolactam by vacuum distillation.

3,882,103
N-PHOSPHORYL AND N-PHOSPHONYL AMIDINES

Ernst Beriger, Allschwil; Odd Kristiansen, Reinach/bl; Kurt Rüfenacht, Basel, all of Switzerland, and Jörg Bader, Deceased, late of Ariesheim, Switzerland (by Dagmar Bader-Ludwig, legal representative), assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 13, 1973, Ser. No. 340,805
Claims priority, application Switzerland, Mar. 17, 1972, 4054/72
Int. Cl. C07f *9/24*
U.S. Cl. 260—240 G **22 Claims**

1. A compound of the formula



wherein

R_1 represents phenyl, or phenyl mono- to trisubstituted by halogen, mono- or disubstituted by C_1-C_4-alkyl, C_1-C_4-alkylthio, nitro, cyano or trifluoromethyl, or monosubstituted by C_1-C_4-carbalkoxy,

R_2 represents methyl, methoxy, ethyl, ethoxy or phenyl,

R_3 represents hydrogen or methyl,

R_4 and R_5 represent methyl, ethyl, n-propyl, isopropyl or allyl,

X and Y represent oxygen or sulphur, or

R_4 and R_5 with the nitrogen atom to which they are bound form the morpholino, piperidino or pyrrolidino ring, or

R_3 with R_4 or R_5 forms a pyrrolidino or piperidino ring, whereby then the group R_4 or R_5 not participating in the ring formation represents methyl or ethyl.

3,882,104

2-AZACYCLOALKYLMETHYL SUBSTITUTED PHENYL CARBINOLS AND KETONES

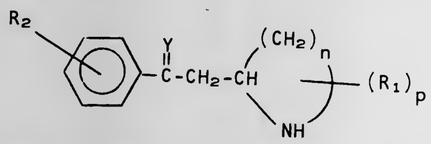
J. Martin Grisar, and George P. Claxton, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Apr. 25, 1973, Ser. No. 354,189

Int. Cl. C07d *29/16, 29/20*

U.S. Cl. 260—240 CA **5 Claims**

1. A 2-azacycloalkylmethyl substituted phenyl carbinol and ketone having the formula:



wherein *n* is an integer of from 3 to 5; *p* is an integer of from 1 to 2; R_1 is hydrogen or lower alkyl having from one to four carbon atoms; Y is the radical =O or



R_2 is selected from the group consisting of phenyl, halophenyl, trifluoromethylphenyl, alkylphenyl having from seven to 10 carbon atoms, alkoxyphenyl having from seven to 10 carbon atoms, alkylthiophenyl having from seven to 10 carbon atoms, phenoxy, alkylphenoxy having from seven to 10 carbon atoms, halophenoxy, trifluoromethylphenoxy, alkoxyphenoxy having from seven to 10 carbon atoms, alkylthiophenoxy having from seven to 10 carbon atoms, phenylthio, phenylalkyl having from seven to 10 carbon atoms, phenylvinyl, phenylalkoxy having from eight to 10 carbon atoms, phenoxyalkoxy having from eight to 10 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

3,882,105

2-AMINO-4-[2-(1-LOWER ALKYL-5-NITRO-2-IMIDAZOLYL)-VINYL]-PYRIMIDINES

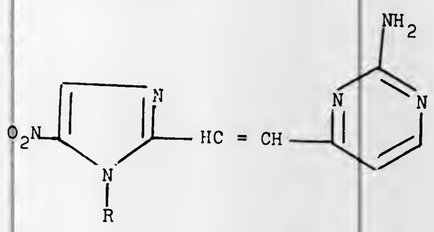
Aldo Garzia, Lodi, Italy, assignor to Istituto Chemioterapico Italiano S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 309,483, Nov. 24, 1972, abandoned. This application May 25, 1973, Ser. No. 364,025

Int. Cl. C07d *51/42*

U.S. Cl. 260—240 E **3 Claims**

1. A compound of the formula



wherein R is lower alkyl of one to about six carbon atoms.

3,882,106

DISUBSTITUTED NAPHTHALENONE COMPOUNDS

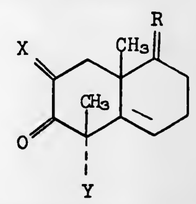
Marinus Los, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 278,508, Aug. 7, 1972, which is a division of Ser. No. 471,143, June 17, 1970, Pat. No. 3,714,195, which is a continuation-in-part of Ser. No. 708,498, Feb. 27, 1968, Pat. No. 3,565,958. This application Apr. 18, 1974, Ser. No. 461,819

Int. Cl. C07d *5/34;* **C09b** *23/00*

U.S. Cl. 260—240 R **4 Claims**

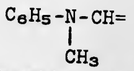
1. A compound of the formula:



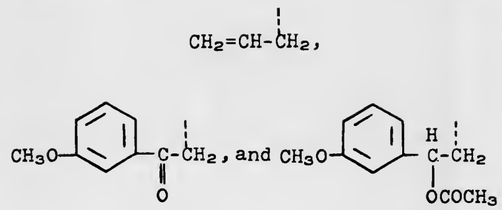
wherein R is a member selected from the group consisting of ethylenedioxy and oxygen; X is a member selected from the group consisting of



and



and Y is a member selected from the group consisting of



3,882,107

ZINC CHELATE OF 2,4-DIHYDROXY-1,4(2H)-BENZOXAZINE-3-ONE

Carl Lee Tipton, Ames, Iowa, and Francis Hsiang-Chian Tsao, Chicago, Ill., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 14, 1973, Ser. No. 360,336

Int. Cl. C07f *3/06*

U.S. Cl. 260—242 **1 Claim**

1. The complex of 2,4-dihydroxy-1,4-(2H)-benzoxazin-3-one (DIBOA) with zinc containing 1 mole zinc to 2 moles of DIBOA.

3,882,108

PREPARATION OF 7-AMINO CEPHALOSPORIN COMPOUND

Philip Howard Chapman, Dendron near Ulverston, and James Raymond Hilligan, Grange-over-Sands, both of England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

Filed Apr. 4, 1972, Ser. No. 241,087

Claims priority, application United Kingdom, Apr. 7, 1971, 8988/71

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **1 Claim**

1. In a process for the preparation of 7β-amino-3-acetoxymethylceph-3-em-4-carboxylic acid, the steps which include reacting 3-acetoxymethyl-7β-(D-5-amino-5-carboxypentanamido)ceph-3-em-4-carboxylic acid wherein the amino group is blocked with from about 0.20 to about 2 moles of a phosphorus trihalide selected from the group consisting of phosphorus trichloride and phosphorus tribromide at a temperature from about −50°C to about +65°C in an organic halogenated solvent selected from the group consisting of methylene chloride, 1,2-dichloroethane and chloroform under anhydrous conditions; contacting the resultant solution with phosphorus pentachloride in molar proportions of about 1:1 to about 1:3 based on the cephalosporin at a temperature from about −50°C to about +25°C; commingling the resultant reaction mixture with a molar excess of an imino ether forming compound selected from the group consisting of alkanols having from 1 to 6 carbon atoms and alkane diols having 2 to 4 carbon atoms at a temperature from about −50°C to about +10°C; and recovering 7β-amino-3-acetoxymethylceph-3-em-4-carboxylic acid by treatment with a base to raise the pH to about 3.5.

3,882,109

[(PHENOTHIAZINYL)PROPYL]-TRIAZASPIRO [4,5]-DECAN-4-ONES

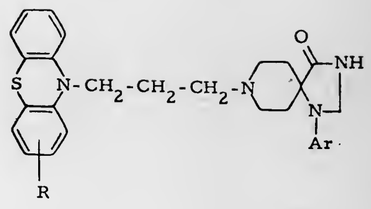
Willem Soudijn, Turnhout; Ineke Van Wijngaarden, Beerse, and Paul Adriaan Jan Janssen, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 335,848, Feb. 26, 1973, abandoned. This application Dec. 28, 1973, Ser. No. 429,432

Int. Cl. C07d *93/14*

U.S. Cl. 260—243 A **6 Claims**

1. A chemical compound selected from the group consisting of a [phenothiazinyl)propyl]-1,3,8-triazaspiro[4,5]-decan-4-one having the formula:



and the therapeutically active acid addition salts thereof, wherein R is a member selected from the group consisting of hydrogen, halo and trifluoromethyl and Ar is a member selected from the group consisting of phenyl and halophenyl.

3,882,110

NOVEL 2-ALKYL-5-THIAZOLE-CARBOXYLIC ACID DERIVATIVES

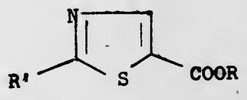
Francois Clemence, Rosny-sous-Bois, and Odile Le Martret, Paris, both of France, assignors to Roussel Uclaf, Paris, France

Continuation of Ser. No. 244,909, April 17, 1972, abandoned, which is a continuation-in-part of Ser. No. 842,017, July 15, 1969, abandoned. This application Jan. 9, 1974, Ser. No. 431,881

Int. Cl. C07d *91/32*

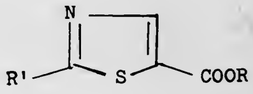
U.S. Cl. 260—247.1 M **17 Claims**

1. 2-Alkyl-5-thiazole carboxylic acid derivative of the formula



wherein R is a member selected from the group consisting of hydrogen, an alkali metal, triethylammonium, diisopropylammonium, diethylammonium, ethanolammonium, collidinium, morpholinium, piperidinium, and alkyl having 1 to 10 carbon atoms and R′ is a linear alkyl of 3 to 12 carbon atoms.

12. 2-Alkyl-5-thiazole carboxylic acid derivatives of the formula



wherein R is a member selected from the group consisting of hydrogen, alkali metal, triethylammonium, diisopropylammonium, diethylammonium, ethanolammonium, collidinium, morpholinium, piperidinium, alkyl of 1 to 10 carbon atoms, benzyl, the alkyl residue of an alkylheterocyclic alcohol the alkyl residue of which contains 1 to 6 carbon atoms and of which the heterocyclic residue is selected from the group consistint of furyl, thienyl and pyridyl, α-glyceryl, β-glyceryl, diethylaminoethyl, diethylaminopropyl and dipropylaminoethyl and R′ is a linear alkyl of 3 to 12 carbon atoms.

3,882,111
1,2-DIHYDRO-3-PHENOXYMETHYLPYRIDO[3,4-E]-AS-RIAZINE HYDROCHLORIDE AND 3-PHENOXYMETHYLPYRIDO[3,4-E]-AS-TRIAZINE

George C. Wright; Allan V. Bayless, and Joseph E. Gray, all of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed June 6, 1973, Ser. No. 367,497
Int. Cl. C07d 57/34
U.S. Cl. 260—248 AS 4 Claims

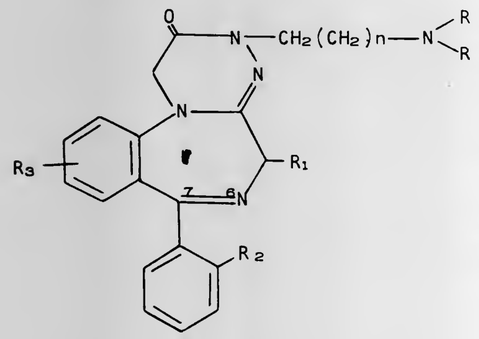
1. A compound selected from the group consisting of 1,2-dihydro-3-phenoxymethylpyrido[3,4-e]-as-triazine hydrochloride and 3-phenoxymethylpyrido[3,4-e]-as-triazine.

3,882,112
7-PHENYL-3-[2-(DIALKYLAMINO)-ALKYL]-3,4-DIHYDROAS-TRIAZINO[4,3-A][1,4]BENZODIAZEPIN-2(1H)-ONES

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sept. 19, 1973, Ser. No. 398,641
Int. Cl. C07d 57/34
U.S. Cl. 260—248 AS 9 Claims

1. A compound of the formula



wherein *n* is 1 or 2; wherein R is hydrogen, alkyl of one to three carbon atoms, inclusive, or together



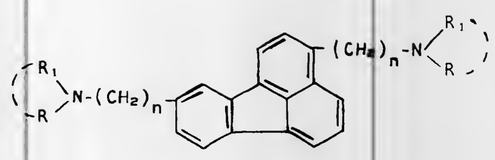
is pyrrolidino, piperidino, N-methylpiperazino, or morpholino; wherein R_1 is hydrogen or alkyl as defined above; and wherein R_2 and R_3 are hydrogen, alkyl as defined above, fluorine, chlorine, bromine, nitro, trifluoromethyl, or alkylthio in which alkyl is defined as above, and the pharmacologically acceptable acid addition salts thereof.

3,882,113
FLUORANTHENE DERIVATIVES

William L. Albrecht, Cincinnati, Ohio, and Robert W. Fleming, Ann Arbor, Mich., assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Dec. 21, 1972, Ser. No. 317,150
Int. Cl. C07d 87/28
U.S. Cl. 260—246 B 6 Claims

1. A 3,9-bis-basic alkane of fluoranthene having the general formula:



wherein *n* is an integer of from 2 to 6; R and R_1 are each selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the vinyl unsaturation is in a position other than in the 1-position of the alkenyl group, and when R and R_1 are taken together with the nitrogen atom to which they are attached represent the pyrrolidinyl, morpholino, piperidino or 4-lower alkyl piperidino radical, said 4-lower alkyl piperidino radical having from 1 to 4 carbon atoms; and their pharmaceutically acceptable acid addition salts.

3,882,114
N-(MORPHOLINOMETHYL CARBAMYL) CYSTEAMINE AND GLYCINE

Gregoire Kalopissis, Paris; Jean-Louis Abegg, Le Perreux; Guiliana Ghilardi, and Henri Philippe de Beaulieu, both of Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 770,074, Oct. 23, 1968, Pat. No. 3,678,157. This application Apr. 17, 1972, Ser. No. 244,906
Claims priority, application Luxembourg, Oct. 26, 1967, 54745
Int. Cl. C07d 87/42, 87/46
U.S. Cl. 260—247.1 R 2 Claims

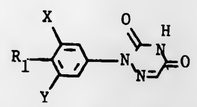
1. N-(morpholinomethylcarbamyl) cysteamine.

3,882,115
PREPARATION OF 2-ARYL-AS-TRIAZINE-3,5 (2H,4H)-DIONES

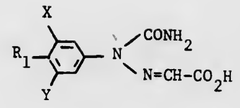
Banavara L. Mylari, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed June 25, 1973, Ser. No. 373,253
Int. Cl. C07d 55/10
U.S. Cl. 260—248 AS 8 Claims

1. A process for the preparation of a compound of the formula



wherein X is selected from the group consisting of hydrogen and methyl;
Y is selected from the group consisting of hydrogen, methyl and chloro; and
R_1 is selected from the group consisting of hydrogen, 2-chlorophenoxy and 2-chloro-4-(N-methyl-N-ethylsulfamoyl)phenoxy,
which comprises contacting a compound of the formula



with an equimolar amount of an alkali metal salt of an alkanoic acid containing from 2 to 5 carbon atoms and an equimolar amount of an alkanoic acid anhydride containing from 4 to 8 carbon atoms at 75°–150°C. in a reaction-inert solvent.

3,882,116
PREPARATION OF PERCHLORINATED HETEROCYCLIC COMPOUNDS

Walter Mahler, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed May 9, 1972, Ser. No. 251,654
Int. Cl. C07d 55/42, 51/36, 51/76
U.S. Cl. 260—248 C 13 Claims

1. The process of obtaining a mixture of at least three of the perchlorinated compounds, cyanuric chloride, perchloropyrazine, perchloropyrimidine and perchloropyridine which comprises
heating, at a temperature, in the range of about 350° to 750°C.,
a reaction charge consisting initially of hexachlorobenzene and one or two of said compounds.

3,882,117
PROCESS FOR THE PREPARATION BENZENE ISOCYANAURATES

Richard Garth Pews; Lennon H. McKendry, both of Midland, Mich., and Ralph M. Rodia, Salem, Oreg., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 285,503, Aug. 31, 1972, Pat. No. 3,804,844, which is a continuation-in-part of Ser. No. 94,622, Dec. 2, 1970. This application Nov. 1, 1973, Ser. No. 411,938
Int. Cl. C07d 55/38
U.S. Cl. 260—248 NS 4 Claims

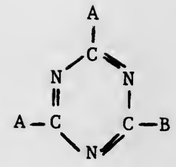
1. A process for the preparation of a benzene isocyanurate compound which comprises reacting a benzene compound, ring-substituted with at least one displaceable substituent selected from the group consisting of chloro, bromo, fluoro, iodo, $—N_2^+$, $—OSO_2R$, $—SO_2R$, and $—SR_2^+$, wherein each R independently represents hydrogen, phenyl or a loweralkyl radical of from 1 to about 4 carbon atoms, inclusive, with an alkali metal cyanate in the presence of a high dielectric-aprotic solvent.

3,882,118
PROCESS FOR THE PREPARATION OF UNSYMMETRICALLY-SUBSTITUTED ALKANOLAMINO-S-TRIAZINES

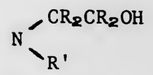
Thirumurti L. Narayan, Riverview, and Moses Cenker, Trenton, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 29, 1972, Ser. No. 319,931
Int. Cl. C07d 55/22
U.S. Cl. 260—249.6 10 Claims

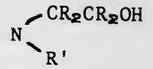
1. A process for the preparation of unsymmetrically-substituted alkanolamino-s-triazines of the formula:



wherein
B is



R is hydrogen or lower alkyl,
R′ is CR_2CR_2OH or lower alkyl and
A is NR_2,



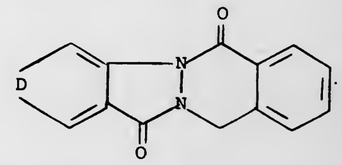
C_1–C_{12} alkoxy, phenoxy, aziridyl, pyrrolidyl or piperidyl with the proviso that both A's cannot be B, which comprises reacting cyanuric chloride with a reactive hydrogen-containing compound having the formula: A–H wherein A is as described above in the presence of an acid acceptor to obtain a mono- or dichloro-containing intermediate and further reacting said intermediate without isolation or purification with an alkanolamine in the presence of an acid acceptor the mole ratio of cyanuric chloride to reactive hydrogen-containing compound to alkanolamine being from 1:1:2 to 1:2:1, respectively.

3,882,119
TETRACYCLIC SUBSTITUTED PHTHALAZINE COMPOUNDS

Giangiacomo Nathansohn, Milan, and Elvio Bellasio, Albate, (Como), both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 96,625, Dec. 9, 1970, abandoned. This application Oct. 15, 1973, Ser. No. 406,730
Claims priority, application Italy, Jan. 27, 1970, 19810/70
Int. Cl. C07d 51/06, 57/02
U.S. Cl. 260—250 P 9 Claims

1. A compound of the formula



wherein D represents a divalent radical —CH=Y—, in which Y is nitrogen or CR, and in which R is selected from hydrogen, lower alkyl of from 1 to 4 atoms, nitro, amino, acylamino in which the acyl moiety is formyl, acetyl, propionyl, butyryl, phenacetyl or benzoyl, phenylamino, benzylamino, and lower alkylamino or di-lower alkylamino in which the lower alkyl moieties have from 1 4 carbon atoms.

3,882,120
SULFONYL COMPOUNDS

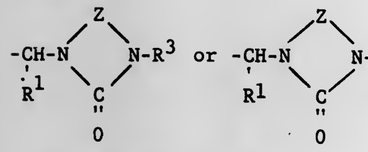
Steffen Piesch, Oberursel/Taunus, and Friedrich Engelhardt, Frankfurt, Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur AG

Filed June 2, 1972, Ser. No. 259,201
Claims priority, application Germany, June 5, 1971, 2128011
Int. Cl. C07d *51/18*
U.S. Cl. 260—251 R **5 Claims**

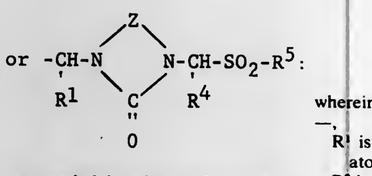
1. A compound of the formula

$$R - SO_2 - X$$

wherein X is



or



R and R^5 are phenyl or p-methylphenyl, 4-methoxyphenyl, p-chlorophenyl, 3-trifluoromethylphenyl, 4-nitrophenyl, 3-cyanophenyl, 4-acetaminophenyl, 3,4-dichlorophenyl, 2,5-dichlorophenyl, 2,6-dichlorophenyl, 2,3,4-trichlorophenyl, 2,5-dimethoxyphenyl, 3,4,5-trimethoxyphenyl, 2-methoxy-5-chlorophenyl, 2-chloro-5-nitrophenyl, 2-chloro-5-trifluoromethylphenyl, 2-chloro-6-methylphenyl, 2-chloro-5-methoxyphenyl;

R^1 and R^4 are phenyl, p-chlorophenyl, o-chlorophenyl, p-bromophenyl, p-methoxyphenyl, 3,4,5-trimethoxyphenyl, o-hydroxyphenyl, 2,5-dichlorophenyl, 3,4-dichlorophenyl, p-dimethylaminophenyl, p-acetaminophenyl, methylphenyl, m-nitrophenyl, p-nitrophenyl, hydrogen, carboxy or $COOX_1$ wherein X_1 is ammonium, sodium, potassium, calcium, copper, trimethylammonium, triethylammonium, triethanolammonium, morpholinium, piperidinium, pyrrolidinium or anilinium;

R^3 is hydrogen and

Z is alkylene having 2 to 3 carbon atoms or hydroxy substituted ethylene.

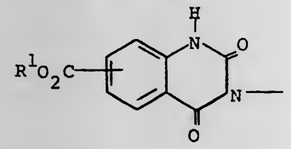
3,882,121
DICARBOXYLIC COMPOUNDS HAVING 2,4-QUINAZOLINEDIONE RINGS

Choua Cohen, Grenoble; Bruno Durif-Varambon, Eybens; Robert Salle, and Bernard Sillion, both of Grenoble, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

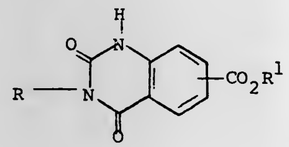
Filed Sept. 13, 1972, Ser. No. 288,478
Claims priority, application France, Sept. 15, 1971, 71.33327; Apr. 10, 1972, 72.12565
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.4 Q **11 Claims**

1. A compound of the formula:

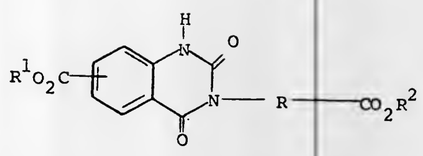
(I)



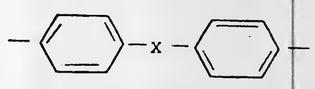
or



(II)



in which R is alkylene of 1–20 carbon atoms, phenylene, tolylene, ethylphenylene, chlorophenylene, biphenylene, naphthylene, or a divalent radical of the formula:



wherein X is — O —, — S —, — SO —, — SO_2 —, or — CH_2 —,

R^1 is hydrogen or an alkyl or cycloalkyl of 1–10 carbon atoms and

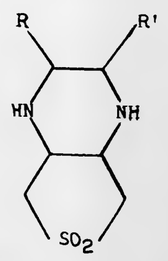
R^2 is alkyl or cycloalkyl of 1–10 carbon atoms.

3,882,122
THIENOPYRAZINE DIOXIDES AND METHODS OF MAKING SAME

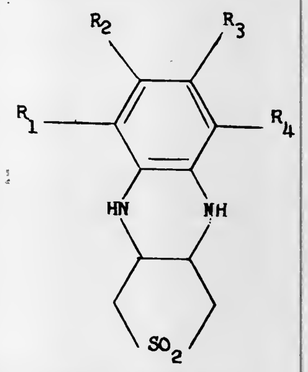
Edward L. Hagen, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,752
Int. Cl. C07d *51/66*
U.S. Cl. 260—268 TR **10 Claims**

1. A compound selected from the group consisting of compounds having the formula:



wherein R is hydrogen and R′ is hydrogen or methyl, and a compound having the formula:



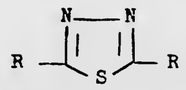
wherein R_1, R_2, R_3 and R_4 are hydrogen.

3,882,123
2,5-BIS-SUBSTITUTED AMINO-1,3,4-THIADIAZOLES AND METHOD OF USE

Harry Lee Lindsay; Robert Bruce Angier, and Keith Chadwick Murdock, all of Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 1, 1973, Ser. No. 384,641
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 H **5 Claims**

1. A compound selected from the group consisting of those of the formula:



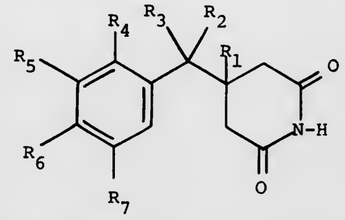
wherein R is selected from the group consisting of cyclohexylamino, cyclopentylamino and N-(lower alkyl of 1–2 carbon atoms)piperazin-1-yl, and pharmaceutically acceptable acid addition salts thereof.

3,882,124
3-(5-OXYPHENETHYL)-GLUTARIMIDES

Richard Kirchlechner; Werner Rogalski, and Jürgen Seubert, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Aug. 18, 1972, Ser. No. 281,652
Claims priority, application Germany, Aug. 21, 1971, 2141946
Int. Cl. C07d *29/20*
U.S. Cl. 260—281 **13 Claims**

1. A glutaric acid imide of the formula



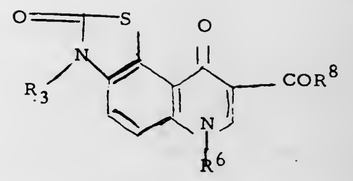
wherein R_1, R_2 and R_3 are H or unbranched alkyl or unbranched alkoxy, each of up to 6 carbon atoms; R_4 and R_6 are H, halogen, OH, alkoxy of up to 6 carbon atoms, benzyloxy or tetrahydropyranyloxy, NO_2, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, sec.butyl, amino, alkylamino, or dialkylamino, each of up to 8 carbon atoms, or alkanoyl of up to 7 carbon atoms; R_5 is H, halogen, OH, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, sec.butyl, amino, alkylamino or dialkylamino, each of up to 8 carbon atoms, or alkanoyl of up to 7 carbon atoms; or R_4 and R_5 or R_5 and R_6 collectively are —CH=CH—CH=CH—; and R_7 is OH, alkoxy of up to 6 carbon atoms, benzyloxy or tetrahydropyranyloxy.

3,882,125
2,9-DIOXO-3,6 SUBSTITUTED THIAZOLO[5,4-F] QUINOLINE-8-CARBOXYLATES

Renzo Dohmori, Yachiyo; Shizuo Kadoya, Tokyo; Senkichi Nagasaki, Funabashi, and Hidemasa Ogawa, Tokyo, all of Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1972, Ser. No. 300,950
Claims priority, application Japan, Oct. 26, 1971, 46-84846
Int. Cl. C07d *91/42*
U.S. Cl. 260—283 S **21 Claims**

1. A compound having the formula:



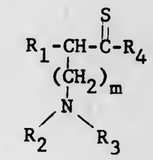
wherein R^3 is C_1—C_6 lower alkyl or C_1—C_6 alkenyl; R^6 is C_1—C_6 lower alkyl; and R^8 is an —OR, or —NHR″ group, in which R is a member selected from the group consisting of an C_1—C_6 lower alkylamino C_1—C_6 lower alkyl, a piperidino C_1—C_6 lower alkyl, an C_1—C_6 lower alkyl piperidino C_1—C_6 lower alkyl, an alkanoyloxy C_1—C_6 lower alkyl, a hydroxy C_1—C_6 lower alkyl, a halogeno C_1—C_6 lower alkyl, C_1—C_6 lower alkyl, an oxooxazolidino C_1—C_6 lower alkyl, C_1—C_6 lower alkenyl; and R″ is an C_1—C_6 lower alkyl amino C_1—C_6 lower alkyl, or the pharmaceutically acceptable acid-addition salt thereof.

3,882,126
2-AMINO(AND 2-AMINOMETHYL)-2-QUINOLYLTHIOACETAMIDES

L. Martin Brenner, Upper Darby, and Bernard Loev, Broomall, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 236,593, March 21, 1972, Pat. No. 3,740,409. This application Mar. 30, 1973, Ser. No. 346,488
Int. Cl. C07d *33/48*
U.S. Cl. 260—283 S **4 Claims**

1. A compound of the formula:

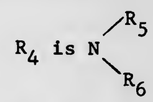


in which:

m is 0 or 1;

R_1 is a 2-quinolyl ring, said ring being optionally nonsubstituted by halogen, lower alkyl or lower alkoxy;

R_2 and R_3 are lower alkyl or taken together with the nitrogen atom to which they are attached form a piperidino, pyrrolidino or N-lower alkylpiperazino ring;



or NH-$(CH_2)_n$-cycloalkyl, said cycloalkyl having 3-6 carbon atoms;

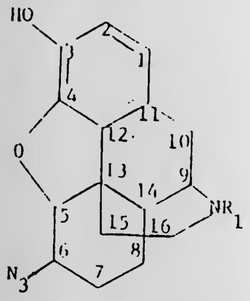
R_5 and R_6 are hydrogen or lower alkyl and *n* is 0 or 1 or a pharmaceutically acceptable acid addition salt thereof.

3,882,127
17-ALKENYL-6β-AZIDO-4,5α-EPOXYMORPHINAN-3-OLS

Robert I. Meltzer, Rockaway, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 31, 1973, Ser. No. 393,379
Int. Cl. C07d *43/28*
U.S. Cl. 260—285 2 Claims

1. A compound of the formula:



wherein R_1 is alkenyl having 3 to 8 carbon atoms and the pharmaceutically acceptable acid addition salts.

3,882,128
ISOCYANATED IMIDES OF HYDROCARBON ANHYDRIDES AND BLENDS THEREOF

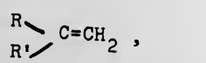
Robin A. McLaren, Ballwin, and Charles A. Alcott, St. Louis, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 788,947, Jan. 3, 1969, abandoned. This application May 18, 1973, Ser. No. 361,765
Int. Cl. C08c *11/70*
U.S. Cl. 260—28.5 A 10 Claims

1. An isocyanated imide reaction product of

1. an organic isocyanate or a mixture of organic isocyanates and
2. an imide of a member selected from the group consisting of

an olefin-maleic compound adduct prepared by reacting (a) a maleic compound selected from the group consisting of maleic acid, citraconic acid, ethylmaleic acid, glutaconic acid, itaconic acid, methylitaconic acid, the anhydride of each of said acids and an ester drivative of each of said acids with (b) an olefin of the formula R-CH=CH_2 or of the formula



where R is a hydrocarbon radical of 9-100 carbon atoms and R′ is hydrogen or $H(CH_2)_n$, n being 1-100 , and

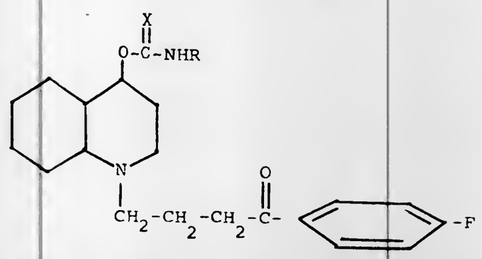
ii. a wax-maleic compound graft copolymer prepared by reacting (a) a maleic compound selected from the group consisting of maleic acid, citraconic acid, ethylmaleic acid, glutaconic acid, itaconic acid, methylitaconic acid, the anhydride of each of said acids and an ester derivative of each of said acids with (b) a wax selected from the group consisting of plastic microcrystalline waxes, tank bottom waxes, tank bottom microcrystalline waxes, solvent extracted microcrystalline waxes, Fischer-Tropsch waxes, polyalkylene hydrocarbon waxes and blends thereof.

3,882,129
4-CARBAMOYL-1-(P-FLUOROBENZOYLPROPYL)DECAHYDROQUINALINE DERIVATIVES

Maurice Prost, Brussels, and Marcel Urbain, Waterloo, both of Belgium, assignors to Labaz, Paris, France

Filed Nov. 24, 1972, Ser. No. 309,446
Claims priority, application United Kingdom, Nov. 23, 1971, 54466/71
Int. Cl. C07d *33/48*
U.S. Cl. 260—287 R 10 Claims

1. A heterocyclic compound of the formula



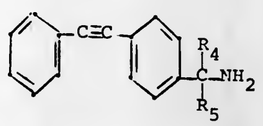
and pharmaceutically acceptable acid addition salts thereof, wherein R represents hydrogen, lower alkyl having 1 to 3 carbon atoms, allyl, cycloalkyl having 5 to 6 carbon atoms, phenyl, phenyl substituted by a fluorine, chlorine or bromine atom or methoxyl group, or benzyl, and X represents an oxygen or sulphur atom.

3,882,130
4-PHENYLETHYNYL BENZYLAMINES

David C. Remy, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 861,987, Sept. 29, 1969, Pat. No. 3,719,712. This application Jan. 7, 1972, Ser. No. 216,264The portion of the term of this patent subsequent to Mar. 6, 1990, has been disclaimed.
Int. Cl. C07d *29/10*
U.S. Cl. 260—293.72 5 Claims

1. A compound of the formula



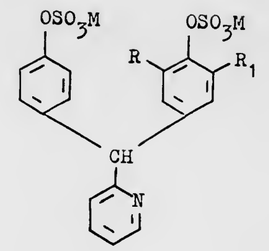
and N-loweralkyl and N,N-diloweralkyl derivatives thereof in which the alkyls contain from 1 to 4 carbons, wherein R_4 and R_5 are hydrogen or loweralkyl substituents.

3,882,131
PROCESS FOR PREPARING 4,4-DISULPHOXY-DIPHENYL-(2-PRYIDYL)-METHANE DERIVATIVES

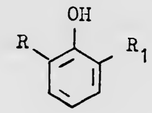
Tiberio Bruzzese, Milan, Italy, assignor to SPA - Societa Prodotti Antibiotics S.p.A., Milan, Italy

Division of Ser. No. 288,076, Sept. 11, 1972, Pat. No. 3,822,273. This application Oct. 5, 1973, Ser. No. 403,978
Claims priority, application United Kingdom, Sept. 17, 1971, 43431/71
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 R 5 Claims

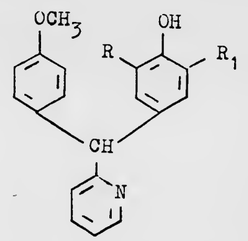
1. A process for the preparation of a 4,4′-disulphoxydiphenyl-(2-pyridyl)-methane compound of the formula



wherein M is a cation selected from the group consisting of alkali metal, alkaline earth metal, aluminium and non-toxic amine cations and R and R_1, which are the same or different, are hydrogen, halogen, alkyl of 1 – 6 carbon atoms, phenyl, naphthyl, benzyl or phenethyl, which comprises (1) condensing p-methoxyphenyl-(2-pyridyl)-methanol with a phenol of the formula

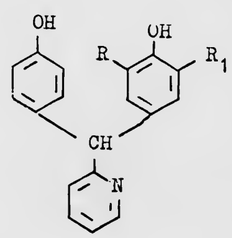


wherein R and R_1 have the same meanings as above, in the presence of sulphuric acid to yield a compound of the formula



(V)

wherein R and R_1 have the same meanings as above, (2) demethylating the compound V to yield an asymetric compound of the formula



(VI)

wherein R and R_1 have the same meanings as above, (3) esterifying the compound VI to yield the dihemisulphate ester and (4) neutralizing the ester with a basic alkali metal compound, alkaline earth metal compound, aluminium compound or a non-toxic amine.

3,882,132
PREPARATION OF 1-ALKYL-1,4-DIHYDRO-7-SUBSTITUTED-4-OXO-1,8-NAPHTHYRIDINE-3-CARBOXYLIC ACIDS VIA THE 3-AMINOMETHYL ANALOGS

George Y. Lesher, Schodack, and Monte D. Gruett, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,090
Int. Cl. C07d *31/36*
U.S. Cl. 260—295.5 B 6 Claims

1. The process which comprises reacting 1,4-dihydro-4-oxo-7-Q-1,8-naphthyridine with formaldehyde and a lower-secondary amine of the formula R_1R_2NH to produce 1,4-dihydro-3-($R_1R_2NCH_2$)-4-oxo-7-Q-1,8-naphthyridine, reacting the latter with a lower-alkylating agent to produce 1-(lower-alkyl)-1,4-dihydro-3-($R_1R_2NCH_2$)-4-oxo-7-Q-1,8-naphthyridine, and reacting said 1-(lower-alkyl)-3-($R_1R_2NCH_2$) compound with a oxidizing agent capable of converting —$CH_2NR_1R_2$ to —COOH to produce 1-(lower-alkyl)-1,4-dihydro-4-oxo-7-Q-1,8-naphthyridine-3-carboxylic acid, where Q is lower-alkyl, lower-alkanoyloxymethyl, 4(or 3)-pyridyl or 4(or 3)-pyridyl having one or two lower-alkyl substituents, and R_1 and R_2 are each lower-alkyl.

3,882,133
MANUFACTURE OF BIPYRIDYLS

Raymond Frederick Dalton, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 6, 1972, Ser. No. 303,957
Claims priority, application United Kingdom, Nov. 15, 1971, 52936/71
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 D 6 Claims

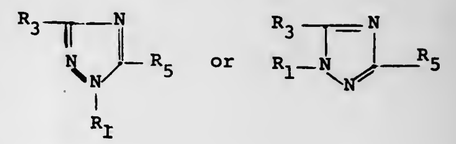
1. A process for the manufacture of 2,2′-bipyridyl and dimethyl derivatives thereof which comprises heating at a temperature of between 300° and 400°C. pyridine or α, β or γ-picoline with from 2 to 40% of its weight of a halide salt of pyridine or of a quaternised pyridine, the pyridine being selected from pyridine itself, α, β or γ-picoline and 2,2′-dipyridyl and the quaternised group being derived from a member selected from the group consisting of methyl iodide, ethylene dichloride, ethylene dibromide, acetyl chloride, α, α′-dichloroacetone or o-xylylene dibromide and wherein from 2% to 40% of the salt, based on the weight of the pyridine, is used.

3,882,134
1-SUBSTITUTED-3,5-DIPYRIDYL-1,2,4-TRIAZOLES

John J. Baldwin, Lansdale, and Frederick C. Novello, Berwyn, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 21, 1973, Ser. No. 361,914
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R 10 Claims

1. A triazole of the formula



wherein

R_1 is a substituted, C_1—C_5 -alkyl having substituents selected from hydroxy, phenyl, chlorophenyl, nitrophenyl, dilower-C_1—C_3—alkylamino

R_3 is pyridyl; and

R_5 is pyridyl.

3,882,135
PROCESS FOR THE PREPARATION OF AMINOPYRIDINES

Richard Garth Pews; Lennon H. McKendry, both of Midland, Mich., and Ralph M. Rodia, Salem, Oreg., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 285,503, Aug. 31, 1972, Pat. No. 3,804,848, and a continuation-in-part of Ser. No. 94,622, Dec. 2, 1970. This application Nov. 1, 1973, Ser. No. 411,944

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R **8 Claims**

1. A process for the preparation of an aminopyridine compound which comprises reacting a pyridine compound, ring-substituted with at least one displaceable substituent selected from the group consisting of chloro, bromo, fluoro, iodo, $-N^+_3$, $-OSO_2R$, and $-SR^+_2$, wherein each R independently represents hydrogen, phenyl or a loweralkyl radical of from one to about 4 carbon atoms, inclusive, with an alkali metal cyanate in the presence of a high dielectric-aprotic solvent and water.

3,882,136
S-[OMEGA-(1-IMIDAZOLYL) ALKYL]HYDROGEN MONOTHIOSULFATES AND SALTS THEREOF

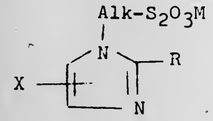
Ernest F. Levon, Evanston, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 16, 1973, Ser. No. 416,382

Int. Cl. C07d *49/36*

U.S. Cl. 260—299 **9 Claims**

1. A compound of the formula



wherein R represents hydrogen, lower alkyl, phenyl, or halophenyl; X represents hydrogen or nitro; Alk represents alkylene containing more than 1 and fewer than 7 carbons; and M represents hydrogen, alkali metal, ammonium, silver, or alkaline earth metal/2.

3,882,137
BIS-HYDANTOIN DIALCOHOLS

Juergen Habermeier, Allschwil; Hans Batzer, Arlesheim, and Daniel Porret, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 80,493, Oct. 13, 1970, Pat. No. 3,726,895. This application June 13, 1972, Ser. No. 262,423

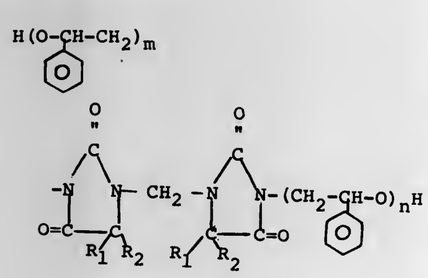
Claims priority, application Switzerland, Nov. 18, 1969, 17105/69

Int. Cl. C07d *49/32*

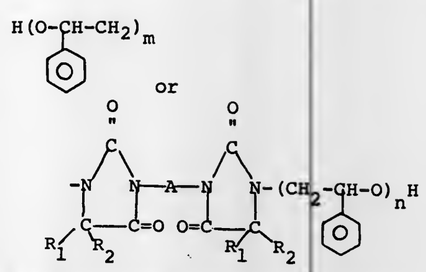
U.S. Cl. 260—309.5 **6 Claims**

1. A dialcohol of the formula

(a)



(b)



wherein R_1 and R_2 is hydrogen, alkyl of 1 to 5 carbon atoms, or where R_1 and R_2 is tetramenthylene or pentamethylene; and A is an alkylene of 1 to 12 carbon atoms or lower alkylene interrupted by one oxygen atom; and m and n each represents an integer having a value of 1 to 30.

3,882,138
OXAZOLE AND OXADIAZOLE BENZOIC ACID DERIVATIVES AS HERBICIDES

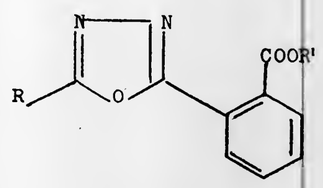
Walter G. Brouwer, Gulph, Ontario; Edwin J. MacPherson, Waterloo, Ontario, both of Canada; Ronald B. Ames, Naugatuck, Conn., and Robert W. Neidermyer, Cheshire, N.H., assignors to Uniroyal, Inc., New York, N.Y. and Uniroyal Ltd., Montreal, Canada

Filed Aug. 9, 1971, Ser. No. 170,263

Int. Cl. C07d *85/54*

U.S. Cl. 260—307 G **6 Claims**

1. A chemical having the structural formula



wherein R is selected from the group consisting of
phenyl,
phenyl substituted with up to three substitutents wherein the substitutents are halo, nitro, alkyl having up to 4 carbon atoms or alkoxy having up to 4 carbon atoms,
4-methyl-2-(pyridyl)-5-thiazolyl,
alkyl having up to 6 carbon atoms, and 3-pyridyl;
and R′ is hydrogen, alkali metal, ammonium, or a moiety having up to 12 carbon atoms selected from alkyl, alkynyl and epoxyalkyl.

3,882,139
2-[3-(HYDROXYMETHYL)-5-(PHTHALIMIDOMETHYL)-4H,1,2,4-TRIAZOL-4-YL]BENZOPHENONES

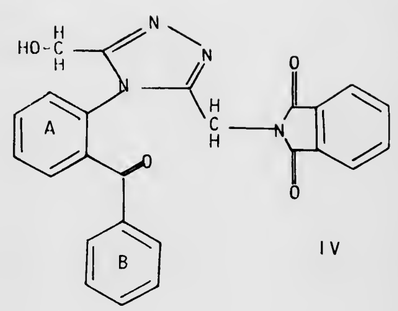
Martin Gall, Kalamazoo, and Jackson B. Hester, Jr., Galesburg, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 332,293, Feb. 14, 1973, Pat. No. 3,842,090. This application June 19, 1974, Ser. No. 480,978

Int. Cl. C07d *57/00*

U.S. Cl. 260—308 R **10 Claims**

1. A compound of the formula IV:



IV

wherein rings A and B are unsubstituted, or substituted with one or two substituents selected from the group consisting of fluoro, chloro, bromo, trifluoromethyl and nitro.

3,882,140
SALTS OF 2,4,5-TRISUBSTITUTED IMIDAZOLES AND THEIR PREPARATION

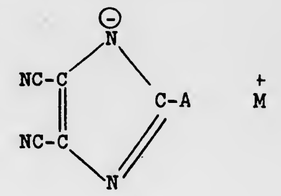
Owen Wright Webster, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 242,199, April 7, 1972, Pat. No. 3,793,339. This application Nov. 5, 1973, Ser. No. 412,701

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **10 Claims**

1. A compound having the formula



wherein
M is a tetra(lower alkyl)ammonium group or a Group I metal and
A is chlorine, bromine, iodine, cyano, nitro or azido.

3,882,141
BENZO-(F)-1,4-THIAZEPINES

Helmut Hagen, Frankenthal; August Amann, Ludwigshafen, and Hubert Giertz, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhein, Germany

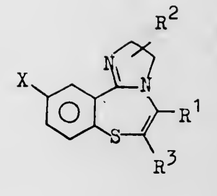
Filed Mar. 27, 1973, Ser. No. 345,308

Claims priority, application Germany, Mar. 30, 1972, 2215606

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **6 Claims**

1. A benzo-(f)-1,4-thiazepine of the formula



(I)

or a pharmacologically compatible acid addition salt thereof in which X is hydrogen, chloro, bromo or lower alkyl of one to seven carbon atoms,
R^1 is lower alkyl of one to four carbon atoms, phenyl, naphthyl or said phenyl and naphthyl which are mono- or di-substituted by halogen, hydroxy, nitro, methoxy, acetylamino or alkyl of 1 to 4 carbon atoms, and
R^2 and R^3 are each hydrogen or lower alkyl of one to four carbon atoms.

3,882,142
1,2-DIALKYL-3,5-DIPHENYL PYRAZOLIUM SALTS

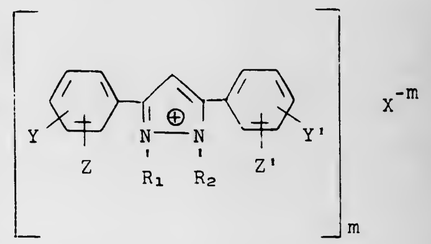
Bryant Leonidas Walworth, Pennington, and Erwin Klingsberg, Mountain Side, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 271,424, July 13, 1972, abandoned, which is a continuation-in-part of Ser. No. 209,448, Dec. 17, 1971, abandoned. This application Nov. 17, 1972, Ser. No. 307,672

Int. Cl. C07 *49/18*

U.S. Cl. 260—311 **7 Claims**

1. A compound having the formula:



wherein R_1 and R_2 each represent lower alkyl of 1 to 4 carbon atoms; Y, Y′, Z and Z′ each independently represent a member selected from the group consisting of hydrogen; halogen; nitro; alkyl of 1 to 4 carbon atoms; haloalkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; *m* is an integer selected from 1, 2 and 3; and, X represents an anion selected from the group of: acetate, sulfate, hydroxide, hydrogen sulfate, methyl sulfate, benzene sulfonate, a 1 to 4 carbon atom, alkoxybenzene sulfonate; a 1 to 3 carbon atom alkylbenzene sulfonate, nitrate, phosphate, carbonate and alkane sulfonate of 1 to 4 carbon atoms.

3,882,143
4-(2-HYDROXY-3-AMINOPROPOXY)OXINDOLE DERIVATIVES

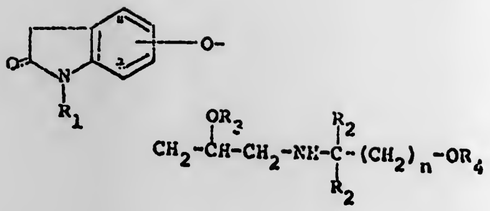
Fritz Seemann, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Dec. 19, 1972, Ser. No. 316,580

Int. Cl. C07d *27/40*

U.S. Cl. 260—325 R **9 Claims**

1. A compound of the formula:



wherein the aminopropoxy side chain is in the 4 or 7 position of the oxindole structure,

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms, both groups R_2 are the same and are each hydrogen or alkyl of 1 to 4 carbon atoms,

n is an integer from 1 to 8, and

R_3 and R_4, which are the same or different, are each hydrogen or the group $—COR_5$,

wherein

R_5 is alkyl of 1 to 12 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms substituted by alkyl of 1 to 4 carbon atoms; thienyl; furyl; pyridyl; or tetrahydropyranyl; phenyl; phenylalkyl of 7 to 12 carbon atoms; styryl; or phenyl, phenylalkyl of 7 to 12 carbon atoms or styryl mono substituted, on the phenyl nucleus thereof, by fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms,

in free base or pharmaceutically acceptable acid addition salt form.

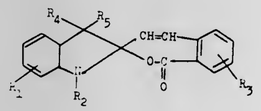
3,882,144

1'-OXOSPIRO(INDOLINE-2,3'-1'H,3H'-2-BENZOXEPINE)DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

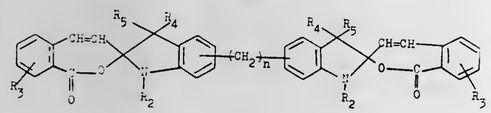
Harumi Katsuyama, and Histake Ono, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-shi, Japan

Filed Sept. 8, 1972, Ser. No. 287,385
Claims priority, application Japan, Sept. 9, 1971, 46-69852
Int. Cl. C07d *27/38*
U.S. Cl. 260—326.11 S **37 Claims**

1. A 1'-oxospiro(indoline-2,3'-1'H,3H'-2-benzoxepine) compound of the formula:

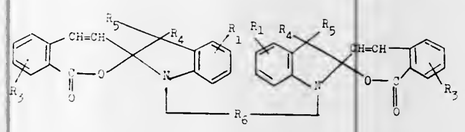


(I - 1)



(II - 1)

or



(III - 1)

wherein R_1 is a hydrogen atom, a halogen atom, a nitro group, an alkyl group containing from 1 to 3 carbon atoms, an alkoxyl group containing from 1 to 3 carbon atoms, or an alkoxycarbonyl group containing from 2 to 4 carbon atoms;

R_2 is an alkyl group or an aralkyl group represented by the formula $—CH_2—X$, in which X is a hydrogen atom, a hydroxyl group, a cyano group, a nitro phenyl group, a carboxyl group, or an alkoxycarbonyl group containing from 2 to 4 carbon atoms and *m* is an integer of from 1 to 4;

R_6 is an alkylene chain containing from 1 to 5 carbon atoms or a xylylene group;

R_3 is a hydrogen atom, a halogen atom or a nitro group;

R_4 and R_5 each is an alkyl group having from 1 to 3 carbon atoms; and

n is 0 or an integer of 1 or 2.

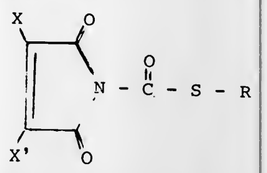
3,882,145

HALOGENATED N-SUBSTITUTED THIOCARBOXY MALEIMIDES

William E. Bissinger, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 22, 1972, Ser. No. 317,571
Int. Cl. C07d *27/18*
U.S. Cl. 260—326.4 **5 Claims**

1. A halogenated N-substituted thiocarboxy maleimide represented by the formula:



where X is halogen; X' is halogen or H; and R is alkyl, alkenyl, cycloalkyl, cycloalkenyl, haloalkyl, haloalkenyl, phenyl, alkyl phenyl, alkoxyphenyl or halophenyl containing 12 carbon atoms or less.

3,882,146

PROCESS FOR PREPARING PYRRYL-2-ACETONITRILES

Karl E. Wiegand, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 30, 1973, Ser. No. 355,785
Int. Cl. C07d *27/22*
U.S. Cl. 260—326.62 **4 Claims**

1. In a process for producing pyrryl-2-acetonitriles comprising reacting a 2-(N,N-dialkylaminomethyl)-pyrrole with an alkylating agent to form a quaternary salt and further reacting the quaternary salt with an aqueous alkali metal cyanide solution, the improvement comprising carrying out the process homogeneously in a reaction medium which is an inert solvent

selected from the group consisting of ketones and ethers having up to about 10 carbon atoms.

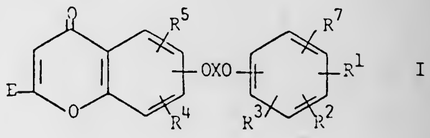
3,882,147

3-HYDROXY-3-(3,4-METHYLENEDIOXYPHENYLALKYL-3,4-DIHYDRO-2H-1,5-BENZODIOXEPIN PRODUCTS

Burton K. Wasson, Valois, and Haydn W. R. Williams, Dollard Des Ormeaux, Quebec, both of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 249,422, May 1, 1972, Pat. No. 3,812,150, which is a division of Ser. No. 832,879, June 9, 1969, Pat. No. 3,700,691, which is a continuation-in-part of Ser. No. 755,442, Aug. 26, 1968, abandoned. This application Nov. 21, 1973, Ser. No. 417,870
Int. Cl. C07d *13/00*
U.S. Cl. 260—340.5 **7 Claims**

1. A 3,3-disubstituted -benzodioxepin having the structure



I

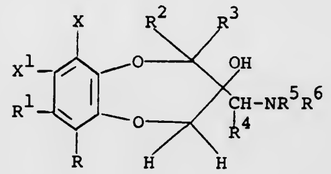
wherein

X is a straight chain alkylene group containing from 3 to 7 carbon atoms and is unsubstituted or is substituted by one hydroxy group, E is a carboxy group and

R_1, R_2 and R_3 may be the same or different and are hydrogen, hydroxy, methoxy, benzyloxy, acetyl, acetylamino, allyl or propyl and

R_4 is hydrogen, allyl or propyl,

and pharmaceutically acceptable salts thereof.



and acid addition salts thereof wherein

R is selected from hydrogen, hydroxy, lower alkyl and lower alkoxy;

R^1 is selected from hydrogen, chloro, bromo, lower alkyl, nitro, amino, C_{1-3} alkylsulfonylamino, C_{1-3} alkoxycarbonylamino, lower carbalkoxyamino, hydroxy and lower alkoxy;

X and X^1 are selected from hydrogen, lower alkyl and halogen;

R^2 is selected from hydrogen, lower alkyl, phenyl, phenyl-lower alkyl and lower cycloalkyl;

R^3 is selected from hydrogen, lower alkyl, phenyl and phenyl-lower alkyl;

R^4 is selected from hydrogen and lower alkyl;

R^5 is selected from hydrogen, lower alkyl, and 2-phenyl-2-hydroxyethyl;

R^6 is 3,4-methylenedioxyphenyl-lower alkyl.

3,882,148

CHROME COMPOUNDS HAVING SRS—A PROPERTIES

Joachim Augstein, Lindford; David Carter, and Thomas Brian Lee, both of Loughborough, all of England, assignors to Fisons Limited

Filed July 31, 1972, Ser. No. 276,798
Int. Cl. C07d *7/34*
U.S. Cl. 260—345.2 **25 Claims**

1. A compound of the formula

I

wherein

X is a straight chain alkylene group containing from 3 to 7 carbon atoms and is unsubstituted or is substituted by one hydroxy group, E is a carboxy group and

R_1, R_2 and R_3 may be the same or different and are hydrogen, hydroxy, methoxy, benzyloxy, acetyl, acetylamino, allyl or propyl and

R_4 is hydrogen, allyl or propyl,

and pharmaceutically acceptable salts thereof.

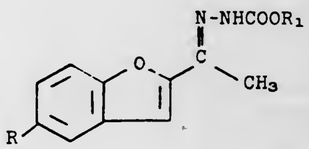
3,882,149

SUBSTITUTED BENZOFURANYL ETHYLIDENE CARBAZIC ACID ESTERS

John Paul Dusza, Nanuet; Harry Lee Lindsay, Pearl River, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 17, 1973, Ser. No. 425,423
Int. Cl. C07d *5/42*
U.S. Cl. 260—346.2 R **3 Claims**

1. A compound of the formula:



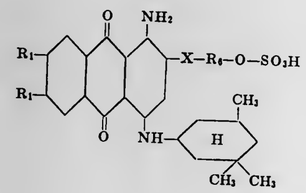
wherein R is selected from the group consisting of hydrogen and chlorine, and R_1 is alkyl C_1–C_4.

3,882,150
ANTHRAQUINONE COMPOUNDS

Wolfgang Frey, Munchenstein Basel-Land, and Wolfgang Schoenauer, Riehen/BS, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 808,322, March 18, 1969, Pat. No. 3,646,071. This application Nov. 17, 1971, Ser. No. 199,810
Claims priority, application Switzerland, Apr. 8, 1968, 5122/68; May 31, 1968, 8169/68; Sept. 30, 1968, 14593/68
Int. Cl. C07c *97/14*
U.S. Cl. 260—380 **6 Claims**

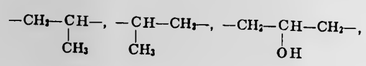
1. A compound of the formula



wherein

one R_1 is hydrogen, fluorine, chlorine or bromine or a $-SO_3H$-group and the other R_1 is hydrogen, or each R_1 is chlorine,

R_6 is $-CH_2-CH_2-$, $-CH_2-CH_2-CH_2-$,



or $-CH_2-CH_2-(O-CH_2-CH_2)_p-$,

X is $-O-$ or $-S-$, and

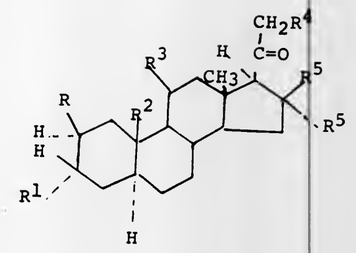
p is 1 to 9.

3,882,151
CHEMICAL COMPOUNDS

Gordon Hanley Phillipps, Wembley, and Christopher Earle Newall, London, both of England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

Filed Dec. 16, 1971, Ser. No. 208,961
Claims priority, application United Kingdom, Dec. 17, 1970, 60065/70
Int. Cl. C07c *167/00*
U.S. Cl. 260—397.45 **13 Claims**

1. A [3α-oxygenated pregnane-21-ether having the general] compound of the formula



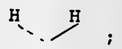
wherein:

R is hydrogen, halogen, C_1–C_6 alkanoyloxy, C_1–C_6 alkoxy, C_1–C_6 aklylthio, C_1–C_5 alkyl or thiocyanato;''

R^1 is hydroxy or an alkanoyloxy group of up to 5C atoms or such a group substituted by at least one halogen atom or carboxy or amino group;

R^2 is hydrogen or methyl;

R^3 is oxygen or



;

R^4 is a C_1–C_6 alkoxy, C_5–C_6 cycloalkoxy, phenyl (C_1–C_6) alkoxy or phenoxy group or such a group substituted by at least one halogen atom or a carboxyl, C_1–C_6 alkoxycarbonyl, C_1–C_6 alkoxy or cyano group or an amino group of the formula NR^aR^b where R^a and R^b which may be the same or different are H or C_1–C_4 alkyl or NR^aR^b represents a piperazino or morpholino group or such a group substituted by at least one C_1–C_4 alkyl group; and

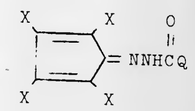
R is hydrogen or C_1–C_6 alkyl.

3,882,152
BETA CYCLOPENTADIENYL HYDRAZIDES AND CARBAZATES

Dale D. Dixon, Kutztown, and Joseph V. Urenovitch, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

Filed Sept. 9, 1970, Ser. No. 70,883
Int. Cl. C07c *125/00*
U.S. Cl. 260—468 E **2 Claims**

1. Compound corresponding to a structure



wherein each X is independently selected from F, Cl, Br and I and wherein Q is a C_1–C_6 alkoxy radical.

3,882,153
METHOD FOR RECOVERING FLUORINATED CARBOXYLIC ACID

Shigeru Seki, and Koji Sato, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 70,916, Sept. 9, 1970, abandoned. This application Apr. 4, 1973, Ser. No. 347,665
Claims priority, application Japan, Sept. 12, 1969, 44-72483
Int. Cl. C07c *51/42*; C08f *1/88*
U.S. Cl. 260—408 **5 Claims**

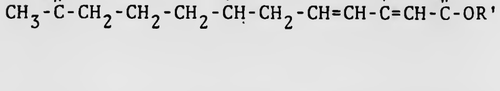
1. A method for recovering a fluorinated carboxylic acid from a dilute aqueous solution, which comprises contacting a weak basic anion exchange resin with a dilute aqueous solution of a fluorinated carboxylic acid of the formula X —CYZ-$CF_2)_n$COOM, where X is H, Cl, F, CF_3, or CF_2CL; Y is H or F; Z is H, Cl, or F; M is H, NH_4, K or Na; and n is an integer of 2 to 6, and containing a total of 5–13 carbon atoms in the X —CYZ-$CF_2)_n$ group to adsorb the fluorinated carboxylic acid onto the basic anion exchange resin, and then contacting the anion exchange resin with an aqueous solution of NH_3 as an eluent to transfer the fluorinated carboxylic acid from the anion exchange resin into the eluent to isolate the fluorinated carboxylic acid; said weak basic anion exchange resin (a) containing at least one amine group, as an exchange group selected from primary, secondary and tertiary amines, and (b) having a pH in the range of 0 to 7.0

3,882,154
ESTERS OF 3,7,11 -TRIMETHYLDODECA-2,4,11-TRIENOIC ACID

Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Nov. 9, 1972, Ser. No. 305,042
Int. Cl. C07c *153/07*; A01n *9/24*
U.S. Cl. 260—410 **7 Claims**

1. A compound selected from those of the following formula:



wherein, R′ is lower alkyl, cycloalkyl of three to eight carbon atoms, or lower alkynyl.

3,882,155
PROCESS FOR SYNTHESIZING SPECIFIC COMPLETE MIXED POLYOL ESTERS

Harry Whitney Wharton, Colerain Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 12, 1973, Ser. No. 415,034
Int. Cl. C07c *67/00*
U.S. Cl. 260—410.7 **16 Claims**

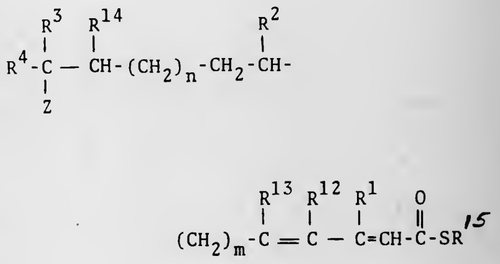
1. A process for preparing specific complete mixed polyol esters from partial polyol esters with substantially no ester group rearrangement comprising esterifying a partial polyol ester with an acid anhydride in the presence of a catalytic amount of 2,4,6-trinitrobenzene sulfonic acid, said partial polyol ester being selected from the group consisting of partial polyol esters from saturated aliphatic diols having the hydroxyl groups unsymmetrically substituted with respect to the carbon chain and partial polyol esters from saturated aliphatic polyols containing at least three hydroxyl groups.

3,882,156
DI- AND TRI-OLEFINIC THIOLESTERS

Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 266,030, June 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 206,174, Dec. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 187,897, Oct. 8, 1971, Pat. No. 3,755,411, which is a continuation-in-part of Ser. Nos. 111,650, Feb. 1, 1971, Pat. No. 3,729,486, and Ser. No. 111,702, Feb. 1, 1971, abandoned, and Ser. No. 111,765, Feb. 1, 1971, abandoned, and Ser. No. 111,766, Feb. 1, 1971, abandoned, and Ser. No. 111,770, Feb. 1, 1971, abandoned, and Ser. No. 115,725, Feb. 16, 1971, Pat. No. 3,706,733. This application Nov. 1, 1972, Ser. No. 302,982
Int. Cl. C07c *153/01*
U.S. Cl. 260—455 R **29 Claims**

1. A compound selected from those of the formula:



wherein,

m is zero or the positive integer one;

n is zero or the positive integer one or two;

Z is chloro or the group —OR in which R is hydrogen, lower alkyl or hydrocarbon carboxylic acyl of one to three carbon atoms;

each of R^1, R^2 and R^3 is methyl or ethyl; R^4 is lower alkyl; each of R^{12}, R^{13} and R^{14} is hydrogen or methyl; and

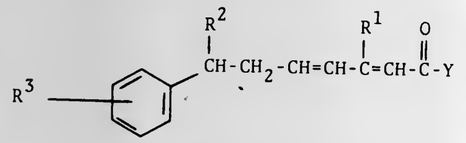
R^{15} is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl of three to eight carbon atoms, aryl of six to 12 carbon atoms, or aralkyl of seven to 12 carbon atoms.

3,882,157
THIOLESTERS OF PHENYLHEPTADIENOIC ACIDS

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 275,646, July 27, 1972, Pat. No. 3,845,089. This application June 10, 1974, Ser. No. 477,573
Int. Cl. C07c *153/01*
U.S. Cl. 260—455 R **9 Claims**

1. A compound selected from those of the formula:



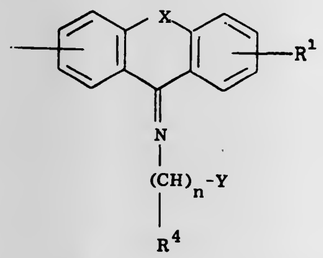
wherein,
each of R^1 and R^2 is lower alkyl;
R^3 is lower alkyl, chloro, the group —OR or the group —SR in which R is hydrogen or lower alkyl; and
Y is lower alkylthio.

3,882,158
TRICYCLIC IMINES

Philippe Dostert, Basel, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 184,901, Sept. 29, 1971, Pat. No. 3,803,234. This application Jan. 14, 1974, Ser. No. 433,319
Claims priority, application Switzerland, Oct. 9, 1970, 14972/70
Int. Cl. C07c *143/68*
U.S. Cl. 260—456 A **2 Claims**

1. A compound of the formula



wherein X is ethylene or vinylene; R^1 is hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl, cyano, lower alkoxycarbonyl, carbamoyl, sulfamoyl, lower alkylmercapto, trifluoromethyl or nitro; R^4 is hydrogen or lower alkyl; *n* is an integer from 2 to 5; and Y is phenylsulfonyloxy or phenylsulfonyloxy substituted by lower alkyl or halogen.

3,882,159
REACTIVATION OF MOLYBDENUM CONTAINING OXIDATION CATALYSTS IN FLUID BED REACTORS

James L. Callahan, Bedford Heights; Wilfrid G. Shaw, and Arthur F. Miller, both of Lyndhurst, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Aug. 20, 1973, Ser. No. 390,175
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 **5 Claims**

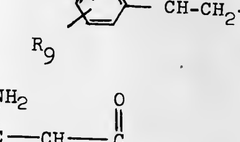
1. In the process for the ammoxidation of propylene at a temperature of about 200° to about 600°C. in a fluid-bed reactor using a fluid-bed ammoxidation catalyst containing molybdenum to produce acrylonitrile wherein said ammoxidation catalyst has become partially deactivated by loss of molybdenum, the improvement comprising regenerating the ammoxidation catalyst at reaction temperatures in the presence of air, steam or mixture thereof by contacting the ammoxidation catalyst with fluid-bed particles consisting of (a) an essentially inert support giving less than 25% conversion of the propylene and (b) molybdenum oxide.

3,882,160
CARBAMATES AND THIOLCARBAMATES

Julius Jakob Fuchs, Wilmington, Del., assignor to E. I. du Pont de Nemours Company, Wilmington, Del.

Continuation-in-part of Ser. No. 312,904, Dec. 7, 1972, Pat. No. 3,823,179. This application May 2, 1973, Ser. No. 356,422
Int. Cl. C07c *129/12*
U.S. Cl. 260—468 E **4 Claims**

1. A compound having the following formula



wherein
R_1 is selected from a C_4–C_8 cycloalkyl substituted with 0–1 C_2–C_4 alkyl, 0–2 methyl groups, 0–2 chlorine or bromine atoms, or 0–1 methoxy or ethoxy group; a C_5–C_8 cycloalkenyl; a C_6–C_8 cycloalkylmethyl or cycloalkenylmethyl; a C_7–C_{10} bicycloalkyl or bicycloalkenyl; a C_8–C_{11} bicycloalkylmethyl or bicycloalkenylmethyl; trimethylcyclohexyl; tetramethylcyclohexyl;
R_2 is a C_1–C_3 alkyl;
R_3 is hydrogen, methyl, or ethyl;
R_4 is a C_1–C_4 alkyl, a C_3–C_4 alkenyl, a C_3–C_4alkenyl;
R_5 is —OR_6,
wherein R_6 is a C_1–C_8 alkyl substituted with 0—3 chlorine atoms or 0–1 methoxyl; and
X is oxygen.

3,882,161
BETA-PHENYLPROPIONIC ACIDS AND ESTERS

Kurt Eichenberger, Therwil, and Christian Egli, Magden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,444
Claims priority, application Switzerland, Apr. 9, 1970, 5273/70; July 16, 1970, 10817/70; Mar. 2, 1971, 3065/71
Int. Cl. C07c *101/18*
U.S. Cl. 260—471 A **7 Claims**

1. A member selected from the group consisting of a compound of the formulae

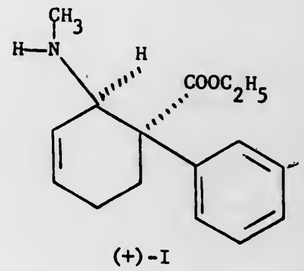
wherein the NH—CO—XR′ occupies the two or three position on the phenyl ring, and wherein X is oxygen, R′ is a lower alkyl, or phenyl radical and R_2 and R_3 are methyl groups and *n* and *m* are integers having values from 2 through 4 inclusive.

3,882,164
DEXTROROTATORY 3r-N-MONOMETHYL-AMINO-4c-HENYL-4t-ETHOXYCARBONICYCLOHEXENE-1 AND PROCESS FOR THE PRODUCTION THEREOF

Gerhard Satzinger; Wolfgang Herrmann, both of Denzlingen, and Manfred Herrmann, Gundelfingen, all of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 266,036, June 26, 1972, abandoned. This application July 5, 1973, Ser. No. 376,845
Int. Cl. C07c *101/14*
U.S. Cl. 260—471 A **6 Claims**

1. A compound of formula (+)-I



(+)-I

which is (+)-3r-N-monomethylamino-4c-phenyl-4t-ethoxycarbonylcyclohexene-1, the hydrochloride, D-(−)-O,O-dibenzoyltartrate L-(+)-O,O-dibenzoyltartrate or other medically acceptable acid addition salts thereof.

3,882,162
PROCESS FOR MAKING A C1–C7 ALIPHATIC HYDROCARBYL ESTER OF AN N-[2,6-DI(C1–C7 ALKYL)PHENYL] ALPHA-AMINOCARBOXYLIC ACID

Anthony B. Clayton, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 11, 1973, Ser. No. 405,610
Int. Cl. C07c *101/44*
U.S. Cl. 260—471 A **7 Claims**

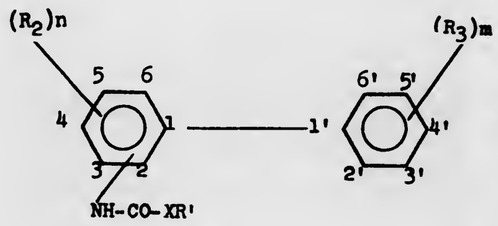
1. A process for synthesizing a C_1–C_7 aliphatic hydrocarbyl ester of an N-[2,6-di(C_1–C_7 alkyl)phenyl] α-aminocarboxylic acid from the corresponding 2,6-di(C_1–C_7alkyl)aniline and the corresponding chlorocarboxylic acid ester, which comprises effecting with a catalytic quantity of 2,6-(C_1–C_7 alkyl-)aniline hydrochloride reaction of said aniline and said ester.

3,882,163
URETHANE DERIVATIVES OF POLYMETHYL BIPHENYL

Imre Puskas, Glen Ellyn, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Jan. 24, 1972, Ser. No. 220,368
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **11 Claims**

1. A urethane derivative of polymethylbiphenyl having the following formula:



3,882,165
PROCESS FOR PREPARING CARBANILATES

Richard Garth Pews; Lennon H. McKendry, both of Midland, Mich., and Ralph M. Rodia, Salem, Oreg., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 285,503, Aug. 31, 1972, Pat. No. 3,804,844, and a continuation-in-part of Ser. No. 94,622, Dec. 2, 1970. This application Nov. 1, 1973, Ser. No. 411,943
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **8 Claims**

1. A process for the preparation of a carbanilate compound which comprises reacting a phenyl compound, ring-substituted with at least one displaceable substituent selected from the group consisting of chloro, bromo, fluoro, iodo; $-N_2^+$—OSO_2R, —SO_2R, and —SR_2^+, wherein each R independently represents hydrogen, phenyl or a loweralkyl radical of from one to about 4 carbon atoms, inclusive, with an alkali metal cyanate in the presence of a high dielectric-aprotic solvent and an alkanol.

3,882,166
ANTIMICROBIAL QUATERNARY AMMONIUM COMPOUNDS

Robert Andrew Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,750
Int. Cl. C07c *101/42*
U.S. Cl. 260—479 S **6 Claims**

1. A chemical compound having the structural formula:



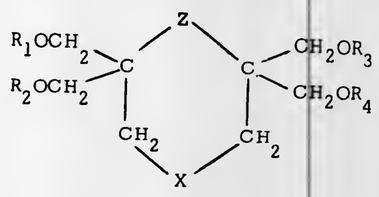
wherein R is a long chain alkyl group of 12–18 carbon atoms, R^1 and R^2 are methyl or ethyl groups; *n* is an integer from 1–6; Ar is a substituted aryl radical selected from the group consisting of phenyl and naphthyl, said substituted moiety being selected from the group consisting of tri-halo- and mono-nitro-radicals; and X is an anion selected from the class consisting of halides, sulfates and methosulfates.

3,882,167
PROCESS FOR THE MANUFACTURE OF ACRYLIC ACID ESTERS
Elmar Lohmar, Cologne-Lindenthal; Alexander Ohorodnik, Erftstadt, Liblar; Klaus Gehrmann, Hurth-Knapsack, and Paul Stutzke, Walberberg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed May 25, 1973, Ser. No. 363,863
Claims priority, application Germany, June 2, 1972, 2226829
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **11 Claims**

1. A process permitting heterogeneous catalytic reactions to be carried out continuously in liquid phase, wherein a suspension of liquid starting material and fine particulate catalyst together with resulting reaction product is continuously conveyed upwardly in a reaction zone, in accordance with the principle underlying an air-lift pump, by the introduction of a gas into, near the bottom of, the reaction zone, and recycled downwardly through a by-pass reflux line to the bottom of the reaction zone, the recycled liquid material passing through an injector system interrupting its flow, the said system being situated in the by-pass reflux line in a closed catalyst-separating zone containing reaction product; wherein, following establishment of the reaction equilibrium, starting material is continuously supplied to the reaction zone and crude, catalyst-free reaction product is removed near the head of the catalyst-separating zone: wherein reaction product, which is to be removed from the catalyst-separating zone, is caused to flow upwardly through the catalyst-separating zone with the injector system therein towards the reaction product outlet at a velocity smaller than the sedimentation velocity of the catalyst in the catalyst-separating zone under the operational conditions prevailing; which process comprises esterifying acrylic acid in contact with an acid ion exchanger as a catalyst, at elevated temperature and under pressures substantially between 0.01 and 1 atmosphere absolute by continuously supplying the reaction zone with a starting mixture of acrylic acid and an alkanol having between 4 and 6 carbon atoms; introducing an inert gas into, near the bottom of, the reaction zone; heating the resulting suspension to boiling; distilling off, in a distillation zone placed directly above the head of the reaction zone, an azeotropic mixture of water originating from the esterification, alkanol and/or ester; condensing the said azeotropic mixture and separating it into a specifically lighter, predominantly organic phase and into a specifically heavier, predominantly aqueous phase, the organic phase being recycled to the head of the distillation zone and/or to the reaction zone; and discharging resulting crude alkyl acrylate, near the head of the catalyst-separating zone.

3,882,168
PHOTOPOLYMERIZABLE COMPOUNDS
Kurt-Walter Klupfel, Wiesbaden-Sonnenberg; Hartmut Steppan, Wiesbaden-Dotzheim, and Manfred Hasenjager, Hochheim, all of Germany, assignors to Hoechst Aktiengesellschaft
Filed Sept. 3, 1971, Ser. No. 177,847
Claims priority, application Germany, Sept. 7, 1970, 2044233
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **5 Claims**

1. A photopolymerizable compound having the formula

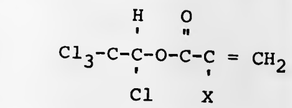


A

in which
X is selected from the group consisting of a single bond, an oxygen atom and a $-CH_2-$ group,
Z is selected from the group consisting of —CO— and —CHOH— groups, and
R_1, R_2, R_3, and R_4 are selected from the group consisting of hydrogen and acryloyl or methacryloyl groups,
Z is a carbonyl group if X is a single bond and, on an average, at least one of the groups R_1, R_2, R_3, and R_4 is an acryloyl group.

3,882,169
1,2,2,2,-TETRACHLORETHYL ACRYLATE AND METHACRYLATE
Frantisek Hrabak, and Milos Vacek, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved No. 3 Narodni, Prague, Czechoslovakia
Filed Oct. 27, 1972, Ser. No. 301,275
Claims priority, application Czechoslovakia, Oct. 28, 1971, 7599-71; Oct. 28, 1971, 7600-71
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 H **13 Claims**

1. A 1,2,2,2-tetrachloroethyl ester compound of the formula



wherein X is hydrogen, chlorine or methyl.

3,882,170
CHLORAL HYDRATE BIS-ESTER OF 2,2,3-TRICHLOROPROPIONIC ACID
Yog R. Dhingra, and Zdravko Jezic, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Mar. 21, 1973, Ser. No. 343,717
Int. Cl. C07c *69/62*
U.S. Cl. 260—487 **1 Claim**

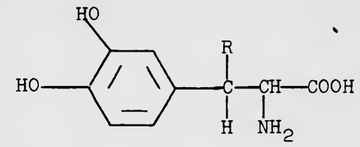
1. The chloral hydrate bis-ester of 2,2,3-trichloropropionic acid.

3,882,171
HYDROGENATION OF NITROBENZOIC ACIDS
Joseph Levy, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of Ser. No. 132,168, April 21, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,309
Int. Cl. C07c *101/54*, *101/56*
U.S. Cl. 260—518 R **10 Claims**

1. In a process for the hydrogenation of a nitrobenzoic acid, the improvement which comprises hydrogenating said nitrobenzoic acid at a hydrogen pressure less than about 100 psig. and at a pH of from about 5 to about 7 in the presence of a hydrogenation catalyst in a solution consisting essentially of said acid dissolved in an aqueous solution of from about 0.95 to about 1.0 equivalents of an alkali metal hydroxide, carbonate or bicarbonate.

3,882,172
β-SUBSTITUTED-DIHYDROXYPHENYL-ALANINES
John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed June 26, 1973, Ser. No. 373,801
Int. Cl. C07c *101/72*
U.S. Cl. 260—519 **2 Claims**

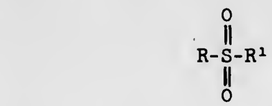
1. A compound of the formula



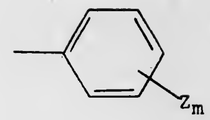
in which R is a cycloalkyl of three to eight carbon atoms, and pharmaceutically acceptable salts thereof.

3,882,173
PREPARATION OF MONOHALOACYL HALIDES
Virgil W. Gash, and Donald E. Bissing, both of Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed July 19, 1973, Ser. No. 380,785
Int. Cl. C07c *51/58*, *53/20*
U.S. Cl. 260—544 Y **21 Claims**

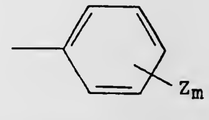
1. A process for the preparation of a monohaloacyl halide which comprises reacting a ketene selected from the group consisting of unsubstituted ketene, methyl ketene, dimethyl ketene, ethyl ketene, diethyl ketene, phenyl ketene and diphenyl ketene and a halogenating agent selected from the group consisting of chlorine, bromine, iodine, iodine monochloride, iodine monobromide and bromine monochloride in the presence of a sulfone of the formula



wherein R and R^1 are independently selected from alkyl of from 1 through 8 carbons, inclusive, cycloalkyl of from 5 through 6 carbons, inclusive, phenyl, substituted phenyl of the formula



wherein each Z is independently halo, trihalomethyl, cyano, nitro, lower alkyl or lower alkoxy, and *m* is an integer from 1 through 3, inclusive, provided that when each Z is nitro, *m* cannot exceed 2, and substituted alkyl of the formula $-C_xH_{2x-y+1}$ y wherein R^2 is halo, phenyl, or substituted phenyl of the formula



wherein Z and *m* are defined hereinbefore, *x* is an integer from 1 through 8, inclusive, and y is an integer from 1 through 3, inclusive, or R and R^1 when taken together are alkylene of the empirical formula C_nH_{2n} wherein *n* is an integer from 3 through 10, inclusive, and having from 3 through 8 carbons, inclusive, in a continuous chain.

3,882,174
AMIDES OF 4-(4′-BIPHENYLYL)-BUTYRIC ACID AND ITS 4-HYDROXY AND 4-OXO DERIVATIVES
Ernst Seeger; Wolfhard Engel; Josef Nickl; Helmut Teufel, and Gunther Engelhardt, all of Biberach/Riss, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany
Filed Aug. 21, 1972, Ser. No. 282,363
Claims priority, application Germany, Aug. 20, 1971, 2141925; Aug. 20, 1971, 2141926; Aug. 20, 1971, 2141927
Int. Cl. C07c *103/30*
U.S. Cl. 260—558 R **8 Claims**

1. A compound selected from the group consisting of 4-(4′-biphenylyl)-4-oxo-butyric acid amide, 4-(2″-amino-4′-biphenylyl)-4-oxo-butyric acid amide, 4-(3″-chloro-4′-biphenylyl)-4-oxo-butyric acid amide, 4-(4′-biphenylyl)-4-hydroxy-butyric acid amide, 4-(2″-amino-4′-biphenylyl)-4-hydroxy-butyric acid amide, 4-(2″-fluoro-4′-biphenylyl)-butyric acid p-hydroxy-anilide 4-(2″-fluoro-4′-biphenylyl)-butyric acid o-hydroxy-anilide and non-toxic, pharmacologically acceptable acid addition salts thereof.

3,882,175
PROCESS FOR THE PREPARATION OF N,N-DIALKYLFORMAMIDES
Naoya Kominami; Yohei Fukuuoka, and Katuyoshi Sasaki, all of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Aug. 25, 1971, Ser. No. 174,923
Claims priority, application Japan, Aug. 29, 1970, 45-75271; Dec. 15, 1970, 45-111225; Dec. 15, 1970, 45-111226
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 R **1 Claim**

1. In the process for the preparation of an N,N-dialkylformamide by reacting hydrocyanic acid with an alcohol represented by the formula:

ROH

wherein R represents an alkyl group having 1 to 4 carbon atoms, and in the presence of a titanium compound selected from the group consisting of titanium hydroxides, titanium oxides, titanium halides, titanium sulfates, titanium nitrates, titanium alkoxides, titanium oxalates, ammonium and amine

salts of hexahalogenotitanic acids and mixtures thereof, the improvement comprising conducting the reaction at temperatures of 150°–270°C., in the presence of water, said water being present at the time of the initiation of the reaction in the amount of 0.5–2.0 moles per mole of the hydrocyanic acid.

3,882,176

N-TRIFLUOROACETYL AMIDOXIME-O-CARBAMATES AND THEIR USE AS ANTIHYPERTENSIVE AGENTS IN WARM-BLOODED ANIMALS

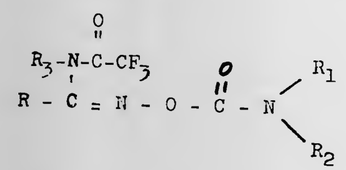
Jerome Ferdinand Deye, Philadelphia, Pa., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Oct. 10, 1973, Ser. No. 404,918

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 HL **7 Claims**

1. Compounds of the formula



where

R is an aliphatic hydrocarbon of from 3 through 12 carbon atoms,

R_1 and R_2 are each independently hydrogen or lower alkyl of from 1 through 3 carbon atoms, provided, however, that the sum of carbon atoms in R_1 and R_2 does not exceed 3,

R_3 is hydrogen or alkyl of from 1 through 6 carbon atoms, and

pharmaceutically acceptable salts of these compounds.

3,882,177

PROCESS FOR THE PREPARATION OF DL-THREO-1-(P-NITRO-PHENYL)-2-ACETAMINO-1,3-PROPANEDIOL

Aurel Ujhidy; Laszlo Szotyori; Janos Szepvolgyi, all of Veszprem; Karoly Horvath, Budapest; Ferenc Nagy, Budapest; Istvan Orban, Budapest, and Istvan Simonyi, Budapest, all of Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed May 7, 1973, Ser. No. 357,718

Claims priority, application Hungary, May 12, 1972, EE 2024

Int. Cl. C07c *97/16*

U.S. Cl. 260—562 CL **4 Claims**

1. A process for the preparation of DL-threo-1-(p-nitrophenyl)-2-acetamino-1,3-propanediol from the isopropanol solution of DL-threo-1-(p-nitrophenyl)-2-acetamino-1,3-propanediol - aluminium alcoholate compounds formed in the Meerwein-Ponndorf-Verley reduction of p-nitro-α-acetamino-β-hydroxy-propio-phenone, comprising hydrolyzing said aluminum alcoholates in the presence of 50–100% of the calculated amount of water, water vapor or an equivalent amount of aqueous mineral acid solution, simultaneously with or subsequent to said hydrolysis evaporating isopropanol continuously, then dissolving aluminum oxide in the form of its doulbe salt from the residual powdery mixture of DL-threo-1-(p-nitrophenyl)-2-acetamino-1,3-propanediol is a solvent system selected from the group consisting of an aqueous solution of alkali metal sulfate and sulfuric acid at a pH of about 6 and a temperature no higher than 30°C. and an aqueous solution of alkali metal hydroxide and alkali metal carbonate, and then separating said DL-threo-1-(p-nitrophenyl)-2-acetamino-1,3-propanediol from the reaction mixture.

3,882,178

FLUORINATED TERTIARY AMINO ETHERS

Siegfried Benninger, Schwalbach, Taunus; Siegfried Rebsdat, Neuotting, and Rudolf Kohlhaas, Fischbach, Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

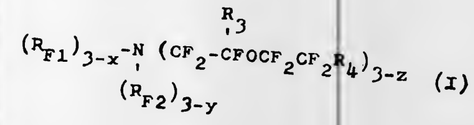
Filed Aug. 9, 1973, Ser. No. 386,861

Claims priority, application Germany, Aug. 12, 1972, 2239800

Int. Cl. C07c *87/36*

U.S. Cl. 260—563 R **16 Claims**

1. A compound of the formula



where

R_{F1} and R_{F2} each are linear or branched perfluoro-alkyl radicals having from one to 10 carbon atoms or perfluoro-cyclo-alkyl radicals having from four to 10 carbon atoms

R_3 is CF_3 or F;

R_4 is H or F;

x, y and z each are integers; x and y being 1, 2 or 3; z being 0, 1 or 2; and

$x + y + z$ are 6.

3,882,179

1-VERATRYLAMINO-4-T-BUTYLCYCLOHEXYLAMINE HYDROCHLORIDE

Thomas J. Schwam, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,461

Int. Cl.·C07c *87/28*

U.S. Cl. 260—570.9 **1 Claim**

1. 1-Veratrylamino-4-t-butylcyclohexylamine hydrochloride.

3,882,180

TRIFLUOROMETHYL-SUBSTITUTED AROMATIC ACIDS

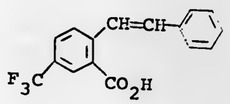
Edward L. Engelhardt, Gwynedd Valley, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

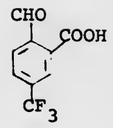
Division of Ser. No. 864,907, Oct. 8, 1969, Pat. No. 3,714,239, which is a division of Ser. No. 553,656, May 31, 1966, Pat. No. 3,499,037. This application July 19, 1972, Ser. No. 273,090

Int. Cl. C07c *63/12*, *63/60*, *65/18*

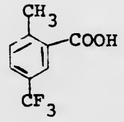
U.S. Cl. 260—515 A **4 Claims**

1. A trifluoromethyl substituted benzoic acid compound having a structural formula selected from the group consisting of





and



3,882,181

PRODUCTION OF AMINES AND DIAMINES

Denis Forster, University City, and Virgil W. Weiss, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 2, 1971, Ser. No. 177,908

Int. Cl. C07c *85/04*, *85/16*

U.S. Cl. 260—583 N **6 Claims**

1. A process for production of hexamethylenediamine which comprises

a. contacting a mole proportion of a 1,6-dibromohexane with an excess of at least 30 moles of an ammonium salt and an excess of at least 40 moles of ammonia followed by evaporation of excess ammonia after the formation of hexamethylenediamine-dihydrobromide in the reaction mixture, and

b. separation of the reaction product comprising a mixture of hexamethylenediamine-dihydrobromide and ammonium bromide by contacting the said-mixture with a solvent system comprising an organic solvent and from 1 mol percent to 50 mol percent of a modifier selected from the group consisting of ammonia, water and methanol, leaving the said ammonium bromide undissolved, removing the said solid ammonium bromide, and

c. subjecting the said solvent system to a precipitation treatment by removing the said modifier with the resultant precipitation of the hexamethylene-dihydrobromide, and

d. neutralizing the said hexamethylenediamine-dihydrobromide with a base to obtain the free hexamethylenediamine.

2. A process for separating hexamethylenediamine dihydrobromide from inorganic ammonium salts which comprises contacting a mixture thereof, with an organic solvent, the said organic solvent having present therein from 1 mol percent to 50 mol percent of a modifier selected from the group consisting of ammonia, water and methanol, and thereafter removing the solvent containing dissolved hexamethylenediamine dihydrobromide from the said insoluble inorganic ammonium salts.

3,882,182

TERTIARY PERFLUORO-AMINO ETHERS

Siegfried Benninger, Schwalbach, Taunus, and Thomas Martini, Neuenhain, Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

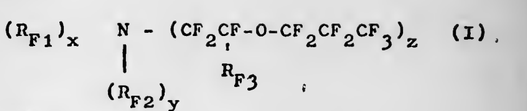
Filed Aug. 9, 1973, Ser. No. 386,857

Claims priority, application Germany, Feb. 9, 1973, 2306438

Int. Cl. C07c *93/02*

U.S. Cl. 260—584 C **8 Claims**

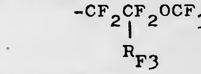
1. A compound of the formula



where

R_{F1} is a linear or branched perfluoro-alkyl radical having from 1 to 10 carbon atoms;

R_{F2} is a perfluoro-alkyl radical having from 1 to 10 carbon atoms or the radical



R_{F3} is a CF_3 or F radical;

x, y and z each are integers; x an y each being 0, 1 or 2, z being 1,2 or 3, and $x + y + z$ being 3.

3,882,183

PROCESS FOR THE ALKYLATION OF AROMATIC HYDROCARBONS

Giuseppe Messina, Alghero; Loreno Lorenzoni, Porto Torres, and Natale Bertolini, Milan, all of Italy, assignors to Societa Italiana Resine, S.I.R. S.p.A., Milan, Italy

Filed Nov. 15, 1973, Ser. No. 416,137

Claims priority, application Italy, Nov. 30, 1972, 322/71

Int. Cl. C07c *3/56*

U.S. Cl. 260—671 R **6 Claims**

1. A process for the alkylation of aromatic hydrocarbons by reaction of an olefin with an aromatic hydrocarbon in the presence of a complex catalyst comprising a metal halide and aromatic hydrocarbons, in which the activity of the complex catalyst is maintained by addition of fresh metal halide, characterized in that the activity of the catalyst is measured by determination of the ratio of the dialkylated products to the trialkylated products in the complex catalyst or in the liquid alkylation product and fresh metal halide is added to the complex catalyst in such amounts as to maintain said ratio at predetermined values.

3,882,184

PROCESS FOR THE SEPARATION OF ACYCLIC AND MONOCYCLIC MONOTERPENES

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 2, 1974, Ser. No. 466,368

Int. Cl. C01b *33/28*; C07c *7/12*, *13/00*; C09f *3/02*

U.S. Cl. 260—675.5 **29 Claims**

1. A process for separating an acyclic monoterpene from a feed mixture comprising an acyclic monoterpene and a monocyclic monoterpene which process comprises contacting said mixture with a crystalline aluminosilicate adsorbent selected from the group consisting of type X structured and type Y structured zeolites containing at least one cation selected from the group consisting of lithium, sodium, potassium, rubidium, cesium and barium at the exchangeable cationic sites within said zeolite thereby selectively adsorbing, at adsorption conditions, said acyclic monoterpene isomer from said mixture and thereafter recovering the selectively adsorbed isomer.

3,882,185

ACID-MODIFIED POLYTEREPHTHALIC ACID ESTERS

Eduard Radlmann, Dormagen; Eugen Velker, Dormagen-Hackenbroich; Francis Bentz, Cologne, and Gunther Nischk, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed May 18, 1973, Ser. No. 361,466

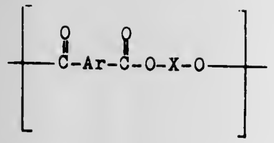
Claims priority, application Germany, May 18, 1972, 2225255

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 S **4 Claims**

1. A high molecular weight linear terephthalic acid copolyester which contains sulfonate groups, which copolyester consists essentially of recurrent structural elements of the

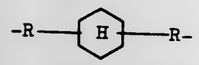
general formula



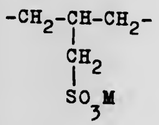
in which

Ar represents p-phenylene or p-phenylene with up to 10 mol % m-phenylene,

X consists of 99 – 70 mols-% of a straight or branched chain C_2 to C_{20} alkylene group, a cycloalkylene group or a group of the general formula



in which R represents a straight or branched chain C_1 to C_{10} alkylene group and 1 – 30 mols-% of a group which contains sulfonate groups, represented by the general formula



in which M represents a metal.

3,882,186

RETARDATION OF RUBBER VULCANIZATION

Maurice Edward Cain; Geoffrey Thomas Knight; Peter McHugh Lewis; Ian Richard Gelling, all of London, England, assignors to Natural Rubber Producers' Research Association, London, England

Filed Aug. 23, 1973, Ser. No. 390,740

Claims priority, application United Kingdom, Aug. 23, 1972, 39354/72

Int. Cl. C08c *11/40;* **C08d** *1/38*

U.S. Cl. 260—780 **7 Claims**

1. A method of inhibiting the premature vulcanization of a rubber vulcanizable by heating with a sulphur vulcanizing agent and a thiazole vulcanization accelerator, which method comprises incorporating into the rubber, in addition to the sulphur vulcanizing agent and the thiazole vulcanization accelerator, a cyclohexa-2,5-diene derivative having the formula



where X is O or NR′ and R and R′ may be the same or different and are inert alkyl, cycloalkyl or aryl groups.

3,882,187

RADIATION CURABLE EPOXY ESTER-SATURATED ALKYD COMPOSITIONS

Eiichiro Takiyama, Kamakura; Sadakazu Hokamura, Kamato, and Toshiaki Hanyuda, Yokohama, all of Japan, assignors to Showa High Polymer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 224,917, Feb. 9, 1972, abandoned. This application Nov. 21, 1973, Ser. No. 417,760

Claims priority, application Japan, Feb. 10, 1971, 46-5254

Int. Cl. C08g *39/10, 45/14*

U.S. Cl. 260—835 **5 Claims**

1. An unsaturated epoxy-ester resinous composition curable under electron beam radiation to form a coating film with excellent dryness and adhesion to metals, which composition comprises: a reaction product of

a. one equivalent weight of an epoxy compound having at least two epoxy radicals in the molecule,

b. 0.5 equivalent weight of an unsaturated monocarboxylic acid, and

c. 0.5 equivalent weight of a saturated alkyd which has a terminal carboxyl radical in the molecule and is produced by heating one mole of a glycol with 1.33 to 2.0 moles of a saturated dicarboxylic acid,

said reaction product being produced under heating and in the presence of an esterification catalyst and with or without a polymerization inhibitor, solvent, polymerizable monomer selected from the group consisting of ethylacrylate, butylacrylate, methylmethacrylate, ethylmethacrylate, butylmethacrylate, isobutylmethacrylate, hydroxy-ethylmethacrylate, hydroxy-ethylacrylate, hydroxy-propylmethacrylate, acrylonitrile, vinyl acetate, styrene, vinyl toluene, ethylene glycol-diacrylate, ethylene glycol-dimethacrylate, trimethylol-propane-trimethacrylate, diethylene glycol-dimethacrylate, diethylene glycol-diacrylate and butanediol-dimethacrylate, or additional solvent.

3,882,188

COATING COMPOSITIONS AND PROCESS THEREFOR

Klaus Behmel, Graz, Austria, assignor to Vianova-Kunsthraz, A.G., Vienna, Austria

Filed Oct. 17, 1972, Ser. No. 298,388

Claims priority, application Austria, Oct. 29, 1971, 9369/71; Mar. 10, 1972, 1995/72; Mar. 22, 1972, 2430/72

Int. Cl. C08g *37/34, 17/14*

U.S. Cl. 260—850 **22 Claims**

1. Process for producing thermosetting coating compositions from saturated polyesters containing hydroxy groups and aminoplast resins, characterized in that

A) *n* mols of one or more compounds having two free or latent hydroxy groups are reacted with

B *n* + 1 mols of a dicarboxylic acid which will not form an anhydride, to form a linear polyester AB carrying terminal carboxy groups,

C. thereafter polyester AB is reacted at an elevated temperature, with elimination of reaction water until a low acid value is obtained with an amine alcohol of the general formula

$$HO - (CX_2)_n - NH_2$$

n being 2 or 3 and X is equal or different and standing for hydrogen, or an alkyl, aryl or hydroxy alkyl radical, at least one of said X being hydroxy alkyl, the amount of AB to amine being equal to $(e_s - e_p)$ M_A wherein M_A is the molecular weight of the amine alcohol; e_s equals the number of carboxy equivalents in the polyester; and e_p equals the number of hydroxy equivalents in the polyester, and not exceeding 2 mols amine alcohol per mol polyester AB, to provide a polyester containing terminal oxazoline groups, and

D. combining ABC containing terminal oxazoline groups with 10 – 60 percent by weight of an aminoplast resin.

3,882,189

POLYESTER RESINS PREPARED FROM ORGANIC POLYISOCYANATES AND BLENDS WITH OTHER RESINS OR MONOMERS

Stephen F. Hudak, Minneapolis, Minn., assignor to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 145,502, May 20, 1971, Pat. No. 3,759,873, which is a continuation of Ser. No. 716,349, March 27, 1968, abandoned. This application Apr. 19, 1973, Ser. No. 352,482

Int. Cl. C08g *37/34, 39/10*

U.S. Cl. 260—850 **4 Claims**

1. A water reducible resinous coating composition comprising from 95 to 50 parts by weight of (1) a water-soluble lower alkyl amine salt of a polyurethane modified polyester consisting essentially of the reaction product of:

a. a mixture of saturated polyhydroxy alcohols of which from about 5 to 25 percent by weight contains at least three functional groups and wherein one of said three functional groups is a carboxyl group,

b. at least one saturated polycarboxylic acid, and;

c. an organic polyisocyanate compound; said reaction product being the result of preliminary reaction between (a) and (b) to form a saturated polyester intermediate which is subsequently reacted with (c) to form the modified polyester; the proportion of the reactants (a), (b) and (c) being selected so that the OH/(COOH+NCO) ratio is from 1 to 2.0 and the COOH/NCO ratio is greater than 1 and up to about 30 and correspondingly from 5 to 50 parts of an aminoplast resin.

3,882,190

ANTISTATIC POLYAMIDE FIBER

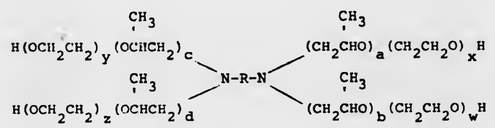
Rodney Lee Wells, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,873. The portion of the term of this patent subsequent to Nov. 13, 1990, has been disclaimed.

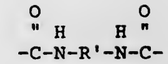
Int. Cl. C08g *41/04*

U.S. Cl. 260—857 PG **10 Claims**

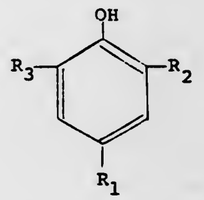
1. In a process for the formation of an antistatic polyamide fiber from a fiber-forming polyamide polymer containing about 1 to 12 percent by weight of an antistatic compound which is a chain-extended reaction product of a tetrol compound represented by the formula:



where *a*, *b*, *c*, *d*, *w*, *x*, *y* and *z* are each a whole number and R is a difunctional radical from a hydrocarbon containing 1 to 13 carbon atoms, said tetrol compound having a molecular weight between about 4,000 and about 50,000, and at least one compound selected from the group consisting of compounds which yield the following divalent radical:



where R′ is a difunctional radical from a hydrocarbon containing 1 to 30 carbon atoms, by extruding the molten polymer through an orifice into a quenching medium and thereafter stretching the resulting filaments, the improvement comprising dissolving in the extrudate prior to extrusion at least 0.5 percent by weight, based on the weight of the antistatic compound, of a phenol compound of the formula:



where R_1 is hydrogen or an alkyl radical containing 1 to 12 carbon atoms, R_2 is an alkyl radical containing 4 to 18 carbon atoms, and R_3 is an alkyl radical containing 4 to 18 atoms.

3,882,191

BLEND OF THERMOPLASTIC POLYURETHANE ELASTOMER, POLYVINYL CHLORIDE RESIN AND CHLORINATED POLYETHYLENE

Julius A. Balatoni, Waterloo; Som N. Khanna, Guelph, and Wayne S. Mills, Kitchener, all of Canada, assignors to Uniroyal Ltd., Montreal, Canada

Filed Mar. 29, 1973, Ser. No. 345,924

Int. Cl. C08G *41/04*

U.S. Cl. 260—859 PV **2 Claims**

1. A method of making a shaped article comprising the steps of blending

A. a high molecular weight thermoplastic polyurethane elastomer devoid of ethylenic unsaturation and free — NCO groups which is a reaction product of a polymeric polyol, an organic polyisocyanate and a low molecular weight bifunctional material having two reactive hydrogens,

B. polyvinyl chloride resin, and

C. an elastomeric chlorinated polyethylene having a glass transition temperature of −30°C to −20°C. and a chlorine content of 25–50% by weight,

the amount of (A) being 40–60%, the amount of (B) being 15–25%, and the amount of (C) being 15–30%, based on the weight of the three polymers, the resulting blend being repeatedly reprocessable and being devoid of curing agent, and forming the resulting blend into a shaped article without cure.

3,882,192
POLYCARBONATE-POLYVINYL CHLORIDE MOULDING COMPOSITIONS

Salah Elabd Elghani; Winfried Fischer, both of Cologne, Germany; Michael Koehler, Wien, Austria; Johannes Lindner, Hamburg, and Richard Prinz, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 28, 1974, Ser. No. 437,154
Claims priority, application Germany, Feb. 1, 1973, 2304894
Int. Cl. C08g *39/10*
U.S. Cl. 260—873 3 Claims

1. A moulding composition consisting essentially of
a. 5 to 95 parts by weight of a polycarbonate of a dihydric phenol and a derivative of carbonic acid,
b. 5 to 95 parts by weight of a vinyl chloride polymer containing at least 80 parts by weight of vinyl chloride and
5 to 95 parts by weight of a graft copolymer obtained by polymerizing a monomer mixture of styrene, an alkyl styrene, methyl methacrylate, or a mixture thereof with acrulonitrile, an alkyl acrylonitrile, methyl methacrylate, or a mixture thereof, in the presence of a rubber selected from the group consisting of diene polymers and ethylene-propylene-non-conjugated diene terpolymers, a copolymer of styrene and maleic anhydride or a coploymer of ethylene and vinyl acetate containing 1 to 80 percent by weight of vinyl acetate.

3,882,193
FLUORINE-CONTAINING BLOCK COPOLYMERS

David E. Rice, Woodbury, and Robert L. Hansen, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 168,373, Aug. 2, 1971, Pat. No. 3,810,875, which is a continuation-in-part of Ser. No. 70,541, Sept. 8, 1970, abandoned. This application Sept. 17, 1973, Ser. No. 397,841. The portion of the term of this patent subsequent to May 14, 1974, has been disclaimed.
Int. Cl. C08f *29/16*
U.S. Cl. 260—874 13 Claims

1. A block copolymer comprising at least one block derived from at least one free radical polymerizable terminally ethylenically unsaturated compound and at least one block comprising poly(perfluoroalkylene oxide) having a plurality of $-CF_2O-$ and $-C_2F_4O-$ and, optionally, $-C_3F_6O-$ randomly repeating units, said copolymer having at least 1 glass transition temperature below −78°C.

3,882,194
COGRAFTED COPOLYMERS OF A POLYOLEFIN, AN ACID OR ACID ANHYDRIDE AND AN ESTER MONOMER

Lawrence J. Krebaum, Palatine; William C. L. Wu, Arlington Heights, and John Machonis, Jr., Schaumburg, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Jan. 26, 1973, Ser. No. 327,065
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R 15 Claims

1. A cograft copolymer of about 50–99.9 weight percent of a polyolefin member of the group consisting of unconjugated and deactivated conjugated polyolefins, about 0.05–25 weight percent of at least one ethylenically unsaturated ester and about 0.05–25 weight percent of at least one member of the group consisting of polymerizable acyclic, cyclic and polycyclic ethylenically unsaturated acids and acid anhydrides.

3,882,195
PRE-EMULSIFICATION-DELAYED INITIATION SUSPENSION PEARL POLYMERIZATION PROCESS

Wiley E. Daniels, Easton; Dewey G. Holland, Chadds Ford, and Gerald J. Mantell, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 16, 1973, Ser. No. 360,835
Int. Cl. C08f *15/00*, *19/00*
U.S. Cl. 260—878 R 17 Claims

1. A process for preparing vinyl chloride based polymers selected from the group consisting of vinyl chloride homopolymers and copolymers containing vinyl chloride as the major constituent by suspension polymerization, which comprises:
a. pre-emulsifying a vinyl chloride based monomer(s) to form a stable dispersion of the monomer in an aqueous mixture in the absence of a polymerization initiator at temperatures ranging from about 30° to about 75°C with agitation, said aqueous mixture comprising a polyvalent metal ions selected from the group consisting of zirconium, magnesium, calcium, zinc, strontium, aluminum, lead, antimony, tin, barium and cadmium, in an amount in the range from about 0.01 to about 0.30 parts of said polyvalent metal ion per hundred parts monomer(s); a surface active agent in an amount in the range from about 0.01 to about 0.30 parts per hundred parts monomer(s); and a polymer seed selected from the group consisting of homopolymers of styrene, vinyl acetate and methacrylate, copolymers of vinyl acetate-ethylene, vinyl chloride-2-ethyl hexyl acrylate and vinyl chloride-vinyl isobutyl ether and carboxylated terpolymers of vinyl chloride-2-ethyl hexyl acrylate and the similar polymers which are soluble in the monomer(s) and are capable of stabilizing the emulsion, in an amount in the range from about 0.2 to about 2.0 parts of said polymer seed per hundred parts monomer(s),
b. initiating the suspension polymerization of the stabilized, monomer-containing emulsion to form the polymer in the presence of a free-radical initiator in an amount in the range from about 0.05 to about 0.5 parts of said initiator per hundred parts monomer(s), and
c. recovering the polymer product by filtration.

3,882,196
ODOR-FREE THERMOFORMED HEAT-DEGRADED POLYVINYL ALCOHOL

David E. Hanke, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 292,543, Sept. 27, 1972. This application Feb. 21, 1974, Ser. No. 444,482
Int. Cl. C08f *29/26*, *29/30*
U.S. Cl. 260—895 4 Claims

1. An improvement in the structure of thermoformed cold-water-soluble polyvinyl alcohol which has a percent hydrolysis in the range of 74 to about 98 and which structure has been heat-degraded by such thermoforming to the extent that some free acetic acid is produced in the thermoformed polyvinyl alcohol and is distributed throughout said thermoformed structure, said improvement consisting of the incorporation throughout said structure before heat degradation of a proton acceptor, said proton acceptor being such that it has a pH in the range of about 7.5 to 12.0 when said proton acceptor is activated and ionized by the pick-up of moisture normally present in the ambient atmosphere, said proton acceptor being present in said structure in an amount sufficient to react with and to neutralize any of said acetic acid which is also ionized when said structure is exposed to the moisture normally present in the ambient atmosphere, said proton acceptor being present in an amount of up to about 5 parts by weight of said polyvinyl alcohol structure thereby providing a heat-degraded polyvinyl alcohol structure which remains substantially free of the odor of said acetic acid.

3,882,197
ALPHA-OLEFIN COPOLYMER BLENDS

Andrea Fritz, and Chi-Kai Shih, both of Wilmington, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed June 21, 1973, Ser. No. 372,050
Int. Cl. C08f *37/18*
U.S. Cl. 260—897 A 6 Claims

1. An intimate polymer blend comprising, by weight of the blend,
a. about from 5–90 percent of a thermoplastic, elastomeric copolymer of propylene and at least one alpha-olefin having from 6–20 carbon atoms, the copolymer having stereoregular crystalline sequences and amorphous sequences, about from 10–50 wt. percent of the copolymer being derived from the alpha-olefin, the remainder being derived from propylene, the copolymer having a melt index of about from 0.01–200 at 190°C and a crystallinity number of about from 40–70;
b. about from 5–90 percent of polymer having at least one melting transition above 155°C and which consists essentially of substantially stereoregular polypropylene of the same type of stereoregularity as copolymer (a); and
c. about from 5–80 percent of an uncured ethylene hydrocarbon copolymer rubber which is a copolymer of ethylene, at least one alpha-olefin of the formula $RCH_2—CH=CH_2$ wherein R is hydrogen or $C_1—C_{15}$ alkyl, and optionally at least one non-conjugated diene.

3,882,198
POLYVINYL HALIDE RESIN COMPOSITIONS HAVING IMPROVED PROCESSABILITY CONTAINING A METHYL METHACRYLATE/ALKYLACRYLATE COPOLYMER

Robert S. Miller, Bridgewater, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 271,451, July 13, 1972. This application May 20, 1974, Ser. No. 471,469
Int. Cl. C08f *29/24*
U.S. Cl. 260—899 10 Claims

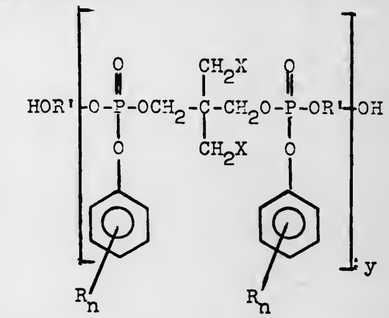
1. A resinous composition comprising a polyvinyl halide resin and from 1 to 20 parts by weight per 100 parts by weight of the polyvinyl halide resin of a methacrylate copolymer that is the product formed by the process that comprises the steps of
a. forming an aqueous emulsion that contains
i. a monomer mixture consisting of 80 to 99 mole percent of methyl methacrylate and 1 to 20 mole percent of at least one alkyl acrylate wherein the alkyl group has 1 to 10 carbon atoms,
ii. a water-soluble, free-radical catalyst selected from the group consisting of hydrogen peroxide, ammonium persulfate, and alkali metal persulfates,
iii. an emulsifying agent, and
iv. An alkyl mercaptan having 4 to 14 carbon atoms;
b. maintaining said aqueous emulsion at a temperature in the range of 50°to 70°C. until about 40 to 60 mole percent of the monomer mixture has polymerized;
c. raising the temperature of the aqueous emulsion by at least 10°C. to a temperature in the range of 70°to 100°C. over a period of 10 to 40 minutes;
d. maintaining the aqueous emulsion at a temperature in the range of 70°to 100°C. until the polymerization of the monomer mixture is substantially complete and a latex emulsion is formed; and
e. recovering the methyl methacrylate-alkyl acrylate copolymer from the latex emulsion.

3,882,199
POLYMERIC HALOGENATED ORGANOPHOSPHORUS DIOLS

Wadim Batorewicz, New Haven, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Jan. 11, 1974, Ser. No. 432,703
Int. Cl. C07f *9/18*
U.S. Cl. 260—928 8 Claims

1. A polymeric halogenated organophosphorus ester diol having the structure



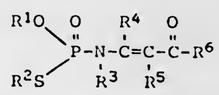
wherein R may be:
a. hydrogen, chlorine, or bromine;
b. an alkyl, haloalkyl, or alkoxy radical having from 1 to 6 carbon atoms;
wherein *n* may vary from 1 to 3;
wherein R′ may be:
c. a branched or linear alkylene, alkenylene, alkynylene or alkoxyalkylene radical containing from 2 to 10 carbon atoms; optionally containing bromine or chlorine substituents,
wherein X may be chlorine or bromine; and
wherein y has a value of from 1 to 7.

3,882,200
PHOSPHOROAMIDOTHIOATES

Francis J. Freenor, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sept. 6, 1973, Ser. No. 394,872
Int. Cl. A01n *9/36*; C07f *9/24*
U.S. Cl. 260—946 10 Claims

1. A compound of the formula



wherein R^1 and R^2 individually are alkyl of 1 to 6 carbon atoms or alkenyl of 3 to 6 carbon atoms; R^4 is hydrogen, alkyl of 1 to 6 carbon atoms or haloalkyl of 1 to 6 carbons atoms and 1 to 3 fluorine, chlorine or bromine; R^3 and R^5 individually are hydrogen or alkyl of 1 to 6 carbon atoms; R^6 is alkyl of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms and 1 to 3 fluorine, chlorine or bromine, phenyl or phenyl substituted with 1 to 2 alkyl of 1 to 4 carbon atoms, fluorine, chlorine or bromine, with the proviso that two alkyl R^4 and R^6 groups may be joined to form a 5 - or 6-membered carbocyclic ring.

3,882,201
THIOPHOSPHORIC ACID TRIESTERS

Erich Ruf, Essen, Germany, assignor to The Goldschmidt AG

Division of Ser. No. 160,144, July 6, 1971, Pat. No. 3,770,853.

This application Mar. 21, 1973, Ser. No. 343,372

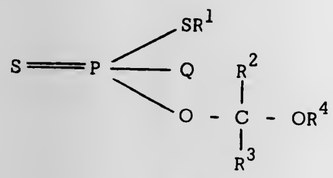
Claims priority, application Germany, July 9, 1970, 2033987

Int. Cl. C07f 9/16

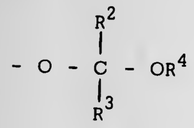
U.S. Cl. 260—950

1 Claim

1. A compound having the formula



wherein Q is the group —SR^1 or



in which

R^1 and R^4 are selected from the group consisting of alkyl and chloroalkyl groups having about 1 to 12 carbon atoms, benzyl, phenyl, and chlorophenyl, and

R^2 and R^3 are selected from the group consisting of hydrogen, alkyl and chloroalkyl groups having about 1 to 12 carbon atoms, benzyl, phenyl, and chlorophenyl.

3,882,202
AMIDOTHIONOPHOSPHORIC ACID ESTERS

Masahiro Aya; Shigeo Kishino; Nobuo Fukazawa, and Toyohiko Kume, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 27, 1972, Ser. No. 319,092

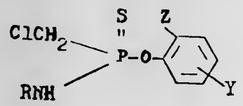
Claims priority, application Japan, Dec. 27, 1971, 46-105444

Int. Cl. C07f 9/40

U.S. Cl. 260—951

15 Claims

1. Amidothionophosphonic acid ester compound of the formula:



in which

R is alkyl of from 1 to 6 carbon atoms or cycloalkyl of from 5 to 6 carbon atoms;

Y is hydrogen, halogen or alkyl or alkoxy of from 1 to 6 carbon atoms; and

Z is nitro.

3,882,203
HYDROCARBON-PEROXY HYDROCARBON PHOSPHONATES

Lothar G. Dulog, Latem, and Willy P. Broeckx, Reet, both of Belgium, assignors to S.A. Texaco Belgium N.V., Brussels, Belgium

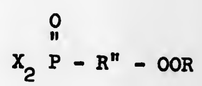
Filed Sept. 25, 1972, Ser. No. 291,868

Int. Cl. C07f 9/40; C08f 3/74

U.S. Cl. 260—961

4 Claims

1.



wherein R is a hydrocarbon containing less than about 18 carbon atoms and R may be inertly substituted, R'' is divalent hydrocarbon containing 2–10 carbon atoms and R' may be inertly substituted and X is —OR or —NR_2.

3,882,204
MECHANICALLY ACTUATED VENT SWITCH

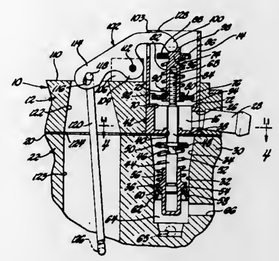
James C. St. Amand, Spencerport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 7, 1974, Ser. No. 440,455

Int. Cl. F02m 5/08

U.S. Cl. 261—34 A

2 Claims



2. In a carburetor having a fuel bowl housing defining a primary fuel chamber closed by an air horn housing and wherein an accelerator pump assembly is located within the primary fuel chamber for providing fuel enrichment under acceleration conditions, the improvement comprising: an air horn housing having a chamber with an inlet passage in communication with the primary fuel bowl and an outlet passage adapted to be connected to a charcoal cannister for collecting vapors from the primary fuel chamber, a valve seat formed in said air horn chamber between said inlet passages and said outlet passages, a vent valve located in overlying relationshhip with said valve seat movable with respect to said valve seat to open and close communication between the inlet passage to said chamber and the outlet passage therefrom, said movable vent valve having a central opening therethrough, a shaft directed through said opening, coacting means on said shaft and said air horn housing for preventing relative rotation therebetween, said shaft having one end thereof adapted to be connected to an accelerator plunger assembly and including a threaded extension on the other end thereof located centrally of said annular valve seat and extending therefrom into said air horn housing chamber, a stem adaptor including a flanged opened end thereon and an internally threaded bore threadably received on said extension for axially positioning said stem adaptor with respect to said threaded extension, said vent valve having a central opening therethrough through which said stem adaptor extends with said flanged end engaging said vent valve around the central opening therein for supporting said vent valve for movement away from said

annular valve seat, said stem adaptor including a grooved upper end thereon having a spring retainer slidably supported therein, spring means connected between said retainer and said vent valve for holding said vent valve against said flange, actuator means for reciprocating said stem adaptor and said shaft with respect to said air horn housing upon throttle movement, said actuator means including a first operative position wherein said stem adaptor and shaft are moved inwardly of said chamber to position said vent valve in sealed engagement with said annular valve seat to prevent vapor transfer from the primary fuel bowl to the cannister when the throttle is open said actuator means having a second position wherein said stem adaptor and spring retainer are moved with respect to said closed vent value for operating said plunger assembly when said vent valve is closed, said actuator means having a third operative position wherein said shaft and said stem adaptor are moved outwardly of said air horn housing to locate said vent valve in spaced relationship with said valve seat to permit transfer of vapors from the primary fuel chamber to the cannister.

3,882,205
APPARATUS FOR DISSOLVING LARGE QUANTITIES OF OXYGEN IN WATER

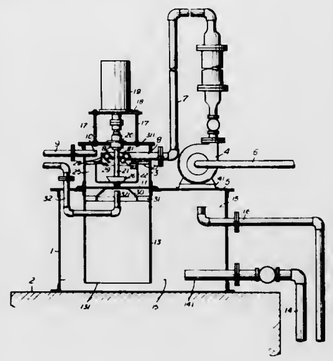
Toyohiko Aoki, Tokyo, Japan, assignor to Naigai Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1974, Ser. No. 461,001

Int. Cl. B01f 3/04

U.S. Cl. 261—37

3 Claims



1. An oxygen-dissolving apparatus comprising in combination:

a. an air-tight cistern (1);

b. a tank (3) on said cistern;

c. an elongated inner vessel (13) in said cistern (1) under said tank (3) with a perforated partition (11) between said tank (3) and said inner vessel (13), said inner vessel being concentric with said tank (3) within the cistern (1), said inner vessel having a lower opening (131);

d. a rotary shaft (21) disposed perpendicularly in said tank (3) with a perforated drum (22) around said shaft at an upper part of which an opening (29) is formed and at a lower part of which a water receiving dish (26) is disposed;

e. a conduit (9) leading into said tank (3) for supplying oxygen into said drum (22), a water-supplying pipe (8) leading into said tank and a pump (4) for supplying water into said tank;

f. a circular part (81) above said opening (29) at the end of said pipe (8) around which circular part (81) a plurality of spouts (82) are disposed for discharging water towards said dish (26);

g. a feeding conduit (14) at a lower part of said cistern (1) with an end (141) thereof a little above said lower opening (131) and a conduit (16) for controlling the discharge of water supplied to said dish (26) from the spouts (82), wherein water is finely divided by the dish rotated by said rotary shaft at high speed so that fine drops are formed while oxygen is released into a circular space (25) between an outer circumference of said drum (22) and an inner circumference of the tank (3) through perforations (23) (24) due to the centrifugal force of the drum (22) being rotated at high speed so that water and oxygen mixing takes place continuously dissolving a large volume of oxygen into the water which is received in the inner vessel (13) through the perforations of said partition (11) and is stored in the air tight cistern (1) through the lower opening of the inner vessel (13) for discharging into oxygen-poor water.

3,882,206
CARBURETOR

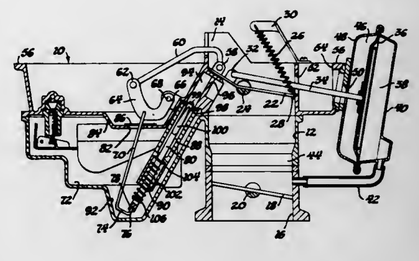
John A. Gural, Pittsford, N.Y.; Stanley H. Mick, Mt. Clemens, Mich., and John W. Moulds, Penfield, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1973, Ser. No. 343,553

Int. Cl. F02m 7/18

U.S. Cl. 261—39 B

8 Claims

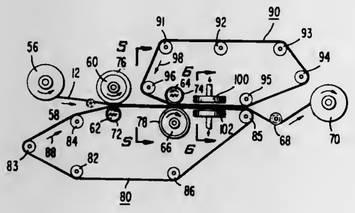


1. A carburetor comprising a mixture conduit having an air inlet and a mixture outlet, a throttle disposed in said mixture outlet and controlling flow therethrough, an air valve rotatably disposed in said air inlet, means controlling said air valve whereby its rotative position is a measure of the rate of air flow through said air inlet, a fuel bowl, a fuel passage receiving fuel from said fuel bowl and discharging fuel into said mixture conduit, a metering orifice disposed in said fuel passage, a metering rod associated with said metering orifice and controlling the area thereof to control the rate of fuel flow from said fuel bowl through said passage and said orifice to said mixture conduit, a pivot pin, a lever pivoted on said pin, said lever having a first lever arm connected to said metering rod and a second lever arm, a link connected to said air valve and to said second lever arm whereby the positions of said lever and said metering rod are controlled by the rotative position of said air valve and the rate of fuel flow through said passage to said mixture conduit is proportioned to the rate of air flow through said air inlet, said second lever arm having a slot formed therein and receiving said link, and operating condition responsive means controlling the position of said link in said slot whereby the length of said second lever arm may be varied to adjust the proportion of fuel flow to air flow, said operating condition responsive means including an aneroid responsive to inlet air pressure and operative to increase the length of said second lever arm upon a decrease in inlet air pressure whereby a proper proportion of fuel flow to air flow is maintained upon a decrease in inlet air pressure.

3,882,207
PROCESS OF PRODUCING DOUBLE-SIDED HOLOGRAPHIC REPLICAS

William James Hannan, Palm Beach Gardens, Fla., and Joseph Ralph Frattarola, Hightstown, N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 296,861, Oct. 12, 1972, Pat. No. 3,790,245. This application Oct. 18, 1973, Ser. No. 407,545
Int. Cl. B29c *17/00*; B29d *11/00*
U.S. Cl. 264—1 4 Claims



1. A method of forming an information storage replica in the form of a continuous sheet of transparent, thermoplastic material having information on both sides of said sheet, said information being in the form of a surface relief pattern comprising a tilted off-axis recorded transmission hologram formed by object and reference beams which define a plane oblique to the longitudinal axis of the hologram comprising the steps of:

passing said sheet and a first master containing a first relief pattern between a first pair of calender rollers while heating said first master to a temperature so that said sheet is heated to a temperature below its flow temperature, but one which causes said sheet to adhere firmly to said first master, to impress said first pattern into one side of said sheet,

passing said sheet adhered to said first master and a second master containing a second relief pattern between a second pair of calender rollers while heating said second master to a temperature below the flow temperature of said sheet to press said second pattern into said sheet on the opposite side from said first pattern,

cooling said first and second masters below a temperature at which said sheet adheres to said masters, and

separating said sheet from said first and second masters.

3,882,208
METHOD FOR PRODUCTION OF SPHERICAL PARTICLES OF A SOLID MATERIAL

William Geresy, Jr., Bedford Hills, N.Y., assignor to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 30, 1970, Ser. No. 76,898
Int. Cl. C06b *21/02*
U.S. Cl. 264—3 C 9 Claims

1. A process for making spherical particles of a solid explosive or propellant material which comprises subjecting said solid explosive or propellant material to a temperature above its melting point in a liquid medium,

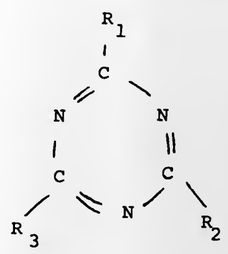
passing the molten solid thereby formed through a progression of successively lower temperature zones of the same liquid mediums and collecting the solidified spherical particles.

3,882,209
METHOD FOR EXTRUSION COATING ELECTRIC WIRES WITH A FOAMED POLYOLEFIN RESIN INVOLVING REDUCED DIE-PLATEOUT

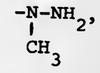
Koji Yanagisawa; Hirokazu Kobayashi, and Yukio Tayama, all of Chiba-ken, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed July 30, 1973, Ser. No. 383,719
Claims priority, application Japan, Aug. 3, 1972, 47-77810; Aug. 3, 1972, 47-77811; Aug. 3, 1972, 47-77812; May 5, 1973, 48-62516
Int. Cl. B29d *27/09*
U.S. Cl. 264—45.9 16 Claims

1. A method for manufacturing electric wires insulated with a foamed polyolefin resin by continuous, stable extrusion wherein a foamable polyolefin resin composition is prepared by mixing a polyolefin resin with a foaming agent comprising azodicarbonamide and between about 10 and 150 percent by weight of at least one material having a solubility parameter of at least 12.0 based on the amount of said azodicarbonamide and extruding it on an electric conductor under conditions in which said azodicarbonamide decomposes, said material having said solubility parameter being selected from the group consisting of polyhydric alcohols having less than eight carbon atoms, ethanol amines having less than six carbon atoms, alkanols having less than three carbon atoms, dimethyl sulfoxide, carboxymethyl cellulose, methyl cellulose, lignin, lignin sulfonic acid, lactones, alkyl acetamides, alkylformamides, phenols, ethylene carbonate, thiourea, succinimide, and compounds containing a 1,3,5-triazine ring expressed by the general formula



where R_1, R_2 and R_3 are selected from the group consisting of — NH_2, —NHOH, —$NHCOCH_3$, —$CONH_2$, —$CSNH_2$, —$NHCONH_2$, $NHCH_3$,



—$NHSO_3H$, —SO_2NH_2 and NHCHO.

3,882,210
INJECTION OF A CERAMIC INTO A MOULD

Ian Alexander Crossley, Little Staughton; Geoffrey Eric Kirk, Gotham; Norman Howell Anthony, Spondon, and Derek Robert Bamber, Castle Donington, all of England, assignors to Rolls-Royce Limited, London and The University of Technology, Leicestershire, both of England

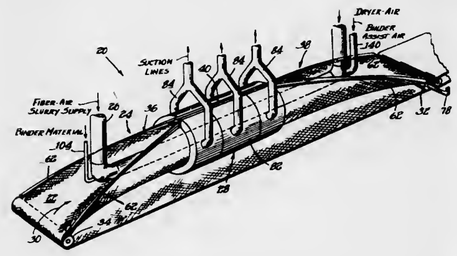
Filed Nov. 17, 1972, Ser. No. 307,525
Claims priority, application United Kingdom, Nov. 19, 1971, 53786/71
Int. Cl. B29c *25/00*
U.S. Cl. 264—63 5 Claims

1. A method of producing an article from a mixture of alpha silicon carbide, graphite and a binder thereof, including the steps of charging a chamber with the mix, attaching the chamber to a mould member, heating the assembly, forcing the mix through a nozzle in the chamber so as to firstly compact the mix and secondly inject it into said mould member, increasing said force so as to further compact the mix whilst in the mould member, then removing said force, separating the chamber from the mould member and then the mix from the mould member.

3,882,211
METHOD FOR THE HIGH SPEED PRODUCTION OF NON-WOVEN FABRICS

Ewald A. Kamp, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 51,967, July 2, 1970. This application July 20, 1973, Ser. No. 380,963
Int. Cl. B29d *23/03*; D04h *1/00*
U.S. Cl. 264—91 9 Claims

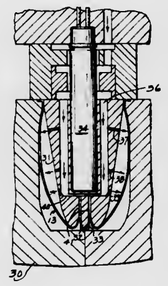


1. The method of making a non-woven fibrous web comprising the steps of: providing a gaseous stream; incorporating discrete fibers in said stream; continuously directing said stream into a centrifugal flow; collecting said fibers from said flow as a substantially longitudinally endless tubular web; and de-tubularizing and flattening said web.

3,882,212
PROCESS FOR FORMING THIN WALLED PLASTIC ARTICLES

Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 214,275, Dec. 30, 1971, abandoned. This application Sept. 24, 1973, Ser. No. 400,104
Int. Cl. B29c *17/07*
U.S. Cl. 264—94 4 Claims



1. The method for producing elongated relatively thin walled hollow thermoplastic articles with controlled wall thicknesses in an injection-blow molding arrangement, wherein the male injection mold part is retained at one end against axial movement within and relative to the female injection mold part to define a mold cavity and wherein the other end of said male injection mold part is capable of being deflected in a radial direction and wherein the injection molded preform is susceptible to shifting on said male mold part in blowing said article in a female blow mold having the shape of said article comprising the steps of:

directing a stream of a molten thermoplastic material into the injection mold cavity through the female injection mold part toward said other end of said male injection mold part and along the axis from which the male injection mold part is deflectable,

thereafter directing said stream consecutively through restricted circumferentially continuous concentric annular areas encircling the entrance of said stream of molten thermoplastic material into said cavity and maintaining said axially fixed relation of said male injection mold part while continuing the foregoing flow of molten thermoplastic material through said concentric annular areas to fill said cavity to form the injection molded preform with circumferentially continuous concentric annular portions at said other end,

moving said male injection mold part with said preform thereon into a female blow mold with said other end of said male injection mold part spaced from and sufficiently adjacent to one interior surface of said female blow mold to mechanically lock said circumferentially continous concentric annular portion of said preform on said male injection mold part during initial blowing,

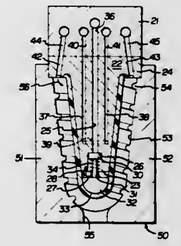
applying blowing air through the sides and said other end of said male mold part to blow the sides of said preform against the interior surface of said female blow mold during initial blowing and to thereafter blow said other end of said injection molded preform into the shape of said article

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3,882,213
METHOD OF MAKING BLOWN PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 225,448, Feb. 11, 1972, abandoned. This application Feb. 15, 1974, Ser. No. 443,092
Int. Cl. B29c *17/07*, *25/00*
U.S. Cl. 264—97 5 Claims



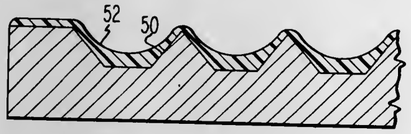
1. In a method of making a blown thermoplastic article, the steps of forming a parison of thermoplastic material, enclosing said parison in an individual heat exchange chamber having opposed openable and closeable sections, the sections having interior walls spaced substantially uniformly from the exterior of said parison, flowing a fluid heat transfer medium through the space between said parison and said interior section walls, terminating the flow of heat transfer medium when the average wall temperature of the parison is conducive to orientation during subsequent blowing of the parison, opening said opposed heat chamber sections, transferring the parison at said temperature to a blow mold, and blowing said parison at said orientation temperature.

3,882,214

TRAPEZOIDAL SMOOTH GROOVES FOR VIDEO DISC

Richard William Nosker, Princeton, and Leonard Pincus Fox, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,235
Int. Cl. B29d *17/00*
U.S. Cl. 264—106 **6 Claims**



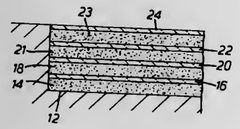
1. A method of forming a grooved disc for recording information therein comprising:
   forming a spiral groove to a trapezoidal cross-sectional shape in a disc having a relatively flat surface;
   filling said groove with viscous fluid material; and
   rotating said disc at a speed commensurate with viscosity of said fluid material to drive off a portion of said fluid material from said disc, leaving a residue of said fluid material coating the groove region of said disc and causing said fluid material to assume, when solidified, a regularly curved cross-sectional shape including inflection points on each wall of said groove located closer to the peaks than to the valley of said groove.

3,882,215

METHODS OF MAKING BUILDING AND LIKE COMPONENTS

Edward Dyke, Sheffield, and George Harold Farringdon, Wrenthorpe near Wakefield, both of England, assignors to FPA Fypol Limited, Sheffield, England

Continuation-in-part of Ser. No. 45,050, June 10, 1970, abandoned. This application June 23, 1972, Ser. No. 268,217
Int. Cl. D04h *1/16*
U.S. Cl. 264—113 **8 Claims**



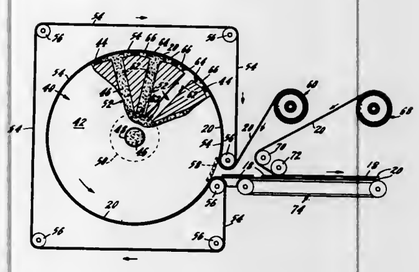
1. A method of manufacturing a reinforced polyester resin-filled component, comprising:
   a. forming a mixture of a curable liquid polyester resin, a monomer of a thermoplastic synthetic resin, a catalyst for said polymer, and an inert particulate filler material, said filler particles being capable of settling in said liquid resin as a lower layer containing the major part of said filler particles and an upper layer containing a minor part of said filler particles,
   b. pouring a portion of said mixture into a mold for said component,
   c. allowing said filler particles to settle into said lower and upper layers,
   d. placing a first reinforcing stratum of glass fiber on said resin upper layer in which said stratum is permeable, is impregnated therewith, and is allowed to sink and rest upon said filler lower layer to which said stratum is impervious,
   e. pouring a second portion of said mixture as in step (a) into said mold over said first reinforcing stratum,
   f. allowing said filler particles in the second portion of said mixture to settle upon and without displacing said first-placed stratum to form upper and lower layers as in step (c),
   g. placing on said second portion upper layer a second reinforcing stratum of said glass fiber which sinks and rests upon said second portion lower layer of filler particles, and
   h. curing all portions of said polyester resin to produce a unified component thereof.

3,882,216

DISPOSABLE DIAPER

John T. Delanty, and William F. Hanson, both of Neenah, Wis., assignors to International Paper Company, New York, N.Y.

Division of Ser. No. 387,155, Aug. 9, 1973. This application Jan. 15, 1974, Ser. No. 433,504
Int. Cl. D04h *1/16*
U.S. Cl. 264—113 **3 Claims**



1. A method for forming an absorbent cellulose fluff fiber pad of generally hourglass outline suitable for incorporation in a disposable diaper comprising:
   suspending individual wood cellulose fibers in a stream of air,
   directing said fiber-containing air stream radially outward from the center of a drum through a chute-like structure, the outer end of which chute is substantially hourglass shaped and covered by an air pervious screen forming the side wall of the drum, and having an air pervious fiber-collecting web material interposed between said hourglass-shaped chute end and said screen,
   deflecting selected portions of said fiber-bearing air stream so that a larger portion of said fibers impinge on said collecting web in a preselected, centrally located section within the area of the collecting web and screen covering the hourglass-shaped chute end,
   collecting said fibers on said collecting web while allowing the air stream to pass through said web and screen, whereby there is formed on said collecting web an hourglass-shaped fiber pad having substantially greater fiber concentration in said preselected centrally located section and,
   removing said collecting web and the collected pad of fibers from said screen.

3,882,217

METHOD FOR THE PRODUCTION OF FREE-FLOWING POLYTETRAFLUOROETHYLENE MOLDING POWDERS

John Banham, Stevenage, and Howard Edmund Browning, Welwyn, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 205,656, Dec. 7, 1971, abandoned. This application Nov. 16, 1973, Ser. No. 416,460
Claims priority, application United Kingdom, Dec. 11, 1970, 59005/70; July 26, 1971, 34952/71
Int. Cl. B01j *2/12*
U.S. Cl. 264—117 **11 Claims**

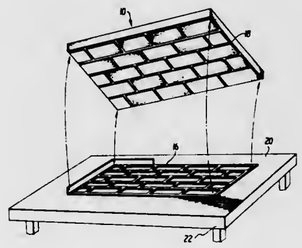
1. A process for the preparation of a free flowing granular moulding powder containing polytetrafluoroethylene which comprises the steps of wetting a fine particle size granular polytetrafluoroethylene powder wherein the particles have an air sedimentation size of less than 100 μm with an aqueous solution of a non-ionic surfactant which volatilises at a temperature below the sintering temperature of polytetrafluoroethylene, the solution containing the surfactant in an amount of at least 40 times the critical micelle concentration at 20°C, the solution being used in an amount from $21.5/\alpha$ ml to $215/\alpha$ ml per 100 gm of the fine particle size powder where α is the true density in gm/cm³ of the powder and forming the wet powder into agglomerates by mechanical agitation, and drying the agglomerates, the mechanical agitation being conducted at a temperature and for a time to obtain a moulding powder which when dry has a compacted flow rating of at least 16 and a compaction ratio of less than 4.3.

3,882,218

BRICK TEXTURED BUILDING PANELS AND THEIR METHOD OF MANUFACTURE AND INSTALLATION

Charles G. Bixel, Jr., 395 Gardiner Dr., Fort Walton Beach, Fla. 32548

Filed July 11, 1973, Ser. No. 378,317
Int. Cl. B29c *3/00, 17/14;* **B29d** *27/00*
U.S. Cl. 264—157 **3 Claims**



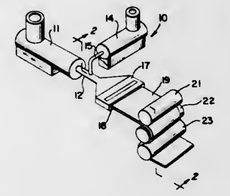
1. A method of manufacturing a brick-textured foamed thermoplastic building panel comprising the steps of severing a base panel from a rigid block of a foamed thermoplastic material having a density in the order of 2.5 lb./cu. ft., and simultaneously fusing the edges by means of a heated element whereby the edges of the panel exhibit the texture of masonry, cement or brick depending upon the temperature of the heated element and the speed by which the heated element is passed through the block, and forming a brick and mortar array on one surface portion of said panel by positioning the panel above a lattice-type rectangular array of heating elements and pressing the panel downwardly upon said elements to such an extent that the elements soften the material of the panel and form therein grooves which simulate mortar while the ungrooved portions of the panel simulate bricks.

3,882,219

CO-EXTRUSION OF ACRYLIC ESTER POLYMER/POLYSTYRENE MULTIPLE-LAYERED SHEETING

Donald F. Wiley, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

Continuation of Ser. No. 128,724, March 29, 1971, abandoned. This application Aug. 10, 1973, Ser. No. 387,506
Int. Cl. B29d *7/04*
U.S. Cl. 264—171 **6 Claims**



1. A process for the manufacture of composite sheeting having a major layer corresponding substantially to the final composite sheeting thickness of a styrene polymer selected from the group consisting of homopolystyrene, impact polystyrene and normal copolymers of styrene containing a minor amount of another copolymerizable monomer, and a minor layer constituting less than 20% of the total final thickness of an acrylic ester polymer firmly united to the exterior surface of said major layer, comprising conveying a heat plasticized stream of said styrene polymer in a conduit having a generally circular cross section, joining to the exterior surface of said styrene polymer stream within the said conduit a second, heat plasticized stream of said acrylic ester polymer, said second stream constituting less than about 20% by volume of the combined first and second streams thereby forming a single stratified stream of heat plasticized material conforming to the cross section of said conduit and being characterized by distinct, contiguous layers of said polymeric materials having a relatively sharply defined interface therebetween, said interface terminating at each end at a point on the inside surface of said conduit, adjusting the respective temperatures of the first and second streams under co-extrusion conditions to temperatures at which the melt viscosity of the acrylic ester polymer stream exhibits a value within the range of about 50 to 150% of the melt viscosity exhibited by said styrene polymer stream under the conditions of A.S.T.M. Test D-12-38-63T, conveying said composite stream undisturbed through said conduit to a sheet-form extrusion die having its die lips generally aligned in parallel with the said interface between the two polymeric materials, and passing said composite stream of molten material through the said die to form a sheet, whereby said second stream spreads laterally across said first stream thereby forming said minor layer of said composite sheeting.

3,882,220

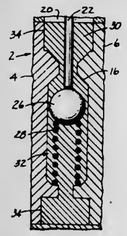
METHOD OF MOLDING UTILIZING MELTABLE CORE

Francis E. Ryder, Barrington, Ill., assignor to Ryder International Corporation, Barrington, Ill.

Continuation of Ser. No. 173,786, Aug. 23, 1971. This application Nov. 2, 1973, Ser. No. 412,506
Int. Cl. B29c *1/08*
U.S. Cl. 264—221 **5 Claims**

1. A method of molding an article including a housing and a spring biased element held captive within said housing, said method comprising the steps of: providing a first mold having a cavity shaped to the desired inner configuration of the housing; positioning a biasing member and an element within said first mold cavity; depressing said element against said biasing member to disengage said element from any restrictions in said first mold cavity; molding a first material about said

element and biasing member while maintaining said element depressed to provide a casting including said element and said biasing member in the depressed condition; molding a second material about the casting, said second material having a higher melting point than said first material; and melting said

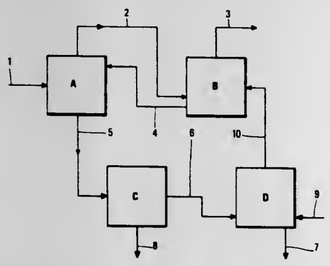


first material away from between said second material and said element and biasing member, while maintaining said second material solidified, thereby freeing said element to be biased into engagement with a seating surface provided by said second molded material.

3,882,221
PROCESS FOR LIQUID GAS REACTION ON ACID UNDECOMPOSABLE SILICATES
Harold W. Wilson, P.O. Box 9851, El Paso, Tex. 79989
Filed Jan. 10, 1973, Ser. No. 322,546
Int. Cl. B01j *9/04*; **C01b** *17/00*
U.S. Cl. 423—244 **29 Claims**

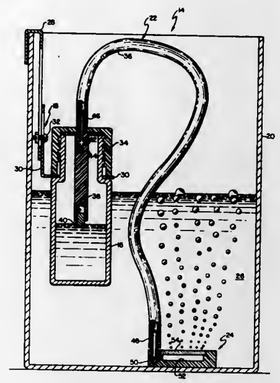
7. A process, as claimed in claim **6**, wherein said composition contains about 12 percent by weight water.

3,882,222
PROCESS FOR PURIFYING A GAS CONTAINING OXYGENATED SULFUR COMPOUNDS AND RECOVERING SULFUR USING AMMONIA LIQUORS
Andre Deschamps, Chatou; Claude Dezael, Maisons-Laffitte; Sigismond Franckowiack, Montesson, and Philippe Renault, Noisy-le-Roi, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France
Filed Feb. 24, 1972, Ser. No. 228,830
Claims priority, application France, Mar. 9, 1971, 71.08198
Int. Cl. C01b *17/04*
U.S. Cl. 423—575 **12 Claims**



1. A process for removing sulfur dioxide from a gas containing it, wherein the gas is contacted with ammonia and water at a temperature of from 30° to 80° C so as to obtain a solution of ammonium sulfites in which the molar ratio of H_2O to ammonium sulfites (expressed as SO_3) is from 11 : 1 to 100 : 1, the solution is concentrated in a concentration zone by evaporating water at a temperature lower than 100° C so as to obtain a molar ratio of H_2O to SO_3 of 4 : 1 to 10 : 1, the resulting concentrated solution is heated up to 105°–200° C so as to convert at least the major portion of the ammonium sulfites therein into a gas mixture of sulfur dioxide, ammonia and steam, and so as to produce a more concentrated residual solution containing ammonium sulfates, said residual solution being discharged from the process, said gas mixture is then passed with hydrogen sulfide through a liquid phase consisting essentially of an organic solvent, at a temperature of from 120° to 170°C, so as to produce sulfur, said sulfur and a gas phase consisting essentially of steam and ammonia are separated from the liquid phase, and ammonia is recirculated through the zone of contact with the sulfur dioxide containing gas.

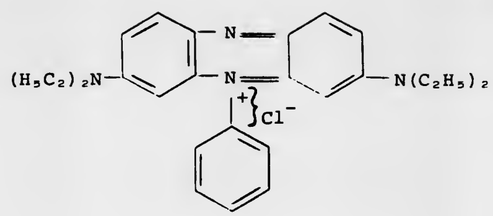
3,882,223
METHOD AND APPARATUS FOR CATALYTICALLY DECOMPOSING A SOLUTION FOR GENERATING OXYGEN THEREFROM
Paul W. Reinhardt, Roane County, Tenn., assignor to Acorn Associates, Inc., Oak Ridge, Tenn.
Filed Aug. 6, 1973, Ser. No. 385,635
Int. Cl. C01b *13/00*
U.S. Cl. 423—579 **9 Claims**

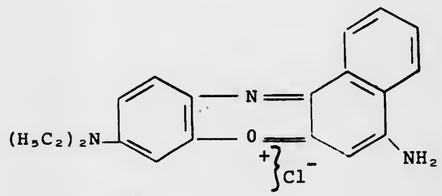


1. A method of generating oxygen comprising providing a water-based solution of hydrogen peroxide and an acid which reacts with lead oxide to form a reaction product selected from the group consisting of water soluble lead salts, water, gases innocuous to animal life and mixtures thereof; placing a hydrogen peroxide decomposition catalyst comprising an effective quantity of catalytically active elemental lead in contact with the solution; recovering oxygen from the solution; and minimizing degradation of catalyst performance comprising the concurrent steps of reacting the catalytic elemental lead with produced oxygen to form lead oxide and removing the lead oxide from the catalyst by reacting the same with the acid.

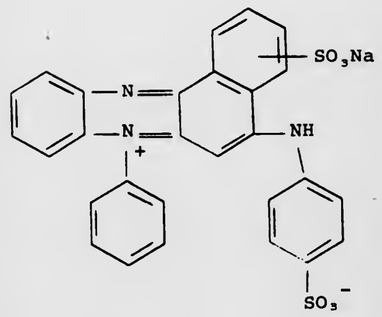
3,882,224
REAGENTS AND TESTS FOR SYPHILIS
Peter Salvatore Forgione, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sept. 11, 1973, Ser. No. 396,169
Int. Cl. G01n *31/02, 31/22, 33/16*
U.S. Cl. 424—8 **9 Claims**

1. An antigen preparation for use in carrying out an agglutination test for syphilis which comprises
a. 0.1–25 percent by weight of a syphilis antigen reagent,
b. 0.0001–0.2 percent by weight of a dye compound comprising



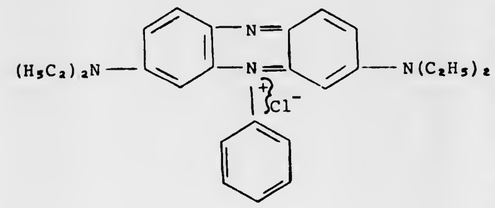


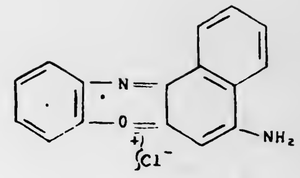
or



and
c. a flocculating amount of polyvinylimidazoline.

5. A method for carrying out an agglutination test for syphilis on a test card having dried thereon a test spot containing a flocculating amount of polyvinylimidazoline said method comprising contacting said test spot with
1. a test serum or plasma and
2. an antigen preparation comprising
a. 0.1–25 percent by weight of a syphilis antigen reagent and
b. 0.0001–0.2 percent by weight of a dye compound comprising





3,882,225
DIRECT AGGLUTINATION IMMUNOLOGICAL REAGENT
Virendra Patel, Baroda, India; Marion Cook Fetter, and Shradha Nand, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed Dec. 9, 1968, Ser. No. 782,467
Int. Cl. G01n *31/00, 31/02, 33/10*
U.S. Cl. 424—12 **6 Claims**

1. An immunological indicator reagent capable of detecting an antigen selected from the group consisting of bovine serum albumin, diptheria toxoid, tetanus toxoid, and C-reactive protein, comprising a pre-polymerized aggregate of an antibody coupled to a bacterial cell with a coupling agent said; bacterial cell being of uniform shape and size selected from the group consisting of E. coli, B. subtilis, L. leichmannii, B. pumilus and P. fragi said coupling agent being selected from the group consisting of bis diazobenzidine, bis diazobenzidine disulfonic acid, acrolein, difluorodinitrobenzene, dicyclohexylcarbodiimide, cyanuric chloride, 2,7-diaminofluorene, toluene diisocyanate, dichlorotriazine, difluorodinitrodiphenyl sulfone, tetrazo-p-phenylenediamine, glutaraldehyde and N-5-butyl-5-methylisoxazolium perchlorate.

3,882,226
INSECTICIDAL COMPOSITION EMPLOYING DDVP
Francis Edward Husband Bradburne, Shaw Street Works, Lancashire, Blackburn, England
Continuation-in-part of Ser. No. 37,571, May 15, 1970, abandoned. This application Oct. 5, 1972, Ser. No. 295,271
Claims priority, application United Kingdom, Feb. 12, 1970, 26970/69
Int. Cl. A01n *9/36, 17/00*
U.S. Cl. 424—19 **1 Claim**

1. An insecticidal material comprising a porous ceramic carrier impregnated with at least an insecticidal amount of a liquid mixture of 2,2-dichlorovinyl dimethyl phosphate and from about 5 to about 20 percent by weight of a volatile water-insoluble substance selected from the group consisting of hexachloroethane, naphthalene and camphor based on the total weight of the mixture, the porosity of said ceramic carrier being sufficient to allow absorption thereby of an insecticidal amount of the liquid mixture.

3,882,227
INSECTICIDAL COMPOSITION EMPLOYING DDVP

Francis Edward Husband Bradburne, Shaw Street Works, Blackburn, Lancashire, England

Continuation-in-part of Ser. No. 37,571, May 15, 1970, abandoned. This application Oct. 5, 1972, Ser. No. 295,272
Claims priority, application United Kingdom, Feb. 12, 1970, 26970/69
Int. Cl. A01n *9/36, 17/00*
U.S. Cl. 424—19 **1 Claim**

1. An insecticidal material comprising a porous ceramic carrier impregnated with at least an insecticidal amount of a liquid mixture of 2,2 dichlorovinyl dimethyl phosphate and from about 5 to about 20 percent by weight of paradichlorobenzene based on the total weight of the mixture, the porosity of said ceramic carrier being sufficient to allow absorption thereby of an insecticidal amount of the liquid mixture.

3,882,228
ANALGESIC FORMULATIONS

Graham Arthur Boncey, Cowley; Maurice John Hedge, Windsor, and James Rae Henderson, High Wycombe, all of England, assignors to Aspro-Nicholas, Limited, Slough, England

Filed Nov. 23, 1970, Ser. No. 92,284
Claims priority, application United Kingdom, Nov. 28, 1969, 58203/69
Int. Cl. A61k *9/00, 27/00*
U.S. Cl. 424—35 **5 Claims**

1. Free flowing readily wetable coated aspirin particles, of which at least 95 percent by weight are not more than 150 microns, comprising: one part of aspirin to one to one ninth part of a coating agent comprising at least one ingredient selected from glycine, methionine, sucrose, lactose, arabino galactan sugar products, mannitol, inositol and sorbitol; said coating agent also comprising up to five percent by weight of a wetting agent; and up to ten percent by weight of a film forming agent selected from hydroxy ethyl cellulose, hydroxy propyl methyl cellulose, sodium carboxy methyl cellulose, starches, dextrin, dextran, gum acacia, gum tragicanth and poly vinyl pyrrolidone.

3,882,229
COMPOSITION AND METHOD FOR SHRINKING MUCOUS MEMBRANES

Hans-Joachim May, Moorrege/Holstein, and Alex Berg, Eschershausen, both of Germany, assignors to Nordmark-Werke GmbH, Hamburg, Germany

Continuation of Ser. No. 273,779, July 21, 1972, abandoned. This application Nov. 8, 1973, Ser. No. 413,778
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **3 Claims**

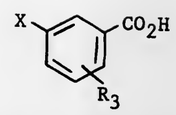
1. The method of reducing the swelling of human mucous membrane which comprises contacting the mucous membrane with an aqueous solution containing an effective amount of 2-(4-indanylamino)-2-imidazoline or a pharmaceutically acceptable acid addition salt thereof.

3,882,230
SUBSTITUTED BENZOIC ACID HYPOLIPEMIC AGENTS

Gerald Fagan Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 304,528, Nov. 7, 1972, which is a division of Ser. No. 155,209, June 21, 1971. This application May 3, 1974, Ser. No. 466,776
Int. Cl. A61k *27/00*
U.S. Cl. 424—317 **3 Claims**

1. A method for reducing blood lipid levels which comprises administering to a hyperlipemic mammal a hypolipemic effective amount of a compound selected from the group consisting of those of the formula



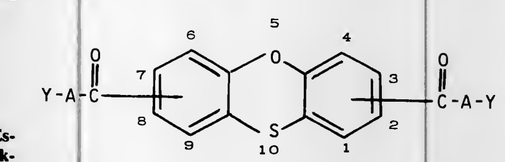
and the pharmaceutically acceptable salts thereof wherein
X is selected from the group consisting of fluorine, chlorine, bromine, methyl and trifluoromethyl and
R_3 is selected from the group consisting of fluorine, chlorine, bromine and methyl.

3,882,231
ANTIVIRAL COMPOSITIONS CONTAINING BIS-BASIC KETONES OF PHENOXATHINS AND METHODS OF INHIBITING VIRAL INFECTIONS THEREWITH

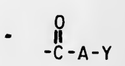
Robert W. Fleming, and Arthur D. Sill, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 158,122, June 29, 1971, Pat. No. 3,808,206. This application July 9, 1973, Ser. No. 377,572
Int. Cl. A61k *27/00*
U.S. Cl. 424—85 **18 Claims**

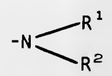
1. A pharmaceutical composition for controlling viral infections comprising, in unit dosage form, a significant quantity of a pharmaceutically acceptable carrier and from about 2 milligrams to about 3 grams of a phenoxathiin compound of the formula



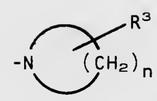
wherein the



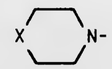
groups are attached at the 1,6-, 1,9-, 2,7-, 2,8-, 3,7- or 4,6-positions of the phenoxathiin radical; A is a straight or branched alkylene chain having from one to six carbon atoms; and each Y is selected from
A. the group



wherein R^1 and R^2 are individually selected from hydrogen, lower alkyl having from one to six carbon atoms, cycloalkyl having from three to six carbon atoms, alkenyl of from three to six carbon atoms and having the vinyl unsaturation in other than the 1-position of the alkenyl group; or
B. the group



wherein *n* is a whole integer of from 4 to 6 and R^3 is selected from hydrogen, lower alkyl of from one to four carbon atoms and can be linked to any one of carbon atoms of the heterocyclic group; or
C. the group



wherein X is oxygen or NR^4, and R^4 is hydrogen or lower alkyl of from one to four carbon atoms;
or a pharmaceutically acceptable acid addition salt thereof.

3,882,232
METHOD OF COMBATING HYPOMAGNESEMIA IN CATTLE

Robert A. Pendergrast, Atlanta, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1973, Ser. No. 396,951
Int. Cl. A61k *27/00*
U.S. Cl. 424—158 **7 Claims**

1. Method of combating hypomagnesemia in foraging cattle comprising applying to the pasture an effective amount of a slurry of MgO and clay in a ratio of MgO to clay of from about 2:1 to about 20:1 by weight.

3,882,233
METHODS OF INCREASING PRODUCTION OF PITUITARY HORMONES

Norman H. Grant, Wynnewood, and Ruth S. Rappaport, Strafford, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed July 27, 1973, Ser. No. 383,414
Int. Cl. A61K *17/08;* **C12D** *5/00, 13/06*
U.S. Cl. 424—177 **9 Claims**

1. A method of stimulating the in vitro secretion of at least one pituitary hormone selected from the class consisting of growth hormone, prolactin, luteinizing hormone and thyrotropin which comprises contacting cultured pituitary cells with an effective concentration of cholera enterotoxin.

3,882,234
METHOD OF TREATING ARRHYTHMIAS WITH N-(2-DIETHYLAMINO)ETHYL-α-(5,5-DIPHENYLHYDANTOIN-3-YL)ACETAMIDE

Herbert John Havera, Edwardsburg, Mich., and Wallace Glenn Strycker, Goshen, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 351,319, April 16, 1973, Pat. No. 3,835,151. This application Apr. 3, 1974, Ser. No. 457,455
Int. Cl. A61k *15/12*
U.S. Cl. 424—273 **3 Claims**

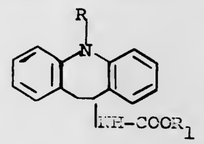
1. In a method of treating cardiac arrythmias in a mammal by administering thereto an antiarrhythmic agent by oral, intravenous, or parenteral administration, the improvement which comprises:
administering to said mammal an effective antiarrhythmic amount of a compound selected from the group consisting of N-(2-diethylamino)ethyl-α-(5,5-diphenylhydantoin-3-yl)acetamide and a nontoxic, pharmaceutically acceptable salt thereof.

3,882,235
FUNGICIDAL COMPOSITIONS COMPRISING A 10, 11 DIHYDRODIBENZO [B,F] AZEPINE DERIVATIVE

Jean Fouché, Bourg-la-Reine, and André Léger, Massy, both of France, assignors to Rhone-Poulenc, S.A., Paris, France

Division of Ser. No. 48,450, June 22, 1970, Pat. No. 3,792,042. This application Aug. 1, 1973, Ser. No. 384,419
Claims priority, application France, June 24, 1969, 69.21176; Apr. 9, 1970, 70.12838
Int. Cl. A01n *9/22*
U.S. Cl. 424—244 **8 Claims**

1. A fungicidal composition comprising, as active ingredient, a fungicidally effective amount of a 10,11-dihydrodibenzo [b,f] azepine derivative of the formula



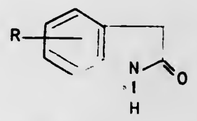
wherein R represents hydrogen or alkyl of 1 through 5 carbon atoms and R_1 represents alkyl of 1 through 7 carbon atoms in association with a diluent or adjuvant compatible with the dihydrodibenzoazepine derivative and suitable for use in agricultural fungicidal compositions, the quantity of dihydrodibenzoazepine derivative in the composition being between 80 and 0.0005% by weight of the composition.

3,882,236
PHARMACEUTICAL COMPOSITIONS CONTAINING SUBSTITUTED 2-OXO-INDOLINES AND THE USE THEREOF TO TREAT ANXIETY AND TENSION

Bryan B. Molloy, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 26, 1973, Ser. No. 427,947
Int. Cl. A61u *27/00*
U.S. Cl. 424—274 **16 Claims**

8. A method of treating a patient to relieve anxiety and tension, which comprises administering to said patient a pharmaceutically effective amount of an oxo-indoline of the formula



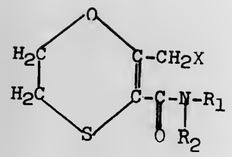
in which R is C_1–C_3 alkyl, C_1–C_3 alkoxy, halo, or trifluoromethyl.

3,882,237
2-(SUBSTITUTED-METHYL)-5,6-DIHYDRO-1,4-OXATHIIN-3-CARBOXAMIDES USED AS FUNGICIDES

Barry I. Knight; Michael Curcumelli-Rodostamo; Marshall Kulka, all of Guelph, Ontario, Canada, and Bogislav Von Schmeling, Hamden, Conn., assignors to Uniroyal, Inc., New York, N.Y. and Uniroyal Ltd., Quebec, Canada

Division of Ser. No. 78,344, Sept. 8, 1970, Pat. No. 3,728,357. This application Dec. 18, 1972, Ser. No. 316,176
Int. Cl. A01n *9/12*
U.S. Cl. 424—276 **4 Claims**

1. A method of controlling the fungus causing early blight of tomato plants comprising applying to said plants, a fungicidally effective amount of a 2-(substituted-methyl)-5,6-dihydro-1,4-oxathiin-3-carboxamide compound of the formula:



wherein R_1 is hydrogen, methyl or ethyl, R_2 is phenyl, methylphenyl, methoxyphenyl, cyclohexyl, or tertiary octyl and X is chloro.

3,882,238

SULFONATE ESTERS AS CHOLESTEROL-LOWERING AGENTS

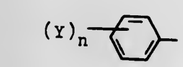
Forrest W. Quackenbush, Brookston, and Phillip G. Rand, Elkhart, both of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Nov. 13, 1972, Ser. No. 306,083
Int. Cl. A01n *9/14, 9/20*
U.S. Cl. 424—303 **11 Claims**

1. A process for reducing the blood cholesterol concentration in a warm-blooded animal exhibiting hypercholesterolemia which comprises administering to said animal in an amount sufficient to lower said cholesterol concentration a compound of the formula

$$R''—SO_3—R'$$

in which R'' is cyclohexadienyl, naphthyl, indanyl, cyclohexyl, or



in which *n* is zero or an integer from 1 to 3, and each Y independently is C_1-C_{30} alkyl, phenyl, halo, C_1-C_3 alkoxy, C_2-C_3 alkenyl, carboxy, nitro, halomethyl, or phenylazo; and R' is a saturated or unsaturated hydrocarbon group having from 8 to 20 carbon atoms, at least 8 carbon atoms of which are in a straight chain, and said group is bonded to the sulfonyl function through a primary or secondary carbon atom.

3,882,239

METHOD OF TREATING PAIN FEVER AND INFLAMMATION AND COMPOSITION

Tsung-Ying Shen, Westfield; Howard Jones, Holmdel, and Michael W. Fordice, Cranford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 286,798, Sept. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 108,629, Jan. 21, 1971, abandoned. This application June 13, 1974, Ser. No. 479,014
Int. Cl. A61k *27/00*
U.S. Cl. 424—303 **2 Claims**

1. A method of treating pain, fever and inflammation which comprises administering to a host a therapeutically effective amount of 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-3-indenyl-β-ethanol.

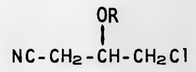
3,882,240

METHOD FOR PRODUCING INFERTILITY IN MALE RATS

Gilbert A. Youngdale, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 93,382, Nov. 27, 1970, abandoned. This application Mar. 30, 1973, Ser. No. 346,493
Int. Cl. A01n *9/20*
U.S. Cl. 424—304 **3 Claims**

1. A method for producing epididymal lesions and infertility in fertile male rats which comprises the oral administration to a fertile male rat of an effective amoumt for producing epididymal lesions an infertility of a compound of the formula:



Wherein R is a member selected from the group consisting of hydrogen and acyl of hydrocarbon carboxylic acid of from 1 to 18 carbon atoms, inclusive, in association with an edible orally acceptable carrier.

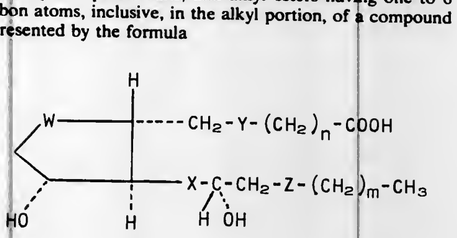
3,882,241

USE OF PROSTAGLANDINS E AND F FOR PREVENTION OF PREGNANCY IN HUMANS

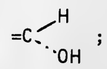
Bruce B. Pharriss, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 881,296, Dec. 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 756,294, Aug. 9, 1968, abandoned. This application Feb. 7, 1973, Ser. No. 330,351
Int. Cl. A61k *27/00*
U.S. Cl. 424—305 **9 Claims**

1. A method of preventing pregnancy in an ovulating human which consists essentially of providing to a said human in a span of time beginning at or about the time of ovulation and ending at or about the time of next expected heat or menses an effective amount for preventing pregnancy of a member selected from the group consisting of the free acids, pharmaceutically acceptable salts, and alkyl esters having one to 6 carbon atoms, inclusive, in the alkyl portion, of a compound represented by the formula



wherein W is =C=O or



X is CH_2CH_2 or trans CH=CH and both Y and Z are CH_2CH_2; X is trans CH=CH, Y is cis CH=CH and Z is CH_2CH_2 or cis CH=CH; *m* is 0, 1 or 2 and *n* is 2, 3, 4 or 5, in a dosage unit form compounded with pharmaceutical means which adapt the form for systemic administration.

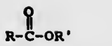
3,882,242

INSECTICIDAL ESTERS OF 1-ACENAPHTHENOL

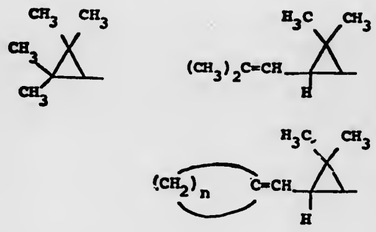
Robert J. Crawford, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 198,434, Nov. 12, 1971, Pat. No. 3,840,584. This application May 15, 1974, Ser. No. 469,994
Int. Cl. A01n *9/24*
U.S. Cl. 424—305 **2 Claims**

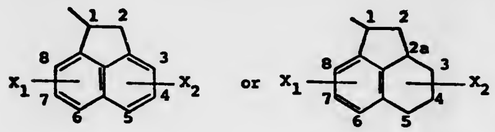
1. A process for combatting insects comprising applying to said insects, or to their habitat, an insecticidally effective amount of a cyclopropanecarboxylic acid ester of the formula



wherein R is a cyclopropane moiety selected from the group consisting of



wherein *n* is an integer of from 4 to 6 and wherein R' is a 1-acenaphthenyl or tetrahydro-1-acenaphthenyl moiety of the formula



wherein X_1 and X_2 are each selected from the group consisting of hydrogen, halogen, nitro, thiomethyl, straight or branched chain alkyl containing from about 1 to 5 carbon atoms, alkoxyl containing from about 1 to 2 carbon atoms and sulfonylmethyl.

3,882,243

AQUEOUS SUSPENSIONS OF STABLE NON-BETA TYPE CRYSTALS OF HIGHER FATTY ACID ESTERS OF CHLORAMPHENICOL

Tadao Maeda, Minoo; Tomoaki Kiyotaki, Ibaraki; Yasuo Katsuhara, Kobe; Takayoshi Mitsunaga, Takatsuki, and Mitsuo Iwade, Settsu, all of Japan, assignors to Sumitomo Chemical Company Limited

Filed Aug. 18, 1972, Ser. No. 281,941
Claims priority, application Japan, Feb. 4, 1972, 47-13190
Int. Cl. A61k *21/00*
U.S. Cl. 424—312 **3 Claims**

1. A stabilized aqueous suspension of a non-β-type chloramphenicol myristate, palmite or stearate crystals which comprises an aqueous suspension of said crystals and 0.1 to 20 % by weight based on the weight of chloramphenicol myristate, palmitate or stearate, of either a sucrose ester of a fatty acid selected from the group consisting of stearic acid, palmitic acid, myristic acid, oleic acid and mixtures of stearic and palmitic acids, or a sucrose ester of a mixed fatty acid derived from beef tallow, lard, lanolin, coconut oil, castor oil or safflower oil; said sucrose ester having an HLB value of 7 to 17.

3,882,244

METHOD OF TREATING ACNE WITH A C20 ACID

Kwan-Hua Lee, San Francisco, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 207,623, Dec. 13, 1971, abandoned. This application Mar. 21, 1973, Ser. No. 343,559
Int. Cl. A61k *27/00*
U.S. Cl. 424—318 **1 Claim**

1. A method of treating an acne condition comprising: applying topically to the affected area of a patient having an acne condition, an amount effective for treating said acne condition, of 2,6,6-trimethyl-1-(10'-carboxy-deca-1', 3', 5', 7', 9'-pentaenyl)cyclohex-1-ene in combination with a physiologically acceptable carrier.

3,882,245

USE OF PROSTAGLANDINS IN COMBATING SHOCK

Donald W. Du Charme, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 302,714, Nov. 1, 1972, abandoned, which is a continuation of Ser. No. 159,561, July 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 884,017, Dec. 10, 1969, abandoned, which is a continuation-n-part of Ser. No. 622,029, March 10, 1967, abandoned. This application Nov. 23, 1973, Ser. No. 418,501
Int. Cl. A61k *27/00*
U.S. Cl. 424—318 **8 Claims**

1. A method of combating shock which consists essentially of administering parenterally to a mammal in shock a pharmaceutical form supplying a nontoxic effective amount of a prostaglandin selected from the group consisting of an A-type prostaglandin, and E-type prostaglandin, an F-type prostaglandin, and pharmaceutically acceptable salts thereof.

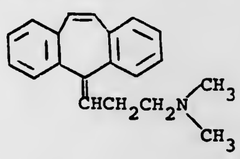
3,882,246

TREATMENT OF SKELETAL MUSCLE DISORDERS WITH CYCLOBENZAPRINE

Nathan Norman Share, Cote St. Luc, Quebec, Canada, assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. Nos. 145,875, May 21, 1971, abandoned, and Ser. No. 328,192, Jan. 31, 1973, abandoned. This application Apr. 9, 1974, Ser. No. 459,748
Int. Cl. A61k *27/00*
U.S. Cl. 424—330 **5 Claims**

1. A method for treating patients afflicted with disorders involving skeletal muscle hypertonic activity selected from the group consisting of muscle spasm, muscle spasticity, muscle rigidity or muscle splinting which comprises administering to said patient a therapeutically effective and safe dosage of cyclobenzaprine of the formula



or a pharmaceutically acceptable non-toxic acid addition salt thereof in an amount between 0.05 to 5 mg./kg./day of said cyclobenzaprine or salt to selectively reduce skeletal muscle hypertonic activity without significantly reducing normal muscle strength or coordination.

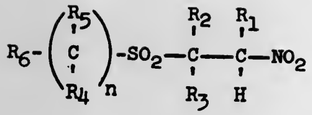
3,882,247

FUNGICIDAL NITRO ORGANIC SULFUR COMPOUNDS

Greg A. Bullock, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 246,495, April 21, 1972, Pat. No. 3,792,093. This application Nov. 1, 1973, Ser. No. 412,039
Int. Cl. A01n *9/00, 9/12*
U.S. Cl. 424—337 **19 Claims**

1. The method for protecting a locus from damage by fungi comprising applying a fungicidally effective amount to the locus to be protected of a compound of the formula:



where

R_1 and R_2 are each independently hydrogen or alkyl of 1–4 carbon atoms;

R_3 is alkyl of 1–4 carbon atoms or phenyl; and

R_4 and R_5 are each independently hydrogen or methyl;

R_6 is alkyl of 1–6 carbon atoms, cycloalkyl of 1–6 carbon atoms, alkylcycloalkyl of 4–7 carbon atoms, cycloalkylalkyl of 4–7 carbon atoms, 1- or 2-naphthyl or



wherein

X is hydrogen, halogen, hydroxyl, alkyl of 1–12 carbon atoms, nitro, or alkoxy of 1–4 carbon atoms; and

Y is hydrogen, halogen, alkyl of 1–4 carbon atoms or alkoxy of 1–4 carbon atoms

with the provision that the total number of carbon atoms in X and Y may not exceed 12;

n is 0 or 1 provided that when R_6 is other than aryl, *n* is 0 and R_3 must be alkyl of 1–4 carbon atoms.

3,882,248

GALLSTONE SOLUBILIZER

Hirotsune Igimi, and Hiroyuki Ide, both of Fukuoka, Japan, assignors to Hisamitsu Pharmaceutical Company, Inc., Tosushi, Japan

Continuation-in-part of Ser. No. 237,918, March 12, 1972, abandoned. This application Jan. 28, 1974, Ser. No. 437,202

Int. Cl. A61k *27/00*

U.S. Cl. 424—356 **2 Claims**

1. A gallstone solubilizer for dissolving cholesterol-type gallstones by direct injection into the affected parts of the patient through a medical cathether, comprising:

a. 99.8 – 70% (W/V) of limonene;

b. 0.1 – 15% (W/V) of a member selected from the group consisting of sorbitan monolaurate, sorbitan monooleate and polyoxyethylene sorbitan monooleate having about 20 oxyethylene units; and

c. 0.1 – 15% (W/V) of a member selected from the group consisting of ethanol and water.

3,882,249

METHOD FOR THE DEODORIZATION AND BLOOD-REMOVAL OF MEATS AND FISH EGGS

Ryutaro Fukazawa, Tokyo, Japan, assignor to Sankyo Company Limited, Tokyo, Japan

Filed June 28, 1973, Ser. No. 374,418

Claims priority, application Japan, July 27, 1972, 47-75260

Int. Cl. A22c *18/00, 25/00*

U.S. Cl. 426—7 **8 Claims**

1. A method for the deodorization and blood-removal of flesh meat, marine animal meat and fish egg which comprises treating a raw flesh meat, a raw marine animal meat or a raw fish egg by immersing said meat or egg into an aqueous solution containing lipase and a water-soluble salt of citric acid, wherein the concentration of said lipase in said solution is from 1×10^3 to 1×10^5 units per liter of said solution and the concentration of said water-soluble salt is from 0.5 to 3.0 in said solution said period of time for the immersion being from about 0.5 to about 6 hours.

3,882,250

PREPARATION OF CHEESE

Ira Loter, Fair Lawn; Howard G. Dissly, Summit, and Robert E. Schafer, Long Branch, all of N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation of Ser. No. 267,239, June 28, 1972, abandoned. This application Nov. 7, 1973, Ser. No. 413,711

Int. Cl. A23c *19/02*

U.S. Cl. 426—39 **6 Claims**

1. An acid cheese curd making process comprising:

A. acidifying milk under vigorous agitation and at a temperature of about 20°C to about 30°C with from about 0.3 to about 1.0 parts by weight of 10 to 90 percent free acid aqueous solution per 100 parts by weight of milk to obtain an acidified milk with a pH reduced to about 5.15 and then adding additional free acid aqueous solution at a slower rate until the pH of the milk is reduced to about 5.00, without coagulation of the milk and with the further proviso that all of the acid is not added to the milk at the same time; then

B. maintaining the acidified milk at about the same temperature and adding thereto from about 0.25 to about 1.0 parts by weight of acidogen and from about 0.015 to about 0.050 parts by weight of proteolytic enzyme, per 100 parts by weight of milk; and thereafter

C. allowing the milk to stand quiescent at about the same temperature for from about 30 minutes to about 4 hours, so as to form an acid cheese curd suitable for making cottage cheese, baker's cheese, quark cheese, cream cheese, and Neufchatel cheese.

3,882,251

IRON ENRICHMENT OF FLOUR

Alexis D. Bell, St. Louis, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 199,734, Nov. 17, 1971, Pat. No. 3,803,292, which is a continuation-in-part of Ser. No. 110,655, Jan. 28, 1971, abandoned. This application Mar. 19, 1974, Ser. No. 452,630

Int. Cl. A21d *2/28*

U.S. Cl. 426—72 **6 Claims**

1. The method for fortifying flour with iron which comprises intimately mixing with flour a nutritionally acceptable level of a finely divided iron composition, the particles of which consist essentially of ferrous sulfate monohydrate with a surface coating of ferrous sulfate heptahydrate.

3,882,252

SHIRRED SAUSAGE CASING CLOSED AT ONE END AND METHOD OF MAKING SAME

Bruno Winkler, Oberflockenbach, Germany, assignor to Naturin-Werk Becker & Co., Weinheim, Germany

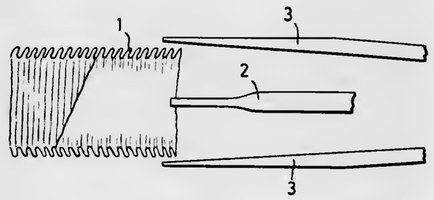
Filed Feb. 13, 1973, Ser. No. 331,755

Claims priority, application Germany, Feb. 16, 1972, 2207218; Sept. 28, 1972, 2247515

Int. Cl. A22c *13/00*

U.S. Cl. 426—140 **14 Claims**

1. A shirred food casing suitable for holding sausage meat closed at one end comprising a food casing material, the closure being an end portion of the casing compressed to provide compressed folds adjacent the axis of the casing, the closure being at least partially sealed by a physiologically tolerable adhesive placed between the compressed folds, the seal being strong enough to withstand the pressure occurring at the moment of filling the casing with food, and the adhesive being softened by juice from sausage meat.



3,882,253

DIRECTLY EDIBLE AND RAPIDLY REHYDRATABLE COMPACTED AND DEHYDRATED FOOD BAR AND METHOD OF MAKING THE SAME

Glenn R. Schafer, and Abdul R. Rahman, both of Natick, Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 15, 1974, Ser. No. 443,071

Int. Cl. A23b *7/02*

U.S. Cl. 426—637 **10 Claims**

1. A rapidly rehydratable, compacted, dehydrated food bar comprising discrete particles of blanched and freeze-dried potatoes substantially uniformly mixed with non-potato food bar-forming ingredients in the approximate proportion of about 10 to about 20 percent of said particles of potatoes to about 90 to about 80 percent of said non-potato food bar-forming ingredients, said percentages being by weight, said potato particles having volumes of from about 1/64 cubic inch to about ⅛ cubic inch when mixed with said non-potato food bar-forming ingredients, said compacted, dehydrated food bar having a bulk density from about 1.0 to about 1.4 gm per cc and a moisture content of from about 1 percent to about 4 percent by weight.

3,882,254

PEANUT BUTTER

Chester Martin Gooding, Westfield, N.J., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Oct. 31, 1973, Ser. No. 411,524

Int. Cl. A23l *1/38*

U.S. Cl. 426—633 **2 Claims**

1. A peanut butter composition having improved spreadability, improved melt down in the mouth and resistance to oil bleeding and gravitational separation comprising peanut butter and a non-hydrogenated refined and bleached hard fraction separated from palm oil in an amount sufficient to provide an SCI value in solution with peanut oil of from about 2.0 to about 3.0 at 80°F and from about 1.5 to 2.5 at 92°F.

3,882,255

METHOD FOR PREPARING FLAVORED POPCORN

Robert D. Gorham, Jr., Rocky Mount, N.C.; Lawrence D. Lorah, Concord, and F. Gordon Willis, Jr., Winchester, all of Mass., assignors to Robert D. Gorham, Jr., Rocky Mount, N.C.

Filed May 3, 1973, Ser. No. 356,969

Int. Cl. A23l *1/10*

U.S. Cl. 426—235 **14 Claims**

1. A method for preparing popcorn having at least one selected flavor and employing a cooking, flavoring and dispensing apparatus and including the steps of:

dry cooking kernels of poppable corn in a cooking chamber to provide popped popcorn having no cooking oil residue thereon;

dispensing said cooked popcorn from said cooking chamber into a flavoring chamber and causing said popcorn to traverse a travel path along which said popcorn is prevented from contacting any surface of said flavoring chamber;

applying at least one selected flavoring substance to the cooked popcorn at a location within said flavoring chamber and along said travel path; and

dispensing the flavored popcorn through a dispensing channel defined by said travel path whereby said cooked flavored popcorn does not contact the walls of said dispensing channel thereby preventing contamination of the dispensing channel by the flavoring substance.

3,882,256

METHOD FOR THE PREPARATION OF A MILK PROTEIN COPRECIPITATE

Rudolf De Boer, Wageningen, Netherlands, assignor to Stichting Bedrijven Van Het Nederlands Instituut Voor Zuivelonderzoek, Wageningen, Netherlands

Filed Nov. 14, 1972, Ser. No. 306,192

Claims priority, application Netherlands, Nov. 15, 1971, 7115702

Int. Cl. A23j *3/00*; A23c *21/00*; A21d *2/26*

U.S. Cl. 426—583 **10 Claims**

1. Method for the preparation of a milk protein coprecipitate being high in the ability to impart to cereal doughs baking qualities such as dough workability, crispness on baking and good flavor and nutritional value and low in lactose content, comprising the steps providing a mixture comprising at least one member from the group consisting of 2–10 parts by weight of whey, an amount of concentrated whey having the same solids content as 2 to 10 parts of whey and 0.2 to 1 part by weight of residual mother liquors of whey from lactose production (having a solids content of 30–35 percent by weight) and 1 part by weight of buttermilk or skimmed milk, adjusting the pH of said mixture to a value of 6.5–7.1 by heating it to at least 80°C. for at least 5 minutes before, during or after the addition of 0.1–1.0 percent by weight of the mixture of $CaCl_2$, washing the coprecipitate thus formed with water, thereafter resuspending the coprecipitate in water while admixing therewith an aqueous solution of a polyphosphate in such an amount that after drying the composition will have a NSI (Nitrogen Solubility Index) between 4 and 11 percent.

3,882,257

PREPARATION OF PET FOOD FROM BONES AND ANIMAL BY-PRODUCTS

J. Douglas Cagle, East Point, Ga., assignor to Cagle's, Inc., Atlanta, Ga.

Continuation of Ser. No. 155,268, June 21, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 392,041

Int. Cl. A23k *1/10*

U.S. Cl. 426—274 **1 Claim**

1. A method of preparing a pet food product comprising the steps of:

a. forming a mixture yielding a finsihed product containing approximately 40 percent natural animal protein by mixing 75 percent by weight of bones of various animals with 23.5 percent by weight of animal by-products selected from the group consisting of livers, skins, lungs, hearts, kidneys, heads, feet and mixtures thereof;

b. cutting and chopping the mixture of step (a) to form an uncoagulated mass;

c. adding salt to said uncoagulated mass in amount sufficient to combine with the protein content thereof and form a binder, said salt being added in amount of 1.5 percent by weight;

d. mixing the uncoagulated mass of step (b) and the added salt of step (c) to form a cohesive mass having the appearance and behavior of a unitary product;

e. de-aerifying the cohesive mass of step (d) to remove any air bubbles trapped therein;
f. compressing and forming the de-aerified cohesive mass into discrete and separate masses; and
g. dehydrating said discrete and separate masses at a temperature of 90°F – 140°F to yield said finished product containing approximately 40 percent natural animal protein and having a moisture content between 6 and 8 percent by weight.

3,882,258
DRY PREPARED FLUFFY FROSTING MIXES
Ronald David Harris, Wyoming, and Richard Morris Roudebush, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 5, 1973, Ser. No. 329,477
Int. Cl. A23g *3/00*
U.S. Cl. 426—572 **9 Claims**

1. A process for making a dry prepared fluffy frosting mix which comprises the steps of:
a. melting and flaking a polyglycerol ester containing from about 2 to about 12 glycerol units and from about 1 to about 4 fatty acid groups per molecule;
b. pulverizing said polyglycerol ester to a small particle size while maintaining the polyglycol ester at a temperature below its melting point;
c. blending said pulverized polyglycerol ester with a dry mixture comprising sugar, and flavoring; and
d. pulverizing the resulting blend to such an extent that 95 percent of the particles will pass through an 80 mesh screen and 5 percent of the particles will pass through a 100 mesh screen.

3,882,259
LAMINATE OF ETHYLENE/VINYL ALCOHOL COPOLYMER, ETHYLENE/VINYL ACETATE COPOLYMER AND POLYOLEFINS
Shigezo Nohara; Shunsaku Hirata, both of Yokohama; Jinichi Yazaki, Kawasaki, and Toru Suzuki, Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan
Filed Mar. 30, 1973, Ser. No. 347,406
Claims priority, application Japan, Aug. 8, 1972, 47-78732
Int. Cl. B32b *27/08, 31/30*
U.S. Cl. 428—35 **9 Claims**

1. A laminated composite sheet consisting essentially of an intermediate layer composed of a mixture of an ethylene-vinyl alcohol copolymer and a member selected from the group consisting of (1) an ethylene-vinyl acetate copolymer and (2) an ionomer which is a copolymer of a major proportion of ethylene and a minor proportion of acrylic acid neutralized by sodium ions or a copolymer of a major proportion of ethylene and a minor proportion of methacrylic acid neutralized by sodium ions; and two outer layers which have been coextruded with said intermediate layer and bonded to the opposite sides thereof, each of said outer layers being composed of a polyolefin selected from the group consisting of polyethylenes and polypropylenes or a blend of the polyethylenes or polypropylenes with the copolymers (1) or (2) described above.

8. A hollow container having a wall made of a laminated materials as defined in claim 1.

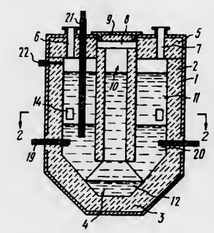
3,882,260
METHOD OF COATING SHAPED ARTICLES
Heinz Mueller-Tamm; Wolfgang Immel, both of Ludwigshafen; Heinrich Mohr, and Karl-Heinz Fauth, both of Frankenthal, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Feb. 7, 1973, Ser. No. 330,307
Claims priority, application Germany, Feb. 11, 1972, 2206509
Int. Cl. C23c *3/00;* **B44d** *1/09*
U.S. Cl. 428—337 **5 Claims**

1. A method of coating shaped articles of polyisobutylene having a molecular weight of from 3×10^5 to 6×10^6 (viscosity average) which comprises applying to the surface of said shaped article as a coating composition from 10 to 2000 g/m² of shaped article surface of molten polyethylene, polypropylene, ethylene/propylene copolymer or mixtures of said polymers having a molecular weight of from 2,000 to 20,000.

2. A method as set forth in claim 1 wherein said shaped articles are heated in a stream of hot air prior to the coating step whereby the temperature of the shaped articles is at least 5°C above the melting point of the coating composition.

ELECTRICAL

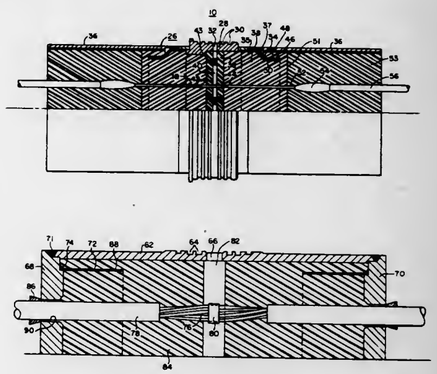
3,882,261
ELECTRIC FURNACE AND METHOD FOR THE CONTINUOUS REFINING OF MAGNESIUM
Sergei Petrovich Kosarev, Nalichnaya ulitsa, 39, korpus 1, kv. 20; Nina Voldemarovna Didrikh, Moskovsky prospekt 220, kv. 26, both of Leningrad; Vladimir Dmitrievich Yazev, ulitsa Bogdana Khmelnitskogo, 66, kv. 59, Kalush Ivano-Frankovskoi oblasti; Viktor Georgievich Raskatov, ulitsa Khimikov, 14, kv. 8, Kalush Ivano-Frankovskoi oblasti; Oleg Nikolaevich Romanenko, ulitsa Sevastopolskaya, 96, kv. 46, Kalush Ivano-Frankovskoi oblasti, and Alexandr Fedorovich Trukhin, ulitsa Zhdanova, 11, kv. 32, Kalush Ivano-Frankovskoi oblasti, all of U.S.S.R.
Filed May 2, 1974, Ser. No. 466,493
Int. Cl. H05b *3/60*
U.S. Cl. 13—23 **14 Claims**



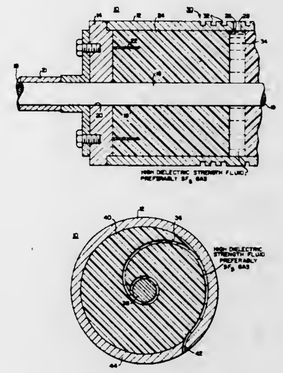
1. A furnace for the refining of a metal, such as magnesium and the like having a refractory lined bottom, side walls and a roof and comprising: vertically disposed partition means dividing said furnace into a centrally disposed chamber and a plurality of chambers disposed peripherally about said central chamber, said central chamber having removable cover means, and being sealed with respect to said peripheral chambers by means of a molten salt mass when said furnace is in operation; all of said chambers communicating with each other at their lower portions; each of said peripheral chambers communicating with an adjacent peripheral chamber at a level in said furnace so as to ensure the consecutive overflow of refined metal from a first peripheral chamber to a last peripheral chamber, and opening means in said roof for charging said furnace and for discharging said refined metal.

3,882,262
MODULAR ELECTRICAL PENETRATION
Renzo L. Korner, Horseheads; David Green, Corning; Albert Bereza, Elmira, and Robert J. Colegrove, Horseheads, all of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 10, 1974, Ser. No. 432,375
Int. Cl. G21c *13/02;* **H01b** *17/26*
U.S. Cl. 174—11 R **8 Claims**

1. An electrical penetration assembly comprising:
a. an enclosure defining metal member;
b. a pair of axially aligned annular seal shroud means disposed within the enclosure defined by the metal member, each of said annular seal shroud means comprising a sealing end which is sealingly connected to the interior surface of the metal member, and a free end which is spaced from the enclosure defining metal member which free end has an outer surface generally parallel to the interior surface of the metal member;
c. at least one longitudinally extending electrical conductor extending through said enclosure defined by said metal member, and passing through both of the annular seal shroud means;
d. a chemically stable, radioactive resistant, gas inpervious, compressive setting, resinous potting material substantially filling the enclosure defined by said metal member, and providing a compression seal along and about the conductor, and about the outer surface of the free end of each of the seal shroud means.



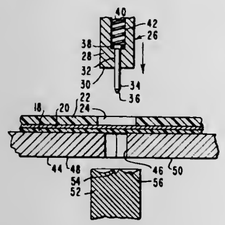
3,882,263
ELECTRICAL PENETRATION FOR WITHSTANDING VOLTAGE SURGE ON THE CONDUCTOR
Renzo L. Korner, Horseheads, and David Green, Corning, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 3, 1974, Ser. No. 457,685
Int. Cl. G21c *13/02;* **H01b** *17/26*
U.S. Cl. 174—11 R **4 Claims**



1. In an electrical penetration assembly comprising a metal enclosure member, a pair of axially aligned annular seal shroud means disposed within the enclosure defined by the metal member, each of said annular seal shroud means including a sealing end which is sealingly connected to the interior surface of the metal member, and a free end which is spaced from the metal member, which free end has another surface generally parallel to the interior surface of the metal member, at least one longitudinally extending electrical conductor extending through the enclosure and passing through the annular seal shroud means, a compressive setting resinous potting material substantially filling the enclosure which pot-

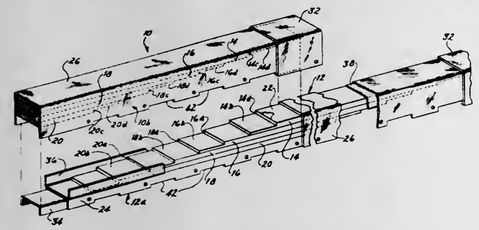
ting material has spaced apart portions forming a centrally located leak monitoring chamber, and an aperture is provided through said metal enclosure member interconnected with the leak monitoring chamber, the improvement wherein a fluid having a dielectric strength substantially greater than air fills the leak monitoring chamber so that said assembly can withstand a high voltage surge on the conductor.

3,882,264
EYELET IN FLEXIBLE CIRCUITRY
Lawrence R. Travis, Brockton, Mass., assignor to AMP Incorporated, Harrisburg, Pa.
Division of Ser. No. 694,476, Dec. 29, 1967, abandoned. This application Nov. 23, 1971, Ser. No. 201,427
Int. Cl. H05k *1/02*
U.S. Cl. 174—68.5 **1 Claim**



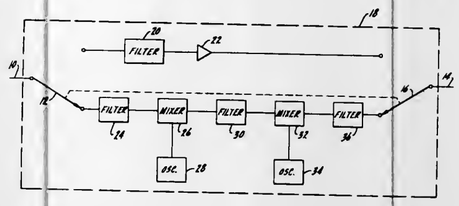
1. An integral eyelet in flexible circuitry which circuitry comprises thin, flexible conductive foil bonded to a surface of thin flexible, insulative, plastic backing, said eyelet including an opening defined through said foil and backing with the peripheral portion of said foil and said backing about said opening bent backwards upon itself, with the backing in contact with itself and with the foil exposed about the periphery of said opening overlying said backing on each side of said opening, the thickness of said eyelet adjacent said opening being approximately twice the thickness of said foil and backing.

3,882,265
ELECTRICAL BUSWAY WITH IMPROVED JOINT CONSTRUCTION
Frank C. Johnston, Trumbull, and Werner A. Krause, Plantsville, both of Conn., assignors to General Electric Company, Schenectady, N.Y.
Filed May 3, 1974, Ser. No. 466,533
Int. Cl. H01r *5/02*; H02g *15/08*
U.S. Cl. 174—88 B **12 Claims**



1. Electrical busway comprising, in combination:
A. plural busway sections, each including
1. a plurality of flat, elongated busbars arranged in stacked relation, corresponding one ends of said busbars formed with scarf lap joint terminations arrayed in longitudinally staggered relation and corresponding other ends of said busbars formed with complementary scarf lap joint terminations likewise arrayed in longitudinally staggered relation,
2. insulation insulating said busbars one from the other, said busbar terminations being devoid of said insulation, and
3. a housing enclosing said stacked busbars along the mid lengths thereof intermediate said busbar terminations,
4. said busway sections aligned in appropriate end-to-end relation with said scarf lap joint terminations of corresponding ones of said busbars in said aligned sections mating to effectuate electrical connections therebetween; and
B. means maintaining said busbar electrical connections between said aligned busway sections.

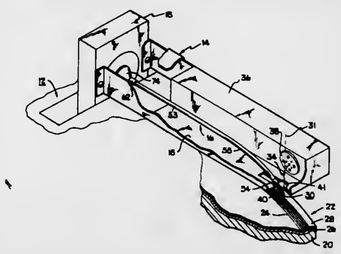
3,882,266
APPARATUS FOR CONVERTING SELECTED CHANNELS
Eugene C. Walding, Arlington Heights, Ill., assignor to Oak Industries, Inc., Sycamore, Ill.
Filed Jan. 11, 1973, Ser. No. 322,852
Int. Cl. H04n *1/44*
U.S. Cl. 178—5.1 **7 Claims**



7. A cable TV converter including an input band pass filter tuned to pass a plurality of contiguous TV channels, a first mixer connected to said filter, and a first oscillator connected to said first mixer,
an intermediate band pass filter connected to the output of said first mixer, said intermediate filter having generally the same band width as said first filter, a second mixer connected to the output of said intermediate filter and a second oscillator connected to said second mixer, and an output band pass filter connected to said second mixer and having a band width the same as said input and intermediate band pass filters,
one of said oscillators having a frequency such that less than all of said plurality of TV channels present at the output of its associated mixer are passed by the following band pass filter.

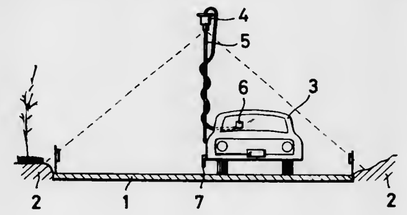
3,882,267
VIDEO PLAYBACK SYSTEM TRACKING ARM AND PICKUP ASSEMBLY
Marvin Allan Leedom, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Dec. 14, 1972, Ser. No. 314,976
Claims priority, application United Kingdom, Apr. 19, 1972, 18154/72
Int. Cl. G11b *11/06*; H04n *5/76*
U.S. Cl. 178—6.6 A **12 Claims**

1. In a video playback system for use with a video disc record having geometrical variations in a spiral groove on a major surface of said disc record, said video playback system employing signal processing circuitry subject to energizing oscillations, the combination comprising:
a tracking stylus for engaging said disc record spiral groove, said tracking stylus including an electrode for signal transfer as said disc record is rotated;
means for electrically connecting said stylus electrode to said signal processing circuitry;
means for shield said signal processing circuitry in order to limit radiation of said energizing oscillations, said shielding means comprising a conductive housing for said signal processing circuitry having a bottom surface subject to positioning adjacent said disc record during playback;
an elongated tracking arm yieldably supported at one end within said conductive housing and subject to rotational motion, as well as translatory motion in a direction substantially parallel to said housing bottom surface, during record playback; and
support means for said tracking stylus at the end of said tracking arm remote from said one end for supporting said tracking stylus in signal transfer relation with said disc record when said tracking stylus engages said disc record;
wherein said housing has an opening in said bottom surface through which said remote end of said tracking arm pro-



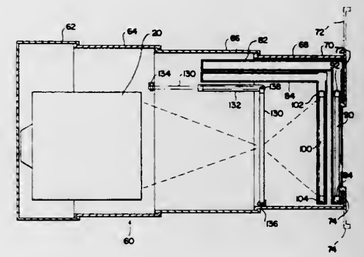
trudes during record playback, and through which radiation of said energizing oscillations may occur; said opening being dimensioned to accommodate said rotational and translatory motions of said tracking arm without engagement between said remote end and said housing; and wherein said tracking arm includes a first straight portion, extending from said one end in substantially parallel relationship with said housing bottom surface during playback, and a further portion adjacent said first portion and curved toward said opening, whereby the opening area requirements requisite for said motion accommodation are reduced relative to the opening area requirements associated with such motion accomodation for a tracking arm of straight configuration between supported end and remote end.

3,882,268
APPARATUS FOR SURVEYING PAVED SURFACE
Yukio Ogawa, 7-3, Iwakura Hanazono-cho, Kyoto, and Haruo Miki, c/o Nikon Raina Ishikawadai-ryo, 22-4, 3-chome, Higashiyukigaya, Tokyo, both of Japan
Filed July 2, 1973, Ser. No. 375,860
Claims priority, application Japan, July 3, 1972, 47-59555; July 3, 1972, 47-59556
Int. Cl. H04n *5/84*
U.S. Cl. 178—6 **5 Claims**



1. An apparatus for surveying a paved surface having marginal edges separating the paved surface from the bordering unpaved surface, said apparatus comprising a vehicle, a television camera on said vehicle for viewing the vehicle and the paved and unpaved surfaces, a television receiver for receiving a signal from the camera and includng an image screen on which an image of the vehicle, the paved surface inclusive of its marginal edges, and the unpaved surface is received, a scale on said screen including a central mark and two lateral marks, paint applicator means on said vehicle, the arrangement of said vehicle, camera and marks being such that said marginal edges are aligned with said lateral marks and said applicator means with said central mark, and automatic control means operatively associated with said screen for detecting misalignment of the lateral marks and said marginal edges for correction of such misalignment and including photoelectric sensors adjacent said lateral marks for detecting shifting of the marginal edges relative to said lateral marks due to differences in brightness between the paved and unpaved surfaces.

3,882,269
APPARATUS, SYSTEM AND METHOD OF STORING A STATIC IMAGE DISPLAYED ON A TELEVISION TUBE
William R. Niehaus, Cincinnati, Ohio, assignor to The E. W. Scripps Company, Cincinnati, Ohio
Filed May 11, 1973, Ser. No. 359,344
Int. Cl. G11b *31/00*; G11c *11/42*
U.S. Cl. 178—6.6 R **16 Claims**



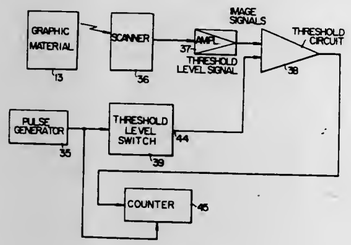
12. A cable television system for storing for subsequent visual display a static image onto a generally flat plate formed from a layer of ceramic material capable of forming a visually displayable image when concurrently exposed to an electromagnetic field and a light image, said system comprising:
a. means for positioning said plate in a position exposed to the image surface of a television tube receiving a static image from a cable television network;
b. means for exposing said flat plate to a generally uniform light source while concurrently subjected to an electromagnetic field;
c. means for creating a selected image on said image surface for at least a given time;
d. means for subjecting said flat plate to an electro-magnetic field while exposed to said selected image;
e. means for requesting a particular selected image;
f. means responsive to said requesting means for displaying said requested selected image on said image surface; and,
g. means for allowing removal of said plate from its exposed position whereby said selected image may be viewed independent of said television tube.

3,882,270
IMAGE TRANSMISSION SYSTEM
Mutsuo Ogawa, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed May 31, 1973, Ser. No. 365,479
Claims priority, application Japan, June 7, 1972, 47-56755
Int. Cl. H04n *1/04*, *1/40*
U.S. Cl. 178—7.1 **10 Claims**

1. An image transmission system comprising
means for scanning an image at a repeating plurality of sensitivity levels to generate a sequence of image signals, each image signal corresponding to a scan at a single one of said sensitivity levels;

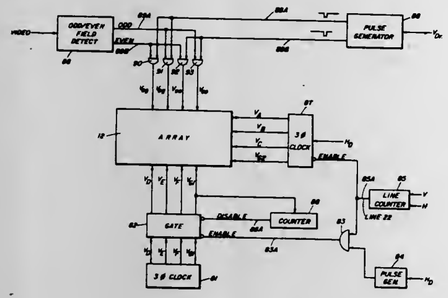
means for generating a threshold level signal comprising a repeating plurality of threshold levels in timed relationship with each of said image signals; and

means for comparing each image signal with said threshold level signal to generate a first transmission signal when



the level of the image signal is higher than the time related level of the threshold level signal and for generating a second transmission signal when the level of the image signal is lower than the time related level of the threshold level signal.

3,882,271
DISPLAY USING ARRAY OF CHARGE STORAGE DEVICES
William E. Glenn, Stamford, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed Nov. 13, 1973, Ser. No. 415,334
Int. Cl. H04n *3/14*
U.S. Cl. 178—7.3 D **20 Claims**



1. Apparatus for receiving image-representative fields of electronic video information and displaying the images, comprising:

a semiconductor substrate;

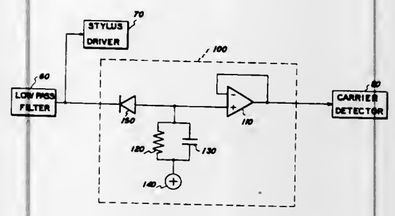
an array of semiconductor devices formed in a surface of said substrate, each of said devices being capable of receiving an element of video information as represented by stored charge;

means for sampling said video signal and for temporarily storing elemental samples thereof in said semiconductor devices;

a layer of electrically deformable material disposed on said substrate; and

optical means for converting deformations of said deformable material into an image.

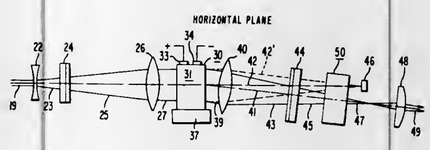
3,882,272
CARRIER DETECTOR
Roger F. Norian, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 21, 1973, Ser. No. 427,157
Int. Cl. H04b *1/16*
U.S. Cl. 178—7.3 R **2 Claims**



1. In a facsimile receiver arranged for connection to a communication channel and responsive to signals on said channel to provide a facsimile of an original scanned document, said receiver including carrier detector means responsive to the average level of the signals on said channel for generating a shut-down signal for the inactivation of said receiver when said average level falls below a predetermined value, the improvement comprising

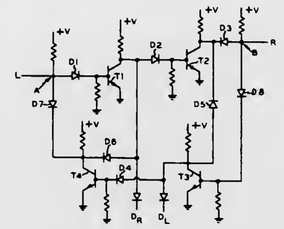
negative peak detector means connected to the input of said carrier detector means and responsive to fluctuations of the level of signals on said channel for maintaining the level at the input to said carrier detector means at substantially the negative peaks of said fluctuations.

3,882,273
OPTICAL BEAM SCANNING SYSTEM
Joseph Dale Knox, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Oct. 24, 1973, Ser. No. 409,177
Int. Cl. H04n *3/10*
U.S. Cl. 178—7.6 **10 Claims**



1. In a system for deflecting a light beam in horizontal and vertical directions, an acousto-optic horizontal light deflector having an aperture which is elongated in the horizontal plane of deflection and is narrow in the vertical plane, a spherical beam expander lens to expand the beam to a diameter equal to the elongated dimension of said deflector aperture, a first cylindrical lens positioned closely following said beam expander lens and oriented to not affect light in the horizontal plane but to converge slightly-expanded light in the vertical plane to the narrow dimension of the deflector aperture, a spherical collimator lens to direct the horizontally expanded beam in parallel rays through said acousto-optic deflector, and a reverse telescope, including a spherical converging lens and a second cylindrical lens spaced from said converging lens, to focus the light from said deflector to a point in a utilization plane.

3,882,274
BIDIRECTIONAL DIGITAL AMPLIFIER
William E. Vice; Arthur J. Brodersen, and Gerald J. Lipovski, all of Gainesville, Fla., assignors to Board of Regents, State of Florida, Tallahassee, Fla.
Filed Feb. 28, 1974, Ser. No. 446,797
Int. Cl. H04l *25/24*
U.S. Cl. 178—70 TS **9 Claims**



1. A bi-directional signal translating device for transmitting signals in two directions along a path,

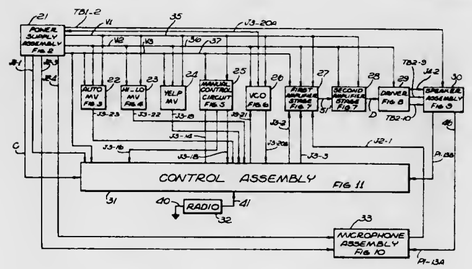
said translating means including first amplifier means for propagating in a first direction a signal applied to its input and a second amplifier for propagating in the second direction a signal applied to its input,

means responsive to a signal applied to the input of each one of said amplifier means for blocking propagating of a signal applied to the input of the other one of said amplifier means,

means for connecting in common the input of said first amplifier means and the output of said second amplifier means including a first unidirectional conducting device, means for connecting in common the input of said second amplifier means and the output of said first amplifier means including a second unidirectional conducting device,

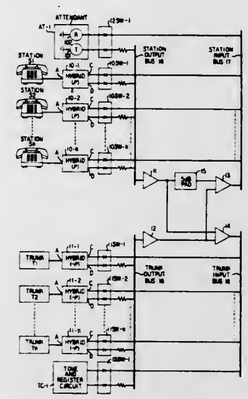
and means for selectively applying delimiting control signs at preselected times to either one amplifier means or simultaneously to both amplifier means, for blocking propagation of input signals therethrough.

3,882,275
SOUND COMMUNICATION SYSTEM
Gordon S. Carroll, Costa Mesa, Calif., assignor to International Telephone & Telegraph Corporation
Filed Aug. 2, 1973, Ser. No. 384,889
Int. Cl. G08b *3/10*
U.S. Cl. 179—1 R **19 Claims**



1. A multipurpose sound communication system comprising: first and second oscillators having first and second output leads, respectively, said first and second oscillators producing respective first and second periodic output signals on said first and second leads thereof which have magnitudes that are first and second different predetermined functions of time, respectively; first means having an input lead, said first means being constructed to broadcast audible sound when at least one signal of an audio frequency is impressed upon said first means input lead; and a selectively operable switch having at least one pole and at least first and second contacts; and second means connecting said switch pole to said first means input lead, said first and second output leads of said respective first and second oscillators being respectively connected to said first and second switch contacts, said switch pole being movable to a first position in which said pole engages the said first switch contact without engaging the said second switch contact, and to a second position in which said pole engages the said second switch contact without engaging the said first switch contact, said third oscillator third output signal being on audio frequency signal, said second means including a third oscillator having a third output lead and a control input, said control input being connected from said switch pole, said third oscillator being constructed to produce a third periodic audio output signal on said third output lead of a frequency that is a third predetermined function of and variable with the magnitude of a signal impressed upon said control input thereto, said third oscillator output lead being connected to said first means input lead.

3,882,276
CONFERENCING SYSTEM UTILIZING OPPOSITELY PHASED HYBRIDS
Alexander Feiner, and Dennis Bryan James, both of Rumson, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 22, 1974, Ser. No. 453,705
Int. Cl. H04m *3/56*
U.S. Cl. 179—1 CN **7 Claims**



1. A conferencing system for interconnecting a plurality of 2-wire communication devices, said system comprising:

a plurality of hybrids, each hybrid adapted for converting from 2-wire to 4-wire operation, said 4-wire portion of said hybrids including an output bus and an input bus;

means for interconnecting said output bus of each hybrid and for interconnecting said input bus of each of said hybrids, said interconnecting means including a summation means for communicating signals from said output bus to said input bus,

said hybrids arranged in groups, a first group connected to certain ones of said communication devices and a second group connected to other ones of said communication devices,

said first group of hybrids having means for establishing a signal having a first polarity with respect to any reflected transmission signals,

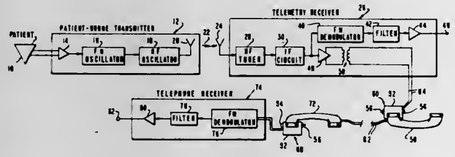
said second group of hybrids having means for establishing a signal having a second polarity with respect to any reflected transmission signals; and

means for enabling said interconnecting means of selected ones of said first group of hybrids and of selected ones of said second group of hybrids so that a conference connection is possible between said communication devices associated with said interconnected hybrids whereby the polarity differences of the reflected signals of said first group of hybrids and said second group of hybrids act to reduce the overall reflected signal.

3,882,277
ELECTROCARDIOGRAPHIC TELEMETRY AND TELEPHONE TRANSMISSION LINK SYSTEM

Donald DePedro, Millis, and Robert Cannon, Waltham, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Apr. 20, 1972, Ser. No. 246,053
Int. Cl. H04h *11/06*
U.S. Cl. 179—2 DP **6 Claims**



1. A system for transmitting an EKG signal from an ambulatory patient to a remote monitor comprising a portable patient-borne unit carried by said patient for detecting said EKG signal and transmitting a radio-frequency signal representative thereof, a telemetry receiver within range of said patient-borne unit for detecting said radio-frequency signal and for converting it to an audio-frequency electrical signal representative of said EKG signal, a telephone link for extending said audio-frequency electrical signal to said remote monitor, said telephone link including a first telephone, a second telephone, a communication channel therebetween, a pair of electrical-acoustical transducers, each of said transducers including a housing with a speaker contained therein, a first of said transducer housings being placed over the mouthpiece of said first telephone with the telemetry receiver audio-frequency electrical signal being electrically coupled to the respective transducer, the second of said transducer housings being placed over the earpiece of said second telephone with the respective transducer being electrically coupled to said remote monitor, and wherein the transducer attached to the mouthpiece of said first telephone includes an electrical switch which when operated breaks the electrical connection of the transducer, said patient-borne unit further including electrode leads for connection to said patient for detecting an EKG signal, and means for applying the radio-frequency signal to said leads so that said leads further function as an antenna for transmitting said signal.

3,882,278
INTERFACE DEVICE FOR USE WITH AN ALARM SYSTEM AND A TELEPHONE SYSTEM

Edward T. Coll, Philadelphia, Pa., assignor to Martha H. Egly and Michael J. Manchester, Philadelphia, Pa.

Filed July 16, 1973, Ser. No. 379,610
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 R **8 Claims**

1. An interface device to be used to connect an alarm system to a telephone system coupler comprising in combination a first source of power adapted to be activated during predetermined hours,

means connecting said first source of power to said telephone system coupler to provide power thereto,

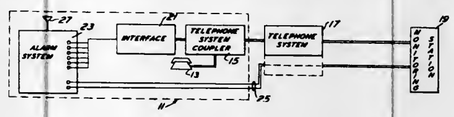
first signal switching means having first and second terminals,

first circuitry means connecting said first and second terminals to said telephone system coupler to activate said first switching means in response to a particular signal being transmitted to said telephone system coupler,

first timing circuitry means connected to said first and second terminals to provide a threshold signal after a predetermined time that said particular signal has been applied to said telephone system coupler,

second switching means connected to receive said threshold signal and further connected to said first switching means to cause said first switching means to be turned off in response to said threshold signal being generated,

second circuitry means connected to said first switching means to enable a signal to be applied to said telephone system coupler which in turn causes it to seize a tele-



phone line connected thereto in response to said first signal switching means being switched,

third circuitry means connected to said first signal switching means and to said alarm system as well as to said telephone system coupler to enable audio signals to be transmitted from said alarm system through said first signal switching means, through said telephone system coupler to said seized telephone line,

fourth circuitry means connected to said first signal switching means to provide control signals through said first signal switching means to said telephone system coupler, and

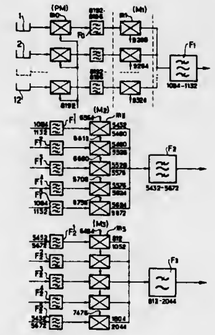
fifth circuitry means including second timing circuitry means connected to both said first circuitry means and said fourth circuitry means whereby at least one of said control signals is connected to disconnect said second timing circuitry means while said first signal switching means are activated and whereby said second timing circuitry means is connected to disenable said first circuitry means from passing said particular signal after a given period of time during which said second timing circuitry is activated.

3,882,279
MULTI-STAGE MODULATOR SYSTEM

Georges Duval, Boulogne, and Jacques Renaud-Goud, St. Michel sur Orge, both of France, assignors to Compagnie Industrielle des Telecommunications Clt-Alcatel, Paris, France

Filed Oct. 24, 1973, Ser. No. 409,293
Claims priority, application France, Oct. 24, 1972, 72.37679
Int. Cl. H04j *1/06*
U.S. Cl. 179—15 FD **6 Claims**

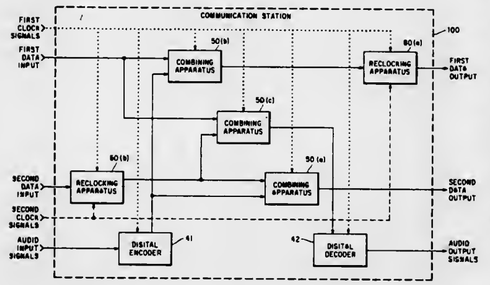
1. A multi-stage modulator system for forming, starting from voice frequency channels, a standard frequency multiplex group, comprising a first modulator group including a plurality of premodulated voice frequency channels each having a first modulator receiving respective input signals and respective modulation signals and a first filter connected directly to the outputs of said first modulators in common, a second modulator group including a plurality of second modulators each receiving the output of said first filter and a respective modulation signal and a second filter connected directly to the outputs of said second modulators in common, and a third modulator group including a plurality of third modulators each receiving the output of said second filter and a respective modulator signal and a third filter connected directly to the outputs of said third modulators in common, each of the modulators of each modulator group supplying a single modulation sideband within a given frequency band.



3,882,280
METHOD AND APPARATUS FOR COMBINING DIGITIZED INFORMATION

Michel M. Goutmann, Fort Washington, Pa., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Dec. 19, 1973, Ser. No. 426,176
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 AL **20 Claims**



1. A plurality of communication stations for permitting simultaneous exchange of vocal information between said communication stations wherein each of said stations comprises:

first means for combining first digitally-encoded signals from a first group of said communication stations with second digitally encoded signals from a second group of said communication stations, output signals from said first combining means providing data to said station from said first and second group of communication stations;

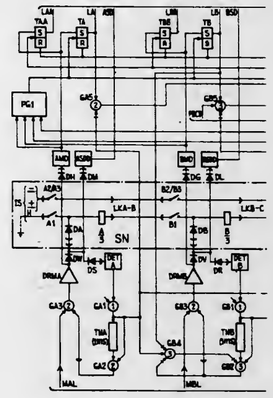
second means for combining said first signals with digitally encoded local signals, output signals from said second combining means for distribution to said second group of said communication stations; and

third means for combining said second signals with said local signals, output signals from said third combining means for distribution to said first group of said communication stations.

3,882,281
CONTROL AND SUPERVISION OF TELECOMMUNICATIONS SWITCHING NETWORKS

Brian Grundy, Ashton-in-Makerfield, and Robert Toy, Fairfield, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland

Filed May 31, 1973, Ser. No. 365,645
Claims priority, application United Kingdom, June 6, 1972, 26302/72
Int. Cl. H04m *3/42*
U.S. Cl. 179—18 E **11 Claims**



1. A switching network, comprising a succession of link-connected stages each having a plurality of matrix switches formed by crosspoint relays, with control equipment, for effecting the setting-up and release of self-holding connections between any inlet and an outlet of the network and characterised in that said equipment has an incoming multi-conductor signalling-path for the reception of individual instruction messages including messages demanding the setting-up and release of specific network connections, an outgoing multi-conductor signalling-path for the transmission of status messages by said equipment, and marking arrangements which are operable either by a setting-up instruction message to selectively mark the outlet and all other salient points of the specified connection with potentials suitable for the establishment of that connection, or by a release instruction message to selectively and exclusively mark the outlet of a specified established connection with a potential such as to effect release of that connection.

3,882,282
SYSTEM FOR DETECTING LOOPING OF A SUBSCRIBER'S TELEPHONE LINE

Jean Picandet, Paris, France, assignor to Jeumont-Schneider, Puteaux, France

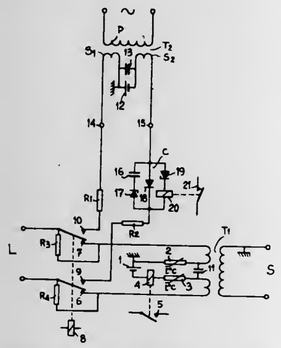
Filed July 18, 1973, Ser. No. 380,393
Claims priority, application France, July 20, 1972, 72.26123
Int. Cl. H04m *3/02*
U.S. Cl. 179—18 HB **4 Claims**

1. A circuit for terminating the application of ringing pulses to a subscriber line when an off-hook condition occurs either during ringing periods or silent periods between ringing pulses comprising:

a subscriber speech circuit having a source of D.C. potential and a transformer,

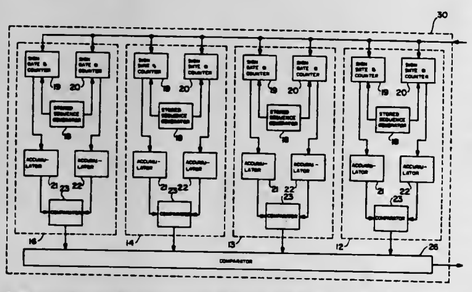
first threshold detector means connected in series with said source of D.C. potential and said transformer for detecting an off-hook condition during a silent period,

an A.C. source for providing said ringing pulses,
a D.C. source connected in series with said A.C. source,
a detector circuit connected in series with said A.C. and D.C. sources,
said detector circuit having three parallel paths comprising:
a first path comprising a capacitor,
a second path comprising a diode connected in opposition to said D.C. source, and



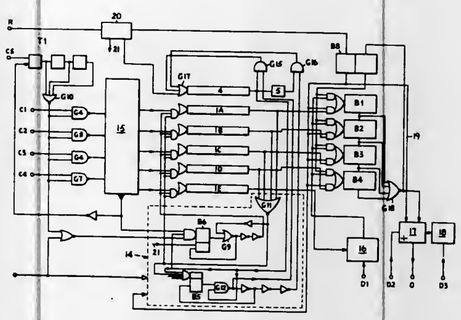
a third path comprising second threshold detector means for detecting an off-hook condition during a ringing period, and
switching means normally connecting said subscriber line to said speech circuit, said switching means operative for connecting said subscriber line to said detector circuit during ringing periods,
whereby activation of either said first and second threshold detector means terminates the operation of said switching means thereby terminating said ringing pulses on said subscriber line.

3,882,283
METHOD AND APPARATUS FOR DETECTING THE PRESENCE OF SIGNAL COMPONENTS OF PREDETERMINED FREQUENCY IN A MULTI-FREQUENCY SIGNAL
Alexander David Proudfoot, Oxford, England, assignor to The Commonwealth of Australia, Melbourne, Australia
Filed Aug. 13, 1973, Ser. No. 387,855
Claims priority, application Australia, Aug. 10, 1972, 24/72
Int. Cl. H04m *1/50*
U.S. Cl. 179—84 VF **17 Claims**



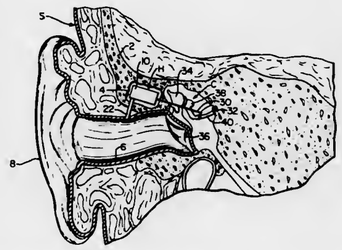
1. A method of determining whether a particular frequency component is present in a first sequence of pulse code modulated signals, the signals representing instantaneous time spaced values of a periodically varying signal of substantially constant amplitude, the method comprising;
generating from a stored sequence generator second and third sequences of digitally encoded signals respectively representing the instantaneous values, at time spacings corresponding to the time spacing of said values of said periodically varying signal, of separate ones of two test signals of said particular frequency, these test signals being of substantially constant amplitude and of substantially square-wave form but displaced relative to each other by a phase displacement other than 0 and π;
deriving two further sequences of signals representing the multiplicands of the corresponding instantaneous values of the periodically varying signal and the respective phase displaced test signals;
deriving, from these two further sequences of signals, two signals, one representing the sums of the multiplicands of each respective said further sequence of signals; and
deriving, from said signals representing the sums of multiplicands, an indication signal which, when said component is present, is indicative of such presence.

3,882,284
DIAL SIGNAL STORAGE AND TRANSMISSION ARRANGEMENT USING DUAL RECIRCULATING REGISTERS AND HAVING REPEAT CAPABILITY
John Charles Munday, Fife, Scotland, assignor to General Instrument Corporation, Clifton, N.J.
Filed Mar. 20, 1974, Ser. No. 452,685
Int. Cl. H04m *1/42*
U.S. Cl. 179—90 B **10 Claims**



1. A storage arrangement for storing sequences of digits required for telephone dialling, the arrangment comprising: a first recirculating register means for storing a sequence of digits; a second recirculating register means for storing a marker bit to be recirculated synchronously with said sequence to mark the digit next to be read out from the first register means; an excess bit position of the second register means and which provides for the second register means a bit position in excess of the number of digit positions in the first register means; gate means having a first mode to cause the excess bit positon to be bypassed so that the marker bit will circulate in alignment with a digit in the first register means and having a second mode to cause the excess bit position to be utilised to displace the marker bit rearwardly in relation to a sequence of digits in the first register means; and control means coupled to the register means and the gate means for controlling the gate means, in dependence upon marker bit position and upon the digit positions, (a) to position the marker bit to mark the first digit to be read out, (b) to set the gate means to the second mode to displace the marker bit by one position rearwardly on read-out of a digit to mark the next digit to be read-out, and (c), subsequent to read-out of all the digits, to set the gate means to the second mode to repeatedly offset the marker bit until it again marks the first digit of the sequence.

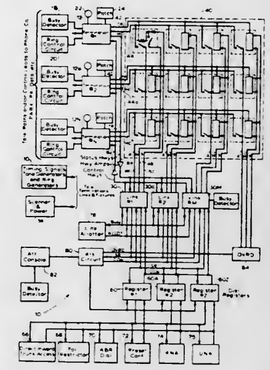
3,882,285
IMPLANTABLE HEARING AID AND METHOD OF IMPROVING HEARING
James A. Nunley, and Jeremy A. Agnew, both of Colorado Springs, Colo., assignors to The Vicon Instrument Company, Colorado Springs, Colo.
Filed Oct. 9, 1973, Ser. No. 404,339
Int. Cl. H04r *25/02*
U.S. Cl. 179—107 E **10 Claims**



1. A self-contained implantable hearing device for positioning in a hollowed-out portion of the skull adjacent to the ear canal to provide a sound path parallel to the normal sound path to improve hearing, said unit comprising:
transducer means positionable adjacent the ear canal for receiving audio signals entering the ear canal and converting them to electrical signals;
means for connecting said transducer means with the ear canal for transmission of the audio signal from the ear canal to said transducer means for transmission along a path parallel to the ear canal;
amplifier means coupled to said transducer means adjacent the ear canal for amplifying the electrical signal produced by said transducer means along said parallel path;
transmitter means coupled to said amplifier means adjacent the ear canal for converting the electrical signal to a mechanical response; and
mechanical response means coupled to said transmitter means adjacent the ear canal and connectable to a mechanical drive structure within the ear to complete said parallel path and to provide a mechanical movement of the structure in response to an acoustical signal received by said transducer, which augments and supports any signal produced by the transmission of sounds through the normal sound path of the ear to provide improved hearing.

3,882,286
TELEPHONE SWITCHING SYSTEM
Virgle E. Porter, Steger, Ill., assignor to Amtron, Inc., Midlothian, Ill.
Filed May 8, 1973, Ser. No. 358,465
Int. Cl. H04q *1/52*
U.S. Cl. 179—18 GF **39 Claims**

1. In a telephone switching system having a crosspoint matrix of horizontal and vertical terminal dimensions N by M, respectively, with the matrix crosspoint at the intersection of respective horizontal and vertical terminal pairs being adapted for effecting an electrical interconnection of said respective terminal pairs in response to coincident signal markings thereon and further having N termination circuits and M normally idle link circuits coupled to individual ones of said horizontal and vertical terminals, respectively, of said matrix, the combination comprising:
a plurality of register means associated with said link circuits;
scanner means for signal markings the horizontal terminal of a first predetermined member of said N termination circuits;
allotter means for enabling an idle one of said M link circuits to signal mark its associated vertical matrix terminal and for completing an electrical connection to said horizontal terminal of said first predetermined member of said N termination circuits;
means responsive to said link circuit signal mark for electrically connecting one of said register means to selected link circuit and for supplying a dial tone to said predetermined member of said N termination circuits to enable said predetermined member of said N termination circuits to dial, and whereby said connected register means is responsive to said dialing;
a first control circuit means connecting each of said M link circuits to each of said N termination circuits, wherein said first control circuit means supplies individual identification data relating to each of said N termination circuits to said M link circuits;

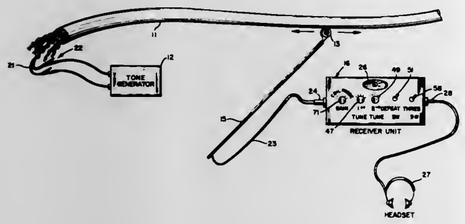


a second control means connecting each of said N termination circuits to each of said M link circuits whereby said connected register means energizes said second control circuit means associated with a second member of said predetermined N termination circuits in response to said dialing thereby signal marking the horizontal terminal of said second predetermined member of said N termination circuits, whereby said second predetermined member of said N termination circuits is connected to said first predetermined member of said N termination circuits through said previously connected vertical matrix terminal; and
conference circuit means associated with said register means for connecting a preselected number of said termination circuits together along a single vertical matrix terminal.

3,882,287
METHOD AND APPARATUS FOR DETECTING FAULTS AND LOCATING CONDUCTORS IN MULTI-CONDUCTOR CABLES
James F. Simmonds, Sherman Oaks, Calif., assignor to Perkins Research & Mfg. Co., Canoga Park, Calif.
Filed Apr. 20, 1973, Ser. No. 353,210
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 A **7 Claims**

1. A method for detecting and locating faults and/or identifying conductors in a multiconductor cable comprising the steps of:
connecting one of a plurality of tone generators all having a known nominal frequency but wherein the precise frequency of any given such generator varies from said

nominal frequency and is thus unknown to one or more conductors of the cable at a first location thereon;
temporarily coupling a tunable frequency amplifier having a manual adjustment to said tone generator or to a point adjacent the connection of said generator to said cable; tuning the tunable amplifier by means of said manual adjustment to the precise frequency emitted by said generator;

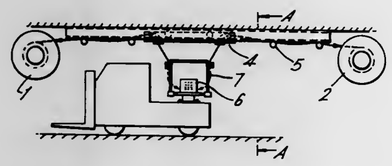


decoupling the tunable frequency amplifier from said first location; and
sensing the presence or absence of the applied tone generator signal on said cable at a location remote from said first location by applying a signal from a pick-up means to said tunable frequency amplifier; and
monitoring the amplified output available from said amplifier for the presence or absence of the tone signal at said remote location.

3,882,288
CABLE SYSTEM FOR THE TRANSMISSION OF ELECTRIC ENERGY FROM A STATIONARY ELECTRIC PLANT TO A TRUCK OR ANOTHER STEERABLE VEHICLE DRIVING FREELY WITHIN THE RANGE OF THE CABLE SYSTEM

Rolf Bjorn Rasmussen, Krokliveien 2 b, N-Oslo 5, Norway

Filed Nov. 28, 1973, Ser. No. 420,188
Claims priority, application Norway, Aug. 24, 1973, 3358/73
Int. Cl. H02g *11/00*
U.S. Cl. 191—2 **7 Claims**

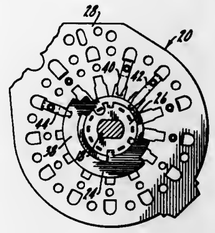


1. In combination: a steerable vehicle, a slip ring contact on said vehicle, said contact having a substantially vertical axis, a guide bow associated with said contact, said guide bow being tiltable about a generally horizontal axis; a rectilinear track disposed above said vehicle; a guide carriage movable along said track, two flexible cable elements guided by said carriage and secured to said guide bow, a least one of said cable elements being a supply cable and contacting said slip ring and means for applying tension to said cables.

3,882,289
BINARY CODED ROTARY WAFER TYPE SWITCH ASSEMBLY

Eugene C. Walding, Arlington Heights, and John G. Cummings, Cary, both of Ill., assignors to Oak Industries, Inc., Crystal Lake, Ill.

Filed Feb. 28, 1972, Ser. No. 229,712
Int. Cl. H01h *19/58*
U.S. Cl. 200—11 D **2 Claims**



1. In a television receiving means, a rotary channel selector switch having a shaft, rotor means mounted on said shaft, a stator positioned about said rotor, said stator having five of output lines and only one input line, said selector switch having at least 26 finite positions, said rotor means and stator having cooperative contact areas such that the input line is connected to different combinations of said output lines for each position of the channel selector switch shaft and such that there is a change in the condition of only one output line each time the switch shaft is moved from one position to an adjacent position, the condition of the output lines providing a coded indication of switch position.

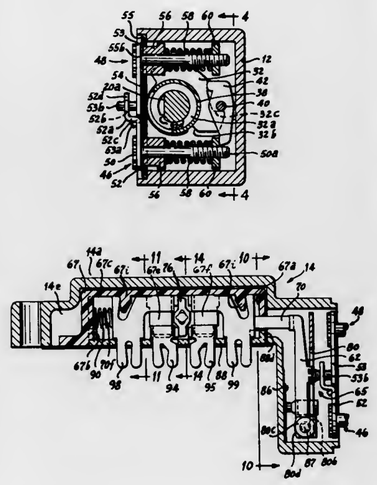
3,882,290
MULTIPOLE LIMIT SWITCH WITH AN ANGULARLY RESETTABLE OPERATING HEAD

Eugene F. Duncan, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed July 12, 1973, Ser. No. 378,409
Int. Cl. H01h *3/16*
U.S. Cl. 200—47 **8 Claims**

1. A multipole limit switch comprising:
a self-enclosed switch portion having an open end;
a self-enclosed operating head having a mating end secured to said open end to close the latter and provide a limit switch allowing detachment of said operating head without any parts falling out, and rotation and repositioning of said operating head at a different angle on said open end of said switch portion without changing switch operation or function or requiring relocation of any operating parts;
said switch portion comprising:
a housing;
stationary contact means mounted in said housing;
movable contact means mounted in said housing;
contact actuator means including first and second plunger members to cause movement of said movable contact means into selected positions of actuation with said stationary contact means;
guiding means for said plunger members allowing low-friction movement thereof relative to one another; and a pair of pivoted levers at said open end of said switch portion for actuating the respective plungers, the first one of said levers having an engagable portion at the center of said open end, and the second lever having an engagable portion radially spaced from said center;
and said operating head comprising:
a housing;

an external operating arm mounted on said housing and adapted to be moved into at least two positions to operate said switch;
first and second push plate means;
means for transmitting operating motion from said external operating arm selectively to said first and second push plate means;
said first push plate means having an actuator operably located generally centrally of said mating end to cause actuation of said first pivoted lever for all angular mounting positions of said operating head in response to movement of said operating arm to one of said positions;
and said second push plate means having an actuator operably located generally concentrically around said first push plate actuator at the radius of said engagable portion of said second pivoted lever to cause actuation of said second pivoted lever for all angular mounting positions of said operating head in response to movement of said operating arm to another of said positions.

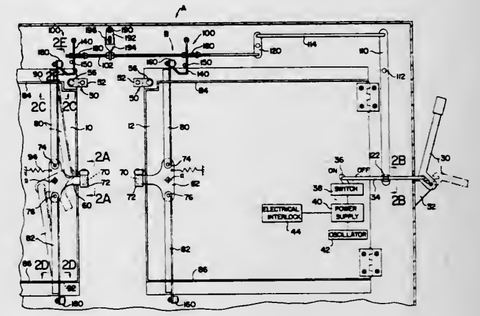


3,882,291
MECHANICAL INTERLOCK MECHANISM FOR AN ELECTRICAL CABINET

Joseph W. Chiboroski, Brooklyn Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Feb. 14, 1974, Ser. No. 442,688
Int. Cl. H01h *9/20;* **E05b** *65/46*
U.S. Cl. 200—50 A **16 Claims**

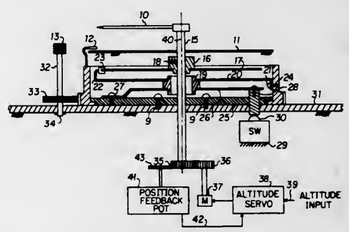
1. A mechanical interlock for a cabinet surrounding an electrical component and having a switch control member movable between a first position allowing energization of said component and a second position preventing energization of said component, at least one door movable between a first closed position and a second opened position, and a door latch element movable between a first position latching said door to said cabinet when said door is in said closed first position and a second position unlatching said door from said cabinet and, thus, allowing movement of said door with respect to said cabinet, said mechanical interlock comprising: an actuation element; means for connecting said actuation element to said switch control member for movement between a first position when said switch control member is in its first position and a second position when said switch control member is in its second position; a latch member on said cabinet, said latch member being mounted on said cabinet for movement between a first position and a second position and having a first locking abutment facing one direction; means connecting said latch member with said actuation element for urging said latch member toward its first position when said actuation element is in its first position and for moving said latch member into its second position when said actuation element is in its second position; spring means between said actuation element and said latch member for biasing said latch member toward its first position and allowing forced movement of said latch member toward its second position while said actuation element is in its first position; a keeper element with a second locking abutment mounted onto said door and movable into a first position by movement of said door latch element into its first latching position and movable into a second position by movement of said door latch element into its unlatching position; means for aligning said keeper element with said latch member so that said locking abutments coact to lock said door latch member in said first position when said door is in said first closed position, said latch member is in its said first position and said keeper element is in its first position.



3,882,292
INDICATOR TYPE SWITCH ASSEMBLY WITH PERIPHERAL CAM FOLLOWER MOTION TRANSFER SWITCH ACTUATION MEANS

Glade M. Stockwell, and Benjamin B. Biderman, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, Dallas, Tex.

Filed Dec. 26, 1973, Ser. No. 428,167
Int. Cl. G01d *13/26*
U.S. Cl. 200—56 R **8 Claims**



1. A switching mechanism responsive to rotation of a rotatable member from one preselected rotational segment to an adjacent complementary segment thereof comprising: means for mounting said rotatable member for rotation about an axis normal to a mounting base member, an arcuate plate member, means for mounting said arcuate plate member for rotation about the axis of said rotatable member and in concert therewith, camming surface means carried by said arcuate plate member at a point on the circumference thereof correspond-

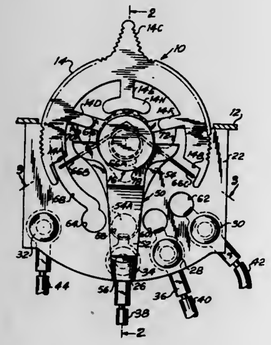
ing to a reference point on said rotatable member, cam follower means being selectively positionable about the circumference of and in spring loaded engagement with said arcuate plate member, said cam follower means, when operably engaged with said camming surface means, effecting a transfer of engagement of said cam follower means from one planar surface of said arcuate plate member to the opposite planar surface thereof to effect a predetermined translation of said cam follower means transverse the plane defined by said arcuate plate member, switching means fixed-mounted with respect to said mounting base member, motion transfer means connected to said cam follower means and said switch member, said motion transfer means being responsive to said cam follower engagement transfer to activate said switching means from one to the other of two possible positions thereof.

3,882,293

QUICK BREAK TYPE SWITCH WITH SNAP ACTION DEACTUATION STRUCTURE

Richard J. Naples, New Britain, and Norman H. Newhall, Suffield, both of Conn., assignors to General Signal Corporation, New York, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,272
Int. Cl. H01h *5/16*
U.S. Cl. 200—154 **6 Claims**



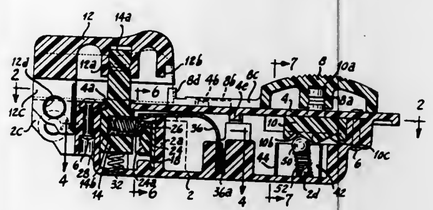
1. An electric switch assembly comprising:
a base plate;
a common electrical terminal on said base plate;
a plurality of spaced, fixed electrical contacts arranged in an arcuate line on said base plate;
a shaft secured to said base plate;
a switch member rotatably supported on said shaft, said switch member including a contact arm for selectively bridging said common terminal with any one of said fixed contacts;
a control knob disposed on said shaft, said control knob being adapted to be actuated by finger pressure and engageable with said shaft so as to control said switch member for selecting contact positions;
means for retaining the switch member in certain of said contact positions after removal of the finger pressure used in selecting such positions;
spring means formed around said shaft and engageable by said control knob such that the spring means is able to shift the contact arm abruptly from certain ones of said fixed contacts to other ones thereof;
means on said base plate for restraining said spring means only when said switch member is being moved to a predetermined one of said contact positions from an adjacent position by application of sufficient pressure to said control knob, such that said switch member will remain in such predetermined position so as to engage the particular fixed contact thereat only so long as said sufficient pressure is being applied, and will return to said adjacent position upon release of the pressure.

3,882,294

TOOL HANDLE SWITCH WITH INTERLOCK

Harold W. Hults, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 27, 1974, Ser. No. 455,383
Int. Cl. H01h *5/10, 13/08*
U.S. Cl. 200—157 **8 Claims**



1. A double-pole tool handle switch comprising:
an insulating housing;
a return spring biased switch actuator mounted to said housing for reciprocal movement;
a plunger extending from said switch actuator within said housing;
a spring biasing said plunger and said plunger being resiliently depressible against the force of said bias spring;
a pair of connector members mounted in said housing and having exposed terminal lugs adapted to be connected to an external circuit;
a movable contact actuator block having a double-incline camming surface comprising opposite inclines meeting at a high point arranged for engagement by said plunger;
double-pole on-off butt contacts having a controlled amount of wipe comprising a pair of movable contacts carried by said actuator block and being pressed against the respective connector members and sliding therealong and remaining in contact therewith throughout the movement of said actuator block, and a pair of stationary contacts mounted in said housing and having flexible cantilever portions extending into overlapping relation to the respective movable contacts and biased to a small inclination toward said movable contacts from a plane substantially perpendicular to the path of movement thereof;
and actuation of said switch actuator causing said plunger to slide up one incline of said camming surface and, after passing over said high point, to cause snap-action movement of said actuator block while said plunger acts on the other incline and said movable contacts remain in sliding contact with said connector members thereby to cause said movable contacts to contact said stationary contacts and to move a small distance further, flexing said stationary contacts against the bias therein to cause a controlled amount of wipe therebetween.

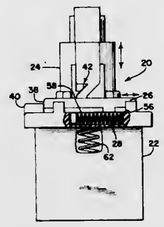
3,882,295

TACTILE FEEDBACK SWITCH MECHANISM

Robert Christen Madland, Mount Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 4, 1973, Ser. No. 403,372
Int. Cl. H01h *13/52*
U.S. Cl. 200—159 R **6 Claims**

1. A manually operated electrical switch comprising a switching mechanism, a housing comprising a cavity and first and second pairs of retaining tabs, a plunger depressable along a first axis and comprising a cam, a return spring for said plunger, a unitary cam follower carrier comprising first and second spaced apart wing members, said first pair of retaining tabs being constructed to overlap said first wing member and said second pair of retaining tabs being constructed to overlap said second wing member, said cam follower carrier being displaceable with respect to said housing along a second axis that is substantially normal to said first axis and comprising a tongue which projects into said housing cavity and a resilient arm having a cam follower thereon, a coiled bias spring positioned in said cavity between said tongue and a wall of said cavity for biasing said cam carrier follower to an initial position and said cam carrier to a first point, said resilient arm being displaceable along a third axis that is substantially normal to both said first axis and second axis with said cam follower being in engagement with a first portion of said cam as said plunger is depressed to a breakaway point, said cam follower carrier being directed along said second axis against the force of said bias spring as said plunger is depressed beyond said breakaway point so that said cam follower is abruptly driven to a second point, said cam follower carrier being returned substantially to its initial position along said second axis as said plunger completes its return to its undepressed position aided by the force of said return spring with said cam follower completing its return to said first point over a second portion of said cam as a result of a deflection of said resilient arm along said third axis.

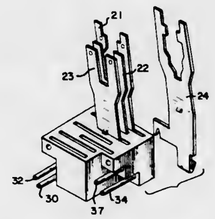


3,882,296

LEAF SPRING SWITCHING MEANS

Peter Keith Townsend, Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 5, 1973, Ser. No. 413,078
Int. Cl. H01h *1/30*
U.S. Cl. 200—246 **16 Claims**



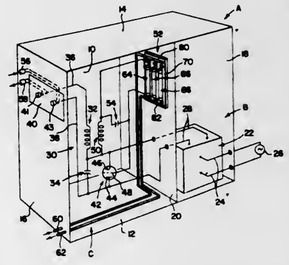
1. A leaf spring type switch comprising:
a plurality of leaf spring contacts having a longitudinal axis;
a plurality of lead-in wires;
a base of molded, insulative material comprising a plurality of slots formed therein and positioned in a side-by-side relationship with each other in a stacked manner, and with said slots all opening in substantially the same direction from said base;
each slot lying in a separate plane with said separate planes positioned to intersect a first given plane at parallel lines of intersection;
said base further comprising a plurality of apertures formed therein, each of said apertures being oriented to intersect different ones of said slots;
one of said lead-in wires being inserted in each of said apertures to intersect said different ones of said slots;
one of said leaf spring contacts being retained in each of said slots with its longitudinal axis being substantially perpendicular to said parallel lines of intersection;
at least some of said leaf spring contacts having a notch formed therein, with said notch of each leaf spring contact being positioned to engageably slide over the particular lead-in wire inserted in the aperture which intersects with the slot in which said each leaf spring contact is inserted, to thereby make electrical contact with said particular lead-in wire; and
actuating means for connecting and disconnecting slective ones of said leaf spring contacts.

3,882,297

WATER COOLED GRID RESISTOR ASSEMBLY FOR RADIO FREQUENCY INDUCTION HEATING GENERATOR

Robert J. Avalon, Burton, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed May 28, 1974, Ser. No. 473,382
Int. Cl. H05b *9/00*
U.S. Cl. 219—10.75 **7 Claims**



1. In a radio frequency induction heating generator including oscillator circuit means and cabinet means enclosing said circuit means and wherein said circuit means includes oscillator tube means having a grid resistance means electrically connected with said grid, the improvement comprising: means including casing means supporting said grid resistance means with respect to said cabinet means, said casing means enclosing said grid resistance means in spaced relationship with respect thereto and in sealed relationship with respect to the interior of said cabinet means, and means providng inlet and outlet passageways in said casing means for flowing cooling liquid therethrough in heat transfer relationship with said grid resistance means.

3,882,298

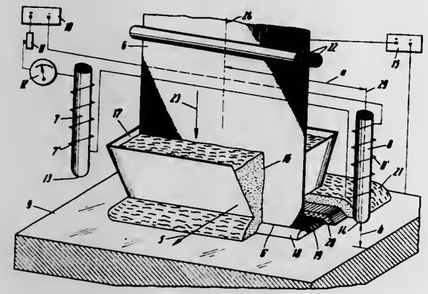
METHOD OF AND APPARATUS FOR THE SUBMERGED ARC SURFACING OF METALLIC WORK PIECES

Franz Neff, and Hermann Ornig, both of Kapfenberg, Austria, assignors to Gebr. Boehler & Co., Vienna, Austria

Filed Apr. 13, 1973, Ser. No. 351,122
Claims priority, application Austria, Apr. 14, 1972, 2218078/72
Int. Cl. B23k *9/08*
U.S. Cl. 219—76 **7 Claims**

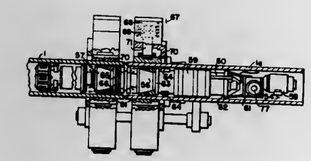
1. Apparatus for the submerged arc surfacing of metallic work pieces with metal electrode strips melting in an electric arc while forming welding beads of more tha 75 mm width, comprising a work piece, an electrode strip, means operative to move said electrode strip and work piece relative to each other, a direct current source, means for connecting to oppo-

site poles of said source the electrode strip and the work piece, respectively, electromagnetic means producing a stationary magnetic field and having a pair of end faces of opposite polarity operatively mounted at opposite sides of electrode strip, means for adjusting the intensity of said electromagnetic



means, said end faces of opposite polarity being arranged in the edge zone of the melt-off edge of the strip electrode at equal distances from the center axis of the strip, the electromagnetic means being disposed at equal distances from the surface of the work piece.

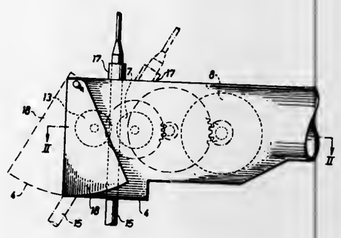
3,882,299
ROTATING ARC PIPE WELDING MACHINE
David Sciaky, Chicago, Ill., assignor to Welding Research, Inc., Chicago, Ill.
Filed Apr. 12, 1974, Ser. No. 460,600
Int. Cl. B23k *9/02*
U.S. Cl. 219—60 R **6 Claims**



1. An apparatus for welding girth joints between the adjacent ends of pipes laid end to end comprising:
a tube approximately equal in length to the longest pipe to

three hydraulic cylinders fastened in tandem to one end of the said tube, each cylinder forming a sealed chamber of annular form coaxial with the longitudinal axis of the said tubing;
a second tube telescoped and slidable within the first tube, one end of said second tube fastened to a piston slidable within the first of said annular chambers and having fastened at its opposite end a means for clamping the said pipe to the said second tube;
a third tube telescoped within the said second tube and fastened at one end to a second piston which is slidable within the second of said group of cylinders in tandem, the said third tube having fastened close to its other end and concentric with its axis a pair of solenoid coils separated from each other by a distance of approximately 1 inch;
a disk whose outer diameter is approximately 2 inches less in diameter than the inside diameter of the pipe mounted over the end of the said third tube;
a fourth telescoping tube within the said third tube whose one end is fastened to a third piston slidable within the third cylinder in tandem and extending beyond the third piston, the other end of the said fourth tube extending beyond the end of the said third tube and having fastened to it beyond the end of the third tube a second clamping device electrically insulated from said fourth tube for clamping the second of two pipes to be welded together; flange means fastened to the end of said fourth tube for retaining the said second clamping means in a fixed position on the outer surface of the said tubing, said flange having means for supporting an inner bead cleaning tool on its outer surface so that the tool lies along the axis of the said tubing; and means for producing an alternating current arc between the ends of the pipes to be welded.

3,882,300
MEANS IN WELDING TOOLS FOR WELDING WITH WELDING ELECTRODES AND MEANS FOR SMOKE REMOVAL
Jan Anders Rolf Karlsson, Liedbergsgatan 43, S-352 32 Vaxjo, Sweden
Filed Oct. 30, 1973, Ser. No. 411,077
Claims priority, application Sweden, May 17, 1973, 7354264; Oct. 30, 1972, 5803/72
Int. Cl. B23k *9/12*
U.S. Cl. 219—130 **8 Claims**
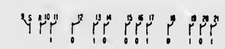


1. A welding tool comprising a consumable rod electrode having a working end and a contact end, a hollow casing directly surrounding said electrode and having an opening adapted to face a welding zone, means for supporting said electrode within said casing and for selectively feeding said electrode to present the working end of said electrode toward said opening as said electrode is consumed, means for connecting the contact end of said electrode to a source of current and a conduit connected to said casing and communicating with its interior leading to a source off suction for removal of smoke produced during welding from about said electrode.

3,882,301
RETROSPECTIVE PULSE MODULATION INCLUDING BAR CODING AND APPARATUS THEREFOR
Ernie George Nassimbene, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 183,968, Sept. 27, 1971, abandoned, which is a division of Ser. No. 31,959, April 27, 1970, Pat No. 3,708,748. This application July 13, 1973, Ser. No. 379,017
Int. Cl. G06k *9/18*; **G01d** *15/12*; **G01n** *21/30*; **G06k** *7/10*; **H03k** *7/00*
U.S. Cl. 235—61.11 E **19 Claims**

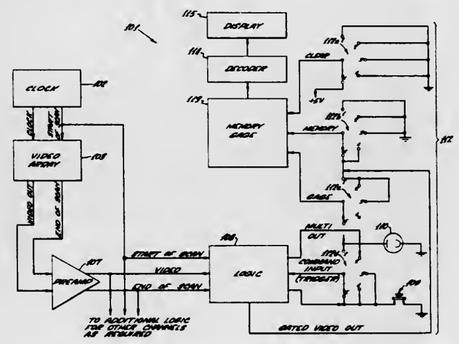
1. Retrospective pulse modulating apparatus comprising means for generating a train of impulses at substantially equal intervals therebetween,

means for inputting binary information to be conveyed,
means for varying the intervals between said impulses in accordance with said binary information to be conveyed, said interval varying means including,



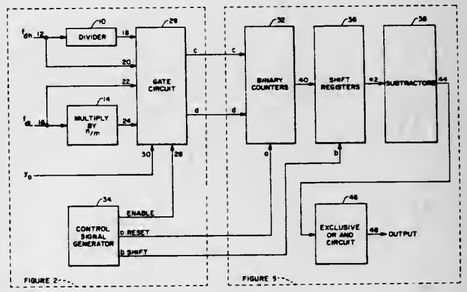
means for storing an indication of a preceding interval, and means coupled to said storing means, to said generating means and to said data inputting means for enabling an impulse in relation to a data bit in accordance with both the binary information of that data bit and the duration of the interval preceding that data bit.

3,882,302
ELECTRO-OPTICAL MEASURING DEVICE
Arthur C. Deichmiller, North Branford, Conn., and Jack C. von der Heide, Arlington, Tex., assignors to Universal Technology, Inc., Woodbridge, Conn.
Filed Feb. 20, 1973, Ser. No. 333,960
Int. Cl. G06m *3/14*
U.S. Cl. 235—92 DN **19 Claims**



1. A device for comparing the corresponding dimensions of a master specimen and a plurality of unknown specimens, comprising:
means for directly measuring a corresponding linear size dimension of a master specimen and a plurality of unknown specimens to produce a plurality of digital signals, said plurality comprising:
a first digital signal defining said linear size dimension of said master specimen; and
a plurality of second digital signals defining said corresponding linear size dimension of said plurality of unknown specimens;
a memory for storing said first digital signal obtained from direct measurement of said linear size dimension of said master specimen;
means for repetitively producing an output signal from said memory indicative of said first digital signal, said means not removing said first digital signal from said memory; and
means for comparing respective ones of said plurality of second digital signals representative of the corresponding linear size dimensions of said unknown specimens with respective memory output signals.

3,882,303
DIGITAL FREQUENCY CORRELATOR
John L. Linder, Las Cruces, N. Mex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 8, 1974, Ser. No. 459,146
Int. Cl. G06f *7/50, 15/20*
U.S. Cl. 235—151.3 **11 Claims**



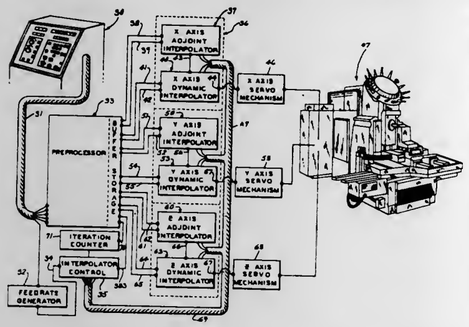
1. A digital frequency correlator circuit for digitally comparing the frequencies of a plurality of a-c signals to determine if they are coherent within a predetermined number of cycles comprising:
a. means for providing a plurality of first a-c signals;
b. means for receiving said plurality of first a-c signals and converting each of said first a-c signals into a digital number representing the frequency of each first a-c signal;
c. means for generating and providing control signals to said means for providing a plurality of first a-c signals and to said means for converting each of said first a-c signals into a digital number representing the frequency of each first a-c signal, said control signals synchronizing the operation of said means for providing a plurality of first a-c signals and said means for converting each of said first a-c signals into a digital number representing the frequency of each first a-c signal;
d. means for receiving each said digital number and comparing each said digital number with each other said digital number and outputting a logic 0 whenever any comparision of two said digital numbers exceeds a predetermined number of cycles and outputting a logic 1 whenever any comparison of two said digital numbers is equal to or less than a predetermined number of cycles, said means having a separate output for each said comparison.

3,882,304
PARAMETRIC INTERPOLATION OF THREE-DIMENSIONAL SURFACES
Ronnie G. Walters, Painesville, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.
Filed May 4, 1973, Ser. No. 357,321
Int. Cl. G06f *7/38*; **G06g** *7/30*
U.S. Cl. 235—151.11 **55 Claims**

1. An interpolation system, the combination comprising:
a preprocessor having input means for receiving an ordered set of input data which relates to a spacial form to be reproduced, including the coordinate values of selected data points on the spacial form, said preprocessor including means for calculating the elements of an initial state vector which describes said spacial form at one of said selected data points, means for calculating the elements

of an initial steering vector, and means for storing the elements of an initial complex state vector which defines the spacial form and which includes the elements of said initial state vector and the elements of said initial steering vector;

a mapping interpolator having input means connected to receive the initial complex state vector elements generated by the preprocessor and including adjoint interpolator means for iteratively altering the values of selected elements of said initial state vector, and dynamic interpo-



lator means for iteratively altering selected elements of said initial steering vector, said mapping interpolator thereby performing a state transition on the initial complex state vector;

interpolation control means connected to control the iterations of said mapping interpolator; and

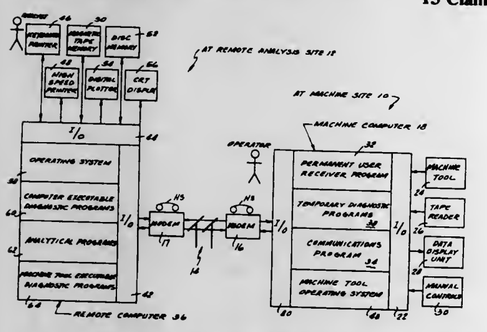
controlled means for reproducing said spacial form, said controlled means being connected to continuously receive selected elements of said complex state vector which are iteratively generated by said mapping interpolator during said state transition.

3,882,305

DIAGNOSTIC COMMUNICATION SYSTEM FOR COMPUTER CONTROLLED MACHINE TOOLS

Richard Johnstone, Brookfield, Wis., assignor to Kearney & Treaker Corporation, Milwaukee, Wis.

Filed Jan. 15, 1974, Ser. No. 433,439
Int. Cl. G06f *15/20, 15/46*
U.S. Cl. 235—151.11 **13 Claims**



1. In a computer controlled machine tool system having a machine tool, a computer for said machine tool, and a power drive means connected to effect operation of said machine tool in response to signals from said computer, the combination comprising:

a. control means located at a site remote from said machine and connected to said computer for controlling said computer to operate said machine,

b. means responsive to operation of said machcine tool for communicating selected data from said machine site to said remote site,

c. means located at said remote site for comparing said selected data with predetermined data, and

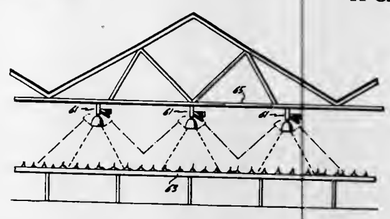
d. means for manifesting a difference between said selected data and said predetermined data.

3,882,306

OSCILLATING LIGHT APPARATUS

J. Delvin Armstrong, 2224 137th Pl. SE, Bellevue, Wash. 98005

Filed Aug. 31, 1973, Ser. No. 393,618
Int. Cl. F21m *7/00*
U.S. Cl. 240—48 **11 Claims**



1. An apparatus for supplying light energy to plants to substantially aid in the growth thereof, comprising:

high intensity lamp means operable when energized to emit light radiation of a wavelength and in sufficient quantity to stimulate plant growth;

means pivotally supporting said lamp means a predetermined distance from the plants, which plants are arranged in substantially a horizontal plane below said lamp means;

means partially surrounding said lamp means for controlling the direction of said light radiation, wherein said radiation controlling means is so configured and arranged that when said lamp means is positioned substantially normal to said horizontal plane on which said plants are arranged and at said predetermined distance therefrom, substantially uniform light radiation is provided over a predetermined area on said horizontal plane; and

means for cyclically pivoting said lamp means and said controlling means through a predetermined vertically planar arc relative to said horizontal plane, wherein the predetermined arc has a magnitude of less than 90°, a section of said horizontal plane being illuminated as said lamp means pivots through said predetermined arc, the magnitude of said predetermined arc, said predetermined distance, and the configuration of said radiation controlling means being such that light radiation is provided substantially uniformly over a substantial portion of the illuminated section of said horizontal plane during the pivoting of said lamp means through said predetermined arc.

3,882,307

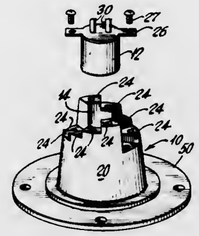
LAMP SOCKET MOUNT

Viggo Bech Rambusch, New York, N.Y., and Peter White, Montclair, N.J., assignors to Rambusch Decorating Company, New York, N.Y.

Filed Apr. 5, 1973, Ser. No. 348,074
Int. Cl. F21v *19/02*
U.S. Cl. 240—44.2 **7 Claims**

4. A lamp socket mount comprising a body having an opening extending therethrough, one end of said body being recessed to form a plurality of pairs of axially spaced stepped seats, a lamp socket disposed within and slidably engaging the opening in said body, said socket having a base with lugs extending outwardly, therefrom for engaging selected pairs of stepped seats said socket being adapted to carry a lamp extending from the other end of said body, means on the other end of said body carrying a reflector having a central opening

and extending outwardly therefrom in surrounding relationship to said lamp and means engaging said lugs for securing



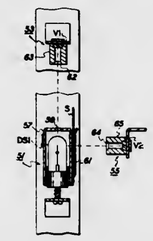
them to selected pairs of seats to adjustably position said lamp relative to said reflector.

3,882,308

DETECTION SYSTEM FOR SUPERPOSED SHEETS

John W. Daughton, Fairport, and Gary L. Schluntz, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 6, 1970, Ser. No. 25,804
Int. Cl. H01j *39/12*
U.S. Cl. 250—222 R **1 Claim**



1. In a recording machine in which copy sheets are advanced through copy processing stations along a predetermined path, an improved detection apparatus for detecting multiple superposed sheets at a sheet detection station comprising

means for feeding sheet material along a sheet path past copy processing stations,

illumination means positioned along the sheet path at a sheet detection station,

first photosensitive means for receiving illumination from said illumination means,

second photosensitive means for receiving illumination from said illumination means,

sample sheet material interposed between said illumination means and said second photosensitive means,

first circuit means for generating discrete electrical signals representative of the transmittance of sheet material to be detected,

second circuit means responsive to the transmittance of the sample sheet material for generating a signal representative of the transmittance of said sample sheet material,

third circuit means for comparing the signals generated from said first and second circuit means and determining the presence of multiple superposed sheets and generating an output signal to machine control to de-energize the machine when a multiple superposed sheet condition occurs at the sheet detection station, and

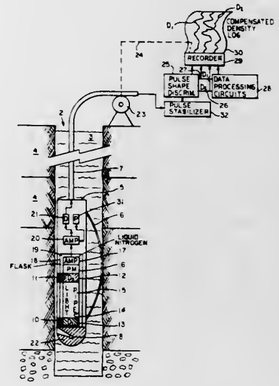
means for maintaining a multiple superposed sheet output condition in the event that a failure of said illumination means occurs.

3,882,309

DUAL SCINTILLATION DETECTOR, SINGLE PHOTOMULTIPLIER DENSITY LOGGING SYSTEM

Hans J. Paap, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 30, 1973, Ser. No. 383,942
Int. Cl. G01t *1/20*
U.S. Cl. 250—264 **11 Claims**



1. A gamma ray density well logging system comprising:

a fluid tight hollow sonde sized and adapted for passage in a well borehole and having disposed therein a source of medium energy gamma rays and means for selectively irradiating preferred portions of earth formations in the vicinity of a well borehole with said gamma rays, first scintillation detector means longitudinally spaced from said source and having first phosphorescent decay characteristics, second scintillation detector means longitudinally spaced from said source and said first scintillation detector means and having second, substantially different phosphorescent decay characteristics, means situated between said detector means for optically coupling said first and second scintillation detector means and effectively shielding said detectors from each other with respect to gamma radiations, means optically coupled to said first and second scintillation detectors for generating first and second voltage pulses in response to scintillations occurring in said first and second detectors, said first and second voltage pulses having substantially different shape characteristics due to the difference in said first and second phosphorescent decay characteristics, means for transmitting said voltage pulses from said sonde to the surface of the earth and means for separating said first and second voltage pulses from each other on the basis of their substantially different shape characteristics.

3,882,310

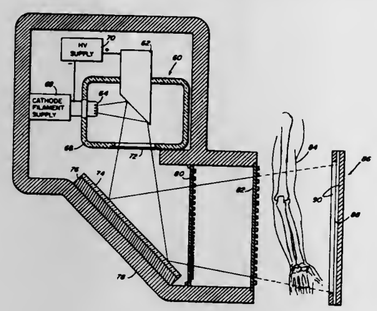
SPATIALLY MODULATED IMAGING SYSTEM

Harrison H. Barrett, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 302,992, Nov. 1, 1972, Pat. No. 3,801,785, and a continuation-in-part of Ser. No. 303,167, Nov. 2, 1972, which is a division of Ser. No. 77,459, Oct. 2, 1970, Pat. No. 3,748,470, and a continuation-in-part of Ser. No. 250,224, May 4, 1972, Pat. No. 3,829,688. This application Sept. 26, 1973, Ser. No. 400,768
Int. Cl. G01t *1/16*
U.S. Cl. 250—320 **7 Claims**

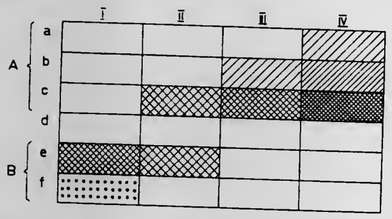
1. The method comprising the steps of:

introducing into at least selected regions of an object comprising living tissue a substance having a substantially different absorption coefficient of X-rays at a predetermined energy level than said absorption coefficient of said living tissue adjacent said selected regions;
spatially recording at least components of spatially distributed patterns of X-rays predominantly concentrated in regions respectively above and below said predetermined energy level which have passed through said object;
said spatially distributed patterns of said X-rays having at least components of a spatially varying periodicity formed by the steps comprising directing said X-rays through a



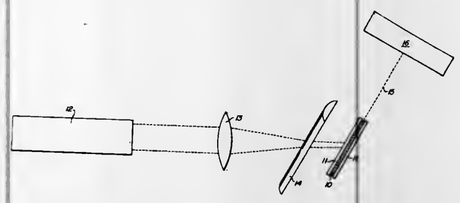
structure comprising a plurality of regions of different sizes substantially permeable to said X-rays separated by regions which are substantially less permeable to said X-rays and which have a thickness in a direction parallel to the average direction of motion of said X-rays through said structure which is less than the average dimension of said permeable regions transverse to said direction; and deriving an image of the differences in absorption of different regions of said object to said X-rays by steps comprising spatially subtracting at least portions of said spatially recorded components derived from said energy level pattern above said predetermined energy level from said pattern below said predetermined energy level.

3,882,311
FILM FOR COLOR RADIOGRAPHS
Vasile Voinea, Bucharest, Romania, assignor to Spitalul de Copii "Calarasi", Bucharest, Romania
Filed Sept. 11, 1972, Ser. No. 288,084
Claims priority, application Romania, Sept. 9, 1971, 68172; July 25, 1972, 71745
Int. Cl. G03b *41/16*
U.S. Cl. 250—472 **2 Claims**



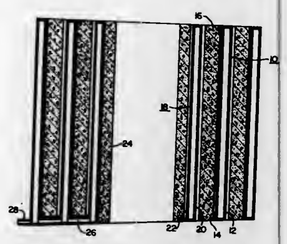
1. A radiographic film for color portrayal of an image, comprising a radiation-transparent support layer, a high radiosensitivity first layer of one of the primary colors on one side of said support layer, a moderate radiosensitivity second layer on said high radiosensitivity layer and of a second primary color, a low radiosensitivity layer on said moderate radiosensitivity layer and of a third primary color, a reversal layer providing one of said primary colors in the absence of irradiation through said support layer and coated onto the other side thereof, said reversal layer having a high radiosensitivity, and another reversal layer of another of said primary colors and a reduced radiosensitivity on the first-mentioned reversal layer.

3,882,312
X-RAY LASERS
John G. Kepros; Edward Eyring, and Fredric William Cagle, all of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah
Filed June 22, 1973, Ser. No. 372,565
Int. Cl. H01s *3/09*
U.S. Cl. 250—493 **10 Claims**



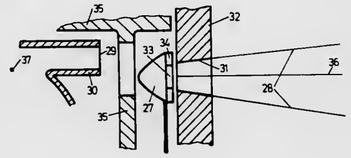
1. A method of producing collimated radiation of the x-ray wave length comprising;
obtaining a laser operable to produce a pulse of laser radiation in the near infrared spectrum;
orienting a focusing system so as to focus the pulse of laser radiation into a linear beam;
placing a layer of metallic ions in the focal range of the focusing system with the plane of the layer being transverse to the plane of the beam, the angle of the layer being between 6° and 25° to the axis of the beam; and
triggering the laser so as to cause a pulse of laser energy to excite the metal ions thereby generating a collimated beam of x-radiation.

3,882,313
CONCENTRIC ANNULAR TANKS
Dan H. Siemens, Jr., Richland, Wash., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 7, 1972, Ser. No. 304,452
Int. Cl. G21f *1/00*
U.S. Cl. 250—507 **8 Claims**



1. Concentric annular tanks with isolation for the storage of solutions containing nuclear materials comprising:
a first annular hollow tank having a tubular inside and outside wall concentrically formed with a bottom plate sealably affixed therebetween at one of the corresponding tubular end terminations so as to form the bottom wall thereof;
a second annular hollow tank having a tubular inside and outside wall concentrically formed with a bottom plate sealably affixed therebetween at one of the corresponding tubular end terminations so as to form the bottom wall thereof, said second tank being concentrically positioned within the interior annular opening formed by said inside wall of said first tank; and
isolation means associated with said first and second tanks having a neutron capture cross section sufficient to guard against the formation of a critical mass of nuclear material between the storage contents of said first and second tanks.

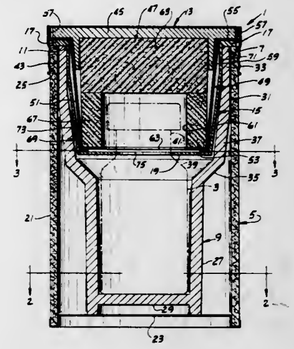
3,882,314
DEVICE FOR X-RAY TREATMENT
Riccardo Benedetti; Rudolf Meyer; Franz Petersilka; Rudolf Schittenhelm; Leonhard Taumann, all of Erlangen, and Wolf-Eberhard Schiegl, Weisendorf, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Feb. 8, 1974, Ser. No. 440,706
Claims priority, application Germany, Feb. 10, 1973, 23065198
Int. Cl. G03b *41/16*
U.S. Cl. 250—505 **4 Claims**



1. A device for X-ray treatment, comprising an electronic accelerator, an anticathode exposed to the accelerated electrons for producing X-rays, an adjustable collimator for X-rays, at least one member for equalizing the density of the X-rays in the cone of X-rays passing the collimator adapted to be shifted into the X-ray cone, supervising devices for the correct positioning of said member, and two ray detectors connected to said supervising devices in the part of the X-ray cone which is not influenced by said collimator for increasing operational safety, the first one of say ray detectors being located centrally to the central ray of the X-ray cone passing the collimator behind said equalizing member, the second of said ray detectors being located to the side of said central ray, wherein, in the ray direction the two ray detectors are located in front of said collimator and said equalizing member, wherein said first ray detector, located centrally to the central ray of the X-ray cone, has the shape of a circular disk, and wherein the second ray detector surrounds annularly the first ray detector, the two ray detectors being fixed to said equalizing member, and wherein the two ray detectors are equally sensitive toward X-rays and have equal surfaces directed to the X-ray source, said supervising devices comprising an alarm device and a differential amplifier connected to the two ray detectors and to said alarm device.

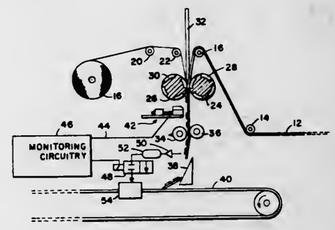
3,882,315
SHIPPING CONTAINER FOR A BOTTLE OF RADIOACTIVE MATERIAL
Donald W. Soldan, St. Louis, Mo., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.
Filed Apr. 12, 1973, Ser. No. 350,402
Int. Cl. G21f *5/00*
U.S. Cl. 250—506 **9 Claims**

I. A shipping container for a bottle which contains a radioactive material, the bottle having a neck, said container comprising
an outer container having an open top,
a receptacle constituting a safe within the outer container, said safe being open at the top for receiving a bottle,
a closure removably secured to said outer container for closing the top of the safe,
and a bottle retainer removably mounted in the safe extending downwardly in the safe from the upper end of the latter having an upper end portion disposed between the closure and the upper end of the safe and a lower end portion formed relatively closely to receive the neck of a bottle in the safe, said closure, when secured to said outer container positively holding said safe and said retainer in



position within the outer container, said closure having means on the bottom thereof for absorbing spillage from the bottle, said absorbing means comprising sponge means held captive to the closure and having a recess in its lower end for reception of the upper end of the bottle.

3,882,316
QUALITY CONTROL MONITOR FOR MEDICINAL CAPSULE PACKAGING APPARATUS
Charles R. Garris, Stratford, N.J., assignor to SmithKline Corporation, Philadelphia, Pa.
Filed May 24, 1973, Ser. No. 363,346
Int. Cl. H01j *39/12*
U.S. Cl. 250—560 **7 Claims**

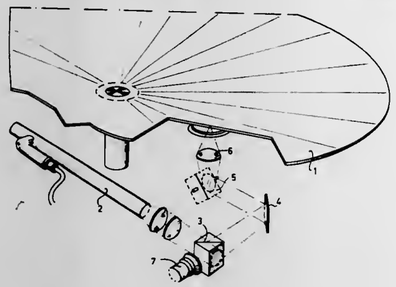


1. A quality control monitor for medicinal capsule packaging apparatus comprising:
means for photoelectrically sensing the presence of medication in a capsule and providing an electrical signal the time duration between the onset and the cessation of said signal being a function of the quantity of medication in the capsule, and
means, establishing a predetermined time interval and providing an indication whether said duration of the electrical signal is greater or less than the predetermined time interval, including a first monostable multivibrator connected to be triggered to its unstable state at the onset of said electrical signal, a second monostable multivibrator, and gating means responsive to said electrical signal and to the output of the first multivibrator for triggering the second multivibrator to its unstable state if and only if the first monostable multivibrator returns to its stable state during said duration of said electrical signal.

3,882,317
APPARATUS FOR READING A ROTATING DISC-SHAPED RECORD CARRIER

Eduard Camerik, and Daniel Ong, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 345,134, March 26, 1973, abandoned. This application July 23, 1974, Ser. No. 490,944
Claims priority, application Netherlands, Aug. 26, 1972, 7211676
Int. Cl. G01n *21/30*
U.S. Cl. 250—570 **6 Claims**



1. Apparatus for reading a rotating disc-shaped record carrier which contains optically encoded signals on a reflective lower surface thereof, comprising a gas laser beneath the record carrier providing a radiation beam along a first path parallel to the surface of the record carrier, a beam splitting mirror in the path of the radiation from the radiation source oriented to reflect the radiation from the radiation source along a second path parallel to the record surface and normal to the direction of the beam from the radiation source, a second mirror in the path of the light from the beam splitting mirror and oriented to reflect the beam from the beam splitting mirror along a third path parallel to the first path, a third mirror positioned in the third path and oriented to reflect the radiation beam to the reflecting surface of the record carrier along a fourth beam path, a lens in the fourth beam path for focussing the beam on a small area of the reflecting surface of the record carrier and for directing the radiation reflected from the carrier back to the third mirror, the radiation reflected from the carrier thereafter being reflected along the third and second beam paths to the beam splitting mirror, and a radiation-sensitive detector aligned with the second beam path and positioned on a side of the beam splitting mirror remote from the second mirror.

3,882,318
DETECTOR MEANS FOR AN AUTOMATIC CHEMICAL TESTING APPARATUS

George Tadeusz Mioduski, Bellaire, Tex., assignor to Hycel, Inc., Houston, Tex.

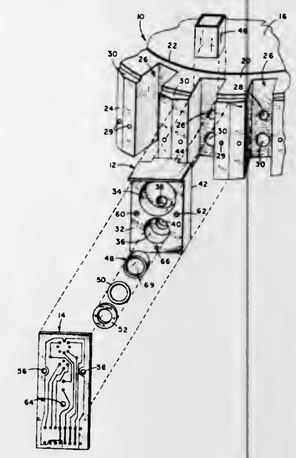
Filed Jan. 21, 1974, Ser. No. 435,227
Int. Cl. G01n *21/26*
U.S. Cl. 250—576 **22 Claims**

9. In automatic chemical testing apparatus capable of performing a plurality of chemical tests on a specimen to determine the amount of different selected substances therein, each test being performed by mixing, in a separate reaction container, a predetermined amount of said specimen with at least one reagent selected for that test, by thereafter inserting each container in a chamber of said apparatus for that test, and, at a given time thereafter, by measuring the radiant energy at a wavelength specified for that test which is transmitted through that mixture, the improvement comprising:

a source of radiant energy;

radiant energy source housing means for containing said source at a position interior to the perimeter thereof, said perimeter having a plurality of cutaway portions selected ones of which are used to perform said tests, each cutaway portion forming in part a chamber for holding a container, said housing means including a pair of energy transmission paths for each of said selected cutaway portions for transmitting radiant energy from said source to each of said selected cutaway portions; and

detection means for and affixed to each of said selected cutaway portions to form a test chamber, each detection means having a first and a second radiant energy detector



positioned therein in alignment with a different one of said energy paths when said detection means is affixed to said source housing means, one of said detectors providing a signal manifesting the presence of a container in said formed chamber and the other of said detectors providing a signal manifesting the transmittance thereto of radiant energy of a specific wavelength transmitted through said formed chamber, said specific wavelength being the wavelength specified for the test being performed in that formed chamber.

3,882,319
AUTOMATIC MELT LEVEL CONTROL FOR GROWTH OF SEMICONDUCTOR CRYSTALS

Donald R. Clement, Scottsdale; Larry D. Mason, Phoenix, and Carl A. Helber, Scottsdale, all of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Oct. 23, 1973, Ser. No. 408,897
Int. Cl. G01n *21/26*
U.S. Cl. 250—577 **16 Claims**

14. Apparatus for pulling solid crystals from a melt wherein the level of said melt is maintained constant during the time that the crystal is being pulled comprising:

a container for said melt;

motor means for raising and lowering said container;

first red source means for transmitting, at one angle to the vertical, a first radiation beam to the level surface of said melt;

second red source means for transmitting, at another angle to the vertical, a second radiation beam to the level surface of said melt;

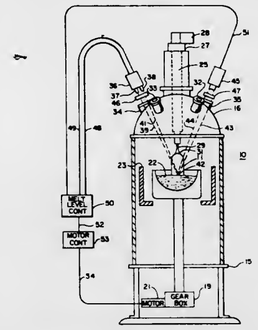
sensor means for receiving the sum of the reflections of said first and said second radiation beams;

said sensor means being disposed at an angle to the vertical to encompass the reflections of said first and said second radiation beams;

means for alternately energizing said first and said second source means at a high frequency rate;

means for focusing each of said first and said second radiation beams on the same spot at a designated melt level;

said sensor means including means responsive to changes in said first and said second reflected radiation beams

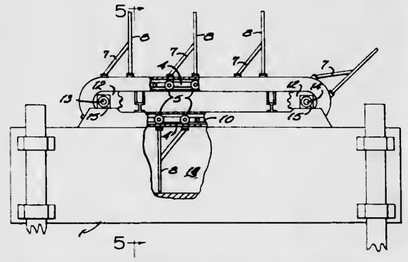


caused by corresponding changes in said melt level; and means controlled by said responsive means for effecting energization of said motor means to raise and lower, respectively, said container.

3,882,320
TIDE ENERGY CONVERSION DEVICE

Edmund Schmeller, Chewelah, Wash. 99109

Filed Dec. 20, 1973, Ser. No. 409,013
Int. Cl. F03b *13/12*
U.S. Cl. 290—43 **3 Claims**



1. An apparatus for producing electrical energy from directional flow of water, comprising:

a supporting base fixedly located upwardly adjacent to a moving surface of a body of water;

a pair of elongated endless rigid channel members fixed to the base in transversely spaced relationship facing one another, said channel members extending along the base parallel to the direction of movement of the water surface, each channel member having a lower flight extending along said base adjacent to the water surface and an upper flight spaced vertically above its lower flight, the lower and upper flight being interconnected by vertical arcuate end sections formed integrally therewith;

a rigid roller frame including two pairs of transversely spaced coaxial rollers, one pair of said rollers being engaged in each channel member for structural support of the roller frame and for rolling movement along the lower and upper flights are arcuate end sections thereof;

a transverse elongated blade extending outward from and substantially perpendicular to said channel members across the device in a direction transverse to the direction of movement of said water surface, said blade being fixed to the roller for movement therewith along said channel members;

a diagonal brace fixed between the roller frame and said blade;

said blade extending outward from the channel members a distance sufficient to enable it to extend downwardly into the water when supported along said lower flights and thereby being movable in response to the flow of water;

an output shaft;

endless drive means movably mounted to the base parallel to said channel members and operatively connected between said roller frame and said shaft for converting movement of said roller frame with respect to said base into rotational movement of said shaft;

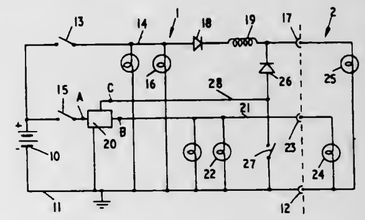
electrical generating means;

and motion transmitting means operatively connecting said shaft and said electrical generating means, whereby rotational movement of said shaft energizes said electrical generating means.

3,882,321
VEHICLE ELECTRICAL SYSTEMS

Gordon Harris Leonard, Chalfont St. Peter, England, assignor to C. A. V. Limited, Birmingham, England

Continuation-in-part of Ser. No. 332,141, Feb. 13, 1973, abandoned. This application Nov. 5, 1973, Ser. No. 412,824
Claims priority, application United Kingdom, Feb. 19, 1972, 7782/72
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 LS **9 Claims**



1. A vehicle electrical system comprising a load sensitive unit which controls current flow from a first point of electric supply on the vehicle to a first lamp on the vehicle, the system being adapted to have a second lamp connected in parallel with the first lamp, a third lamp associated with said second lamp, a second point of electric supply on the vehicle, said third lamp when said second lamp is connected in parallel with said first lamp, is connected to said second point of electric supply of the vehicle, and sensing means for sensing the connection of said third lamp to said second point of electric supply, said sensing means acting to modify the operating characteristics of said unit.

3,882,322
PULSE GENERATOR

David H. Gobeli, St. Paul, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

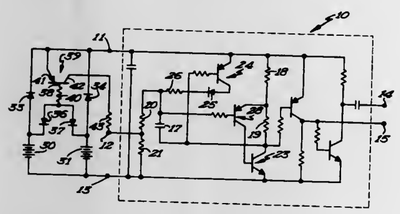
Filed Jan. 26, 1973, Ser. No. 326,794
Int. Cl. H02j *7/00*
U.S. Cl. 307—65 **17 Claims**

1. In a pulse generator of the type having pulse timing means, having a power supply comprising a plurality of power sources connected in parallel and having means connected to each of said power sources for disconnecting any power source from said power supply upon a differential depletion thereof, the improvement which comprises:

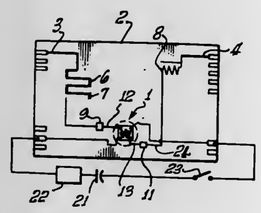
resistive means electrically connected to the pulse timing means; and

means operatively connected to said resistive means and said power sources for altering the timing characteristics of said pulse timing means by switching the current flow

in said resistive means between a conducting state and a non-conducting state in response to a differential depletion of at least one of the power sources with respect to the others.

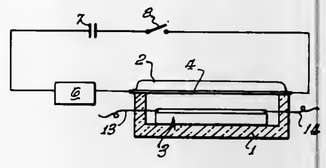


3,882,323
METHOD AND APPARATUS FOR PROTECTING SENSITIVE INFORMATION CONTAINED IN THIN-FILM MICROELECTONIC CIRCUITRY
Gary Smolker, Venice, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 17, 1973, Ser. No. 425,405
Int. Cl. H05k 1/18; C06b 19/00
U.S. Cl. 307—202 A **5 Claims**



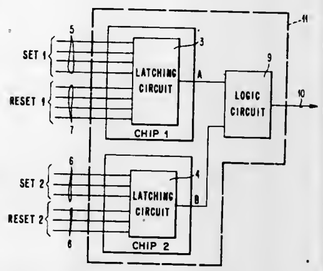
1. Self-destruct two-part microelectronic circuit apparatus comprising:
a first electrical circuit formed of an incomplete network of circuit elements,
a wafer-like circuit chip, and
a second electrical circuit carried by said chip and having a network of resistive elements, said first and second circuits being adapted to be detachably interconnected for electrically completing said two-part microelectronic circuit;
said chip including:
a glass like substrate,
an ignitable self-destruct thin film sandwich formed of aluminum and a metal oxide deposited adjacently one on the other on said substrate, said film sandwich having an auto ignition temperature of about 1500°F and being capable when ignited to produce an exothermic chemical reaction sufficient to sustain combustion,
ignition means coupled to said film sandwich
a thin electrical insulator film deposited on said sandwich, and
the aforementioned network of resistor elements; said network being formed from a thin film of electrically resistive material deposited on said insulative film,
whereby information contained in said resistive network can be destroyed by igniting said film sandwich, the heat of reaction of said ignited sandwich mechanically distorting said insulative film sufficiently to destroy said resistive network deposited thereon.

3,882,324
METHOD AND APPARATUS FOR COMBUSTIBLY DESTROYING MICROELECTRONIC CIRCUIT BOARD INTERCONNECTIONS
Gary Smolker, Venice, and Leon Chernick, Encino, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 17, 1973, Ser. No. 425,406
Int. Cl. H05k 1/18; C06b 19/00
U.S. Cl. 307—202 A **6 Claims**



1. Self-destruct apparatus for combustibly destroying circuit board electrical interconnectors comprising:
a box-like enclosure,
a microelectronic circuit board provided on one of its surfaces with electrical circuit interconnectors formed of superimposed films of metallized electrically-conductive exothermically-reactive materials adapted when ignited to self-destructively maintain combustion,
an ignitable and combustible sheet formed of exothermically reactive materials having an auto-ignition temperature approximating that of said interconnector materials, and
remotely-controllable means of igniting said sheet,
said circuit board and said ignitable sheet being disposed in a spaced relationship within said box-like enclosure with said circuit board interconnectors spanned by and directly exposed to said sheet,
whereby ignition and combustion of said exothermic sheet directly and indirectly applies to said interconnectors a temperature sufficient to produce the auto-ignition and the desired destruction of said interconnectors.

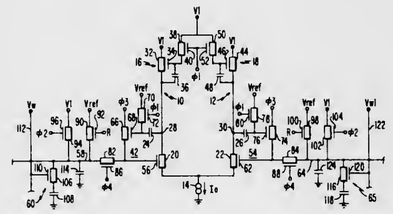
3,882,325
MULTI-CHIP LATCHING CIRCUIT FOR AVOIDING INPUT-OUTPUT PIN LIMITATIONS
Fred Elias Sakalay, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 10, 1973, Ser. No. 423,627
Int. Cl. H02k 17/00
U.S. Cl. 307—218 **9 Claims**



1. A composite latching circuit receiving a plurality of set signals and a plurality of reset signals comprising:
a first constituent latching circuit receiving at least one of said set signals and the associated one of said reset signals,
a second constituent latching circuit receiving the remainder of said plurality of set and reset signals,

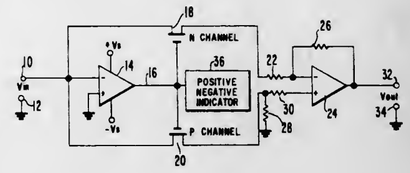
each said constituent latching circuit providing an output signal representing the state thereof, and
a logic circuit operative as a positive OR circuit for input signal amplitude changes in one direction and as a positive AND circuit for input signal amplitude changes in the opposite direction,
said output signal from each said constituent latching circuit being applied to said logic circuit as said input signals.

3,882,326
DIFFERENTIAL AMPLIFIER FOR SENSING SMALL SIGNALS
Robert Henry Kruggel, Jericho, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1973, Ser. No. 428,591
Int. Cl. H03k 5/20; G11c 11/24; H03k 5/18
U.S. Cl. 307—235 R **17 Claims**



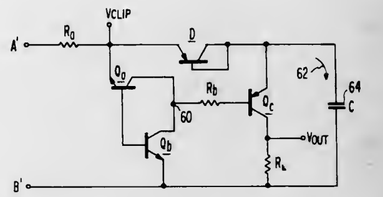
17. A sensing circuit comprising
a constant current sink,
a constant voltage source,
first and second serially connected transistors coupling said constant voltage source to said constant current sink, said second transistor being interposed between said first transistor and said constant current sink, each of said transistors having a gate electrode,
third and fourth serially connected transistors coupling said constant voltage source to said constant current sink, said fourth transistor being interposed between said third transistor and said constant current sink, said third and fourth transistors having gate electrodes,
a first alternating current feedback circuit coupled to the common point between said first and second transistors,
a second alternating current feedback circuit coupled to the common point between said third and fourth transistors,
a first capacitor connected between the gate electrode of said first transistor and the common point between said first and second transistors,
a second capacitor connected between the gate electrode of said third transistor and the common point between said third and fourth transistors,
means coupled to the gate electrodes of said first and third transistors for periodically charging said first and second capacitors, and
means for applying a differential input signal between the gate electrodes of said second and fourth transistors,
each of said first and second feedback circuits including a voltage source, a field effect transistor, having a gate electrode, coupling said voltage source to said input signals applying means and a capacitor coupled between one of said common points and the gate electrode of said field effect transistor and means for applying a bias voltage to the gate electrode of said field effect transistors.

3,882,327
ABSOLUTE VALUE CIRCUIT EMPLOYING OPPOSITE CONDUCTIVITY TYPE SWITCHES
Alfred Brown, Jr., Philadelphia, Pa., and Kenneth Mansfield Schlesier, Stockton, N.J.
Filed June 7, 1974, Ser. No. 477,189
Int. Cl. H03k 5/00
U.S. Cl. 307—236 **12 Claims**



1. A circuit comprising:
at least one input terminal adapted for connection to a source of input signals;
a signal comparator means responsive to said input signals and to a reference signal level for providing one control signal when the input signal is at one polarity relative to said reference signal level and a second control signal when the input signal is at another polarity relative to said reference signal level;
first and second semiconductor switching devices of opposite conductivity types, said first device being responsive to said one control signal for providing one low impedance signal path for said one polarity of the input signal, said second device being responsive to said second control signal for providing another low impedance signal path for said other polarity of input signal; and
signal translation means coupled to said first and second devices for inverting the polarity of the signal provided via said one low impedance path and for maintaining the polarity of the signal provided via said other low impedance path, said signal translation means providing an output signal substantially equal to the absolute value of the input signal.

3,882,328
CROSS OVER DETECTOR AND RECTIFIER
James Dimitri Mazgy, Parsippany, N.J., and Henry Martin Kleinman, Boca Raton, Fla., assignors to RCA Corporation, New York, N.Y.
Filed Aug. 6, 1973, Ser. No. 385,655
Int. Cl. H03k 5/08, 5/153, 17/30
U.S. Cl. 307—237 **18 Claims**



3. A clamping and zero crossing detection circuit adapted for use in integrated form comprising
a pair of transistors of like conductivity type each having emitter, base and collector electrodes;
a pair of input terminals adapted for connection to a periodically varying source of potential, each of said terminals connected to a respective one of said emitter electrodes;
means for connecting said base electrodes in common circuit;

means for connecting said collector electrodes in common circuit;

a further transistor having an emitter, a base, and a collector electrode;

output means connected in series circuit with the emitter-to-collector path of said further transistor;

means for connecting said series circuit in circuit with said input terminals;

means for connecting said commonly coupled collector electrodes to the base electrode of said further transistor, whereby the base-emitter junction of one of said transistor pair is forward biased through the reverse breakdown voltage of the base-emitter junction of the other transistor of said pair to render said one transistor conductive and said other transistor nonconductive between the emitter and collector electrodes thereof when the potential applied to said input terminals is of a given polarity and exceeds a predetermined magnitude to provide an indication of the zero crossing point of said periodically varying source at said output means.

3,882,329

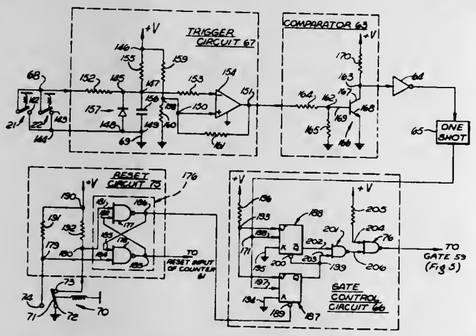
GATE GENERATOR WITH J-K FLIP-FLOPS

Walter Fah Min Tyau, Orange, Calif., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Division of Ser. No. 304,997, Nov. 9, 1972, Pat. No. 3,832,883. This application Jan. 21, 1974, Ser. No. 435,257

Int. Cl. H03k *17/00, 3/12*

U.S. Cl. 307—247 R **1 Claim**



1. A gate generator comprising: first and second JK flip-flops each having inhibit, J, K and drive inputs, and Q and Q outputs; a D.C. source of potential; a resistor connected from said D.C. source to each J input, both K inputs being connected to ground; a source of pulses, both drive inputs being connected from said pulse source, a NAND gate having first and second inputs and an output, said Q output of said first flip-flop being connected to said NAND gate first input, said Q output of said second flip-flop being connected to said NAND gate second input, said second flip-flop Q output being connected to the inhibit input of said first flip-flop; and manually operable means for momentarily changing the potential at said second flip-flop inhibit input to cause said Q output of said second flip-flop to be high.

3,882,330

CIRCUIT ARRANGEMENTS

Robert Keith Portway Galpin, Marlow, England, assignor to Plessy Handel und Investments A.G., Zug, Switzerland

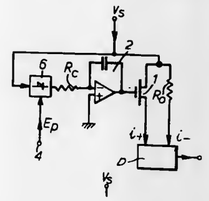
Filed Apr. 11, 1973, Ser. No. 350,213

Claims priority, application United Kingdom, Apr. 13, 1972, 17111/72

Int. Cl. H03k *1/14*

U.S. Cl. 307—264 **6 Claims**

1. A variable gain circuit arrangement for use in or with an adaptive equaliser comprises integrator means having an input for the application thereto of an applied electrical signal and an output, field effect transistor means connected in the output of said integrator means, a constant voltage source connected directly to the junction of the field effect transistor means and the electrical impedance, and combining means for selectively combining outputs from the field effect transistor means and electrical impedance to afford a required output, modulator means to which the signal is applied, the output of the modulator means being fed to the integrator means, the output of the modulator means being applied to the integrator means via a charge resistance, the modulator means taking the form of a balanced modulator which is operated in dependence upon the output of the voltage source and a derived



error signal, and the balanced modulator comprising differential amplifier means having two inputs one of which is earthed and an output, first resistor means connected in series with the other of said inputs and to the output of the voltage source, second resistor means connected between the output of the differential amplifier means and the other input, second field effect transistor means for applying the output of said differential amplifier means to the charge resistance in dependence upon the polarity of an error signal and third field effect transistor means for applying the output of the voltage source to the charge resistance in dependence upon the inverse of the polarity applied to said second field effect transistor means.

3,882,331

HYSTERESIS CIRCUITS USING INSULATED GATE FIELD EFFECT TRANSISTORS

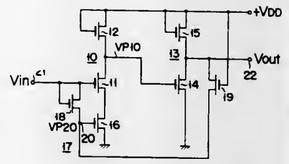
Minoru Sasaki, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1974, Ser. No. 446,726

Claims priority, application Japan, Mar. 5, 1973, 48-25163

Int. Cl. H03k *3/286, 3/295, 3/33*

U.S. Cl. 307—279 **11 Claims**



1. A hysteresis circuit comprising: an input means; an output means; first circuit means coupled to said input means and including a first switchable impedance means for generating control signals in response to input voltage levels; second circuit means including a second switchable impedance means for switching output voltage levels impressed on said output means in response to said control signals; voltage dividing circuit means connected between said input and output means; and third switchable impedance means connected in circuit with said first switchable impedance means for controlling input voltage levels switching output voltage levels in response to outputs from said voltage dividing circuit means; said third switchable impedance means is connected in series with said first switchable impedance means.

3,882,332

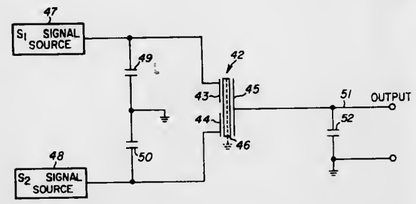
PIEZOELECTRIC PHASE DETECTOR

Edward M. Frymoyer, Santa Ana, Calif., assignor to Rockwell International Corporation, Dallas, Tex.

Filed Aug. 20, 1971, Ser. No. 173,434

Int. Cl. H04r *17/00*

U.S. Cl. 310—8.1 **10 Claims**



1. In a phase detector circuit unit using crystal filters, a phase detector section; first signal source means; second signal source means; first crystal filter means circuit connected to said first signal source means; second crystal filter means circuit connected to said second signal source means; said first and second crystal filter means having substantially identical phase characteristics and phase temperature behavior, piezoelectric material means common to and interconnecting said first and second crystal filter means; and signal combining electrode means on said piezoelectric material means circuit connected in said phase detector section.

3,882,333

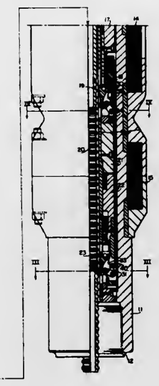
FAIL SAFE LINEAR MOTION DEVICE

John L. DeWeese, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 17, 1973, Ser. No. 351,917

Int. Cl. H02k *41/02, 33/00*

U.S. Cl. 310—14 **9 Claims**



1. A linear motion device comprising an elongated linearly movable element, two axially spaced gripper means for engaging said linear element, electrically energized magnet coil means for activating said gripper means and for incrementally moving said linear element in a rectilinear manner in both longitudinal directions, and means for substantially maintaining the relative axial position of said linear element with respect to said linear motion device, said means including locking apparatus for maintaining engagement of at least one of said two gripper means with said linear element to prevent movement of said linear element in either longitudinal direction, said locking apparatus being activated when electrical power to said magnet coil means is interrupted.

3,882,334

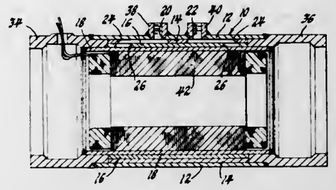
FLUID COOLED DYNAMOELECTRIC MACHINE FRAME AND STATOR ASSEMBLY

William J. Newill, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1974, Ser. No. 440,667

Int. Cl. H02k *9/00*

U.S. Cl. 310—59 **2 Claims**



1. A cooling arrangement for a dynamoelectric machine comprising: a dynamoelectric machine frame including an inner cylindrical sleeve, a first intermediate cylindrical sleeve circumjacent the inner sleeve, a second intermediate cylindrical sleeve circumjacent the first intermediate sleeve and an outer cylindrical sleeve circumjacent the second intermediate sleeve, the outer sleeve having a fluid inlet port and a fluid outlet port, the first intermediate sleeve having a first pattern of openings therein and the second intermediate sleeve having a second pattern of openings therein overlapping respective ones of the openings in the first pattern and the inlet and outlet ports to define an interconnecting tortuous fluid path between the inlet and outlet ports; and a dynamoelectric machine stator assembled within the inner sleeve, the inner sleeve providing heat transfer between the stator and fluid circulated within the fluid path.

3,882,335

COOLING APPARATUS FOR THE ROTOR OF AN ELECTRIC MACHINE WHICH USES A HEAT PIPE

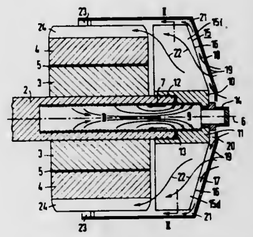
Paul Fries, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 18, 1973, Ser. No. 352,270

Claims priority, application Germany, Apr. 25, 1972, 2220266

Int. Cl. H02k *1/32*

U.S. Cl. 310—61 **3 Claims**



1. Apparatus for improved cooling in an electric machine in which the rotor shaft is hollow and contains a small amount of working fluid so that it acts as a heat pipe comprising:

a. a fan having a plurality of essentially rectangular radial vanes, said fan having a hub shaped to fit over the end of the hollow shaft and said fan inclusive its vanes and its hub being formed in a single piece of highly conductive material and said hub having a hollow portion of a diame-

ter equal to that of the hollow shaft to form an extension of the heat pipe, whereby the working fluid will be evaporated in the shaft portion of the heat pipe and will travel to the fan portion of the heat pipe where it will be condensed with heat being removed by the conductive effect of said hub and vanes and the air flowing thereover due to rotation of the fan,

b. at least two trapezoidal guide baffles between two different pairs of vanes of said fan; and

c. a hood, having a shape matching that of the fan, enclosing said fan.

3,882,336

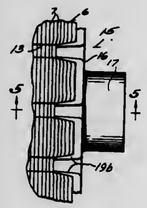
ELECTRIC MOTOR ARMATURE CORE

Edward A. Boyd, Sussex, and Joseph R. Harkness, Germantown, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Division of Ser. No. 420,940, Dec. 3, 1973, Pat. No. 3,831,268. This application May 20, 1974, Ser. No. 471,568

Int. Cl. H02k *1/06*

U.S. Cl. 310—216 **5 Claims**



1. An armature core comprising a stack of laminations assembled on a shaft, to form a laminated coil-carrying body the peripheral portion of which is defined by a circular row of T-shaped teeth, the heads of which are radially outermost so that said body has circumferentially spaced reentrant coil receiving slots formed by the spaces between the teeth and opening to its periphery through the spaces between the heads of the T-shaped teeth, and

said core being characterized in that the heads of the T-shaped teeth on a plurality of the endmost laminations at the axially opposite ends of said laminated body are progressively narrower towards the ends of the body.

3,882,337

HALL PLATE CONTACT-LESS OPERATOR AND METHOD OF ITS ADJUSTMENT

Josef Pfeffer, Amtszell, and Horst Schwable, both of Obermelsungen, Germany, assignors to Rafi Raimund Finsterholzl Elektrotechn. Spezialfabrik, Ravensburg-Vorberg, Germany

Filed Nov. 13, 1973, Ser. No. 415,335

Claims priority, application Germany, Nov. 17, 1972, 2256360

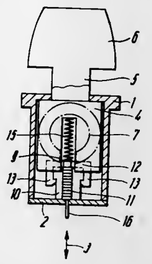
Int. Cl. H02k *35/02*

U.S. Cl. 310—273 **2 Claims**

1. A contact-less operator comprising: a housing, a Hall generator, a plate which carries said Hall generator and is disposed in said housing, a permanent magnet having pole surfaces defining an air gap, a pushrod member carrying said magnet and disposed in said housing, means for displacing said pushrod member from outside said housing, and a spring disposed in said housing and acting on said pushrod member to bias said pushrod member to a position in which said Hall generator is outside said air gap of said magnet, displacement of said pushrod member by said means bringing said magnet to a position in which said Hall generator is between said pole surfaces, wherein said magnet is in the interior of said pushrod member, and the displacing means comprises:

A. a pushrod integrally connected to said pushrod member, and

B. an operating button on said pushrod outside said housing,



the operator further comprising a retaining loop bracket having a central portion and two resilient limb portions projecting therefrom provided with inwardly projecting portions which engage behind corresponding projections on holders extending inwardly from an end member of the housing, said plate being held between said central portion and said end member.

3,882,338

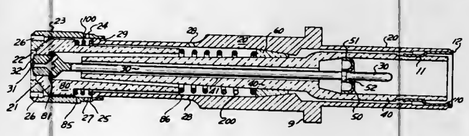
IGNITER PLUG

Helmut P. Meyer, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 16, 1974, Ser. No. 433,944

Int. Cl. H01t *13/20, 13/24*

U.S. Cl. 313—11.5 **8 Claims**



1. In combination with a spark plug of the type having an inner elongated electrode having a front portion and a rear portion; a forward elongated insulator disposed around the forward portion of said electrode; an intermediate elongated insulator disposed around at least the rear portion of said electrode, said intermediate insulator having a front portion and a rear portion; an outer elongated metal shell disposed around the electrode and electrically isolated therefrom by the forward and intermediate insulators, said metal shell having a rear portion that has an opening therein and a front end portion arranged to provide a spark gap with the end of the front portion of said electrode, said forward elongated insulator having its forward end immediately adjacent the spark gap, a first forward portion in contact with a portion of the front end of said outer elongated metal shell, and a second forward portion in contact with a portion of the front end of the inner elongated electrode whereby said forward elongated insulator extends adjacent said spark gap between said metal shell and inner electrode; and a metal sleeve having a front end portion that includes an opening that is in mated relationship with the rear portion of said intermediate insulator, the inside of said front end portion of said sleeve annularly fastened in pressure tight relationship to the outside rear portion of said intermediate insulator; and a rear end portion having a configuration that matches the opening in the rear of said metal shell, the rear end of said metal sleeve annularly fastened in pressure tight relationship to the rear end of said metal shell whereby said intermediate insulator and said shell are connected together by said sleeve, the improvement comprising:

means for slidably mounting said forward insulator, including means for axially and resiliently biasing said forward insulator against said front end portion of said shell.

3,882,339

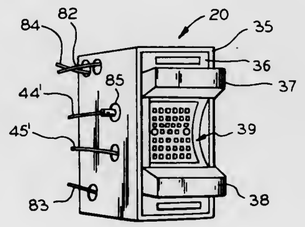
GRIDDED X-RAY TUBE GUN

Edward T. Rate, Jr., Mequon, and Robert F. Helting, Milwaukee, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed June 17, 1974, Ser. No. 479,746

Int. Cl. H01j *35/06*

U.S. Cl. 313—60 **8 Claims**



1. An X-ray generator comprising:

a. electron emission means having a substantial electron emission area,

b. first anode means spaced from said emission means for producing X-radiation when impinged upon by electrons from said emission means,

c. second anode means having an opening and being interposed between said emission means and said first anode means, said second anode means when at a positive potential relative to said emission means producing an electric field effective to converge electrons emitted in a path from said emission means into a beam for passing through said opening to impinge on said first anode means,

d. means for selecting the portion of said emission means from which electrons are withdrawn including first grid means nearest said emission means having a gridded area substantially coextensive with the entire electron emission area, and

e. other grid means more remote from said emission means than said first grid means, said other grid means having electrically isolated gridded areas adjacent each other and generally transverse to said beam path to enable biasing said isolated areas individually or jointly at a positive potential relative to said emission means and said first grid means to thereby withdraw electrons from portions of said emissive means corresponding substantially with said isolated gridded areas.

3,882,340

IMAGE INTENSIFIER TUBE

Wilhelm Richard Jonker, Vries, Netherlands, assignor to B.V. Delft Electronics producten a Dutch, Roden, Netherlands

Filed Nov. 30, 1973, Ser. No. 420,387

Claims priority, application Netherlands, Dec. 22, 1972, 7217628

Int. Cl. H01j *5/02, 31/26*

U.S. Cl. 313—94 **9 Claims**

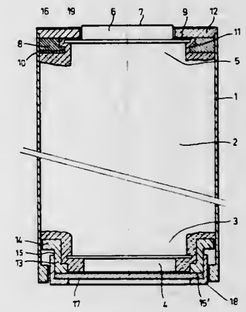
1. Image intensifier device comprising:

a housing of rigid synthetic resin plastic provided respectively at opposite ends with openings centered on a common axis, at least a first of said openings, located at a first end of said housing, being formed in a cover provided on the first end of said housing;

a unitary body coaxial with said axis composed of at least one image intensifier tube coaxial with said axis and coaxial optical windows at the axial ends of said body adjacent image intensifier tube end surfaces on which they are respectively affixed and also high voltage power supply means consisting of components all located off said axis, all of the foregoing components of said body being embedded and surrounded, except for end surfaces of said tube or tubes and of said optical windows, in a synthetic resin plastic, said opening in said cover clearing the adjacent optical window and the other of said openings clearing the adjacent end of said unitary body;

at least the intensifier tube end adjacent said cover having a flange;

a ring of rigid non-deformable material arranged to provide a rigid annular end surface of said unitary body for attachment to said cover, said ring having an internal flange



embedded in said embedding synthetic resin plastic and located axially inwardly of said flange of said intensifier tube end;

said ring being spaced from said tube end and its flange by an annular mass of said embedding plastic, whereby the positioning of said ring relative to said cover substantially fixes the position of said tube end and the optical window adjacent thereto relative to said cover, said ring being affixed to said cover, and

means near the end of said unitary body remote from said first end of said housing for supporting said unitary body transversely to said axis in said housing while freely permitting axial movement of said end of said body relative to said housing.

3,882,341

SPARK PLUG WITH INDUCTIVE SUPPRESSOR

Sam J. Green, Temperance, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

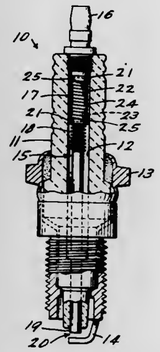
Filed Jan. 24, 1974, Ser. No. 436,079

Int. Cl. H01j *23/16;* **H01t** *13/04*

U.S. Cl. 313—134 **11 Claims**

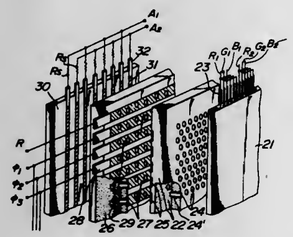
1. A spark plug having a ceramic insulator with a central bore therein, a center electrode assembly within said bore, and a wire wound radio interference inductive suppressor

within such center electrode assembly, said suppressor comprising a core of ferromagnetic materials and a conductive



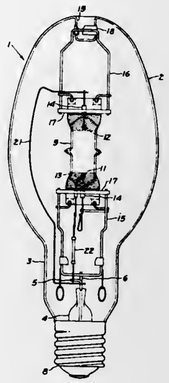
wire wound around said core and connected in series in such center electrode assembly.

3,882,342
GAS DISCHARGE DISPLAY PANEL FOR COLOR PICTURE REPRODUCTION
Takeo Kamegaya, Tokyo; Yutaka Imahori; Ryuichi Kaneko, both of Kawasaki, and Minori Yokozawa, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan
Filed July 30, 1974, Ser. No. 493,080
Int. Cl. H01j *61/06*
U.S. Cl. 313—188 **10 Claims**



1. A gas discharge display panel comprising in combination;
a front panel formed by transparent insulating material,
a first intermediate insulating plate provided with a plurality of picture elements arranged in matrix shape, in which each picture element is formed by a set of three display discharge units for displaying three primary colors, red, green and blue, respectively, and each of the display discharge unit comprises a hollow display cathode,
a number of display anode stripes extended in parallel and provided between the front panel and the first intermediate insulating plate, in which the display anode stripes are formed in groups for respective primary colors and each stripe being provided at a location to establish registration with respective row of said display discharge units for reproducing corresponding primary color,
a second intermediate insulating plate provided with a plurality of hollow scanning cathodes, in which each hollow scanning cathode is provided at a position facing against said set of hollow display cathodes representing a picture element and each column of the hollow scanning cathodes are connected by a conductive stripe,
a rear panel made of insulating material, and
a plurality of scanning anodes provided in parallel on the rear panel in a direction normal to said conductive stripes,
wherein the set of the hollow display cathodes and the hollow scanning cathode are so arranged as to overlap at through holes having small cross-sectional area so that a scanning discharge produced between the scanning cathode and the scanning anode can easily be transferred to the hollow display cathode forming the display discharge unit together with the display anode in a manner that the scanning discharge will not give substantial influence to a viewer located at the front panel side.

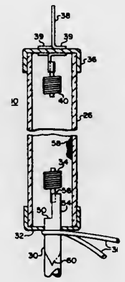
3,882,343
TIN CHLORIDE MOLECULAR RADIATION LAMP
Dimitrios M. Speros, Painesville; Robert M. Caldwell, Richmond Hts.; Robert H. Springer, Warrensville Hts., and Robert P. Taylor, Euclid, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 6, 1970, Ser. No. 78,484
Int. Cl. H01j *61/18*
U.S. Cl. 313—229 **10 Claims**



1. A high intensity arc lamp comprising a light transmissive envelope of a material non-reactive with stannous chloride at an elevated temperature, refractory metal sealed into the ends thereof and a filling within said envelope comprising stannous chloride, stannous iodide and tin, a quantity of mercury which is substantially all vaporized during operation, and an inert gas to facilitate starting, the atom ratio of chlorine to iodine within said envelope being not in excess of approximately two and the maximum residual oxygen content being low enough to prevent excessive electrode attack by one oxyhalide transport cycle while permitting wall cleanup by another oxyhalide transport cycle.

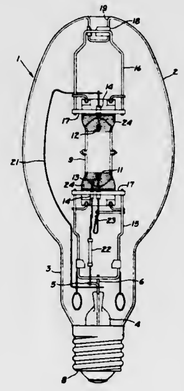
3,882,344
TUBULAR ELECTRODE SUPPORT FOR CERAMIC DISCHARGE LAMP
William J. Knochel, West Orange; Leo C. Werner, Cedar Grove, both of N.J., and Francis C. M. Lin, Flushing, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 4, 1974, Ser. No. 447,619
Int. Cl. H01j *1/94, 61/06*
U.S. Cl. 313—217 **9 Claims**

4. An improved refractory metal exhaust and fill tubulation for a ceramic discharge lamp, said tubulation comprising:
an elongated, thin walled tubular member having a notched out portion adjacent one end thereof and a collapsed wall portion extending from said notched out portion to said adjacent end, said collapsed wall portion extending substantially curvilinearly with and adjacent to the inner



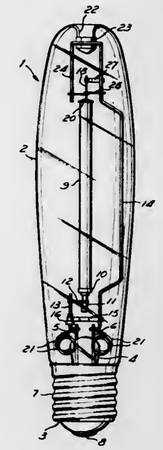
surface of its opposite wall portion to thereby form a double walled electrode holding portion.

3,882,345
METAL HALIDE DISCHARGE LAMP CONTAINING TIN AND SODIUM HALIDES
Gregory J. Kazek, Eastlake, and Dimitrios M. Speros, Painesville, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Continuation-in-part of Ser. No. 200,714, Nov. 22, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 414,807
Int. Cl. H01j *61/18*
U.S. Cl. 313—229 **6 Claims**



1. A high intensity discharge lamp exhibiting a substantially continuous spectrum in the visible range plus broadened sodium D line radiation comprising
a sealed elongated arc tube of light-transmitting material,
arc supporting electrodes mounted at opposite ends of said arc tube on inleads sealed therethrough,
and a discharge sustaining filling within said arc tube comprising per cubic centimeter of arc tube volume from 0.15 to 0.70 milligrams of $SnCl_2$, from **0.60** to **2.50** milligrams of SnI_2, at least 0.10 milligram of tin, from 2.0 to 6.0 mg of mercury, from 1.0×10^{-6} to 2.0×10^{-5} moles of one of sodium chloride, sodium bromide, sodium iodide and mixtures thereof, and a small quantity of an inert starting gas.

3,882,346
CERAMIC ARC TUBE MOUNTING STRUCTURE
Charles I. McVey, Shaker Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Nov. 5, 1973, Ser. No. 412,659
Int. Cl. H01j *1/88, 19/42*
U.S. Cl. 313—253 **10 Claims**

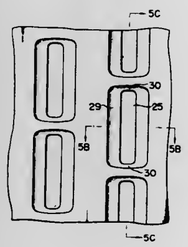


1. A high intensity discharge lamp comprising:
an outer vitreous envelope domed at one end and having a base attached to the other end, and a pair of inleads sealed into said envelope and connected to said base;
a tubular ceramic envelope having electrodes sealed therein and containing an ionizable medium, a closure at the lower end of said envelope including a metal member serving as an inlead to the electrode, and a closure at the upper end of said envelope comprising a ceramic plug and a slender lead wire sealed therethrough;
an arc tube mounting frame within said envelope comprising one side rod extending from one inlead to the dome end of said envelope, and a short support rod extending from the other inlead, said metal member inlead being rigidly connected to one of said rods;
a transverse support member extending across from the other of said rods, said transverse support member being a smooth round wire making a single close-fitting loop around said slender lead wire, and a flexible conductor connecting said slender lead wire to said other rod.

3,882,347
COLOR STRIPE CATHODE RAY TUBE HAVING BRIDGED STRIP APERTURES
Takeshi Suzuki; Hiroshi Tanaka, and Makoto Kudo, all of Fukaya, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan
Filed May 29, 1973, Ser. No. 364,255
Claims priority, application Japan, May 30, 1972, 47-53034
Int. Cl. H01j *29/66, 29/32, 31/20*
U.S. Cl. 313—403 **3 Claims**

1. A color cathode ray tube comprising,
an envelope having a face plate,
a fluorescent screen formed on the inner surface of said face plate and including a plurality of elemental phosphor stripes
a shadow mask provided with a multiplicity of vertically elongated slit apertures and disposed in spaced relationship with respect to said fluorescent screen,
electron gun means for emitting electron beams through said apertures to said screen,

said slit apertures being vertically spaced apart by transverse bridge elements, each of said slit apertures having a first pair of vertical side walls and a second pair of lateral side walls for defining the throat of said slit aperture, said throat being the most constricted opening defined by said aperture, said second pair of side walls defining said transverse bridge elements, each of said side walls comprising a portion inclined with respect to the surface of said mask facing said fluorescent screen and terminating at said throat, said inclined portions of said



lateral side walls being so inclined as to locate the lateral portion of said throat substantially at the center of the thickness of said shadow mask between the surface of said mask facing said fluorescent screen and the surface thereof facing said guns at a longitudinal section taken on the longitudinal central axis of each said slit apertures of said mask, said inclined portions of said vertical side walls being inclined to locate the vertical portion of said throat substantially closer than said lateral portion of the throat to said surface of said mask facing said guns.

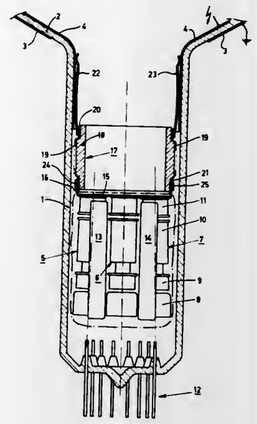
3,882,348

CATHODE-RAY TUBE WITH INTERNAL CYLINDRICAL RESISTOR BETWEEN HIGH VOLTAGE CONNECTION AND ELECTRON GUN

Cornelis Johannes Henricus Paridaens, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 16, 1971, Ser. No. 433,803
Claims priority, application Netherlands, Feb. 21, 1973, 7302366
Int. Cl. H01j *29/96, 29/48*
U.S. Cl. 313—450 **2 Claims**

1. A cathode-ray tube comprising an evacuated envelope, means disposed within said envelope and including a final anode to produce at least one electron beam, an electrically conductive layer on an inner surface of the envelope, an electric resistor which connects the conductive layer to the final anode, said electric resistor being a mono-layer winding of resistance wire on the outside of on a mainly cylindrical hollow body spaced apart from said envelope and having an axis which is coaxial with the main axis of the tube, said cylin-



drical body being a material of a sufficiently low resistance to prevent surface charging.

3,882,349

MULTI-POSITION, GASEOUS DISCHARGE, CHARACTER DISPLAY PANEL INCLUDING AUXILIARY, CATHODE TRANSFER ELECTRODES

George E. Holz, North Plainfield, and James A. Ogle, Neshanic Station, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed June 13, 1974, Ser. No. 478,916
Int. Cl. H01j *61/08, 61/66*
U.S. Cl. 313—519 **13 Claims**

1. A multi-position character display panel comprising
a gas-filled envelope consisting of a base plate and a face plate having a viewing window and containing,
a plurality of groups of display cathode electrodes adapted to be energized in different combinations to display characters, the cathodes in each group being so positioned that cathode glow can transfer readily from one cathode to an adjacent cathode in a selected sequence through the display cathodes of each group whereby each display cathode is in glowtransfer proximity to at least one other display cathode whereby every cathode of each group can be energized and caused to exhibit cathode glow,
an anode electrode in operative relation with each of said groups of display cathode electrodes, and
a plurality of groups of auxiliary cathode electrodes disposed adjacent to and between each group of display

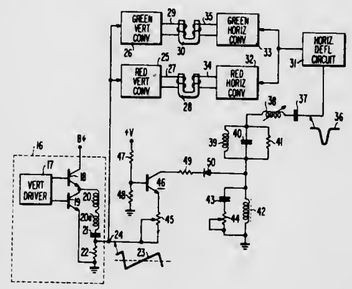
cathode electrodes, said auxiliary cathode electrodes being disposed in series, with adjacent electrodes being close to each other so that cathode glow can transfer readily from one to another, said auxiliary electrodes also being positioned close to selected ones of said display cathode electrodes so that cathode glow can transfer readily from an auxiliary cathode electrode to at least one display cathode electrode in each said group of display cathodes whereby characters can be displayed by each group of display cathodes by means of cathode glow transferred along each group of auxiliary cathode electrodes and from each group of auxiliary cathode electrodes through each group of display cathode electrodes.

3,882,350

DYNAMIC CONVERGENCE CIRCUIT

Cyril John Hall, Zurich, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Sept. 26, 1973, Ser. No. 401,089
Claims priority, application United Kingdom, June 12, 1973, 27791/73
Int. Cl. H01j *29/50*
U.S. Cl. 315—13 C **7 Claims**



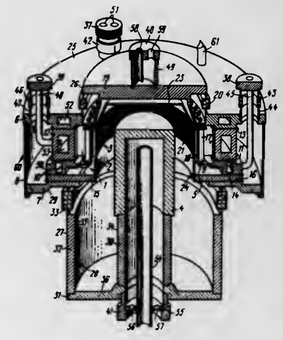
1. A dynamic convergence circuit comprising:
a first source of waveforms having a first frequency;
a convergence coil;
waveshaping means coupled to said first source and to said convergence coil for producing a desired convergence current waveform at said first frequency in said convergence coil;
a second source of waveforms having a second frequency;
means including an active current conducting device having an input electrode coupled to said second source; and
unidirectional conducting direct current coupling means for direct current coupling an output electrode of said device to said convergence coil through a single conduction path for amplitude modulating said first frequency convergence current in response to simultaneous conduction of said device and said unidirectional conducting means caused by said second source of waveforms.

3,882,351

MICROWAVE ELECTRON TUBE

Vladimir Alexandrovich Ryabinin, Naberezhnaya reki Fontani, 33, kv. 103; Vladimir Ivanovich Sadofiev, prospekt Smirnova, 65, kv. 67; Igor Mikhailovich Mitin, Kolomenskaya ulitsa, 46, kv. 20; Kira Boleslavovna Yankevich, Shkolnaya ulitsa, 15, kv. 26; Evgeny Ivanovich Matrosov, ulitsa Fedoseenko, 25, kv. 63; Anton Felixovich Leliovsky, prospekt Smirnova, 27, korpus 2, kv. 90; Karl Romanovich Terra, Grazhdansky prospekt, 27, korpus 2, kv. 152, and Alexei Petrovich Kashirin, Grazhdansky prospekt, 108, korpus 1, kv. 36, all of Leningrad, U.S.S.R.

Continuation of Ser. No. 278,013, Aug. 4, 1972, Pat. No. 3,805,111. This application Apr. 15, 1974, Ser. No. 461,236
Int. Cl. H01j *7/46, 19/80*
U.S. Cl. 315—39 **10 Claims**



1. A microwave electron tube comprising: a plurality of electrodes including at least a first electrode, a second electrode arranged opposite said first electrode and at least one grid arranged between said first and second electrodes; high-frequency leads for each of said electrodes; means for electrically coupling each of said electrodes to its high-frequency lead, at least one of said means coupling one of said electrodes being constructed in the form of a section of a microwave line; a first conductor of said section of the microwave line being connected at one end to said one electrode; a second conductor of said section of the microwave line being connected at one end to the high-frequency lead of said one electrode, the other ends of said first and second conductors being electrically shorted, said first and second conductors being constructed in the form of surface of revolution whose size is selected so that the impedance at said point of connection is inductive in character; means for feeding supply voltages to said electrodes, and an evacuated envelope means enclosing said electrodes and said section of the microwave line.

3,882,352

ELECTRICALLY TUNED MICROWAVE ENERGY DEVICE

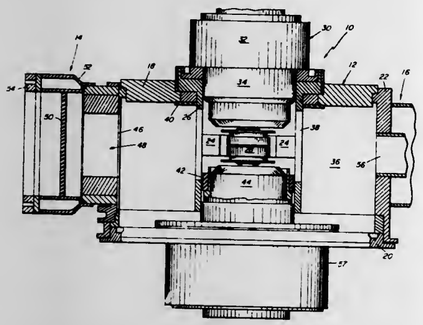
John M. Osepchuk, Concord, and Theodore Kohane, Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 27, 1974, Ser. No. 446,446
Int. Cl. H01j *25/50*
U.S. Cl. 315—39.55 **7 Claims**

1. A microwave energy device comprising:
means for generating electromagnetic energy at a predetermined frequency including cavity resonator means;
coupled-circuit means for electrically tuning said device including a transmission line electrically coupled with said cavity resonator means;
said transmission line having mounted therein, in the order named, a circular polarizer for converting linear to circularly polarized wave energy, ferromagnetic phase-shifting

means, short circuit means enclosing an end to reflect substantially all of the circularly polarized energy incident thereon;

magnetic field producing means including a source of electric current positioned in the region of said phase-shifting means to provide said ferromagnetic material with an



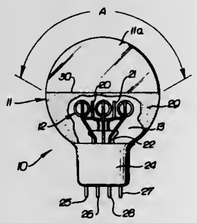
internal magnetization field below the saturation magnetization value of said material and produce a variable phase shift of circularly polarized wave energy propagated therethrough in forward and reverse directions;

output energy coupling means electrically coupled to said cavity resonator means at a location separate and apart from said coupled-circuit means.

3,882,353
MULTICOLOR LIGHT SOURCE

Donald M. Ackley, 1115 17th St., Hermosa Beach, Calif. 90254

Filed Mar. 28, 1973, Ser. No. 345,765
Int. Cl. H01j *19/78*, *61/40*; H01k *1/26*
U.S. Cl. 315—68 **9 Claims**



1. In a colored light source, the combination comprising

a. an envelope having a translucent portion,

b. at least two filaments located within the interior of the envelope so that said translucent portion subtends a substantial angle the apex of which is proximate the filaments,

c. a light transmitting glass enclosure extending at least part way about each filament and characterized in that light of different colors is transmitted through the respective enclosures when the associated filaments are electrically energized to incandescence, said enclosures contained within the envelope,

d. each enclosure having a generally cylindrically curved surface with direct and unobstructed exposure to said translucent portion of the envelope,

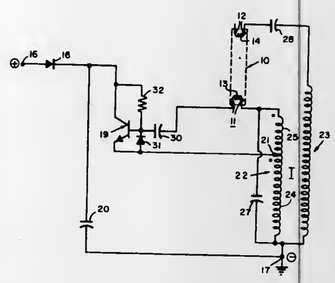
e. first light masking means in alignment with opposite ends of the enclosures to block escape through the envelope of light traveling axially endwise from said enclosures, and

f. second light masking means extending between the enclosures to block light transmission directly therebetween, thereby to prevent interference effects.

3,882,354
INVERTER BALLAST CIRCUIT FOR FLUORESCENT LAMP

Randall L. May, Andover, Kans., assignor to The Coleman Company, Wichita, Kans.

Filed July 23, 1973, Ser. No. 381,858
Int. Cl. H05b *41/29*, *41/392*
U.S. Cl. 315—101 **2 Claims**



1. An inverter ballast circuit for energizing a fluorescent lamp from a source of direct voltage comprising: a transistor having a collector, an emitter and a base terminal, said collector being connected to one terminal of said source; a transformer having a primary winding and a secondary winding, said primary winding including an input section and a feedback section; means for connecting said lamp between said primary and secondary winding; means for connecting said feedback winding section of said transformer in series with a filament of said lamp and with the base-emitter junction of said transistor, the emitter junction of said transistor being further connected in circuit with said input winding section of said primary winding of said transformer such that current flowing through said transistor will energize said input winding section to induce a voltage in said secondary and in said feedback winding section, said input winding and said transistor being arranged in an oscillatory circuit, whereby as the current in said input winding section increases, said filament will limit the input current to said transistor, said filament being characterized as being a substantially constant current element over its operating range, thereby to control the output voltage of said transistor.

3,882,355
FLAT SCREEN DISPLAY DEVICE USING CONTROLLED COLD CATHODES

David De Witt, Poughkeepsie, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,587
Int. Cl. H05b *41/00*
U.S. Cl. 315—169 TV **14 Claims**

1. A display device comprising:

an electcrically conductive phosphor coating on a transparent screen,

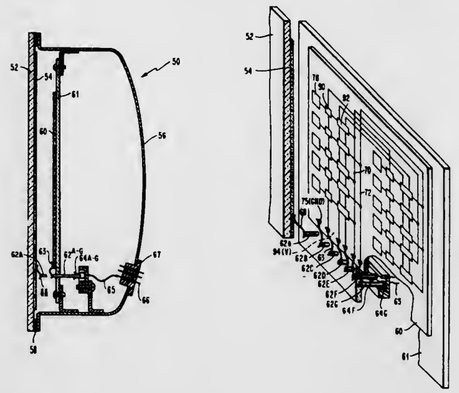
a semiconductor integrated circuit panel element in close parallel relation to said screen having embodied

1. a matrix array of surface regions facing said phosphor coating, each of said surface regions being one electrode of a diode capable of cold emission of electrons into a vacuum when electrically biased.

2. a plurality of control devices, each of which is connected to control the electrical bias of an associated surface region of said matrix,

3. storage circuitry having a plurality of storage elements, each storage element being arranged to be capable of continuously activating as associated control device,

means for translating externally applied digital signals to establish the desired state of each of said storage elements,



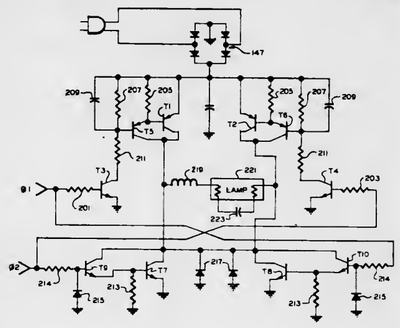
means to maintain an electric potential between said screen and said panel element, and

means for maintaining a vacuum at least in the space between said screen and said panel.

3,882,356
LEVEL SHIFTER TRANSISTOR FOR A FLUORESCENT LAMP BALLAST SYSTEM

Robert A. Stehlin, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1973, Ser. No. 426,734
Int. Cl. H05b *41/30*; H05b *41/39*
U.S. Cl. 315—205 **6 Claims**

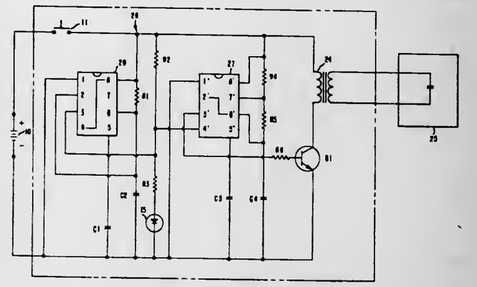


1. In a solid-state ballast system for a fluorescent lamp wherein first and second switching transistors are connected in series across the output of a full wave rectifier, with the connection between said transistors being provided to the lamp, and wherein only one of said transistors is ever on at one time, the switching of said transistors being controlled by logic circuits, which logic circuits are only capable of withstanding a low voltage, means to provide isolation between the logic circuits and said transistors comprising: a level shifter transistor having its emitter grounded and its collector output coupled as a control input to said transistors with the output of one of said logic circuits being coupled to the base of said level shifter transistor.

3,882,357
BATTERY OPERATED ELECTROLUMINESCENT FILM IDENTIFICATION DEVICE

Gerrit Nieuweboer, Claymont, and Martin A. Apostolico, Wilmington, both of Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Feb. 27, 1974, Ser. No. 446,535
Int. Cl. H05b *41/36*
U.S. Cl. 315—209 R **5 Claims**



1. Apparatus for electrically exciting an electroluminescent material, comprising:

a d.c. storage means for providing a d.c. voltage to a first and second timing means and a transformer,

a means for electrically connecting said d.c. storage means to said first and second timing means and said transformer,

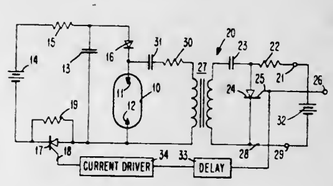
said first timing means generating an electrical gate pulse, said second timing means being electrically responsive to said gate pulse and generating a series of electrical pulses, said electrical pulses occurring during the duration of said gate pulse, said second timing means being further electrically responsive to termination of said gate pulse and terminating said series of pulses,

said transformer being electrically coupled to said second timing means and developing a voltage in response to each pulse of said series of pulses, said transformer being further electrically coupled to said electroluminescent material and applying said voltage to said electroluminescent material, said transformer, upon termination of each pulse, expending substantially all energy therein to said electroluminescent material as an oppositely polarized pulse.

3,882,358
ANTI-HOLDOVER CHARGING CIRCUIT FOR FLASH LAMP

Stephen Deskevich, Endwell; James C. Peacock, Endicott; Richard F. Tynan, Endwell, and Alan D. Wilson, Apalachin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

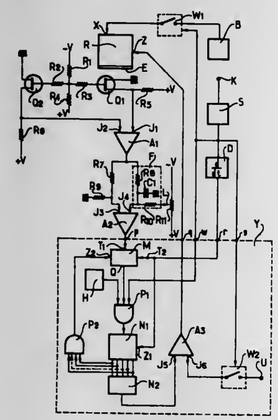
Filed June 26, 1973, Ser. No. 373,848
Int. Cl. H05b *37/00*
U.S. Cl. 315—241 P **4 Claims**



1. A circuit for permitting high frequency repetition of a flash lamp comprising:

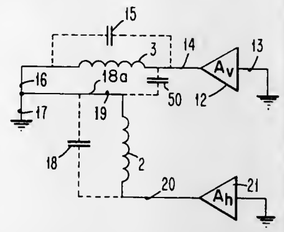
an energy storage circuit connected to said lamp;
direct current charging means connected to said storage circuit, said charging means including a first constant impedance path and a second path with switch means having an on-state and an off-state in parallel with said first path to vary the rate of energy supplied to said storage circuit, said second path switch states being selectable in response to a control signal;
trigger pulse means for initiating flashing of said lamp and discharge of said storage circuit; and
circuit means including a delay circuit therein, said circuit means being connected to said trigger pulse means and responsive thereto for producing a said control signal at said charging means a predetermined time after said trigger pulse for selecting one of said switch states of said second path and changing said energy supply rate.

3,882,359
DEVICE FOR STABILIZING THE BRILLIANCY OF AN OSCILLOSCOPE
Fernand Secher, Lannion, France, assignor to Societe Lannionnaise d'Electronique Sle-Citerel
Filed June 11, 1973, Ser. No. 368,522
Claims priority, application France, June 9, 1972, 72.20842
Int. Cl. H01j *29/70*
U.S. Cl. 315—383 **6 Claims**



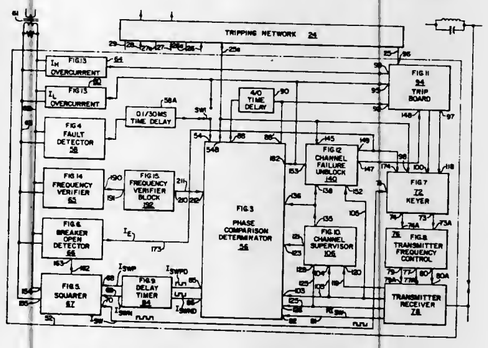
1. A device for the stabilization of the brightness of a display device, including a cathode ray tube having a brightness control input and a screen, a time base means for controlling the timing of operation of said cathode ray tube, comprising
a first differential amplifier having two inputs,
a first photo-transistor disposed before the screen of said cathode ray tube so as to receive illumination therefrom and being connected to one input of said first differential amplifier,
a second photo-transistor disposed at a position isolated from the illumination of the screen of said cathode ray tube and being connected to a second input of said first differential amplifier,
a second differential amplifier having two inputs, one input being connected to the output of said first differential amplifier and the other input being connected to a source of reference potential,
control voltage generating means responsive to the output of said second differential amplifier for generating a control voltage which increases in a step-wise manner until the output of said first differential amplifier reaches the level of said reference potential as indicated by the output of said second differential amplifier, and
an adder amplifier having one input connected to the output of said control voltage generating means and another input connected to a source of video signals, the output of said adder amplifier being connected to said brightness control input of said cathode ray tube.

3,882,360
CROSSTALK SUPPRESSOR FOR MAGNETIC DEFLECTION YOKES
Errol Ray Williams, Jr., Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 7, 1973, Ser. No. 395,332
Int. Cl. H01j *29/70*
U.S. Cl. 315—395 **8 Claims**



1. Means for preventing undesired ringing in both the horizontal and vertical sections of a magnetic deflection yoke comprising:
a fast retrace winding;
a high frequency voltage source connected to said fast retrace winding;
a low frequency trace winding capactively coupled to said fast retrace winding such that during retrace time a common mode current path is established which allows common mode current to flow through both of said windings such that said common mode current causes undesired ringing therein;
a low frequency current source providing current through said low frequency trace winding;
a transformer connected in said common mode current path having means associated therewith to damp said undesired ringing in both said trace and retrace windings.

3,882,361
SEGREGATED PHASE COMPARISON RELAYING APPARATUS
Walter L. Hinman, Jr., New Providence, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 295,031, Oct. 4, 1972, abandoned.
This application July 26, 1973, Ser. No. 382,791
Int. Cl. H02h *3/26, 7/26*
U.S. Cl. 317—27 R **16 Claims**

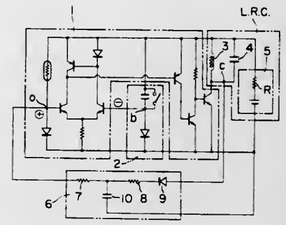


1. In a phase comparison unblocking relaying apparatus, a receiving apparatus, said receiving apparatus normally maintaining a first pair of normal logic signal outputs whenever a

normal non-fault signal is being received by said receiving apparatus, a first comparing network having a plurality of input terminals and an output terminal, means interconnecting a first of said input terminals of said comparing network to said receiving apparatus for energization by one of said first normal logic signal outputs, said receiving apparatus being effective to supply a first operating logic signal to said first input terminal of said comparing network when said receiving apparatus is receiving said one non-fault normal logic signal output, a timer having an input and an output and operable to delay the change in energization of its said output for a predetermined timing interval subsequent to a change in energization of its said input, means operatively connecting said input of said timer to said receiving apparatus whereby the removal of said one normal non-fault logic signal output of said receiving apparatus will change the energization of said input of said timer, an AND network having a plurality of input terminals and an output terminal, circuit means operatively connecting said receiving apparatus to a first of said input terminals of said AND network to provide a second operating logic signal to said first input terminal of said AND network solely in the absence of a selected one of said first pair of normal logic signal outputs from said receiving apparatus, circuit means operatively connecting said output of said timer to a second of said input terminals of said AND network to provide a third operating logic signal to said second input terminal of said AND network solely prior to the timing out of said timer, a fault detector having an output terminal connected to a third of said input terminals of said AND network and to a second of said input terminals of said comparing network, said fault detector being effective to supply fourth and fifth operating logic signals to said third input terminal of said AND network and said second input terminal of said comparing network respectively solely as a consequence of the operation of said fault detector in response to a fault, said receiving apparatus being effective to provide a second output signal which changes in character in response to changes in the character of said transmitted fault signal, a local signal supplying means having a local signal which changes in character, a signal character comparing network connected to be energized by said second output signal provided by said receiving apparatus and by said local signal provided by said local signal supplying means, means connecting said signal character comparing network to a third of said input terminals of said first comparing network, said signal comparing network being effective to provide a sixth operating logic signal to said third input terminal of said first comparing network solely at first predetermined relative relations of said characters of said second output signal from said receiving apparatus and said normal local signal from said local signal supplying means, said first comparing network being effective to provide a first tripping signal at its said output terminal solely when operating logic signals are being supplied to its said first and second and third input terminals, said AND network being effective to provide a second tripping signal at its said output terminal solely when operating logic signals are being supplied to its said first and second and third input terminals.

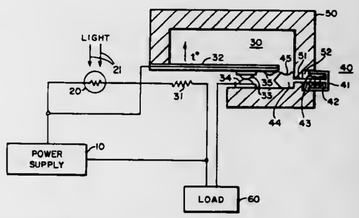
3,882,362
DEVICE FOR PREVENTING OSCILLATION OF LRC CIRCUIT
Sakuji Watanabe, Urawa, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Nov. 26, 1973, Ser. No. 419,044
Claims priority, application Japan, Nov. 30, 1972, 47-119377
Int. Cl. H01f *7/18*
U.S. Cl. 317—123 **5 Claims**

1. In an improved shutter control circuit for an electronic shutter device including an electromagnet for energization to hold open a shutter curtain, a drive circuit for the electromagnet, a capacitor disposed in parallel circuit relation with the electromagnet for preventing high frequency noise from interfering with the operation of the electromagnet, a control circuit having an input and having an output connected to the drive circuit for generating first and second output signals for respectively energizing and deenergizing the electromagnet, and a battery power source connected to the electromagnet, the drive circuit and the control circuit, the improvement comprising:



positive feedback circuit means coupled between a junction of the electromagnet-capacitor circuit and an input to the control circuit, said positive feedback circuit including means for sensing the commencement of deenergization of the electromagnet and for developing a feedback voltage in response thereto for application to said control circuit for increasing said second output signal of the control circuit.

3,882,363
PHOTOCONTROL WITH AUTOMATIC LIGHT OPERATED RESET
John J. Misencik, Shelton, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 7, 1974, Ser. No. 448,861
Int. Cl. H01h *47/24*
U.S. Cl. 317—124 **7 Claims**



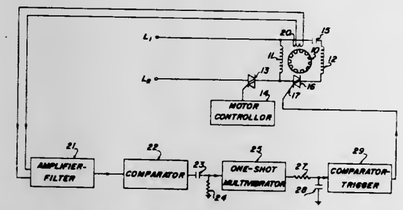
1. A photocontrol comprising:
a photosensitive device which passes current when excited by a predetermined light level;
a heat generator which is energized by said photosensitive device;
a bimetal member which moves in response to heat received from said heat generator;
a pair of electrical contacts, one of said contacts being carried by said bimetal member, said contact carried by said bimetal member being moved when light received by said photosensitive device falls below a predetermined level to engage said other electrical contact to close an electrical circuit including a power source and moves when light received by said photosensitive device rises above a predetermined level to disengage said other electrical contact to open said electrical circuit; and
means for locking said pair of contacts in circuit open position, said means being actuated by a predetermined light level to permit said contacts to move to circuit closed position.

3,882,364

3,882,364
INDUCTION MOTOR CONTROL SYSTEM

Floyd H. Wright, and David M. Erdman, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 281,757, Aug. 18, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,996
Int. Cl. H02p 1/44
U.S. Cl. 318—221 R **18 Claims**

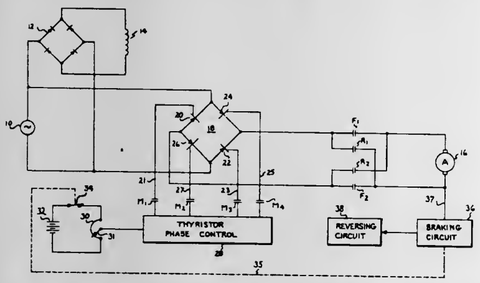


1. A control system for an induction motor with at least a pair of poles and a multi-toothed rotor and having a first winding and a second winding, comprising:
means for energizing said first winding from an alternating-current source;
a bidirectional switch for connecting the source to the second winding in response to a firing signal;
means for sensing an operating characteristic of said motor and developing a control signal in response to flux variations effected by the teeth in said rotor, the control signal including a ripple frequency corresponding to movement of slots between said teeth past one of said poles;
filter means for removing from said control signal components having frequencies of the alternating current;
regulating means responsive to the filtered control signal for developing an average signal that is proportional to said ripple frequency and that is also proportional to the speed of said rotor, said regulating means including a comparator responsive to said filtered control signal for developing a control voltage representative of the ripple frequency;
and trigger means for applying said firing signal to said switch and responsive to said average signal for terminating the application of said firing signal when said speed reaches a predetermined value.

3,882,365
DC MOTOR CONTROL CIRCUIT

Charles R. Yemington, Waynesboro, Va., assignor to General Electric Company, Salem, Va.

Filed June 18, 1973, Ser. No. 371,270
Int. Cl. H02p 3/10
U.S. Cl. 318—269 **14 Claims**

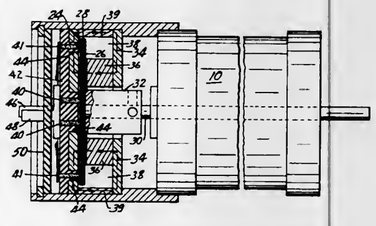


1. A control circuit for a direct current motor including an armature and operable from a source of alternating current power comprising:
a. a full wave rectification bridge circuit for applying rectified power from said source to said motor, said bridge circuit including a controlled rectifier in each leg thereof;
b. means for phase controlling the rectifiers of said bridge circuit to vary the effective power applied to said motor;
c. reversing circuit means for selectively determining the direction of power application to said motor whereby the direction of armature rotation may be changed; and
d. selectively operable braking circuit means for stoping the rotation of said armature including,
i. direction sensing means for determining the direction of armature rotation, and
ii. means responsive to said direction sensing means and associated with said reversing sensing means for controlling said bridge circuit to apply power to said motor in a direction opposite to that to drive the motor in the then existing direction of rotation.

3,882,366
MOTOR SPEED CONTROL SYSTEM

Kenneth Clunis, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 234,255, March 13, 1972, abandoned. This application Nov. 5, 1973, Ser. No. 412,816
Int. Cl. H02p 5/00; H02k 17/44
U.S. Cl. 318—326 **10 Claims**

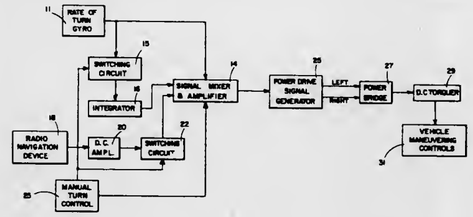


1. A servo system that provides precise motor speed control of a bi-directional motor and comprises:
a control means for furnishing an electrical drive signal to said motor;
a differential means for providing an error signal to said control means; and
a homopolar generator serving as a tachometer for providing a signal indicative of the speed and rotation of the motor to said differential means and having:
means for providing a unipolar magnetic field;
a conductor coupled to the shaft of the motor for rotation in said magnetic field to uniformly intersect said field at all rotational positions; and
at least two pair of stationary brushes for providing a signal to said differential means, which brushes include an outer pair electrically contacting the outside portion of one side of said conductor and an inner pair electrically contacting the inside portion of the same one side of said conductor, and the brushes of said outer pair are electrically connected together and the brushes of said inner pair are electrically connected together but one of the brushes from each pair is disposed to contact said conductor at a position radially opposite from the other brush of the pair in order that the output signal provided by said generator is substantially ripple free.

3,882,367
PULSE-WIDTH MODULATED SERVO TORQUER CONTROL WHEREBY POWER DRAIN IS MINIMUM AT NULL

Gerald F. Dulin, Torrance, Calif., assignor to Astronautics Corporation of America, Milwaukee, Wis.

Filed Apr. 24, 1972, Ser. No. 246,993
Int. Cl. G05b 11/28
U.S. Cl. 318—599 **14 Claims**

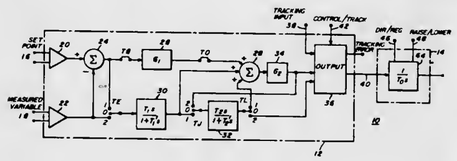


1. In an autopilot system for controlling the maneuvering of a vehicle, said system including means for generating a control signal in accordance with a desired yaw attitude of said vehicle, the improvement comprising:
power drive signal generator means for generating electrical power drive in response to said control signal, said power drive signal generator means including first means for generating a first train of DC pulses having a width in accordance with yaw control signals representing yaw in a first direction and second means for generating a second train of DC pulses having a width in accordance with yaw control signals representing yaw in a second direction opposite to said first direction, said first generating means being in an off condition whenever the control signals are zero or represent yaw in the second direction, said second generating means being in an off condition whenever the control signals are zero or represent yaw in the first direction,
power bridge means for receiving said pulse trains,
vehicle maneuvering controls, and
DC torquer means for receiving the output of said power bridge means for driving said vehicle maneuvering controls, said DC torquer means being connected to said power bridge means to receive DC current in one direction in response to said first train of pulses, and DC current in the direction opposite to said one direction in response to said second train of pulses.

3,882,368
APPARATUS AND METHOD FOR AUTOMATIC OR MANUAL PROCESS CONTROL

James T. Carleton, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 14, 1972, Ser. No. 271,857
Int. Cl. G05b 11/42
U.S. Cl. 318—610 **16 Claims**

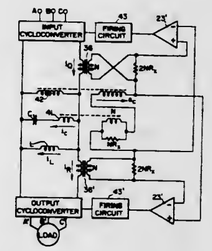


1. A process control system including:
measurement means for generating a feedback signal representative of a selected process variable,
set point means for generating a signal representative of a desired value of the measured variable,
controller means for generating a control signal from the feedback signal and the set point signal, said controller being operative to apply selected control action including at least one form of control action other than integral action to the feedback signal and only integral action to set point signal, and
a final control element responsive to the control signal to modify the process so as to drive the measured variable toward the set point value.

3,882,369
CONTROL OF CYCLOCONVERTER SYSTEMS HAVING A PARALLEL RESONANT COMMUTATION CIRCUIT

William McMurray, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 28, 1973, Ser. No. 419,490
Int. Cl. H02m 5/16
U.S. Cl. 321—6 **20 Claims**



1. A cascaded power converter system comprising
a first power converter circuit and a second phase controlled converter power circuit each having a plurality of controlled power devices that are rendered conductive in sequence at a variable frequency to produce a desired output,
parallel resonant commutation circuit means connected in a link between said first and second converter circuits and including commutation instance means and parallel commutating capacitor means for supplying a variable amount of reactive power to selectively render said controlled power devices nonconductive, and
a firing circuit comprising means for generating a phase controlled converter firing angle retard limit signal which is comprised by a constant turn-off time control circuit for computing an approximately constant turn-off time for said power converter circuit controlled power devices, and further includes additional control circuitry for computing added time for turn-off to obtain approximately simultaneous turn-off of a selected first and second power circuit controlled power device.

3,882,370
CONTROL OF POWER CONVERTERS HAVING A PARALLEL RESONANT COMMUTATION CIRCUIT

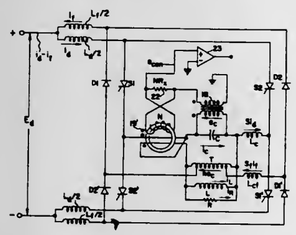
William McMurray, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,006
Int. Cl. H02m 7/52
U.S. Cl. 321—45 R **23 Claims**

21. An efficient power converter comprising
a variable operating frequency power converter circuit having a plurality of controlled power devices that are sequentially rendered conductive at a variable frequency,
a parallel resonant commutation circuit including commutating inductance means and parallel commutating capacitor means for supplying a variable amount of reactive power to render said controlled power devices nonconductive, and

constant turn-off time control means for computing the timing of and generating firing signals to provide an approximately constant turn-off time for said controlled power devices at each operating frequency,

said constant turn-off time control means comprising sensing means for continuously and simultaneously sensing at



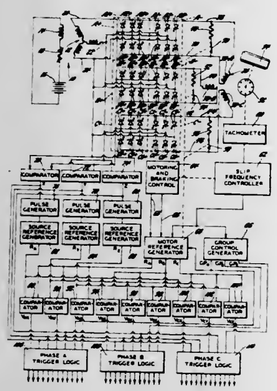
each instant a plurality of selected instantaneous power circuit voltage and current parameters from which the future state of said commutating capacitor means can be determined, and computation cirduit means for cyclically and continuously computing the timing of each firing signal from the sensed instantaneous voltage and current parameters at each instant.

3,882,371

CYCLOCONVERTER TRIGGER TIMING SYSTEM

Daniel W. Shimer, Grosse Pointe Woods, and Michael F. Matouka, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 8, 1974, Ser. No. 458,561
Int. Cl. H02m *5/44*; H02p *5/40*
U.S. Cl. 321—61 **3 Claims**



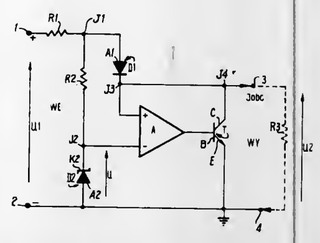
1. A system for supplying an alternating signal at a desired frequency to a load comprising: a polyphase voltage generator for generating polyphase line-to-neutral voltages; a converter coupled between the voltage generator and the load including a pair of polyphase full wave bridge rectifiers, one of said pair of bridge rectifiers including a first set of controlled rectifiers poled for supplying positive current to the load and a second set of controlled rectifiers poled for returning said positive current to the voltage generator and the other of said pair of bridge rectifiers including a third set of controlled rectifiers poled for supplying negative current to the load and a fourth set of controlled rectifiers poled for returning said negative current to the voltage generator; means for generating a number of waveforms each having alternating states, each state representing the firing angle range of a respective controlled rectifier in each fullwave bridge rectifier; means for generating a number of source reference waveforms each having an instantaneous amplitude representing the firing delay angle of a respective controlled rectifier in each full-wave bridge rectifier and having a fast falling trailing edge, the state of the waveform representing the firing angle range of one of the controlled rectifiers coinciding with the source reference waveform whose instantaneous amplitude represents the firing delay angle thereof; means for generating a series of square waves at the desired frequency of the alternating signal, each of said square waves having alternating first and second states; means for generating a series of load reference waveforms having a period coincident with each state of the square waves, each load reference waveform having an instantaneous amplitude representing a desired controlled rectifier firing delay angle and having a fast falling trailing edge; comparator means responsive to the amplitudes of the source reference waveforms and the load reference waveforms for generating firing commands for each of the controlled rectifiers; a number of bistable multivibrators, each of said multivibrators having an output coupled to a respective one of the controlled rectifiers in the pair of full wave bridge rectifiers; means for selectively setting the multivibrators coupled to the controlled rectifiers in the first and second sets to selectively gate said controlled rectifiers into conduction, each one of said last mentioned multivibrators being set upon the simultaneous occurrence of the first state of the square wave signal, the state of the waveform representing the firing angle range of the controlled rectifier coupled thereto and the firing command for the controlled rectifier coupled thereto; means for selectively setting the multivibrators coupled to the controlled rectifiers in the third and fourth sets to selectively gate said controlled rectifiers into conduction, each one of said last mentioned multivibrators being set upon the simultaneous occurrence of the second state of the square wave signal, the state of the waveform representing the firing angle range of the controlled rectifier coupled thereto and the firing command for the controlled rectifier coupled thereto; and means for resetting each multivibrator coupled to a controlled rectifier in a respective one of the first, second, third and fourth sets upon the setting of another one of the multivibrators coupled to a controlled rectifier in the same set, whereby the controlled rectifiers in the pair of full wave bridge rectifiers are selectively gated into conduction to supply the alternating signal at the desired frequency to the load.

3,882,372

PARALLEL VOLTAGE REGULATOR

Wieslaw Martynow, ul. Grojecka 102/149; Stanislaw Wilkowski, ul. Grojecka 102/33, and Wojciech Michalowski, ul. Chlodna 41/74, all of Warsaw, Poland

Filed Sept. 26, 1973, Ser. No. 401,108
Claims priority, application Poland, Oct. 2, 1972, 158039
Int. Cl. G05f *1/60*
U.S. Cl. 323—8 **2 Claims**



1. A parallel voltage regulator having an improved factor of stabilization, said regulator being adapted for use in battery-type measuring instruments, said regulator comprising first

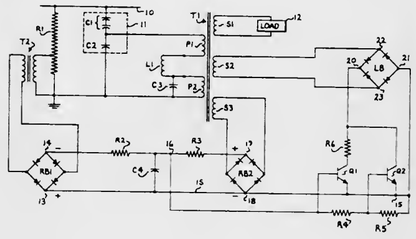
and second output terminals, a differential amplifier including first and second inputs and an output, an n-p-n type regulating transistor, a Zener diode including a cathode and anode, a semi-conducting diode including a cathode and anode, and resistors each including first and second terminals, the first terminal of the first resistor being connected with said first input terminal, the second terminal of the said first resistor being connected with the first terminal of said second resistor, the second terminal of the said second resistor being connected with the cathode of said Zener diode and with the first input of said differential amplifier, a regulating transistor including a base, collector and emitter, the second input of the said differential amplifier being connected with the collector of said regulating transistor and with said first output terminal, the output of the said differential amplifier being connected with the base of the said regulating transistor, and a point at which appears a reference potential of the system, the second input terminal, the anode of Zener diode, the emitter of the said regulating transistor, and said second output terminal being connected with the point of the reference potential of the system, the anode of the semi-conducting diode being connected with the junction between the first resistor and the second resistor, the cathode of the said semi-conducting diode being connected with the second input of said differential amplifier whereby the Zener diode is supplied, through the second resistor with an output voltage increased by the value of voltage drop across the semi-conducting diode, the sum of the current of a load and of the regulating diode flowing through the said semi-conducting diode.

3,882,373

CONTROL DEVICE FOR POWER LINE VOLTAGE MEASURING CIRCUIT

Theodore Brenig, Lynchburg, Va., assignor to General Electric Company

Filed May 6, 1974, Ser. No. 467,103
Int. Cl. G05f *1/56, 1/64*
U.S. Cl. 323—66 **7 Claims**



1. In a power line measuring system having a coupling capacitor, an improved control circuit comprising:

a. a load transformer having a primary winding and a secondary winding coupled thereto;

b. means adapted to couple said primary winding across one of the capacitors of the coupling capacitor;

c. means for deriving a reference voltage from the power line;

d. means for coupling a load to said secondary winding;

e. a controllable load coupled to said transformer, said controllable load having control terminals for receiving control signals to vary the magnitude of said controllable load;

f. means coupled to said transformer for deriving a load voltage therefrom;

g. means for comparing said reference voltage and said load voltage and producing a control signal having a magnitude that varies as a function of the relative magnitudes of said load voltage and said reference voltage;

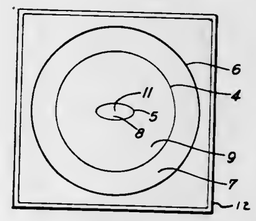
h. and means coupling said control signal to said control terminals of said controllable load for changing said load as a function of said control signal magnitude.

3,882,374

TRANSMITTING-RECEIVING COIL CONFIGURATION

Alden W. McDaniel, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 18, 1974, Ser. No. 462,159
Int. Cl. G01v *3/10*
U.S. Cl. 324—3 **1 Claim**



1. In a metal detector of the type in which a transmitting coil is excited with alternating current of a given phase to generate electromagnetic waves and those of said waves which are reflected off metal induce a current in at least a receiving coil of said detector, which current has a component which is in phase quadrature with said given phase, the improvements comprising, said transmitting coil being of a first diameter, a first receiving coil being concentric and co-planar with said transmitting coil and being of a greater diameter than said transmitting coil, a second receiving coil being co-planar with said first receiving coil and being connected in series opposition therewith, said second receiving coil being of a smaller diameter than said transmitting coil and having a cross section of elliptical shape, each of said coils bounding an area, the difference between the area bounded by said first receiving coil and that bounded by said transmitting coil added to the area bounded by said second receiving coil being equal to the difference between the area bounded by said transmitting coil and that bounded by said second receiving coil, initial balance between said transmitting and receiving coils having been effected by adjusting the diameter of said transmitting coil and final balance having been effected by varying the number of turns on said second receiving coil.

3,882,375

ELECTROMAGNETIC WELL LOGGING SYSTEM HAVING RECEIVER AND NULLING COILS MOUNTED ON SEPARATE MAGNETIC CORES

Joseph Zemanek, Jr., Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,129
Int. Cl. G01v *3/18, 3/10*
U.S. Cl. 324—6 **7 Claims**

1. Apparatus for electromagnetically logging the earth formation surrounding a borehole, including:

a. a pair of coaxially supported magnetic cores,

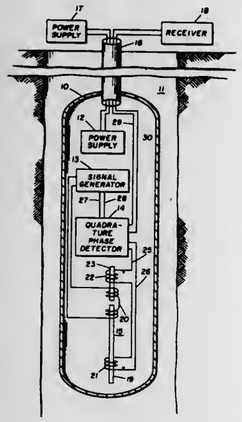
b. a transmitter coil mounted partly on each of said magnetic cores,

c. means for providing alternating current to said transmitter coil to thereby cause an alternating magnetic field in the earth formation surrounding the borehole,

d. a receiver coil mounted on one of said magnetic cores in coaxial-spaced relationship with said transmitter coil,

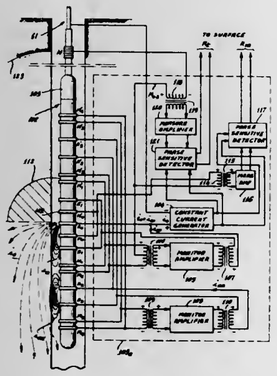
e. a nulling coil connected in series opposition to said receiver coil and mounted on the other of said magnetic cores in such a position that the total induced voltage across the nulling and receiver coils caused by said alter-

nating magnetic field is indicative of the magnetic susceptibility and electrical conductivity of the earth formation, and



f. said magnetic cores being of similar low-reluctance material whereby said induced voltage across the nulling and receiver coils is not affected by temperature variations throughout the length of the borehole.

3,882,376
METHODS AND APPARATUS FOR INVESTIGATING EARTH FORMATIONS
Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.
Continuation of Ser. No. 247,197, April 24, 1972, abandoned, which is a division of Ser. No. 815,265, April 7, 1969, abandoned. This application Dec. 20, 1973, Ser. No. 426,549
Int. Cl. G01v *3/18*
U.S. Cl. 324—10 **11 Claims**



1. Apparatus for measuring a characteristic of earth formations traversed by a borehole, comprising:

a plurality of electrodes including at least one current-emitting electrode, a first pair of measuring electrodes, a first return electrode located between said at least one current-emitting electrode and said first pair of measuring electrodes, a second pair of measuring electrodes, a second current-emitting electrode located between said first and second pairs of measuring electrodes and a second current return electrode located between said second current-emitting electrode and said second pair of measuring electrodes;

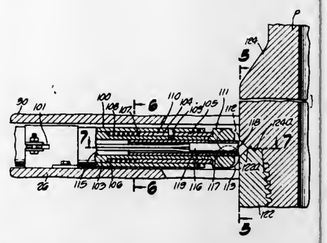
means for mounting said electrodes for passing through said borehole;

means for supplying survey current to said at least one current-emitting electrode for emission into the media surrounding said mounting means said survey current being returned to an electrode spaced from said plurality of electrodes;

means responsive to the potentials on said first pair of measuring electrodes for supplying a first auxiliary current between said at least one current-emitting electrode and said first return electrode of sufficient magnitude to maintain a given potential relationship between the electrodes of said first measuring electrode pair; and

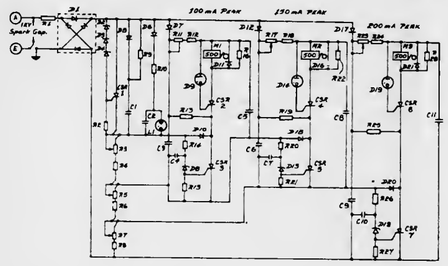
means responsive to the potentials on said second pair of measuring electrodes for supplying a second auxiliary current between said second current-emitting electrode and said second current return electrode of sufficient magnitude to maintain a given relationship between the potentials of said second measuring electrode pair whereby said survey current will be forced into said formation to thereby obtain a measure of a characteristic of said formation.

3,882,377
APPARATUS FOR SENSING ANOMALIES AT THE THREADED PIPE JOINTS OF A PIPE STRING USING A DOUBLE TELESCOPING PROBE
Robert R. Kelly, Hoffman Estates, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 314,285, Dec. 12, 1972. This application Apr. 19, 1974, Ser. No. 462,276
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **2 Claims**



1. Apparatus for sensing anomalies at the threaded pipe joints of a pipe string along which the device is longitudinally moved comprising: an elongated case having a longitudinally extending cylindrical bore therein open at one end thereof, means for supporting said case normal to the pipe string with an open end of said case facing the pipe string and spaced a predetermined distance therefrom, an elongated cylindrical tubular body longitudinally positioned in the bore of said case and having a cylindrical, tubular end portion spaced inwardly from the wall of the cylindrical bore of said case to provide with said wall an annular cylindrical chamber open at said one end of said case, a sleeve received in said chamber for longitudinal sliding movement therein and having one end projecting from said chamber, resilient means biasing said sleeve outwardly of said chamber, means for limiting outward movement of said sleeve in said chamber, means for preventing rotation of said sleeve in said chamber, a head member affixed to said one end of said sleeve, a cylindrical tubular support longitudinally adjustably carried by said head and having one end extending slidably into the bore of the cylindrical tubular end portion of said body, magnetic detector sensor means mounted in the other end of said tubular support and adapted to sense anomalies at the threaded pipe joints, and roller means on said head member and engageable with the pipe joints to roll longitudinally therealong for spacing said head means a fixed distance from said pipe joints.

3,882,378
LEAKAGE SURGE INDICATOR
Peter M. Foord, Eastwood, Australia, assignor to The Electricity Trust of South Australia, Eastwood, Australia
Filed Apr. 12, 1973, Ser. No. 350,340
Int. Cl. G01r *31/02, 19/00*
U.S. Cl. 324—54 **3 Claims**



1. A leakage surge indicator for counting the number of surges of electrical leakage current, above preset magnitudes, occurring across a high voltage insulator of an electrical power transmission line, comprising:

a power supply circuit responsive to the leakage current through said insulator and consisting of rectifiers and capacitors for storing energy from said leakage current;

a current magnitude sensing circuit including a zener diode and a first thyristor responsive to the current through said insulator for developing a voltage across a resistance to overcome the zener diode and turn on the first thyristor;

a time delay circuit connected to said sensing circuit and including a timing capacitor, a neon diode, and a second thyristor said timing capacitor being connected to the neon diode for turning on the second thyristor; and

an impulse counter connected to the second thyristor and actuated by the simultaneous conducting of said first and second thyristors in such a manner that after a count a fixed time must elapse before a further count can be recorded.

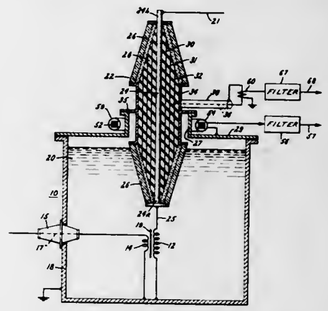
3,882,379
MEANS FOR DETECTING CORONA WITHIN HIGH-VOLTAGE ELECTRICAL APPARATUS
Chi Lung Kang, Princeton, N.J., assignor to General Electric Company, Philadelphia, Pa.
Filed Apr. 11, 1974, Ser. No. 460,237
Int. Cl. G01r *31/02, 31/14*
U.S. Cl. 324—54 **6 Claims**

1. Means for detecting the presence of corona within electrical apparatus comprising: a housing; a high-voltage working part within said housing; and a terminal bushing extending through a wall of said housing for carrying current between a transmission line and said working part, said terminal bushing comprising: a (i) bushing conductor having a first end inside said housing connected to said working part and a second end located outside said housing and adapted to be connected to said transmission line, (ii) a body of electrical insulation surrounding said bushing conductor, (iii) a ground sleeve around a portion of said body of insulation, (iv) a tubular shield embedded in said insulation, surrounding said bushing conductor, and surrounded by said ground sleeve, and (v) a tap extending between said shield and said ground sleeve; and means defining a conductive path between said ground sleeve and ground; said detecting means comprising:

a. means including a first sensor surrounding said bushing conductor and said shield at a location effectively between said conductive path and said second end of said bushing conductor for deriving a first signal substantially proportional to $I_1 - I_2$, where I_1 is the total current in a predetermined high-frequency band flowing into said bushing conductor from said working part and is constituted by $I_{S1} - I_{N1}$, where I_{S1} is a signal current component originating within said apparatus and indicative of corona therein and I_{N1} is a noise current component originating outside said apparatus and flowing through said bushing conductor from said transmission line via said first end; and I_2 is the total current in said predetermined high frequency band flowing between said bushing conductor and said shield through said body of insulation,

b. means sensitive to current in said tap for deriving a second signal substantially proportional to I_2,

c. and means for receiving said first and second signals and for developing a third signal substantially proportional to



$$(I_1 - I_2) + (1 + \frac{Z_2}{Z_1}) I_2 .$$

where Z_1 is the impedance in said predetermined high frequency band of said working part and Z_2 is the impedance in said predetermined high frequency band between said bushing conductor and ground presented to current flow through said insulating body between said bushing conductor and said shield.

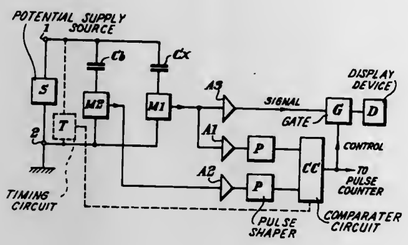
3,882,380
HIGH VOLTAGE COMPONENT TESTING SYSTEMS
Ian Alexander Black, Worthing, Sussex, England, assignor to F. C. Robinson & Partners Limited
Filed Feb. 7, 1973, Ser. No. 330,324
Claims priority, application United Kingdom, Feb. 10, 1972, 6173/72
Int. Cl. G01r *27/26*
U.S. Cl. 324—60 C **17 Claims**

1. A method of testing an electrical component for any partial discharge comprising connecting two separate monitoring units into a circuit arrangement comprising a component to be tested and two terminals of a potential supply source, each of said monitoring units being connected between said two terminals via a respective electrical component, one of which may be the component to be tested, and wherein the output of each monitoring unit is fed to a separate input of a comparator circuit which compares the respective polarities or time relationship of pulses produced by said monitoring units, and the circuit arrangement being such that the polarity or time relationship of pulses caused by any external transient voltage fluctuations imposed upon said potential supply source differs from the corresponding relationship of any respective pulses produced by a partial discharge in any

said component within said circuit arrangement, said compar-

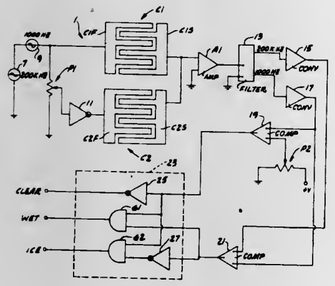
said electrode being a flexible electrical conducting strip

said component within said circuit arrangement, said comparator circuit being such that it responds to produce an output



pulse only in the event of the latter type of pulse relationship, and not in the event of pulses caused by external transients.

3,882,381
SYSTEM FOR DETECTING WET AND ICY SURFACE CONDITIONS
Robert O. Gregory, St. Louis, Mo., assignor to Surface Systems, Inc., Warson Woods, Mo.
Filed Nov. 5, 1973, Ser. No. 412,910
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 R **18 Claims**



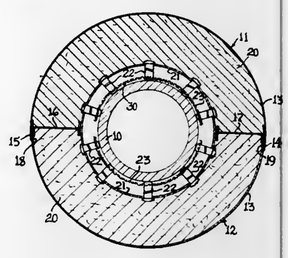
1. A system for detecting wet and icy conditions on the surface of highways, airport runways and the like comprising: a first capacitor adapted to be positioned on a surface the condition of which is to be detected, said capacitor having first and second spaced-apart electrodes adapted to be positioned substantially coplanar with said surface and exposed to atmospheric precipitation thereby to affect the dielectric and capacitance thereof;

a second capacitor comprising first and second electrodes spaced from and substantially identical to and in registration with the aforesaid electrodes and adapted to be positioned so as not to be exposed to atmospheric precipitation;

means for concurrently applying respective out-of-phase time-varying signals to the first electrodes of said capacitors, said second electrodes being commonly connected; and

means for indicating when the magnitude of a signal coupled to the commonly connected second electrodes reaches a predetermined magnitude thereby to provide an indication of the presence of any atmospheric precipitation on said surface.

3,882,382
INSULATED CONDUIT COVER AND LEAK DETECTOR
Lowell Johnson, Chicago, Ill., assignor to Transco Inc., Chicago, Ill.
Filed Sept. 7, 1972, Ser. No. 286,896
Int. Cl. G01r *27/02*
U.S. Cl. 324—65 R **4 Claims**



1. An insulated conduit cover and leak detector comprising prefabricated complementary ringlike sections with each ringlike section including

a. an outer metallic cover plate,

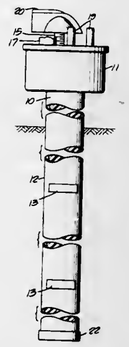
b. an encapsulated mat of insulating material within said cover plate,

c. a current conductive member between said cover plate and said conduit to be covered thereby,

d. spacer means connected between said current conductive member and said cover plate and in contact with the conduit for separating and electrically insulating said current conductive member from said cover plate and from the conduit covered thereby, and

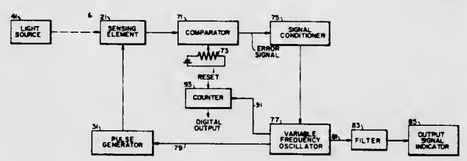
e. electrical means connecting in open circuit said current conductive member, said cover plate, and said conduit and responsive to the escape of moisture through said conduit to close the circuit therebetween.

3,882,383
SOIL MOISTURE SENSING SYSTEM
Charles Matlin, 5552 Lanto St., Bell Gardens, Calif. 90201
Filed June 7, 1973, Ser. No. 367,872
Int. Cl. G01r *27/02*
U.S. Cl. 324—65 R **2 Claims**



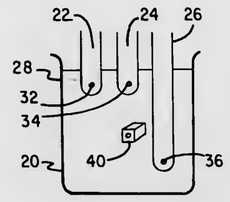
1. In a system for determining the moisture content of soil wherein a soil moisture sensor is an electrical resistive component and where said sensor has a pair of spaced external electrodes in direct contact with the soil, a springlike means for maintaining a constant pressure relationship between each said electrode and the associated soil; said springlike means being a coherent assembly comprising each of said electrode, rubberlike matter and non-electrical conducting tubing; each said electrode being a flexible electrical conducting strip mounted in an annular arrangement on said tube; said mounting being so effected that there is an acute angled opening between each said electrode and said tube into which opening is wedged said rubberlike matter and so constituting the said springlike means.

3,882,384
ENERGY CONVERSION
William F. List, Linthicum, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 173,488, Aug. 20, 1971, Pat. No. 3,846,028. This application Nov. 16, 1973, Ser. No. 416,469
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 R **4 Claims**



1. Condition measuring apparatus including at least one transistor having an emitter, a collector and a base, means for subjecting said transistor to said condition, means connected to said emitter and collector for impressing in circuit with said emitter and collector, a periodic electrical potential, means responsive to the magnitude of the current transmitted by said collector and emitter as a result of said potential, while said transistor is subject to said condition, for varying the periodicity of said potential, and means for deriving a measurement of said condition from said varied periodicity.

3,882,385
METHOD AND APPARATUS FOR STUDYING PARTICLES HAVING WIDELY DIFFERENT SIZES
Wallace H. Coulter, Miami Springs, and Walter R. Hogg, Miami Lakes, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.
Filed Feb. 6, 1974, Ser. No. 439,875
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 CP **27 Claims**



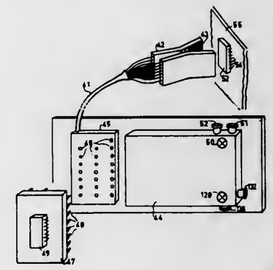
1. A method for studying particles of widely different sizes wherein the particles are suspended in a liquid medium in a vessel and settle through the medium from top to bottom at a rate determined by their size, said method including the steps of:

detecting the concentration at a particular height in said vessel of particles suspended in said liquid medium in excess of a particular size,

allowing the liquid medium and particles suspended therein to pass through a first aperture in a first tube positioned at said particular height in said vessel in response to said concentration at said particular height decreasing below a first detected concentration, and

allowing the liquid medium and particles suspended therein to pass into a second tube, at a second particular height on said beaker through a second aperture substantially greater in size than said first aperture.

3,882,386
DEVICE FOR TESTING OPERATION OF INTEGRATED CIRCUITAL UNITS
Mario Vinsani, Milan, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy
Filed Mar. 10, 1972, Ser. No. 233,675
Claims priority, application Italy, June 9, 1971, 25624/71
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 R **17 Claims**



1. A test device for testing minimal replaceable electronic circuit units which are normally mechanically mounted and electrically connected within an operating digital electronic system, said circuit units each having a plurality of input and output leads, said test device being operative without removing said circuit units from said system and while said system continues to supply system-generated input signals to said input leads of said circuit units, comprising: a reference circuit, extrinsic to said system and identical to the circuit under test; at least a comparator circuit having two inputs and one output; connector means for temporarily and singularly connecting said input lead terminal of said circuit unit under test to the corresponding input lead terminal of the reference circuit unit placing said input leads in parallel connection to receive said system-generated input signals from said digital electronic system and for connecting at least one output terminal of said circuit unit under test to a first input terminal of the comparator circuit; means for connecting the corresponding output terminal of the reference circuit unit to the second input terminal of said comparator circuit, in such a way, that a discordant signal of a predetermined binary level is present at the output of said comparator circuit whenever two signals of two different binary levels are present at the inputs of said comparator circuit; timing means for permitting the detection of said discordant signal only in case it exceeds a predetermined duration; means for memorizing said detected discordant signal; and alarm means controlled by said memorizing means.

3,882,387
ELECTRICAL CURRENT DETECTOR
Dennis G. Vikstrom, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 23, 1973, Ser. No. 344,072
Int. Cl. G01r *1/22, 19/00*
U.S. Cl. 324—117 R **2 Claims**

1. Means for measuring a d.c. current in a conductor comprising,

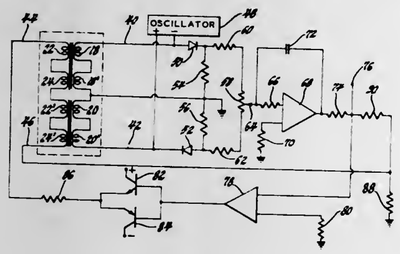
a current sensor for placement in the magnetic field of the current including a unitary folded annular core defining two core halves, the core comprising ferromagnetic material of uniform cross section, so that the core halves carry flux proportional to the magnetic field of the current, and

an excitation winding and a feedback winding on each core half,

and a measuring circuit including,

excitation circuit means for delivering to the excitation windings periodic pulses of unidirectional current sufficient to uniformly saturate the core, and

a detecting circuit connected with the excitation windings and electrically isolated from the periodic pulses having means for differentially summing e.m.f. pulses generated



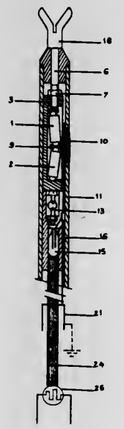
in the excitation windings by core flux change occurring after the termination of each periodic current pulse, and having integrator means for integrating the differential sum thereby producing a signal proportional to the current in the conductor,

and a feedback circuit associated with the detecting circuit and connected to the feedback windings for supplying current for nulling that d.c. flux in the core material which is due to the current being measured.

3,882,388
APPARATUS INCLUDING A PIEZOELECTRIC ELEMENT FOR CHECKING THE OPERATIVENESS OF A VOLTAGE TESTER

Maurice Nery, Paris, France, assignor to IPA Internationale Patent - und Lizenz-Anstalt, Vaduz, Liechtenstein

Continuation of Ser. No. 260,081, June 6, 1972, abandoned. This application Feb. 28, 1974, Ser. No. 447,125
Claims priority, application France, June 7, 1971, 71.20505
Int. Cl. G01r *19/16, 13/36*
U.S. Cl. 324—133 **3 Claims**

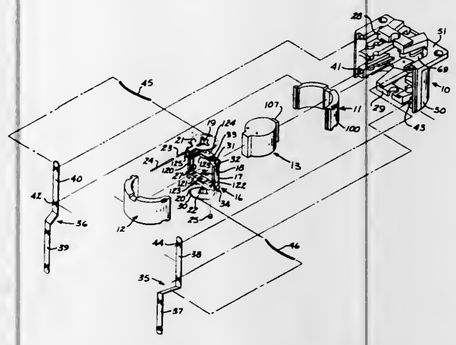


1. In a voltage tester of the type comprising one or more contact elements for engaging a conductor to be tested for its voltage condition, an insulated armature for capacitively cooperating with ground, and an indicating circuit including glow discharge means connected between said contact elements and said armature, the improvement which comprises the provision of means for checking the operativeness of said voltage tester comprising a piezoelectric device, a member for applying a mechanical load thereto to produce a voltage between opposed terminals of the piezoelectric device, electrical leads extending from said terminals, and a spark-gap in one of said leads, said leads being arranged for connection across said indicating circuit of the voltage tester, said piezoelectric device comprising a metallic frame having two terminal support points, two piezoelectric elements having respective ends mounted for pivotal movement about said terminal support points, a metallic terminal member located between their other ends so that the piezoelectric elements form a large obtuse angle, said member for applying the mechanical load being mounted adjacent said metallic terminal member to change said angle.

3,882,389
METER CONSTRUCTION

David B. Pearson, Raritan, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Division of Ser. No. 173,425, Aug. 20, 1971, Pat. No. 3,764,909. This application Aug. 24, 1973, Ser. No. 391,496
Int. Cl. G01r *1/16*
U.S. Cl. 324—151 A **39 Claims**



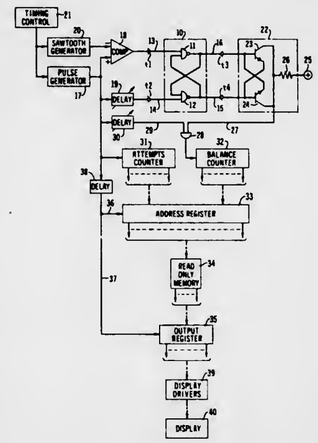
1. A meter comprising a supporting base; a magnetic material yoke mounted on said base; a magnet within and engaging said yoke, said magnet and said yoke having cooperating locating surfaces thereon to locate said magnet within said yoke; fixed cooperating locating surfaces on said base, yoke, and magnet for locating said yoke and magnet on said base; said yoke and magnet defining a moving coil receiving space therebetween; a coil extending around said magnet and through said coil receiving space; a zero adjust element at one end of said coil and supported by said base; said zero adjust element and base including cooperating locating surfaces for locating said zero adjust element at a predetermined position on said base; and spring means connected between said coil and said zero adjust element for changing the at rest position of said coil in response to movement of said zero adjust element.

3,882,390
FLIP-FLOP BALANCE TESTING CIRCUIT

James Allen Lucas, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 31, 1974, Ser. No. 493,326
Int. Cl. G01r *31/28*
U.S. Cl. 324—158 R **13 Claims**

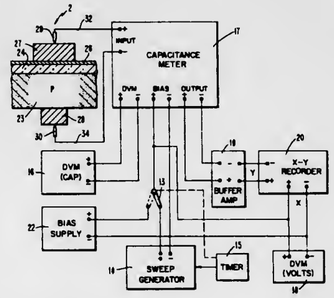
1. An electrical flip-flop balance testing circuit comprising first circuit means for applying a plurality of first input signals to one input of a flip-flop under test at periodic points in time, second circuit means for applying a plurality of second input signals to the other input of said flip-flop at times continuously varying around said periodic points in time, detector circuit means for generating balance signals responsive to equal output signals on the outputs of said flip-flop, first counter circuit means for counting said balance signals during a predetermined time interval for generating a balance sum signal, and second counter means for counting said first input signals during said predetermined time interval for generating an attempt sum signal.



3,882,391
TESTING THE STABILITY OF MOSFET DEVICES

Robert E. Liles, Pleasant Valley, and Gerald D. O'Rourke, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 25, 1973, Ser. No. 373,042
Int. Cl. G01r *31/26*
U.S. Cl. 324—158 D **6 Claims**



1. A method for determining the stability of semiconductor devices which include a phosphosilicate glass film on the surface thereof to trap contaminants comprising the steps of: measuring the initial flatband potential across said film;

applying a fixed potential across said film for a duration sufficient to polarize said film and at a temperature insufficient to cause said contaminants to drift;

remeasuring the flatband voltage to determine the polarization of said film;

determining the amount of phosphosilicate glass in said film using the value of polarization;

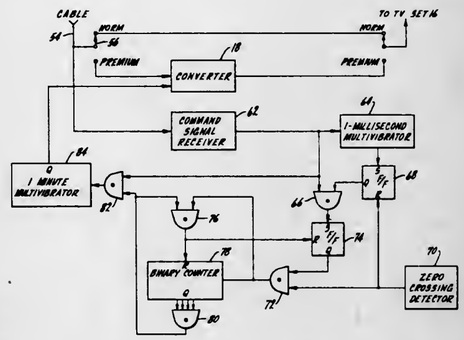
determining the amount of contaminants present using the value of said initial flatband potential and the value of said polarization; and

comparing said determined amounts to insure that the amount of phosphosilicate glass is sufficient to trap the contaminants present.

3,882,392
HOTEL-MOTEL PAY TV SYSTEM

Ralph P. Harney, Wonder Lake, Ill., assignor to Oak Industries, Inc., Crystal Lake, Ill.

Filed Jan. 29, 1973, Ser. No. 327,582
Int. Cl. H04k *1/00*
U.S. Cl. 325—53 **7 Claims**



1. In a subscription TV system having a central station, a plurality of receivers and cable connections therebetween,

means at the central station for sending TV signals to the receivers, means at each receiver for converting the received TV signals to signals useful in the receiver,

means at the central station for repetitively and periodically transmitting authorization signals over the cable to only predetermined selected authorized receivers, and means at each receiver for enabling its converting means for only a predetermined period and in response to and upon receipt of each of its repetitive and periodic specific authorization signals, said period being longer than the time between consecutive authorization signals,

and clock means at the central station and each receiver for synchronizing the sending and receiving of said authorization signals, said clock means being connected to a power line and using power line frequency as a base.

3,882,393
COMMUNICATIONS SYSTEM UTILIZING MODULATION OF THE CHARACTERISTIC POLARIZATIONS OF THE IONOSPHERE

Mark R. Epstein, Chevy Chase, Md., assignor to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 4, 1973, Ser. No. 366,932
Int. Cl. H04b *7/10*
U.S. Cl. 325—56 **3 Claims**

1. A method of communicating by way of the ionosphere comprising the steps of:

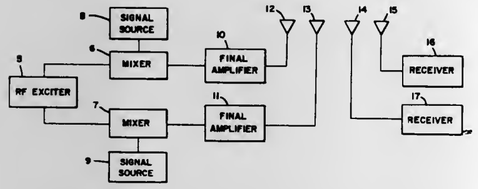
a. propagating a plurality of polarized radio frequency waves;

b. polarizing said propagated waves at the transmitting location to correspond to the polarization of the characteristic waves for propagation along a ray path of the ionosphere in the region where the transmitted energy enters the ionosphere on its way to a receiving location;

c. receiving said waves with receiving means which is polarized to correspond to the polarizations of the characteristic waves for propagation along the ray path of the

ionosphere in the region where the electro-magnetic departs from the ionosphere in the direction proceeding towards the receiving station;

d. wherein the polarization of at least one of the receiving antennas does not correspond to the characteristic polarization within the energy region of entry; and



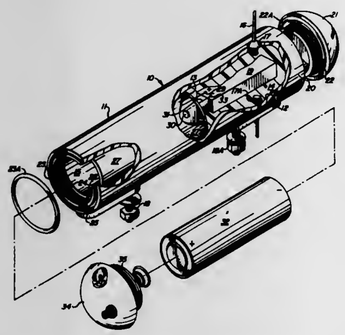
e. wherein the polarization of at least one of the transmitting antennas and at least one of the recieving antennas does not correspond to the characteristic polarization within the energy region of departure.

3,882,394

AIRPLANE CRASH LOCATING DEVICE

Charles A. Koster, Phoenix, and Wayne E. Perry, Tempe, both of Ariz., assignors to Aero Electronics Development Co., Inc., Tempe, Ariz.

Filed Aug. 20, 1973, Ser. No. 389,967
Int. Cl. H04b *1/02*
U.S. Cl. 325—115 **7 Claims**



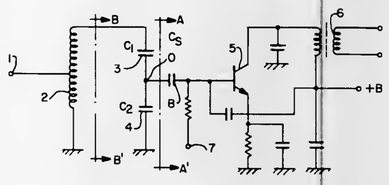
1. An airplane locating device comprising:
an open ended cylinrical housing having an axially disposed bore,
demountable closure caps one for attaching to each end of said housing,
a radially disposed baffle in said bore to provide a transmitter compartment at one end of the housing and a battery compartment at the other end of the housing,
a radiation antenna attached to the outer circumference of the housing at the transmitter compartment end thereof,
switching means mounted in one of said caps for selectively connecting a battery placed in said battery compartment with a transmitter placed in said transmitter compartment,
said switching means comprising a selector switch and an impact switch,
said selector switch in one position directly connecting the battery in said battery compartment to the transmitter in said transmitter compartment and when in another position connecting the battery through said impact switch to the transmitter,
said impact switch upon closure under given impact forces energizing the transmitter, and
electrical means for opening said impact switch.

3,882,395

SOLID STATE VHF AMPLIFIER CIRCUIT FOR ELIMINATING INTERFERENCE CAUSED BY NONLINEARITY OF A TRANSISTOR

Masashi Sato; Koji Tanaka, and Masaaki Miura, all of Gunma, Japan, assignors to Sanyo Electric Company, Ltd., Osaka and Tokyo Sanyo Electric Company, Ltd., Gunma, both of, Japan

Filed Dec. 7, 1972, Ser. No. 312,917
Claims priority, application Japan, Dec. 7, 1971, 46-100551
Int. Cl. H04b *1/12, 1/14*
U.S. Cl. 325—319 **3 Claims**



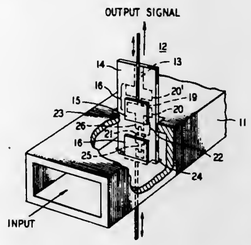
1. In a solid state VHF input circuit for receiving a desired signal said input circuit having a tuning stage including a tuning coil connected to an antenna terminal and a pair of serially connected condensers connected across said tuning coil, and a transistor amplifier stage with AGC having its base coupled to the common terminal between said serially connected condensers to receive the output of said tuning stage, the improvement for eliminating interference problems comprising a third condenser means inserted between said common terminal and said base of said transistor, the capacitance of said third condenser means being selected to prevent reduction of the quality factor of said tuning stage in case of reception in the strong field of broadcast of said desired signal thereby eliminating interference problems caused by the nonlinear characteristics of said transistor.

3,882,396

IMPEDANCE-MATCHED WAVEGUIDE FREQUENCY CONVERTER INTEGRALLY MOUNTED ON STRIPLINE

Martin Victor Schneider, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 10, 1973, Ser. No. 387,343
Int. Cl. H03h *1/02*
U.S. Cl. 325—445 **10 Claims**



7. In combination, a conductively bounded waveguide; means for responding to guided waves within said waveguide via nonlinear conduction, said responding means comprising a planar transmission line penetrating said waveguide and having a dielectric substrate, at least one planar conductor plated on said substrate, and a diode mounted on said substrate within said waveguide and connected to said line by a conductor forming a part of said transmission line; and an impedance-matching dielectric plate movable along said substrate which acts as a guiding surface for motion of said plate along said substrate inside and outside of said waveguide,

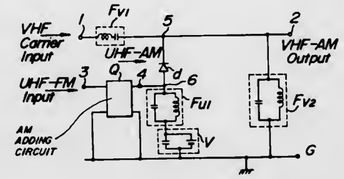
whereby said waveguide and said planar transmission line may be respectively tuned.

3,882,397

CARRIER CONVERTING EQUIPMENT

Yoshihiro Konishi, Sagamihara, Japan, assignor to Nippon Hoso Kyokai, Tokyo, Japan

Filed Nov. 26, 1973, Ser. No. 419,052
Claims priority, application Japan, Nov. 30, 1972, 47-119312; Apr. 18, 1973, 48-43063
Int. Cl. H04b *7/20*
U.S. Cl. 325—449 **12 Claims**



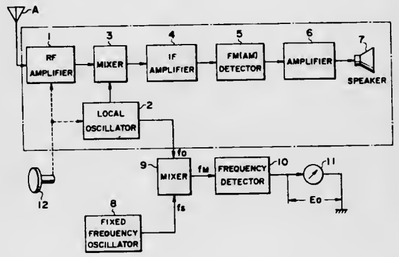
1. A carrier converting equipment for converting an amplitude modulated signal of a first carrier wave into a corresponding amplitude modulation signal of a second carrier wave of which the frequency is different from that of the first carrier wave, the equipment comprising;
a non-linear element which is variable in conductance,
means for applying said first and second carrier waves to said non-linear element, and
means for deriving an amplitude modulated second carrier wave which is modulated in accordance with the variation of the conductance of said non-linear element, which variation corresponds to the amplitude variation of said amplitude modulated first carrier wave so that the second carrier wave is amplitude modulated according to the amplitude of the first carrier wave.

3,882,398

RECEIVING FREQUENCY INDICATOR SYSTEM FOR BROADCAST RECEIVER

Minoru Ogita, and Teruyoshi Matsui, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Jan. 24, 1973, Ser. No. 326,477
Claims priority, application Japan, Feb. 14, 1972, 47-015449; Oct. 25, 1972, 47-123141; Oct. 25, 1972, 47-123142; Nov. 25, 1972, 47-135796
Int. Cl. H04b *1/16*
U.S. Cl. 325—455 **6 Claims**



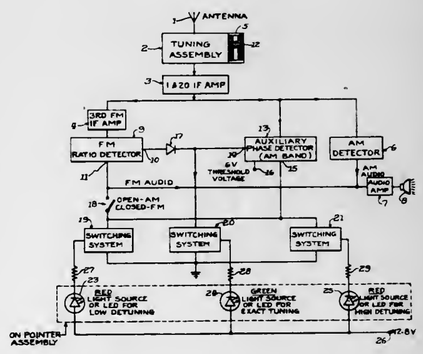
1. In a broadcast receiver tuner for receiving a selected one of the broadcast frequencies, said selected one being designated the received frequency, a frequency indicator system comprising, first means for producing a first signal having a reference frequency, second means for producing a second signal having a frequency variable in accordance with the received frequency, a mixer connected to said first and second means for producing a third signal having a frequency equal to the difference frequency of said first and second signal frequencies, a frequency detector connected to said mixer for converting said third signal into a d.c. signal having an amplitude that varies in accordance with said difference frequency, and a meter connected to said detector and carrying a scale marked in receivable broadcast frequencies.

3,882,399

RADIO OR TELEVISION RECEIVER TUNING INDICATOR

Oleh Karpowycz, Addison, and Walter Klymkiw, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 5, 1973, Ser. No. 412,848
Int. Cl. H03j *3/14*
U.S. Cl. 325—455 **2 Claims**



1. A radio receiver comprising:
means for selectively tuning RF broadcast signals;
a readout display comprising first, second and third light emitting devices for visually indicating the tuning condition of said receiver in respect to a selected broadcast signal;
a source of threshold potential;
phase detector means coupled to said tuning means and comprising a tuned circuit responsive to the IF signal associated with said selected broadcast signal for developing control signals representative of the tuning condition of said receiver,
said detector means further comprising a first output terminal and a second output terminal,
means intercoupling said tuned circuit and said source of threshold potential,
said first output terminal exhibiting a control signal of maximum amplitude upon receipt of said selected broadcast signal and a substantially smaller amplitude control signal when said tuning means is detuned from said selected broadcast signal,
said second output terminal exhibiting a signal of predetermined polarity, relative to said threshold potential, when said tuning means is tuned below the frequency of said selected broadcast signal and
exhibiting a signal of predetermined different polarity, relative to said threshold potential, when said tuning means is tuned above the frequency of said selected broadcast signal;
a first switching system intercoupling said first output terminal and said first light emitting device and responsive only to said maximum amplitude control signal to illuminate said first device when said receiver is tuned to said selected broadcast signal;

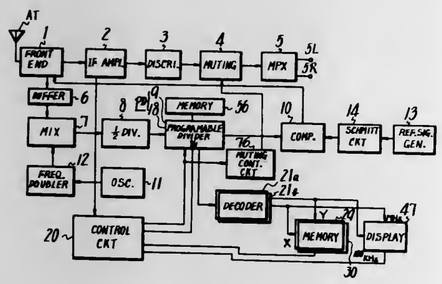
a first auxiliary switching system intercoupling said second output terminal and said second light emitting device and responsive only to a control signal of said predetermined polarity to illuminate said second light emitting device when said tuning means is tuned below the frequency of said selected broadcast signal; and

a second auxiliary switching system intercoupling said second output terminal and said third light emitting device and responsive only to a control signal of said predetermined different polarity to illuminate said third light emitting device when said tuning means is tuned above the frequency of said selected broadcast signal.

3,882,400
BROADCAST RECEIVER

Osamu Hamada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 309,803, Nov. 27, 1972, Pat. No. 3,845,394. This application Jan. 3, 1974, Ser. No. 430,483
Claims priority, application Japan, Jan. 9, 1973, 48-5431
Int. Cl. H04b *1/06*
U.S. Cl. 325—456 **15 Claims**



1. A broadcast receiver comprising:

a. a front end having a variable local oscillator for generating a local frequency signal:

b. a programmable divider coupled to said front end and including dividing means and a counter, said dividing means operating to divide the frequency of said local frequency signal by a factor determined by contents of said counter;

c. pulse generator means for producing pulses for changing the content of said counter;

d. a comparator for comparing the divided local frequency signal derived from said programmable divider with a reference signal to produce a control signal for determining the frequency of said local frequency signal generated by said variable local oscillator;

e. means coupled to said front end for converting the output signal produced by said front end to a low frequency signal and to transmit said low frequency signal to output means;

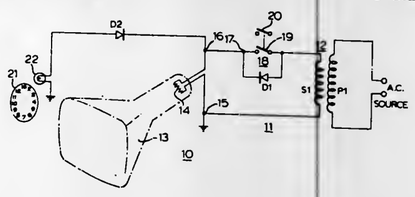
f. a muting circuit connected to said last-mentioned means for selectively inhibiting the transmission of said low frequency signal to said output means; and

g. muting circuit control means activated when the content of said counter is changed for actuating said muting circuit to inhibit said transmission of said low frequency signal, and for sensing when said counter content is not changed for deactuating said muting circuit to enable the transmission of said low frequency signal to said output means.

3,882,401
ILLUMINATING ARRANGEMENT FOR CHANNEL OR STATION SELECTION INDICATOR OF A RECEIVER OF THE STANDBY TYPE

David E. Cleland, Waterloo, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed Mar. 4, 1974, Ser. No. 447,860
Int. Cl. H05b *39/00*
U.S. Cl. 325—492 **5 Claims**

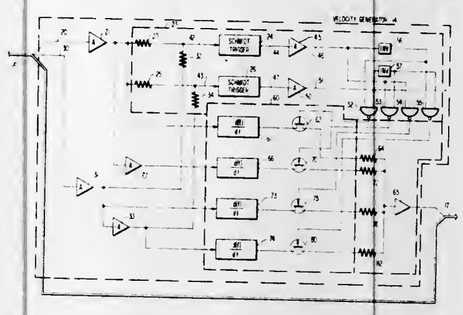


1. In a receiver of the standby type having at least one tube including a cathode filament, a lamp for indicating whether the receiver is on or off, means to be connected to an AC source and including a first diode connected in circuit with said filament for supplying reduced power to said filament during standby operation, a switch connected in shunt with said first diode for bypassing said first diode when said switch is closed to supply full power to said filament during normal operation, and a DC power supply the improvement comprising a second diode connected in a series circuit with said lamp, said series circuit being connected in shunt with said filament and being independent of said DC power supply, said first and second diodes being connected with reverse polarity to inhibit flow of current through said lamp during standby operation but permitting current to flow through said lamp during normal operation.

3,882,402
CIRCUIT FOR TRANSMITTING VELOCITY SIGNALS DERIVED FROM POSITION SIGNALS

Dale J. Jensen, Chelmsford, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 26, 1973, Ser. No. 335,895
Int. Cl. H03b *19/00*; **G01p** *3/52, 13/00*
U.S. Cl. 328—13 **6 Claims**



1. A velocity signal generator responsive to a plurality of phase displaced cyclical sinusoidal position signals for transmitting a velocity signal, said generator comprising:

A. input means for receiving the position signals,

B. multi-phase signal means connected to said input means for generating a plurality of mutually exclusive phase signals synchronized to the position signals, one phase signal being associated with each zero crossing for each position signal,

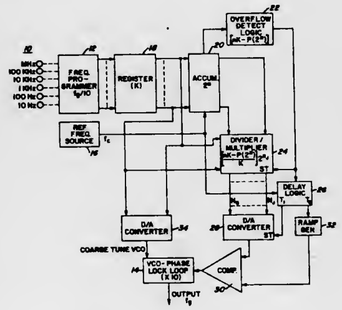
C. gated differentiating means connected to receive each position signal for generating a differentiated position signal as an output signal during intervals determined by a corresponding one of the phase signals, the output signals having the same polarity, and

D. means for summing the output signals from said gated differentiating means, said summing means thereby transmitting the velocity signal.

3,882,403
DIGITAL FREQUENCY SYNTHESIZER

William G. Gerken, Pittsford, N.Y., assignor to General Dynamics, St. Louis, Mo.

Filed Mar. 14, 1974, Ser. No. 451,665
Int. Cl. H03b *19/00*
U.S. Cl. 328—14 **22 Claims**



1. A frequency synthesizer which comprises

a. means for providing a reference frequency signal;

b. means for detecting the number of periods of said reference frequency signal equal to the lowest integral multiple of a number which is a factor of the frequency to be synthesized, which exceeds a certain number;

c. means operated by said detecting means for providing upon detection of said number of periods, a signal which changes in amplitude;

d. means also operated by said detecting means upon the detection of said number of periods for providing a signal level proportional to the difference between said lowest integral multiple and said certain number divided by said number which is a factor of the frequency to be synthesized;

e. means for generating an output when said signal which changes in amplitude and said level are equal to each other; and

f. said output providing the signal having the frequency to be synthesized.

3,882,404
TIMING DEVICE WITH PULSE SPLITTING FEEDBACK

Reynold W. Bell, Santa Clara, Calif., assignor to The Singer Co., New York, N.Y.

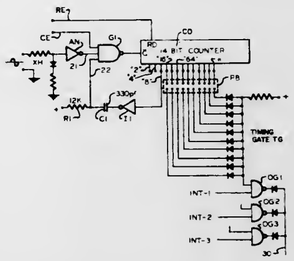
Filed Nov. 29, 1973, Ser. No. 420,067
Int. Cl. H03k *5/00, 21/32*
U.S. Cl. 328—38 **8 Claims**

1. A device for converting a periodic input signal into a periodic output signal having a period which is equal to the sum of the periods of a predetermined number of input signals, comprising:

a gate circuit having at least two inputs, one of which is adapted to receive the input signals for passing the input signals through the gate to provide periodic gated pulses;

a counter which advances in response to the gated pulses for counting the gated pulses and providing the output signal;

feedback means connected to the other input of the gate circuit and responsive to the count condition of the counter for periodically temporarily disabling the gate circuit while an input pulse is passing there though causing a hiatus period in the input pulse during the temporary disabling preceded by a first pulse portion and followed by a last pulse portion, both pulse portions of the input pulse being counted by the counter causing an extra count in the counter for each temporary disabling;



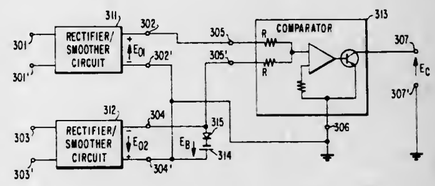
a first delay means within the feedback means for delaying the feedback of the counter count condition to the gate circuit for defining the width of the first pulse portion; and

a second delay means within the feedback means for defining the width of the hiatus period.

3,882,405
ANALOG SIGNAL COMPARATOR CIRCUIT

Mutsunari Tajima, and Isao Komatsu, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Apr. 3, 1973, Ser. No. 347,592
Claims priority, application Japan, Apr. 7, 1972, 47-035450
Int. Cl. H03k *5/08, 5/20*
U.S. Cl. 328—146 **3 Claims**



1. An analog comparator circuit of the type which includes first means for rectifying and smoothing a first analog signal to provide a first output signal at its output, second means for rectifying and smoothing a second analog signal to provide a second output signal at its output, and a comparator means connected to receive said first and second output signals, having a minimum resolution level, and adapted to provide an output voltage which varies depending upon the difference in the absolute value of said first and second output signals, wherein the improvement comprises means connected to the output of said second means for clamping the absolute value of said second output signal to a minimum value greater than said minimum resolution level of said comparator means when said absolute value is smaller than said minimum value.

3,882,406
FAULT SUPPRESSING SIGNAL SELECTION APPARATUS

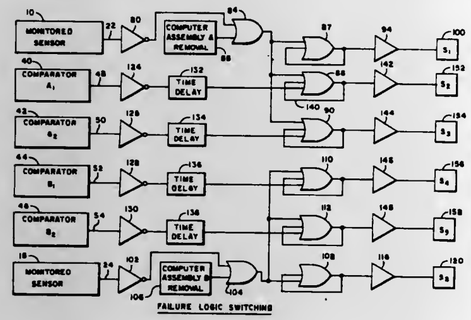
Harry C. Graves, Minneapolis, Minn., and Brian E. Horne, Cheltenham, England, assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 14, 1973, Ser. No. 415,775
Int. Cl. H03k *17/00*
U.S. Cl. 328—150 **8 Claims**

1. Signal selection apparatus for use with a control system having at least three redundant channel signals comprising:

a signal selector means, having a plurality of inputs each for receiving a separate one of said channel signals, said signal selector means for selecting an intermediate value signal from the channel signals received;

comparator means, having two inputs, for comparing signals received at its inputs and generating a switching signal when the received signals differ by a predetermined amount;



connective means for providing said selected intermediate value signal and a first redundant channel signal at the comparator means inputs; and,

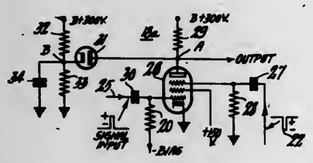
means responsive to said switching signal for substituting a passive signal at the signal selector means input which receives said first redundant channel signal.

3,882,407

AMPLIFIER BLANKING CIRCUIT

A. Donald Arsem, Liverpool, N.Y., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 8, 1950, Ser. No. 154,855
Int. Cl. H01j *19/82*
U.S. Cl. 328—221 **5 Claims**



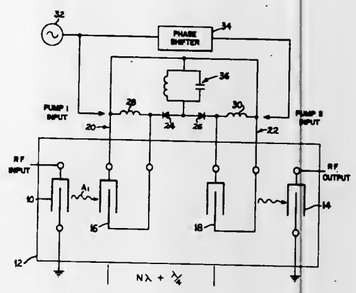
1. In combination, an amplifier for amplifying applied signals comprising an amplifier tube having an anode, a cathode, and at least one control grid, an anode resistor through which an operating voltage is applied to said anode, means for biasing said tube so that it has good transconductance whereby there is substantial anode current flow in the absence of applied signals, said tube having an input circuit through which signal may be applied to said tube with its polarity in the direction to increase the flow of anode current in said tube, said tube having a blanking circuit through which a blanking pulse may be applied to drive said tube to anode current cut-off, means for applying said blanking pulse to said blanking circuit, said anode being at a certain potential in the absence of applied input signal and applied blanking pulses, and an un-bypassed unidirectional conducting device that is direct-current connected between said anode and a point of substantially the same potential as said certain potential, said device having an anode that is connected to the anode of said amplifier tube to permit current flow from said anode to said point.

3,882,408

PARAMETRIC ACOUSTIC SURFACE WAVE AMPLIFIER

Bertram A. Auld, Menlo Park, Calif., assignor to Stanford University, Stanford, Calif.

Filed May 18, 1973, Ser. No. 361,788
Int. Cl. H03f *7/04*
U.S. Cl. 330—5.5 **2 Claims**



1. A parametric acoustic surface wave amplifier which comprises

an acoustic surface wave propagating medium,

means for generating a signal acoustic surface wave to propagate along a predetermined path in said medium,

means for generating two pump signals displaced in phase by 90° and having a predetermined frequency relationship to said signal wave to enable parametric interaction, and

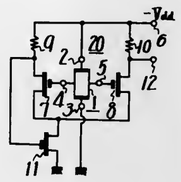
means including a pair of transducers connected to said pump signal generating means and positioned on said medium at positions spaced on odd number of one-quarter wavelengths along said predetermined path such that additive relation of acoustic waves reradiated at said transducers occurs.

3,882,409

DIFFERENTIAL AMPLIFIER CIRCUIT

Atsuo Yagi, Ebina, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 22, 1974, Ser. No. 463,162
Claims priority, application Japan, May 1, 1973, 48-52287
Int. Cl. H03f *15/00*
U.S. Cl. 330—6 **16 Claims**



1. A differential amplifier circuit comprising:

a power supply source having first and second voltage terminals;

signal input means for providing differential input signal voltages; and

at least a first differential amplifier unit including first, second and third field effect transistors each having gate, source and drain electrodes, means connecting the drain-source paths of said first and second field effect transistors in parallel with each other and in series with the drain-source path of said third field effect transistor between said first and second voltage terminals, means for applying said differential input signal voltages to the gate

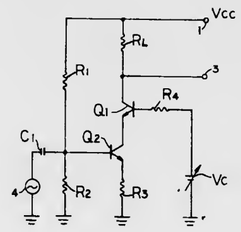
electrodes of said first and second field effect transistors, a signal output terminal connected to said drain electrode of said second field effect transistor for providing an amplified output signal, and a feedback loop connected between said drain electrode of said first field effect transistor and said gate electrode of said third field effect transistor for providing negative feedback in respect to common changes in the currents through the drain electrodes of said first and second field effect transistors and positive feedback in respect to the amplification of said differential input signal voltages.

3,882,410

GAIN CONTROL CIRCUIT

Masayuki Hongu, Tokyo, and Hiromi Kawakami, Yokohama, both of Japan, assignors to Song Corporation, Tokyo, Japan

Filed Dec. 13, 1973, Ser. No. 424,307
Claims priority, application Japan, Dec. 13, 1972, 47-124874; Dec. 13, 1972, 47-124875
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 **11 Claims**



1. A gain control circuit comprising:

A. a constant signal current source transistor having a base-emitter input circuit and an emitter-collector output circuit, said constant signal current source transistor being biased to operate in its active region; and being supplied with a signal voltage;

B. a gain control transistor having base emitter, and collector electrodes;

C. circuit means to connect said constant current source transistor output circuit in series with said gain control transistor emitter electrode;

D. a load impedance connected to said gain control transistor collector electrode; and

E. a gain control voltage source connected to said gain control transistor base electrode for forward-biasing the base-collector junction of said gain control transistor to control the base-collector impedance thereof so as to control the gain of said gain control transistor.

3,882,411

LINEAR AMPLIFIER

Hideo Ashida, Yokohama; Yoshimasa Daido, Tokyo; Hidemitsu Komizo, and Hiroyuki Suzuki, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 9, 1973, Ser. No. 404,322
Claims priority, application Japan, Oct. 12, 1972, 47-102228
Int. Cl. H03f *3/10*
U.S. Cl. 330—34 **9 Claims**

1. A linear amplifier having a negative resistance amplifier circuit including an avalanche diode, said linear amplifier comprising

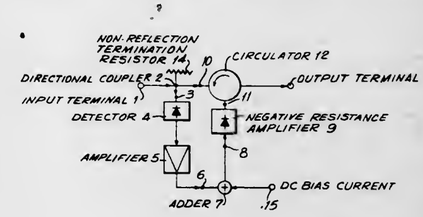
input means for supplying an input signal to the negative resistance amplifier circuit;

coupling means coupled to the input means for diverging part of the input signal;

detector means connected to the coupling means for detecting the part of the input signal;

circuit means connected between the detector means and the negative resistance amplifier circuit for supplying a bias current to the avalanche diode of the negative resistance amplifier circuit and for controlling the bias current in accordance with the amplitude of the detected input signal voltage; and

output means coupled to the negative resistance amplifier circuit for providing an output signal.

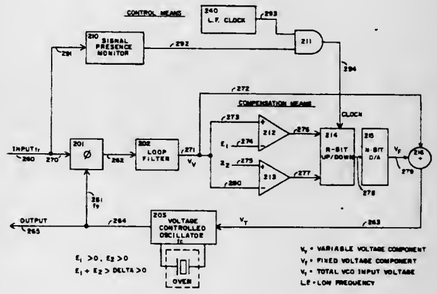


3,882,412

DRIFT COMPENSATED PHASE LOCK LOOP

Garrett Gordon Apple, Jr., Worthington, Ohio, assignor to North Electric Company, Galion, Ohio

Filed Mar. 29, 1974, Ser. No. 456,213
Int. Cl. H03b *3/04*
U.S. Cl. 331—1 A **12 Claims**

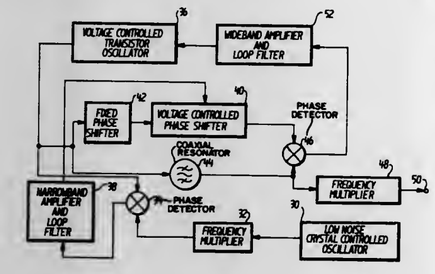


1. In a phase locked loop circuit having a crystal controlled oscillator which has a center operating frequency f_c and output frequency f_o, reference means which provide a reference frequency f_r, first means, including phase comparator means connected to said reference means and to said oscillator for providing an output signal which represents the difference in the values of said frequency signals f_r and f_o, the improvement comprising compensation means, connected to the output of said first means, for receiving said output signal and for generating a frequency representative signal V_f which initially represents the value of the center frequency f_c of said oscillator, including means operative whenever said reference frequency is not present for holding the apparent center frequency of said oscillator to the last reference frequency known, and control means connected between said reference means and said compensation means, said control means being enabled whenever said reference frequency is present to selectively control said compensation means to adjust the value of said frequency representative signal to represent changes in the value of said center frequency f_c of the crystal controlled oscillator.

3,882,413
MICROWAVE SIGNAL SOURCE STABILIZED BY AUTOMATIC FREQUENCY AND PHASE CONTROL LOOPS

Daniel J. Healey, III, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed July 30, 1973, Ser. No. 383,627
Int. Cl. H03b *3/04*
U.S. Cl. 331—9 **13 Claims**



1. A method for controlling the frequency of a signal comprising the steps of:

generating a first signal having a noise power density below a predetermined level at Fourier frequencies above a first Fourier frequency, the frequency of the first signal being automatically controlled about a predetermined center frequency by a frequency control signal provided by a frequency discriminator in an automatic frequency control loop;

generating a second signal having a frequency approximately equal to said center frequency and having a noise power density below said predetermined level at Fourier frequencies below a second Fourier frequency higher than the first Fourier frequency;

generating a phase control signal responsively to a phase comparison between the first and second signals;

modifying the frequency control signal in response to the phase control signal at Fourier frequencies below the second Fourier frequency;

controlling the frequency of the first signal in response to the modified frequency control signal;

modifying the first signal by means of a passive resonant frequency determining element, said passive resonant frequency determining element being part of said frequency control loop; and,

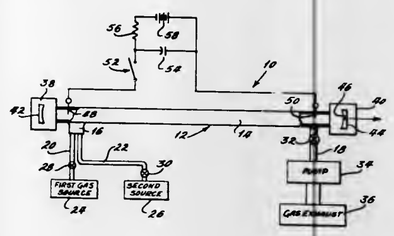
providing said modified first signal as an oscillator output signal.

3,882,414
HALIDE DISSOCIATIVE TRANSFER LASER

William Q. Jeffers, Florissant, and Charles E. Wiswall, Hazelwood, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 5, 1972, Ser. No. 295,195
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 G **1 Claim**

1. A dissociative transfer laser comprising means forming an elongated discharge chamber constructed of a relatively inert substance, a gaseous mixture in said chamber including a mixture of helium gas, hydrogen fluoride gas and molecular hydrogen, said helium gas being present in the mixture in quantities at least equal to about ten times as great by volume as the hydrogen fluoride gas, the pressure of said gaseous mixture being between about 0.01 and 2.0 Torr, optical resonator means capable of sustaining oscillation at the wavelengths 7037.45 A, 7127.77A, 7202.37A and 7800.22A and including a pair of spaced reflectors positioned to be in optical communication with each other through the gaseous mixture, one of said reflectors being located adjacent to each opposite end of the discharge chamber, a pair of spaced electrodes mounted extending into the discharge chamber adjacent opposite ends thereof in the space between the spaced reflectors, and means including a source of voltage connected between said electrodes to produce an electric discharge through the gaseous mixture sufficient to cause at least some of the helium gas to go into a metastable condition and to produce collisions

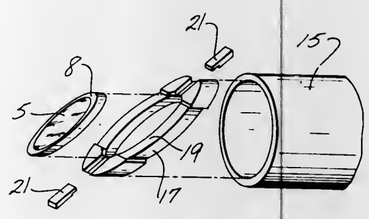


with some of the particles of the hydrogen fluoride gas that are present, said collisions being sufficient to cause dissociation of some of the hydrogen fluoride gas particles whereby some of the fluoride component is dissociated from its hydrogen component, the energy introduced to dissociate the fluoride being sufficient to also electrically excite the dissociated fluoride particles to produce a population inversion of the energy levels and an accompanying visible lasing condition.

3,882,415
GLASS LASER DISCS WITH ANNULAR ALKALI LEAD BORATE COATINGS AND USES THEREOF

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 13, 1973, Ser. No. 332,057
Int. Cl. H01s *3/16*
U.S. Cl. 331—94.5 E **17 Claims**



1. A glass laser disc having an annular alkali lead borate glass coating capable of absorbing energy at a wave length of 1.06 microns to thereby absorb parasitic oscillations, the glass coating having an index of refraction not more than about 12 percent greater than the index of refraction of the disc, the thermal expansion and contraction of the coating being matched with the disc so that undesirable strains therein are not developed in the disc; the glass coating comprising:

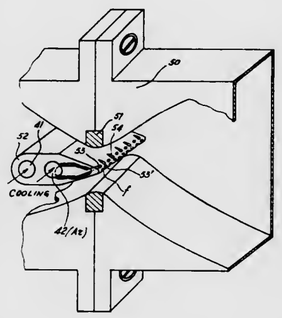
1. a mixture of alkali metal oxides in which at least two different alkali metal oxides are present, and any K_2O that is present is limited to an amount of not substantially more than about 1 percent by weight; and

2. an effective energy-absorbing amount of a heavy metal oxide that absorbs energy at a wave length of about 1.06 microns.

3,882,416
THERMALLY PUMPED GASDYNAMIC LASERS

Roland P. Borghi, Chatenay-Malabry; Marc A. Charpenel, Longjumeau, and Jean-Pierre Taran, Bures-sur-Yvette, France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon, France

Filed July 16, 1973, Ser. No. 379,478
Claims priority, application France, July 17, 1972, 72.25705; Mar. 16, 1973, 73.09584
Int. Cl. H01s *3/22, 3/09*
U.S. Cl. 331—94.5 G **5 Claims**



1. A thermal mixing gas dynamic laser adapted to emit radiation by means of the expansion of a gas mixture containing as a lasing material a gas selected from the group consisting of nitrogen, a carbon oxide and mixtures thereof and further containing a relaxant additive monoatomic gas, said laser comprising:

hot gas generating means for delivering a gas flow containing at least nitrogen at high pressure and high temperature;

a convergent and divergent expanding nozzle having a throat between convergent and divergent portions thereof for expanding said gas flow to supersonic speed located downstream from said generation means;

means for adding carbon oxide to the gas flow upstream of the divergent portion of said nozzle;

an optical resonance cavity for extracting the vibrational energy of the mixed nitrogen and carbon oxide gases and producing a coherent radiation downstream from the divergent portion of said nozzle;

an injector means for adding the relaxant additive monoatomic gas to the gas mixture located in the vicinity of said throat portion of said nozzle and delivering said additive gas substantially along the direction of said gas flow; and, wherein said nozzle is bidimensional having two plane parallel and opposite sides and having other sides which are evolutive and symmetrical and wherein said injector is in the form of a wing which is traversed by a feed package for delivering the gas at the trailing edge of said wing and said wing is pierced by holes for the communication between said feed package and said nozzle.

3,882,417
GAS ION LASER CONSTRUCTION FOR ELECTRICALLY ISOLATING THE PRESSURE GAUGE THEREOF

Charles E. Wood, Manhattan Beach, and Robert S. Witte, Redondo Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sept. 10, 1973, Ser. No. 395,895
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 T **5 Claims**

1. A gas ion laser comprising:

a. a main envelope consisting of an insulating material and including an ionizable laserable gas;

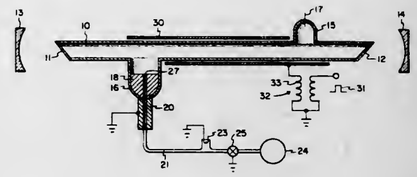
b. a first appendix in communication with said main envelope;

c. an anode disposed in said first appendix;

d. a second appendix in communication with said main envelope;

e. a cathode disposed in said second appendix, said cathode being a cold cathode formed by a slug of metal substantially filling said second appendix and having a central aperture therethrough;

f. a pressure gauge for measuring the pressure in said main envelope;



g. a metallic tube interconnecting said central aperture in said cathode with said pressure gauge, whereby said anode, said cathode and said pressure gauge are interconnected in series to permit a continuous gas movement therein, said metallic tube extending partially through the central aperture in said cathode;

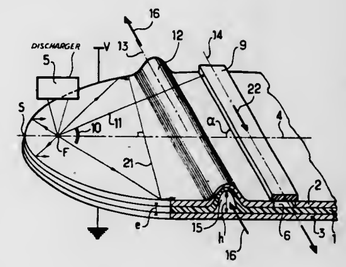
h. means coupled to said anode and to said cathode for applying an electric potential thereto and for creating a discharge through said main envelope in the laserable gas; and

i. means optically coupled to said main envelope for stimulating a coherent beam of radiation from the laserable gas.

3,882,418
PARALLEL PLATE TRANSMISSION LINE LASER EXCITATION SYSTEM

Bruno Godard, Gif-sur-Yvette, and Bernard Lacour, Villebon-sur-Yvette, Palaiseau, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed June 21, 1974, Ser. No. 481,725
Claims priority, application France, June 22, 1973, 73.22972
Int. Cl. H01s *3/09, 3/22*
U.S. Cl. 331—94.5 G **8 Claims**



1. In a laser generator including: an active gaseous medium; an electric excitation line formed by an insulating plate inserted between a first metallic plate and a second metallic plate, an edge of the said plates being formed in the shape of a parabola, the foci as well as the apices of the parabolas being respectively arranged on the same straight line perpendicular to the plane of the plates, the metallic plates being parallel to one another and connected to a voltage source, the first metallic plate having at least one slot separating it into two distinct parts, the common axis of the parabolas forming an angle α greater than zero with the slot; means for maintaining an

active gaseous medium in the said slot, comprising a longitudi-

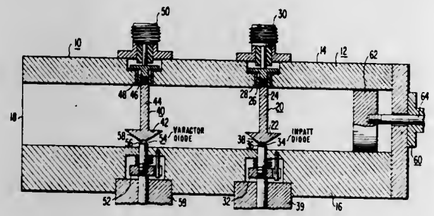
active gaseous medium in the said slot, comprising a longitudinal blade closing the slot and fixed to the said two parts of the first metallic plate; and means for generating a current wave in the said line, comprising a release circuit for setting up a substantially punctiform discharge between the said metallic plates at the level of the foci of the parabolas; and comprising the improvement wherein: in the immediate vicinity of said slot (6) and on the side of said release circuit (5), said insulating plate (1) as well as said first metallic plate (2) form a projecting part (12) so that a cavity (15) having an axis (13) substantially parallel to the axis (4) of the slot(6) is formed between the insulating plate (1) and said second metallic plate (3); and said cavity (15) contains at least one fluid having a dielectric rigidity whose value is, on the one hand, less than the value of the dielectric rigidity of the insulating material forming said insulating plate (1) and, on the other hand, adjusted in such a way that any over-voltage induced in the electric excitation line at the time of the setting up of a first discharge between between the metallic plates (2, 3) at the level of the foci (F) of the parabolas causes a second discharge between the said metallic plates (2, 3) exclusively through the fluid in the said cavity (15).

3,882,419

VARACTOR TUNED IMPATT DIODE MICROWAVE OSCILLATOR

George Allan Swartz, Princeton, and Cheng Paul Wen, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 1, 1974, Ser. No. 447,221
Int. Cl. H03b *7/14*
U.S. Cl. 331—96 **5 Claims**



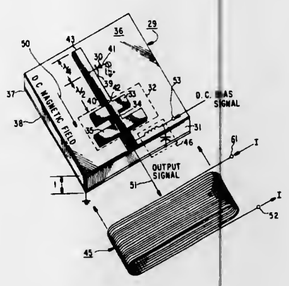
1. A frequency tuned microwave oscillator comprising:
a waveguide section having a moveable short-circuiting piston at one end;
first and second electrically coupled radial cavity resonators within said waveguide section, each of said resonators being formed by a circular disc mounted on one wall of said waveguide section and the opposite wall of said waveguide section, said disc having a tapered surface facing said opposite wall and defining thereby the cavity of said resonator;
said second cavity resonator being positioned in said waveguide section between said first cavity resonator and said moveable short circuiting piston and separated from said first cavity resonator by a distance which is substantially equal to an integral number of half-wavelengths of the generated microwave signal;
said moveable short-circuiting piston being adjusted to be separated from said second cavity resonator by a distance which is substantially equal to an integral number of half-wavelengths of the generated microwave signal;
a microwave generating element disposed within said first cavity resonator; and
a variable reactance element disposed within said second cavity resonator.

3,882,420

MAGNETICALLY TUNABLE FERRITE STRIPLINE TRAPATT MODE OSCILLATOR AND AMPLIFIER CIRCUITS

Shing-Gong Liu, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 24, 1974, Ser. No. 473,210
Int. Cl. H03b *3/04, 7/14*; **H03f** *3/10*
U.S. Cl. 331—99 **7 Claims**



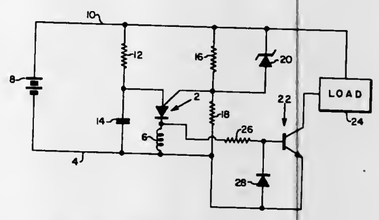
1. Apparatus comprising:
an active element having at least two input terminals and exhibiting a current-voltage characteristic including a negative resistance portion for causing said element to operate in a Trapatt mode in response to a bias signal exceeding a predetermined threshold magnitude;
a transmission line circuit on a ferrite substrate including said element operating in said Trapatt mode and generating signals at a desired frequency during periods when said bias signal exceeds said predetermined threshold magnitude, said transmission line circuit having a first magnetically tunable portion determining said desired frequency and a second portion having a magnetically tunable impedance for operating said element in said Trapatt mode.

3,882,421

LOW POWER PULSE GENERATOR

Jeffrey P. Stein, Devon, Pa., assignor to Honeywell, Inc., Minneapolis, Minn.

Continuation of Ser. No. 256,904, May 25, 1972, abandoned.
This application June 29, 1973, Ser. No. 375,100
Int. Cl. H03k *3/335*
U.S. Cl. 331—111 **6 Claims**



1. A pulse generator comprising:
a programmable unijunction transistor having an anode electrode, a cathode electrode and a gate electrode;
energizing means connected to said anode electrode and to said cathode electrode to energize said unijunction transistor into a current conducting state;
de-energizing means connected to said gate electrode to de-energize said unijunction transistor to terminate said current conducting state after a predetermined time following the energizing of said unijunction transistor by said energizing means,

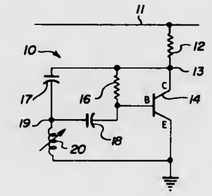
said de-energizing means including current path means providing a current path to said gate electrode after said predetermined time, said current path having a current demand greater than the current capable of being supplied by said unijunction transistor from said gate electrode,
said current path means including a first current path means connected between said gate electrode and a source of energizing current and a second current path means connected between said gate electrode and said source of energizing current and arranged to provide a low impedance current path upon the occurrence of a predetermined current in said first current path means,
said second current path means including a Zener diode and said first current path means including a voltage generator means arranged to produce a voltage representative of a current flow in said first current path means and circuit means connecting said voltage generator means to said Zener diode to back-bias said Zener diode into a nonconducting state upon the occurrence of a first level of current flow in said first current path and to bias said Zener diode into a conducting state upon the occurrence of a second level of current flow in said first current path means.

3,882,422

LC AND CRYSTAL TRANSISTOR OSCILLATORS

Karol Freed, 1424 N. Walnut, Arlington Heights, Ill. 60004

Filed May 6, 1974, Ser. No. 467,261
Int. Cl. H03b *5/12, 5/36*
U.S. Cl. 331—116 R **10 Claims**



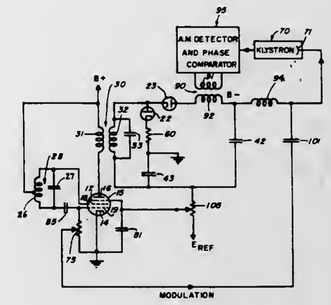
1. An oscillator circuit comprising: solid state amplifier means having a common, an output and a control electrode, first circuit means coupled to a supply voltage and to said solid state amplifier means for applying operating voltage to said electrodes of said solid state amplifier means, said operating voltage being of a predetermined value, inductive reactance means, capacitive reactance means connected in series with said inductive reactance means to form a resonant circuit therewith and to form a coupling circuit point therebetween, second circuit means for connecting said inductive reactance means to said common electrode, third circuit means for connecting said capacitive reactance means to said output electrode, and a coupling capacitor connected between said coupling circuit point and said control electrode for providing feedback to sustain the oscillation of said oscillator circuit, and to effectively isolate said resonant circuit from other circuit parameters, whereby the peak-to-peak amplitude of the oscillations obtained from the oscillator circuit is substantially equal to the supply voltage and the frequency of the oscillations thereof is substantially dependent upon the value of the inductive reactance means and the capacitive reactance means forming the resonant circuit.

3,882,423

KLYSTRON CONTROL CIRCUIT

Harry L. Gerwin, Bethesda, Md.; Robert J. Darcey, and Houston D. Hoyt, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 12, 1957, Ser. No. 671,672
Int. Cl. H01s *1/02*
U.S. Cl. 332—7 **2 Claims**



1. A klystron modulator and mode control circuit, comprising in combination: an electron-coupled oscillator having a pentode with an ungrounded suppressor grid; a transformer having its primary winding connected in the plate circuit of said pentode tube; a voltage doubler comprising first and second diodes and first and second capacitors, the plate of said first diode and the cathode of said second diode being connected to one end of the secondary winding of said transformer, one end of said first capacitor being connected to the cathode of said first diode, said cathode of said first diode being at circuit ground, and one end of said second capacitor being connected to the plate of said second diode, the other ends of said first and second capacitors being connected to the other end of said secondary winding; a potentiometer having its ends connected between a reference voltage and the junction of said first and second capacitors and its variable arm connected to the suppressor grid of said pentode tube, movement of the variable arm of said potentiometer varying the voltage applied to said suppressor grid causing the negative output voltage of said voltage doubler obtained between the plate of said second diode and circuit ground to be varied; means for applying a portion of said electron-coupled oscillator voltage to the repeller of a klystron to cause modulation of said klystron; means for applying said negative output voltage of said voltage doubler to said repeller to provide a negative bias for said repeller; and means for controlling said negative bias on said repeller to maintain said klystron on mode center, said means for controlling including means for injecting a correction voltage in series with said second diode, said correction voltage having an amplitude proportional to the amount said repeller bias is off mode center and having a phase relative to said klystron modulating voltage such that said output voltage of said voltage doubler changes in the amount necessary to place said klystron on mode center.

3,882,424

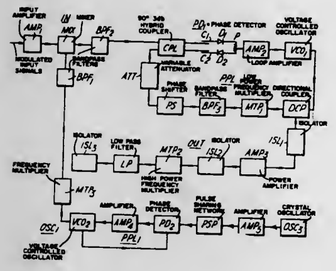
PHASE LOCKED LOOP TRANSMITTER

Pierre G. M. J. Debois, Duffel; Albert F. Liekens, Gravenwezel, and Gilbert Quaghebeur, Bornem, all of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 27, 1973, Ser. No. 429,006
Claims priority, application Belgium, Dec. 29, 1972, 793483
Int. Cl. H03c *3/08*
U.S. Cl. 332—18 **8 Claims**

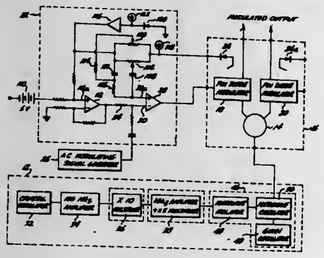
1. A phase locked loop transmitter comprising:

a first source of modulated input signals;
a second source of stabilized reference signals having a given frequency;
a mixer coupled to said first and second sources;
a phase locked loop including
a phase detector having two inputs, one of said two inputs of said phase detector being coupled to the output of said mixer,
a loop amplifier coupled to the output of said phase detector,
a voltage controlled oscillator having its frequency control input coupled to the output of said loop amplifier providing an output signal having a frequency equal to a submultiple of said given frequency,
a directional coupler coupled to the output of said controlled oscillator,



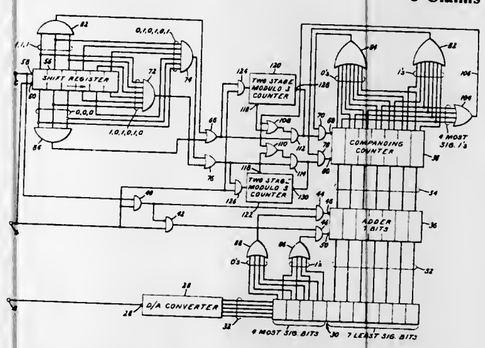
a low power frequency multiplier coupled to one output of said directional coupler to provide an output signal having a frequency equal to said given frequency,
a bandpass filter coupled to the output of said low power frequency multiplier,
a phase shifter coupled to the output of said bandpass filter, and
a variable attenuator coupled between the output of said phase shifter and the other of said two inputs of said phase detector;
a power amplifier coupled to the other output of said directional coupler; and
a high power frequency multiplier coupled to the output of said power amplifier to provide an output signal having said given frequency for said transmitter.

3,882,425
LINEAR MICROWAVE MODULATOR
Darrell A. Briley, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Aug. 27, 1973, Ser. No. 392,129
Int. Cl. H03c *1/06*
U.S. Cl. 332—37 D **16 Claims**



1. A microwave modulator, comprising in combination:
means for generating a carrier signal;
means for generating a reference signal;
modulator means responsive to a modulator drive signal and operative to produce a modulated output signal comprising said carrier signal and a modulation component;
circuit means for compensating for variations in the response of said detecting means due to environmental temperature changes;
means having an output for detecting said modulation component;
means coupled to said modulation signal generating means and said detecting means for determining a signal difference between said reference signal and said modulation component, and operative to derive said modulator drive signal, which modulator drive signal is a function of said difference signal; and,
means applying said modulator drive signal to said modulator means.

3,882,426
INCREMENT VARYING MEANS FOR INCREMENTAL ENCODER AND DECODER
David F. Hoeschele, Jr., Norristown, Pa., assignor to General Electric Company, Fairfield, Conn.
Continuation-in-part of Ser. No. 361,598, May 18, 1973, Pat. No. 3,835,385. This application July 16, 1973, Ser. No. 379,435
Int. Cl. H03k *13/22*
U.S. Cl. 332—11 D **5 Claims**



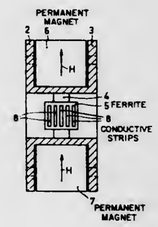
1. In apparatus for the interconversion of a first representation of an information signal by a time-varying amplitude with a second representation of the same information signal by a succession of pulse signals each having one of two possible logical significances which represent the sign of the change in the amplitude of the first representation since the occurrence of the last preceding pulse signal of the second representation, which comprises:
a source of clock pulses connected to herein subsequently recited pulse sequence analysis means, digital companding counter means, and adder means;
pulse sequence analysis means to receive the said pulse signals in sequence and to produce responsively thereto a first pulse sequence output signal when a first predetermined number of pulses in the sequence are all of the same logical significance and a second pulse sequence output signal when a second predetermined number of pulses in the sequence are of alternate logical significance;
digital companding counter means connected to be stepped to be increased in registration during the existence of a first pulse sequence output signal and to be decreased in registration during the existence of a second pulse sequence output signal;
adder means connected to receive the registration of the companding counter means and, responsively to a pulse signal of the second representation of first logical significance to add, and responsively to a pulse signal of the second representation of second logical significance to subtract, the registration of the companding counter means to and from the content of
digital storage means, which are connected to
digital to analogue converter means whose output is the said first representation;
the improvement which comprises:
companding counter control means comprising:
companding counter registration function means connected to registration outputs of the said companding counter, and, responsively thereto, to control
stepping impulse control means to step the companding counter means at a maximum rate when the companding counter registration is greater than a predetermined value and to step the companding counter means at a lower rate when the companding counter registration is not greater than the predetermined value.

3,882,427
TRANSIENT DAMPING MEANS FOR AN ELECTRICAL INSTALLATION
Herbert M. Pflanz, Westwood, Mass., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 20, 1972, Ser. No. 316,985
Int. Cl. H04b *3/28*; **178** *45*
U.S. Cl. 333—12 **25 Claims**

1. An apparatus for connection in circuit with an electrical conductor means to substantially attenuate high frequency electrical voltages and currents in said circuit, but which transmits electrical voltages and currents of normal power frequency or direct current without substantial attenuation thereof, comprising a body of magnetic material, a slot extending inwardly and lengthwise of said body from an outer peripheral surface of said body, and an electrical conductor member of non-magnetic material received in said slot in magnetically inductive relation to said magnetic body, said conductor member extending to contiguous the outer peripheral end of said slot, said conductor member having substantially greater electrical conductivity than said magnetic material, said conductor member being adapted to be connected in circuit with said conductor means whereby to transmit through said conductor member without substantial attenuation electrical currents of normal power frequency and direct current but with substantial attentuation of high frequency electrical voltages and currents.

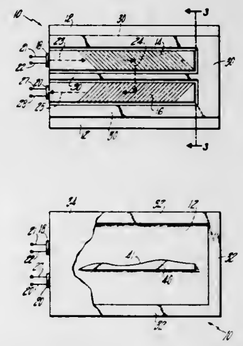
2. An apparatus as defined in claim 1 in which said conductor member is of triangular cross section, with an apex of the triangular cross section being located at a peripherally outer portion of said slot, whereby to provide a reduced cross-sectional area and hence higher resistance path in the region of said apex for flow of high frequency currents.

3,882,428
NON-RECIPROCAL FIELD DISPLACEMENT ISOLATOR
Johannes Petrus Leenders, and Peter Caspar Stephanus Rutjes, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 14, 1974, Ser. No. 442,471
Claims priority, application Netherlands, Mar. 22, 1973, 73/04001
Int. Cl. H01p *1/32*
U.S. Cl. 333—24.2 **3 Claims**



1. A non-reciprocal field displacement isolator, comprising a rectangular waveguide and a rectangular bar of gyromagnetic material which is arranged in the waveguide at a small distance extending parallel to the waveguide walls, the bar of gyromagnetic material being prepolarised in the direction of the smallest dimension of the waveguide by a static magnetic field, characterized in that electrically properly conductive strips which are insulated from each other by intermediate spaces are provided on the surface of the bar of gyromagnetic material which faces the centre of the waveguide, the longitudinal dimensions of the said strips coinciding with the direction of the static magnetic field.

3,882,429
ULTRASONIC SIGNAL TRANSMISSION DEVICE WITH PHASE RESPONSE SHAPING
Tom Alan Martin, Collinsville, Conn., assignor to Andersen Laboratories, Inc., Bloomfield, Conn.
Filed Mar. 29, 1974, Ser. No. 456,301
Int. Cl. H03h *9/26, 9/30*
U.S. Cl. 333—30 R **17 Claims**



1. An electrical signal transmission device of the acoustic, reflection mode type comprising:
a. a medium for supporting propagation of acoustic energy;
b. a mismatching structure in said medium from which a portion of acoustically propagating energy is reflected;
c. transmitting and receiving transducer means for converting an input electrical signal into an acoustic signal propagating along said medium and for converting a reflected acoustic signal into an output electrical signal; and

d. a region of phase affecting material located on said medium in the path of the reflected acoustic signal, the profile and thickness of said region being predetermined to shape the phase response of said device.

3,882,430

SURFACE ACOUSTIC WAVE DEVICES

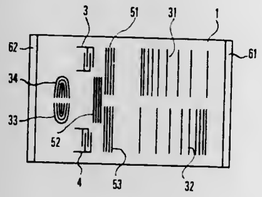
Charles Maerfeld, Paris, France, assignor to Thomson-CSF, Paris, France

Filed June 25, 1974, Ser. No. 482,848

Claims priority, application France, June 29, 1973, 73.23999

Int. Cl. H03h *9/26, 9/30;* **H01v** *7/00*

U.S. Cl. 333—30 R **7 Claims**



1. A surface acoustic wave device comprising a piezoelectric substrate for propagating acoustic waves, an input transducer for converting high frequency electrical waves into acoustic waves for propagating at the surface of said substrate, at least one dispersive grating of non-uniformly spaced discontinuities, and an output transducer for converting the acoustic waves when reflected by said grating, into electrical waves, said grating (2) discontinuities being disposed perpendicularly to the direction of propagation of said acoustic waves, said device further comprising at least one 3 dB coupler (5) of the type having regularly spaced parallel conductive strips arranged between said input (3) and output (4) transducers and said dispersive grating (2), said conductive strips of said coupler (5) being parallel to said discontinuities of said grating (2).

3,882,431

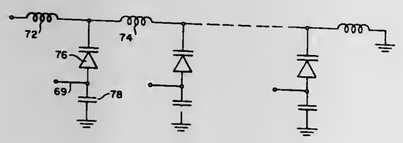
DIGITAL PHASE SHIFTER

Francis W. Hopwood, Severna Park; Stuart S. Horwitz, and Lester K. Staley, both of Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 10, 1973, Ser. No. 387,425

Int. Cl. H03h *7/18*

U.S. Cl. 333—31 R **4 Claims**



1. A digital phase-shifter circuit capable of providing 360° phase shifts for use in phased array applications, comprising: first and second quadrature hybrid means, each having four terminals;

first and second voltage-variable reactance means connected respectively to the second and third terminals of said four terminals of said first quadrature hybrid means;

third and fourth voltage-variable reactance means connected to the second and third terminals respectively of said second quadrature hybrid means, said voltage-variable reactance means acting as reactive loads on their respective quadrature hybrid means,

each of said quadrature hybrid means in combination with their respective voltage-variable-reactance means acting to shift the phase of a input signal by 90° plus the phase shift due to the reactive load on said quadrature hybrid means; and

digital-to-analog converter means acting to receive a digital input and convert said digital input into an analog control voltage, said analog control voltage being applied to each of said voltage-variable reactance means and acting to vary the reactances of said voltage-variable reactance means in accordance with said digital input,

a first terminal of said first quadrature hybrid means acting to receive an input signal, a fourth terminal of said first quadrature hybrid means connected to the first terminal of said second quadrature hybrid means and acting to apply the phase-shifted signal to said second quadrature hybrid means, a fourth terminal of said second quadrature hybrid means providing an output signal with the desired phase shift,

said voltage-variable reactance means comprising:

a varactor diode;

a capacitor connected between the anode of said varactor diode and ground potential and acting to provide an A.C. ground to said varactor diode;

a first inductor connected between the cathode of said varactor diode and ground;

a second inductor connected between the cathode of said varactor diode and an input from said quadrature hybrid means, said inductors acting to linearize the reactive impedance seen by said quadrature hybrid means; and

means to apply an analog control voltage at the anode of said varactor diode in order to vary the reactance of said varactor diode.

3,882,432

RF BROADBAND TRANSMISSION LINE IMPEDANCE MATCHING TRANSFORMER PAIR FOR LESS THAN 4 TO 1 IMPEDANCE TRANSFORMATIONS

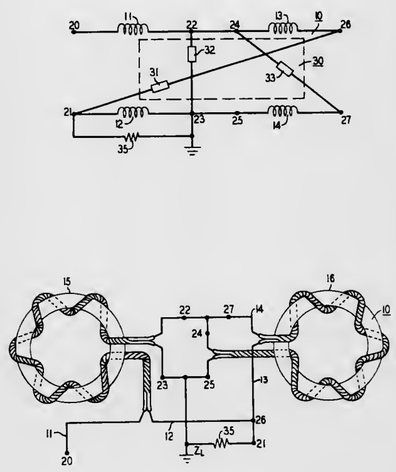
Dennis W. Bowman, Eatontown, and Robert E. Horn, Middletown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 28, 1974, Ser. No. 484,361

Int. Cl. H03h *7/38*

U.S. Cl. 333—32 **7 Claims**

7. A broad band impedance matching device having four conductors coil-wound and serially connected in pairs to form input and output coils in either side of a transmission line and one side of said transmission line being grounded between input and output coils characterized in that a load impedance is connected across said input coil in the grounded side of said transmission line and a network is connected across the two sides of said transmission line, said network having means to produce a ratio of input and output impedance in said device following the series $(n+1/n)^2$ where n is an integer greater than unity.



3,882,434

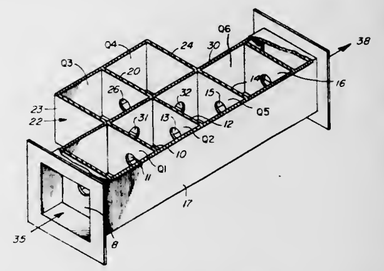
PHASE EQUALIZED FILTER

Ralph Levy, Newton, Mass., assignor to Microwave Development Laboratories, Needham Heights, Mass.

Filed Aug. 1, 1973, Ser. No. 384,719

Int. Cl. H01p *5/04, 7/06;* **H03h** *7/08*

U.S. Cl. 333—73 W **11 Claims**



1. A microwave band-pass filter having a relatively flat group delay and linear phase over the central portion of the pass-band, said filter comprising;

means defining a first series of resonant elements,

means for coupling an input signal to a resonant element of the first series,

the resonant elements in the first series being each directly coupled in consecutive order with its adjacent element,

means defining a second series of resonant elements smaller in number than the number comprising said first series and arranged with each resonant element opposite and in substantial alignment with a different resonant element in the first series,

means coupling from a last resonant element in the first series for obtaining an output signal therefrom,

the resonant elements in the second series being each directly coupled in consecutive order with its adjacent element,

said first and second series being arranged to provide a main path through all of said resonant elements with at least one cross-coupling path being provided between two adjacent elements of the first series,

means for independently tuning each resonant element, and tuning means associated with said one extra cross-coupling path.

3,882,433

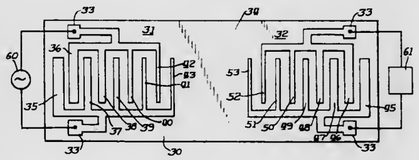
SWIF WITH TRANSDUCERS HAVING VARIED DUTY FACTOR FINGERS FOR TRAP ENHANCEMENT

Sundaram Subramanian, Evanston, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 15, 1974, Ser. No. 442,950

Int. Cl. H03h *9/32, 9/26;* **H01v** *7/00*

U.S. Cl. 333—72 **4 Claims**



1. An acoustic surface wave filter having a predetermined transfer function which defines a major passband essentially centered about a synchronous frequency and adjacent traps, said filter comprising:

a piezoelectric surface wave propagating medium having an attenuation characteristic and defining a propagating surface; and

a transmitting transducer and a receiving transducer formed on said surface for respectively launching and receiving surface waves, each transducer including a pair of interdigitated comb-like arrays of spaced electrically conductive fingers, said attenuation characteristic resulting in substantial reduction of surface waves propagating across said transducers, at least one of said transducers having a duty factor gradient having a maximum for conductive fingers farthest from the other of said transducers and a minimum for those nearest said other transducer, said gradient compensating for said surface wave reduction.

3,882,435

LATCH ATTACHMENT FOR AN ELECTROMAGNETICALLY OPERATED SWITCHING DEVICE

William E. Grass, Milwaukee, and Walter C. Karch, Grafton, both of Wis., assignors to Square D Company, Park Ridge, Ill.

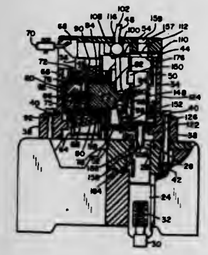
Filed June 28, 1974, Ser. No. 484,058

Int. Cl. H01h *50/32*

U.S. Cl. 335—164 **11 Claims**

1. A latching device for releasably maintaining a linearly movable switching device operator in an operated position, said latching device comprising: a housing having a rear end mountable on a front end of the switching device, a latching lever having a latching surface movable between a released and a latching position in the housing, a spring biasing the latching lever and the latching surface toward the latching position, a latching assembly including: a movable plunger having a rear end engaging a front end of the operator and front end extending through an opening in a front end of the housing, a spring biasing the plunger toward the operator, a latch member movably mounted on the plunger providing a latching surface spaced between the ends of the plunger, adjustment means interconnecting the plunger and the latch member, said adjustment means including a constraining

means for preventing relative movement between the latch member and the plunger when the plunger is moved by the spring and permitting relative movement between the latch member and plunger when a manual force applied to the front



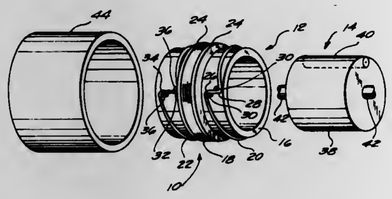
end of the plunger causes the operator to move to the operated position and the latching surface on the latch member to move to a position where it is engaged by the latching surface on the latching lever when the latching lever is at the latching position.

3,882,436

DIFFERENTIAL TRANSFORMER

Jacob Chass, Forest Hills, N.Y., assignor to Pickering & Company, Inc., Plainview, Long Island, N.Y.

Filed Aug. 5, 1974, Ser. No. 494,490
Int. Cl. H01f *21/06*
U.S. Cl. 336—83 **8 Claims**



1. A rotary variable differential transformer comprising: an elongated bobbin formed of non-magnetic, non-conductive material; a primary coil wound circumferentially about said bobbin; a secondary coil adjacent said primary coil wound circumferentially about said bobbin and extending longitudinally from a first position proximal said primary coil to a second position distal said primary coil and thereafter returning to said first position; a rotor assembly disposed for rotation within said bobbin; and an elongated ferromagnetic core secured to said rotor assembly for rotation therewith, said core extending longitudinally between said primary and secondary coils and providing magnetic coupling therebetween.

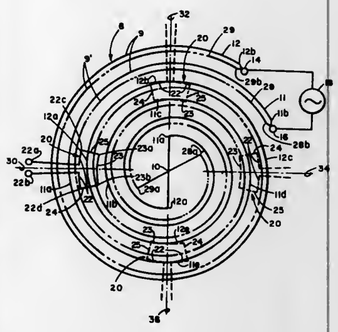
3,882,437

HARMONIC CANCELLATION IN A VARIABLE COUPLING TRANSFORMER

Robert Z. Geller, Mount Kisco, N.Y., assignor to Inductosyn Corporation, Valhalla, N.Y.

Filed July 13, 1973, Ser. No. 379,142
Int. Cl. H01f *21/04*
U.S. Cl. 336—123 **10 Claims**

1. A position-measuring transformer, comprising:
a first winding which defines substantially within a primary plane a pair of concentric spiral conductors of equal and constant pitch with a fixed angular displacement therebetween;
a second winding rotatable with respect to said first winding about the axis of the spiral conductors, said second winding being substantially within a secondary plane parallel to said primary plane and having a pair of arcuate conductors concentric with said first winding, said arcuate conductors having a radial displacement therebetween substantially equal to an integral multiple of one-half of said pitch; and
a third winding which is substantially within said primary plane concentric with said first winding and is defined by spiral conductors having said equal and constant pitch and said fixed angular displacement between each other, corresponding conductors of said first and third windings having a known angular displacement therebetween for the cancellation of a spatial harmonic of a spatial fundamental of a signal provided through said second winding in response to a carrier signal being provided to said first and third windings concurrently with said relative rotation where said known angular displacement is in accordance with a relationship which is given as:



$$\theta = K \frac{360}{2n}$$

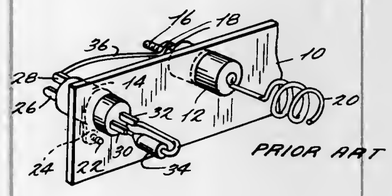
where
θ is said known angular displacement in degrees;
K is an odd integer; and
n is the order of the cancelled spatial harmonic component.

3,882,438

COMBINATION TERMINAL AND FUSE HOLDER ARRANGEMENT FOR AN ELECTRICAL CIRCUIT

Howard L. Bourner, Nashville, Tenn., assignor to Pep Industries, Inc., Nashville, Tenn.

Filed Apr. 5, 1974, Ser. No. 458,441
Int. Cl. H01h *85/16*
U.S. Cl. 337—237 **8 Claims**



1. A combined terminal and fuse holder adapted to project through an aperture of a supporting plate associated with an electrical circuit arrangement, such as an open coil heater assembly, comprising:

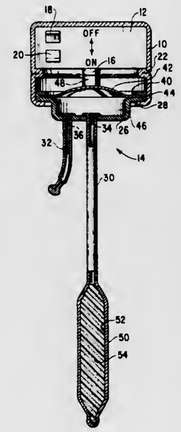
an insulator element having a plurality of passages extending therethrough;
a first electrically conductive element positioned within one of said passages and having a contact portion extending beyond one side of the insulator element;
a second electrically conductive element positioned within another of said passages;
a fuse located on the opposite side of said insulator element from the contact portion of said first conductive element, the fuse being connected between said first and second conductive elements;
conductive means joined to said circuit arrangement and projecting through said insulator element; and
means located on said one side of the insulator for removably securing said conductive means in contact with the second conductive element whereby the terminal and fuse holder are separated from the circuit arrangement when the conductive means is disconnected from said second conductive element.

3,882,439

THERMAL RESPONSIVE SWITCH DEVICE

Denis G. Wolfe, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 5, 1973, Ser. No. 412,843
Int. Cl. H01h *37/40*
U.S. Cl. 337—326 **13 Claims**



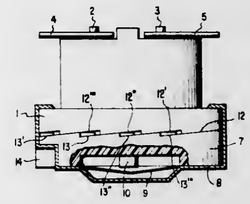
1. A thermal responsive switch device comprising
electrical contact means for controlling a circuit,
means forming a chamber,
a charge of gas in the chamber,
a quantity of porous adsorbent carbonaceous material including a decomposed synthetic polymer selected from the group consisting of decomposed polyvinylidene chloride and decomposed polyvinylidene fluoride in the chamber capable of adsorbing a quantity of the charge of gas, which quantity of adsorbed gas varies inversely with the temperature of the adsorbent material, and
movable means responsive to a gas pressure within the chamber equal to atmospheric pressure for operating the contact means,
said movable means being in an unoperated position when gas pressure within the chamber is less than a predetermined pressure which is less than atmospheric pressure, and
said charge of gas at temperatures below a predetermined temperature of operation having a pressure which is sufficiently less than atmospheric pressure to normally maintain the movable means in the unoperated position.

3,882,440

THERMOSTAT AND METHOD OF ADJUSTING THE SAME

Walter Hollweck, and Karlheinz Eberl, both of Nurnberg, Germany, assignors to Inter control, Hermann Kohler Elektrik GmbH & Co. KG, Nurnberg, Germany

Filed Aug. 1, 1973, Ser. No. 384,506
Claims priority, application Germany, Aug. 1, 1972, 2237815
Int. Cl. H01h *37/52*
U.S. Cl. 337—354 **8 Claims**



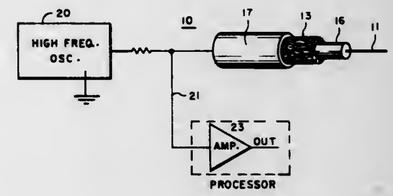
1. In a thermostat having a first and a second housing portion each having an axis, securing means for holding the two housing portions together, a circuit breaker held in the first housing portion, a snap action temperature sensor held in the second housing portion, an insulating actuating member coupling the temperature sensor to the circuit breaker, the improvement comprising at least one pair of camming faces, said pair being formed of two mutually engaging cooperating faces, one belonging to the one housing portion and the other belonging to the other housing portion, said camming faces being arranged for varying the axial spacing of the two housing portions and the distance between said circuit breaker and said temperature sensor upon coaxial rotation of the two housing portions with respect to one another.

3,882,441

RESPONSE NEGATIVE MAGNETOSTRICTIVE WIRE FOR AN INTRUDER DETECTOR

James O. Holmen, and Vahram S. Kardashian, both of Hennepin, Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 24, 1974, Ser. No. 463,488
Int. Cl. G01b *7/16*
U.S. Cl. 338—6 **17 Claims**

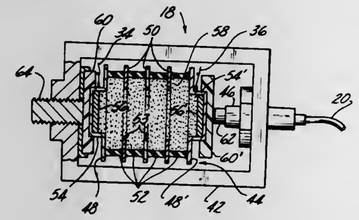


1. An improved sensitivity plated wire for use in an intrusion detection system which uses as a tranducer an extended length of strain responsive anisotropic negatively magnetostrictive thin film plated wire, the improved wire comprising:
an extended length of conductive wire substrate,
a strain responsive anisotropic negatively magnetostrictive thin film deposit on said substrate, said film having a relatively low original average anisotropy field H_k of about 3 Oe., a dispersion in H_k which is low, and a coefficient of magnetostriction in the range from about −15,000 Oe. to about −20,000 Oe.

3,882,442
TRANSDUCER DEVICE FOR ELECTRICALLY OPERATED BRAKES

Harold C. Hubbard, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Division of Ser. No. 322,946, Jan. 12, 1973, Pat. No. 3,823,985. This application May 20, 1974, Ser. No. 471,187
Int. Cl. H01c *13/00*
U.S. Cl. 338—41 **11 Claims**

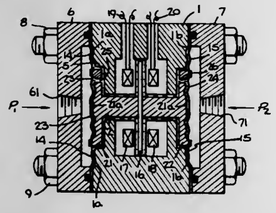


1. A pressure responsive variable electrical resistance control device comprising a flexible bellows having a chamber therein and capable of being contracted and expanded in a given direction in response to forces applied oppositely thereto in said direction, a pair of electrically conductive contacts associated with said bellows and having conductive surfaces exposed within said chamber and disposed in spaced relation from one another along said given direction, a powdered magnetic material received in said bellows chamber between and in engagement with both of said conductive surfaces of said electrically conductive contacts, and means providing a magnetic field having lines of magnetic force extending within said bellows chamber generally in said given direction, whereby contraction of said bellows in response to said applied forces compresses said powdered magnetic material received in said bellows and thereby decreases the electrical resistance between said conductive contacts in proportion to the value of the applied forces and vice versa, and the lines of magnetic force tend to loosen or break up any compacting or adhesion of said powdered material upon reexpansion of said bellows in response to diminution of said applied forces.

3,882,443
DIFFERENTIAL PRESSURE TRANSDUCER

Saichiro Mortia, Tokyo, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed June 6, 1973, Ser. No. 367,411
Claims priority, application Japan, June 30, 1972, 47-77936
Int. Cl. H01c *13/00*
U.S. Cl. 338—42 **8 Claims**

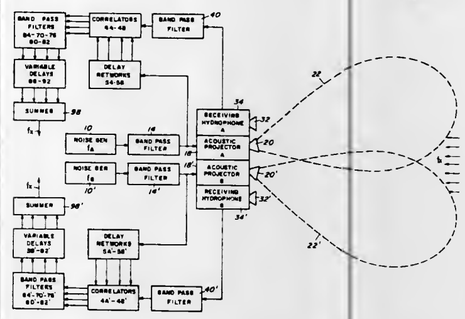


1. A differential pressure transducer comprising:
A. a main body formed with opposing end faces and a passage extending therebetween, the passage being filled with a non-compressible liquid;
B. a pressure-sensing diaphragm mounted closely adjacent each end face of the main body to define a narrow space therebetween, said liquid also filling said space;
C. a rod extending through the passage and terminating at either end in discs having end faces, the diaphragms being secured to the peripheries of the discs whereby the rod is axially displaced in accordance with differential-pressure applied to the diaphragms;
D. at least one temperature-compensating diaphragm disposed closely adjacent one of said end faces to define a narrow space therebetween, liquid from the passage being led to said space whereby this diaphragm serves to absorb the expansion or contraction of the liquid in the passage as a result of ambient temperature changes; and
E. means coupled to said rod to translate the axial displacement thereof into an electrical output signal.

3,882,444
STEERABLE PARAMETRIC CONVERSION ARRAY

Thomas M. Robertson, Silver Spring, Md., assignor to Automation Industries, Inc., Silver Spring, Md.

Filed June 18, 1971, Ser. No. 154,501
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 C **15 Claims**

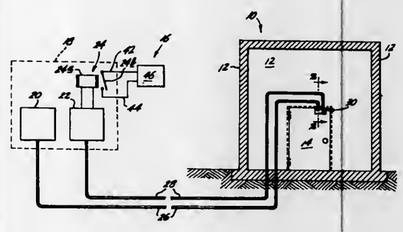


1. The method of detecting and isolating incoming acoustic waves comprising:
a. generating a substantially random noise signal and projecting said signal in a direction to intersect said incoming waves, said projected signal forming a listening beam which interacts with said incoming waves to produce cross-modulation products;
b. receiving said cross-modulation products; and
c. correlating said received cross-modulation products with delayed replicas of said noise signal whereby the cross-modulation products from selected segments of said listening beam are obtained, said selected segments forming a virtual receiving array.

3,882,445
COMPRESSION-WAVE ALARM SYSTEM

Clarence L. Hamilton, Longview, Wash., assignor to Crown Zellerbach Corporation, Camas, Wash.

Filed Sept. 24, 1973, Ser. No. 400,187
Int. Cl. H04b *11/00*
U.S. Cl. 340—15 **6 Claims**

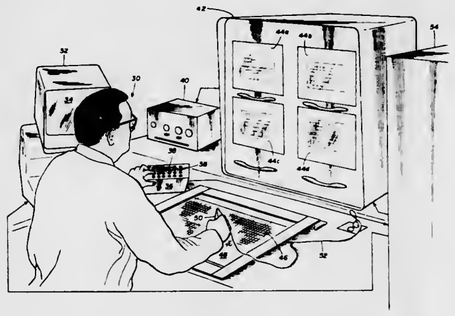


1. A compression-wave alarm system for detecting an intrusion at a selected location in a facility through detecting relative movement between parts in the facility which parts move relative to one another with an intrusion at said location, said system in operative condition comprising
conduit means defining a space independent of open space within said facility adapted to contain a compression-wave-transmitting medium,
generating means operatively coupled to said conduit means for producing in any such medium contained in said conduit means a compression wave having a predetermined characteristic,
receiving means operatively coupled to said conduit means for receiving a compression wave carried in said conduit means,
compression-wave disturbing means forming a portion of said conduit means, in the effective conduction path therein coupling said generating and receiving means, and operatively coupled to said parts, said disturbing means on the occurrence of an intrusion at said selected location, disturbing and thereby altering the characteristics of a compression wave produced by said generating means and carried in said conduit means through modifying the effective conduction path coupling the generating and receiving means, and
output means operatively connected to said receiving means for producing an output signal on said receiving means receiving a compression wave having characteristics differing from said predetermined characteristics.

3,882,446
INTERACTIVE HORIZON BUILDING, ANALYSIS AND EDITING

Ronel W. Brittlan, Dallas; Falvey L. Malarcher, Plano, and William A. Schneider, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1971, Ser. No. 214,145
Int. Cl. G01v *1/28, 1/34*; G06f *3/14*
U.S. Cl. 340—15.5 DS **6 Claims**

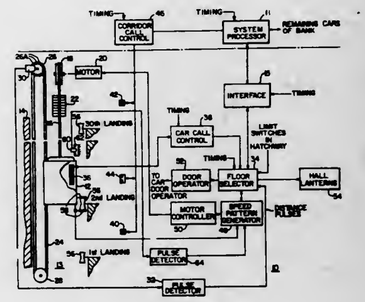


5. A seismic data selective display system comprising:
a data tablet having a surface for receiving a two dimensional graph of primary horizon segment data and including a stylus movable relative to said surface for generating electrical signals representative of a desired location of a horizon data on said two dimensional graph,
means for storing electrical representations of said horizon segment data including means for generating electrical position signals representative of selected portions of said horizon segment data,
first display means responsive to said electrical position signals for displaying horizon segment data including means responsive to said electrical signals generated by said stylus for displaying lines traced by movement of said stylus over said two dimensional graph and said data tablet surface,
a function key box interconnected to said display means which includes a plurality of switches for the selection of portions of the displayed horizon segment data,
second display means for displaying a depth point-RMS velocity profile for all horizon segments on said first display means,
third display means for displaying depth point-interval velocity data for the earth section between the horizons on said first display means,
operative means connected to said second and third display means for reflecting the deletion of data corresponding to the nonselected horizon segment data.

3,882,447
HALL LANTERN APPARATUS FOR ELEVATOR SYSTEM

Clyde A. Booker, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 8, 1973, Ser. No. 358,428
Int. Cl. B66b *3/02*
U.S. Cl. 340—21 **15 Claims**



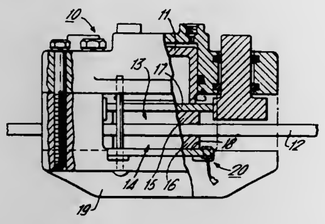
1. An elevator system comprising:
a building having a plurality of floors,
an elevator car mounted for movement in said building to serve the floors,
means providing a position signal responsive to the location of the elevator car in said building,
means providing a first enable signal when said elevator car is preparing to stop at a floor and provide up service for that floor,
means providing a second enable signal when said elevator car is preparing to stop at a floor and provide down service for that floor,
up and down indicating means disposed at the floors of the building for which the elevator car provides up and down service, respectively,
a matrix having first and second sets of conductors and associated drivers,
each of said up and down indicating means being connected between predetermined conductors of said first and second sets of conductors,
each of said drivers being responsive to said position signal and each of the drivers associated with one of the sets of conductors being responsive to one of said first and second enable signals, to selectively activate predetermined drivers associated with the first and second sets of conductors and energize an indicating means according to the floor at which the elevator car is preparing to stop and the service direction to be served by the car.

3,882,448

BRAKE LINING WEAR INDICATOR

Jyuichi Shibatani, and Sadayoshi Ito, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 7, 1973, Ser. No. 357,898
Claims priority, application Japan, Oct. 14, 1972, 47-10309
Int. Cl. B60r *25/10*
U.S. Cl. 340—52 A **9 Claims**



1. In a brake lining wear indicator comprising a member to be braked, a friction member having a brake lining for engagement with said member to be braked, probe means mounted on said friction member for engagement with said member to be braked after a predetermined amount of lining wear, alarm means, and electric control means operatively connected with said probe means for activating said alarm means, the improvement wherein said electric control means comprises a transistor of which the base is connected to an electric source and grounded through said probe means, the collector is connected to the electric source through said alarm means and the emitter is grounded, and said probe means comprises a non-conductive plug mounted on a back plate of said friction member and a spring loaded conductive element assembled within said plug, said conductive element including a portion to be disconnected by way of the frictional engagement with said member to be braked, said portion of the disconnected projecting within said plug from the front face of said back plate correspondingly to the predetermined amount of lining wear and remaining disconnected after said frictional engagement with said member to be braked, and said conductive element being disconnectably secured at one end thereof on the portion of said plug projecting from the front face of said back plate and previously biased at the other end thereof inwardly within said plug by a compressed resilient means interposed between a stopper for receiving the other end of said conductive element and the interior wall of said plug thereby to pull said conductive element inwardly upon disconnection of said conductive element.

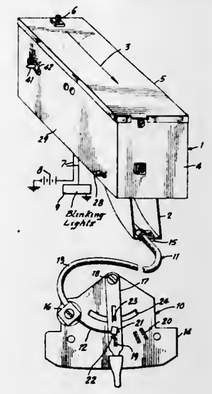
3,882,449

VEHICLE AUTOMATIC EMERGENCY SIGNALLING SYSTEM

Cyrille Bouchard, and Roland Bouchard, both of Rang 9, St. Honore, Quebec, Canada

Filed Oct. 4, 1973, Ser. No. 403,680
Int. Cl. B60q *1/44*
U.S. Cl. 340—52 H **13 Claims**

1. A vehicle automatic emergency signalling system comprising, in combination, an electrical circuit independent of the other vehicle circuits and including emergency signalling lights adapted to be mounted on a vehicle, a normally open inertia switch adapted to be mounted on the vehicle and series-connected to the signalling lights to close the circuit to the same only when deceleration of the vehicle occurs above a minimum, a time delay system associated with said inertia switch to delay the opening of said switch after the latter has closed upon rapid deceleration of the vehicle in which the system is mounted, a container housing said inertia switch and said time delay system, said container adapted to be secured to a vehicle, said inertia switch including an upstanding support lever pivotally mounted within said container at its lower end, an inertia mass fixed to the upper end of said support lever for causing pivoting of the same in a given direction upon deceleration of the vehicle, switch contact means mounted in said container adjacent said support lever and engageable by said support lever in a rest position of the latter to open the contacts of said switch contact means, said support lever, when pivoting away from said rest position, allowing closing of said contact means, spring means urging said support lever towards said rest position, said time delay system including a link connected to said support lever at one end and means mounted in said container connected to the other end of said link and restraining the movement of said link under the action of said spring means.

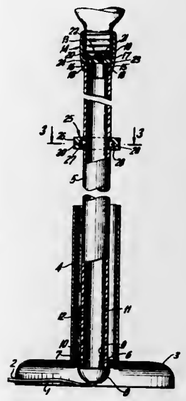


3,882,450

LAMP

Webster E. Janssen, Bronxville, N.Y., assignor to Webster Elliot Janssen, trustee, New York, N.Y.

Filed July 12, 1974, Ser. No. 488,105
Int. Cl. F21v *21/08*
U.S. Cl. 240—52.1 **9 Claims**



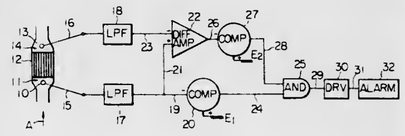
1. An improved lamp structure comprising:
a. a base section;
b. a shaft of insulating material located on said base section and extending upwardly from said base section;
c. bus bar conductors embedded in a surface of said shaft, running lengthwise of said shaft, electrically connected to electricity carrying means which extend out of the lamp structure, and exposed sufficiently at the upper portion of said shaft so as to be able to make electrical contact with the snap conductive contacts of a light bulb socket;
d. a light bulb socket contained within housing of insulating material, said housing being fit over the upper portion of said shaft;
e. snap conductive contacts affixed to and extending below said socket and making electrical contact with said bus bar conductors and said shaft, said snap conductive contacts also making electrical contact with a spring contact in said socket adapted to transmit electric current to an electric bulb when said bulb is inserted into said socket so as to depress said spring contact;
f. switching means for regulating current flow through said bus bar conductors to said light bulb socket.

3,882,451

VEHICULAR CATALYTIC CONVERTER FAILURE ALARM SYSTEM

Takeshi Fujishiro; Kenji Masaki, both of Yokohama, and Kiyoshi Wazawa, Fujisawa, all of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Sept. 13, 1973, Ser. No. 396,683
Claims priority, application Japan, Sept. 14, 1972, 47-92275
Int. Cl. B60q *1/00*
U.S. Cl. 340—57 **8 Claims**



1. A catalytic converter failure alarm system for a catalytic converter installed in a motor vehicle exhaust system which has an inlet port and an outlet port; the system comprising;
a first temperature sensor to produce an inlet temperature signal analogous to the temperature of exhaust gas at the inlet port of the converter;
a second temperature sensor to produce an outlet temperature signal analogous to the temperature of exhaust gas at the outlet port of the converter;
a first comparator to produce an operating temperature signal when the voltage of the inlet temperature signal exceeds a first predetermined value;
a difference signal amplifier to produce a difference signal analogous to the difference between the inlet and outlet temperatures of the converter as represented by the inlet and outlet temperature signals;
a second comparator to produce a failure signal when the voltage of the difference signal is below a second predetermined value;
an AND gate to produce an alarm signal when the operating temperature signal and the failure signal are applied simultaneously thereto; and
an alarm which energizes in response to the alarm signal.

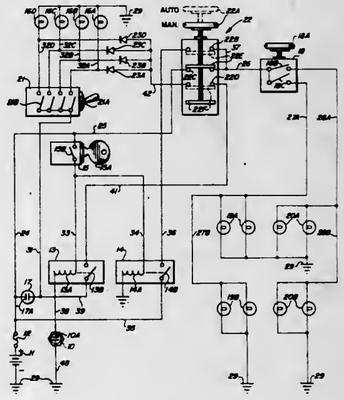
3,882,452

AUTOMATIC CONTROL OF HEADLIGHTS, TAIL LIGHTS, PARKING LIGHTS AND EMERGENCY WARNING FLASHER LIGHTS FOR VEHICLES

Walter R. Stevens, 2294-A Pacific Ave., Costa Mesa, Calif. 92627

Filed July 29, 1974, Ser. No. 492,420
Int. Cl. B60q *1/26*
U.S. Cl. 340—60 **8 Claims**

1. An automatic light switching system for vehicles employing an automobile battery, headlights, tail lights and flasher lights and employing:
a manually operated light switch for connecting said headlights and said tail lights across said battery for controlled energization thereof,
an ignition switch having first and second terminals, said first terminals being connected to said battery, and
a warning flasher light switch having first and second terminals, said first terminal of said flasher light switch being connected to said battery and said second terminal of said flasher light switch being connected to said flasher lights, the improvement comprising:
an automatic warning switch,
said warning switch comprising a pair of contacts mounted within a housing defining a cavity and interconnected in one position by a bridging contact member,
a diaphragm positioned within said cavity housing for dividing it into two chambers,
means for connecting one portion of said cavity to an oil line of the vehicle engine and the other cavity to a vacuum line of the engine,



whereby the loss of vacuum and oil pressure closes the switching means and running of the engine generates oil pressure and vacuum thereby opening said switching means,
one terminal of said warning switch being connected to ground and the other terminal being connected to relay means,
relay means comprising a solenoid coil and a pair of switching contacts,
one terminal of said coil being connected to said other terminal of said warning switch and the other terminal of said coil being connected to the other terminal of said ignition switch,
one contact of said relay means being connected to said battery and the other contact being connected to said flasher lights,
whereby when said ignition switch is closed and said oil pressure and vacuum is low indicating engine stalling or stopping said warning switch is closed, said switching contacts are closed and said flasher lights are energized.

3,882,453

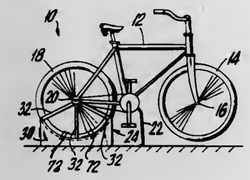
VEHICLE MOVEMENT SENSITIVE ALARM

Carmela Mule, 249 12th St., Brooklyn, N.Y. 11215

Filed Sept. 24, 1973, Ser. No. 400,022
Int. Cl. B60r *25/10*
U.S. Cl. 340—65 **10 Claims**

1. An alarm in combination with a bicycle comprising a tamper-proof enclosure, said enclosure being elongate and provided with two substantially opposing surfaces, one of said surfaces being circularly curved to follow the contour of an adjoining bicycle wheel and the other of said opposing sur-

faces being planar and suitable for abutting against a flat portion of the ground when the bicycle is parked and said enclosure is disposed below the wheel, pendulum means including a freely movable pendular member arranged within said enclosure for providing an open electrical connection when said enclosure is stationary and disposed in a predetermined position and for providing a closed electrical connection when said enclosure is disturbed or moved from said predetermined position; and circuit means connected to said pendulum means for generating an alarm signal when said pendulum means exhibits a closed electrical connection, whereby an alarm condition is established when said enclosure is moved in any manner to disturb said pendulum means.

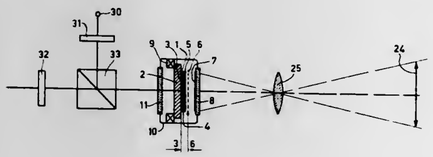


3,882,454

METHODS OF DIFFERENTIATING IMAGES AND OF RECOGNIZING SHAPES AND CHARACTERS, UTILIZING AN OPTICAL IMAGE RELAY

Gerard Marie, L'Hay-les-Roses; Jacques Donjon, Yerres; Jean-Pierre Hazan, Saint-Maur, and Michel Grenot, Brunoy, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1973, Ser. No. 329,236
Claims priority, application France, Feb. 3, 1972, 72.03620
Int. Cl. H01j *39/12*
U.S. Cl. 340—146.3 Q **8 Claims**



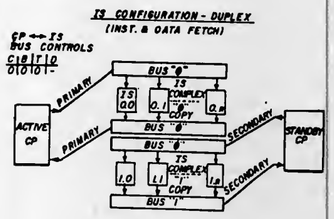
1. A method of optically differentiating images using an optic relay of the type wherein a second image projected on a photosensitive layer is subtracted from a first image projected on the photosensitive layer by reversing the polarity of an applied bias voltage during the projection of said second image, the method comprising projecting an image on the photosensitive layer, reversing the polarity of said applied bias voltage, incrementally shifting said image, projecting the incrementally shifted image with an effective intensity equal to $1/n$ times the absolute value of said first projected image, shifting the incrementally shifted image by an additional increment equal to said first increment, projecting said additionally shifted image on saisd photosensitive layer with an effective intensity equall to the effective intensity of said d first incrementally shifted image, and repeatedly shifting and projecting said incrementally shifted images until a total of n incrementally shifted images have been projected, whereby an approximation of a second derivative of said image is obtained.

3,882,455

CONFIGURATION CONTROL CIRCUIT FOR CONTROL AND MAINTENANCE COMPLEX OF DIGITAL COMMUNICATIONS SYSTEM

Dennis A. Heck, Franklin Park; Rolfe E. Buhrke, La Grange Park; John J. Mele, Chicago; Verner K. Rice, Wheaton, and Donald L. Schulte, Oak Park, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 14, 1973, Ser. No. 397,452
Int. Cl. G06f *15/16, 11/00*
U.S. Cl. 340—146.1 BE **11 Claims**



1. In a digital communications system having duplicate copies of central data processors wherein only one central processor is active at one time and the other is standby, and duplicate copies of storage means each having an associated bus means for communicating with both of said central processors, said bus means including a send bus for transmitting signals from said central processor to said storage means and a return bus for transmitting signals from said storage means to said central processors, the improvement comprising:

configuration control circuit means only in each of said central processors including

active unit bistable circuit means for governing which of said central processors is active and which is standby on a mutually exclusive basis;

central processor trouble bistable circuit means responsive to program control signals and to internally sensed conditions for generating a trouble level signal representative of its associated central processor having sensed a malfunction therein for inhibiting the transmission of its associated central processor to said transmit bus upon detection of a malfunction; and

central processor-storage means bus configuration control logic circuit means including

storage means C bistable circuit means responsive to program signals and to internal malfunction signals for generating output signals defining which copy of said storage means bus means is primary and which is secondary; and

combinatorial logic circuit means responsive to the output signals of said C bistable circuit means for generating separate multiple bus control output signals.

3,882,456

FAULT-DETECTING SYSTEM FOR A MULTI-CHANNEL RELAY SYSTEM

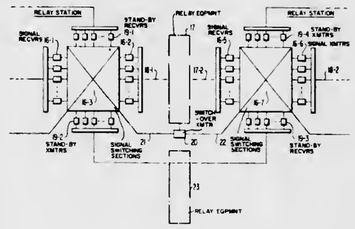
Masami Takada, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 326,191, Jan. 24, 1973, abandoned. This application Dec. 10, 1973, Ser. No. 423,613
Claims priority, application Japan, Jan. 26, 1972, 47-10027
Int. Cl. H04l *1/00*
U.S. Cl. 340—146.1 R **4 Claims**

1. In a digital transmission system comprising a plurality of relay stations each receiving a plurality of signal channels in parallel, a method for detecting channel faults comprising the steps of:

a. determining a first reference level corresponding to the level of interference signals expected on a channel from neighboring channels,

b. determining a second reference level corresponding to the noise signal level on each channel caused by the circuit components in each channel and



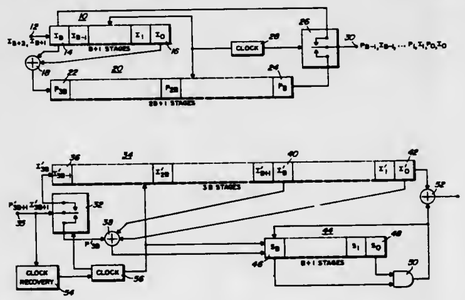
c. at least one relay station, monitoring the incoming signal level for each channel with respect to said first and second reference levels to develop an indication of a fault.

3,882,457

BURST ERROR CORRECTION CODE

John En, Palatine, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Jan. 30, 1974, Ser. No. 438,138
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AQ **15 Claims**



1. An error correcting system for correcting bursts of errors in a bit stream having an arbitrary burst length up to B bits long, said error correcting system having an encoder for generating parity bits from information bits applied thereto and applying said information bits and said parity bits to utilization means, said encoder comprising:

information bit sample and storage means having B + 1 stages for receiving and storing B + 1 successive information bits;

parity bit generating means connected to the first and last of said B + 1 stages of said information bit sample and storage means, said parity bit generating means including modulo 2 adder means for taking the modulo 2 sum of the information bits stored in said first and last stages of said information bit sample and storage means to thereby generate a parity bit at an output thereof associated with the information bits stored in said first and last stages of said information bit sample and storage means;

parity bit sample and storage means having 2B + 1 stages for receiving and storing 2B + 1 successive parity bits, and and input and an output, said input of said parity bit sample and storage means being coupled to said output of said modulo 2 adder means;

switch means connected to said information bit sample and storage means and the output of said parity bit sample and storage means for alternately transferring information and parity bits respectively therefrom to said utilization means; and

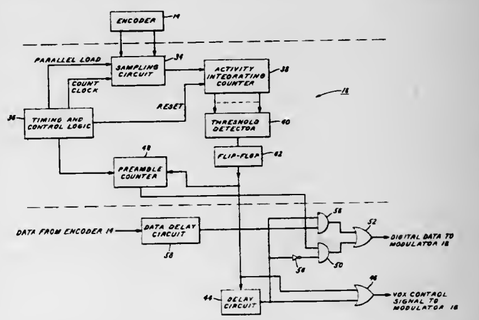
clock means connected to said information bit sample and storage means and said parity bit sample and storage means for successively shifting said information bits and said parity bits between successive stages of said information bit sample and storage means and said parity bit sample and storage means, respectively, said clock means being further connected to said switch means, said switch means being responsive to said clock means for applying one information bit and one parity bit to said utilization means between each shift of information in said information bit and said parity bit sample and storage means.

3,882,458

VOICE OPERATED SWITCH INCLUDING APPARATUS FOR ESTABLISHING A VARIABLE THRESHOLD NOISE LEVEL

David F. Hoeschele, Jr., Norristown, and Eugene H. Barnes, Philadelphia, both of Pa., assignors to General Electric Company, Fairfield, Conn.

Filed Mar. 27, 1974, Ser. No. 455,264
Int. Cl. H04b *15/00*
U.S. Cl. 340—146.1 R **28 Claims**



1. Apparatus for establishing a variable threshold noise level, said apparatus comprising:

first means for selecting the largest data word from a first predetermined number of sequentially received data words;

second means connected to receive said largest data word and for accumulating a second predetermined number of said largest data words to form a summed data word;

third means connected to receive said summed data word and for selecting the smallest of said summed data words detected during a first predetermined time period; and

fourth means connected to receive and store said smallest of said summed data words for use as a threshold noise level.

3,882,459

DEADTRACKING SYSTEM

George J. Barlow, Tewksbury, and Donald R. Taylor, Framingham, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

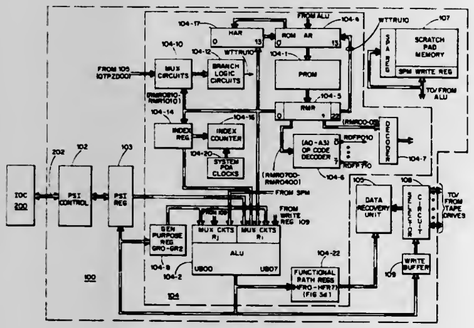
Filed May 2, 1974, Ser. No. 466,438
Int. Cl. G06k *5/00*
U.S. Cl. 340—146.1 F **20 Claims**

1. Apparatus for detecting inactivity in a plurality of tracks of a medium read by a device and applied to a corresponding number of channels of a data recovery system, each of said channels including a number of series coupled deskew buffer registers including first and second bistable storage means and clocking means, said first and second bistable storage means of at least a first one of said buffer registers of each channel being coupled to said clocking means for receiving of clocking signals defining bit intervals for sampling information signals read from said tracks during said intervals and each byte of

information corresponding to a group of bit signals simultaneously recorded on said tracks of said medium and then applied by said device as signal transistions to said channels, said apparatus comprising:

a plurality of input transition detector means, the input detector means of each channel being operative in response to said signal transitions to produce pulses representative of a binary ONE and a binary ZERO to first and second lines respectively coupled to said first and second bistable storage means of said first one of said buffer registers;

a plurality of activity circuit means corresponding in number to said input detector means, each coupled to said first and second lines of a different one of said plurality of said input detector means and being operative to switch from a first to a second state in response to pulses applied to said first and second lines;



a corresponding number of bistable channel failure indicator means, each coupled to a different one of said activity circuit means and to a corresponding one of said clocking means of said channel; and,

control means being operative upon detecting that an initial group of bytes have been received from said device to generate signals for enabling each of said clocking means for generating said sets of clocking signals, said control means being coupled to each of said channel failure indicator means and operative to condition said each channel failure means concurrent with generating said signals to be switched from a first to a second state only when said activity circuit means is in said first state for inhibiting the enabling of said channel clocking means by said signals to prevent transfer of incorrect information through each channel of an inactive track.

3,882,460

SERIAL TRANSFER ERROR DETECTION LOGIC

Walter Scott Bennett, Jr., Diamond Bar, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 2, 1973, Ser. No. 412,353

Int. Cl. G06f *11/10*

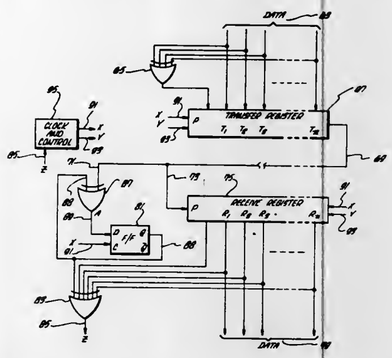
U.S. Cl. 340—146.1 AG **20 Claims**

1. Error detection logic for a serial transfer channel having a single transmission path and utilizing a parallel input, serial output transfer register at one end and a serial input, parallel output receive register at the other end, comprising:

means for generating an overall parity bit in response to all the bits in said transfer register during each transfer cycle;

means for checking parity of all the bits in said receive register during each transfer cycle in response to the bits in said receive register and the overall parity bits received from said overall parity bit generating means; and

means for transferring the overall parity bits from said



parity bit generating means to said parity checking means separately from the bits in said transfer register.

3,882,461

SCANNING DEVICE

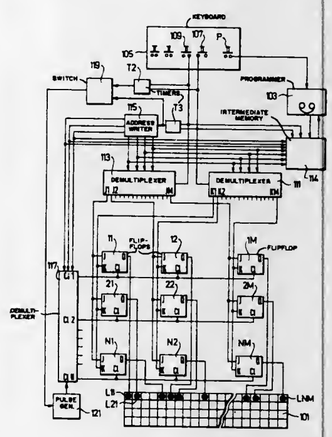
Antonius Vinnemann, and Axel Johner, both of Stuttgart, Germany

Filed Sept. 27, 1973, Ser. No. 401,537

Claims priority, application Germany, Sept. 27, 1972, 2247261

Int. Cl. G09f *9/32*

U.S. Cl. 340—146.3 ED **19 Claims**



1. Equipment for line-by-line scanning of a drawing and for feeding the data obtained by scanning to a programming memory, the drawing consisting of lines and columns of dots, each having at least one of several different properties, comprising in combination means for providing electrical signals corresponding to a selected property of said dots, an intermediate memory for temporary storage of at least as many signals as are obtained by scanning all of the dots in one line having the same selected property, a plurality of visual checking elements mounted immediately adjacent the dots of a line and equal in number at least to the number of dots in one line and having the same spatial configuration as the dots of the line so that each visual checking element is associated with its own dot, a programming memory, input means connected with said programming memory for supplying the signals stored in said intermediate memory to said programming memory, and test means connected to the checking elements to apply to the

checking elements, a visual signal for verification of the electrical signals obtained by scanning the dots associated with said checking elements stored in said intermediate memory prior to being supplied to said programming memory.

3,882,462

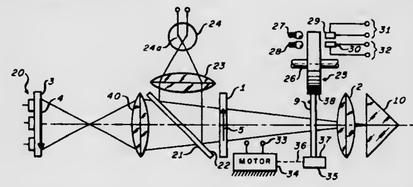
FINGERPRINT RECOGNITION APPARATUS USING NON-COHERENT OPTICAL PROCESSING

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 30, 1974, Ser. No. 438,130

Int. Cl. G06k *9/13*

U.S. Cl. 340—146.3 E **22 Claims**



1. An optical fingerprint pattern identification apparatus comprising:

means for optically illuminating a fingerprint pattern to be identified to produce an optical beam representative of said fingerprint pattern,

first optical imaging lens means responsive to said optical beam,

reflector means for returning said optical beam through said first optical imaging lens means for forming an erect, unity-magnified image of said fingerprint pattern superimposed upon said fingerprint pattern,

second optical imaging lens means responsive to light from said reflector means passing between the line components of said fingerprint to form a second image of said fingerprint pattern at an image plane, and

selector means having a reference direction between said fingerprint pattern and said first optical imaging lens means for spatial modulation of said second image according to the direction of said fingerprint line components with respect to said reference direction.

3,882,463

CHARACTER RECOGNITION APPARATUS

Ronald Howard Britt, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

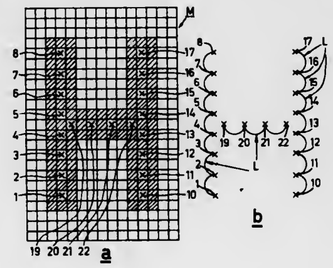
Continuation of Ser. No. 262,142, June 12, 1972, abandoned.

This application Mar. 18, 1974, Ser. No. 451,780

Claims priority, application United Kingdom, June 14, 1971, 27679/71

Int. Cl. G06k *9/12*

U.S. Cl. 340—146.3 AC **16 Claims**



1. A method of character recognition comprising the steps of:

a. comparing a complete character with each member of a set of masks corresponding to a set of complete characters which may contain such complete character, each mask comprising discrete mask elements set in predetermined relative positions corresponding to selected parts of the associated complete character;

b. linking the mask elements into groups only along selected parts of the associated complete character;

c. detecting a fit of each such linked group with a complete character, by applying a fit criterion in which at least a predetermined fraction of the elements of the mask group along a selected part of the associated complete character fits the complete character; and

d. indicating a fit of the complete character with the mask when a selection of the groups of mask elements thus fit such complete character.

3,882,464

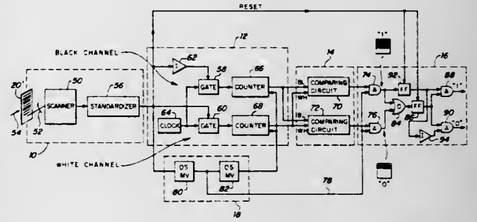
SIZE RATIO LABEL READING SYSTEM

Stanley F. Zamkow, North Abington, Mass., assignor to Computer Identics Corporation, Westwood, Mass.

Filed Apr. 4, 1974, Ser. No. 457,796

Int. Cl. G06k *9/18*

U.S. Cl. 340—146.3 Z **2 Claims**



1. A reading system for reading encoded information and determining whether the ratio of the widths of a pair of segments is within acceptable limits, said encoded information presented in pairs of adjacent segments including a first segment having a first characteristic and a second segment having a second contrasting characteristic, said segments occurring in more than one width, comprising:

sensing means for reading said encoded information and producing a first segment signal representative of said first segment and a second segment signal representative of said second segment;

measuring means, responsive to said first and second segment signals, for providing first and second size signals representative of the widths of said first and second segments, respectively;

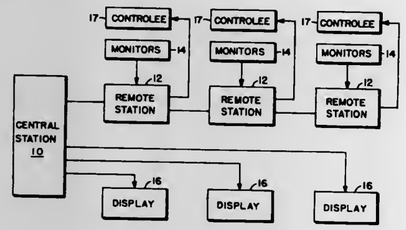
a first function generator, responsive to said first size signal, for producing a first function signal and a second function generator, responsive to said second size signal for producing a second function signal; and

first determining means responsive to the difference between said first function signal and said second size signal for producing a first recognition signal representative of whether the ratio of the widths of said first and second segments is within a first predetermined range and second determining means, responsive to the difference between said second function signal and said first size signal for producing a second recognition signal representative of whether the ratio of the widths of said first and second segments is within a second predetermined range.

3,882,465
REMOTE CONTROL SYSTEM HAVING COMMAND AND ADDRESS SIGNALS

Charles W. Cook, and James T. Odom, both of Huntsville, Ala., assignors to Avco Corporation, Huntsville, Ala.

Filed Dec. 5, 1973, Ser. No. 421,901
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 R **12 Claims**



1. In a signaling system having a central station and a plurality of remote transponding stations, the combination comprising:

signal transmitting means at said central station for transmitting coded address signal to said remote stations;

an address decoder at each of said remote stations for decoding a particular one of said coded address signals;

means responsive to the decoding of a particular one of said address signals for generating a response signal to said central station;

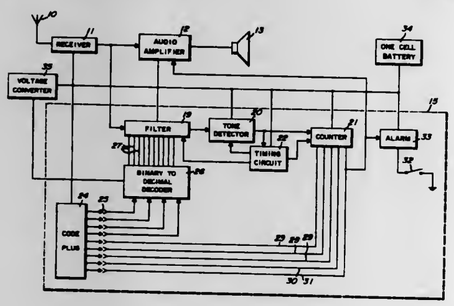
command means at said central station for transmitting a coded command signal ahead of a selected address signal; a command decoder at each of said remote stations for decoding said command signals; and

means responsive to the decoding of said command signals and the generation of said response signal for generating a response to said command signal.

3,882,466
SWITCHABLE FREQUENCY TONE DETECTOR WITH ELECTRONICALLY CONTROLLED CODE PLUG AND BCD CONVERTER

Ronald E. Poorvin, Plantation, Fla., assignor to Motorola, Inc., Chicago, Ill.

Filed Oct. 12, 1973, Ser. No. 405,951
Int. Cl. H04q *1/45*
U.S. Cl. 340—171 PF **9 Claims**



1. A switchable frequency tone detector for receiving and passing a plurality of tone signal frequencies in sequence including in combination;

a one cell battery and a voltage converter providing an output voltage greater than the output voltage of said battery,

active filter means including a plurality of field effect transistor switch means each operative in response to one of a plurality of particular control signals of a first predetermined voltage level greater than the voltage of said battery to determine a particular one of the plurality of tone signal frequencies said active filter means couples therethrough,

detector means coupled to said battery and the output of said active filter means and operative in response to each of said tone signals in sequence being coupled thereto to develop a particular sequence signal,

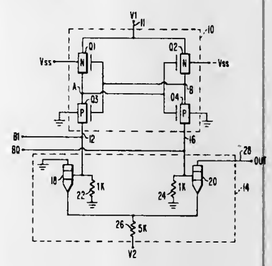
electronically controllable coding means coupled to said battery and said detector means and operative in response to each particular sequence signal to develop a particular group of binary signals at a second predetermined voltage level, lower than the output voltage of said battery, and

converter means coupled to said battery, said voltage converter and said electronically controllable coding means and said switch means and operative in response to each of said particular groups of signals to develop one of said plurality of particular control signals, said converter means including level shifting means coupled to said electronically controllable coding means and operative in response to each signal of said particular group of binary signals to develop a second particular group of binary signals at the first predetermined voltage level and logic circuit means operative in response to each signal in said second particular group of signals at said first predetermined voltage level to develop said particular control signals.

3,882,467
COMPLEMENTARY FIELD EFFECT TRANSISTOR MEMORY CELL

Wilbur David Pricer, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,889
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **12 Claims**



1. A memory circuit having a selected state and a quiescent state, comprising:

a four transistor storage cell, each transistor having a first and second current conducting electrode, a control electrode and a substrate electrode, said storage cell comprising first and second branch circuits, each branch circuit including a first conductivity type transistor and a second type conductivity type transistor having their first current conducting terminals connected to a common point, said common point in each branch circuit also being connected to the control electrodes of the transistors in the other branch circuit, and

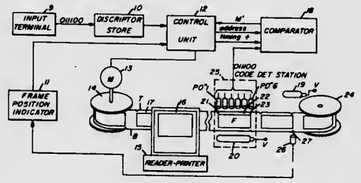
common control signal bias means connected between the second current conducting terminal of said first conductivity type transistor in each branch circuit and its substrate terminal, said bias means providing a first bias condition for sustaining said first conductivity type transistors in enhancement mode during said quiescent state

causing substantially zero current to flow in said branch circuits and providing a second bias condition causing at least one of said first conductivity type transistors to operate in a depletion mode during said selected state causing substantial current to flow in one of said branch circuits.

3,882,468
STORAGE AND RETRIEVAL OF GRAPHIC INFORMATION

Thomas R. Ormsby, Walworth, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,224
Int. Cl. G11b *23/40, 23/38*
U.S. Cl. 340—173 LM **8 Claims**



1. In an information and retrieval system, the combination comprising:

means for producing a first signal representing a descriptor code;

at least one substantially planar record medium which extends to terminate in at least one edge the thickness of said edge being substantially small in relation to the other overall dimensions of said planar record medium, said medium being formed of a light transmitting material which exhibits a lightpipe effect for light within a predetermined range of wavelengths;

means for directing a beam of light, having a wavelength within said range, into said medium at an edge thereof, to travel within the plane of said medium;

means forming a part of said medium for intercepting and modulating said beam in accordance with a preselected code pattern;

means, arranged adjacent to at least one edge of said medium, for receiving said beam and for producing in response thereto a second coded signal representing said modulated code pattern; and

means for receiving said first signal and said second signal, and for comparing the codes represented thereby.

3,882,469
NON-VOLATILE VARIABLE THRESHOLD MEMORY CELL

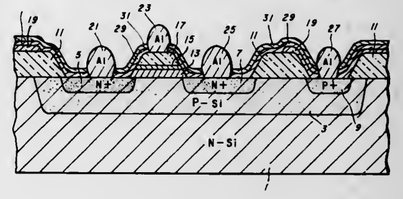
William Milton Gosney, Jr., Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 203,387, Nov. 30, 1971. This application June 18, 1973, Ser. No. 370,583
Int. Cl. G11c *11/40, 7/00;* **H01l** *11/14*
U.S. Cl. 340—173 R **5 Claims**

1. In the operation of a non-volatile memory cell comprising an insulated gate field-effect semiconductor device having a source and drain and having a gate isolation means including two gate isolation materials, one of which is characterized by the ability to preferentially trap charges of one polarity, the other being characterized by the ability to preferentially trap charges of the opposite polarity, the improved method comprising the steps of:

a. writing into the memory cell by increasing the positive voltage on the drain junction to a level which causes avalanche breakdown, while simultaneously applying a small voltage of source polarity to the gate terminal, thereby driving some of the avalanching carriers through only one of said gate isolation materials whereby a trapped charge is stored at the interface between the two gate isolation materials; then at an appropriate later time

b. erasing the memory cell by increasing the voltage on the gate to a sufficiently high level to initiate injection of

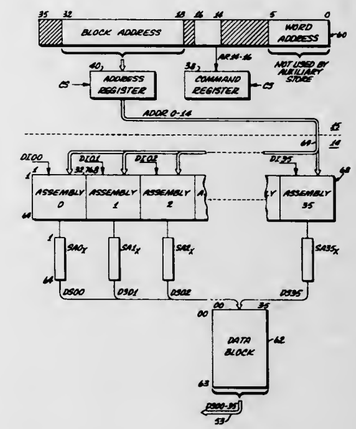


charges of opposite polarity from the gate electrode into the isolation layers, while holding the source, drain and substrate electrodes at substantially ground potential, thereby causing said injection to occur preferentially at the interface between the gate isolation layers, whereby the stored charge at that location is neutralized to restore the threshold voltage to substantially its intrinsic value.

3,882,470
MULTIPLE REGISTER VARIABLY ADDRESSABLE SEMICONDUCTOR MASS MEMORY

John C. Hunter, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Feb. 4, 1974, Ser. No. 439,459
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **20 Claims**



1. An integrated-circuit store comprising a body of semiconductor material having formed thereon a plurality of basic circuits as a common substrate, each of said basic circuits comprising:

a bus portion including at least one signal line sharing address and data information, and a control signal line, said bus portion interconnecting said plurality of basic circuits;

a plurality of first means for storing data signals;

a plurality of second means each capable of storing a different address;

means for enabling one of said plurality of second storage means to store a unique address transmitted over said shared signal line;

means for controlling the transfer of data signals between said shared signal line and one of said first storage means;

means responsive to a comparison between address signals received over said shared signal line and said stored address for actuating said controlling means;

second means for connecting said shared signal line to said actuating means and to said plurality of first storage means;

means for disabling said second connecting means to thereby disconnect said one basic circuit from said signal bus; and

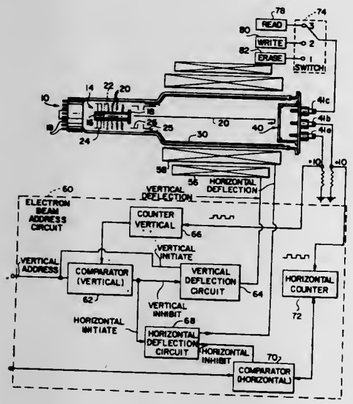
means responsive to the status of all other basic circuits and all other of said plurality of second storage means for alternatively inhibiting or actuating said enabling means, whereby one and only one of said second storage means is enabled to store a unique address at any given time.

3,882,471

APPARATUS AND METHOD OF OPERATING A HIGH-DENSITY MEMORY

John M. Walker, Springfield, Va., and John M. McIntyre, deceased, late of Big Flats, N.Y. (by Betty J. McIntyre, administrator), assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 19, 1974, Ser. No. 462,487
Int. Cl. G11c *11/26*
U.S. Cl. 340—173 SP **12 Claims**



1. A method of providing a high-information density, storage device having a plurality of storage elements disposed in a matrix of lines and rows, wherein each of the addressable storage elements is operative, said method comprising the steps of:

a. providing each line of the storage elements with a positioning tab disposed in a defined relationship therewith;

b. determining whether the storage elements within a selected line are operative or inoperative; and

c. if a selected number of storage elements within a selected line is not operative, removing the positioning tab corresponding to that selected line.

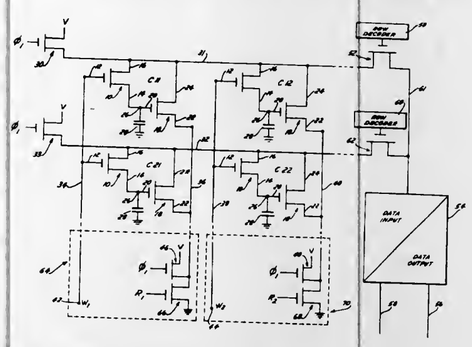
3,882,472

DATA FLOW CONTROL IN MEMORY HAVING TWO DEVICE MEMORY CELLS

Kent F. Smith, Salt Lake City, Utah, assignor to General Instrument Corporation, Clifton, N.Y.

Filed May 30, 1974, Ser. No. 474,391
Int. Cl. G11c *11/24, 11/40, 7/00*
U.S. Cl. 340—173 CA **20 Claims**

1. A method for controlling data flow into a two device memory cell wherein each of the devices have a control terminal and an output circuit, a first command line operably connected to the control terminal of the first device, a storage node, a single data input-output line, the output circuit of the first device being connected between said data line and said node, a second command line, the second device having its output circuit connected between said data line and said second command line and its control terminal connected to said node, the method comprising the steps of charging the



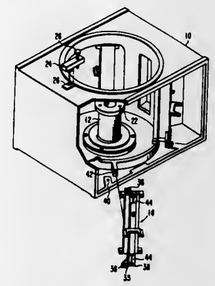
node to a discrete logic level, precharging the data line to a first voltage level, charging the second command line to a second voltage level, the second device being effective, if rendered conductive by the charge on the storage node, to change the voltage level of the data line to the second voltage level such that the resulting voltage level on the data line is representative of the charge on the storage node.

3,882,473

MAGNETIC DISK STORAGE FILE

Henry G. Hoehmann, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 18, 1970, Ser. No. 20,781
Int. Cl. G11c *11/02*
U.S. Cl. 360—98 **12 Claims**



1. A fixed head magnetic disk storage file comprising:

a housing;

a drive spindle defining a rotational axis positioned in said housing;

a plurality of magnetic disks mounted coaxially on said spindle, said disks having recording surfaces on which data tracks are formed;

at least one pair of pivotable post structures positioned 180° apart, aligned parallel to and spaced equally from said spindle axis;

a multiplicity of multi-element head assemblies mounted to said post structures, each head assembly having a like number of transducing elements that are aligned radially relative to a respective disk surface, when the post structure is fixed for file operation and data signal transducing; the transducing elements of one post structure and those of the other post structure of said one pair being diametrically opposed and in transducing relation with the same

data tracks to provide parallel data signal operation so that faster access is achieved;

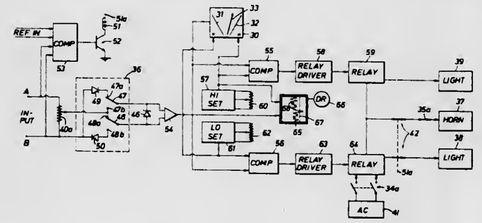
said post structures being pivotable so that said head assemblies may be moved away and precisely back to the same positions such that said transducing elements are accurately aligned with the same data tracks as prior to rotation of the post structures.

3,882,474

SYSTEM FOR MONITORING THE INSTANTANEOUS VELOCITY OF A PIPE STRING BEING TRIPPED RELATIVE TO A WELL BORE

Lester L. Cain, 4728 W. Alabama, Houston, Tex. 77035

Filed Oct. 4, 1972, Ser. No. 294,841
Int. Cl. G08b *21/00*
U.S. Cl. 340—177 CA **15 Claims**



1. For a drilling system, alarm means for providing an indication whenever predetermined velocity values for travel of a pipe string relative to a borehole are exceeded by actual velocity of pipe being moved relative to a borehole,

means adapted for coupling with a pipe string for generating electrical input signals representative of actual velocity of a pipe string,

said alarm means including selectively operable preset means for establishing a preset condition which is representative of a velocity limit,

means for receiving and correlating input signals to said preset means where such input signals are representative of actual velocity of a pipe being moved relative to a borehole, said correlating means being constructed and arranged for providing an output signal whenever such an input signal reaches a preset condition,

means for receiving said output signal and for producing a physiological indication in response thereto, and

means coupled to said receiving and correlating means for selectively applying only those input signals to said alarm means which represent travel of such pipe in one direction.

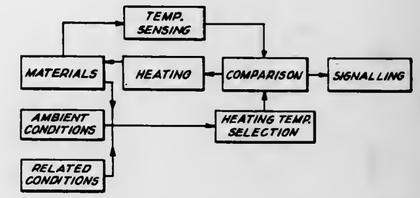
3,882,475

CONTROL OF ROOFING PROCEDURE

Robert J. Moore, 614 Redman Ave., and Gerald B. Curtis, 50 Gill Rd., both of Haddonfield, N.J. 08033

Filed Dec. 4, 1972, Ser. No. 311,743
Int. Cl. G08b *17/06*
U.S. Cl. 340—227 R **5 Claims**

1. In apparatus for temperature control of molten bituminous material to be used in molten form in formation of built-up roofs, the improvement comprising thermostatic means for sensing the temperature thereof and including switch means operatively interconnected to the thermostatic means, a first circuit establishable through the switch means when the sensed temperature exceeds a high-temperature limit, a second circuit establishable through the switch means when the sensed temperature falls below a low-temperature limit, a common circuit establishable when either temperature limit is exceeded, first signalling means in the first circuit, second signalling means in the second circuit, and third signalling means in the common circuit, wherein the switch means includes a pair of singlepole double-throw switches, each having its respective contacts connectable across an electrical potential source, the respective first and second signalling means being connected with oppositely unidirectional current means



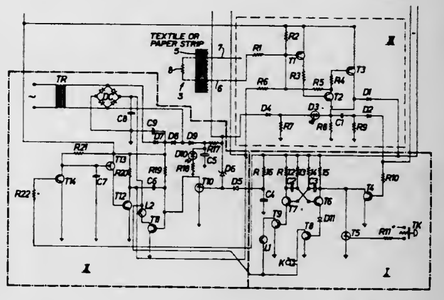
between the respective switch arms, and the third signalling means being connected between the switch arms and one side of the potential source.

3,882,476

ALARM SYSTEM WITH PERIODIC TEST SECTION

Stig Tore Johannes Lofgren, Taby, Sweden, assignor to Lycksele Aktiebolaget Impuls Regulator, Taby, Sweden

Filed Apr. 11, 1973, Ser. No. 349,989
Claims priority, application Sweden, Apr. 13, 1972, 4814/72
Int. Cl. G08b *21/00*
U.S. Cl. 340—235 **17 Claims**



1. An alarm system, comprising:

detecting means for producing a change in an electrical parameter from a normal non-alarm value in response to the occurrence of an alarm state;

an alarm state detecting circuit including trigger means connected to said detecting means for providing an output when said electrical parameter has a value beyond a predetermined threshold value;

an alarm signalling circuit for producing an alarm signal in response to the output of said trigger means;

test means for automatically changing said predetermined threshold value to a value beyond said normal electrical parameter value.

3,882,477

SMOKE AND HEAT DETECTOR INCORPORATING AN IMPROVED SMOKE CHAMBER

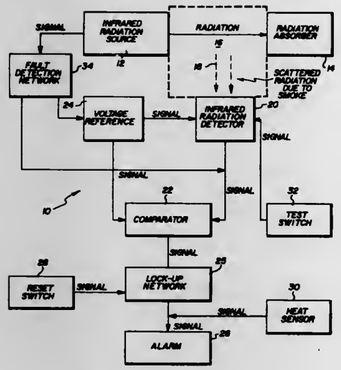
Peter H. Mueller, 517 S. Gunderson, Oak Park, Ill. 60304

Filed Mar. 26, 1973, Ser. No. 344,532
Int. Cl. G08b *17/12*
U.S. Cl. 340—237 S **17 Claims**

1. A smoke detector for detecting the presence of smoke particles within a smoke chamber, said smoke detector comprising:

radiation source means including a radiation emitting semiconductor device for transmitting a beam of radiation within said smoke chamber;

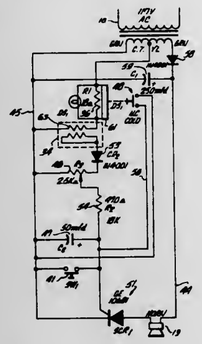
radiation detector means for receiving radiation scattered from said beam by said smoke particles, said radiation detector means providing a detected signal representative of the concentration of said smoke particles in said smoke chamber;



alarm means for generating a warning signal whenever said detected signal indicates that a dangerous concentration of said smoke particles is present within said smoke chamber; and

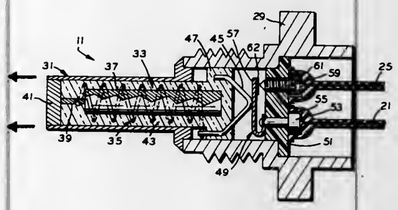
self-test means for electronically simulating a preselected concentration of said smoke particles just sufficient to cause said radiation detector means to enable said alarm means.

3,882,478
GAS AND SMOKE ALARM
John S. Skarman, Whittier, Calif., assignor to Malgard Corporation, Monterey Park, Calif.
Filed May 14, 1973, Ser. No. 359,849
Int. Cl. G08b *17/10*
U.S. Cl. 340—237 R **12 Claims**



1. A gas and smoke alarm comprising a frame, a semiconductor sensor sensitive to the presence of gas and smoke, a heater for the semiconductor sensor, a signal lamp in series with the sensor, a power source electrically connected to the sensor through the lamp, an alarm horn connected to the power source across the sensor, a reset circuit adapted to restore pre-alarm discontinuity to the horn, means for adjusting the sensitivity setting of the semiconductor sensor; said sensor, heater, lamp and horn being secured to said frame; a cover for the frame, and a heat flue defined by the cover and the frame, said heat flue opening upon at least one of said heater, lamp and semiconductor sensor so as to induce convection flow in the flue for sampling ambient atmosphere.

3,882,479
THERMALLY EXPANSIVE SENSOR
Nikolaus A. Szeverenyi, Warren, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed Jan. 23, 1974, Ser. No. 435,663
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 R **15 Claims**



1. A fluid sensor device comprising:

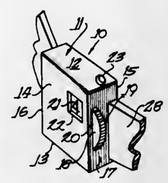
a housing member;

a heat responsive tip member secured to said housing for being exposed to a fluid and for thermally expanding in a first direction;

a substantially elongated solid heat responsive member positioned substantially within said sensor device and fixedly positioned relative to said heat responsive tip member for thermally expanding in a second direction opposing said first direction of expansion of said tip member; and

heater means positioned within said sensor device and relative to said tip member and said elongated heat responsive member for heating said tip member and said elongated heat responsive member to cause said tip member to thermally expand in said first direction and said elongated heat responsive member to expand in said second direction, said elongated heat responsive member expanding greater than said tip member only when the temperature of said elongated heat responsive member exceeds the temperature of said tip member, said greater expansion occuring only when said tip member is exposed to said fluid.

3,882,480
CONTACT PACER TIMER
Robert O. Greber, 10144 Dunbarton Dr., El Paso, Tex. 79925
Filed Dec. 26, 1973, Ser. No. 427,817
Int. Cl. G08b *23/00*
U.S. Cl. 340—323 **1 Claim**



1. A pacer-timer device intended to be worn about a portion of an individual's body to provide audible pacing signals to the individual for pacing of the individual's body movements in jogging, walking and running, the device comprising, in combination:

a housing of a rectangular hollow box-like configuration having a flat vertical front surface, a flat vertical back surface, a flat horizontal top surface, a flat horizontal bottom surface, and opposed vertically extending flat side wall surfaces;

a slot extending longitudinally through said opposed side wall surfaces adjacent said back wall surface and opening out of said side wall surfaces;

an elongated flat rectangularly configured flexible strip like belt of a cross-sectional area to pass freely through said slots of said housing side wall surfaces, said belt intended to pass about an individual's waist for adjustably retaining said housing to the individual's body;

an earphone intended to be worn in an individual's ear and having an electrical cord extending outwardly therefrom;

an earphone jack disposed in said housing top surface adapted to have said earphone cord electrically connected thereto;

a rectangular opening provided in said housing front wall surface and opening into said housing interior;

a slot provided in one of said side wall surfaces adjacentmost said front wall opening and disposed parallel to and adjacent said front wall surface;

a flat circular disc member having a knurled circumferal edge and rotatively affixed about its axis interiorly of said housing to have a face surface thereof disposed rearwardly of said front surface opening and to have a portion thereof projecting outwardly of said housing interior through said slot adjacent said front wall surface to be readily engaged about its circumference by an individual's finger to effect manual rotation of said disc;

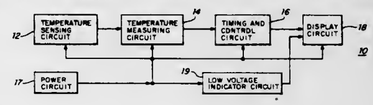
a plurality of numerically increasing indicia in the form of indicating numerals sequentially arranged on said front surface of said disc spaced equally about the circumference thereof in positions to be selectively oriented with said front surface opening upon rotation of said disc for visual indication of the relative position of said disc about its axis to an individual wearing said housing;

a source of electrical energy provided by a battery mounted in said housing; an electrical circuit disposed within said housing interior to provide an electrical signal output in the form of timing impulses to said earphone of a selected frequency range, said electrical circuit including a first and second transistor of the NPN type, a third transistor of the PNP type, a first through fourth diode, a first through third capacitor, a first through third fixed resistor, a first variable resistor, a second variable resistor, said first and second transistors defining a multi-vibrator circuit in conjunction with associated ones of said components to provide an output signal of pulses selectable in frequency in the range of from 0.4 seconds to 3.0 seconds, said third transistor receiving said output signal and amplifying the same to energize said earphone coil to provide audible signals in said earphone varying in accord with said output signal; and

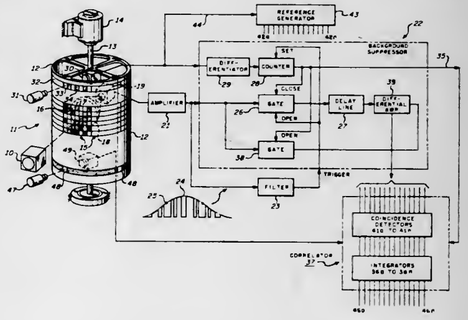
said disc being manually connected to said first and said second variable resistors with rotation of said disc varying the resistance of said variable resistors to effect the tuning of the multi-vibrator circuit in a manner to select the desired frequency output signals.

3,882,481
LOW VOLTAGE INDICATOR CIRCUIT
Robert Bruce Turner, Weymouth, Mass., assignor to American Medical Electronics Corporation, Weymouth, Mass.
Filed May 30, 1974, Ser. No. 474,402
Int. Cl. G08b *5/36*
U.S. Cl. 340—336 **8 Claims**

1. An electronic system comprising a display circuit including at least two display units which are normally simultaneously enabled to display a character during an interval of operation of the system and a low voltage indicator circuit responsive to the supply voltage decreasing below a predetermined level for disabling at least one and less than all of said display units and preventing its display of a character during at least a segment of said interval.



3,882,482
OPTICAL RADIANT ENERGY ENCODING AND CORRELATING APPARATUS
Benjamin W. Green, Achuza, Haifa, Israel; Richard E. Roble, Commack, and Irving Roth, Williston Park, both of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Sept. 12, 1969, Ser. No. 862,625
Int. Cl. G01b *11/26*; **G01n** *21/30*
U.S. Cl. 340—347 P **12 Claims**



1. An optical encoder comprising

a member having a continuous loop track including at least two coded sections each having a plurality of bands disposed along the track with each band containing the same pseudo-random code formed by means of segments respectively relatively more transparent and opaque to optical radiant energy, the transmissivity of the code segments in one section being inverted with respect to the corresponding code segments in the other section and the codes in the bands of at least one of the sections being shifted relative to one another whereby the code patterns of the respective sections are skewed relative to one another.

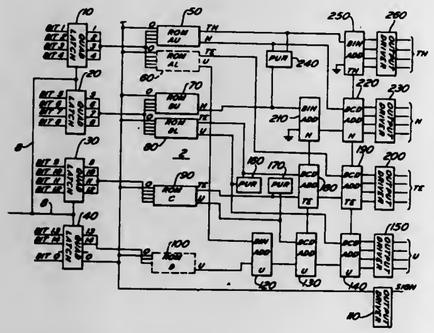
3,882,483
CODE CONVERTER SYSTEM AND METHOD
Edmund T. Burke, West Long Beach, and Donald F. Kennedy, South Toms River, both of N.J., assignors to Electronic Associates, Inc., West Long Branch, N.J.
Filed May 7, 1973, Ser. No. 357,624
Int. Cl. H03k *13/24*
U.S. Cl. 340—347 DD **1 Claim**

1. A system for converting digital input signals to digital output signals between binary coded decimal and binary code signals, comprising:

a. hard wired logic means having a programmed mapping between said codes, said logic means having said input signal applied in one of said codes and for producing a signal in the other of said codes, said logic means including a plurality of read only memory means connected each to the other in parallel fashion, each of said read only memory means having a predetermined decade of information applied thereto in said input signal code;

b. storage register means for holding predetermined decades of information signals, said storage register means

applying said signals to said read only memory means, at least one of said storage register means applying an information signal to each of said read only memory means for determining the sign of a number being applied to said read only memory means in said input signal code; and



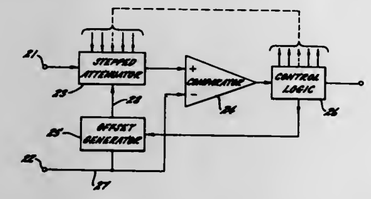
c. summing means connected to said logic means for summing said signals from said logic means for producing said digital output signal in one of said codes.

3,882,484

NON-LINEAR ENCODER AND DECODER

Adrian Paul Brokaw, Woburn, and Daniel Y. S. Chin, Needham, both of Mass., assignors to Wescom, Inc., Downers Grove, Ill.

Filed Oct. 30, 1972, Ser. No. 302,101
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **18 Claims**



13. The encoder of claim 12 wherein said order is selected so that said attenuation factors are multiplicatively contributed to the attenuation level of said attenuator in declining order of significance.

3,882,485

UNIVERSAL POLYBINARY MODEM

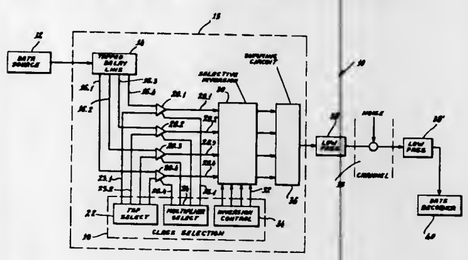
Leo I. Bluestein, Bedford, and John H. Meyn, Carlisle, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 3, 1973, Ser. No. 402,959
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **11 Claims**

5. A universal polybinary modem for use in a system in which data signals precoded for a desired class of polybinary signals having essentially zero energy at an upper band edge are transmitted along a communications channel at a high baud rate and are decoded at a receiving end of the channel comprising

means for selecting the precoded data signals at successive intervals corresponding to the baud rate employed in the precoded data signals;

means, connected to the output of the selecting means, for arithmetically combining predetermined selected precoded data signals in accordance with a desired class of polybinary signals having a power spectrum of essentially zero at the upper band edge; and



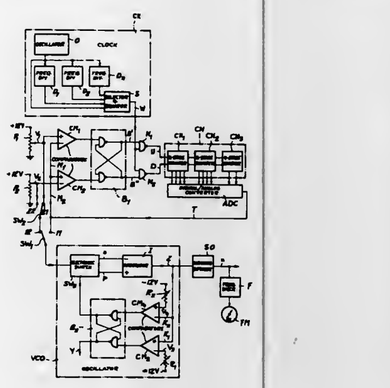
a duobinary wave shaping network in line with the communications channel, the network receiving the output of the combining means and, in conjunction with the selecting and combining means, forming the desired class of polybinary signals.

3,882,486

VARIABLE-FREQUENCY GENERATOR

Nicola Montefusco, and Alfredo Barlucchi, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Oct. 9, 1973, Ser. No. 404,749
Claims priority, application Italy, Oct. 6, 1972, 30148/72
Int. Cl. H03k *4/06*
U.S. Cl. 340—347 DA **8 Claims**



1. A system for producing a periodically and linearly varying frequency, comprising:

a generator of uniformly spaced stepping pulses;

a binary counter provided with a forward-counting first input and with a backward-counting second input;

first bistable switch means responsive to the output of said counter for feeding said stepping pulses to said first input until the count exceeds a predetermined upper limit and to said second input until the count drops below lower predetermined lower limit, with switchover from one to the other upon the passing of either of said limits;

a digital/analog converter connected to the output of said counter for translating said count into an alternately rising and falling stepped voltage with steps of uniform width and height;

a voltage integrator having a small time constant with reference to the repetition period of said stepping pulses; and second bistable switch means for feeding said stepped voltage to said integrator with periodic polarity reversals in response to attainment of either of two predetermined

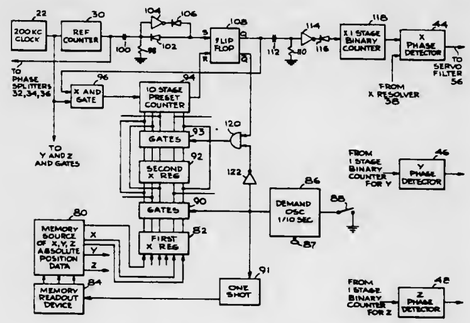
voltage levels by the integrator output, thereby producing a substantially triangular wave whose frequency varies with the instantaneous magnitude of said stepped voltage.

3,882,487

ALL DIGITAL SAMPLING SERVO SYSTEM

Jack Rosenberg, 808 Bienveneda Ave., Pacific Palisades, Calif. 90272

Filed Nov. 29, 1973, Ser. No. 419,903
Int. Cl. G08c *11/00*; **H03k** *13/02*
U.S. Cl. 340—347 DA **9 Claims**



1. A numerical control system for commanding slide motion along each axis of a machine tool comprising, for each axis,

means for generating successive absolute location number signals representative of successive locations to which the slide for an axis must move within successive, identical, predetermined intervals,

means for generating successive reference time signals spaced apart by said identical predetermined intervals,

means responsive to successive absolute location number signals and successive reference time signals for generating successive command signals wherein each command signal is phase delayed from a reference time signal by an amount representative of a location number value,

means for generating a slide signal having a phase delayed from said reference by an amount representative of the distance of said slide from a reference location,

a phase detector,

means for successively applying said command signals and said slide signals to said phase detector to produce an output signal having a phase representative of a phase difference of its inputs, and

means responsive to the output of said phase detector for moving said slide in a direction to minimize said phase difference.

3,882,488

ANALOG TO DIGITAL CONVERTER SYSTEM INCLUDING COMPUTER CONTROLLED FEEDBACK MEANS

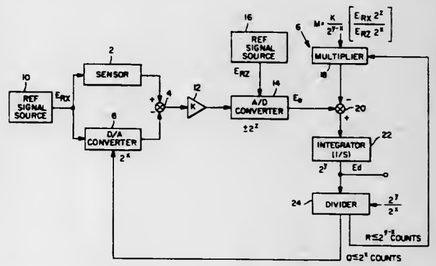
Henry R. Kosakowski, Denville, and Douglas J. Washburn, Morristown, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 26, 1973, Ser. No. 428,156
Int. Cl. H03k *13/00*
U.S. Cl. 340—347 CC **6 Claims**

1. In an analog to digital conversion system of the type including means for summing an analog input signal with a feedback signal from a digital to analog converter to provide an error signal, means for adjusting the gain of the error signal, an analog to digital converter for converting the analog signal to a digital signal, computer means including an integrator for integrating the digital signal and for providing a digital output corresponding to the analog input signal and divider means for dividing the integrated digital signal by a predetermined scale factor signal, the digital to analog converter connected to the divider means for converting the signal therefrom to an analog signal which scales the integrator to said converter, the improvement comprising:

the signal from the divider means including a quotient signal and a remainder signal;

the digital to analog converter converting the quotient signal to an analog signal which scales the integrator to said converter;



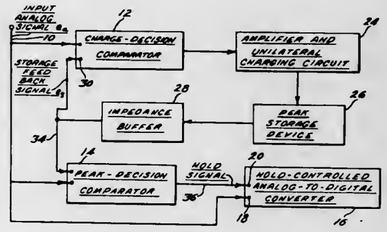
the computer means including means for combining the remainder signal with a signal which is a function of the gain adjustment of the error signal and the least significant bit in the converters to provide a first combined signal, means for combining the first combined signal with the digital signal from the analog to digital converter to provide a second combined signal, and the integrator integrating the second combined signal.

3,882,489

APPARATUS FOR PRODUCING A DIGITAL ELECTRICAL REPRESENTATION OF A PEAK VALUE OF AN ANALOG SIGNAL

Bernd R. Guggolz, Collings Lake, N.J., assignor to John Chatillon & Sons Inc., Kew Gardens, N.Y.

Filed May 15, 1974, Ser. No. 470,029
Int. Cl. H03k *13/17*
U.S. Cl. 340—347 **7 Claims**



1. Apparatus for producing and maintaining a digital electrical representation of substantially a peak value of an analog signal, comprising:

A/D converter means responsive to an input analog signal to produce an electrical digital number representation of the value of said analog signal, said A/D converter means having a control terminal which when supplied with a first value of a control signal permits said digital number representation to follow both increases and decreases in said analog signal value, and which when supplied with a second value of said control signal prevents said electrical digital representation from following reductions in said analog signal value from said peak value;

electrical peak-detector and storage means supplied with said analog signal for producing and storing a signal substantially equal to said peak value of said analog signal;

comparator means for comparing said stored signal with said analog signal and for producing a control signal of said second value when the value of said stored signal exceeds the value of said analog signal by at least a predetermined amount and for producing a control signal of said first value at other times; and

means for applying said control signal to said control terminal of said A/D converter means to hold constant said digital number representation while said second value of said control signal persists.

3,882,490

INDICATING DEVICE

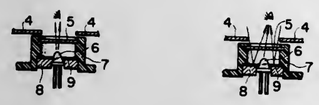
Hiroyuki Tashiro, and Susumu Urano, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed July 30, 1973, Ser. No. 383,547

Claims priority, application Japan, Aug. 11, 1972, 47-95031

Int. Cl. G08b *5/00*

U.S. Cl. 340—366 B **3 Claims**



1. An indicating device comprising a liquid crystal element in plate form disposed in the front part of the device and having a light transmission factor which changes considerably with variation of a voltage applied thereto, a detecting switch having an on-off operation for detecting variation of a quantity or condition to be detected and connected electrically to said liquid crystal element, a light emitting diode disposed at the rear of said liquid crystal element, and a reflecting plate for reflecting an incident light passing through said liquid crystal element and disposed behind said liquid crystal whereby when the light transmission factor of said liquid crystal element is caused to increase with reduction of a voltage applied across said liquid crystal, indication of a warning or the like is given by the light emitted from said light emitting diode and passing through said liquid crystal.

3,882,491

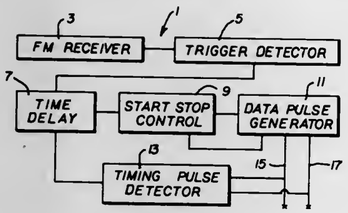
PERSONAL SECURITY SYSTEM

Robert E. Mauch, Santa Monica, and Robert I. Sarbacher, Marina Del Rey, both of Calif., assignors to John C. Bogue, Santa Monica, Calif.

Filed Mar. 13, 1974, Ser. No. 450,878

Int. Cl. G08b *29/00*

U.S. Cl. 340—409 **19 Claims**



1. A distress signal relay system comprising: a plurality of remote units and a master unit coupled to said remote units, said plurality of remote units each including receiving means to receive a radio frequency distress signal and providing an output signal having a time duration greater than a given time duration in response to the receipt of said distress signal, and means responsive to said output signal of said greater duration for generating output data pulses during a given time slot determined by timing pulses received from said master unit by each of said plurality of remote units and said master unit including means to process data pulses from each remote unit, a plurality of lamps at least equal in number to the number of said plurality of remote units, a different one of said plurality of lamps being associated with each of said plurality of remote units, and means coupled between said means to process said data pulses and said lamps for energizing only those lamps for which the corresponding remote unit has received a distress signal.

3,882,492

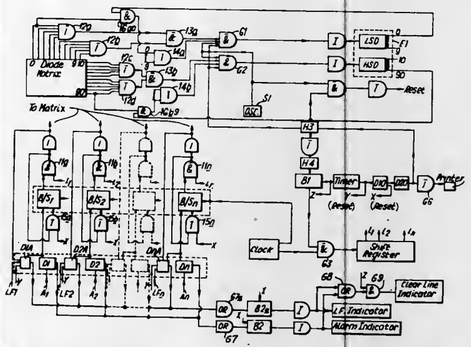
DATA SIGNALLING SYSTEMS

David J. McSorley, Twickenham, and Jaye De Croos, Banstead, both of England, assignors to Alarm Equipment Supplies Limited, Twickenham, Middlesex, England

Filed Apr. 17, 1973, Ser. No. 351,882

Int. Cl. G08b *19/00;* **H04g** *3/00*

U.S. Cl. 340—413 **7 Claims**



1. A receiver for use in a security alarm signalling system in which a predetermined number of remote stations are each connected to a central receiving station by respective pairs of wires, each remote station being identified by a different predetermined number, and the receiver including a multiple input encoder, each input of said encoder being connected, when in use, to a respective pair of wires from one of the numbered remote stations, and the receiver also including a multiple input binary store; gating means connected between the outputs of said binary store and corresponding inputs of said encoder; scanning means for periodically scanning the inputs of said encoder, said scanning means including enabling means for periodically enabling each of said gating means in turn; said encoder including means responsive to a change in the signal level on any one of its inputs for generating a coded output signal representative of the number of the remote station to which the input is connected, and a digital display device including means for converting the coded output into a digital read-out of said number; and means responsive to the presence of a signal in said encoder for inhibiting the enabling means until the signal has been encoded and read out on the display device.

3,882,493

DOPPLER CORRELATION RADAR EXHIBITING REDUCED TIME SIDE LOBES

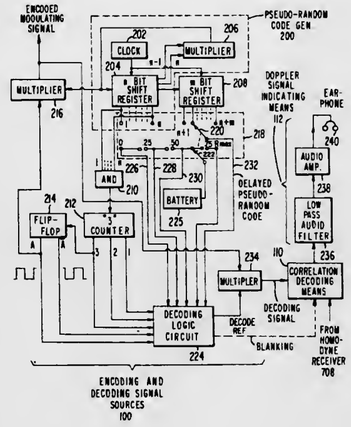
Thomas Vincent Bolger, Pennsauken, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 11, 1973, Ser. No. 368,660

Int. Cl. G01s *9/42;* **G08b** *13/22*

U.S. Cl. 343—5 PD **7 Claims**

1. In a moving target correlation radar system of the type comprising means for transmitting a continuous carrier wave modulated with a predetermined encoded modulating signal including a pseudo-random code sequence, means for demodulating echo signals received from any moving target within a given range illuminated with said transmitted signal, range bins switch means for selectively deriving a delayed pseudo-random code sequence having a delay corresponding to any one of a plurality of different range bins, means coupled to said range bins switch means for generating a decoding signal including a pseudo-random code sequence manifesting the delay selected by said range-bins switch means, and doppler frequency means including correlation decoding means for correlating said demodulated echo signals against said decoding signal to derive an output signal from said correlation decoding means which includes the doppler-frequency signature signal of a moving target having a range within the range bin selected by said range bins switch means; the improvement wherein:



both said transmitting means and said decoding signal generating means are respectively arranged to provide respective encoded modulating and decoding signals which result in the output from said correlation decoding means including both a relatively high frequency carrier component modulated by the time side lobes corresponding to the doppler-frequency signature signals of all received moving targets having a range outside of the selected range bin and a base-band component corresponding to the doppler frequency signature signal of only a received moving target having a range within the selected range bin, and

said doppler-frequency means further includes doppler-frequency indicating means responsive only to the base-band component of the output from said correlation decoding means of a moving target.

3,882,494

DOPPLER CORRELATION RADAR PROVIDING COMBINED TARGET DETECTION AND RANGING

Thomas Vincent Bolger, Pennsauken, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 11, 1973, Ser. No. 368,661

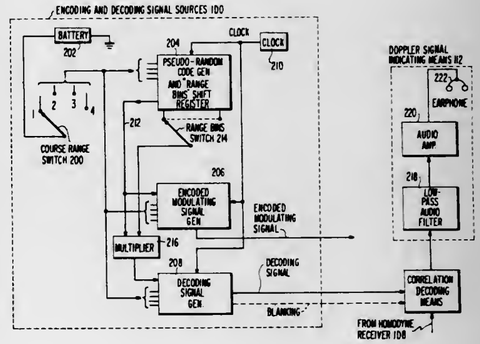
Int. Cl. G01s *9/42;* **G08b** *13/22*

U.S. Cl. 343—5 PD **6 Claims**

1. In a moving target correlation radar system of the type comprising means for transmitting a continuous carrier wave modulated with a predetermined encoded modulating signal including a pseudo-random code sequence, means for demodulating echo signals received from any moving target within a given range illuminated with said transmitted signal, range-bins switch means for selectively deriving a delayed pseudo-random code sequence having a delay corresponding to any one of a plurality of different range bins, means coupled to said range-bins switch for generating a decoding signal including a pseudo-random code sequence manifesting the delay selected by said range-bins switch, and doppler-frequency means including correlation decoding means for correlating said demodulated echo signals against said decoding signal to derive an output signal from said correlation decoding means which includes the doppler-frequency signature signal of a moving target having a range within the range bin selected by said range bins switch means; the improvement wherein:

said transmitting means is arranged to provide a cyclic encoded modulating signal, each cycle of said encoded modulating signal including at least one detection portion and one range bins portion which occur serially with respect to each other, said pseudo-random code sequence occurring only during said range-bins portion, said encoded modulating signal having a first format during a detection portion thereof, and

said decoding signal generating means is arranged to provide a cyclic decoding signal, each cycle of said decoding signal including at least one detection portion and one range-bins portion which occur serially with respect to each other in predetermined phase relationship with respect to said detection portion and range-bins portion of said encoded modulating signal, said delayed pseudo-random sequence only occurring during said range-bins portion of said decoding signal, and said predetermined



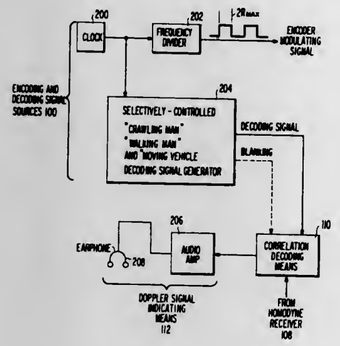
phase relationship providing a cooperative relationship in which said delayed pseudo-random code sequence has an appreciable correlation with the pseudo-random sequence during said range-bins portion of said encoded modulating signal as manifested in said demodulated echo signals only when said moving target has a range within the range bin selected by said range-bins switch, said detection portion of said decoding signal having a second format cooperatively related to said first format of said detection portion of said encoded modulating signal so that with said predetermined phase relationship there is provided a partial but significant amount of correlation during said detection portion of said decoding signal when said moving target has a range within any of said plurality of different range bins,

whereby the output from said correlation decoding means includes a relatively-low amplitude doppler-frequency signature signal of a moving target having a range within a given one of the range bins when said given one of said range bins is not selected by said range-bins switch and includes a relatively high-amplitude doppler-frequency signature signal of that moving target when said given one of said range bins is selected by said range-bins switch.

3,882,495
DOPPLER CORRELATION RADAR PROVIDING COARSE-RANGE DETECTION RESOLUTION

Thomas Vincent Bolger, Pennsauken, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 11, 1973, Ser. No. 368,869
Int. Cl. G01s 9/42; G08b 13/22
U.S. Cl. 343—5 PD **9 Claims**



1. In a moving target correlation radar system of the type comprising means for transmitting a continuous carrier wave modulated with a predetermined encoded modulating signal, means for demodulating echo signals received from any moving target within a given range illuminated with said transmitted signal, means for generating a decoding signal, and doppler-frequency means including correlation decoding means for correlating said demodulated echo signals against said decoding signal to derive an output signal from said correlation decoding means which includes the doppler-frequency signature of any moving target then being detected; the improvement wherein:

said moving targets comprise a predetermined plurality of different target types each having a distinctive doppler-frequency signature and a distinctive radar cross-section, and

said decoding signal generating means includes means for applying to said correlation decoding means at least a selected one of a group of different predetermined decoding signals each of which has a format corresponding to a different target type, each of said respective formats of said different decoding signals only correlating with said demodulated echo signal over a different range subinterval of said given range with the range subinterval corresponding to a target type of relatively smaller radar cross-section being closer than the range subinterval corresponding to a target type of relatively larger radar cross section.

3,882,496
NON-DESTRUCTIVE WEAPON SYSTEM EVALUATION APPARATUS AND METHOD FOR USING SAME

Virgil D. Lewis, Silver Spring, and Gregory V. Cirincione, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 21, 1974, Ser. No. 453,477
Int. Cl. F41g 3/26; G01s 9/02
U.S. Cl. 343—6 R **10 Claims**

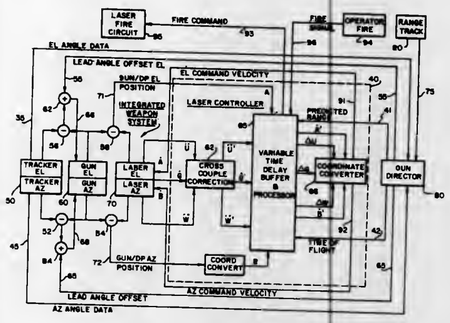
1. Apparatus for nondestructively evaluating the performance of a weapon system, which comprises:

weapon means for launching a projectile intended to intercept a moving target;

tracking means for obtaining position and range data of said target;

first control means responsive to said data for computing the lead angle and predicted range of said target to define a point in space where said projectile, if then launched, will intercept said target;

laser means for illuminating said point in space with a laser beam; and

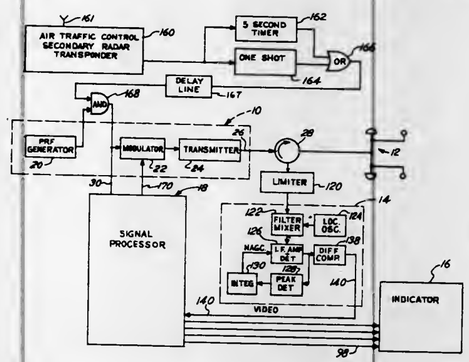


laser control means responsive to said first control means for positioning said laser means at said point in space and for activating said laser means at the end of a predetermined time interval.

3,882,497
SYNCHRONIZING TECHNIQUES FOR AN AIRCRAFT COLLISION AVOIDANCE SYSTEM

Philip J. Klass, Washington, D.C., and Charles P. Harman, Jr., Roseville, Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed July 2, 1973, Ser. No. 375,631
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 LC **6 Claims**



5. In a system for avoiding collision between a group of aircraft within range of a ground-controlled beam of electromagnetic radiation that is cyclically moved through a predetermined arc so that the beam periodically strikes the aircraft, improved apparatus carried on one of the aircraft in the group and adapted to cooperate with like apparatus carried on other aircraft in the group comprising in combination:

means for generating a start signal in response to the receipt of the beam;

means for transmitting an interrogating signal to the other aircraft in response to the start signal, for receiving response signals transmitted by the other aircraft in response to the interrogating signal and for transmitting a response signal in response to the receipt of each interrogating signal transmitted by the other aircraft;

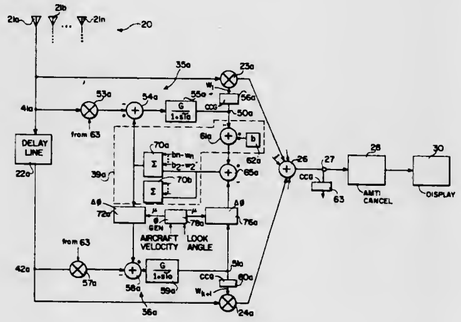
delay means for delaying the transmitting of the interrogating signal to the other aircraft for an adjustable time period; and

means for processing information derived from the interrogating signal and the response signals received from the other aircraft to determine the relative positions of the one aircraft and the other aircraft.

3,882,498
ADAPTIVE ARRAY PROCESSOR PROVIDING IMPROVED MAINLOBE MAINTENANCE

August L. McGuffin, Clinton, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,519
Int. Cl. G01s 9/42
U.S. Cl. 343—7 A **1 Claim**



1. An adaptive AMTI processor for receive-mode operation with an array antenna, comprising, in combination:

a plurality of element circuits connected, one each, to the respective antenna elements, each said circuit including a delay line arranged to receive the output from the antenna element, a pair of cross-correlator control loops connected respectively to the input and output of said delay line, weighting feedback means connected to said cross-correlator control loops and incorporating beam-forming circuit means operable to control the gain of said cross-correlator control loops to suppress signal returns incident upon said antenna from all directions other than the angle of a narrow arc centered about the antenna boresight, and phase shift means also incorporated in said weighting feedback means for introducing into the feedback signal path a phase shift approximately 180° greater than the phase difference between corresponding clutter return signals appearing at the input and output of said delay line;

an AMTI canceller circuit; and

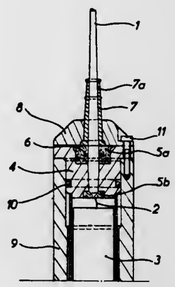
summing circuit means for combining all outputs from said cross-correlator control loops and passing the resultant signal to said AMTI canceller circuit for processing.

3,882,499
ANTENNA LEAD-THROUGH ASSEMBLY FOR A RADIO BUOY

Humbert Garito, Marseille, France, assignor to Le Nickel, Marseille; Centre National Pour l'Exploitation des Oceans, Paris and ERJI, Paris, France

Filed Oct. 23, 1973, Ser. No. 408,520
Claims priority, application France, Oct. 25, 1972, 72.37747
Int. Cl. H01q 1/34
U.S. Cl. 343—709 **5 Claims**

1. An antenna lead-through assembly for a submersible radio buoy having a tubular body, the assembly comprising a plug fitted in the tubular body of the buoy, the plug having a tapered axial bore widening outwardly to receive the inner end part of the antenna tapered to a complementary shape and the plug having two generally cylindrical recesses formed one at the inner end and the other at the outer end thereof, a first toroidal seal interposed between the body and the plug, a second toroidal seal fitted around the antenna and residing in the outer cylindrical recess, a filling of hardenable synthetic

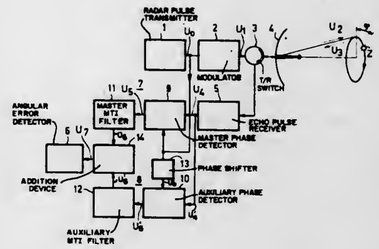


resin in the inner cylindrical recess, and a filling of hardenable synthetic resin in the outer cylindrical recess so as to cooperate with said recess and said second toroidal seal, a sleeve surrounding the antenna outwardly of the plug, a cap fitted on the plug to lie around the sleeve, means for securing the plug and the cap to the tubular body, and an electric conductor for connecting the antenna to a signal generator of the buoy.

3,882,500
SYSTEM FOR THE AUTOMATIC TRACKING OF A MOVING TARGET

Harald Sikora, Bremen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 9, 1973, Ser. No. 414,532
Claims priority, application Germany, Nov. 11, 1972, 2255373
Int. Cl. G01s 9/02
U.S. Cl. 343—7.4 **3 Claims**



1. A radar system for tracking a moving target comprising means for transmitting pulse-modulated electromagnetic energy in a rotating beam whose axis describes a cone, means for receiving electromagnetic energy reflected by a moving target, a first phase detector connected to the receiving means and supplied by a first reference signal from the transmitting means to compare the phase of the reflected signal with the transmitted signal, first frequency selecting means connected to the first phase detector to pass-through the real signals whose frequency differs due to Doppler shifting from that of the transmitted electromagnetic energy, a second phase detector connected to the receiving means and supplied by a second reference signal which is phase shifted about 90° with respect to the first reference signal, second frequency selecting means connected to the second phase detector to pass-through the imaginary Doppler signal components, vector adding means

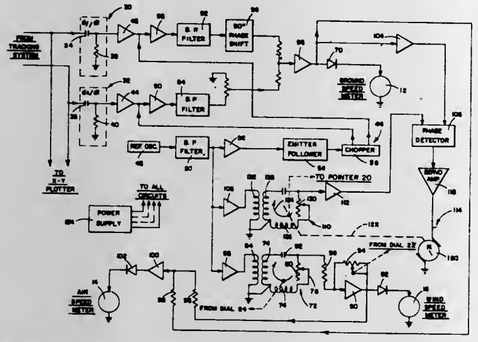
connected to the first and second filter means for adding the real and imaginary Doppler signal components, and tracking error detecting means connected to the output of the said adding means.

3,882,501

SYSTEM FOR DETERMINING SPEED AND HEADING OF AIRBORNE EQUIPMENT WITH RECTILINEAR COORDINATE POSITIONS

Richard Allen Botzum, Chania, and Charalampos Koufidakis, Canea, Crete, both of Greece, assignors to Northrop Corporation, Los Angeles, Calif.

Filed Feb. 11, 1974, Ser. No. 441,144
Int. Cl. G01s 9/44
U.S. Cl. 343—9 **24 Claims**



9. The system for tracking airborne equipment of claim 7 further characterized in that said ground speed determination circuit comprises:

a. rate of change means for determining the rates of change of said first and second coordinate signals with respect to time,

b. summing means operatively connected to said rate of change means for summing the rates of change of the first and second coordinate signals, and

c. ground speed indicative means operatively connected to said summing means and being responsive to the amplitude of the summed signal to thereby determine the speed of the airborne equipment.

3,882,502

CRT MULTIPLE-SCAN DISPLAY APPARATUS AND METHOD PROVIDING TARGET DISCRIMINATION

Roger H. Peabody, Kings Park, L. I.; Seymour Sutkin, Huntington Station, L. I., and Charles Chubb, Brookville, all of N.Y., assignors to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 17, 1974, Ser. No. 434,168
Int. Cl. G01s 7/06
U.S. Cl. 343—17 **7 Claims**

1. A multiple-scan radar display functioning to display a past history of the target's position along with the target's present position in such a manner as to highlight the presence of moving targets amid stationary targets and noise by repetitively displaying data from a finite number of past radar antenna scans in rapid succession comprising:

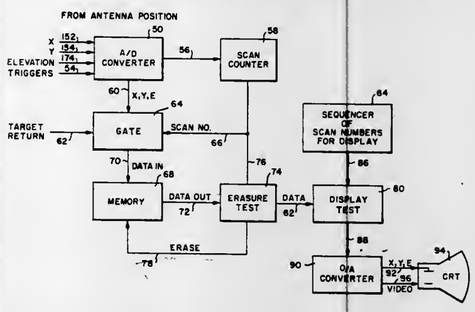
means to receive antenna beam-position data and convert said data to its proper form wherein said antenna beam position data consists of X-coordinate, Y-coordinate, and elevation data;

a scan counter receiving its input signal from said means to receive antenna position data each time the antenna starts a new scan, the input signal changing the count held in said scan counter;

gate and timing means to receive an input signal each time a target signal is detected, said gate and timing means also being connected to said means to receive antenna beam position data and to said scan counter, said gate-and-timing means sampling the X-coordinate, Y-coordinate, and elevation data therefrom and sampling the scan count in said scan counter upon the receiption of a target return signal;

a memory, connected to said gate and timing means, into which is read the sampled data and the scan count at the proper time by the gate and timing means;

erasure test means receiving inputs from said memory and said scan counter and acting to compare the scan count of the oldest target data stored in said memory to the present scan count in said scan counter to determine whether this target data is from a scan older than the scans that are to be displayed, said erasure test means



sending an erase signal to said memory if the scan count from the target data is determined to be too old;

display test means connected to said erasure test means connected to said erasure test means to receive the target data from said erasure test means if it is not too old and to compare the scan count of this target data to a scan number indicating the scan to be displayed at a particular time;

D/A converter means connected to said display test means and acting to receive a signal from said display test means if the scan number and the scan count of the target data are equal and to convert the X-coordinate, Y-coordinate, and elevation data into analog form; and

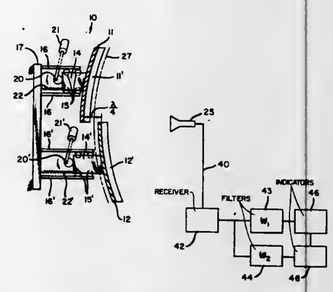
a display device connected to said D/A converter means and utilizing this analog target data to display the targets in their proper sequence and position.

3,882,503

WAVE DETECTION APPARATUS

Norbert J. Gamara, Los Altos, Calif., assignor to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Aug. 17, 1960, Ser. No. 50,262
Int. Cl. G01s 1/00
U.S. Cl. 343—100 R **5 Claims**



5. Wave detection apparatus comprising an antenna having at least two relatively movable wave reflecting surfaces

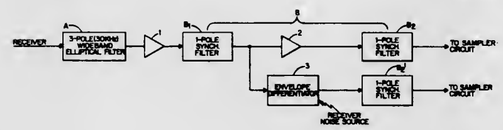
adapted to reflect electromagnetic waves received from the same direction, said surfaces being spaced from each other along said direction by one-quarter of a wavelength at the operating frequency of the antenna, means to reciprocate said surfaces at relatively different rates, and means for receiving waves reflected from said surfaces and for discriminating between waves modulated at said different rates.

3,882,504

PROCESS OF AND APPARATUS FOR PROVIDING FILTER DISCRIMINATION BETWEEN RECEIVED DIRECT IMPULSES AND DELAYED PULSES AS IN PULSE NAVIGATION AND RELATED APPLICATIONS

John M Currie, Westford, and Herbert L. Brown, Cohasset, both of Mass., assignors to International Navigation Corporation, Bedford, Mass.

Filed Nov. 2, 1973, Ser. No. 412,249
Int. Cl. G01s 1/24
U.S. Cl. 343—103 **13 Claims**



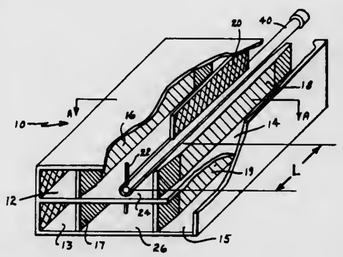
12. A composite filter apparatus for signal discrimination in Loran C pulse navigation and related radio-frequency signal applications, having, in combination, means for receiving said signal, and filter means connected with said receiving means and having an overall response characteristic substantially symmetrically disposed with respect to the signal center frequency that drops gradually in bell-shaped fashion over a limited predetermined frequency band, then steeply drops with substantially infinite slope and then more gradually flares out with high attenuation for more remote frequencies.

3,882,505

DUAL BAND PHASED ARRAY ELEMENT

Robert J. Mailloux, 98 Concord Rd., Wayland, Mass. 01778

Filed May 30, 1974, Ser. No. 474,561
Int. Cl. H01q 13/06, 21/00
U.S. Cl. 343—727 **10 Claims**



1. A dual band phased array element comprising in combination

means for forming a plurality of first waveguide sections, said plurality of first waveguide sections having a central wall divider, said plurality of first waveguide sections being dielectrically loaded,

means for forming a plurality of second waveguide sections, said plurality of second waveguide sections being located within said plurality of first waveguide sections, said plurality of second waveguide sections being located at one end of said plurality of first waveguide sections, and a low frequency coaxial line contained within said plurality of first waveguide sections and extending into said plurality of second waveguide sections, said low frequency coaxial line supplying the input signal to said plurality of second waveguide sections.

3,882,506

ANTENNA FOR DIRECTION FINDERS WITH MAST ISOLATION

Kenzo Mori; Yujiro Katsube, both of Tokyo, and Norio Ikeda, Ichikawa, all of Japan, assignors to Taiyo Musen Co. Ltd., Tokyo, Japan

Filed Feb. 20, 1974, Ser. No. 443,949
Int. Cl. H01q 21/00
U.S. Cl. 343—728 **1 Claim**



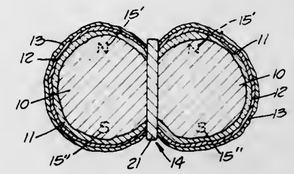
1. An antenna device for direction finders comprising a loop means formed of two loop antennas arranged so as to rectangularly intersect with each other and shields fitted respectively with said antennas, a sense determining vertical antenna provided at the center of said loop means, a hollow insulated base fitted with said loop means at the lower end and a transformer provided within said base so as to take a sense determining output out of its secondary side, the primary winding in said transformer being connected on both sides respectively with the lower central point of said loop means and the lower side of said vertical antenna, all the above mentioned composing members being not earthed.

3,882,507

MEANS AND METHOD FOR CREATING A VISIBLE DISPLAY UTILIZING HIGH SENSITIVITY MAGNETOCHEMICAL PARTICLES

Lyne S. Trimble, and Florence A. Ito, both of North Hollywood, Calif., assignors to Lyne S. Trimble, North Hollywood, Calif.

Filed Dec. 20, 1971, Ser. No. 210,077
Int. Cl. G01d 15/34; G03g 19/00
U.S. Cl. 346—74.1 **46 Claims**



1. A high sensitivity magnetochemical particle, comprising: two anisotropic masses of magnetic material; non-magnetic bond means interconnecting surface portions of said masses with their maximum anisotropic axes parallel, said masses when subjected to a magnetic field, being capable of generating bond breaking forces between adjacent-like magnetic poles induced in the masses parallel to the bonded surface portions thereof by said magnetic field.

3,882,508

STIMULATION APPARATUS FOR A JET PROP

a. means for producing a code signal having an information

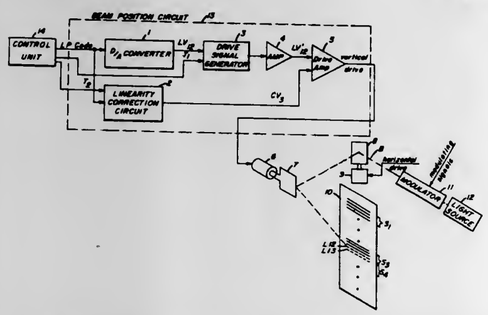
objective lens diaphragm adjusting means for setting the

3,882,508
STIMULATION APPARATUS FOR A JET DROP RECORDER
Leonard G. Stoneburner, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed July 22, 1974, Ser. No. 491,154
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **18 Claims**



1. In a jet drop recording head comprising an orifice plate provided with a plurality of orifices arranged along a line, a common manifold connecting with said orifices, means marginally securing said orifice plate to said manifold for definition of an acoustical wave guide, means for supplying a recording liquid to said manifold at sufficient pressure for forcing the liquid through said orifices and creating a line of liquid jets, means for causing a series of bending waves to travel lengthwise along said orifice plate and stimulate said jets to break up into streams of regularly formed drops, and means for charging and deflecting said drops to create intelligible patterns therefrom; the improvement wherein the marginal attachment of said orifice plate to said manifold defines a wave guide of progressively decreasing width to counteract the naturally occurring attenuation of said waves.

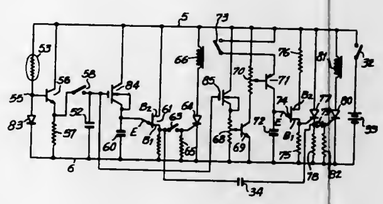
3,882,509
LINEARITY CORRECTION CIRCUIT FOR AN OPTICAL SCANNING DEVICE
John E. Newton, and Robert L. Reifsteck, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 23, 1973, Ser. No. 408,350
Int. Cl. B41b *13/00*
U.S. Cl. 354—5 **3 Claims**



1. In a character recording apparatus for recording characters on a light sensitive medium including means for forming at least one beam of light for use in character recording, a first mirror for scanning said beam in a first direction to form at least portions of characters generally arranged in a line and a second mirror movable in a second direction relative to said first direction to positions respectively corresponding to lines of a page, said first direction being along such lines and said second direction being between topmost and bottom-most ones of such lines of the page, and first and second galvanometers coupled to said first and second mirrors and responsive to first and second drive signals for respectively scanning and positioning said first and second mirrors, apparatus for producing such second drive signal comprising:

a. means for producing a code signal having an information content representative of the position of a line of a page on which characters are to be formed;
b. linear signal producing means responsive to said code signal for producing a linear output signal corresponding to such line;
c. linearity correction circuit means responsive to such code signal for producing a correction signal which is a function of the position of such line on the page; and
d. means responsive to said linear output signal and said linearity correction signal for producing such second drive signal and providing it as an input to said second galvanometer whereby said second galvanometer is moved to a position corresponding to such line on the page.

3,882,510
OSCILLATION SYSTEMS FOR CONTROL OF CAMERA SHUTTERS
Tsukumo Nobusawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 5, 1973, Ser. No. 403,829
Claims priority, application Japan, Oct. 6, 1972, 47-99901; Oct. 6, 1972, 47-99902; Oct. 23, 1972, 47-105232; Oct. 23, 1972, 47-105233
Int. Cl. G03b *7/08*
U.S. Cl. 354—24 **27 Claims**

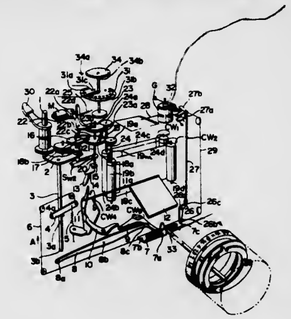


1. In a camera having an electronically controlled shutter, oscillation means for providing a series of pulse signals whose frequency is a function of light intensity at an object to be photographed, shutter-opening circuit means electrically connected with said oscillation means for opening the shutter in response to one of said pulses selected by a shutter-release operation, exposure circuit means electrically connected with said shutter-opening circuit means for responding to said one pulse for converting preset exposure factors into a time duration starting with said one pulse and for providing a control signal after the elapse of said time duration, and shutter-closing circuit means electrically connected to said exposure circuit means for receiving said control signal and in cooperation therewith closing the shutter.

3,882,511
ELECTRICAL EXPOSURE CONTROL DEVICE FOR A PHOTOGRAPHIC CAMERA
Kayoshi Tsujimoto, and Toru Matsui, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Aug. 8, 1973, Ser. No. 386,557
Claims priority, application Japan, Aug. 8, 1972, 47-78791
Int. Cl. G03b *7/08*
U.S. Cl. 354—29 **9 Claims**

1. An electrical exposure control device for use in a photographic camera, comprising:
a light receiving circuit including at least one light receiving element for generating a photometric output in accordance with the luminance on the light receptive surface thereof;

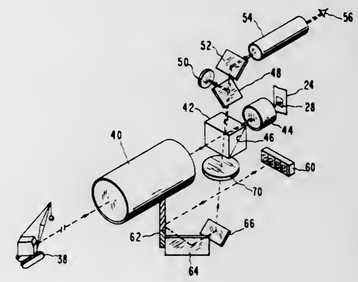
objective lens diaphragm adjusting means for setting the camera lens aperture;
a selecting member for selecting a first and a second exposure control, said first exposure control setting the camera shutter speed and adjusting said diaphragm means commensurate with said shutter speed setting and said photometric output, said second exposure control adjusting shutter speed and said diaphragm means in programmed relation commensurate with said photometric output;
a first variable resistor whose resistance varies in accordance with said selected shutter speed with said selecting member selecting said first exposure control;
a movable member responsive to said photometric output;
a detecting member for detecting the position of said movable member;
a diaphragm operating member responsive to said detecting member for controlling said objective lens diaphragm means;



a second variable resistor whose resistance is varied by said detecting member in accordance with the detected position of said movable member;
a timing circuit having a variable time constant for controlling the shutter speed, said time constant varying in accordance with said first variable resistor and said second variable resistor with said selecting member respectively selecting said first and said second exposure control;
means for switching said first variable resistor and said second variable resistor into said timing circuit in dependence upon the selection of said first and second exposure controls; and
means for varying the ratio of said photometric output to the quantity of light incident on said light receiving element and providing a greater ratio with said selecting member selecting said first exposure control than with said second exposure control.

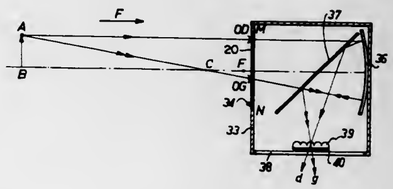
3,882,512
CAMERA SYSTEM WITH ON-FRAME DIGITAL RECORDING MEANS
Franklin B. Lawrence, Saratoga, and Robert E. Lewis, Palo Alto, both of Calif., assignors to Timelapse, Inc., Mountain View, Calif.
Filed June 25, 1973, Ser. No. 373,043
Int. Cl. G03b *17/24*
U.S. Cl. 354—109 **6 Claims**

1. A camera system comprising: a single lens reflex camera having an optical axis, an actuatable shutter mechanism, a film plane intersecting the optical axis, a first lens operable to focus light rays to substantially a standard infinity focus, an optical device having a partially reflective face between the first lens and the film plane, said face being transmissive to the light rays from said first lens, a second lens between said optical device and said film plane, and means for receiving a film having a plurality of image frames thereon and for placing the film at said film plane to permit the image frames to move successively into optical alignment with said optical axis, whereby light rays representing the image of an external object can be directed into the camera through said first lens, said optical device and said second lens and onto an image frame aligned therewith; an electronic digital clock circuit; an actuatable visual display device, said circuit being coupled



with said shutter mechanism and said display device for simultaneously actuating the same; and means optically coupled to said optical device for directing an image of said display onto said face for reflection toward an image frame aligned with said lens assembly.

3,882,513
EQUIPMENT FOR RECORDING RELIEF OR STEREOSCOPIC IMAGES
Maurice Bonnet, Puteaux, France, assignor to Agence Nationale de Valorisation de la Recherche ANVAR, Neuilly-sur-Seine, France
Filed Aug. 2, 1973, Ser. No. 384,960
Claims priority, application France, Aug. 18, 1972, 72.29581
Int. Cl. G03b *35/08*
U.S. Cl. 354—115 **3 Claims**

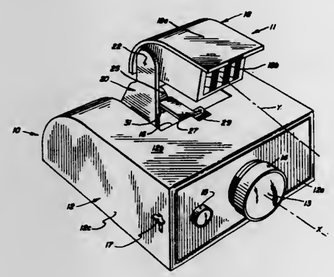


1. In a device for recording relief images of remote objects, the combination of:
a housing having an opening in one wall thereof;
a convergent optical system disposed within said housing and aligned with said opening, said optical system being spaced from said opening by an amount substantially equal to the principal focus of such optical system, and said optical system comprising a concave mirror facing said opening and a semitransparent mirror disposed between said concave mirror and said opening and inclined at a 45° angle;
a sensitive film disposed in said housing and lenticular means comprising at least one optical element overlying said film and having a surface composed of cylindrical lenticular elements, and sensitive film and overlying optical element being positioned to receive an image from said optical system.

3,882,514
CAMERA WITH A SELF-CONTAINED LIGHT SYSTEM

Thomas G. Graham, Point Pleasant Beach, N.J., assignor to Berkey Photo, Inc., Paramus, N.J.

Filed Feb. 4, 1974, Ser. No. 439,306
Int. Cl. G03b *15/03*
U.S. Cl. 354—149 **6 Claims**

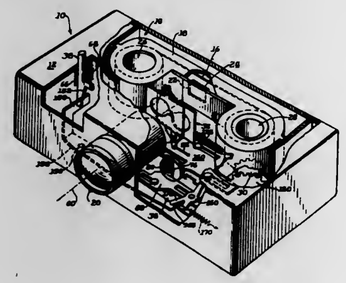


1. A camera comprising a housing, a lens mounted on one wall of the housing and having a fixed optical axis, focusing means operatively connected to said lens and adjustably mounted on said housing for varying the focal length of said lens, and a self-contained light system mounted on a second wall of said housing for movement between an extended operative position and a retracted inoperative position; said light system including a reflector piece having a light source disposed therein whereby said light source and reflector piece are movable only as a unit between extended and retracted positions; mounting means interconnecting said reflector piece and said housing; and actuating means carried on said housing and being responsive to the adjustment of said focusing means to effect tilting of said reflector piece and light source relative to the lens optical axis, only when said light system is disposed in said extended operative position.

3,882,515
SHUTTER SETTING AND FILM ADVANCING MECHANISM FOR AN ELECTRICALLY OPERATED CAMERA

Arthur C. Mueller, Niles, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed May 28, 1974, Ser. No. 473,528
Int. Cl. G03b *9/14, 17/42*
U.S. Cl. 354—173 **30 Claims**



1. For a photographic camera having a film transport mechanism and an exposure controlling mechanism including a shutter, the improvement in a drive control system comprising:

drive motor means;

power supply means for energizing said motor means;

circuit means coupled to said power supply means for selectively energizing said motor means;

drive plate means cyclically drivable by said motor means;

film transport means operatively coupled to said drive plate means for actuation during part of the operative cycle of said drive plate means;

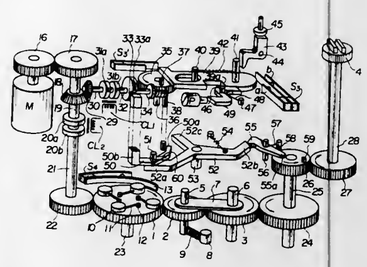
shutter setting drive means operatively coupled to said drive plate means for action during another part of the cycle of said drive plate means;

said film transport means and said shutter setting drive means being actuated independently during the parts of said cycle whereby said motor means drives only one of said means at a time.

3,882,516
AUTOMATIC WIND-UP DEVICE TO DETECT COMPLETION OF FILM WIND-UP

Mitsutoshi Ogiso, Kawasaki; Hiroshi Aizawa, Machida, and Tomonori Iwashita, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1973, Ser. No. 407,874
Claims priority, application Japan, Oct. 24, 1972, 47-106570
Int. Cl. G03b *1/12*
U.S. Cl. 354—173 **6 Claims**



1. An automatic wind-up device for detecting completion of film wind-up in a camera, comprising:

means for winding up film to a condition of completion;

means for driving said wind-up means at controlled speeds;

transmission means for coupling force supplied by said driving means to said film wind-up means;

means for controlling said driving means;

means for sensing the speed of said driving means for rendering said driving control means inactive, said control means being rendered inactive upon the sensing of a speed resulting from completion of wind-up action; and

means responsive to the completion of wind-up action for releasing said transmission from supplying driving force to said wind-up means until said driving control means becomes inactive for preventing excessive load on said film wind-up means.

3,882,517
SYSTEM FOR MOUNTING PHOTOGRAPHIC ACCESSORIES ON A CAMERA

Edwin H. Land, and John B. Morse, both of Cambridge, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 300,820, Oct. 25, 1972, abandoned. This application Jan. 23, 1974, Ser. No. 435,980
Int. Cl. G03b *11/00, 17/00*
U.S. Cl. 354—295 **1 Claim**

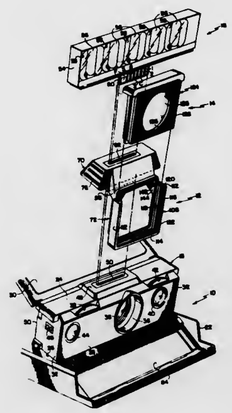
1. A detachable holder for receiving and supporting a flash unit on a camera of the type including a flash unit socket and electrical means including a pair of contacts within the socket for converting the camera from a daylight mode of operation to a flash mode of operation in response to the pair of electrical contacts being electrically connected, said detachable holder comprising:

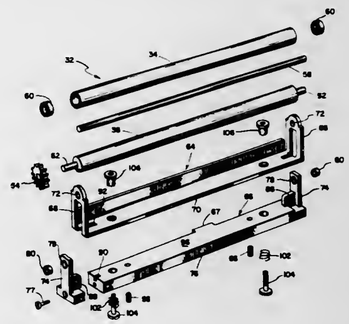
a support member;

means for coupling said support member to the camera flash unit socket;

a flash unit socket on said support member for receiving and supporting a flash unit thereon;

electrical means on said support member for electrically connecting the pair of electrical contacts in the camera flash unit socket to convert the camera from the daylight mode to the flash mode of operation upon operatively coupling said support member to the camera flash unit socket and operatively coupling a flash unit to said flash unit socket on said support member, said electrical means being inoperative for electrically connecting the pair of electrical contacts in the camera flash unit socket when said support member is operatively coupled to the camera flash unit socket and a flash unit is not operatively coupled to said flash unit socket on said support member; and means on said support member for receiving and holding at least one accessory, other than a flash unit, for modifying the performance of the camera.





3,882,518
PROCESSING SYSTEM FOR PHOTOGRAPHIC APPARATUS

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 6, 1974, Ser. No. 448,448
Int. Cl. G03d *9/00*
U.S. Cl. 354—301 **19 Claims**

1. Photographic apparatus, including means for spreading a processing fluid between a pair of sheet materials comprising: a pair of elongated spreader elements;

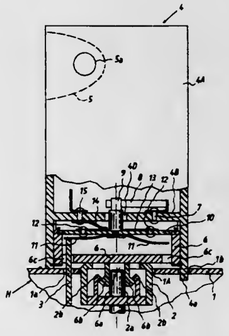
means for mounting said spreader elements in juxtaposition, said mounting means being structured to facilitate the displacement of said spreader elements away from each other, and wherein said mounting means include a pair of support members each of which includes means for rotatably mounting at least one of said spreader elements therebetween and means for linearly guiding the movement of said spreader elements relative to each other; and

manually operable means for adjusting the spacing between said spreader elements, said manually operable means cooperatively acting with said linearly guiding means to facilitate adjustment of the spacing between said spreader elements.

3,882,519
PHOTOGRAPHIC APPARATUS FOR USE WITH PERCUSSIVELY IGNITABLE AND ELECTRONIC FLASH UNITS

Alfred Winkler, Munich, and Dieter Engelsmann, Unterhaching, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 22, 1973, Ser. No. 390,561
Claims priority, application Germany, Sept. 7, 1972, 2243832
Int. Cl. G03b *15/05*
U.S. Cl. 354—141 **3 Claims**



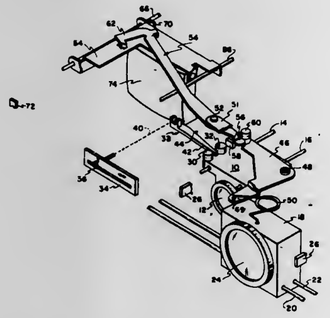
1. The combination of a photographic apparatus having a housing provided with an aperture, a socket for multiple flash lamp holders indexible in said housing between a plurality of predetermined positions and an impeller which is movable from a first to a second position to extend outwardly through said aperture at least in said second position thereof and to thereby initiate the firing of a flash lamp in a holder which is connected with said socket, with an electronic flash unit having a casing including a foot directly but separably connectable to and indexible with said socket, said casing having an opening in register with said aperture to permit entry of said impeller into said casing at least in said second position of said impeller when said foot is connected with said socket, said flash unit further comprising normally open switch means provided in said casing and including first contact means and a plurality of second contact means, one for each position of said socket, said second contact means being indexible with and movable relative to said foot so that a different second contact means is located behind said opening in each position

of said socket, said impeller being arranged to move the second contact means behind said opening into engagement with said first contact means not later than upon completion of movement from said first to said second position thereof when said foot is connected with said socket, and said flash unit further comprising a source of artificial light in circuit with said switch means and arranged to illuminate the subject in response to engagement between said first contact means and one of said second contact means.

3,882,520
FOCUSING DEVICE FOR CAMERA HAVING SELECTABLE FOCAL LENGTHS

Leonard F. Kamp, and Edward J. Koval, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 10, 1974, Ser. No. 477,581
Int. Cl. G03b *13/18*
U.S. Cl. 354—197 **6 Claims**



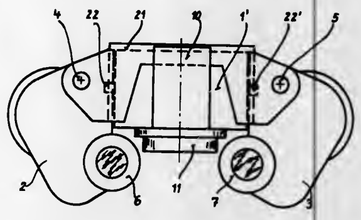
1. In a camera having an axially movable primary lens, a converter lens movable into and out of axial alignment with said primary lens, and a movable focus member; the improvement comprising:
   a cam member operatively connected to said focus member for movement therewith, said cam member having first and second cam surfaces of different slopes;
   first and second cam followers integral with said primary lens; and
   spring means for (1) urging said first cam follower into abutment with said first cam surface when said converter lens is out of axial alignment with said primary lens and (2) urging said second cam follower into abutment with said second cam surface when said converter lens is in axial alignment with said primary lens, whereby, when said focus member is moved a given distance, said primary lens will move one distance if the converter lens is axially aligned with the primary lens and different distance if the converter lens is not so aligned with the primary lens.

3,882,521
PHOTOGRAPHIC APPARATUS

Hans Werner Johannsen, Hegebachstrasse 46, 6333 Braunfels, Germany

Filed Oct. 10, 1972, Ser. No. 296,086
Claims priority, application Germany, Oct. 14, 1971, 2151123
Int. Cl. G03b *29/00*
U.S. Cl. 354—79 **4 Claims**

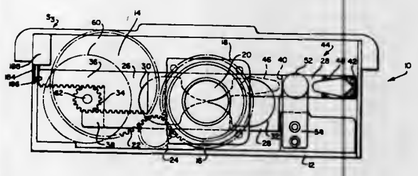
1. A dual-purpose optical instrument comprising:
   a frame having a pair of lateral portions provided with respective eyepieces and objectives together constituting a binocular telescope with a pair of parallel optical axes defining an axial plane; and
   a camera body supported on said frame between said lateral portions, said body being provided with a film chamber, a camera objective disposed centrally thereon with an optical axis perpendicular to said axial plane in a first position, film-transport means in said chamber defining an image plane parallel to said axial plane in said first position, and a viewfinder bisected by a plane of symmetry of said telescope including the optical axis of said camera objective;
   said frame being provided with pivotal mounting means for said body enabling a rotation thereof through 90° from said first position into a second position, with the optical axis of said camera objective swinging in said plane of symmetry into parallelism with said axial plane.



3,882,522
NON-COCKING SPRINGLESS SHUTTER DEVELOPING TWO PARAMETER EXPOSURE REGULATION

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 22, 1973, Ser. No. 362,926
Int. Cl. G03b *7/08, 9/08*
U.S. Cl. 354—30 **17 Claims**



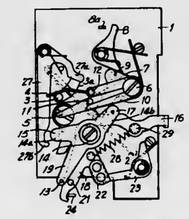
1. A photographic exposure control system for a camera, the camera having means for mounting photographic film material at a given focal plane, a lens for directing image-carrying rays from a scene along a given optical path to the camera focal plane, and selectively operable means for initiating an exposure cycle, said system comprising:
   means for sensing the brightness of the scene;
   a magnetically detented stepper motor having an output drive pinion, said motor being energizable by a select sequence of electrical pulses to rotate said output drive pinion in a step relation therewith;
   a pair of blade members mounted for displacement with respect to each other between a first position blocking the optical path and other positions unblocking the path and defining an aperture valve through which scene light rays are passed to the camera focal plane, each of said blade members having a primary and secondary opening which when displaced into at least partial coincidence with the corresponding opening of the other blade member respectively define a primary aperture value unblocking the given optical path and a secondary aperture value unblocking said brightness sensing means, each of said blade members having rack extension portions coupled in mutually oppositely meshed relation with said motor drive pinion so that said blade members are simultaneously moveable in opposite directions in accordance with motor operation in a given direction to define progressively changing primary and secondary aperture values;
   means responsive to the exposure initiating means for generating a first predetermined sequence of electrical pulses to selectively energize said motor in a first directional sense to displace said blades from said first position to unblock the optical path to define progressively enlarging primary aperture values thereby initiating an exposure interval during which scene light is directed to the focal plane and, in response to said brightness sensing means, for subsequently generating a second predetermined sequence of electrical pulses to selectively energize said motor in an opposite directional sense to displace said blades back to said first position thereby terminating the exposure interval.

14. A method of controlling operation of a photographic shutter arrangement to expose photographic film material comprising the steps of:
   evaluating the brightness of a scene to be photographed;
   generating a series of electrical pulses corresponding to a desired exposure interval correlated to said evaluation;
   feeding said series of electrical pulses to a magnetically detented stepper motor to energize said motor in step with said pulses;
   driving a photographic shutter arrangement from said magnetically detented stepper motor in a correlated step relation therewith to define the total amount of scene light impinging on said photographic film in accordance with said evaluation, said driving step including driving said shutter arrangement from said magnetically detented stepper motor to initiate and terminate said exposure interval.

3,882,523
SHOCK-REDUCING STRUCTURE FOR SINGLE LENS REFLEX CAMERAS

Naoyuki Uno, and Katsuhiko Nomura, both of Kawagoe, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha

Filed Sept. 18, 1973, Ser. No. 398,433
Claims priority, application Japan, Sept. 20, 1972, 47-108438
Int. Cl. G03b *19/12*
U.S. Cl. 354—156 **7 Claims**

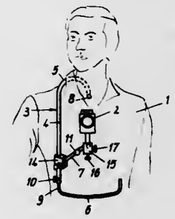


1. In a single lens reflex camera, a swingable mirror having a lower viewing position and an upper exposure position, automatic raising means operatively connected with said mirror for automatically raising the latter from said lower viewing position to said upper exposure position thereof in response to initiation of a shutter-releasing operation, manually operable raising means operatively connected with said mirror for manually raising the latter from said lower viewing position to said upper exposure position thereof, drive means operatively connected with said automatic raising means for driving the latter to raise the mirror from said lower viewing position to said upper exposure position thereof, and lock means having a locking position engaging said drive means to prevent the latter from driving said automatic mirror raising means and a release position displaced from said drive means so that the latter is free to drive said automatic mirror raising means, said lock means normally occupying said release position thereof and cooperating at least with said manually operable mirror raising means to be displaced from said release to said locking position when said manually operable raising means raises the mirror to its exposure position, said automatic mirror raising means being operable independently of said manually operable mirror raising means while the latter operates said automatic mirror raising means for transmitting motion therethrough to said mirror so that a portion of said automatic mirror raising means forms part of and is in common with said manually operable mirror raising means, the latter portion of said automatic mirror raising means cooperating directly with the mirror for raising the latter from said lower viewing position to said upper exposure position when either of said mirror raising means operates, said automatic mirror raising means including a swingable driven lever having said portion cooperating directly with said mirror for raising the latter from said lower viewing position to said upper exposure position thereof, and said manually operable mirror raising means including a swingable lever operatively connected with said driven lever for manually swinging the latter to raise the mirror through said portion of said lever of said automatic raising means which cooperates directly with siad mirror.

3,882,524
APPARATUS FOR HOLDING A CAMERA READY FOR USE

Georg Rauscher, Stuttgart, Germany, assignor to Ingeborg Rauscher, Stuttgart, Germany

Filed Sept. 13, 1973, Ser. No. 396,714
Claims priority, application Germany, Oct. 3, 1972, 2248379
Int. Cl. G03b *17/56*
U.S. Cl. 354—293 **5 Claims**

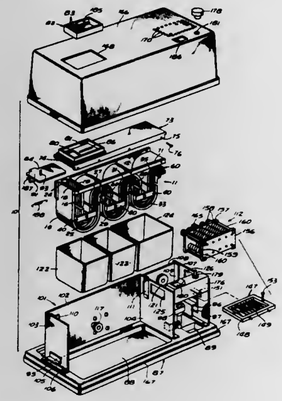


1. A support apparatus for holding a camera in front of a user consisting essentially of a rod system, said rod system comprising:
   a single longitudinally extending rod portion,
   a single suspending member connected to said rod portion at a first end thereof,
   a supporting member connected to said rod portion at a second end thereof, said supporting member being attached to the rod system in such a manner as to be able to pivot around the longitudinal axis of said rod portion, and
   a holder member connected to said rod portion intermediate of said first and second ends thereof,
   said rod system being supported on a body of a user by means of said single suspending member extending over only one shoulder of said user and by means of said supporting member resting against said body approximately at the belt line thereof, said supporting member resting aginst said body at only two points thereof, wherein said rod system is supported on said body such that said single longitudinally extending rod portion and said holder member are supported free from contact with the chest of said user, whereby said rod system is uneffected by breathing motions of said user,
   wherein said supporting member is formed of a rod having one end inserted into said second end of said single longitudinal rod portion and is retained by means of a setscrew extending through a cross slot in said second end.

3,882,525
AUTOMATIC FILM PROCESSOR FOR DENTAL X-RAY FILM

Ernst Zwettler, 2101 Hollister Ter., Glendale, Calif. 91206

Filed Sept. 5, 1973, Ser. No. 394,536
Int. Cl. G03d 17/00
U.S. Cl. 354—316 9 Claims

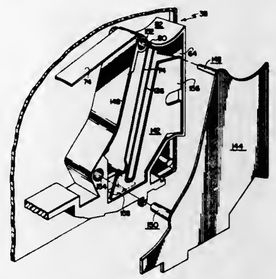


1. A processor for film chips comprising:
a series of tanks;
transport means including a rear vertical wall having a pair of parallel, spaced, walls laterally extending therefrom, said spaced walls having curved portions thereof extending down into and up out of each said tanks and curved portions thereof extending from each tank over into the succeeding tank;
a plurality of laterally spaced grooves formed on the opposing surfaces of said spaced walls, each groove on one wall associated with a groove on the opposite wall to form a pair of opposing grooves lying in a common vertical plane extending parallel to the plane of said rear vertical wall and forming a path through the spaced walls for a vertically oriented film chip;
a lower laterally extending arm having a radial member mounted for rotation about an axis disposed normal to the rear vertical wall and substantially at the center of each curved portion of the spaced walls extending down into and up out of each of said tanks; and
an upper laterally extending arm having a radial member mounted for rotation about an axis disposed normal to the rear vertical wall and substantially at the center of each curved portion of the spaced walls extending from a tank over into a succeeding tank;
each said lower arm synchronized to rotate with an upper arm so that when said lower arm lifts film chips along their paths out of a tank the upper arm continues to lift the film chips and transfers them along their paths into the succeeding tank.

3,882,526
PHOTOGRAPHIC PROCESSING APPARATUS EMPLOYING DELAYED ACTION EXPANDABLE SPONGE

Irving S. Lippert, Lexington, and Joseph A. Stella, West Peabody, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 19, 1973, Ser. No. 416,763
Int. Cl. G03d 5/00
U.S. Cl. 354—317 18 Claims

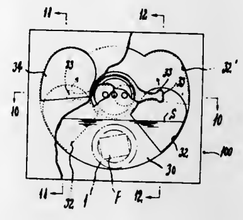


1. A film handling cassette comprising:
a housing configured to retain a strip of photographic film;
processing means including an applicator configured to receive means for retaining a quantity of processing fluid to be selectively applied to such a strip of photographic film subsequent to its exposure to process such film; and
absorption means positioned relative to said applicator so as to directly contact said processing fluid and means associated with said absorption means to prevent it from absorbing said processing fluid during the application of said processing fluid to such film, and to permit said absorption means to absorb processing fluid remaining subsequent to said application.

3,882,527
METHOD AND APPARATUS FOR AUTOMATICALLY DEVELOPING SMALL FILM

Ryosaku Sawada, Nishinomiya, and Tsutomu Sato, Nadaku, both of Japan, assignors to Kabushiki Kaisha Hanshin Gijutsu Kenkyusho, Hyogo, Japan

Filed June 6, 1973, Ser. No. 367,438
Claims priority, application Japan, June 10, 1972, 47-57983
Int. Cl. G03d 3/10
U.S. Cl. 354—322 30 Claims



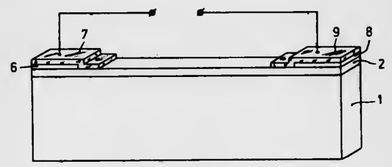
1. A method for automatically developing particularly small size film, such as dental X-ray film and the like, said method comprising the steps of:
a. attaching a single piece of film in a planar condition within a single generally annular, rigid, frame-like film holder having an outer periphery and major and minor planes; said attaching being generally in the medial plane of thickness of said rigid film holder which medial plane is coplanar with and essentially constitutes the major plane of said film holder; and

b. moving said annular film holder by rotatively enaging it along at least part of its outer periphery and passing is successively through a plurality of vertical parallel bath chambers in succession by passing said film holder in alternatingly opposite directions for each successive bath chamber for film development utilizing the successive rotative travel imparted to said film holder while maintaining said film holder with its major plane vertically disposed and parallel with partition walls forming said bath chambers;
c. said moving and passing including lifting said film holder up adjacent to open transfer window means in said partitions, moving said holder through or across said open transfer window means; and
d. allowing said film holder to drop by gravity into the adjacent bath chamber whereby it is again moved as per paragraphs (b) and (c) through the adjacent chambers.

3,882,528
SEMICONDUCTOR DEVICE FOR PRODUCING OR AMPLIFYING HIGH-FREQUENCY ELECTROMAGNETIC OSCILLATIONS

Dominique Boccon-Gibod, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 265,330, June 22, 1972, abandoned.
This application Oct. 2, 1973, Ser. No. 402,803
Claims priority, application France, June 24, 1971, 71.22983
Int. Cl. H01l 9/00
U.S. Cl. 357—3 8 Claims



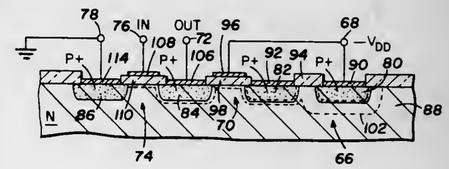
1. A semiconductor device for producing or amplifying high frequency electromagnetic oscillations, said device comprising:
a. a semiconductor layer having a first conductivity type and characterized by a two-valley band structure;
b. two spaced electrodes respectively comprising an anode and a cathode located at and forming ohmic contacts with said layer, said semiconductor layer, anode and cathode comprising a Gunn diode structure, whereby a negative differential resistance can be produced by applying an electric field between said anode and cathode; and
c. at least said anode having a first metal layer in ohmic contact therewith at a first portion of said first metal layer and a second portion of said first metal layer disposed between said anode and cathode and forming a Schottky-diode type rectifying contact with an active part of said semiconductor layer adjoining said anode.

3,882,529
PUNCH-THROUGH SEMICONDUCTOR DIODES

Raymond M. Warner, Jr., Palm Beach, Fla., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 673,467, Oct. 6, 1967, abandoned.
This application June 21, 1973, Ser. No. 372,462. The portion of the term of this patent subsequent to May 6, 1990, has been disclaimed.
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 357—13 2 Claims

1. In an integrated semiconductor circuit, a punch-through device for voltage regulation comprising:
a semiconductor body of a first conductivity type having a planar surface,
an elongated relatively highly doped first region of a second conductivity type disposed in said semiconductor body and extending to the planar surface of said semiconductor body,
a plurality of relatively highly doped second regions of said second conductivity type disposed in said semiconductor body and extending to the planar surface thereof, said plurality of second regions being spaced from said elongated first region and disposed along the length thereof, terminal means ohmically connected to at least said elongated first region,
said plurality of second regions being disposed in relatively closely spaced relationship with respect to said elongated first region with progressively increasing distance between each successive region and said elongated first region, to define a plurality of semiconductor junctions with said semiconductor body having depletion regions



which respectively interact upon the application of progressively increasing voltages to said terminal means wherein each of said voltages is less than the avalanche voltage of the device,
an elongated relatively highly doped third region of said second conductivity type disposed in said semiconductor body and extending to the planar surface thereof, said third region being located on the side of said plurality of second regions opposite from that of said elongated first region and being in spaced relationship with respect to said plurality of second regions,
an insulating layer overlying the space between said elongated third region and said plurality of second regions,
an elongated gate electrode on said insulating layer,
a terminal ohmically connected to said gate electrode, and
said device comprising a punch-through diode and said plurality of second regions cooperating with said elongated third region to define enhancement mode channels providing an enhancement mode metal oxide semiconductor device in series with said punch-through diode.

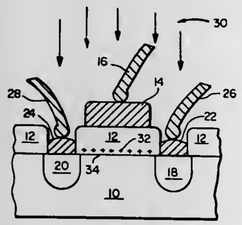
3,882,530
RADIATION HARDENING OF MOS DEVICES BY BORON

Vitaly Danchenko, Lanham, Md., assignor to United States Government, Washington, D.C.

Division of Ser. No. 206,266, Dec. 9, 1971, Pat. No. 3,799,813.
This application Sept. 4, 1973, Ser. No. 394,206
Int. Cl. H01l 11/14
U.S. Cl. 357—23 5 Claims

1. A MOS field-effect device exhibiting a reduced gate threshold potential shift sensitivity to ionizing radiation, said device comprising a substrate of semiconductor material, a gate electrode, an insulating film of oxide disposed between said gate electrode and said semiconductor substrate, and element means in said oxide film disposed only at the semicon-

ductor-insulator interface providing acceptors in the semiconductor lattice, said element means substantially annihilating

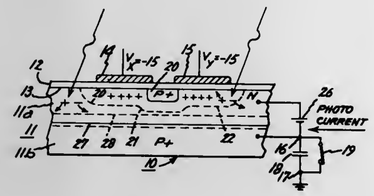


accumulated radiation induced positive charges in said oxide at room temperature.

3,882,531
APPARATUS FOR SENSING RADIATION AND PROVIDING ELECTRICAL READ OUT

Gerald J. Michon, Waterford, and Hubert K. Burke, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 29, 1973, Ser. No. 364,345
Int. Cl. H01l *15/00, 11/14*
U.S. Cl. 357—24 **5 Claims**

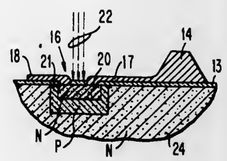


1. A radiation sensing device comprising
a substrate of semiconductor material of one conductivity type having a major surface,
a first conducting member overlying a first portion of a region of said substrate adjacent said major surface and in insulating relationship therewith,
a second conducting member overlying a second portion of said surface adjacent region of said substrate and in insulating relationship therewith,
means for coupling said first and second portions of said surface adjacent region,
a first voltage means for providing a first voltage between said first conducting member and said substrate to deplete said first portion of majority charge carriers,
a second voltage means for providing a second voltage between said second conducting member and said substrate to deplete said second portion of majority charge carriers,
means for exposing said substrate to radiation whereby minority carriers generated in said portions are stored therein,
means for collapsing said first voltage to cause charge stored in said first portion to flow into said second portion,
means for collapsing said second voltage whereby charge stored in said second portion is injected into said substrate,
capacitive means in series circuit with the capacitor formed by said second conducting member and said substrate for integrating a first displacement current flow in said series circuit in response to the collapsing of said second voltage thereon,
a region of opposite conductivity type in said substrate spaced from and adjacent to both of said portions of said surface adjacent region of one conductivity type,
means for conductively connecting said region of opposite conductivity type to said substrate to deplete mobile carriers from the vicinity of the PN junction formed between said region of opposite conductivity and said substrate,
whereby minority charge carriers injected into the substrate are substantially collected and removed from said substrate without substantially altering the charge on said capacitive means,
means for reestablishing said second voltage on said second conducting member whereby a second displacement current flows in said series circuit in response to the reestablishment of said second voltage, the time integrated first and second displacement current flows in said capacitive means constituting a measure of said stored charge.

3,882,532
EXTERNALLY ACCESSING MECHANICALLY DIFFICULT TO ACCESS CIRCUIT NODES IN INTEGRATED CIRCUITS

Hubert F. Quinn, Ossing, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 268,407, July 3, 1972, Pat. No. 3,801,910.
This application Dec. 26, 1973, Ser. No. 428,609
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 357—29 **2 Claims**

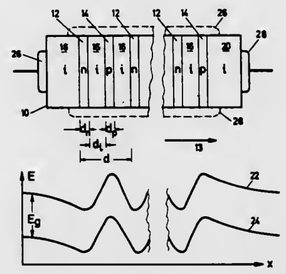


1. In a semiconductor integrated circuit structure comprising a semiconductor substrate surface from which a plurality of regions of different conductivity types extend into the substrate to provide the active and passive devices of the circuit, a layer of insulative material covering said surface, a plurality of electrical contacts extending through openings in said insulative layer respectively to said regions, and a metallization pattern formed on said insulative layer respectively connecting a plurality of chip terminals formed on said insulative layer to different regions through said contacts,
the improvement comprising the combination of
at least one externally accessible circuit terminal,
a plurality of photoconductive semiconductor devices formed at said surface of said substrate,
a plurality of first conductive connecting means on said insulative layer, each respectively extending through said insulative layer to contact one of said photoconductive devices and connecting said photoconductive device to said externally accessible terminal, and
a plurality of second conductive connecting means on said insulative layer, each respectively extending through said layer to respectively contact one of said photoconductive devices and connecting said photoconductive device to a respective one of said chip terminals,
said photoconductive devices being normally nonconductive but adapted to conduct when selectively exposed to light to thereby provide a conductive path from the chip terminal to which the exposed device is connected, through the exposed device to the externally accessible circuit terminal.

3,882,533
SEMICONDUCTOR DEVICE

Gottfried Heinrich Döhler, Nurtingen, Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Gottingen, Germany

Filed July 2, 1973, Ser. No. 375,534
Claims priority, application Germany, Dec. 15, 1972, 2261527
Int. Cl. H05b *33/00*
U.S. Cl. 357—58 **23 Claims**

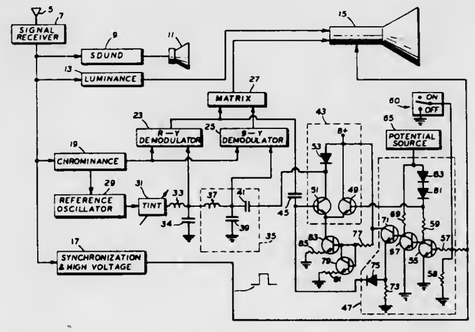


1. A Semiconductor device comprising: a body of semiconductor material with a given energy gap and a given lattice constant, said body including a plurality of zones which in a given direction constitute a succession of alternatingly n-conductive and p-conductive zones having a given excess of donors and acceptors, respectively, each of whose thickness in said given direction is less than 10^3 times said lattice constant, the thicknesses of said zones and the doping thereof being adjusted so that the amplitude and spatial period length of the wave-type potential distribution produced by the alternating p-conductive and n-conductive zones is of such a magnitude that the alternating effect between states in adjacent zones is small; and a pair of spaced contact electrodes on said semiconductor body.

3,882,534
GATED AUTOMATIC TINT CONTROL CIRCUIT

Gopal Krishna Srivastava, Amherst, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed July 20, 1973, Ser. No. 381,251
Int. Cl. H04n *9/12*
U.S. Cl. 358—28 **8 Claims**

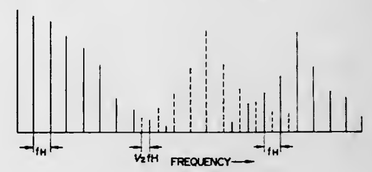


1. In a color television receiver having chrominance and reference oscillator signal sources, a gated tint control circuit comprising:
first demodulator means coupled to said chrominance and reference oscillator signal sources;
second demodulator means coupled to said chrominance signal source;
phase shift network means coupled to said reference oscillator signal source and to said first and second demodulator means;
bias potential development means coupled to the output of one of said first and second demodulator means and to synchronization and high voltage development means; and
switching means coupled to said phase shift network means and to said bias potential development means, said switching means altering said phase shift network to effect alterations in the phase angle of signals applied to said first and second demodulators in accordance with polarity reversal of a signal from said output of said one demodulator means whereby flesh tones are enhanced while green signal response remains substantially unaltered.

3,882,535
COLOR TELEVISION IMAGE PICKUP APPARATUS PROVIDING FREQUENCY INTERLEAVED COLOR CARRIERS AND SIDEBANDS

Yasuo Takeumra, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Aug. 31, 1970, Ser. No. 68,459
Claims priority, application Japan, Aug. 30, 1969, 44-68385; Aug. 30, 1969, 44-68386; Aug. 30, 1969, 44-68387; Aug. 30, 1969, 44-68388
Int. Cl. H04n *9/06*
U.S. Cl. 358—44 **5 Claims**



1. A color television image pickup apparatus comprising:
an optical system including a color striped filter including a plurality of first and second stripe elements, said first and second stripe elements being equally spaced blocking elements for blocking first and second color lights, respectively, said first stripe elements being dimensioned and inclined relative to the direction of a horizontal scanning line so that image signal components obtained upon each alternate scan by a scanning electron beam have a phase difference of 180° with respect to each other relative to the signal period corresponding in time to the scanning of each first element of said stripe filter, said second stripe elements being dimensioned and superimposed on said first stripe elements at different pitches than said first stripe elements and at different angles of inclination than said first stripe elements relative to said direction of horizontal scanning so that:
image signal components of the second stripe elements obtained upon each alternate scan have a carrier frequency which is higher than that of said image signal components corresponding to said first stripe element;
that the frequency of the color signal corresponding to said first stripe elements is interleaved with that of the color signal corresponding to said second stripe elements and the horizontal scanning frequency component of the color television signals; and
that the image signal components of the second stripe elements obtained upon each alternate scan have the same phase relationship with respect to each other relative to the signal period corresponding in time to the scanning of each second stripe element; and
receiving means responsive to light transmitted through said filter for forming color television signals having the frequency components corresponding to said respective first and second stripe elements.

3,882,536
COLOR INFORMATION ON BLACK AND WHITE FILM

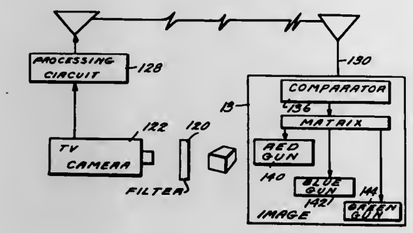
Thomas F. Hanlon, 337 Tremont Ave., Fort Lee, N.J. 07024

Continuation-in-part of Ser. No. 84,570, Oct. 28, 1970, Pat. No. 3,715,461. This application Oct. 19, 1972, Ser. No. 299,126. The portion of the term of this patent subsequent to Feb. 6, 1990, has been disclaimed.

Claims priority, application Germany, Oct. 23, 1971, 2152911

Int. Cl. H04n 9/07

U.S. Cl. 358—44 6 Claims



1. Apparatus for transmitting a color coded image comprising:

a television camera having a pick-up tube for receiving a scene image and producing a video output signal and

a three color filter mounted vertically relative to the horizontal scan of the tube so that the filter is in focus on the image pick-up surface of the tube and having a plurality of contiguous rectangular regions, each region including three and only three non-white portions, the portions in each region being contiguous and in a fixed order, and each region including a red responsive portion with a length extending the length of said filter and a first width, a blue responsive rectangular portion with a length extending the length of said filter and a second width differing from said first width and a green responsive rectangular portion with a length extending the length of said filter and a third width differing from said first and second widths, and disposed between said image and said video input so that said camera produces a color coded video output signal.

3,882,537
COLOR TELEVISION CAMERA AND A STRIP-FILTER SUITABLE THEREFORE

Sing Liong Tan, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

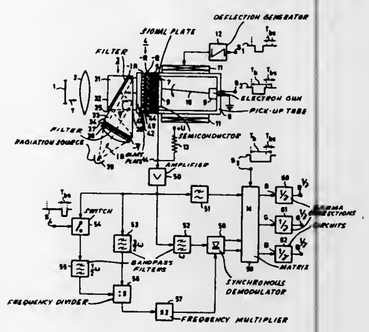
Filed Oct. 1, 1973, Ser. No. 402,453

Claims priority, application Netherlands, Oct. 14, 1972, 7213942

Int. Cl. H04n 9/06

U.S. Cl. 358—45 21 Claims

1. A color television camera for imaging an object illuminated with visible radiation comprising an image detector sensitive to light in the visible range and outside the visible range, a source of light radiation having a frequency outside the visible range, means for projecting the light from the source to the image detector through an optical path, said optical path comprising first and second portions, means for projecting an image of the illuminated object to the image detector along an optical path including a third portion spatially separated from said first portion and including said second portion, a specific index strip-filter in the second portion and provided with alternating filter strips and clear areas that both affect visible light in the same manner, said strip-filter stripes suppressing radiation outside the visible range, and a color strip-filter serially aligned with the specific index filter in the second portion of the optical paths and having



sequentially arranged colored stripes that separate the visible radiation from said image into at least two separate spectral components and pass radiation outside the visible range uniformly.

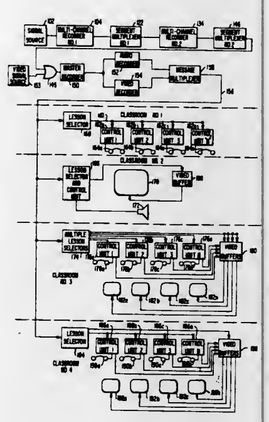
3,882,538
MULTIPLE ACCESS MESSAGE RETRIEVAL SYSTEM

Virgil L. Lowe, Alexandria, Va., assignor to Edutron, Incorporated, Gainesville, Fla.

Continuation of Ser. No. 129,470, March 30, 1971, abandoned. This application Aug. 31, 1973, Ser. No. 393,335

Int. Cl. H04n 5/78

U.S. Cl. 360—9 25 Claims



18. An information storage and retrieval system comprising:

a. time segmenting means for dividing a message of duration T into N message segments, each message segment having a duration t, where $T = Nt$;

b. multiplexing means for multiplexing the N message segments into a multiplexed message signal having a duration t;

c. demultiplexing means for demultiplexing the multiplexed message signal into the N message segments; and

d. output means for providing an output signal of the message and incuding an audio output device for providing an audio output signal of recorded audio message, a video output device for providing a video output signal of recorded video messages and control means coupling said output means with said demultiplexing means for applying each of the N message segments in turn to the output means.

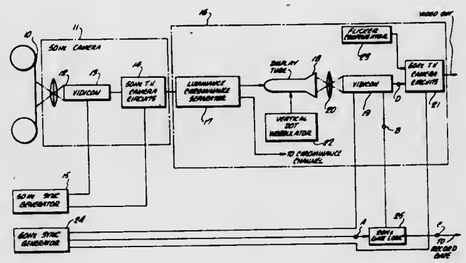
3,882,539
METHOD AND APPARATUS FOR IMPROVED SKIP FIELD RECORDING

Yves C. Faroudja, 26595 Anacapa Dr., Los Altos Hills, Calif. 94022

Filed Feb. 12, 1973, Ser. No. 331,785

Int. Cl. H04n 5/76

U.S. Cl. 360—11 19 Claims



1. The method of skip field recording wherein certain ones of a plurality of successive individual video signals are recorded as composite video signals, the individual video signals not being recorded, comprising the steps of;

producing a multitude of successive series of video signals, each series comprising a plurality of individual video signals,

combining certain ones of said plurality of individual video signals in each series into a composite video signal, and recording each of the successive composite video signals on a recording medium, the individual video signals in each series being unrecorded.

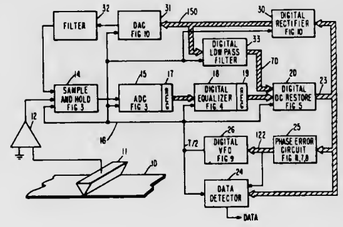
3,882,540
READBACK CIRCUITS FOR DIGITAL SIGNAL RECORDERS

Hjalmar H. Ottesen, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 17, 1974, Ser. No. 480,072

Int. Cl. G11b 5/09

U.S. Cl. 360—39 10 Claims



1. A readback circuit for a digital signal recorder, sensing means for generating a readback signal having periodic bit periods T,

the improvement including in combination:

sample and hold means receiving said readback signal and holding sampled signal amplitudes;

a digital-to-analog converter circuit (DAC) for repeatedly converting said held sampled signal amplitudes to first sets of digital signals, each set including a sign signal;

a gated DAC register receiving said first set of digital signals;

a first digital signal processing circuit receiving said first sets of digital signals and operative to generate second sets of digital signals, each including a sign signal, based upon said first sets of digital signals in accordance with a given transfer function;

timing means responsive to successive ones of said second sets of digital signals to adjust its operation to supply timing signals in accordance with said bit periods T;

said sample and hold means responsive to said timing signals to receive said readback signal at least at bit period boundaries;

said timing signals actuating said gated DAC register to receive said first sets of digital signals after each receipt of said readback signal amplitudes by said sample and hold means and further actuating said digital signal processing circuit to operate synchronously with said bit periods;

digital-to-analog converter means responsive to said second sets of digital signals to supply a bias signal related to a magnitude represented by successive ones of said second sets of digital signals; and

means in said sample and hold means responsive to said bias signal to adjust said sampled signal amplitude in accordance therewith.

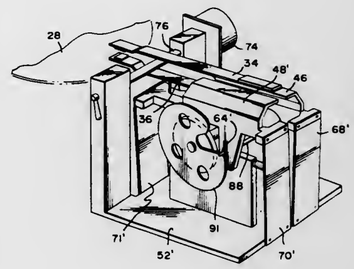
3,882,541
ROTATING MEMORY ACCESSING MECHANISM

Sanjoy Ghose, Redwood Estates, and Paul A. Gilovich, Saratoga, both of Calif., assignors to IBM Corporation, Armonk, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,454

Int. Cl. G11b 5/52

U.S. Cl. 360—78 25 Claims



1. A disk file accessing system for advancing a magnetic head assembly to successive tracks comprising:

a head assembly support device coupled to said magnetic head assembly for movement substantially along a selected axis;

cam follower means coupled to said support device;

cam means having a peripheral cam surface adjacent said cam follower defining circumferential increments at varying radii from a selected axis of rotation;

motor means coupled to rotate said cam means about said axis of rotation in incremental movements corresponding to the circumferential increments;

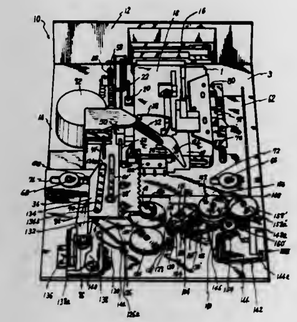
and flexural means coupled to and supporting said support device and disposed to mechanically bias said cam follower means into engagement with the peripheral cam surface of said cam means.

3,882,542

CASSETTE TYPE TAPE RECORDER USING PLANETARY GEARING

Niro Nakamichi, Tokyo, Japan, assignor to Nakamichi Research, Inc., Tokyo, Japan

Filed Oct. 23, 1973, Ser. No. 408,852
Claims priority, application Japan, Oct. 23, 1972, 47-10592
Int. Cl. G11b *15/00, 23/08*
U.S. Cl. 360—96 **10 Claims**



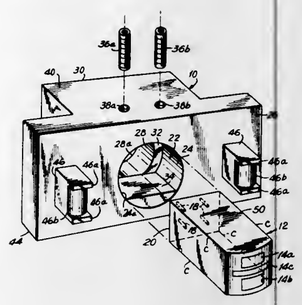
1. A cassette type tape recorder comprising a cassette including a tape therein; a cassette container into which said cassette is inserted and from which said cassette is removed, said cassette container having a first position in which said cassette is positioned for playing the tape recorder and a second position in which said cassette is positioned for insertion into or removal from said cassette container; an assembly including magnetic head means and pinch roller means and having a first position in which said assembly is positioned for playing the tape recorder and a second position in which said assembly recorder and a second position in which said assembly is retracted relative to said cassette; operating means movable to move said cassette container and said assembly to said first and second positions in response to the direction of movement of said operating means; transmission means including a transmission gear and a reverse transmission gear meshed with said transmission gear, said transmission gear operatively associated with said operating means for movement of said operating means in first and second directions; a sun and planet gear mechanism including sun gear means and planet gear means meshed with said sun gear means for rotation about its axis and about an axis of said sun gear means, said transmission gear and said reverse transmission gear disposed on the orbit of said planet gear means of said sun and planet gear mechanism; power supply to selectively drive said tape in one and another directions and to drive said sun and planet gear mechanism in one direction; and locking means to selectively lock said sun and planet gear mechanism so as to mesh said planet gear means with one of said reverse transmission gear and said transmission gear of said transmission means whereby upon said operating means positioned to place said cassette container and said assembly in said first position and said locking means locks said planet gear means to be meshed with said reverse transmission gear of said transmission means for movement of said cassette container and said assembly to said second position and upon said operating means positioned to place said cassette container and said assembly in said second position said locking means locks said planet gear means to be meshed with said transmission gear of said transmision means for movement of said cassette container and said assembly to said first position.

3,882,543

TAPE HEAD MOUNT AND ALIGNMENT MEANS

William D. Richards, Medway, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Sept. 10, 1973, Ser. No. 396,026
Int. Cl. G11b *5/56, 21/24*
U.S. Cl. 360—109 **7 Claims**



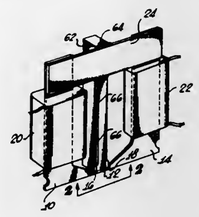
1. A tape head mount comprising headreceiving opening means for providing a head-receiving opening and for receiving therein a tape head of generally rectangular cross-section, said head-receiving opening having cylindrical inner surface means for supporting the tape head in the vicinities which receive the edges of the tape head, means for limiting the insertion of the tape head within said head-receiving opening, a pair of tape guides disposed on opposite sides of said head-receiving opening in the direction of tape travel, and a pair of screw means extending into said head-receiving opening means for bearing against the same side of an inserted tape head, said screw means in cooperation with said cylindrical inner surface means for controlling the rotation of the tape head within said head-receiving opening around the substantially central axis of said cylindrical inner surface means which axis remains fixed near the center line of the tape guides in the direction of tape travel.

3,882,544

COMBINED WIDE-ERASE AND READ-WRITE MAGNETIC HEAD

Gordon Frierson Hughes, Los Angeles, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1973, Ser. No. 424,871
Int. Cl. G11b *5/26, 5/28*
U.S. Cl. 360—118 **9 Claims**



1. A combined erase and read-write magnetic head, comprising:
an elongated magnetic recording surface having a longitudinal dimension and a substantially constant width transverse to said longitudinal dimension;
an erase magnetic circuit having an erase gap in said recording surface, the length of said gap being along said longitudinal dimension of said surface and the width of said gap being transverse to said longitudinal dimension across the entire width of said surface, said erase gap being sufficiently long compared to said width of said erase gap to permit the generation of effective erasing magnetic fields beyond the ends of said width of said erase gap;
a read-write magnetic circuit having a read-write gap in said recording surface spaced from said erase gap, the length of said read-write gap being in the direction of said longitudinal dimension and the width of said read-write gap being transverse to said longitudinal dimension across the entire width of said surface and substantially the same width as said erase gap, said erase magnetic circuit and said read-write magnetic circuit having a common magnetic path between said erase gap and said read-write gap.

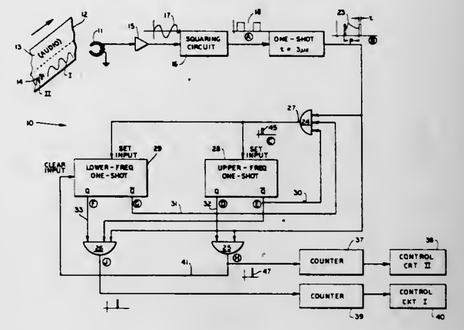
3,882,545

APPARATUS AND METHOD FOR DETECTING TONE SIGNALS OCCURING WITHIN A PREDETERMINED FREQUENCY RANGE

Theodore Titus, IV, Atlanta, Ga., assignor to Lanier Electronic Laboratory, Inc., Atlanta, Ga.

Filed Nov. 15, 1972, Ser. No. 306,544
Int. Cl. G11b *5/00;* **H03k** *5/20;* **H03d** *13/00*
U.S. Cl. 360—137 **13 Claims**

13. The method of detecting either of two tone signals of different frequencies which are recorded on a recording medium and which are reproduced during recording medium movement at a speed which may vary within a range of possible playback speeds to provide playback signals having frequencies which are within two mutually exclusive ranges of playback frequencies, comprising the steps of:
establishing a first period of time which commences in response to the occurrence of a frequency cycle of said playback signal and which terminates after a predetermined certain time not less than the period of the lowest playback frequency within the range of possible playback frequencies corresponding to the higher of said recorded frequencies;
establishing a second period of time which commences no earlier than the termination of said first period of time and which has a predetermined certain duration not less than the period of the lowest frequency of the playback frequency range corresponding to a lower one of said recording frequencies;



detecting the occurrence of the next frequency pulse only during said first period of time to denote the occurrence of a tone signal having said higher recording frequency; and
detecting the occurrence of the next frequency pulse only during said second period of time to denote the occurrence of a tone signal having said lower recording frequency.

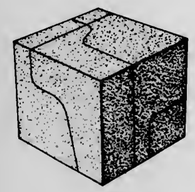
DESIGNS

GRANTED MAY 6, 1975

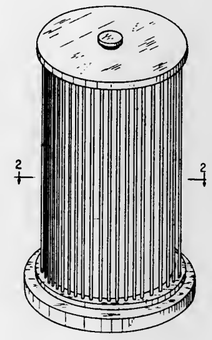
235,038
HOSIERY
Leander Lockes, 3815 Norfolk Ave., Baltimore, Md. 21216
Filed Mar. 28, 1973, Ser. No. 345,682
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—342



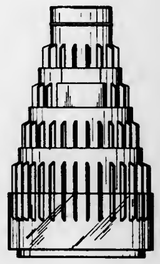
235,039
FURNITURE ASSEMBLY COMPOSED OF SEVEN INTERRELATED ARTICLES
Robert J. Olsen, 11 Waverly Place, New York, N.Y. 10003
Filed Apr. 13, 1970, Ser. No. 22,401
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—4



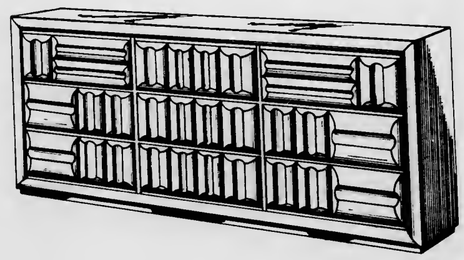
235,040
GREETING CARD DISPLAY HOLDER
Thomas C. Wright, Chicago, Ill., assignor to Charles Davis III, Grosse Point, Mich.
Filed May 3, 1973, Ser. No. 356,738
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—20



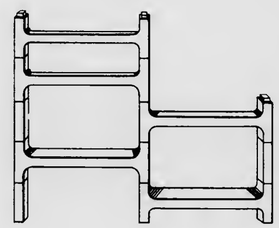
235,041
DISPLAY CASE
Howard Nathan, New York, and Frank X. Schoen, Brooklyn, N.Y., assignors to Textron Inc., Providence, R.I.
Filed Apr. 13, 1973, Ser. No. 350,898
Term of patent 14 years
Int. Cl. D6—*04*; D20—*02*
U.S. Cl. D6—23



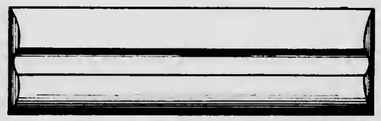
235,042
DRESSER
Aaron Donner, Weston, Conn., assignor to The Lane Company
Filed July 10, 1974, Ser. No. 487,377
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



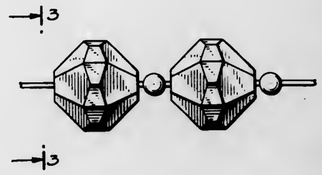
235,043
SHELVING UNIT
Arnold C. Martinelli, Lake Shore Drive, Rawdon, Quebec, Canada
Filed Mar. 30, 1973, Ser. No. 346,449
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



235,044
DECORATIVE PANEL FOR FURNITURE DOOR, DRAWER FRONT, HEADBOARD OR THE LIKE
Aaron Donner, Weston, Conn., assignor to The Lane Company
Filed July 10, 1974, Ser. No. 487,380
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



235,045
BEAD STRAND FOR A CURTAIN ELEMENT OR THE LIKE
Irving Levine, 5212 Weller Drive, Woodland Hills, Calif. 91364
Filed Mar. 7, 1969, Ser. No. 16,110
Term of patent 14 years
The term of this patent subsequent to Aug. 6, 1985, has been disclaimed
Int. Cl. D6—*10*
U.S. Cl. D6—205



235,046
ROLLING PIN
J. Henry Adams, 64 Onyx Ave., Walla Walla, Wash. 99326
Filed Mar. 26, 1973, Ser. No. 344,853
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—99



235,047
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Aug. 31, 1973, Ser. No. 393,654
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



235,048
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 12, 1973, Ser. No. 424,168
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



235,049
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 12, 1973, Ser. No. 424,169
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



235,050
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 26, 1973, Ser. No. 427,921
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



235,051
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Aug. 31, 1973, Ser. No. 393,655
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—150



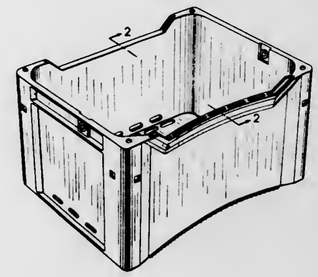
235,052
CLOTHES PIN
Douglas Arthur Davidson, 4 Waimana Road, Takanini, Auckland, New Zealand
Filed May 7, 1973, Ser. No. 357,706
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—198



235,053
PICK UP TOOL
Raymond B. Nockleby, Rte. 1, Kalispell, Mont. 59901
Filed Oct. 15, 1973, Ser. No. 406,376
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—52



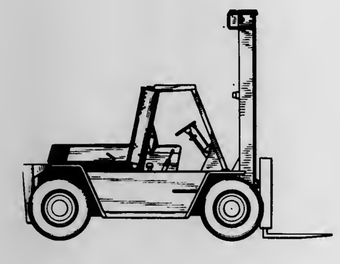
235,054
FRUIT BOX OR THE LIKE
Gilbert Lucien Herman, Domaine de Castang, G.F.A. 24, Bergerac, France
Filed Dec. 27, 1972, Ser. No. 319,040
Claims priority, application France July 19, 1972
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—243



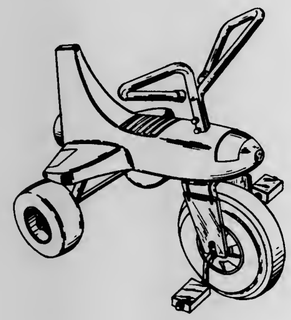
235,055
WATER DEPTH INDICATOR OR THE LIKE
Edward W. McCloskey, 271 Alpine St., Pasadena, Calif. 91106
Filed Mar. 29, 1973, Ser. No. 346,122
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—101



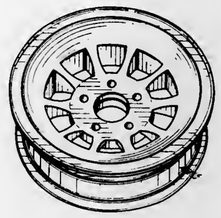
235,056
LIFT TRUCK
Robert G. Neer and Lawrence A. Liljequist, Salem, Norman D. Thompson, Dallas, and Llewellyn L. Walter, Monmouth, Oreg., and William O. Smart, Dunlap, and Robert W. Briggs and Bernard E. Erlacher, Washington, Ill., assignors to Towmotor Corporation, Mentor, Ohio
Filed May 30, 1973, Ser. No. 365,332
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—57



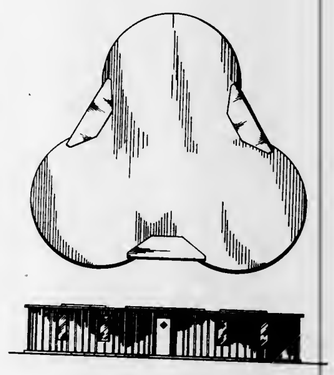
235,057
RIDING TOY
Richard D. Williams, Brentwood, Tenn., assignor to The Murray Ohio Manufacturing Co., Brentwood, Tenn.
Filed Nov. 1, 1973, Ser. No. 412,031
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—108



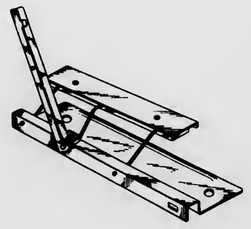
235,058
WHEEL
Dalton M. Davis, Palos Verdes Estates, Calif., assignor to E-T Industries, Inc.
Filed Oct. 10, 1972, Ser. No. 299,129
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



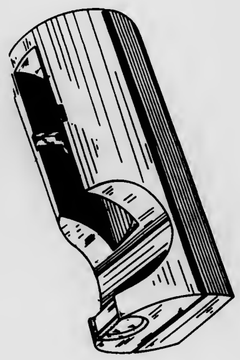
235,059
BUILDING
Charles R. Turner, Hopkins, Mo. (% Advance Concrete & Asphalt Co., P.O. Box 324, Maryville, Mo. 64468)
Continuation-in-part of abandoned design application Ser. No. 116,296, Feb. 17, 1971. This application May 21, 1973, Ser. No. 362,477
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 E



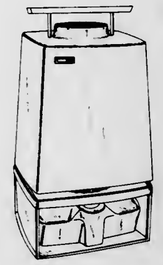
235,060
PAPER CLAMP
Norihito Tanaka, Osaka, Japan, assignor to Lihit Industrial Co., Ltd., Osaka, Japan
Filed Sept. 7, 1972, Ser. No. 287,005
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—65



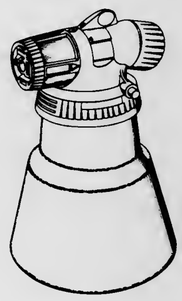
235,061
TAPE DISPENSER
Secondo Vailati, Vedano Olona, Italy, assignor to S.I.A.T. S.p.A., Tradate, Varese, Italy
Filed Feb. 22, 1973, Ser. No. 334,606
Claims priority, application Italy Aug. 23, 1972
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—67



235,062
WATER PURIFIER
Frederick G. Mayer, South Norwalk, Conn. (1700 Summer St., Stamford, Conn. 06905)
Filed Mar. 10, 1972, Ser. No. 205,779
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



235,063
SPRAYER
Rudolph M. Gunzel, Jr., 1606 Charleton Road, San Marino, Calif. 91108; Tony Radecki, 1340 E. Palm St., Altadena, Calif. 91001; and Robert A. Pinne, 2145 Las Gallinas Ave., San Rafael, Calif. 94903
Filed Aug. 6, 1973, Ser. No. 386,018
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18



235,064
SWIVEL SHAMPOO BOWL

235,066
HEAT CONVECTOR

235,068
TEXT EDITING TERMINAL

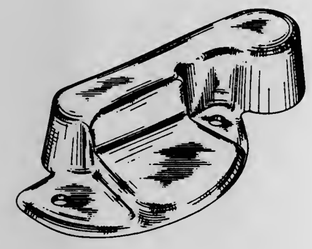
235,070
PHONOGRAPH STYLUS

235,064
SWIVEL SHAMPOO BOWL
Bobby L. Strickland, 10913 N. McKinley, and Doyle E. Simpson, 1200 NW. 104th St., both of Oklahoma City, Okla. 73114
Filed Aug. 15, 1973, Ser. No. 388,646
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—64

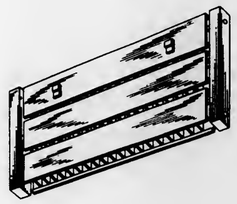




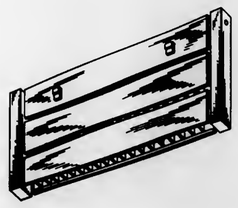
235,065
VENTILATION CONDUIT FOR A WATER CLOSET
Clyde J. Hunnicutt, Jr., 3026 E. Garfield St., Phoenix, Ariz. 85008
Filed Oct. 2, 1972, Ser. No. 293,808
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



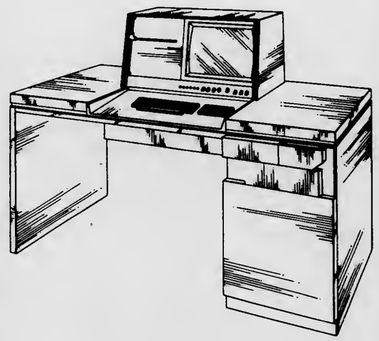
235,066
HEAT CONVECTOR
Gunnar Olaf Vestergaard Rasmussen, % Hudevad Radiatorfabrik Aktieselskab, Aarslev, Denmark
Filed June 19, 1972, Ser. No. 264,290
Claims priority, application Denmark Dec. 20, 1971
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



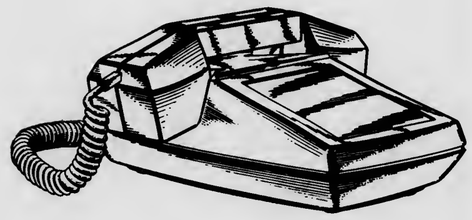
235,067
HEAT CONVECTOR
Gunnar Olaf Vestergaard Rasmussen, % Hudevad Radiatorfabrik Aktieselskab, Aarslev, Denmark
Filed June 19, 1972, Ser. No. 264,291
Claims priority, application Denmark Dec. 20, 1971
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



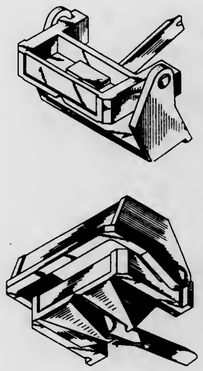
235,068
TEXT EDITING TERMINAL
Kenneth E. Burkhalter, Ann Arbor, Frank L. Hibbard, Farmington, Charles Newman and Charles L. Schaldenbrand, Ann Arbor, and William R. Story, Troy, Mich., assignors to Omnitext, Inc., Ann Arbor, Mich.
Filed Jan. 11, 1973, Ser. No. 322,734
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



235,069
TELEPHONE SET OR SIMILAR ARTICLE
Bruno Todeschini, 25 Via Giovanni Pascoli, Cernusco sul Naviglio, Milan, Italy
Filed June 14, 1973, Ser. No. 369,886
Claims priority, application Italy Mar. 8, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



235,070
PHONOGRAPH STYLUS
Robert L. Deschamps, Wheaton, James P. Thomsen, Mount Prospect, and Ronald G. Thielmann, Arlington Heights, Ill., assignors to Shure Brothers Incorporated
Filed July 20, 1973, Ser. No. 381,066
Term of patent 14 years
Int. Cl. D14—*99, 01*
U.S. Cl. D26—14 D



235,071
ELECTRIC LAMP
Bengt Erling Beckman, Alstensgatan 90, S–161 39 Bromma, Stockholm, Sweden
Filed Oct. 10, 1972, Ser. No. 299,183
Claims priority, application Sweden Apr. 7, 1972
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8



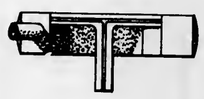
235,072
LIGHTER FOR SMOKERS
Guy Neyret, Francheville, France, assignor to Etablissements Genoud & Cie, Venissieux, Rhone, France
Filed Nov. 30, 1973, Ser. No. 420,673
Claims priority, application France June 13, 1973
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



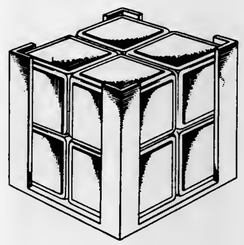
235,073
GAME DIE OR SIMILAR ARTICLE
John C. Warren, Exeter, N.H. 03833
Filed Apr. 20, 1973, Ser. No. 352,968
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 DT



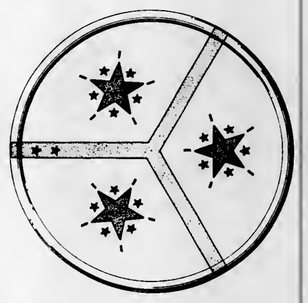
235,074
GOLF PUTTER HEAD
Terrill R. McCabe, Highland Greens, F116 Westchester, Ohio 45069
Original design application Feb. 14, 1972, Ser. No. 226,385, now abandoned. Divided and this application July 11, 1973, Ser. No. 378,166
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



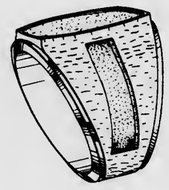
235,075
PUZZLE GAME
William H. Baynes, Los Angeles, Calif. (4122 Greenbush Ave., Sherman Oaks, Calif. 91403)
Filed Mar. 23, 1973, Ser. No. 344,354
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



235,076
FLEXIBLE SPINNING TOY
Donald E. Snyder, P.O. Box 478, Colona, Ill. 61241
Filed Oct. 1, 1973, Ser. No. 402,629
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 W



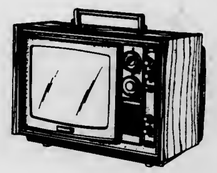
235,077
CLASS RING
Carter Moyer, Houston, Tex., assignor to Stuckey & Speer, Inc., Houston, Tex.
Filed July 26, 1973, Ser. No. 382,943
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 B



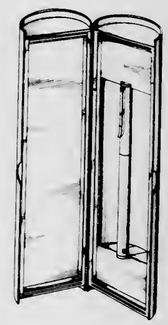
235,078
LAMP
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004, and James Allan Thomas, 861 Willow Drive, Brea, Calif. 92621
Filed Apr. 30, 1973, Ser. No. 355,558
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R



235,079
TELEVISION RECEIVER OR SIMILAR ARTICLE
Soji Ohtsuka, Tokyo, and Kazunori Johdai, Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of abandoned design application Ser. No. 177,542, Sept. 2, 1971. This application June 4, 1973, Ser. No. 366,264
Claims priority, application Japan Mar. 5, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D



235,080
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Franco Verona, Strada San Vito 350, Turin, Italy
Filed July 30, 1971, Ser. No. 167,888
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D87—1 R



235,081
BED PAN
Julia Gatewood, 18 Pinetop Drive, Central Islip, N.Y. 11722
Filed Oct. 29, 1973, Ser. No. 410,975
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 U

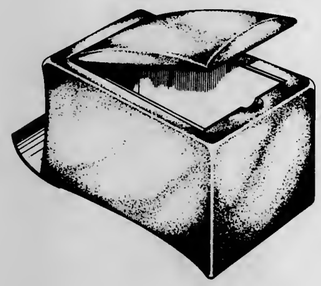


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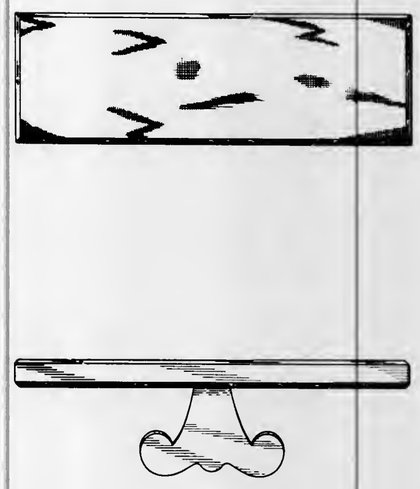
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Frank M. Weaver, Safford, Ariz., assignor to T.I.C., Inc.
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Int. Cl. D3—*01*; D12—*16*
U.S. Cl. D87—1 R



235,083
IDENTIFICATION PLAQUE
Norman V. Crandell, 3788 S. Poplar St., Denver, Colo. 80237
Filed Mar. 9, 1973, Ser. No. 339,579
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 F



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Ballew, Howard T., Sr.; Burton, Ellick E.; and Lancaster, Charles C. Electric lock assembly. 3,881,332, Cl. 70-282.000.

Bamber, Derek Robert: *See—*
Crossley, Ian Alexander; Kirk, Geoffrey Eric; Anthony, Norman Howell; and Bamber, Derek Robert, 3,882,210.

Banham, John; and Browning, Howard Edmund, to Imperial Chemical Industries Limited. Method for the production of free-flowing polytetrafluoroethylene-molding powders. 3,882,217, Cl. 264-117.000.

Bannon, Albert C., to P. R. Mallory & Co. Inc. Method of making permanent magnet rotor for a synchronous motor. 3,881,243, Cl. 29-598.000.

Banta, Edward M., to Petro-Tex Chemical Corporation. Stabilized dispersions of chloroprene polymers. 3,882,069, Cl. 260-29.7SQ.

Barannik, Ivan Andreevich; Belkin, Ivanovich; Borodin, Viktor Ivanovich; Voronova, natalya Alexandrovna; Romanenko, Oleg Nikolaevich; Bogdanov, Alexandr Petrovich; Belosludtsev, Valery Sergeevich; Marfin, Vladimir Dmitrievich; Shish, Nikolai Yakovlevich; Shevchenko, Anatoly Filippovich; Emelyanov, Ivan Yakovlevich; Boiko, Jury Nikolaevich; Kljuchnik, Mikhail Nikolaevich; Khaber, Nikolai Vasilievich; Raskatov, Viktor Georgievich; Trukhin, Alexandr Fedorovich; Kondratenko, Anatoly Borisovich; Yazev, Vladimir Dmitrievich; Alontsev, Viktor Stephanovich; Startsev, Valery Alexeevich; and Sergeev, Jury Alexandrovich. Method of producing granules of magnesium and its alloys. 3,881,913, Cl. 75-.5OC.

Barlow, George J.; and Taylor, Donald R., to Honeywell Information Systems Inc. Deadtracking system. 3,882,459, Cl. 340-146.10F.

Barlucchi, Alfredo: *See—*
Montefusco, Nicola; and Barlucchi, Alfredo, 3,882,486.

Barnard, Douglas: *See—*
Baker, Crispon Stuart Leworth; Barnard, Douglas; and Porter, Maurice Read, 3,882,089.

Barnes, Eugene H.: *See—*
Hoeschele, David F., Jr.; and Barnes, Eugene H., 3,882,458.

Barnett, Eugene J., to Westinghouse Electric Corporation. Windowed door for a heat cleaning oven. 3,881,462, Cl. 126-197.000.

Barnett, Thomas A., to Monsanto Company. Square cut bias belt of steel tire cord. 3,881,237, Cl. 29-193.000.

Barnhard, Peter Robin: *See—*
McFadden, Michael Duncan; and Barnhard, Peter Robin, 3,881,499.

Barrett, Harrison H., to Raytheon Company. Spatially modulated imaging system. 3,882,310, Cl. 250-320.000.

Barry, Charles B., to Ralph M. Parsons Company. In situ recovery of hydrocarbons from tar sands. 3,881,550, Cl. 166-272.000.

Bartell, Ralph A., to Warner-Lambert Company. Container closure for lyophilized products. 3,881,626, Cl. 215-256.000.

Bartko, John: *See—*
Chu, Chang K.; Bartko, John; and Felice, Patrick E., 3,881,963.

BASF Wyandotte Corporation: *See—*
Narayan, Thirumurti L.; and Cenker, Moses, 3,882,118.

Bass, Merlyn Duane; and Gerhardt, Ralph August, to Deere & Company. Method of loading agricultural machines on a railroad car. 3,881,564, Cl. 180-21.000.

Bate, Frederick Douglas Clavell. Method and apparatus for packaging. 3,881,296, Cl. 53-30.000.

Bate, Frederick Douglas Clavell. Device for opening and filling an envelope. 3,881,299, Cl. 53-187.000.

Batorewicz, Wadim, to Uniroyal, Inc. Polymeric halogenated organophosphorus diols. 3,882,199, Cl. 260-928.000.

Battelle Memorial Institute: *See—*
Trojer, Felix J.; O'Connor, Grahame P.; and Tannenberger, Helmut, 3,881,945.

Batzer, Hans: *See—*
Habermeier, Juergen; Batzer, Hans; and Porret, Daniel, 3,882,137.

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Baugh, Benton F.: *See—*
Childers, Thomas W.; Weber, Ronald A.; Rains, John K.; and Baugh, Benton F., 3,881,516.

Baulard-Cogan, Raymond Gerard, to Agence Nationale de Valorisation de la Recherche ANVAR. Animated doll with members controlled by weighted, swiveled, slidably mounted interior rod. 3,881,275, Cl. 46-119.000.

Bauman, John H.: *See—*
Gilford, Saul R.; Freeman, Gary M.; and Bauman, John H., 3,881,827.

Bauman, Robert Andrew, to Colgate-Palmolive Company. Antimicrobial quaternary ammonium compounds. 3,882,166, Cl. 260-479.00S.

Baumann, Heinz: *See—*
Bracher, Hans; and Baumann, Heinz, 3,881,524.

Bausch & Lomb Incorporated: *See—*
Chisholm, James J., 3,881,825.

Bayer Aktiengesellschaft: *See—*
Aya, Masahiro; Kishino, Shigeo; Fukazawa, Nobuo; and Kume, Toyohiko, 3,882,202.
Corte, Herbert; Heller, Harold; and Netz, Otto, 3,882,053.
Elghani, Salah Elabd; Fischer, Winfried; Koehler, Michael; Lindner, Johannes; and Prinz, Richard, 3,882,192.
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BBC Brown Boveri & Company Limited: *See—*
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Bea, Gayle A., to United States of America, Navy. Pyrotechnic initiator. 3,881,419, Cl. 102-70.00R.

Beachy, Dale K.: *See—*
Botta, Jose A., Jr.; and Beachy, Dale K., 3,881,544.

Beal, Richard: *See—*
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Beall, George H.; Campbell, Donald E.; MacDowell, John F.; Miller, David M.; Reade, Richard F.; Rittler, Hermann L.; and Watkins, Harry J., to Corning Glass Works. Porous glass-ceramic bodies for catalyst supports. 3,881,944, Cl. 106-39.700.

Bechtold, Edwin W., to Eltra Corporation. Optical scanning system. 3,881,801, Cl. 350-6.000.

Beck, Franklin L.: *See—*
Cooley, William C.; and Beck, Franklin L., 3,881,554.

Beckman Instruments, Inc.: *See—*
Neti, Radhakrishna Murty; and Reeves, George I., 3,881,869.

Becton, Dickinson and Company: *See—*
Ayres, Waldemar A., 3,882,021.

Bedell, John R.: *See—*
Polk, Donald E.; and Bedell, John R., 3,881,542.

Bedell, John Robert, to Allied Chemical Corporation. Continuous casting of narrow filament between rotary chill surfaces. 3,881,541, Cl. 164-87.000.

Beezer, Earl F., to Stelron Cam Co. Adjustable X and Y axis controlled movement mechanism. 3,881,362, Cl. 74-53.000.

Behmel, Klaus, to Vianova-Kunsthraz, A.G. Coating compositions and process therefor. 3,882,188, Cl. 260-850.000.

Beikhold, Galina Albertovna: *See—*
Pomogailo, Anatoly Dmitrievich; Mambetov, Urakbai Alimbaevich; Sokolsky, Dmitry Vladimirovich; Bolshov, Alexandr Avraamovich; Gluzman, Moisei Kharitonovich; Kochurovskaya, Gerta Gennadievna; Gluzman, Evgeny Moiseevich; Matkovsky, Petr Evgenievich; Beikhold, Galina Albertovna; Afanasieva, Irina Ivanovna; Burymchenko, Mikhail Ivanovich; and Baishiganov, Esengeldy, 3,882,046.

Bekefi, Gabriella: *See—*
Brieger, Lajos; Doktor, Karoly; Szekely, Geza; Szenas, Tibor; Bekefi, Gabriella; and Zoranyi, Dezso, 3,881,875.

Belkin, Ivanovich: *See—*
Barannik, Ivan Andreevich; Belkin, Ivanovich; Borodin, Viktor Ivanovich; Voronova, natalya Alexandrovna; Romanenko, Oleg Nikolaevich; Bogdanov, Alexandr Petrovich; Belosludtsev, Valery Sergeevich; Marfin, Vladimir Dmitrievich; Shish, Nikolai Yakovlevich; Shevchenko, Anatoly Filippovich; Emelyanov, Ivan Yakovlevich; Boiko, Jury Nikolaevich; Kljuchnik, Mikhail Nikolaevich; Khaber, Nikolai Vasilievich; Raskatov, Viktor Georgievich; Trukhin, Alexandr Fedorovich; Kondratenko, Anatoly Borisovich; Yazev, Vladimir Dmitrievich; Alontsev, Viktor Stephanovich; Startsev, Valery Alexeevich; and Sergeev, Jury Alexandrovich, 3,881,913.

Bell, Alexis D., to Mallinckrodt, Inc. Iron enrichment of flour. 3,882,251, Cl. 426-72.000.

Bell & Howell Company: *See—*
Mueller, Arthur C., 3,882,515.

Bell, Reynold W., to Singer Co., The. Timing device with pulse splitting feedback. 3,882,404, Cl. 328-38.000.

Bell, Richard M.: *See—*
Mushovic, John N.; and Bell, Richard M., 3,881,593.

Bell, Robert Graham; Collins, James Edward; and Griffiths, Gwylfa George, to National-Standard Company Limited. Apparatus for manufacturing annular beads. 3,881,526, Cl. 140-92.200.

Bell Telephone Laboratories, Incorporated: *See—*
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Lucas, James Allen, 3,882,390.
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Barannik, Ivan Andreevich; Belkin, Ivanovich; Borodin, Viktor Ivanovich; Voronova, natalya Alexandrovna; Romanenko, Oleg Nikolaevich; Bogdanov, Alexandr Petrovich; Belosludtsev, Valery Sergeevich; Marfin, Vladimir Dmitrievich; Shish, Nikolai Yakovlevich; Shevchenko, Anatoly Filippovich; Emelyanov, Ivan Yakovlevich; Boiko, Jury Nikolaevich; Kljuchnik, Mikhail Nikolaevich; Khaber, Nikolai Vasilievich; Raskatov, Viktor Georgievich; Trukhin, Alexandr Fedorovich; Kondratenko, Anatoly Borisovich; Yazev, Vladimir Dmitrievich; Alontsev, Viktor Stephanovich; Startsev, Valery Alexeevich; and Sergeev, Jury Alexandrovich, 3,881,913.

Belsanti, James F., to Allis-Chalmers Corporation. Aftercooler for internal combustion engine. 3,881,455, Cl. 123-119.0CD.

Ben-Tovim, Nathan. Manually held indirect ophthalmoscope especially adapted for viewing the periphery of the fundus oculi. 3,881,812, Cl. 351-6.000.

Bendix Corporation, The: *See—*
Doniger, Jerry, 3,881,670.
Harper, Peter W.; and Confair, Leslie, 3,881,453.
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Meyer, Helmut P., 3,882,338.

Benedetti, Riccardo; Meyer, Rudolf; Petersilka, Franz; Schittenhelm, Rudolf; Taumann, Leonhard; and Schiegl, Wolf-Eberhard, to Siemens Aktiengesellschaft. Device for X-ray treatment. 3,882,314, Cl. 250-505.000.

Benner, Robert J.; and Lundquist, Roger J., to General Motors Corporation. Fuel pick-up baffle. 3,881,457, Cl. 123-136.000.

Bennett, Raymond P.: *See—*
Jenkins, Andrew H.; Morgan, Robert L.; Bennett, Raymond P.; and Dugas, Charles E., 3,881,816.

Bennett, Walter Scott, Jr., to Burroughs Corporation. Serial transfer error detection logic. 3,882,460, Cl. 340-146.1AG.

Benninger, Siegfried; Rebsdat, Siegfried; and Kohlhaas, Rudolf, to Hoechst Aktiengesellschaft. Fluorinated tertiary amino ethers. 3,882,178, Cl. 260-563.00R.

Benninger, Siegfried; and Martini, Thomas, to Hoechst Aktiengesellschaft. Tertiary perfluoro-amino ethers. 3,882,182, Cl. 260-584.00C.

Bennington, William E. Dental floss dispenser. 3,881,502, Cl. 132-91.000.

Benson, Henry E.: *See—*
Markfelt, Reinhold S.; Paulson, Rueben E.; and Benson, Henry E., 3,881,656.

Benson, Norman E., to Electrostatic Equipment Corporation. Chuck. 3,881,763, Cl. 294-116.000.

Bentz, Francis: *See—*
Radlmann, Eduard; Velker, Eugen; Bentz, Francis; and Nischk, Gunther, 3,882,185.

Benz, Charles S., to Scott Paper Company. Method for forming apertured fibrous webs. 3,881,987, Cl. 162-116.000.

Benzing, James A., to Champion International Corporation. Gripless sheet guiding apparatus. 3,881,720, Cl. 271-63.000.

Beraudy, Philippe: *See—*
Allanic, Jacques; Beraudy, Philippe; and Guillon, Louis, 3,881,851.

Berends, Howard P., to Holland Hitch Company. Towing coupler assembly for factory made homes. 3,881,749, Cl. 280-415.00B.

Bereza, Albert: *See—*
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Berg, Alex: *See—*
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Berg, David A., to Allis-Chalmers Corporation. Quick disconnect coupling. 3,881,514, Cl. 137-614.040.

Berger, Abe; and Hardman, Bruce Bertolette, to General Electric Company. Latent addition curable organopolysiloxane compositions. 3,882,083, Cl. 260-46.5UA.

Beriger, Ernst; Kristiansen, Odd; Rufenacht, Kurt; and Bader, Jorg, deceased (by Bader-Ludwig, Dagmar, legal representative), to Ciba-Geigy Corporation. N-phosphoryl and n-phosphonyl amidines. 3,882,103, Cl. 260-240.00G.

Berkey Photo, Inc.: *See—*
Graham, Thomas G., 3,882,514.

Bernstein, Seymour: *See—*
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Bertolacini, Ralph J.; Hopkins, Paul Donald; and Menzl, Roland L., to Standard Oil Company. Catalyst for hydrotreating petroleum hydrocarbon oils and catalyst employed therein. 3,882,049, Cl. 252-466.0PT.

Bertolini, Natale: *See—*
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Bettiol, Bruno P., to Essilor International S.A. Machine for producing aspherical surfaces. 3,881,378, Cl. 82-19.000.

Beveridge, James F. Retractable basketball goal. 3,881,724, Cl. 273-1.50R.

Biderman, Benjamin B.: *See—*
Stockwell, Glade M.; and Biderman, Benjamin B., 3,882,292.

Biebuyck, Lawrence F., to Kawneer Company, Inc. Glass framing system. 3,881,287, Cl. 52-127.000.

Biebuyck, Lawrence F., to Kawneer Company, Inc. Construction element for glass framing system. 3,881,294, Cl. 52-720.000.

Biery, Galen A., Jr.: *See—*
Cotter, John L.; Melder, Robert C.; Biery, Galen A., Jr.; Rothenbuhler, Dan E.; and Rothenbuhler, Howard E., 3,881,573.

Bimba, Charles W. Fluid power cylinder with spring locking clip for threaded end cap and body cylinder. 3,881,401, Cl. 92-169.000.

Birckhead, Lennox, to Vitek Research Corporation. Powder deposition system. 3,881,653, Cl. 239-15.000.

Bird, Michael Gavin; and Parry, Keith Aled Wyn, to British Petroleum Company Limited, The. Synergistic mixture of adiamine and alkalimetalamide as an antioxidant composition and lubricants containing same. 3,882,032, Cl. 252-49.700.

Birle, John David, to General Electric Company. Abrasive boron nitride particles containing phosphorus. 3,881,890, Cl. 51-307.000.

Bissing, Donald E.: *See—*
Gash, Virgil W.; and Bissing, Donald E., 3,882,173.

Bissinger, William E., to PPG Industries, Inc. Halogenated N-substituted thiocarboxy maleimides. 3,882,145, Cl. 260-326.400.

Biviator S.A.: *See—*
Jenni, Rene; and Adler, Karl, 3,881,309.

Bixel, Charles G., Jr. Brick textured building panels and their method of manufacture and installation. 3,882,218, Cl. 264-157.000.

Black, Ian Alexander, to F. C. Robinson & Partners Limited. High voltage component testing systems. 3,882,380, Cl. 324-60.00C.

Blakeley, Clyde A.; and Morgan, Joe M., to Fabit Corporation. Process of refuse container emptying. 3,881,616, Cl. 214-152.000.

Block, Milton L.; Goldberg, David D.; and Douthit, Kenneth S. Flying toy. 3,881,729, Cl. 273-106.00D.

Block, Sheldon L. Fluid velocity responsive instrument. 3,881,354, Cl. 73-228.000.

Bluestein, Leo I.; and Meyn, John H., to GTE Laboratories Incorporated. Universal polybinary modem. 3,882,485, Cl. 340-347.0DD.

Blume, Lowell R. Monorail car and wheel assembly. 3,881,427, Cl. 105-141.000.

Board of Regents, State of Florida: *See—*
Vice, William E.; Brodersen, Arthur J.; and Lipovski, Gerald J., 3,882,274.

Boccon-Gibod, Dominique, to U.S. Philips Corporation. Semiconductor device for producing or amplifying high-frequency electromagnetic oscillations. 3,882,528, Cl. 357-3.000.

Bochory, Michael E. Fastener mechanism. 3,881,753, Cl. 285-92.000.

Bodig, Bernd: *See—*
Roozenbeek, Herman; Bodig, Bernd; Meyer, Klaus; and Fritz, Adolf, 3,881,458.

Boehringer Ingelheim G.m.b.H.: *See—*
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Bohrdt, Joaquin: *See—*
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Boiko, Jury Nikolaevich: *See—*
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Bolan, Harry H.: *See—*
Peake, Charles C.; and Bolan, Harry H., 3,881,240.

Bolger, Thomas Vincent, to RCA Corporation. Doppler Correlation radar exhibiting reduced time side lobes. 3,882,493, Cl. 343-5.0PD.

Bolger, Thomas Vincent, to RCA Corporation. Doppler correlation radar providing combined target detection and ranging. 3,882,494, Cl. 343-5.0PD.

Bolger, Thomas Vincent, to RCA Corporation. Doppler correlation radar providing coarse-range detection resolution. 3,882,495, Cl. 343-5.0PD.

Bolker, James H.; Zoephel, Richard L.; and Collins, Robert F., to Kendal Company, The. Interlocked surgical drape and method. 3,881,476, Cl. 128-132.00D.

Bolshov, Alexandr Avraamovich: *See—*
Pomogailo, Anatoly Dmitrievich; Mambetov, Urakbai Alimbaevich; Sokolsky, Dmitry Vladimirovich; Bolshov, Alexandr Avraamovich; Gluzman, Moisei Kharitonovich; Kochurovskaya, Gerta Gennadievna; Gluzman, Evgeny Moiseevich; Matkovsky, Petr Evgenievich; Beikhold, Galina Albertovna; Afanasieva, Irina Ivanovna; Burymchenko, Mikhail Ivanovich; and Baishiganov, Esengeldy, 3,882,046.

Boncey, Graham Arthur; Hedge, Maurice John; and Henderson, James Rae, to Aspro-Nicholas, Limited. Analgesic formulations. 3,882,228, Cl. 424-35.000.

Bonnet, Maurice, to Agence Nationale de Valorisation de la Recherche ANVAR. Equipment for recording relief or stereoscopic images. 3,882,513, Cl. 354-115.000.

Bontinck, Walter; and De Coster, Willy, to UCB, Societe Anonyme. Method of manufacturing an artificial paper. 3,882,061, Cl. 260-23.70M.

Booker, Clyde A., Jr., to Westinghouse Electric Corporation. Hall lantern apparatus for elevator system. 3,882,447, Cl. 340-21.000.

Borden, Inc.: *See—*
Buckwalter, Geoffrey R., 3,881,942.

Borg-Warner Corporation: *See—*
Guzy, Raymond L., 3,882,060.
Kelly, Robert R., 3,881,375.
Kelly, Robert R., 3,882,377.

Borghi, Roland P.; Charpenel, Marc A.; and Taran, Jean-Pierre, to Office National d'Etudes et de Recherches Aerospatiales. Thermally pumped gasdynamic lasers. 3,882,416, Cl. 331-94.50G.

Borodin, Viktor Ivanovich: *See—*
Barannik, Ivan Andreevich; Belkin, Ivanovich; Borodin, Viktor Ivanovich; Voronova, natalya Alexandrovna; Romanenko, Oleg Nikolaevich; Bogdanov, Alexandr Petrovich; Belosludtsev, Valery Sergeevich; Marfin, Vladimir Dmitrievich; Shish, Nikolai Yakovlevich; Shevchenko, Anatoly Filippovich; Emelyanov, Ivan Yakovlevich; Boiko, Jury Nikolaevich; Kljuchnik, Mikhail Nikolaevich; Khaber, Nikolai Vasilievich; Raskatov, Viktor Georgievich; Trukhin, Alexandr Fedorovich; Kondratenko, Anatoly Borisovich; Yazev, Vladimir Dmitrievich; Alontsev, Viktor Stephanovich; Startsev, Valery Alexeevich; and Sergeev, Jury Alexandrovich, 3,881,913.

Botta, Jose A., Jr.; and Beachy, Dale K., to Koppers Company, Inc. Mold oscillating apparatus. 3,881,544, Cl. 164-260.000.

Botzum, Richard Allen; and Koufidakis, Charalampos, to Northrop Corporation. System for determining speed and heading of airborne equipment with rectilinear coordinate positions. 3,882,501, Cl. 343-9.000.

Bouchard, Cyrille; and Bouchard, Roland. Vehicle automatic emergency signalling system. 3,882,449, Cl. 340-52.00H.

Bouchard, Roland: *See—*
Bouchard, Cyrille; and Bouchard, Roland, 3,882,449.

Bouchey, George J., to General Electric Company. Glazed impervious sheet assembly and method of glazing. 3,881,290, Cl. 52-398.000.

Bouchnik, Joseph. Detachable cabin aircraft. 3,881,671, Cl. 244-140.000.

Bourgeois, Alain, to Elastelle Paul Fontanille & Fils. Device for and method of making a knitted band having a spiral zipper incorporated therein. 3,881,326, Cl. 66-86.00R.

Bourner, Howard L., to Pep Industries, Inc. Combination terminal and fuse holder arrangement for an electrical circuit. 3,882,438, Cl. 337-237.000.

Bowling, Joseph E., Jr.; and Speilman, Robert A., to Carborundum Company, The. Wear plate in an apparatus for conditioning a granular material. 3,881,664, Cl. 241-275.000.

Bowman, Dennis W.; and Horn, Robert E., to United States of America, Army. RF broadband transmission line impedance matching transformer pair for less than 4 to 1 impedance transformations. 3,882,432, Cl. 333-32.000.

Bowman, Thomas C. Joint seals. 3,881,834, Cl. 404-64.000.

Boyd, Edward A.; and Harkness, Joseph R., to Briggs & Stratton Corporation. Electric motor armature core. 3,882,336, Cl. 310-216.000.

Boynton, Vaughn E. Sandbox with superstructure defining a play structure detachably attached thereto. 3,881,723, Cl. 272-1.00A.

BP Trading Limited: *See—*
Hoy, Herbert Raymond; Roberts, Alan Gregson; and Wilkins, Dennis Malcolm, 3,881,857.

Bracher, Hans; and Baumann, Heinz, to Sulzer Brothers Limited. Shuttle return apparatus. 3,881,524, Cl. 139-126.000.

Bradburne, Francis Edward Husband. Insecticidal composition employing DDVP. 3,882,226, Cl. 424-19.000.

Bradburne, Francis Edward Husband. Insecticidal composition employing DDVP. 3,882,227, Cl. 424-19.000.

Bradford, Bert C. Water treatment plant. 3,881,700, Cl. 259-4.000.

Bradley, Arthur W.; and White, Robert L., to General Motors Corporation. Adjustable steering column. 3,881,366, Cl. 74-493.000.

Bradt, Lynn J., to SI Handling Systems, Inc. Apparatus for dispensing items from shelves. 3,881,633, Cl. 221-123.000.

Brady, Thomas Eugene: *See—*
Loffelman, Frank Fred; and Brady, Thomas Eugene, 3,882,035.

Brainerd, Andrew W.; Brainerd, Kent H.; and Brainerd, Stuart W. Aerosol can holder. 3,881,628, Cl. 220-17.000.

Brainerd, Kent H.: *See—*
Brainerd, Andrew W.; Brainerd, Kent H.; and Brainerd, Stuart W., 3,881,628.

Brainerd, Stuart W.: *See—*
Brainerd, Andrew W.; Brainerd, Kent H.; and Brainerd, Stuart W., 3,881,628.

Brandenburg, Jan Hendrik. Cooled shaft-furnace and stave-cooler to be used therefor. 3,881,860, Cl. 432-83.000.

Brandt, Siegfried: *See—*
Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, 3,882,085.

Braukmann, Heinz Dieter; and Hattwig, Wolfgang, to Rheinstahl Gieberei. Apparatus for casting composite cast rolls. 3,881,545, Cl. 164-349.000.

Braun, Hans: *See—*
Rasenberger, Otto; and Braun, Hans, 3,881,382.

Braun, Ralph V.: *See—*
Whitehead, Howard A.; and Braun, Ralph V., 3,881,490.

Bre Landiere S.A.: *See—*
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Brenig, Theodore, to General Electric Company. Control device for power line voltage measuring circuit. 3,882,373, Cl. 323-66.000.

Brenner, L. Martin; and Loev, Bernard, to SmithKline Corporation. 2-Amino(and 2-aminomethyl)-2-quinolylthioacetamides. 3,882,126, Cl. 260-283.00S.

Brieger, Lajos; Doktor, Karoly; Szekely, Geza; Szenas, Tibor; Bekefi, Gabriella; and Zoranyi, Dezso, to Tiszai Vegyi Kombinat. Equipment for the continuous production of synthetic resins for the varnish industry. 3,881,875, Cl. 23-283.000.

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Britt, Ronald Howard, to U.S. Philips Corporation. Character recognition apparatus. 3,882,463, Cl. 340-146.3AC.

Brittian, Ronel W.; Malarcher, Falvey L.; and Schneider, William A., to Texas Instruments Incorporated. Interactive horizon building, analysis and editing. 3,882,446, Cl. 340-15.5DS.

Brock, Carl Martin, to du Pont de Nemours, E. I., and Company. Vapor degreaser process employing trichlorotrifluoroethane and ethanol. 3,881,949, Cl. 134-31.000.

Brodersen, Arthur J.: *See—*
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Brokaw, Adrian Paul; and Chin, Daniel Y. S., to Wescom, Inc. Nonlinear encoder and decoder. 3,882,484, Cl. 340-347.0AD.

Brouwer, Walter G.; MacPherson, Edwin J.; Ames, Ronald B.; and Neidermyer, Robert W., to Uniroyal, Inc.; and Uniroyal Ltd. Oxazole and oxadiazole benzoic acid derivatives as herbicides. 3,882,138, Cl. 260-307.00G.

Brown, Alfred, Jr.; and Schlesier, Kenneth Mansfield. Absolute value circuit employing opposite conductivity type switches. 3,882,327, Cl. 307-236.000.

Brown, Andrew M. Roll mill for flaking grain and the like. 3,881,663, Cl. 241-225.000.

Brown, Herbert C., to Aldrich-Boranes, Inc. Stabilized boranetetrahydrofuran solutions. 3,882,037, Cl. 252-188.000.

Brown, Herbert L.: *See—*
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Brown, Newton D.: *See—*
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Brown, Robert H.: *See—*
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Brown, Thomas C., to John D. Hollingsworth on Wheels, Inc. Carding machine drive. 3,881,223, Cl. 19-106.00R.

Brown & Williamson Tobacco Corporation: *See—*
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Browne Engineering Company: *See—*
Browne, Kenneth A., 3,881,637.

Browne, Kenneth A., to Browne Engineering Company. One-shot metering valve. 3,881,637, Cl. 222-136.000.

Browning, Howard Edmund: *See—*
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Brunato, Siro. Drillstring structure. 3,881,755, Cl. 285-137.00A.

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Bryan, John F., Jr. Tie replacing system. 3,881,422, Cl. 104-9.000.

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Cleary, William C.: *See—*

Bryson, Robert Andrew; and Wise, James C., to Harris-Intertype Corporation. Combined newspaper press and stuffer, and method of forming newspapers therewith. 3,881,716, Cl. 270-12.000.
Buchele, Wesley F., to Iowa State University Research Foundation, Inc. Strain-gauge, brushless torque meter. 3,881,347, Cl. 73-136.00R.
Buckwalter, Geoffrey R., to Borden, Inc. Fast drying, solvent-free printing ink. 3,881,942, Cl. 106-22.000.
Budenholzer, Robert J., to Westinghouse Electric Corporation. Multi-temperature circulating water system for a steam turbine. 3,881,548, Cl. 165-110.000.
Buerger, Herbert, to Del-Met Corporation. Wheel trim locking rings. 3,881,778, Cl. 301-37.00B.
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Bunjes, Johan Henri, to Neratoom B.V. Centrifugal pump for processing liquids containing abrasive constituents, more particularly, a sand pump or a waste-water pumper. 3,881,840, Cl. 415-109.000.
Burczynski, Thomas J. Bullet. 3,881,421, Cl. 102-92.200.
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Callahan, James L.; Shaw, Wilfrid G.; and Miller, Arthur F., to Standard Oil Company. Reactivation of molybdenum containing oxidation catalysts in fluid bed reactors. 3,882,159, Cl. 260-465.300.
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Cofer, Daniel B.; Mitchell, Francis Marion; Ward, George C.; and Kozak, Milan, to Southwire Company. Apparatus for direct cooling of continuous rolled rod. 3,881,337, Cl. 72-45.000.
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Falconer, Errol Linton; and Holden, Harold William, to Canadian Industries Limited. Explosive composition having a liquid hydroxyalkyl nitrate as sensitizer. 3,881,970, Cl. 149-47.000.
Faldi, Giovanni. Plant for evacuating dredged material. 3,881,530, Cl. 141-284.000.
Falgas, Raymond. Combined window structure. 3,881,539, Cl. 160-107.000.
Fantuzzo, Joseph, to Xerox Corporation. Half tone development process for touchdown system in electrostatic imaging. 3,881,927, Cl. 96-15.00D.
Farkas, Francis. Injection blow molding apparatus. 3,881,855, Cl. 425-342.000.
Faroudja, Yves C. Method and apparatus for improved skip field recording. 3,882,539, Cl. 360-11.000.
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Flaherty, Kenneth Allen, to Brown & Williamson Tobacco Corporation. Cigarette dispensing package. 3,881,599, Cl. 206-273.000.
Fleming, Robert W.; and Sill, Arthur D., to Richardson-Merrell Inc. Antiviral compositions containing bis-basic ketones of phenoxathins and methods of inhibiting viral infections therewith. 3,882,231, Cl. 424-85.000.

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Folk, Kenneth Foster, to AMP Incorporated. Method and apparatus for facilitating the positioning of the free end sections of a plurality of leads in a plurality of grooves. 3,881,246, Cl. 29-628.000.

Foltz, Carl L., to Concept, Inc. Flex light. 3,881,468, Cl. 128-23.000.

Fontana, Frank J., to Stewart-Warner Corporation. Caster brake and latch assembly. 3,881,216, Cl. 16-35.00R.

Fooladi, Mike Mehdi. Catalyst composition and production of 2,2-dichloropropionic acid therewith. 3,882,045, Cl. 252-429.00R.

Foord, Peter M., to Electricity Trust of South Australia, The. Leakage surge indicator. 3,882,378, Cl. 324-54.000.

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Foster, Karl: *See—*
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Fouche, Jean; and Leger, Andre, to Rhone-Poulenc, S.A. Fungicidal compositions comprising A 10, 11 dihydrodibenzo [b,f] azepine derivative. 3,882,235, Cl. 424-244.000.

Fougea, Edouard Marie, to Constructions Edmond Coignet. Plant for the fabrication of parallel molded construction elements. 3,881,856, Cl. 425-432.000.

Fowells, Robert W.; Damon, Robert A.; and Coma, James G., to Crown Zellerbach Corporation. Process for forming polyolefin fibers. 3,882,095, Cl. 260-88.20R.

Fox, John Francis; and Harber, Bernard Frank, to Ethicon, Inc. Apparatus for washing and decontaminating articles. 3,881,503, Cl. 134-57.00R.

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Frank, Charles J., to SCM Corporation. Machine for cutting frozen foods. 3,881,384, Cl. 83-407.000.

Frank, Lee F., to Eastman Kodak Company. Electrophotographic process employing image and control grid means. 3,881,921, Cl. 96-1.00R.

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Frederickson, Robert Eugene, to McCulloch Corporation. Chain saw filter assembly. 3,881,250, Cl. 30-383.000.

Freed, Karol. LC and crystal transistor oscillators. 3,882,422, Cl. 331-116.00R.

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French, Bruce K. Wide-angle rear view mirror with rotary center piece. 3,881,811, Cl. 350-289.000.

Frey, Wolfgang; and Schoenauer, Wolfgang, to Sandoz Ltd. Anthraquinone compounds. 3,882,150, Cl. 260-380.000.

Fried, Krupp Huttenwerke AG: *See—*
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Friedman, Leonard: *See—*
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Fries, Paul, to Siemens Aktiengesellschaft. Cooling apparatus for the rotor of an electric machine which uses a heat pipe. 3,882,335, Cl. 310-61.000.

Friesem, Albert A., to Harris-Intertype Corporation. Multicolor image memory. 3,881,800, Cl. 350-3.500.

Frigieri, Ugo Luciano, to Luisada, Tulio C. Silage compression apparatus. 3,881,409, Cl. 100-68.000.

Fritz, Adolf: *See—*
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Fritz, Andrea; and Shih, Chi-Kai, to du Pont de Nemours, E. I., and Company. Alpha-olefin copolymer blends. 3,882,197, Cl. 260-897.00A.

Fritzlen, Thomas L., to Reynolds Metal Company. Clad composites and aluminous metal compositions for cladding. 3,881,883, Cl. 29-197.500.

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Frymoyer, Edward M., to Rockwell International Corporation. Piezoelectric phase detector. 3,882,332, Cl. 310-8.100.

Fuchs, Julius Jakob, to du Pont de Nemours, E. I., and Company. Carbamates and thiolcarbamates. 3,882,160, Cl. 260-468.00E.

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Fujishiro, Takeshi; Masaki, Kenji; and Wazawa, Kiyoshi, to Nissan Motor Company Limited. Vehicular catalytic converter failure alarm system. 3,882,451, Cl. 340-57.000.

Fujitsu Limited: *See—*
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Fuller, John C.; Fuller, Gordon W.; Fuller, Ralph A.; and Fuller, William I. Composition for inhibiting leakage of air pressure from pneumatic tires and the like. 3,881,943, Cl. 106-33.000.

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Funck, Herbert. Last for the manufacture of shoes. 3,881,205, Cl. 12-133.00R.

Furuhashi, Toshio; and Kinosita, Takesi, to Hitachi, Ltd. Control device for automatic transmission in automobiles. 3,881,368, Cl. 74-866.000.

Furukawa Electric Co., Ltd., The: *See—*
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Gaetcke, Werner. Inlet valve for internal combustion engine and method for supplying fuel thereto. 3,881,459, Cl. 123-188.00R.

Gall, Martin; and Hester, Jackson B., Jr., to Upjohn Company, The. 2-[3-(Hydroxymethyl)-5-(phthalimidomethyl)-4H,1,2,4-triazol-4-yl]benzophenones. 3,882,139, Cl. 260-308.00R.

Galloway, David E., to Exxon Production Research Company. Arctic barrier formation. 3,881,318, Cl. 61-1.00R.

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Galpin, Robert Keith Portway, to Plessy Handel und Investments A.G. Circuit arrangements. 3,882,330, Cl. 307-264.000.

Gamara, Norbert J., to GTE Sylvania Incorporated. Wave detection apparatus. 3,882,503, Cl. 343-100.00R.

Gardner, Elmer W. Tightening spindle for mobile homes. 3,881,694, Cl. 254-164.000.

Garito, Humbert, to Le Nickel; Centre National Pour l'Exploitation des Oceans; and ERJI. Antenna lead-through assembly for a radio buoy. 3,882,499, Cl. 343-709.000.

Garrett Corporation, The: *See—*
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Gash, Virgil W.; and Bissing, Donald E., to Monsanto Company. Preparation of monohaloacyl halides. 3,882,173, Cl. 260-544.00Y.

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Gehl Company: *See—*
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Gehrke, Charles W.; Zumwalt, Robert; Kuo, Kenneth; and Stalling, David L. Chromatograph system and method. 3,881,892, Cl. 55-67.000.

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Kogan, Mark Isoifovich: *See—*
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Koop, James R.; Butler, Gene R.; Darnall, David L.; and Butler, Lee D., to Sperry Rand Corporation. Machine for forming a compact stack of crop material. 3,881,306, Cl. 56-346.000.

Kopp, Georg, to Sig Schweizerische Industrie-Gesellschaft. Apparatus for the groupwise packaging of bags. 3,881,645, Cl. 225-94.000.

Kopp, Paul W.: *See—*
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Korner, Renzo L.; Green, David; Bereza, Albert; and Colegrove, Robert J., to Westinghouse Electric Corporation. Modular electrical penetration. 3,882,262, Cl. 174-11.00R.

Korner, Renzo L.; and Green, David, to Westinghouse Electric Corporation. Electrical penetration for withstanding voltage surge on the conductor. 3,882,263, Cl. 174-11.00R.

Korner, Siegfried: *See—*
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Kosakowski, Henry R.; and Washburn, Douglas J., to Bendix Corporation, The. Analog to digital converter system including computer controlled feedback means. 3,882,488, Cl. 340-347.0CC.

Kosarev, Sergei Petrovich; Didrikh, Nina Voldemarovna; Yazev, Vladimir Dmitrievich; Raskatov, Viktor Georgievich; Romanenko, Oleg Nikolaevich; and Trukhin, Alexandr Fedorovich. Electric furnace and method for the continuous refining of magnesium. 3,882,261, Cl. 13-23.000.

Kosicki, Witold W.; and Hollingsworth, Charles M., to Horsman Dolls Inc. Doll including a joint member with filling opening and gas vent therein. 3,881,276, Cl. 46-162.000.

Koster, Charles A.; and Perry, Wayne E., to Aero Electronics Development Co., Inc. Airplane crash locating device. 3,882,394, Cl. 325-115.000.

Kosyak, Jury Fedorovich; Sobolev, Sergei Petrovich; Rudkovsky, Ary Fedorovich; Ugolnikov, Viktor Vasilievich; Iglinsky, Yakov Lvovich; Babadzhanian, Nikolai Artemovich; German, Semen Iosifovich; Ochkovsky, Ivan Fedorovich; and Zilber, Teodor Markovich. Diaphragm for steam turbine stage. 3,881,842, Cl. 415-168.000.

Kotauczek, Fritz, to Daimler-Benz Aktiengesellschaft. Arrangement for lubricating a bearing. 3,881,788, Cl. 308-21.000.

Koufidakis, Charalampos: *See—*
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Cofer, Daniel B.; Mitchell, Francis Marion; Ward, George C.; and Kozak, Milan, 3,881,337.

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Krautsack, Richard G., to Cooperative Marketing Co., The. Holders having foldable support. 3,881,649, Cl. 229-38.000.

Krebaum, Lawrence J.; Wu, William C. L.; and Machonis, John, Jr., to Chemplex Company. Cografted copolymers of a polyolefin, an acid or acid anhydride and an ester monomer. 3,882,194, Cl. 260-878.00R.

Krezanoski, Joseph Z.; and Petricciani, John C., to Flow Pharmaceuticals, Inc. Contact lens cleaning and storing composition including nonionic surfactant, benzalkonium chloride and Na_2EDTA. 3,882,036, Cl. 252-106.000.

Krier, Keith N.; and Kimzey, Paul W., to Tennant Company. Surface cleaning apparatus. 3,881,215, Cl. 15-340.000.

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Krings, Josef. Pressure guide for use in ditch supporting assembly. 3,881,679, Cl. 248-356.000.

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Kruggel, Robert Henry, to International Business Machines Corporation. Differential amplifier for sensing small signals. 3,882,326, Cl. 307-235.00R.

Krulwich, Lester S. Device for re-inking typewriter ribbons. 3,881,588, Cl. 197-171.000.

Krzewinski, Henrietta K., to Johnson & Johnson. Reinforced surgical drape. 3,881,474, Cl. 128-132.00D.

Kubota, Hideo, to General Motors Corporation. Fiber reinforced polyester resin having a low surface profile and improved impact strength. 3,882,078, Cl. 260-40.00R.

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Kumai, Akira; Shiba, Keisuke; and Yamamoto, Nobuo, to Fuji Photo Film Co., Ltd. Light-sensitive material undergoing little change of latent image formed therein. 3,881,933, Cl. 96-111.000.

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Kurimoto, Masashi; and Sugimoto, Kaname, to Hayashibara Company. Process for producing amylose powders having a mean degree of polymerization between 20–30. 3,881,991, Cl. 195-31.00R.

Kurita, Takaji; and Fujiwara, Takao, to Minolta Camera Kabushiki Kaisha. Magnetic brush developing apparatus. 3,881,446, Cl. 118-637.000.

Kuriu, Sadao: *See—*
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Lafourcade, Jean-Michel. Breathing aid apparatus. 3,881,480, Cl. 128-145.800.

Lagoutte, Pierre. Apparatus for the permutation of movable bed fluids. 3,882,022, Cl. 210-189.000.

L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des procedes George Claude: *See—*
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Lambert, Robert D., to Multiply Development Corporation Ltd. Method of felting fibrous elements. 3,881,225, Cl. 19-155.000.

Lancaster, Charles C.: *See—*
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Land, Edwin H.; and Morse, John B., to Polaroid Corporation. System for mounting photographic accessories on a camera. 3,882,517, Cl. 354-295.000.

Landen, William James. Safety closure device. 3,881,623, Cl. 215-216.000.

Landen, William James. Ratchet-type safety closure. 3,881,625, Cl. 215-221.000.

Lanier Electronic Laboratory, Inc.: *See—*
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Largman, Theodore; Schmehl, Leon J.; and Stone, Herman, to Allied Chemical Corporation. Method for improving flame retardancy of polyamide compositions and resultant product. 3,882,076, Cl. 260-37.00N.

Larkfeldt, Birger, to Aktiebolaget Svenska Flaktfabriken. Distributing ventilating medium within spaces. 3,881,402, Cl. 98-40.00N.

Larkin, Terrance M., to Gates Rubber Company, The. Battery paste pumping and metering system. 3,881,654, Cl. 239-127.000.

Larson, John D., III, to Hewlett-Packard Company. Acoustic terminations for acoustically tuned optical filters. 3,881,805, Cl. 350-149.000.

Laune, Pierre, to Unilando. Child's collapsible stroller. 3,881,739, Cl. 280-42.000.

LaVange, Donald H., to Polytop Corporation. Child resistant closures with lever opening. 3,881,643, Cl. 222-505.000.

Lavering, Gordon R., to Varian Associates. Heat transfer device employing fins in a fluid stream. 3,881,547, Cl. 165-80.000.

Lavnikanis, Vladimir Fedorovich: *See—*
Arifov, Ubai Arifovich; Kharmats, Dmitry Efimovich; Abdurashidov, Gafur Abdushukurovich; Vzenkonsky, Alexandr Vasilievich; Sapon, Anatoly Dmitrievich; Lavnikanis, Vladimir Fedorovich; Kogan, Mark Isoifovich; Egorov, Nikolai Petrovich; Gomelsky, Jury Danilovich; and Shaidu, Abuzar Gabdurakhmanovich, 3,881,227.

Lavoie, Rene L. Small vehicle snow plow. 3,881,261, Cl. 37-46.000.

Lawrence, Franklin B.; and Lewis, Robert E., to Timelapse, Inc. Camera system with on-frame digital recording means. 3,882,512, Cl. 354-109.000.

Lawrence Peska Associates, Inc.: *See—*
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Layne, Melvin E. Panel mold for forming composite concrete-reinforced walls. 3,881,291, Cl. 52-426.000.

Le Nickel: *See—*
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Le Brasseur, Genevieve, nee Nicoud; and Nicco, Adrien, to Ethylene Plastique. Photodegradable polymeric compositions containing a mixture of an iron salt and sulfur or a dialkyl polysulfide. 3,882,058, Cl. 260-23.00H.

LeBus International, Inc.: *See—*
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Le Diouron, Raymond, to L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des procedes George Claude. Method of cooling products. 3,881,322, Cl. 62-63.000.

Lee, George Timothy, to Edgewood Surgical Company, Inc. Splint for the leg of a dog or cat. 3,881,472, Cl. 128-89.00R.

Lee, Kwan-Hua, to University of California, The Regents of the. Method of treating acne with a C_{20} acid. 3,882,244, Cl. 424-318.000.

Lee, Thomas Brian: *See—*
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Leedom, Marvin Allan, to RCA Corporation. Rotary stylus cleaner. 3,881,734, Cl. 274-1.00R.

Leedom, Marvin Allan, to RCA Corporation. Video playback system tracking arm and pickup assembly. 3,882,267, Cl. 178-6.60A.

Leenders, Johannes Petrus; and Rutjes, Peter Caspar Stephanus, to U.S. Philips Corporation. Non-reciprocal field displacement isolator. 3,882,428, Cl. 333-24.200.

Leger, Andre: *See—*
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Leiber, Heinz, to Teldix GmbH. Servo-assisted steering arrangement. 3,881,567, Cl. 180-79.20R.

Leliovsky, Anton Felixovich: *See—*
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Leloux, Arnoldus Willem Jan, to Wavin B.V. Device for producing roll-shaped packets of bags of plastic. 3,881,665, Cl. 242-67.30R.

Lemaitre, Jean-Claude, to Paulstra. Elastic supports. 3,881,711, Cl. 267-57.10R.

Le Martret, Odile: *See—*
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LeMon, David E. Radioactive gas inhalator. 3,881,463, Cl. 128-2.00A.

Lempke, Leslie C., to Homelawn Corporation. Dumpable grass catcher. 3,881,304, Cl. 56-202.000.

Leonard, Gordon Harris, to C. A. V. Limited. Vehicle electrical systems. 3,882,321, Cl. 307-10.0LS.

Leonische Drahtwerke AG: *See—*
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Lepeytre, Jean-Michel; Paul, Claude; Grandet, Louis; and Minjolle, Louis, to Azote et Produits Chimiques, S.A.; and Ceraver. Catalyst for cleaning engine exhaust gases. 3,881,696, Cl. 252-455.00R.

L'Eplattenier, Francois; and Pugin, Andre, to Ciba-Geigy Corporation. Phenyl-azo-(polycyclic)heterocyclic metal complexes. 3,882,099, Cl. 260-146.00R.

Lesher, George Y.; and Gruett, Monte D., to Sterling Drug Inc. Preparation of 1-alkyl-1,4-dihydro-7-substituted-4-oxo-1,8-naphthyridine-3-carboxylic acids via the 3-aminomethyl analogs. 3,882,132, Cl. 260-295.50B.

Lessen, Martin. Method and apparatus for elimination of airfoil trailing vortices. 3,881,669, Cl. 244-40.00R.

Levene, Max Moses. Sampling device and method. 3,881,464, Cl. 128-2.00B.

Levon, Ernest F., to G. D. Searle & Co. S-[omega-(1-imidazolyl) alkyl]hydrogen monothiosulfates and salts thereof. 3,882,136, Cl. 260-299.000.

Levy, Joseph, to Universal Oil Products Company. Hydrogenation of nitrobenzoic acids. 3,882,171, Cl. 260-518.00R.

Levy, Ralph, to Microwave Development Laboratories. Phase equalized filter. 3,882,434, Cl. 333-73.00W.

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Lewis, Albert; and Krueger, Ronald G., to Kaiser Glass Fiber Corporation. Unidirectional webbing material. 3,881,522, Cl. 138-144.000.

Lewis, Dong Sing, to Gerity-Schultz Corporation. Transfer apparatus. 3,881,607, Cl. 214-1.0BC.

Lewis, Frank D., Sr., to Lockheed Aircraft Corporation. Fluidic operated valve actuator. 3,881,400, Cl. 92-52.000.

Lewis, Frederick M., to Marion Health and Safety, Inc. Self-fitting hearing protector. 3,881,570, Cl. 181-135.000.

Lewis, Peter McHugh: *See—*
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Lewis, Robert E.: *See—*
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Lewis, Virgil D.; and Cirincione, Gregory V., to United States of America, Army. Non-destructive weapon system evaluation apparatus and method for using same. 3,882,496, Cl. 343-6.00R.

Libbey-Owens-Ford Company: *See—*
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Lietaert, Robert J., Jr. Cycle locking system. 3,881,680, Cl. 248-499.000.

Liles, Robert E.; and O'Rourke, Gerald D., to International Business Machines Corporation. Testing the stability of MOSFET devices. 3,882,391, Cl. 324-158.00D.

Lin, Francis C. M.: *See—*
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Lindenfors, Sven; and Lundberg, Nils Johan, to Mo och Domsjo. Adhesive composition containing as a binder a graft polymer on a water-soluble cellulose ether of an unsaturated carboxylic acid, alkyl acrylate and vinyl acetate; and process for preparing the same. 3,882,057, Cl. 260-17.00A.

Linder, John L., to United States of America, Navy. Digital frequency correlator. 3,882,303, Cl. 235-151.300.

Lindholm, Carl-Eric, to Medical Products Octagon AB. Device for moistening and heating inhalation air with tracheotomy and endotracheal intubation. 3,881,482, Cl. 128-212.000.

Lindner, Johannes: *See—*
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Lindsay, Harry Lee; Angier, Robert Bruce; and Murdock, Keith Chadwick, to American Cyanamid Company. 2,5-Bis-substituted amino-1,3,4-thiadiazoles and method of use. 3,882,123, Cl. 260-268.00H.

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Lingl, Hans. Device and method for prefabricating wall panels from block-like articles. 3,881,981, Cl. 156-297.000.

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Lippert, Irving S.; and Stella, Joseph A., to Polaroid Corporation. Photographic processing apparatus employing delayed action expandable sponge. 3,882,526, Cl. 354-317.000.

List, William F., to Westinghouse Electric Corporation. Energy conversion. 3,882,384, Cl. 324-71.00R.

Liu, Shing-Gong, to RCA Corporation. Magnetically tunable ferrite stripline trapatt mode oscillator and amplifier circuits. 3,882,420, Cl. 331-99.000.

Livingston, Everett L.; and Kring, James M., to Westinghouse Electric Corporation. Method of forming a polyester preimpregnated fiberglass sheet. 3,881,978, Cl. 156-247.000.

Lloyd, Arthur Leslie; Parry-Evans, Anthony Michael; and Capewell, Terence John, to Lucas Aerospace Limited. Fluid flow control valves. 3,881,517, Cl. 137-637.100.

Lockheed Aircraft Corporation: *See—*
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Loesch, Leo J.; and Loesch, Claude E. Monitor for air pressure type seed planter. 3,881,631, Cl. 221-6.000.

Loev, Bernard: *See—*
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Loffelman, Frank Fred; and Brady, Thomas Eugene, to American Cyanamid Company. Iminodiacetonitrile derivatives as peroxygen bleach activators. 3,882,035, Cl. 252-95.000.

Lofgren, Stig Tore Johannes, to Impuls Regulator, Lycksele Aktiebolaget. Alarm system with periodic test section. 3,882,476, Cl. 340-235.000.

Lohmar, Elmar; Ohorodnik, Alexander; Gehrmann, Klaus; and Stutzke, Paul, to Hoechst Aktiengesellschaft. Process for the manufacture of acrylic acid esters. 3,882,167, Cl. 260-486.00R.

Lohr, Bernd; and Hermann, Heinz, to Hoechst Aktiengesellschaft. Photoconductor and process for the preparation thereof. 3,881,922, Cl. 96-1.500.

Lokema, Lolke, to Ter Borg & Mensinga's Machinenfabriek N.V. Picking machine. 3,881,302, Cl. 56-130.000.

Long, Kenneth H., to Whitin Machine Works, Inc. Doffer mechanism carriage. 3,881,426, Cl. 105-28.000.

Long, Richard L., to McDonnell Douglas Corporation. Continuous process and machine. 3,881,972, Cl. 156-79.000.

Looney, John H., to Xerox Corporation. Bi-axial positioner. 3,881,369, Cl. 74-89.200.

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Lord Mayor, Aldermen and Citizens of the City of Norwich: *See—*
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Los, Marinus, to American Cyanamid Company. Disubstituted naphthalenone compounds. 3,882,106, Cl. 260-240.00R.

Loter, Ira; Dissly, Howard G.; and Schafer, Robert E., to Diamond Shamrock Corporation. Preparation of cheese. 3,882,250, Cl. 426-39.000.

Loubier, Robert J. Apparatus for fabricating an integral rotor assembly. 3,881,853, Cl. 425-174.800.

Love, Mahlon Lloyd: *See—*
Vogelaar, Bernard Francis; Love, Mahlon Lloyd; and Cook, Charles Edward, 3,881,370.

Lovell, Walter C.; and Grise, Frederick G. J. Method of making pop-in container closure. 3,881,437, Cl. 113-121.00C.

Lovell, Walter C.; and Grise, Frederick G. J. Pop-in container closure. 3,881,630, Cl. 220-268.000.

Lowe, Virgil L., to Edutron, Incorporated. Multiple access message retrieval system. 3,882,538, Cl. 360-9.000.

Lucas Aerospace Limited: *See—*
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Machek, John A., to Wagner Electric Corporation. Brake anti-lock mechanism. 3,881,779, Cl. 303-21.00F.

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Moberly, Charles W., to Phillips Petroleum Company. Arylene sulfide polymers. 3,882,092, Cl. 260-79.100.
Mobil Oil Corporation: *See—*
Zemanek, Joseph, Jr., 3,882,375.
Moerk, John C., Jr.; and Malina, Donald W., to Felt Products Mfg. Co. Sidewalk-curb sealing member, assembly and method. 3,881,835, Cl. 404-64.000.
Mohr, Heinrich: *See—*
Mueller-Tamm, Heinz; Immel, Wolfgang; Mohr, Heinrich; and Fauth, Karl-Heinz, 3,882,260.
Mohrman, Harry L., to Stewart-Warner Corporation. Chair control mechanism. 3,881,772, Cl. 297-300.000.
Mohrmann, William C. Trailer having concrete mixer thereon. 3,881,706, Cl. 259-162.000.
Molins Machine Company, Inc.: *See—*
Hitch, Thomas R., 3,881,721.
Molloy, Bryan B., to Eli Lilly and Company. Pharmaceutical compositions containing substituted 2-oxo-indolines and the use thereof to treat anxiety and tension. 3,882,236, Cl. 424-274.000.
Monday, Richard D.; and Scott, Norman H., to Universal Oil Products Company. Reaction zone effluents separation and hydrogen enrichment process. 3,882,014, Cl. 208-134.000.
Monsanto Company: *See—*
Barnett, Thomas A., 3,881,237.
Forster, Denis; and Weiss, Virgil W., 3,882,181.
Gash, Virgil W.; and Bissing, Donald E., 3,882,173.
Kocay, Witold R.; and Denmark, James B., 3,881,525.
Montefusco, Nicola; and Barlucchi, Alfredo, to Societa Italiana Telecomunicazioni Siemens S.p.A. Variable-frequency generator. 3,882,486, Cl. 340-347.0DA.
Moore, Alvin Edward. Pipe-framed, insulated, land-traversing vehicle. 3,881,566, Cl. 180-30.000.
Moore, Robert J.; and Curtis, Gerald B. Control of roofing procedure. 3,882,475, Cl. 340-227.00R.
Morando, Beniamino P. Energy source for generating an electromagnetic flux. 3,881,405, Cl. 99-452.000.
Morgan, Joe M.: *See—*
Blakeley, Clyde A.; and Morgan, Joe M., 3,881,616.
Morgan Refractories Limited: *See—*
Nicol, Peter John, 3,881,864.
Steen, William John, 3,881,709.
Morgan, Robert L.: *See—*
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Morgan, Thomas E., Jr.: *See—*
Morgan, Thomas E., Sr.; and Morgan, Thomas E., Jr., 3,881,982.
Morgan, Thomas E., Sr.; and Morgan, Thomas E., Jr., to Friedman, Leonard. Method for bonding brake linings. 3,881,982, Cl. 156-309.000.
Morgan, William G.: *See—*
Miller, William T.; and Morgan, William G., 3,881,617.
Mori, Kenzo; Katsube, Yujiro; and Ikeda, Norio, to Taiyo Musen Co. Ltd. Antenna for direction finders with mast isolation. 3,882,506, Cl. 343-728.000.
Morimoto, Kazuhisa: *See—*
Murakami, Yoshinobu; and Morimoto, Kazuhisa, 3,881,924.
Moriwaki, Masahiro: *See—*
Hirabayashi, Isamu; Sakaguchi, Mitsuhito; and Moriwaki, Masahiro, 3,881,819.
Morris, Wallace T. Fifth wheel device. 3,881,619, Cl. 214-620.000.
Morse, John B.: *See—*
Land, Edwin H.; and Morse, John B., 3,882,517.
Mortia, Saichiro, to Hokushin Electric Works, Ltd. Differential pressure transducer. 3,882,443, Cl. 338-42.000.
Morton, John Allison, to Combustion Engineering, Inc. Hydraulic spring adjusting device for bowl mills. 3,881,348, Cl. 73-141.00R.
Morton-Norwich Products, Inc.: *See—*
Schwam, Thomas J., 3,882,179.
Wright, George C.; Bayless, Allan V.; and Gray, Joseph E., 3,882,111.
Motor Wheel Corporation: *See—*
Hubbard, Harold C., 3,882,442.
Motorola, Inc.: *See—*
Clement, Donald R.; Mason, Larry D.; and Helber, Carl A., 3,882,319.
En, John, 3,882,457.
Gurtler, Richard W.; and Wechsler, Reuben, 3,881,808.
Nation, Melvin Stanley, 3,881,961.
Poorvin, Ronald E., 3,882,466.
Moulds, John W.: *See—*
Gural, John A.; Mick, Stanley H.; and Moulds, John W., 3,882,206.
Moulton, Michael Maldwyn. Building unit for scaffolding or a trestle. 3,881,571, Cl. 182-178.000.
Mowrey, William L.: *See—*
Dubin, Robert R.; Mowrey, William L.; and Gilhooley, William A., 3,881,955.

Mueller, Arthur C., to Bell & Howell Company. Shutter setting and film advancing mechanism for an electrically operated camera. 3,882,515, Cl. 354-173.000.

Mueller, Peter H. Smoke and heat detector incorporating an improved smoke chamber. 3,882,477, Cl. 340-237.00S.

Mueller-Tamm, Heinz; Immel, Wolfgang; Mohr, Heinrich; and Fauth, Karl-Heinz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Method of coating shaped articles. 3,882,260, Cl. 428-337.000.

Muir, Max K., to Information International, Inc. Control system for automatic reel-film enlarger printer. 3,881,820, Cl. 355-41.000.

Mule, Carmela. Vehicle movement sensitive alarm. 3,882,453, Cl. 340-65.000.

Muller, Alf, to Daimler-Benz Aktiengesellschaft. Independent suspension of front wheels of motor vehicles. 3,881,741, Cl. 280-96.20A.

Multiply Development Corporation Ltd.: *See—*
Lambert, Robert D., 3,881,225.

Munday, John Charles, to General Instrument Corporation. Dial signal storage and transmission arrangement using dual recirculating registers and having repeat capability. 3,882,284, Cl. 179-90.00B.

Murakami, Yoshinobu; and Morimoto, Kazuhisa, to Matsushita Electric Industrial Co., Ltd. Organic photoconductive layer sensitized with trimethine compound. 3,881,924, Cl. 96-1.600.

Murata, Koichiro: *See—*
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Watanabe, Tadashi; Murata, Koichiro; and Tsubouchi, Kenjiro, 3,882,007.

Murata, Tomoya: *See—*
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Murdock, Keith Chadwick: *See—*
Lindsay, Harry Lee; Angier, Robert Bruce; and Murdock, Keith Chadwick, 3,882,123.

Murphy, Robert H., to Wiremold Company, The. One-piece raceway with integral coupling. 3,881,520, Cl. 138-109.000.

Murton, Crawford B. Method of refining steel. 3,881,917, Cl. 75-52.000.

Mushovic, John N.; and Bell, Richard M., to Norton Company. Chain conveyor link and attachment therefor. 3,881,593, Cl. 198-189.000.

Musou, Masanori: *See—*
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Mylari, Banavara L., to Pfizer Inc. Preparation of 2-aryl-as-triazine-3,5 (2H,4H)-diones. 3,882,115, Cl. 260-248.0AS.

Nabisco, Inc.: *See—*
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Nagasaki, Senkichi: *See—*
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Nagel, Horst: *See—*
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Nagy, Ferenc: *See—*
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Naigai Kogyo Kabushiki Kaisha: *See—*
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Naimy, Norman: *See—*
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Nakada, Hisao: *See—*
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Nakamata, Tsuyoshi: *See—*
Takatori, Ken; Hirose, Tetsuzo; and Nakamata, Tsuyoshi, 3,881,756.

Nakamichi, Niro, to Nakamichi Research, Inc. Cassette type tape recorder using planetary gearing. 3,882,542, Cl. 360-96.000.

Nakamichi Research, Inc.: *See—*
Nakamichi, Niro, 3,882,542.

Nakamura, Yashuharu: *See—*
Hayakawa, Yoshihide; Yoshida, Masaji; Nakazawa, Yoshiyuki; Nakamura, Yashuharu; and Sato, Akira, 3,881,936.

Nakamura, Yoshimitsu; and Sugioka, Mitsuo, to Matsushita Electric Works, Ltd. Method of making outer blade for electric shaver. 3,881,373, Cl. 76-104.00R.

Nakano, Takashi: *See—*
Torimoto, Hideo; Shibayama, Yoshimitsu; and Nakano, Takashi, 3,881,613.

Nakasone, Hiroyuki, to Toko Incorporated. Slide switch assembly with fixed terminal array preventing generation of pop noises. 3,882,056, Cl. 200-16.00C.

Nakazawa, Yoshiyuki: *See—*
Hayakawa, Yoshihide; Yoshida, Masaji; Nakazawa, Yoshiyuki; Nakamura, Yashuharu; and Sato, Akira, 3,881,936.

Nand, Shradha: *See—*
Patel, Virendra; Fetter, Marion Cook; and Nand, Shradha, 3,882,225.

Naono, Toyohiko, to Nihon Denshi Kabushiki Kaisha. Automatic analyzing device. 3,881,872, Cl. 23-253.00R.

Naples, Richard J.; and Newhall, Norman H., to General Signal Corporation. Quick break type switch with snap action deactuation structure. 3,882,293, Cl. 200-154.000.

Narayan, Thirumurti L.; and Cenker, Moses, to BASF Wyandotte Corporation. Process for the preparation of unsymmetrically-substituted alkanolamino-s-triazines. 3,882,118, Cl. 260-249.600.

Nassimbene, Ernie George, to International Business Machines Corporation. Retrospective pulse modulation including bar coding and apparatus therefor. 3,882,301, Cl. 235-61.11E.

Nathansohn, Giangiacomo; and Bellasio, Elvio, to Gruppo Lepetit S.p.A. Tetracyclic substituted phthalazine compounds. 3,882,119, Cl. 260-250.00P.

Nation, Melvin Stanley, to Motorola, Inc. Battery housing. 3,881,961, Cl. 136-173.000.

National Distillers and Chemical Corporation: *See—*
Hoyt, John M.; Koch, Karl; and Williams, Mathew, Jr., 3,882,005.

National-Standard Company Limited: *See—*
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Natsuno, Kengi: *See—*
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Naturin-Werk Becker & Co.: *See—*
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Neff, Franz; and Ornig, Hermann, to Gebr. Boehler & Co. Method of and apparatus for the submerged arc surfacing of metallic work pieces. 3,882,298, Cl. 219-76.000.

Neidermyer, Robert W.: *See—*
Brouwer, Walter G.; MacPherson, Edwin J.; Ames, Ronald B.; and Neidermyer, Robert W., 3,882,138.

Nelson, Paul A.; Kolba, Verne M.; Filewicz, Erwin C.; and Holmes, John T., to United States of America, Energy Research and Development Administration. Archive-cup insert for liquid-metal sampling. 3,881,355, Cl. 73-422.00R.

Neratoom B.V.: *See—*
Bunjes, Johan Henri, 3,881,840.

Nery, Maurice, to IPA Intarnationale Patent - und Lizenz-Anstalt. Apparatus including a piezoelectric element for checking the operativeness of a voltage tester. 3,882,388, Cl. 324-133.000.

Neti, Radhakrishna Murty; and Reeves, George I., to Beckman Instruments, Inc. Chemiluminescent detection of ozone. 3,881,869, Cl. 23-232.00E.

Netteland, Loyal G., to A-T-O Inc. Gas generator assembly. 3,881,394, Cl. 89-1.00B.

Netz, Otto: *See—*
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Newall, Christopher Earle: *See—*
Phillipps, Gordon Hanley; and Newall, Christopher Earle, 3,882,151.

Newall Engineering Company Limited, The: *See—*
Hoare, Stanley William, 3,881,886.

Newcomb, C. Lewis, Jr. Vehicle leveler system. 3,881,746, Cl. 280-150.500.

Newell, E. Strohm. Rope pulley hoist with improved holding means. 3,881,361, Cl. 74-230.240.

Newhall, Norman H.: *See—*
Naples, Richard J.; and Newhall, Norman H., 3,882,293.

Newill, William J., to General Motors Corporation. Fluid Cooled dynamoelectric machine frame and stator assembly. 3,882,334, Cl. 310-59.000.

Newton, Albert E., to USM Corporation. Mechanism for maintaining the level of a viscous liquid. 3,881,509, Cl. 137-386.000.

Newton, David Francis: *See—*
Greenhalgh, Colin William; and Newton, David Francis, 3,881,865.

Newton, John E.; and Reifsteck, Robert L., to Eastman Kodak Company. Linearity correction circuit for an optical scanning device. 3,882,509, Cl. 354-5.000.

Nicco, Adrien: *See—*
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Nichols, Henry E.: *See—*
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Nickl, Josef: *See—*
Seeger, Ernst; Engel, Wolfhard; Nickl, Josef; Teufel, Helmut; and Engelhardt, Gunther, 3,882,174.

Nicol, Peter John, to Morgan Refractories Limited. Sheathing for metal furnace members. 3,881,864, Cl. 432-234.000.

Nicolls, John: *See—*
Timmons, James Edward, 3,881,269.

Niebylski, Leonard R., to Ethyl Corporation. Method of depositing a noble metal on a surface of a nickel support. 3,882,050, Cl. 252-472.000.

Niehaus, William R., to E. W. Scripps Company, The. Apparatus, system and method of storing a static image displayed on a television tube. 3,882,269, Cl. 178-6.60R.

Nieuweboer, Gerrit; and Apostolico, Martin A., to du Pont de Nemours, E. I., and Company. Battery operated electroluminescent film identification device. 3,882,357, Cl. 315-209.00R.

Nihon Denshi Kabushiki Kaisha: *See—*
Naono, Toyohiko, 3,881,872.

Nihon Yushi Co., Ltd.: *See—*
Sato, Hiroshi; Yoshida, Bunji; and Sumikawa, Kenji, 3,881,418.

Niimi, Itaru: *See—*
Bunda, Tsuchio; Niimi, Itaru; Kaneko, Yasuhisa; and Noda, Fumiyoshi, 3,881,316.

Niina, Akihiko; Qura, Kiyomori; and Tashiro, Kuniyoshi, to Nippon Zeon Co., Ltd. Oxidation catalyst composition of unsaturated carboxylic acid. 3,882,047, Cl. 252-435.000.

Nilsson, Sven Walter, to SKF Industrial Trading and Development Company, B.V. Ball bushing. 3,881,787, Cl. 308-6.00C.

Nippon Electric Company, Limited: *See—*
Hirabayashi, Isamu; Sakaguchi, Mitsuhito; and Moriwaki, Masahiro, 3,881,819.
Tajima, Mutsunari; and Komatsu, Isao, 3,882,405.
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Hoso Kyokai: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Soda Kabushiki Kaisha: *See—*
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Nippon Zeon Co., Ltd.: *See—*
Niina, Akihiko; Qura, Kiyomori; and Tashiro, Kuniyoshi, 3,882,047.

Nippondenso Co., Ltd.: *See—*
Hase, Masaru; Ishihara, Shinya; Maki, Mikio; and Mizuno, Kiyohiko, 3,881,685.
Tashiro, Hiroyuki; and Urano, Susumu, 3,882,490.

Nischk, Gunther: *See—*
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Nishibayashi, Kiyoshige: *See—*
Katagiri, Kotaro; Saito, Masayuki; Saito, Jiro; Nishibayashi, Kiyoshige; and Matsuo, Tatsuyuki, 3,881,319.

Nishida, Toyomi; Sohma, Hiroshi; and Ito, Hayami, to Kawasaki Jukogyo K.K. Apparatus for calcination of cement-clinker. 3,881,862, Cl. 432-106.000.

Nishimura, Izuhiko: *See—*
Hama, Tetsuro; and Nishimura, Izuhiko, 3,881,311.

Nishimura, Taiichi: *See—*
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Nishioki Mfg. Co., Ltd.: *See—*
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Nissan Jidosha Kabushiki Kaisha: *See—*
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Nissan Motor Company Limited: *See—*
Fujishiro, Takeshi; Masaki, Kenji; and Wazawa, Kiyoshi, 3,882,451.

Nitzsche, Erhard; Zirnstein, Peter; Schebiella, Erwin; Korner, Siegfried; Weise, Joachim; Schlaugat, Horst; and Richter, Wolfgang, to Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen. Sheet transporting unit for use in printing machines or the like. 3,881,646, Cl. 225-96.000.

Niwa, Tatuo, to Kabushiki Kaisha Aichi Denki Kosakusho. Electrically powered can opener. 3,881,247, Cl. 30-4.00R.

Nix, Edwin Lee. Pickup truck bed liner and protector. 3,881,768, Cl. 296-39.00R.

Noble, Terrance O. Apparatus for measuring liquid in the reconstitution of antibiotics. 3,881,640, Cl. 222-158.000.

Nobusawa, Tsukumo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Oscillation systems for control of camera shutters. 3,882,510, Cl. 354-24.000.

Noda, Fumiyoshi: *See—*
Bunda, Tsuchio; Niimi, Itaru; Kaneko, Yasuhisa; and Noda, Fumiyoshi, 3,881,316.

Noda, Touru; and Kobayashi, Norio, to Mitsubishi Paper Mills, Ltd. Photographic silver halide emulsions containing sydnones or sydnone imines as stabilizers. 3,881,939, Cl. 96-109.000.

Noel y Compania Limitada Sociedad Anonima Argentina de Dulces y Conservas: *See—*
Abalo, Juan Manuel, 3,881,591.

Nohara, Shigezo; Hirata, Shunsaku; Yazaki, Jinichi; and Suzuki, Toru, to Toyo Seikan Kaisha Ltd. Laminate of ethylene/vinyl alcohol copolymer, ethylene/vinyl acetate copolymer and polyolefins. 3,882,259, Cl. 428-35.000.

Nohira, Hidetaka; and Kobashi, Kiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system. 3,881,456, Cl. 123-119.00A.

Nomura, Katsuhiko: *See—*
Uno, Naoyuki; and Nomura, Katsuhiko, 3,882,523.

Noordermeer, Williem Hadde: *See—*
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Nordmark-Werke GmbH: *See—*
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Norian, Roger F., to Xerox Corporation. Carrier detector. 3,882,272, Cl. 178-7.30R.

Norris, Darrell E.: *See—*
Allen, Marshall T.; and Norris, Darrell E., 3,881,460.

North Electric Company: *See—*
Apple, Garrett Gordon, Jr., 3,882,412.

Northrop Corporation: *See—*
Botzum, Richard Allen; and Koufidakis, Charalampos, 3,882,501.

Northup, Marcus Allen, Jr.: *See—*
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Norton Company: *See—*
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Watson, George R., 3,881,282.

Norwood Marking & Equipment Company: *See—*
Shenoha, James L., 3,881,410.

Nosker, Richard William; and Fox, Leonard Pincus, to RCA Corporation. Trapezoidal smooth grooves for video disc. 3,882,214, Cl. 264-106.000.

Nosley, Jacques Andre, to Societe Ben. Electromagnetic sensor for measuring velocity of fluids under high pressure. 3,881,350, Cl. 73-194.0EM.

Nothiger, Otto, to Ciba-Geigy Corporation. Apparatus for sequentially evacuating and impregnating a textile web. 3,881,445, Cl. 118-4.000.

Novello, Frederick C.: *See—*
Baldwin, John J.; and Novello, Frederick C., 3,882,134.

Novosel, Thomas A.; and Erskine, Donald O., to Vermont American Corporation. High speed steel metal cutting tool with integral working surfaces substantially free of carbide particles. 3,881,837, Cl. 408-144.000.

Nunley, James A.; and Agnew, Jeremy A., to Vicon Instrument Company, The. Implantable hearing aid and method of improving hearing. 3,882,285, Cl. 179-107.00E.

Nusbaum, Arthur. Elevating perimeter railing. 3,881,699, Cl. 256-59.000.

Nuttall, Roy; and Dormer, Leslie, to Ferranti Limited. Methods of manufacturing semiconductor devices. 3,881,242, Cl. 29-589.000.

Nystuen, David L.: *See—*
Kleimola, David L.; Nystuen, Marcus I.; and Nystuen, David L., 3,881,328.

Nystuen, Marcus I.: *See—*
Kleimola, David L.; Nystuen, Marcus I.; and Nystuen, David L., 3,881,328.

Nyunoya, Mizuo, to Aisin Seiki Kabushiki Kaisha. Brake hydraulic pressure control system for vehicles. 3,881,780, Cl. 303-21.00F.

O.K. Machine and Tool Corporation: *See—*
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Oak Industries, Inc.: *See—*
Harney, Ralph P., 3,882,392.
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O'Connor, Grahame P.: *See—*
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Odello, Robert J.: *See—*
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Odom, James T.: *See—*
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Office National d'Etudes et de Recherches Aerospatiales: *See—*
Borghi, Roland P.; Charpenel, Marc A.; and Taran, Jean-Pierre, 3,882,416.

Ogawa, Hidemasa: *See—*
Dohmori, Renzo; Kadoya, Shizuo; Nagasaki, Senkichi; and Ogawa, Hidemasa, 3,882,125.

Ogawa, Mutsuo, to Ricoh Co., Ltd. Image transmission system. 3,882,270, Cl. 178-7.100.

Ogawa, Yukio; and Miki, Haruo. Apparatus for surveying paved surface. 3,882,268, Cl. 178-6.000.

Ogiso, Mitsutoshi; Aizawa, Hiroshi; and Iwashita, Tomonori, to Canon Kabushiki Kaisha. Automatic wind-up device to detect completion of film wind-up. 3,882,516, Cl. 354-173.000.

Ogita, Minoru; and Matsui, Teruyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Receiving frequency indicator system for broadcast receiver. 3,882,398, Cl. 325-455.000.

Ogle, James A.: *See—*
Holz, George E.; and Ogle, James A., 3,882,349.

Ohbayashi-Gumi, Ltd.: *See—*
Katagiri, Kotaro; Saito, Masayuki; Saito, Jiro; Nishibayashi, Kiyoshige; and Matsuo, Tatsuyuki, 3,881,319.

Ohkawa, Nobuyoshi, to Daieigiken, Inc. Dough processing device. 3,881,404, Cl. 99-353.000.

Ohkubo, Kinji: *See—*
Masuda, Takao; Ohkubo, Kinji; Sugiyama, Mitsunori; and Shishido, Tadao, 3,881,938.
Tsubota, Motohiko; Nishimura, Taiichi; and Ohkubo, Kinji, 3,881,931.

Ohlidal, Vladimir: *See—*
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Ohlschlager, Hans; Riester, Oskar; Ghys, Theofiel Hubert; Verhille, Karel Eugeen; and Vanheertum, Johannes Josephus, to Agfa-Gevaert Aktiengesellschaft. Sensitized electrophotographic layers with a polymethine sentizing dye. 3,881,926, Cl. 96-1.600.

Ohorodnik, Alexander: *See—*
Lohmar, Elmar; Ohorodnik, Alexander; Gehrmann, Klaus; and Stutzke, Paul, 3,882,167.

Ohtsuka, Kunio: *See—*
Miyauchi, Toshiyuki; and Ohtsuka, Kunio, 3,881,372.

Okabe, Katsuhiko, to Kabushiki Kaisha Koparu. Device for controlling the movement of the printing head in printers. 3,881,587, Cl. 197-1.00R.

Okuma Seisakusho Co., Ltd.: *See—*
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Olcott, Herbert K. Bite indicating device. 3,881,270, Cl. 43-17.000.

Olin Corporation: *See—*
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Olson, Harold G., to H. G. Olson & Company, Incorporated. Method for making weatherstripping having a foam plastic core, a tough outer skin, and a sealing surface covered with flocked fibers or the like. 3,881,980, Cl. 156-268.000.

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Onufer, George R. Vapor emission control system and method. 3,881,894, Cl. 55-88.000.

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Otsuka, Yoshinori; Hayashi, Masakatsu; Mantoku, Jun Ichi; Yamazaki, Susumu; Tomita, Akira; and Musou, Masanori, to Hitachi, Ltd. Air conditioner for automotive vehicles. 3,881,546, Cl. 165-42.000.

Ottesen, Hjalmar H., to International Business Machines Corporation. Readback circuits for digital signal recorders. 3,882,540, Cl. 360-39.000.

Outboard Marine Corporation: *See—*
Kashmerick, Gerald E., 3,881,846.

Owens-Corning Fiberglas Corporation: *See—*
Costin, Darryl J.; and Ford, James B., 3,881,918.
Stalego, Charles J., 3,881,903.
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Paap, Hans J., to Texaco Inc. Dual scintillation detector, single photomultiplier density logging system. 3,882,309, Cl. 250-264.000.

Palm, Ronald K., to Engineering Development Associates Incorporated. Time interval sampling mechanism. 3,881,356, Cl. 73-423.00R.

Palmer, Christopher Steven, to Swish Products Ltd. Curtain or drape suspension arrangements. 3,881,218, Cl. 16-93.00D.

Palmer, Graham Eastwood, to Foseco International Limited. Bonded particulate material. 3,881,947, Cl. 106-84.000.

Palu, Attilio Dal, to Fister S.n.c. di Bosso Giacomo & C. Windshield wiper blade made of synthetic material, with the supporting structure formed as an integral element. 3,881,214, Cl. 15-250.420.

Pannozzo, Anthony N.; and Jannetto, Anthony M. Method of nerve therapy using trapezoidal pulses. 3,881,495, Cl. 128-422.000.

Pantek, Henry R. Instrument for inscribing geometrical loops. 3,881,255, Cl. 33-27.00R.

Paramonoff, Elpidifor, to Standun, Incorporated. Scrap disposal mechanism for metallic can body trimmers. 3,881,380, Cl. 83-150.000.

Paridaens, Cornelis Johannes Henricus, to U.S. Philips Corporation. Cathode-ray tube with internal cylindrical resistor between high voltage connection and electron gun. 3,882,348, Cl. 313-450.000.

Park-Ohio Industries, Inc.: *See—*
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Parker, Douglas W. Fishing lure eye assembly. 3,881,272, Cl. 43-42.340.

Parker, Guy Malcolm. Stabilized optical viewing device. 3,881,803, Cl. 350-16.000.

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Olstowski, Franciszek; and Parrish, Donald B., 3,882,072.

Parrish, Lloyd. Tag axle emergency traction device. 3,881,565, Cl. 180-24.120.

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Passler, Helmar; Hanke, Rudolf; and Heger, Adolf, to VEB Textilkombinat Cottbus. Apparatus for treatment of flexible materials in liquid media. 3,881,329, Cl. 68-175.000.

Patel, Virendra; Fetter, Marion Cook; and Nand, Shradha, to Miles Laboratories, Inc. Direct agglutination immunological reagent. 3,882,225, Cl. 424-12.000.

Patenaude, Raymond A.: *See—*
Cozzi, Thomas W.; Tassie, Douglas P.; and Patenaude, Raymond A., 3,881,395.

Paton, Anthony David; and Temple, Stephen. Weaving. 3,881,523, Cl. 139-12.000.

Paul, Claude: *See—*
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Paul, James M., Jr. Electro pulse arthritic physiotherapy system. 3,881,494, Cl. 128-421.000.

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Paumier, Thomas B.; Bulso, Joseph D., Jr.; and Lewers, William R., to Paumier, Inc. Workpiece transfer mechanism. 3,881,436, Cl. 113-115.000.

Peabody, Roger H.; Sutkin, Seymour; and Chubb, Charles, to United States of America, Navy. Crt multiple-scan display apparatus and method providing target discrimination. 3,882,502, Cl. 343-17.000.

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Peake, Charles C.; and Bolan, Harry H., to Westinghouse Electric Corporation. Method for installing a tube clamp. 3,881,240, Cl. 29-468.000.

Pearson, David B., to Weston Instruments, Inc. Meter construction. 3,882,389, Cl. 324-151.00A.

Peddinghaus, Werner. Indexing system for shears, presses and the like. 3,881,589, Cl. 198-127.00R.

Pelton, John Franklin, to Union Carbide Corporation. Chromium-chromium carbide powder. 3,881,910, Cl. 75-.50R.

Pender, David R. Modular housing structure. 3,881,283, Cl. 52-79.000.

Pendergrast, Robert A., to United States Steel Corporation. Method of combating hypomagnesemia in cattle. 3,882,232, Cl. 424-158.000.

Pennwalt Corporation: *See—*
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Petersen, Clarence C. Shell catcher for guns. 3,881,268, Cl. 42-1.00T.

Petersilka, Franz: *See—*
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Peterson, Harley G., to Joy Manufacturing Company. Tensioning device. 3,881,673, Cl. 248-94.000.

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Pettit, Bruce Harold. Multiple drum washing apparatus for vehicles. 3,881,950, Cl. 134-115.00R.

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Pews, Richard Garth; McKendry, Lennon H.; and Rodia, Ralph M., to Dow Chemical Company, The. Process for the preparation of aminopyridines. 3,882,135, Cl. 260-296.00R.

Pews, Richard Garth; McKendry, Lennon H.; and Rodia, Ralph M., to Dow Chemical Company, The. Process for preparing carbanilates. 3,882,165, Cl. 260-471.00C.

Pezdark, Ben C.; and Cleary, William C., to Anaconda Company, The. Fluid operated steering clutch and brake. 3,881,583, Cl. 192-13.00R.

Pfaff, Carl F. Convertible crutch. 3,881,504, Cl. 135-53.000.

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Picandet, Jean, to Jeumont-Schneider. System for detecting looping of a subscriber's telephone line. 3,882,282, Cl. 179-18.0HB.

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Pigeon, Gerard. Level Indicating device. 3,881,259, Cl. 33-397.000.

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Polk, Donald E.; and Bedell, John R., to Allied Chemical Corporation. Method of continuous casting metal filament on interior groove of chill roll. 3,881,542, Cl. 164-87.000.

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Poorvin, Ronald E., to Motorola, Inc. Switchable frequency tone detector with electronically controlled code plug and BCD converter. 3,882,466, Cl. 340-171.0PF.

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Porter, Harold Felton; Rennie, Foster Wilson; and Williamson, Addison Heaton, to du Pont de Nemours, E. I., and Company. Apparatus for sink-float liquid contacting of solids. 3,881,876, Cl. 23-270.00R.

Porter, John H., to Ladd Research Industries, Inc. Viscosity regulated cooling system. 3,881,323, Cl. 62-216.000.

Porter, Lawrence C., to Upjohn Company, The. Mixer for continuous mixing of foam materials. 3,881,871, Cl. 23-252.00R.

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Porter, Virgle E., to Amtron, Inc. Telephone switching system. 3,882,286, Cl. 179-18.0GF.

Porter, William H., to W. H. Porter, Inc. Insulating structural assembly and stud member for forming same. 3,881,292, Cl. 52-461.000.

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Powers, Robert W.; and Giddings, Robert A., to General Electric Company. Method of preparing an electrophoretic suspension of beta-alumina particles. 3,881,661, Cl. 241-15.000.

PPG Industries, Inc.: *See—*
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Prachar, Otakar P., to General Motors Corporation. Method of measuring the mass flow rate of a constituent of a gaseous stream. 3,881,351, Cl. 73-194.00M.

Pratsch, Rudolf, to Siemens Aktiengesellschaft. Voltage overload arrester for a high-voltage switching system. 3,881,766, Cl. 317-58.000.

Pregmon, Walter, to du Pont de Nemours, E. I., and Company. Epoxy resin powder coating composition. 3,882,064, Cl. 260-28.000.

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Price, Samuel T.; and Polney, Richard J., to Enterprise Machine and Development Corporation. Cylindrical baffle for yarn texturing air jet. 3,881,231, Cl. 28-1.400.

Price, Samuel T.; Polney, Richard J.; and Hoffsommer, Walter A., to Enterprise Machine and Development Corporation. Resonant baffle for yarn texturing air jet. 3,881,232, Cl. 28-1.400.

Pricer, Wilbur David, to International Business Machines Corporation. Complementary field effect transistor memory cell. 3,882,467, Cl. 340-173.00R.

Prinz, Richard: *See—*
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Raff, Rudolf August Victor, to Research Corporation. Preparation of polymers containing additives by interfacial polycondensation. 3,882,075, Cl. 260-37.00N.
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Rasmussen, Rolf Bjorn. Cable system for the transmission of electric energy from a stationary electric plant to a truck or another steerable vehicle driving freely within the range of the cable system. 3,882,288, Cl. 191-2.000.
Rate, Edward T., Jr.; and Heiting, Robert F., to General Electric Company. Gridded X-ray tube gun. 3,882,339, Cl. 313-60.000.
Rauscher, Georg, to Rauscher, Ingeborg. Apparatus for holding a camera ready for use. 3,882,524, Cl. 354-293.000.
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Stein, Jeffrey P., to Honeywell, Inc. Low power pulse generator. 3,882,421, Cl. 331-111.000.
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Stevens, Walter R. Automatic control of headlights, tail lights, parking lights and emergency warning flasher lights for vehicles. 3,882,452, Cl. 340-60.000.
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Stimpson, Jack E., to Stanray Corporation. Modular baggage handling system with chain drive. 3,881,592, Cl. 198-181.000.
Stockbridge, Bruce W., to Eastman Kodak Company. Melt spinning tower module and circular melt spin block therefor. 3,881,850, Cl. 425-72.000.
Stockwell, Glade M.; and Biderman, Benjamin B., to Rockwell International Corporation. Indicator type switch assembly with peripheral cam follower motion transfer switch actuation means. 3,882,292, Cl. 200-56.00R.
Stoddard, Xerxes T.: *See—*
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Stone, Philip L.: *See—*
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Stone, William D.: *See—*
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Stoneburner, Leonard G., to Mead Corporation, The. Stimulation apparatus for a jet drop recorder. 3,882,508, Cl. 346-75.000.
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Suzuki, Takeshi; Tanaka, Hiroshi; and Kudo, Makoto, to Tokyo Shibaura Electric Co., Ltd. Color stripe cathode ray tube having bridged strip apertures. 3,882,347, Cl. 313-403.000.

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Suzuki, Toshitaka: *See—*
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Svanholm, Erik V. Buoyancy body. 3,881,439, Cl. 114-69.000.

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Svenstam, Sven Gunnar, to Granges Essem Aktiebolag. Steps, stairs and the like, and a method of constructing same. 3,881,235, Cl. 29-157.30R.

Swartz, George Allan; and Wen, Cheng Paul, to RCA Corporation. Varactor tuned impatt diode microwave oscillator. 3,882,419, Cl. 331-96.000.

Swartz, Paul Russel, to Johns-Manville Corporation. Sizing composition for glass fibers of polypropylene emulsion and silane coupling agent. 3,882,068, Cl. 260-29.6XA.

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Szeverenyi, Nikolaus A., to GTE Sylvania Incorporated. Thermally expansive sensor. 3,882,479, Cl. 340-244.00R.

Szmuszkovicz, Jacob, to Upjohn Company, The. 7-Phenyl-3-[2-(dialkylamino)-alkyl]-3,4-dihydroas-triazino[4,3-a][1,4]benzodiazepin-2(1h)-ones. 3,882,112, Cl. 260-248.0AS.

Szotyori, Laszlo: *See—*
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Takasu, Isamu, to Toyo Glass Machinery Co., Ltd. Speed reduction mechanism. 3,881,363, Cl. 74-63.000.

Takatori, Ken; Hirose, Tetsuzo; and Nakamata, Tsuyoshi, to Nippon Kokan Kabushiki Kaisha. Joints for welding steel pipe piles. 3,881,756, Cl. 285-22.000.

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Takeumra, Yasuo, to Tokyo Shibaura Electric Co., Ltd. Color television image pickup apparatus providing frequency interleaved color carriers and sidebands. 3,882,535, Cl. 358-44.000.

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Takita, Hitoshi; and Take, Katsuo, to Toyo Boseki Kabushiki Kaisha; and Kureha Chemical Industry Co. Process for preparing carbon fiber-reinforced polyamide resins. 3,882,077, Cl. 260-37.00N.

Takiyama, Eiichiro; Hokamura, Sadakazu; and Hanyuda, Toshiaki, to Showa High Polymer Co., Ltd. Radiation curable epoxy ester-saturated alkyd compositions. 3,882,187, Cl. 260-835.000.

Talley, Walter J., Jr., to Sweco, Inc. Wastewater concentrator with slotted distributor. 3,882,025, Cl. 210-354.000.

Tan, Sing Liong, to U.S. Philips Corporation. Color television camera and a strip-filter suitable therefore. 3,882,537, Cl. 358-45.000.

Tanaka, Hiroshi: *See—*
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Tanaka, Susumu; and Konishi, Katsutoshi, to Minolta Camera Kabushiki Kaisha. Electrophotographic sensitive plate. 3,881,923, Cl. 96-1.500.

Tandetzke, Norbert Karl Albert, to Kangol-Teka, Sicherheitsgurt GmbH. Safety-belt locking device. 3,881,667, Cl. 242-107.400.

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Tato, Masao; Hasegawa, Masaki; and Ichijyo, Taro, to Agency of Industrial Science & Technology. Optically cross-linkable polymer. 3,882,084, Cl. 260-47.0UA.

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Tausheck, Russell W., to Ace Glass Co. Portable, one man operated, large sheet glass cutting table. 3,881,618, Cl. 214-505.000.

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Thelen, Hermann; Halcour, Kurt; Schwerdtel, Wulf; and Swodenk, Wolfgang, to Bayer Aktiengesellschaft. Supported vanadium-palladium-containing catalyst. 3,882,048, Cl. 252-464.000.

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Thompson, Arnold M. Ice skate sharpening device with a floating skate guiding member. 3,881,280, Cl. 51-102.000.

Thompson, Darrell R., to du Pont de Nemours, E. I., and Company. Polyesters bearing polyethylenimine terminal groups. 3,882,088, Cl. 260-75.00N.

Thompson, Harry W., to Interlake, Inc. Storage and retrieval arrangement. 3,881,424, Cl. 104-48.000.

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Thorne, John K., to Universal Oil Products Company. Method of making integral finned tube for submerged boiling applications having special o.d. and/or i.d. enhancement. 3,881,342, Cl. 72-68.000.

Thrun, James L., to A-T-O Inc. Inhalant disperser. 3,881,634, Cl. 222-3.000.

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Tischuk, Walter, to H. H. Robertson Company. Method of bending a metal sheet and a corner produced thereby. 3,881,338, Cl. 72-46.000.

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Torimoto, Hideo; Shibayama, Yoshimitsu; and Nakano, Takashi, to Kyokuto Kaihatsu Kogyo Co., Ltd. Refuse collection vehicle. 3,881,613, Cl. 214-83.300.

Toth, Julius; and Walker, Edward M., to Westinghouse Electric Corporation. Method of making abrasion resistant coating for aluminum base alloy. 3,881,999, Cl. 204-33.000.

Toto, Louis R. Scoop means and arrangements thereof for vehicular composting machine. 3,881,707, Cl. 259-183.000.

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Tranberg, Erik Rudolf; and Rosenqvist, Nils Kaj Gunnar, to GKN-Stenman AB. Locking device incorporating a lock case, an escutcheon and a door handle. 3,881,331, Cl. 70-107.000.

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Trojer, Felix J.; O'Connor, Grahame P.; and Tannenberger, Helmut, to Battelle Memorial Institute. Glass fiber of high modulus of elasticity and process for manufacturing it. 3,881,945, Cl. 106-50.000.

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Tsubota, Motohiko; Nishimura, Taiichi; and Ohkubo, Kinji, to Fuji Photo Film Co., Ltd. Method for developing black diazotype photographic light-sensitive materials. 3,881,931, Cl. 96-49.000.

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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Blancett, Allen L., to E. I. du Pont de Nemours and Co. Process. T934,004, 5–6–75, Cl. 8—17.

Chappelow, Ronald E., L. E. Elijah, V. L. Elliott, E. G. Grochowski, H. D. Harrison, H. A. Tice, and R. S. York, to International Business Machines Corp. Computer control for real time determination of resistivity of epitaxially growing crystals. T934,006, 5–6–75, Cl. 235—151.1.

Crary, James W., to E. I. du Pont de Nemours, and Co. Coordination catalyst. T934,005, 5–6–75, Cl. 260—88.2.

De Nemours du Pont, I. E., and Co.: *See*—
Maskornick, Michael J. T934,010.
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Elijah, Leo E.: *See*—
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Elliott, Virgil L.: *See*—
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Fink, Melvin D.: *See*—
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Harrison, Herry D.: *See*—
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Heffelfinger, Carl J., to E. I. du Pont de Nemours and Co. Polyethylene terephthalate film-metal laminate. T934,013, 5–6–75, Cl. 428—458.

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Litz, Donald C., to Westinghouse Electric Corp. Superconductive dynamoelectric machine with improved cryogenic support arrangement. T934,001, 5–6–75, Cl. 310—52.

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Nam Sheng, Abel C., to RCA Corp. Composite transistor. T934,009, 5–6–75, Cl. 357—44.

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Trail, George Cheatham, Jr. Tensometer. T934,002, 5–6–75, Cl. 73—144.

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Donner, Aaron. Decorative panel for furniture door, drawer front, headboard or the like: 235,044, 5–6–75, Cl. D6—192.

Donner, Aaron. Dresser. 235,042, 5–6–75, Cl. D6—154.

Erlacher, Bernard E.: *See*—
Liljequist, Lawrence A., Neer, Thompson, Walter, Smart, Briggs, and Erlacher. 235,056.

Gatewood, Julia. Bed pan. 235,081, 5–6–75, Cl. D83—1.

Gunzel, Rudolph M., Jr.: *See*—
Radecki, Tony, Pinne, and Gunzel. 235,063.

Gunzel, Rudolph M., Jr., T. Radecki, and R. A. Pinne. Sprayer. 235,063, 5–6–75, Cl. D23—18.

Herman, Gilbert L. Fruit box or the like. 235,054, 5–6–75, Cl. D9—243.

Hibbard, Frank L.: *See*—
Burkhalter, Kenneth E., Hibbard, Newman, Schaldenbrand, and Story. 235,068.

Hunnicutt, Clyde J., Jr. Ventilation conduit for a water closet. 235,065, 5–6–75, Cl. D23—71.

Johdai, Kazunori: *See*—
Ohtsuka, Soji, and Johdai. 235,079.

Lea, Melvin A. Spoon or similar article. 235,048, 5–6–75, Cl. D7—137.

Lea, Melvin A. Spoon or similar article. 235,049, 5–6–75, Cl. D7—137.

Lea, Melvin A. Spoon or similar article. 235,050, 5–6–75, Cl. D7—137.

Levine, Irving. Bead strand for a curtain element or the like. 235,045, 5–6–75, Cl. D6—205.

Liljequist, Lawrence A.: *See*—
Neer, Robert G., Liljequist, Thompson, Walter, Smart, Briggs, and Erlacher. 235,056.

Lockes, Leander. Hosiery. 235,038, 5–6–75, Cl. D2—342.

Manderfield, Ellen B. Spoon. 235,047, 5–6–75, Cl. D7—137.

Manderfield, Ellen B. Spoon or similar article. 235,051, 5–6–75, Cl. D7—150.

Martinelli, Arnold C. Shelving unit. 235,043, 5–6–75, Cl. D6—186.

Mayer, Frederick G. Water purifier. 235,062, 5–6–75, Cl. D23—3.

McCabe, Terrill R. Golf putter head. 235,074, 5–6–75, Cl. D34—5.

McCloskey, Edward W. Water depth indicator or the like. 235,055, 5–6–75, Cl. D10—101.

Moyer, Carter. Class ring. 235,077, 5–6–75, Cl. D45—10.

Nathan, Howard, and F. X. Schoen. Display case. 235,041, 5–6–75, Cl. D6—23.

Neer, Robert G.: *See*—
Liljequist, Lawrence A., Neer, Thompson, Walter, Smart, Briggs, and Erlacher. 235,056.

Neer, Robert G., L. A. Liljequist, N. D. Thompson, L. L. Walter, W. O. Smart, R. W. Briggs, and B. E. Erlacher. Lift truck. 235,056, 5–6–75, Cl. D12—57.

Newman, Charles: *See*—
Burkhalter, Kenneth E., Hibbard, Newman, Schaldenbrand, and Story. 235,068.

Neyret, Guy. Lighter for smokers. 235,072, 5–6–75, Cl. D27—42.

Nockleby, Raymond B. Pick up tool. 235,053, 5–6–75, Cl. D8—52.

Ohtsuka, Soji, and K. Johdai. Television receiver or similar article. 235,079, 5–6–75, Cl. D56—4.

Olsen, Robert J. Furniture assembly composed of seven interrelated articles. 235,039, 5–6–75, Cl. D6—4.

Radecki, Tony: *See*—
Gunzel, Rudolph M., Jr., Radecki, and Pinne. 235,063.

Rasmussen, Gunnar O. V. Heat convector. 235,066, 5–6–75, Cl. D23—127.

Rasmussen, Gunnar O. V. Heat convector. 235,067, 5–6–75, Cl. D23—127.

Schaldenbrand, Charles L.: *See*—
Burkhalter, Kenneth E., Hibbard, Newman, Schaldenbrand, and Story. 235,068.

Schoen, Frank X.: *See*—
Nathan, Howard, and Schoen. 235,041.

Simpson, Doyle E.: *See*—
Strickland, Bobby L., and Simpson. 235,064.

Smart, William O.: *See*—
Liljequist, Lawrence A., Neer, Thompson, Walter, Smart, Briggs, and Erlacher. 235,056.

Snyder, Donald E. Flexible spinning toy. 235,076, 5–6–75, Cl. D34—15.

Story, William R.: *See*—
Burkhalter, Kenneth E., Hibbard, Newman, Schaldenbrand, and Story. 235,068.

Strickland, Bobby L., and D. E. Simpson. Swivel shampoo bowl. 235,064, 5–6–75, Cl. D23—6.

Tanaka, Norihito. Paper clamp. 235,060, 5–6–75, Cl. D19—65.

Thomas, James A.: *See*—
Thomas, Wesley L., and J. A. 235,078.

Thomas, Wesley L., and J. A. Lamp. 235,078, 5–6–75, Cl. D48—20.

Thompson, Norman D.: *See*—
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Thomsen, James P.: *See*—
Deschamps, Robert L., Thomsen, and Thielmann. 235,070.

Todeschini, Bruno. Telephone set, or similar article. 235,069, 5–6–75, Cl. D26—14.

Turner, Charles R. Building. 235,059, 5–6–75, Cl. D13—1.

Vailati, Secondo. Tape dispenser. 234,061, 5–6–75, Cl. D19—67.

Verona, Franco. Pen case with pen. 235,080, 5–6–75, Cl. D87—1.

Walter, Llewellyn L.: *See*—
Liljequist, Lawrence A., Neer, Thompson, Walter, Smart, Briggs, and Erlacher. 235,056.

Warren, John C. Game die or similar article. 235,073, 5–6–75, Cl. D34—5.

Weaver, Frank M. Combined automobile armrest and cooler box. 235,082, 5–6–75, Cl. D87—1.

Williams, Richard D. Riding toy. 235,057, 5–6–75, Cl. D12—108.

Wright, Thomas C. Greeting card display holder. 235,040, 5–6–75, Cl. D6—20.

CLASSIFICATION OF PATENTS

ISSUED MAY 6, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

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133R	3,881,205
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252R	3,881,871
253TP	3,881,873
253R	3,881,872
270R	3,881,876
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115	3,881,234
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191	3,881,878
193	3,881,237
	3,881,879
196.2	3,881,880
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197.5	3,881,883
205D	3,881,238
416	3,881,239
468	3,881,240
574	3,881,241
589	3,881,242
590	3,881,884
598	3,881,243
602	3,881,244
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628	3,881,246
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90.7	3,881,249
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74	3,881,297
164	3,881,298
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67	3,881,892
71	3,881,893
87	3,881,895
88	3,881,894
97	3,881,896
158	3,881,897
223	3,881,898
387	3,881,899
416	3,881,900
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14.4	3,881,301
130	3,881,302
192	3,881,303
202	3,881,304
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11	3,881,335
45	3,881,336
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46	3,881,338
68	3,881,342
257	3,881,339
289	3,881,340
297	3,881,341
455	3,881,343
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94	3,881,345
95.5	3,881,346
136R	3,881,347
141R	3,881,348
150R	3,881,349
194EM	3,881,350
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194M	3,881,351
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420	3,881,358
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422R	3,881,355
423R	3,881,356
425.6	3,881,360
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230.17F	3,881,370
230.24	3,881,361
462	3,881,364
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493	3,881,366
608	3,881,371
681	3,881,367
866	3,881,368
867	3,881,372
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.5BA	3,881,912
.5BB	3,881,911
.5A	3,881,914
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.5R	3,881,910
11	3,881,915
36	3,881,916
52	3,881,917
130R	3,881,937
171	3,881,918
175R	3,881,919
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57.35	3,881,375
63	3,881,376
186	3,881,377
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19	3,881,378
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150	3,881,380
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308	3,881,383
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325	3,881,399
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1SD	3,881,927
1R	3,881,921
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48R	3,881,929
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76R	3,881,932
96	3,881,938
109	3,881,939
111	3,881,933
114.7	3,881,934
115R	3,881,935
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452	3,881,405
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68	3,881,409
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45	3,881,411
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127.1	3,881,413
156	3,881,414
451	3,881,415
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22	3,881,417
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70R	3,881,419
90	3,881,420
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638	3,881,447
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60	3,881,449
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2.05V	3,881,481
2.06A	3,881,467
23	3,881,468
25R	3,881,469
55	3,881,470
65	3,881,471
89R	3,881,472
90	3,881,473
130	3,881,475
132D	3,881,474
	3,881,476
132	3,881,477
145R	3,881,478
145.8	3,881,479
	3,881,480
212	3,881,482
214R	3,881,483
218M	3,881,484
270	3,881,485
283	3,881,486
284	3,881,487
287	3,881,488
	3,881,489
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91	3,881,502
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2	3,881,948
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57R	3,881,503
115R	3,881,950
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53	3,881,504
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27	3,881,954
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249 3,881,979
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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		3,881,348		3,881,575		3,882,367		3,882,224		3,881,533		3,881,957					
		3,881,416		3,881,600		3,882,383		3,882,230		3,881,660		3,881,994					
		3,881,816		3,881,609		3,882,404		3,882,265		3,882,232		3,882,015					
		3,882,465		3,881,618		3,882,408		3,882,269		3,882,257		3,882,060					
2	:	3,881,589		3,881,647		3,882,417		3,882,271		3,882,545		3,882,096					
4	:	3,881,334		3,881,648		3,882,439		3,882,293	15	:	3,881,442		3,882,136				
		3,881,353		3,881,662		3,882,452		3,882,302			3,881,752		3,882,163				
		3,881,460		3,881,673		3,882,460		3,882,363	17	:	Re.28,408		3,882,171				
		3,881,504		3,881,675		3,882,473		3,882,376			3,881,197		3,882,184				
		3,881,518		3,881,701		3,882,478		3,882,429			3,881,236		3,882,194				
		3,881,808		3,881,706		3,882,487		3,882,542			3,881,249		3,882,211				
		3,882,319		3,881,725		3,882,491	10	:	3,881,876		3,881,280		3,882,212				
		3,882,394		3,881,747		3,882,503			3,881,949		3,881,349		3,882,220				
		3,882,470		3,881,753		3,882,507			3,882,065		3,881,355		3,882,266				
5	:	3,881,272		3,881,773		3,882,512			3,882,093		3,881,370		3,882,286				
		3,881,443		3,881,776		3,882,539			3,882,116		3,881,375		3,882,289				
		3,881,713		3,881,797		3,882,541			3,882,140		3,881,383		3,882,295				
6	:	Re.28,414		3,881,799		3,882,544			3,882,160		3,881,392		3,882,299				
		3,881,203		3,881,805	8	:	3,881,202		3,882,162		3,881,397		3,882,377				
		3,881,206		3,881,811			3,881,466		3,882,197		3,881,401		3,882,382				
		3,881,217		3,881,815			3,881,551		3,882,247		3,881,410		3,882,390				
		3,881,250		3,881,820			3,881,654		3,882,357		3,881,424		3,882,392				
		3,881,252		3,881,868			3,881,663	11	:	3,881,477		3,881,428		3,882,399			
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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

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Certificates of Correction for the Week of May 13, 1975 3,104,051.—*John Henning* and *Carl W. Hobgood,* Evansville,

PATENT AND TRADEMARK OFFICE NOTICES

Restriction Between Inventions

The practice set out in the notice of June 20, 1968 (852 O.G. 509) is hereby revised as follows.

Under the statute an application may properly be required to be restricted to one of two or more claimed inventions only if they are able to support separate patents and they are either independent or distinct.

If it is demonstrated that two or more claimed inventions have no disclosed relationship ("independent"), restriction should be required, and it is not necessary to further show that the claimed inventions are distinct. If it is demonstrated that two or more claimed inventions have a disclosed relationship ("dependent"), then a showing of distinctness is required to substantiate a restriction requirement.

Where inventions are neither independent nor distinct, one from the other, or they are not sufficiently different to support more than one patent, their joinder in a single application must be permitted.

Every requirement to restrict has two aspects, (1) the reasons (as distinguished from the mere statement of conclusion) why the inventions *as claimed* are either independent or distinct, and (2) the reasons for insisting upon restriction therebetween.

In order to support a requirement to restrict between combination and subcombination inventions, two-way distinctness must be demonstrated.

If it can be shown that a combination, as claimed (1) does not require the particulars of the subcombination as claimed for patentability, and (2) the subcombination can be shown to have utility either by itself or in other and different relations, the inventions are distinct. When these factors cannot be shown, such inventions are not distinct.

Two or more claimed subcombinations, disclosed as usable together in a single combination, and which can be shown to be separately usable, are usually distinct from each other.

In applications claiming inventions in different statutory categories only one-way distinctness is needed to support a restriction requirement. For example, in applications containing claims to both process and apparatus, distinctness may be shown if (1) the process as claimed can be practiced by hand or by another materially different apparatus, or (2) the apparatus as claimed can be used to practice another and materially different process.

As in the notice of May 1, 1974 concerning Markush-Type claims (922 O.G. 1016), if the search and examination of an entire application can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it includes claims to distinct or independent inventions.

Apr. 9, 1975.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Certificates of Correction for the Week of May 13, 1975

P.P. 3,605	3,816,535	3,852,474	3,863,944
P.P. 3,655	3,818,074	3,852,483	3,863,969
Re. 28,253	3,821,383	3,852,734	3,864,338
D. 233,431	3,821,895	3,853,575	3,864,484
D. 234,462	3,824,224	3,854,954	3,865,221
D. 234,463	3,834,361	3,854,975	3,865,342
3,607,096	3,834,892	3,855,209	3,866,079
3,625,827	3,835,229	3,855,237	3,866,164
3,642,500	3,837,220	3,855,825	3,866,432
3,644,414	3,838,008	3,855,854	3,866,493
3,658,458	3,838,459	3,856,399	3,866,734
3,673,207	3,839,399	3,856,811	3,867,066
3,714,115	3,839,405	3,856,959	3,867,125
3,727,942	3,840,514	3,857,274	3,867,147
3,737,478	3,840,874	3,857,363	3,867,320
3,738,790	3,841,039	3,857,903	3,867,439
3,744,420	3,841,361	3,858,606	3,867,862
3,745,820	3,842,372	3,858,780	3,867,922
3,770,340	3,843,635	3,858,852	3,868,007
3,779,523	3,844,080	3,859,092	3,868,058
3,784,648	3,844,286	3,859,319	3,868,504
3,791,546	3,845,293	3,859,417	3,868,653
3,793,368	3,846,520	3,859,581	3,868,671
3,798,457	3,847,211	3,859,698	3,868,713
3,799,799	3,848,365	3,859,880	3,869,260
3,802,907	3,849,426	3,859,930	3,869,365
3,803,860	3,849,428	3,860,326	3,869,475
3,805,260	3,849,454	3,860,450	3,869,802
3,805,736	3,849,468	3,860,644	3,869,906
3,806,712	3,849,517	3,861,542	3,870,020
3,807,901	3,849,523	3,861,742	3,870,120
3,810,602	3,849,545	3,862,250	3,870,221
3,814,379	3,849,800	3,862,837	3,870,427
3,814,749	3,851,081	3,863,198	3,871,423
3,816,122	3,851,375	3,863,409	3,871,588
3,816,163	3,851,581	3,863,464	3,872,852
3,816,300	3,852,180	3,863,772	3,873,874
3,816,459	3,852,345	3,863,939	3,873,953

Disclaimer and Dedication

3,215,266.—*Robert L. Dreyfus,* Arlington, Mass. PACKAGING. Patent dated Nov. 2, 1965. Disclaimer and dedication filed July 10, 1974, by the assignee, *W. R. Grace & Co.*

Hereby disclaims and dedicates claims 1–8 and 11 of said patent to the Public.

Disclaimers

2,978,678.—*Wayne D. Winger* and *Philip W. Jackson,* Wappingers Falls, and *Victor R. Witt,* Poughkeepsie, N.Y. DATA TRANSMISSION SYSTEM. Patent dated Apr. 4, 1961. Disclaimer filed Feb. 15, 1974, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 1 through 20 of said patent.

2,999,816.—*Edward J. Bennett,* Newark, Del., and *Howard M. Parmelee,* Woodstown, N.J. AZEOTROPIC COMPOSITION. Patent dated Sept. 12, 1961. Disclaimer filed July 2, 1974, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to the sole claim of said patent.

3,040,300.—*Edward J. Rabenda,* Poughkeepsie, and *Maurice A. Every,* Wappingers Falls, N.Y. DATA SELECTOR. Patent dated June 19, 1962. Disclaimer filed Feb. 15, 1974, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 1 through 12 of said patent.

3,104,051.—*John Henning* and *Carl W. Hobgood,* Evansville, Ind. ANTI-SLUGGING DEVICE FOR MOTOR-COMPRESSOR UNITS. Patent dated Sept. 17, 1963. Disclaimer filed Jan. 31, 1975, by the assignee, *Americold Compressor Corporation.*

Hereby disclaims the remaining term of the patent subsequent to Dec. 31, 1974.

3,199,402.—*Robert W. G. Hunt,* Wealdstone, and *Peter Bernard Watt,* Stonyhall, Stevenage, England. PRINTING APPARATUS FOR COLOR PHOTOGRAPHY. Patent dated Aug. 10, 1965. Disclaimer filed Sept. 19, 1973, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to claim 1 of said patent.

3,515,574.—*Lionel C. Montgomery,* North Olmsted, Ohio. METHOD FOR METALLIZING A BORON NITRIDE CONTAINING BODY. Patent dated June 2, 1970. Disclaimer filed Mar. 5, 1975, by the assignee, *Union Carbide Corporation.*

Hereby enters this disclaimer to claims 1–16 of said patent.

3,684,425.—*John M. Ross,* Wilmington, Del., and *Harvey I. Stryker,* Carneys Point, N.J. PROCESS FOR DYEING PAPER WITH DIAZO DYESTUFFS AND COMPOSITIONS THEREFOR. Patent dated Aug. 15, 1972. Disclaimer filed Feb. 26, 1975, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to claim 3 of said patent.

3,721,858.—*Kunio Shimizu,* Osaka, Japan. SIZE AND HIGH VOLTAGE STABILIZING CIRCUIT. Patent dated Mar. 20, 1973. Disclaimer filed Apr. 25, 1974, by the assignee, *Sanyo Electric Company, Limited.*

Hereby enters this disclaimer to claims 1 through 14, inclusive and 19 through 22, inclusive, of said patent.

3,789,235.—*Thomas James Bridges,* Holmdel, and *Van-Tran Nguyen,* Matawan Turnpike, Monmouth County, N.J. FAR INFRARED COHERENT RADIATION SOURCE EMPLOYING CHARGE CARRIER SPIN NONLINEARITY IN A MAGNETIC FIELD. Patent dated Jan. 29, 1974. Disclaimer filed July 2, 1974 and Feb. 5, 1975, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 1, 2 and 5 of said patent.

3,805,044.—*Ranendra K. Bhattacharyya,* Kendall Park, N.J., and *Angelo Ralph Fiore, Jr.,* Westville, and *David William Rudd,* East Derry, N.H. COMPUTER PROCESS CONTROL SYSTEM FOR THE GROWTH OF SYNTHETIC QUARTZ CRYSTALS. Patent dated Apr. 16, 1974. Disclaimer filed Dec. 10, 1974, by the assignee, *Western Electric Company, Incorporated.*

Hereby enters this disclaimer to claims 1, 2, 4, 5, 6, 8, 12 and 13 of said patent.

Patents Available for Licensing or Sale

3,467,405. LEVER DOLLY TYPE INDUSTRIAL SEWING MACHINE MOVER. Walter K. Fogg, 45 Kensington St., Feeding Hills, Mass., 01030.

3,636,925. SUN-DIAL REVOLVING STRUCTURES. Wesson A. Kirkman-Sp 135, 10035 Mills Station Road, Sacramento, Calif., 95827.

3,664,754. HAND DRILL ALIGNMENT DEVICES AND METHODS OF MAKING AND USING THE SAME. Donald L. Kelbel, 5469 Ruskin, St. Louis, Mo., 63115.

3,821,859. DREDGE LADDER AND HOLDING SPUD SHOCK MOUNTING ARRANGEMENTS. William A. McWatters, Forest Hills Apartments, U–14, Route 273, New Castle, Del., 19720.

3,834,042. COMPUTATION DEVICE. James L. Henry, 3010 S. 74th E. Ave., Tulsa, Okla, 74129.

3,843,170. JOINTS FOR CONDUITS HAVING A CONTINUOUS CORROSION-RESISTANT LINING. Luigi Bagnulo, Milan, Italy. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,851,535. SPECIAL BELT AND PEDAL

3,861,025. METHOD FOR TESTING AND BALANCING DYNAMOELECTRIC MACHINE ROTOR END RINGS.

3,866,567. MASKING APPARATUS

3,843,170. JOINTS FOR CONDUITS HAVING A CONTINUOUS CORROSION-RESISTANT LINING. Luigi Bagnulo, Milan, Italy. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,851,535. SPECIAL BELT AND PULLEY RIM TRANSMISSION DEVICE. Shelly M. Presentey, Ottawa, Canada. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,853,157. PROCESS AND APPARATUS FOR DISPENSING LIQUID COMPOSITIONS INTENDED FOR PARENTERAL ADMINISTRATION. Anthony J. Madalo, Correspondence to: Pennie & Edmonds, 330 Madison Ave., New York, N.Y., 10017.

3,863,629. LIFE SUPPORT SYSTEM AND REBREATHER. Gordon E. Ries. Correspondence to: Sherman Levy, Suite 635-Washington Bldg., 15th & New York, Ave., NW., Washington, D.C., 20005.

3,864,046. MECHANICAL PENCIL, ESPECIALLY FOR THIN LEADS. Kemal Butka, New York, N.Y., Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y. 10017.

3,865,194. HYDRAULICALLY-OPERATED FIRE EXTINGUISHING DRILL. John F. Chatfield, Jr., 44 Adams Road, Easton, Conn., 06612.

3,866,487. PULLEY DRIVE SYSTEM. The Hoover Company, General Offices and Main Factory, North Canton, Ohio, 44720.

3,868,662. MOBILE HOME ANCHOR STRAND TENSION INDICATOR. Levi Russell, Jr., P.O. Box 461, Ballinger, Tex., 76821.

3,869,863. ROTARY STEAM VAPOR AND EXTERNAL COMBUSTION ENGINE. Mark A. Juge, 8591 Willings Way, Fair Oaks, Calif., 95628.

3,871,325. MARINE DRIVE SYSTEM. Sidney W. Rauleson. Correspondence to: G. P. Edgell, Schuyler et al., 1000 Connecticut Ave. NW., Washington, D.C., 20036.

The International Business Machines Corporation hereby grants to any party a nonexclusive, royalty-free license to make, use and sell apparatus, within or without the U.S. Government, which employs the data encryption information published in the Federal Register of March 17, 1975, Vol. #40, Fed. Reg. 12134–12138 for consideration in the Federal standard-making process, or complies with an encryption standard based on such information, or complies with a revised standard based on such information and using alternate cryptographically secure functions, under:

a. all claims in U.S. Patent No. 3,796,830 entitled "Recirculating Block Cipher Cryptographic System" issued March 12, 1974 in the name of John Lynn Smith, and U.S. Patent No. 3,798,359 entitled "Block Cipher Cryptographic System" issued March 19, 1974 in the name of Horst Feistal; and

b. all those claims in any other United States patent, which is presently assigned to IBM or which is hereafter assigned to IBM, the infringement of which claims could not be avoided by any apparatus which can be constructed and operated for the purpose of employing the published data encryption information or complying with the standard(s).

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The General Electric Company is prepared to grant nonexclusives licenses under the following 8 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Division Patent Counsel. Switchgear Equipment Bus. Div., General Electric Co., 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,858,015. ELECTRIC CIRCUIT BREAKER OF THE GAS BLAST TYPE.

Applications for license under the following 3 patents may be addressed to: General Electric Co. Appliance Components Business Div., 1635 Broadway, Fort Wayne, Ind., 46804, Attn: Patent Counsel.

3,746,894. DYNAMOELECTRIC MACHINE VIBRATION ISOLATION MOUNTING ARRANGEMENT.

3,861,025. METHOD FOR TESTING AND BALANCING DYNAMOELECTRIC MACHINE ROTOR END RINGS.

3,866,567. MASKING APPARATUS FOR USE IN COATING AN ARTICLE OF MANUFACTURE.

Applications for license under the following 4 patents may be addressed to: General Electric Co., Division Patent Counsel, Housewares Bus., Div., 1285 Boston Ave., Bridgeport, Conn., 06602.

3,840,030. DETANGLING DRYER.

3,849,902. COLLAPSIBLE HAIR DRYER.

3,850,180. HAIR DETANGLER.

3,850,181. HAIR DETANGLER.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 36 patents.

Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

3,863,331. MATCHING OF SEMICONDUCTOR DEVICE CHARACTERISTICS.

3,864,172. BATTERY CONNECTING ASSEMBLY.

3,864,548. MACHINE FOR READING ARTICLE CARRYING CODED INDICIA.

3,864,590. ELECTRON DISCHARGE DEVICE HAVING A HOLLOW CONDUCTOR INTEGRAL WITH THE ENVELOPE THEREOF.

3,864,592. ELECTROLUMINESCENT SEMICONDUCTOR DISPLAY.

3,864,641. HIGH-INPUT-IMPEDANCE AMPLIFIER.

3,864,685. REPLACEABLE FLUID CARTRIDGE INCLUDING MAGNETICALLY OPERABLE FLUID JET DEVICES.

3,864,696. PRINTING APPARATUS.

3,864,722. RADIATION SENSING ARRAYS.

3,864,733. CONTROL SIGNAL APPARATUS FOR VIDEO DISC PLAYER.

3,865,488. FINGERPRINT DISPLAY SYSTEM UTILIZING A STORED FINGERPRINT.

3,865,655. METHOD FOR DIFFUSING IMPURITIES INTO NITRIDE SEMICONDUCTOR CRYSTALS.

3,865,997 TRIANGULAR PIEZOELECTRIC TRANSDUCER FOR RECORDING VIDEO INFORMATION.

3,866,025. SPACECRAFT ATTITUDE CONTROL SYSTEM.

3,866,080. INLINE ELECTRON GUN HAVING MAGNETICALLY PERMEABLE PLATES FOR ENHANCING CONVERGENCE OF ELECTRON BEAMS.

3,866,118. MICROWAVE SPECTROMETER.

3,866,149. FOUR-PORT JUNCTION CIRCULATOR HAVING LARGER DIAMETER CONDUCTIVE POST CONTACTING GYROMAGNETIC POST.

3,866,209. CHARGE-TRANSFER DISPLAY SYSTEM.

3,866,227. DOPPLER TRACKER RECEIVER.

3,867,012. NOVEL LITHIUM NIOBATE SINGLE CRYSTAL FILM STRUCTURE.

3,867,108. ACOUSTO-OPTIC DEVICES AND PROCESS FOR MAKING SAME.

3,867,144. SPECTRALLY SENSITIZED ELECTROPHOTOGRAPHIC MATERIALS.

3,867,165. METHOD FOR RECORDING FINGERPRINTS.

3,867,645. CIRCUIT FOR AMPLIFYING CHARGE.

3,867,651. MONOSTABLE SWITCHING CIRCUIT.

3,867,662. GRATING TUNED PHOTOEMITTER.

3,867,666. HIGH DENSITY LIGHT EMITTING DIODE ARRAY.

3,867,668. CATHODE-RAY TUBE HAVING AN INTERNAL-EXTERNAL MAGNETIC SHIELD AND DEGAUSSING COMBINATION.

3,867,685. FRACTIONAL CURRENT SUPPLY.

3,868,481. TRUNK FORMATTER.

3,868,537. AMPLIFIER WHICH CONSUMES A SUBSTANTIALLY CONSTANT CURRENT.

3,868,557. MOTION DAMPING APPARATUS.

3,868,581. CURRENT AMPLIFIER.

3,868,582. AF AMPLIFIER HAVING CONSTANT CURRENT CONSUMPTION.

3,868,588. MICROWAVE OSCILLATOR OR AMPLIFIER USING PARAMETRIC ENHANCED TRAPATT CIRCUITS.

3,868,687. TIME MEASURING SYSTEM.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 26, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-10-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-22-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	6-14-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-3-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-7-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	10-15-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-23-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-23-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	10-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-3-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-24-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-5-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	8-23-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-12-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-24-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	10-4-74

Expiration of patents: The patents within the range of numbers indicated below expire during May 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,832,959, to 2,836,825 inclusive
Plant Patents..... Numbers 1,698, to 1,713 inclusive

REISSUES

diaphragm stretched over and confronting a first surface of nonporous conducting material, means forming a cham-

REISSUES

MAY 13, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,418

HAND STEAMER WITH IRONING SOLE

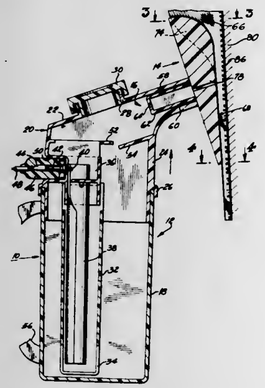
Leonard Osrow, Great Neck, N.Y., assignor to Osrow Products Co., Inc., Glen Cove, N.Y.

Original No. 3,690,024, dated Sept. 12, 1972, Ser. No. 162,404, July 14, 1971. Application for reissue Jan. 17, 1973, Ser. No. 324,533

Int. Cl. A47j *51/00*

U.S. Cl. 38—69

11 Claims



1. A light weight portable hand manipulable pressing/steaming device comprising an electrical steam generator, said electrical steam generator including means for receiving electrical energy and utilizing the same to convert water to steam, a passageway leading from the steam generator for receiving steam formed thereby, a steam discharge exit in communication with said passageway, a sole plate including a pressing section having means for pressing a fabric against a flat surface, said pressing section containing an opening therein in communication with said steam discharge exit, said sole plate made of a synthetic plastic which has a low coefficient of heat conductivity, a low specific heat, a high heat resistance, a high strength, a high dielectric coefficient, a high resistance to impact, a high flexural modulus, a heat distortion temperature in excess of 250° F. and a low rate of water absorption and the plastic being selected from the class consisting of polycarbonates, polyphenylene oxides, polysulfones, phenol formaldehydes, urea formaldehydes, epoxies, polytetrafluoroethylenes, polychlorotrifluoroethylenes, polyesters, silicones, alkyds, furans, diallylphthalates and caseins.

28,419

METHOD OF FABRICATING ALUMINUM ALLOY ROD

Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Original No. 3,670,401, dated June 20, 1972, Ser. No. 31,461, Apr. 1, 1970, which is a division of Ser. No. 814,183, Apr. 7, 1969, now Patent No. 3,512,221, which is a continuation-in-part of abandoned application Ser. No. 779,376, Nov. 27, 1968, which is a continuation-in-part of abandoned application Ser. No. 730,933, May 21, 1968. Application for reissue Apr. 29, 1974, Ser. No. 464,922

Int. Cl. B22d *25/00*

U.S. Cl. 148—2

15 Claims

7. Process for preparing an aluminum alloy rod *for subsequent use in the preparation of an aluminum alloy wire having a minimum conductivity of 61% IACS* comprising the steps of:

a. Alloying from about 98.95 to [about 99.54] *less than 99.45* weight percent aluminum, from about 0.45 to about 0.95 weight percent iron, about [0.01] *0.015* to about 0.15 weight percent silicon, and [from 0.0001 to] *trace quantities of no more than* 0.05 weight percent each of trace elements selected from the group consisting of vanadium, copper, *magnesium,* manganese, zinc, boron and titanium; the total weight percent of trace elements being [from 0.004 to] *no more than* 0.15 weight percent; [and the ratio of iron to silicon being at least 8:1;]

b. Casting the alloy into a continuous bar in a moving mold formed by a groove in the periphery of a casting wheel and an endless belt lying adjacent the groove along a portion of the periphery of the wheel; and

c. *Without any preliminary or intermediate anneals,* [Hot] *hot*-working the bar substantially immediately after casting while the bar is in substantially that condition as cast by rolling the bar in closed roll passes to obtain a continuous aluminum alloy rod [without having been subjected to any preliminary or intermediate anneals] *having a conductivity of less than 61% IACS.*

13. Process for preparing an aluminum alloy wire having substantially evenly distributed iron aluminate inclusions of a particle size of less than 2,000 angstrom units and an electrical conductivity of at least 61 percent IACS comprising the steps of:

a. Alloying less than about 99.70 weight percent aluminum with more than about 0.30 weight percent iron, [no more than] *0.015 to* about 0.15 weight percent silicon, and trace quantities of impurities;

b. Continuously casting the alloy into a continuous bar;

c. Continuously rolling the bar in substantially that condition in which it was cast into a bar to form a continuous rod;

d. Drawing the rod with no preliminary or intermediate anneals to form wire *having a conductivity of less than 61% IACS*; and

e. Annealing or partially annealing the wire.

28,420

ELECTRET ACOUSTIC TRANSDUCER

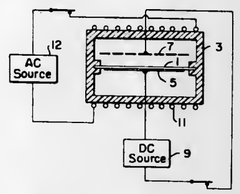
Preston V. Murphy, Weston, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Original No. 3,612,778, dated Oct. 12, 1971, Ser. No. 25,539, Apr. 3, 1970, which is a continuation-in-part of abandoned application Ser. No. 638,463, May 15, 1967. Application for reissue Mar. 30, 1973, Ser. No. 347,322

Int. Cl. H04r *19/04*

U.S. Cl. 179—111 E

6 Claims



12. An electroacoustic transducer, comprising an electret, a metallic diaphragm, and means holding the diaphragm stretched over and confronting a first surface of said electret, said electret comprising a relatively thick sheet of internally polarized dielectric material permeated with holes and having formed on said first surface a grid of supporting elements in contact with said diaphragm to form a plurality of individual transducing cells to control the spacing between the diaphragm and the electret and to prevent electrostatic sticking of the diaphragm to the electret, a meallic coating on a second side of said electret opposite said first side, a sheet of nonporous conducting material, means forming a chamber sealed at one end by said diaphragm and at an opposite end by said material, and a grid of nonconducting support elements in said chamber and supporting said electret above said material whereby the interstices between the support elements provide a compression chamber for said transducer, an electrical connection between one side of said material and said diaphragm, and an electrical connection between the other side of said material and said metallic coating.

PLANT PATENTS

GRANTED MAY 13, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,717
RASPBERRY PLANT
Marion Hagerstrom, Monticello, Minn., assignor to Herschel L. Boll, Champaign, Ill.
Filed Nov. 19, 1973, Ser. No. 417,429
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—46 **1 Claim**

1. A new and distinct variety of raspberry plant substantially as herein shown and described, characterized by its very vigorous growth; by its high productivity; and by its medium-sized, yellow-to-amber colored fruit.

3,718
STRAWBERRY PLANT
Albert B. Cook, Grandview, Ind., assignor to Herschel L. Boll, Champaign, Ill.
Filed Nov. 15, 1973, Ser. No. 416,295
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—49 **1 Claim**

1. A new and distinct variety of strawberry plant substantially as herein shown and described, characterized by its everbearing habit of growth; by its high productivity; by its vigorous growth; by its continuous bearing of fruit from June until freezing weather; by its continuous production of new flower stems, enabling one to pick some large primary berries at any time during the bearing season; and by its large, conic, orange-red fruit.

3,719
ROSE PLANT
O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91762
Filed Mar. 21, 1974, Ser. No. 453,385
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—14 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an extremely vigorous habit of growth, with production of exceptionally long and strong stems which are capable of supporting the heavy blooms well, an extraordinarily profuse blooming habit and excellent and amazingly rapid repetition of the blooming cycle when the plant is pruned back, the production of unusually long buds which open to large beautifully formed open flowers of a classic exhibition type and having many petals, a gardenia-like quality and unusually good substance of the flower petals which is uncommon in most white-flowered varieties, and a creamy-white flower color less than pure stark white, but, still definitely giving the flowers an overall white effect when the plants are in heavy bloom.

PATENTS

GRANTED MAY 13, 1975

ERRATA

For CLASS	See PATENT NO.
228-113	3,882,593
228-122	3,882,594
228-158	3,882,595
228-200	3,882,596
043-012	3,882,624
073-362	3,882,711
073-505	3,882,736
206-005	3,883,037
105-367	3,883,107
431-264	3,883,246
208-044	3,883,404
250-566	3,883,436
250-332	3,883,437
310-152	3,883,633

PATENTS

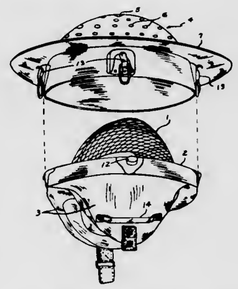
GRANTED MAY 13, 1975

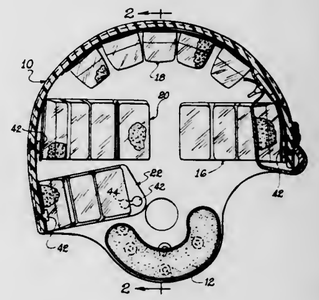
GENERAL AND MECHANICAL

3,882,546
SAFETY HELMET WITH INDIVIDUALIZED HEAD-CONTOURED LINER

William G. Morton, 22 Rue Royale, Kettering, Ohio 45426

Continuation-in-part of Ser. No. 323,195, Jan. 12, 1973, which is a continuation of Ser. No. 805,299, March 7, 1969, abandoned. This application May 16, 1973, Ser. No. 360,950
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **4 Claims**





1. An improved safety helmet assembly which is individualized to a wearer's head for distributing impact forces substantially uniformly over the head, comprising a substantially rigid dome-shaped outer helmet shell of generally uniform thickness, a dome-shaped inner shell of substantially uniform thickness and positioned within said outer shell, a deformable cap-like headpiece of generally uniform thickness and positioned within said inner shell to define a dome-shaped cavity therebetween, said headpiece being effective to receive the wearer's head and to conform to the contour of the head over the entire area covered by said headpiece, means for securing a lower edge portion of said headpiece to the corresponding lower edge portion of said inner shell and forming a fluid-tight seal around the bottom of said cavity, means defining an opening extending to said cavity to provide for introducing a fluid expandable plastics foam material into said cavity after said headpiece and said inner shell are positioned on the wearer's head, the expanded plastics foam material filling said cavity and having a substantially firm inner surface conforming to the contour of said headpiece and the wearer's head, said inner shell, said headpiece, said securing means and said expanded plastics foam material forming an individualized subassembly, and means for retaining said individualized subassembly within said outer helmet shell and providing for using said subassembly within different said outer helmet shells.

3,882,547
PADDING STRUCTURE

Gerard E. Morgan, Lake Forest, Ill., assignor to Riddell, Inc., Chicago, Ill.

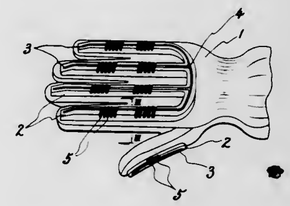
Filed Oct. 9, 1973, Ser. No. 404,254
Int. Cl. A42b *3/02*
U.S. Cl. 2—3 R **14 Claims**

1. A padding structure for use in protective equipment whereby the structure can be fit to the wearer and will provide for energy attenuation upon receipt of an impact to which the wearer is subjected, said structure comprising a housing of flexible, substantially air-impervious material, a sandwich of resilient padding positioned within the housing, said sandwich comprising a first layer of slow-recovery material and a second layer of softer fitting material, and a backing for supporting the sandwich and housing whereby the housing and sandwich are disposed between the backing and the wearer's body when the protective equipment is in use, said first layer being positioned adjacent said backing and said second layer being disposed on said first layer with the wearer's body being immediately adjacent said fitting material, said fitting material being normally partially compressed and said slow recovery material being uncompressed when the padding structure is in use whereby the padding structure snugly engages the body, and wherein said fitting material and said slow-recovery material are adapted to be substantially compressed when absorbing the force of an impact.

3,882,548
GLOVE FOR PROTECTION AGAINST INJURY

Koichiro Shinagawa, 12-6, 7-chome, Ryoke, Urawa-shi, Saitama-ken, and Kiyoko Takahashi, 15-15, 5-chome, Nonoue, Habikino-shi, Osaka-fu, both of Japan

Filed Sept. 26, 1974, Ser. No. 509,726
Claims priority, application Japan, Sept. 28, 1973, 48-112452
Int. Cl. A61d *13/10*
U.S. Cl. 2—161 A **10 Claims**



1. A protective glove comprising a body with finger portions and having an inner palm surface and an outer back surface, and a pad on each finger portion on the outer back surface of the glove body, each pad having a central longitudinal groove in the outer surface thereof, and thread means in said groove attaching the pad to the glove body solely thereat.

3,882,549
METHOD OF APPLYING GARMENT TRIM

Isabelle R. Gaburo, 410 E. Lexington, Apt. D, El Cajon, Calif. 92020

Filed Dec. 5, 1973, Ser. No. 421,945
Int. Cl.[2] A41D *27/08*
U.S. Cl. 2—244 1 Claim

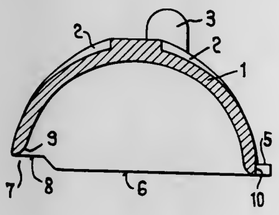


1. The method of applying trim to a garment comprising the steps of:
attaching a first and second section of bias tape to each side of one edge of a section of trim to be attached to a garment;
shaping the first and second sections of bias tape;
pressing the sections of bias tape and trim for setting their shape;
placing the edge of the garment to be trimmed between exposed edges of the first and second bias tape sections; and
attaching the garment to be trimmed to the exposed edges of the first and second sections of bias tape.

3,882,550
SOCKET FOR HIP JOINT PROSTHESIS

Kurt Karpf, Holderbank, and Heinz Moser, Selzach, both of Switzerland, assignors to Oscobal AG, Chirurgische Instruments und Implantate, Selzach, Switzerland

Filed Aug. 13, 1973, Ser. No. 387,622
Claims priority, application Switzerland, Sept. 6, 1972, 13067/72
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 8 Claims

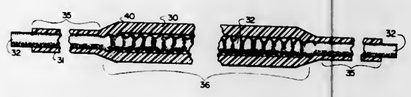


1. A socket for a hip joint prosthesis comprising a substantially hemispherical shell defining a substantially hemispherical cavity and terminating in a rim having a substantially annular face, said hemispherical shell defining a notch in a wall thereof interrupting the face of said rim from the outside of said shell to said cavity and over a section of the circumference less than half thereof, the face of said rim and at least a part of said notch being disposed respectively in two planes which are parallel to each other, said shell defining guide means for enabling precise positioning of the socket in the acetabulum.

3,882,551
ARTIFICIAL MUSCLE

Jerry D. Helmer, and Kenneth E. Hughes, both of Columbus, Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Jan. 9, 1974, Ser. No. 432,101
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 9 Claims

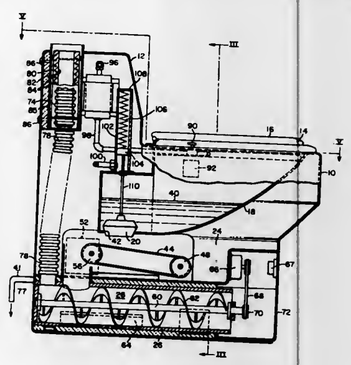


1. An artificial muscle for complete replacement of a natural muscle comprising:
a. an elongated elastic member consisting of an elastic polymeric material biologically compatible with implantation, with said elastic member in a state of tension in the range of from 5 to 25 percent of the maximal tensile force of a normal muscle identical to the muscle being replaced;
artificial tendon means on the extremities of said elastic member for attaching said member to the skeletal system; and
c. means disposed to limit the extension of said elastic member.

3,882,552
SELF-CONTAINED WASTE TREATMENT SYSTEM

Abner B. Turner, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 2, 1973, Ser. No. 356,670
Int. Cl. E03d *5/014*, *5/016*; A47k *11/02*
U.S. Cl. 4—10 8 Claims



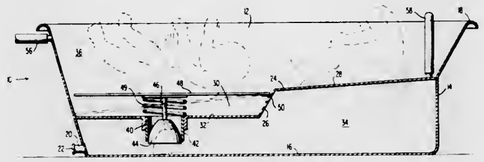
1. A compact waste treatment system comprising:
a housing enclosing a bowl having a liquid therein adapted to receive solid-liquid waste materials;
a valve positioned to open or close a discharge opening in the bottom of said bowl, and selectively operable control means connected to control operation of said valve;
solid-liquid separation means mounted in said housing below said opening and in a position to receive the solid-liquid waste materials upon actuation of said valve to an open position;
incineration means enclosed in a container in said housing, said container having an inlet positioned to receive the solids in the waste materials which are separated from the liquid by the solids-liquid separation means;
said incineration means including a device for moving said solids therethrough, and heating means in said incineration means of sufficient capacity to completely incinerate said solids and thus form an ash residue;

an ash residue outlet in said container, and removable disposal means in said housing adjacent said container outlet for receiving the ash residue from the incineration means;
a sump in the base of said housing which receives liquid from the solid-liquid separation means;
a motor driven pump responsive to said control means, said pump having an inlet connected to the sump and an outlet connected to liquid conditioning means which removes suspended solids and purifies said liquid; and
means connecting said liquid conditioning means with said bowl for furnishing the purified liquid thereto for bowl flushing and cleaning purposes.

3,882,553
INFANT BATHTUB

Joseph Louis Poiencot, 504 Ash St., Houma, La. 70360

Filed Feb. 4, 1974, Ser. No. 439,007
Int. Cl. A47k *3/024*
U.S. Cl. 4—185 B 10 Claims



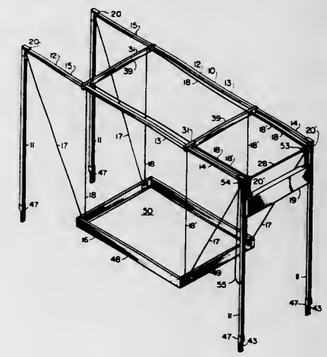
1. A safety bathtub for infants comprising: a tub having side, end and bottom walls, a false bottom spaced above said bottom wall and extending between said side and end walls thereby defining upper and lower chambers within said tub with said upper chamber of a size for bathing an infant, means carried by said tub providing for communication between said upper and lower chambers and including a normally closed valve disposed between said chambers for preventing communication of water from said upper chamber to said lower chamber, and means carried by said tub above said false bottom and responsive to the weight of an infant for opening said valve thereby to flow water from said upper chamber to said lower chamber and substantially empty said upper chamber.

3,882,554
RETRACTABLE BED

Frederic E. Glass, 448 W. 46th St., New York, N.Y. 10036

Continuation-in-part of Ser. No. 349,933, April 11, 1973, abandoned, which is a continuation-in-part of Ser. No. 243,311, April 12, 1972, abandoned. This application Jan. 14, 1974, Ser. No. 433,232
Int. Cl. A47c *17/40*
U.S. Cl. 5—10 R 10 Claims

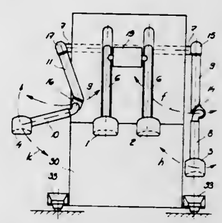
1. A retractable bed comprising, in combination, a frame having transverse members and two pairs of legs supporting the ends of said transverse members to span a room adjacent to the ceiling, a bed platform smaller than the span of said room, support lines fixed to the cornes of said bed platform, pulley means at the ends of said transverse members over which said support lines run, slack take-up weights on said support lines beyond said pulley means limiting travel of said support lines over said pulley means securing said bed platform in a lowe sleeping position with said support lines extending upward and outward from the corners of said bed platform to said pulley means at the ends of said transverse members, four retracting lines extending vertically upward to said transverse members from the corners of said bed platform and extending slidably along said transverse members to extend downward adjacent to one pair of said legs, and a counterweight fixed to said retracting lines substantially balancing the weight of said bed platform as said platform is retracted upward against the ceiling, said slack takeup weights taking up slack in said support lines as said bed platform is retracted.



3,882,555
DEVICE TO LIFT PATIENTS

Karl-Johan Edlund, Ohbergsvagen 13, SF 22100 Mariehamn, Finland

Filed Apr. 30, 1973, Ser. No. 356,041
Claims priority, application Sweden, May 3, 1972, 1216/72
Int. Cl. A47b *83/04*; A61g *1/02*
U.S. Cl. 5—81 R 8 Claims



6. A lifting device which comprises a portable base means and a plurality of adjustable arm units supported by said base means and disposed to engage and thereby support the object to be lifted, said arm units each having a holding element disposed for supportive contact with said object, at least one of said arms having pivot connection means accommodating adjustment of the position of the holding element of that arm unit by independent horizontal and vertical movements, said base means including a moveable beam and said arm units being connected to said beam in spaced-apart relation therealong for movement therewith, said plurality of arm units including a pair of double-section arm units each having an inner arm section pivotally connected to a corresponding end portion of said moveable beam, and an outer arm section pivotally connected to said inner arm section, said double-section arm units being adjustable independently of each other.

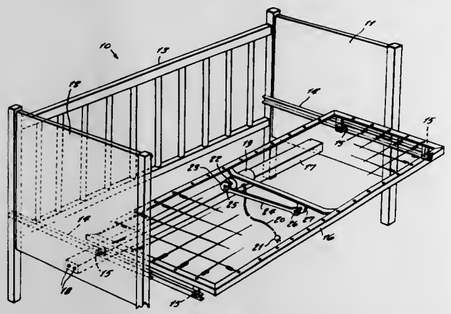
3,882,556
ELECTRICALLY ROCKED CRIB

Serafino Accurso, 1137 67th St., Brooklyn, N.Y. 11219

Filed Mar. 4, 1974, Ser. No. 447,540
Int. Cl. A47d *9/02*
U.S. Cl. 5—109 3 Claims

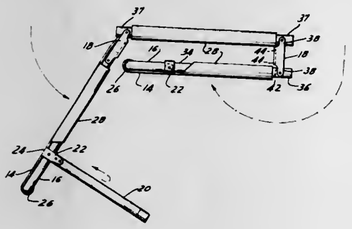
1. In an electrically rocked crib, the combination of a stationary bed stead comprised of a headboard and footboard interconnected by side rails therebetween, so to form an en-

closure around a central area containing a horizontal member upon which a mattress can be supported, and means whereby said horizontal member is reciprocally sidewardly moved, said means comprising a stationarily mounted electric motor on said bedstead, a motor shaft of said motor having a plate



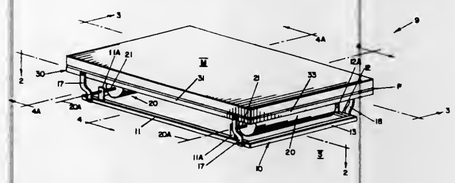
secured thereto, an eccentric pin on said plate being connected pivotally to one end of a connecting rod which at its other end moves said horizontal member, and means whereby said horizontal member travels an arcuate path that accordingly includes a vertical displacement as well as sideward movement.

3,882,557
RAISED SEAT PLATFORM
Richard C. Stehlik, 321 Sheridan Rd., Winnetka, Ill. 60093
Continuation of Ser. No. 212,018, Dec. 27, 1971, Pat. No. 3,742,529. This application July 2, 1973, Ser. No. 375,709
Int. Cl. A47c *27/08*; A47f *1/00*
U.S. Cl. 5—114 **5 Claims**



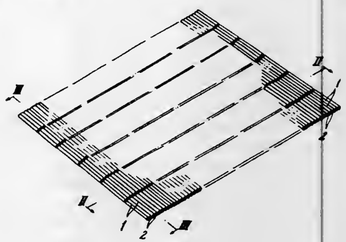
1. A foldable bed having a support platform area and adapted to be used with a raised seat, said bed comprising:
a substantially rectangular shaped frame including
a. a pair of substantially U-shaped end members,
b. a pair of intermediate members, and
c. two pairs of links pivotally connecting said end members and intermediate members together;
a flexible sheeting securely attached to said frame and forming the support platform;
a pair of swingable leg supports each connected to one side of the frame and adapted to cooperate with the raised seat to support the frame and flexible covering;
said connecting links having a pair of tab members at each end thereof pivotally connected to end portions of the end members and the intermediate members;
said tab members being formed by cut-out portions on opposite sides of said links, one cut-out being of lesser extent than the other whereby the end portions of the end members may be pivoted about the tabs and through the greater cut-outs for folding the bed into a compact condition and also for supporting the end members and the intermediate members by the portions of the links adjacent the lesser cut-outs when the bed is extended into an open position for engagement with the seat.

3,882,558
SUSPENSION SYSTEM FOR OVERLAND VEHICLES SLEEPING BEDS
Sheldon L. Christensen, 1963 E. 9th St., Fremont, Nebr. 68025
Filed Aug. 8, 1974, Ser. No. 495,624
Int. Cl. A45f *1/00*
U.S. Cl. 5—118 **9 Claims**



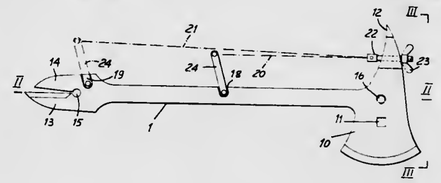
1. A suspension system for overland vehicles sleeping beds and particularly adapted for removably resting upon the rearward elevated shelf-like stratum portion of an overland truck operator's cab, said suspension system comprising:
A. A substantially horizontal bottom-frame adapted to stably rest at constant elevation upon a said shelf stratum, the bottom-frame extending longitudinally lengthwise and also transversely widthwise and including a pair of longitudinally separated transverse-ends, said bottom-frame being provided with a pair of longitudinally separated revolvable drums each rotatable about a transversely extending central-axis therefor whereby an elongated longitudinal-gap exists between the two central-axes;
B. A generally rectangular horizontal top-frame overlying the bottom-frame and in vertically reciprocatably movably attached relationship thereto through connnections to the respective revolvable drums, said top-frame extending longitudinally lengthwise and having a relatively narrow transverse-width and adapted to support a horizontal sleeping mattress thereabove;
C. Leveling means to maintain the top-frame horizontal during vertical movements thereof; and
D. Downward-movement limitation means of the yieldable resistance type for the top-frame and extending actuatably therefrom to the constant elevation bottom-frame.

3,882,559
SHEET FOR BEDDING
Kazuyoshi Kano, 1-8-1-4, Minami-cho, Higashikurume-shi, Tokyo, Japan
Filed Jan. 3, 1974, Ser. No. 430,583
Int. Cl. H47g *9/00*
U.S. Cl. 5—334 R **7 Claims**



1. A sheet for bedding comprising a plurality of short tubes constituted of relatively hard material and having opposite open ends, said tubes being arranged in juxtaposition in rows and columns, said tubes having their axes lying in a common horizontal plane with their open ends facing one another, and means connecting said tubes in an assembled fashion in said horizontal plane in which they are individually freely movable, the open ends of said tubes being vertical.

3,882,560
COMBINED MULTI-PURPOSE IMPLEMENTS
Valentina Carrer, 10, Via Monte Focobon, Mestre-Favaro, Italy
Filed Apr. 4, 1973, Ser. No. 347,641
Int. Cl. B25f *1/02*
U.S. Cl. 7—8.1 R **6 Claims**



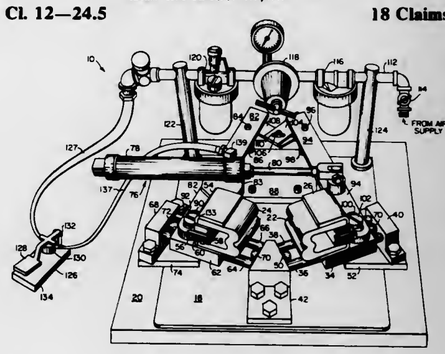
1. A combined multi-purpose implement comprising a basic member and complementary implement parts detachably secured thereto, said basic member comprising a substantially T-shaped member including a head and a shank, said head including a hatchet portion and a pick-axe portion at opposite ends thereof, said hatchet portion including a polygonal aperture therein adapted to serve as a spanner and said shank including a cutter device located at the end of said shank opposite said head, said implement parts including a soil working device detachably secured to said cutter device and adapted to be removed from the cutter device when the latter is to be used, and a hammer member detachably secured to a lateral face of said head, said implement further comprising mounting means on said shank, an anchoring member comprising a strut mounted by said mounting means and extending substantially transversely to said shank, anchoring and tensioning means secured to one of said head portions, and a flexible blade tensioned between said strut and said anchoring and tensioning means.

3,882,561
METHOD OF FITTING A SKI BOOT
Alden B. Hanson, and Chris A. Hanson, both of Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.
Division of Ser. No. 216,080, Jan. 7, 1972, Pat. No. 3,798,799. This application Sept. 25, 1973, Ser. No. 400,667
Int. Cl. A43d *9/00*
U.S. Cl. 12—142 P **16 Claims**



1. The method of fitting a ski boot which comprises an outer shell and a liner assembly disposed within said shell, whereby at least one cavity is formed therebetween, said method comprising the steps of:
inserting a thermoplastic fitting material into said cavity;
heating said thermoplastic fitting material to a temperature substantially above ambient temperature;
shaping said liner assembly about the foot-to-be-fitted;
and thereafter cooling said thermoplastic fitting material to ambient temperature.

3,882,562
PLATFORM BINDING STRIP PINCHER METHOD AND APPARATUS
Alton R. Copithorne, Rowley, Mass., assignor to Boston Machine Works Company, Lynn, Mass.
Filed Mar. 12, 1974, Ser. No. 450,407
Int. Cl. A43d *43/06*
U.S. Cl. 12—24.5 **18 Claims**



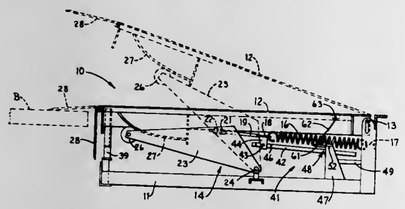
1. A machine for pinching and folding a binding strip about a bevel of a workpiece, said machine comprising:
a. first resilient head means;
b. second resilient head means, said first and second resilient head means constrained for relative movement towards and away from each other between a first position and a second position; and
c. means for moving said first and second resilient head means towards and away from each other;
d. said first and second resilient head means in said first position operative to receive the binding strip and workpiece inserted therebetween, said first and second resilient head means operative to engage the binding strip about opposite edges of the bevel of the workpiece when said first and second resilient head means are urged towards each other by said moving means, said first and second resilient head means operative to apply a progressively increasing force against opposite edges of the bevel when said first and second resilient head means first engage the workpiece, said first and second resilient head means operative to apply a progressively increasing force against opposite edges of the bevel and against opposite faces of the bevel for folding and pinching the binding strip about the bevel as said first and second resilient head means are urged towards said second position.

3,882,563
HOLD-DOWN DEVICE FOR DOCKBOARD
Vernon O. Smith, Ashley, and George E. Mossbarger, Marion, both of Ohio, assignors to Overhead Door Corporation, Dallas, Tex.
Filed Sept. 6, 1973, Ser. No. 394,736
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **16 Claims**

1. In an adjustable dock leveler, the combination including:
a stationary mounting structure;
a ramp hingedly mounted on said stationary mounting structure for swinging movement about a substantially horizontal axis;
ramp lifting means coacting between said ramp and said mounting structure for substantially continuously urging said ramp to swing upwardly about said horizontal axis;
said ramp lifting means including a lifting arm pivotally supported on said support structure for swinging movement about a substantially horizontal pivot axis, said

lifting arm including means thereon coacting with said ramp for swinging said ramp upwardly in response to swinging movement of said lifting arm about its pivot axis; said lifting means further including resilient link means connected between said support structure and said lifting arm for continuously urging said lifting arm to swing in a direction for causing upward swinging movement of said ramp, said resilient link means being hingedly connected to said lifting arm; and

releasable holding means coacting between said ramp lifting



means and said support structure and acting in oppostion to said ramp lifing means for restraining same, comprising the improvement wherein said releasable holding means is connected directly to said resilient link means for restraining same when said holding means is in a latched position while permitting pivotal movement between said lifting arm and said resilient link means to enable said lifting arm to follow the upward swinging movement of said ramp as caused by application of an external force to said ramp.

3,882,564

PROCESS FOR CONSTRUCTION OF BRIDGES, IN PARTICULAR MOTORWAY FLYOVERS

Jean Muller, Suresnes, France, assignor to Societe d'Etudes de Genie Civil et de Techniques Industrielles, Paris, France

Filed Sept. 20, 1974, Ser. No. 507,798

Claims priority, application France, Sept. 24, 1973, 73.34133

Int. Cl. E01d *19/02*

U.S. Cl. 14—77 **4 Claims**

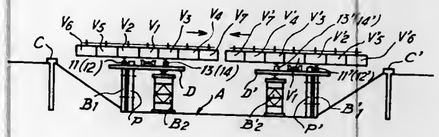
1. In a process for construction of a bridge with at least two piers and a continuous deck resting on the said piers, the said deck comprising at least a central span between two successive piers and two lateral spans extending respectively on either side of the said central span, the said process in particular comprising, to construct the said deck, assembling and fastening by means of prestressing reinforcements a plurality of prefabricated segments each having two opposed end faces, each segment being applied with one of its end faces against the adjacent end face of the immediately adjacent segment, the improvement comprising the following successive steps:

adjacent to each pier is erected a falsework having a substantially horizontal upper platform on which are arranged substantially vertical main jacks provided in their lower portions with sliding or rolling organs enabling the said jacks to slide or roll on the said platform;

the segments of a deck portion which comprises a fraction of the central span and at least a fraction of the lateral span associated with the pier in question are then placed successively in position over each of the said platforms, bearing on the said platform by means of the said main jacks, and the said segments are joined together by means of temporary fastening organs, the deck portion thus formed — which is supported by the said main jacks — then extending over the upper face of the pier in question and out of contact with the said face;

the main jacks supporting at least one of the two deck portions associated with two successive piers are then made to roll or slide on their platforms, so as to move the said two deck portions towards each other until their mutually facing end faces contact each other;

the segments of the assembly formed by the said deck portions are then permanently fastened together by means of prestressing reinforcements distinct from the temporary fastening organs used before, so as to form a continuous deck;



the said continuous deck is lowered by operating the said main jacks until it rests on the piers of the bridge; and

the said temporary fastening organs and the said falseworks equipped with their jacks are disassembled.

3,882,565

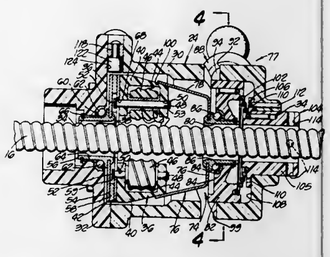
SPRING FEED DEVICE

Lawrence F. Irwin, Calabasas Park, and Fritz O. Ehrler, Panorama City, both of Calif., assignors to Lawrence F. Irwin, San Fernando, Calif.

Filed Nov. 30, 1973, Ser. No. 420,527

Int. Cl. B08b *9/02*

U.S. Cl. 15—104.3 SN **16 Claims**



1. A plumbing tool for use in cleaning out drains, conduits and the like comprising:

a. an elongated coiled spring plumbers snake,

b. means for rotating said plumbers snake about its longitudinal axis;

c. first means including snake engaging means movable into and out of operable engagement with said plumbers snake for feeding said snake in an axial direction, said first means also including first biasing means for yieldably holding said snake engaging means normally out of engagement with said snake;

d. second means movable into operable engagement with said first means for moving said snake engaging means into engagement with said snake against the urging of said first biasing means; and

e. second biasing means for yieldably urging said second means into operable engagement with said first means, said second biasing means being responsive to forces opposing axial feeding of said snake so that said snake engaging means will automatically move out of engagement with said snake in response to such forces.

3,882,566

DUCT CLEANING DEVICE

Clifton H. Hubbell, Downers Grove, Ill., assignor to Sauerman Bros., Inc., Bellwood, Ill.

Filed Apr. 24, 1974, Ser. No. 463,501

Int. Cl. B08b *9/02*

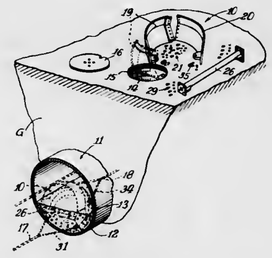
U.S. Cl. 15—104.3 R **11 Claims**

1. A device for cleaning out a duct having means for providing access thereto defining an opening having a cross section smaller than that of the duct, said device being utilized to

clean the duct by being dragged along the bottom of the duct by a drawn dragline so as to drag material collected in the duct to a removal position, said device comprising:

first wall means having a size preselected to permit passage thereof through said access opening into and from said duct;

second wall means having a size preselected to permit passage thereof through said access opening into and from said duct;



means for removably securing said first and second wall means together inwardly of said access opening to define an extended wall arrangement having a cross section larger than that of said recess opening and being preselected to be movable along the bottom portion of the duct for cleaning the duct; and

connecting means on said wall means for connecting a dragline thereto to effect such duct cleaning movement.

3,882,567

WIPER BLADE ELEMENT

Rudolf Herzog, Plochingen, Germany, assignor to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung, Dusseldorf, Germany

Filed June 12, 1972, Ser. No. 263,750

Claims priority, application Germany, June 16, 1971, 2129744

Int. Cl. B60s *1/38*

U.S. Cl. 15—250.36 **9 Claims**



1. An elongated windshield wiper element essentially consisting of

a. a unitary rubber strip having a body portion, a blade portion, and a hinge portion of reduced cross section integrally connecting said blade portion to said body portion, said blade portion having a base part contiguously adjacent said hinge portion and tapering from said base part in a direction away from said hinge portion to constitute a lip part, said portions extending over substantially the entire length of said strip; and

b. a thin, pliable coating of synthetic resin composition substantially impervious to ozone covering substantially the entire surface of said hinge portion and covering the surfaces of said body portion and said blade portion adjacent said hinge portion, said lip part having an exposed, longitudinal edge face of rubber, said edge face being free from said coating.

3,882,568

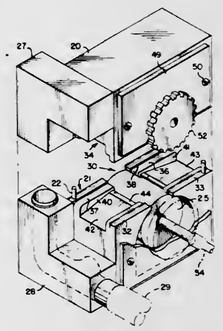
MOVIE FILM CLEANING SYSTEM

George P. Hill, 11525 Fourth Ave., N.W., Seattle, Wash. 98177

Filed Aug. 20, 1973, Ser. No. 389,571

Int. Cl. A47l *5/38*

U.S. Cl. 15—308 **4 Claims**



1. A cleaning device for movie film and the like comprising:

a housing assembly providing a vacuum plenum,

guide means for guiding the film endwise through the plenum such that the film divides the plenum into two vacuum chambers, said guide means comprising a front pair of guide grooves separated from one another by a front air intake and a rear pair of guide grooves aligned with the front pair and separated from one another by a rear air intake, said front pair being separated from said rear pair by a pair of side air intakes, said front, rear and side air intakes having a restricted height arranged to be divided by said film such that each of said chambers is served by respective front rear and side restriction air intakes,

a pair of opposed rotary brush means journal-mounted in said chambers and arranged and adapted to dislodge foreign particles from both faces of the film across the full width thereof, and suction means connected to said chambers for drawing air into said chambers through all of said air intakes simultaneously whereby air circulates over the side edges and entire surface of the film in the vicinity of the brush means.

3,882,569

SECTIONAL HANDLE

Fredric B. Vanderveer, Grand Rapids, Mich., assignor to Leigh Products, Inc., Coopersville, Mich.

Filed Aug. 16, 1974, Ser. No. 497,908

Int. Cl. F16b *9/02*

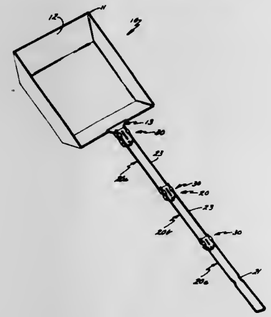
U.S. Cl. 16—114 R **11 Claims**

1. A separable joint for a sectional article support, each section of said article support being an elongated, narrow loop of rod-like material having at least one closed end; a plate rigidly secured to one face of one of said sections at the end thereof remote from said closed end; said plate opposite from said one section to which it is secured, having means forming an elongated trackway parallel to said one section of a height and width to snugly and slidably receive the closed end of the other of said sections; said plate having a forward end and a rearward end, said forward end being adjacent the end of said one section; and rearward end having a rearwardly projecting

tongue spaced from the sides of said one section; a cooperating stop and latch means on said tongue; said tongue being

through a predetermined place of said bone of said ham

tongue spaced from the sides of said one section; a cooperating stop and latch means on said tongue; said tongue being



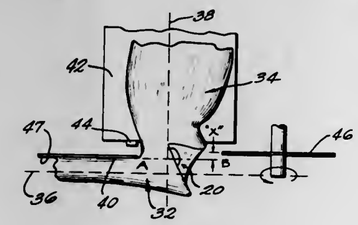
resiliently deflectable whereby said stop and latch means can detachably engage the closed end of said other section.

3,882,570

METHOD AND APPARATUS FOR REMOVING AN ANIMAL FOOT IN THE VICINITY OF THE TARSUS JOINT

Theodore C. Zwiep, Grand Rapids; Konrad H. Marcus, and Ferdinand Weitz, both of Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Division of Ser. No. 14,503, Feb. 26, 1970, Pat. No. 3,657,771.
This application July 21, 1971, Ser. No. 164,781
Int. Cl. A22c
U.S. Cl. 17—1 R **12 Claims**



1. Apparatus for removing the foot portion of an edible mammal leg from the ham portion of the leg by cutting through the bone of the ham portion in the vicinity of the tarsus joint between said portions comprising:

a. first alignment means for establishing the alignment of the medial axis of the ham portion of the leg along a given axis;

b. second alignment means for aligning said foot portion to establish a predetermined amount of bending of said joint and thus a predetermined angle between the medial axes of said leg portions;

c. bending means for bending the joint said predetermined amount to establish said predetermined angle between said portions; and

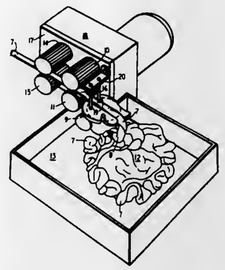
d. severing means located at a predetermined distance from the medial axis of said foot portion for severing the leg in the vicinity of said joint; said severing means having a cutting surface and means for directing said cutting surface for relative movement with respect to said leg on a path located along the medial axis of said foot portion, said path being located along a plane spaced said predetermined distance from the medial axis of said foot portion; means for causing relative movement of said severing means with respect to said leg along said path whereby said severing means will transversely cut only through a predetermined place of said bone of said ham portion.

3,882,571

SEPARATION OF ANIMAL INTESTINES FROM THE STOMACH

Roy James Evers, Cronulla, New South Wales, and Darcy Glen Perrett, Peakhurst, New South Wales, both of Australia, assignors to Davis & Geck Australia Pty. Limited, Hurstville, New South Wales, Australia

Filed July 31, 1973, Ser. No. 384,189
Claims priority, application Australia, July 31, 1972, 9904/72
Int. Cl. A22c *17/14*
U.S. Cl. 17—43 **7 Claims**



1. Apparatus for isolating tubular small intestine from the stomach of a beast, comprising an orientation horn having a longitudinal body freely supported near one end in a substantially horizontal position between one or more pairs of opposing carrying rolls, and a pair of substantially vertical guide pins, one on either side of the body of said horn to substantially prevent lateral displacement of said horn, said horn further having a leading end remote from the rolls over which a length of small intestine which has been initially manually separated from the stomach may be fed, said leading end of the orientation horn being hooked below the horizontal body of the horn so that said leading end is located adjacent a substantially horizontal rotary blade, which blade is adapted to sever the mesentery web holding the intestine tube to the stomach and the fatty tissue lining between the tube and the stomach when the tube is fed over and along the horn.

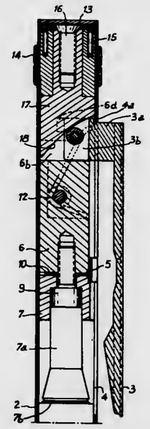
3,882,572

RETRACTABLE CLASP FOR A PEN OR THE LIKE

Robert Hocq, Boulogne, France, assignor to Interlight, Fribourg, Switzerland

Filed June 21, 1974, Ser. No. 481,880
Claims priority, application France, June 26, 1973, 73.23252
Int. Cl. B43k *25/00*
U.S. Cl. 24—11 S **19 Claims**

1. In a portable instrument having a side-wall comprising a clasp which is movable with respect to said wall between a first position received within a recess in said wall and a second projecting position, resilient means biasing the clasp toward the portable instrument, a push-button separate from the clasp and axially movable to actuate an inclined ramp within said instrument, a head on the clasp which is mounted to cooperate with said ramp and slide transversely with respect to the wall of the instrument, the improvement according to which said head has an axial thickness substantially greater than the thickness of the clasp and a surface which engages guiding



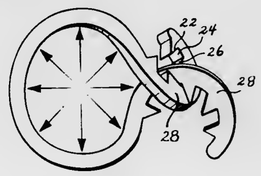
means contained inside the instrument and extending substantially the full length of the paths of travel of said head.

3,882,573

FLEXIBLE, REUSABLE FASTENER

Stanley E. Thomas, Jr., 74 Orchard Ave., Weston, Mass. 02193

Filed Jan. 2, 1974, Ser. No. 429,515
Int. Cl. B65d *77/10*
U.S. Cl. 24—30.5 T **4 Claims**



1. A flexible substantially planar, omega-shaped fastener comprising a resilient spring-like, loop-shaped body portion having planar front and back surfaces and integrally formed end portions which each terminate in oppositely facing hook-like segments, said hook-like segments each having a concave portion in which at least one inwardly extending notch is formed with each of said notches having a hook-end surface and a valley surface so that when said hook-like segments are intertwined in an interlocked position, the valley surface of the notch in one hook-like segment contacts the valley surface of the notch in the other hook-like segment and the hook-end surface of the notch in said one hook-like segment contacts the front surface of said other hook-like segment while the hook-end surface of the notch in said other hook-like segment contacts the back surface of said one hook-like segment.

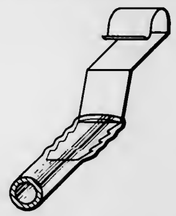
3,882,574

CLIP ON AUTO DOOR GUARD

Robert Joe Martinez, 1506 Parkside Dr., Carrolltown, Tex. 75006

Filed July 12, 1973, Ser. No. 378,519
Int. Cl. A44b *21/00;* **B60j** *11/00*
U.S. Cl. 24—73 B **1 Claim**

1. A removable and reusable auto door guard formed from suitable plastic material such as vinyl which is stretchable and has tubular end portions provided with clips formed from suitable sheet metal such as stainless steel, each clip comprising a substantially flat end portion having a plurality of teeth along both longitudinal edges thereof dimensioned so as to be inserted permanently by hand into a tubular end portion of said plastic material, said clips having a zig zag configuration providing an offset portion between two substantially flat portions; the free end of each clip being provided with a door



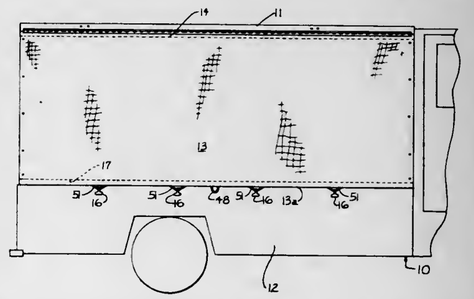
engageable portion of hook-like configuration, the length of said door guard initially being less than that of an associated door so that the plastic material of the guard must be stretched to engage the associated clip portions with lateral edges of an auto door, tension of the plastic material thus holding the guard on the door so that the guard may be easily removed only when the door is opened.

3,882,575

RELEASABLE HOLDDOWN MEANS FOR CURTAINS AND THE LIKE

John T. Jolly, 4116 Fourth Ave., Brighton, Ala. 35020

Filed June 7, 1974, Ser. No. 477,365
Int. Cl. A44b *13/00*
U.S. Cl. 24—203 **1 Claim**



1. In a holddown for securing an edge of a curtain and the like to a supporting member,

a. an elongated hollow tube-like member adapted to be carried adjacent the edge of the curtain to be secured,

b. a flexible member in the hollow tube-like member having at least one bight therein lying outside the tubular member and adapted to be placed over a hook or the like carried by the supporting member,

c. said flexible member being reeved over pulley-like members located inside the tubular mmember adjacent each end thereof and having its free ends passing through the tubular member and secured against moving into the tubular member, and

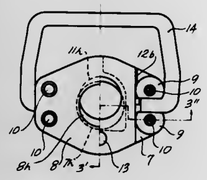
d. means resiliently mounting the pulley-like members inside the elongated hollow tube-like member for movement toward each other, said means comprising a second flexible member having a bight therein lying outside the tubular member and with its ends operatively connected to the mounting means for said pulley-like members, whereby upon increasing the length of said second named bight said pulleys move toward each other, putting slack in said first named flexible member, permitting the bight

therein to be incrased in length for placing over said hook or the like.

3,882,576
HANGING STRAP FASTENER

Kyusei Kanno, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 1, 1974, Ser. No. 484,707
Claims priority, application Japan, July 13, 1973, 48-82409
Int. Cl. A44b *17/00*; A44c *5/18*
U.S. Cl. 24—265 R **2 Claims**



1. A fastener for attaching a hanging strap to a casing of a camera or the like, the fastener comprising

a pin attachable to the casing so that an axially extending portion of the pin projects from the casing to define an axis of rotation, said axially extending portion including first and second circular flanges that are axially spaced apart to define therebetween a circumferential groove in the pin; and

an assembly releasably attachable to the pin, the assembly including

a. first and second plates each of which has a hole,

b. means for interconnecting the plates in facing, spaced-apart relationship with the holes aligned so that the flanges can be journaled therein,

c. slidable retaining means secured between the plates and movable in a direction transverse to the axis or rotation between assembly retaining and assembly releasing positions, the slidable retaining means including a retaining flange portion that, while the slidable retaining means is in the assembly retaining position, is disposed within the groove so as to cooperate with the first circular flange to act as a stop limiting translation of the assembly axially along the pin away from the casing,

d. means operable while the slidable retaining means is in the assembly releasing position for biasing the slidable retaining means to move into the assembly retaining position, and

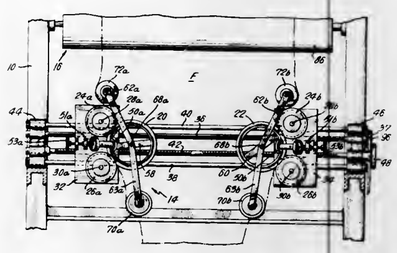
e. a strap ring having opposite ends each of which is held between the pair of plates.

3,882,577
APPARATUS FOR TREATING TUBULAR FABRICS

Edward I. Aronoff, 605 Dorais St., Saint Laurent, Quebec, Canada

Filed Dec. 5, 1973, Ser. No. 422,011
Int. Cl. D06c *5/00*
U.S. Cl. 26—55 R **6 Claims**

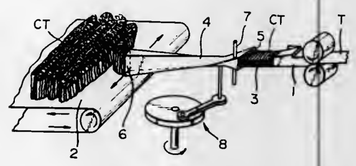
1. An apparatus for handling tubular fabrics, including an upstanding frame, support means on the frame including at least a pair of opposed driven rollers spaced apart on a common plane, a pair of rings between the driven rollers in the common plane, means holding said rings in opposed relationship against said driven rollers, said holding means including running means adapted to allow the rings to rotate about their respective centers upon rotation of said driven rollers, each ring including hub means, a leading arm and a trailing arm pivoted to said hub means, said leading and trailing arms having a fixed angular relation therebetween, said arms extending from the hub and adapted to pivot in said plane relative to the center of said ring.



3,882,578
METHOD AND APPARATUS FOR TRANSFERRING CRIMPED TOW

Nobuharu Izawa, Ehime-ken, Japan, assignor to Teijin Ltd., Osah, Japan

Filed Sept. 4, 1973, Ser. No. 394,075
Claims priority, application Japan, Sept. 7, 1972, 47-89110; July 25, 1973, 48-83032
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 **7 Claims**



1. A method of transferring a stuffer crimped tow onto a running conveyor characterized by standing the stuffer crimped tow erect with respect to the surface of the running conveyor and traversing the tow substantially horizontally and almost perpendicular to the running direction of the conveyor and thereby arranging the tow on the conveyor in a pleated-erect pattern comprising:

crimping a tow of synthetic filaments in a stuffer crimper;

feeding the crimped tow discharged from the stuffer crimper in its as-discharged shape along a horizontal path to a chute having an entrance and an exit and a hollow passageway therebetween, said passageway having a twist of about 90° about its longitudinal axis, said chute being disposed above said running conveyor;

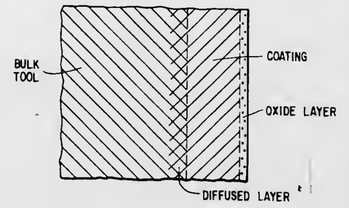
feeding the crimped tow through said passageway of said chute to thereby discharge the crimped tow from the exit of said chute perpendicularly to and onto the surface of said running conveyor and;

traversing the exit of said chute substantially horizontally and almost perpendicular to the running direction of the conveyor whereby the tow is arranged in a pleated-erect pattern on said running conveyor.

3,882,579
ANTI-WEAR THIN FILM COATINGS AND METHOD FOR MAKING SAME

Roy Norman Peacock, Lafayette, Colo., assignor to Granville-Phillips Co., Boulder, Colo.

Division of Ser. No. 234,162, March 13, 1972, abandoned. This application Aug. 21, 1973, Ser. No. 389,644
Int. Cl. B26d *1/00*; B23b *3/00*; B21k *21/00*
U.S. Cl. 29—95 R **14 Claims**



7. In a tool for cutting with a tool metallic materials tending to build up on the cutting edge of said tool during a cutting operation, the improvement comprising

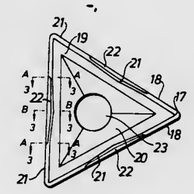
a. a cutting edge substrate;

b. a physically vapor deposited coating of a material selected from the group consisting of titanium, chromium, hafnium, zirconium, and alloys thereof with each other, the thickness of said coating being approximately in the range of 10^{-2} to 10 μm, said coating being partially diffused in said substrate to form a bond therebetween so that build up of said metallic materials on said metal containing material on said tool is minimized during said cutting.

3,882,580
CUTTING INSERT

Evert Gustav Lundgren, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Nov. 23, 1973, Ser. No. 418,219
Claims priority, application Sweden, Jan. 8, 1973, 7300187
Int. Cl. B26d *1/00*
U.S. Cl. 29—95 R **3 Claims**

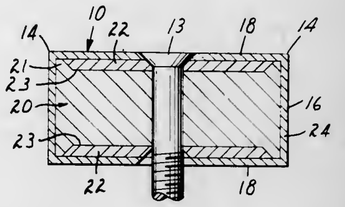


1. In a cutting insert, for chipforming machining of preferably metal work-pieces, having at least one cutting corner (17, 24) from which extends one or more cutting edges (18) provided with a chip-breaker in the form of a groove (19) alongside the cutting edge, the groove being formed in a major or chip face of the insert, only a part (13, 14) of the cutting edge, which part comprises the cutting corner and the adjacent area, normally being engaged with the work-piece (10) during the greater part of the cutting operation, the improvement wherein the insert is strengthened which improvement consists essentially in that that part of the edge which is not engaged has a smaller rake angle (top rake) γ than the part of the insert edge that is essentially active during the cutting operation and in that said rake angle γ decreases continuously along the cutting edge in the direction from the cutting corner within a significant transition range starting at a distance from the corner of one-fourth to one-third of the total length of the insert side.

3,882,581
COATED, PARTIALLY LAMINATED CARBIDE CUTTING TOOL INSERT

Charles E. Mereness, Arden Hills, and Gerald R. Abrahamson, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 13, 1974, Ser. No. 450,579
Int. Cl. B26d *1/00*
U.S. Cl. 29—95 A **12 Claims**



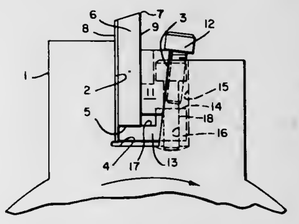
1. A laminated, crater-resistant composite metal cutting tool insert formed of sintered metal carbide comprising:

a body having a core and an edge wall shaped to define both a flank face and a cutting edge, said body having a recess filled with a lamina to define the rake face; wherein said edge wall comprises a flank wear resistant carbide material and said lamina comprises a crater-resistant material containing a majority of tungsten carbide, an iron group binder and at least one carbide of a metal from Groups IV*b* and V*b* of the periodic table, and at least the rake face and flanks of said insert are coated with a hard-surface coating having a thickness of no more than about 0.001 inch.

3,882,582
ADJUSTABLE BIT HOLDER

Thurston V. Williams, Wilton, N.H. 03086

Filed Apr. 18, 1973, Ser. No. 352,101
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 R **6 Claims**



1. A tool holder for a bit with a wearing edge comprising:

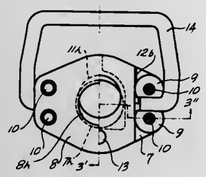
a holder body having a bit recess with a bottom wall and a side wall,

a lock for laterally clamping the bit frictionally with respect to the side, the interengaging face of the bit and said recess side wall being parallel to the interengaging faces of the bit and said lock to allow sliding movement of the bit outwardly of the recess between the lock and side, and the lock including an actuator acting inwardly of the recess and comprising a wedge having an angle substantially greater than 5° and preferably 10°,

a lifter having an abutment for engaging the bit opposite the wearing edge positively to oppose movement of the bit

therein to be incrased in length for placing over said hook or the like.

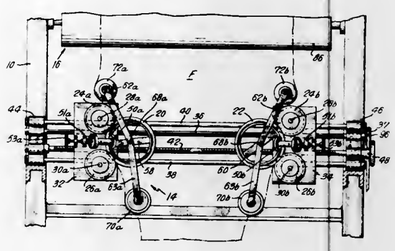
3,882,576
HANGING STRAP FASTENER
Kyusei Kanno, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed July 1, 1974, Ser. No. 484,707
Claims priority, application Japan, July 13, 1973, 48-82409
Int. Cl. A44b 17/00; A44c 5/18
U.S. Cl. 24—265 R **2 Claims**



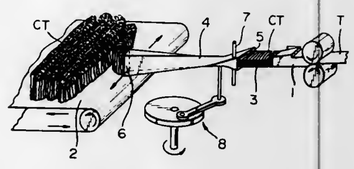
1. A fastener for attaching a hanging strap to a casing of a camera or the like, the fastener comprising
   a pin attachable to the casing so that an axially extending portion of the pin projects from the casing to define an axis of rotation, said axially extending portion including first and second circular flanges that are axially spaced apart to define therebetween a circumferential groove in the pin; and
   an assembly releasably attachable to the pin, the assembly including
   a. first and second plates each of which has a hole,
   b. means for interconnecting the plates in facing, spaced-apart relationship with the holes aligned so that the flanges can be journaled therein,
   c. slidable retaining means secured between the plates and movable in a direction transverse to the axis or rotation between assembly retaining and assembly releasing positions, the slidable retaining means including a retaining flange portion that, while the slidable retaining means is in the assembly retaining position, is disposed within the groove so as to cooperate with the first circular flange to act as a stop limiting translation of the assembly axially along the pin away from the casing,
   d. means operable while the slidable retaining means is in the assembly releasing position for biasing the slidable retaining means to move into the assembly retaining position, and
   e. a strap ring having opposite ends each of which is held between the pair of plates.

3,882,577
APPARATUS FOR TREATING TUBULAR FABRICS
Edward I. Aronoff, 605 Dorais St., Saint Laurent, Quebec, Canada
Filed Dec. 5, 1973, Ser. No. 422,011
Int. Cl. D06c 5/00
U.S. Cl. 26—55 R **6 Claims**

1. An apparatus for handling tubular fabrics, including an upstanding frame, support means on the frame including at least a pair of opposed driven rollers spaced apart on a common plane, a pair of rings between the driven rollers in the common plane, means holding said rings in opposed relationship against said driven rollers, said holding means including running means adapted to allow the rings to rotate about their respective centers upon rotation of said driven rollers, each ring including hub means, a leading arm and a trailing arm pivoted to said hub means, said leading and trailing arms having a fixed angular relation therebetween, said arms extending from the hub and adapted to pivot in said plane relative to the center of said ring.

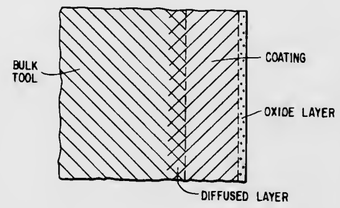


3,882,578
METHOD AND APPARATUS FOR TRANSFERRING CRIMPED TOW
Nobuharu Izawa, Ehime-ken, Japan, assignor to Teijin Ltd., Osah, Japan
Filed Sept. 4, 1973, Ser. No. 394,075
Claims priority, application Japan, Sept. 7, 1972, 47-89110; July 25, 1973, 48-83032
Int. Cl. D02g 1/12
U.S. Cl. 28—1.6 **7 Claims**



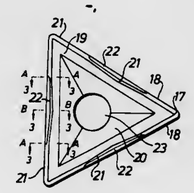
1. A method of transferring a stuffer crimped tow onto a running conveyor characterized by standing the stuffer crimped tow erect with respect to the surface of the running conveyor and traversing the tow substantially horizontally and almost perpendicular to the running direction of the conveyor and thereby arranging the tow on the conveyor in a pleated-erect pattern comprising:
   crimping a tow of synthetic filaments in a stuffer crimper;
   feeding the crimped tow discharged from the stuffer crimper in its as-discharged shape along a horizontal path to a chute having an entrance and an exit and a hollow passageway therebetween, said passageway having a twist of about 90° about its longitudinal axis, said chute being disposed above said running conveyor;
   feeding the crimped tow through said passageway of said chute to thereby discharge the crimped tow from the exit of said chute perpendicularly to and onto the surface of said running conveyor and;
   traversing the exit of said chute substantially horizontally and almost perpendicular to the running direction of the conveyor whereby the tow is arranged in a pleated-erect pattern on said running conveyor.

3,882,579
ANTI-WEAR THIN FILM COATINGS AND METHOD FOR MAKING SAME
Roy Norman Peacock, Lafayette, Colo., assignor to Granville-Phillips Co., Boulder, Colo.
Division of Ser. No. 234,162, March 13, 1972, abandoned. This application Aug. 21, 1973, Ser. No. 389,644
Int. Cl. B26d 1/00; B23b 3/00; B21k 21/00
U.S. Cl. 29—95 R **14 Claims**



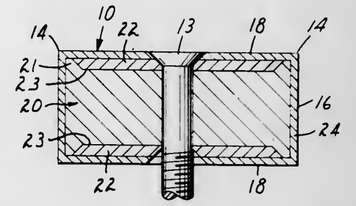
7. In a tool for cutting with a tool metallic materials tending to build up on the cutting edge of said tool during a cutting operation, the improvement comprising
   a. a cutting edge substrate;
   b. a physically vapor deposited coating of a material selected from the group consisting of titanium, chromium, hafnium, zirconium, and alloys thereof with each other, the thickness of said coating being approximately in the range of 10^{-2} to 10 μm, said coating being partially diffused in said substrate to form a bond therebetween so that build up of said metallic materials on said metal containing material on said tool is minimized during said cutting.

3,882,580
CUTTING INSERT
Evert Gustav Lundgren, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden
Filed Nov. 23, 1973, Ser. No. 418,219
Claims priority, application Sweden, Jan. 8, 1973, 7300187
Int. Cl. B26d 1/00
U.S. Cl. 29—95 R **3 Claims**



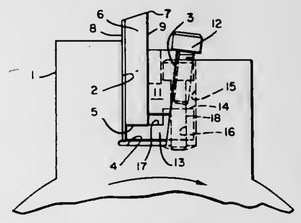
1. In a cutting insert, for chipforming machining of preferably metal work-pieces, having at least one cutting corner (17, 24) from which extends one or more cutting edges (18) provided with a chip-breaker in the form of a groove (19) alongside the cutting edge, the groove being formed in a major or chip face of the insert, only a part (13, 14) of the cutting edge, which part comprises the cutting corner and the adjacent area, normally being engaged with the work-piece (10) during the greater part of the cutting operation, the improvement wherein the insert is strengthened which improvement consists essentially in that that part of the edge which is not engaged has a smaller rake angle (top rake) γ than the part of the insert edge that is essentially active during the cutting operation and in that said rake angle γ decreases continuously along the cutting edge in the direction from the cutting corner within a significant transition range starting at a distance from the corner of one-fourth to one-third of the total length of the insert side.

3,882,581
COATED, PARTIALLY LAMINATED CARBIDE CUTTING TOOL INSERT
Charles E. Mereness, Arden Hills, and Gerald R. Abrahamson, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 13, 1974, Ser. No. 450,579
Int. Cl. B26d 1/00
U.S. Cl. 29—95 A **12 Claims**



1. A laminated, crater-resistant composite metal cutting tool insert formed of sintered metal carbide comprising:
   a body having a core and an edge wall shaped to define both a flank face and a cutting edge, said body having a recess filled with a lamina to define the rake face; wherein said edge wall comprises a flank wear resistant carbide material and said lamina comprises a crater-resistant material containing a majority of tungsten carbide, an iron group binder and at least one carbide of a metal from Groups IV*b* and V*b* of the periodic table, and at least the rake face and flanks of said insert are coated with a hard-surface coating having a thickness of no more than about 0.001 inch.

3,882,582
ADJUSTABLE BIT HOLDER
Thurston V. Williams, Wilton, N.H. 03086
Filed Apr. 18, 1973, Ser. No. 352,101
Int. Cl. B26d 1/12
U.S. Cl. 29—105 R **6 Claims**



1. A tool holder for a bit with a wearing edge comprising:
a holder body having a bit recess with a bottom wall and a side wall,
   a lock for laterally clamping the bit frictionally with respect to the side, the interengaging face of the bit and said recess side wall being parallel to the interengaging faces of the bit and said lock to allow sliding movement of the bit outwardly of the recess between the lock and side, and the lock including an actuator acting inwardly of the recess and comprising a wedge having an angle substantially greater than 5° and preferably 10°,
   a lifter having an abutment for engaging the bit opposite the wearing edge positively to oppose movement of the bit

inwardly of the recess, and move the bit away from the bottom along the side, and

a lifter screw engaging the recess bottom and lifter, the screw being adjustable to urge the bit and wearing edge outwardly of the recess against the clamping friction of the lock, the lifter screw acting substantially in a direction opposite to the actuator so that turning the screw moves the lifter and bit in relief of the actuator force.

3,882,583

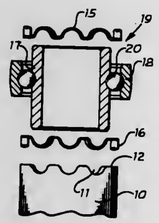
METHOD AND APPARATUS FOR ORIENTING RANDOMLY PLACED ROLLING ELEMENTS

Vic N. Thacker, and Loren H. Rasmussen, both of Kokomo, Ind., assignors to Medco Inc., Kokomo, Ind.

Filed May 22, 1974, Ser. No. 472,171

Int. Cl. B23p *11/00, 19/04*

U.S. Cl. 29—148.4 A **12 Claims**



6. A process for orienting randomly placed rolling elements comprising:

a. placing an anti-friction bearing sub-assembly with randomly spaced rolling elements in contact with a cylindrical member, said cylindrical member having at least one end spacedly notched such that said notches can receive said rolling elements; and

b. causing one of said races to move while the other is held stationary, said movement continuing until each of said randomly spaced rolling elements has been received by one of said notches.

3,882,584

METHOD FOR MANUFACTURE OF ABRASION-RESISTANT SLIDING MEMBER

Yuko Tsuya, Tokyo, Japan, assignor to Agency of Industrial Science and Technology, Japan

Filed Mar. 19, 1974, Ser. No. 452,667

Claims priority, application Japan, Mar. 23, 1973, 48-33217

Int. Cl. B21d *53/10*

U.S. Cl. 29—149.5 S **2 Claims**

1. A method for the manufacture of an abrasion-resistant sliding member consisting essentially of the steps of forming a multiplicity of parallel holes into a metal blank through one terminal face thereof, filling the holes with a solid lubricant, sealing the terminal face so that the solid lubricant cannot substantially enude out during the subsequent elongation, and elongating the solid lubricant-containing metal block in the direction of the sano holes for thereby causing the cross section of the metal to contract simultaneously with the cross section of the lubricant-filled holes.

3,882,585

METHOD AND DEVICE FOR POSITIONING PRESTRESSING HOOPS

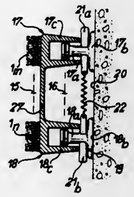
Didier Costes, and Jack Picaut, both of Paris, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 5, 1974, Ser. No. 440,137

Claims priority, application France, Feb. 6, 1973, 73.04168

Int. Cl. B23p *13/00, 19/00;* **B21d** *39/00*

U.S. Cl. 29—150 **11 Claims**



1. A method of positioning hoops of steel wire or strip for prestressing a vessel which contains an internal pressure, with interposition of bearing saddles placed at uniform intervals on the periphery of the pressure vessel, wherein a winding core is placed between the bearing saddles and the prestressing hoops and is driven in rotational motion in order to wind said hoops.

3,882,586

TOOL FOR FASTENING COMPENSATING WEIGHTS TO SPOKED WHEELS

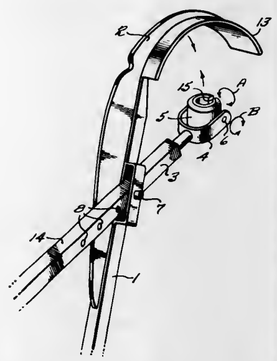
Gunter Schmidt, Darmstadt, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany

Filed Mar. 19, 1974, Ser. No. 452,673

Claims priority, application Germany, Aug. 14, 1973, 2341116

Int. Cl. B25b *27/02*

U.S. Cl. 29—268 **7 Claims**



1. A tool for fastening compensating weights to spoked wheels comprising:

a first tong leg having an extended region for engaging the peripheral surface of a spoked wheel,

a second tong leg pivotably connected to said first leg, and a weight receiving member connected to said second leg and having a bore extending therethrough for receiving a weight compensating element, said bore being opposite said engaging region of said first tong, said member being pivoted about a first axis extending along the direction of said second leg and a second axis extending transversely to said first axis.

3,882,587

METHOD OF PRODUCING A FIBRE-REINFORCED MATERIAL

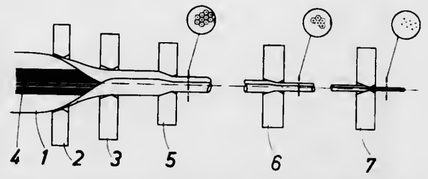
Friedrich Schneider, and Dieter Stockel, both of 7530 Pforzheim, Germany, assignors to G. Rau, Pforzheim, Germany

Filed Dec. 3, 1973, Ser. No. 421,281

Claims priority, application Germany, Dec. 6, 1972, 2259636

Int. Cl. B23p *17/04*

U.S. Cl. 29—419 R **9 Claims**



1. A method for producing a composite shaped element formed of a homogeneous matrix substance having intimately embedded therein a plurality of reinforcing fibers of a material different from that of said matrix substance and of a material capable of structurally reinforcing said matrix substance, said method consisting essentially of:

rigidly and metallurgically connecting to each of a plurality of wires of a reinforcing material a sheath of said matrix substance;

arranging said plurality of thus sheathed wires in a bundle in contact with each other;

continuously advancing said bundle of sheathed wires in a longitudinal direction;

encasing the thus advancing bundle of sheathed wires in a jacket of jacketing material;

continuously applying a lubricant to the exterior surface of said thus advancing jacket while maintaining the interior surface of said jacket and the exterior surfaces of said sheathed wires free of said lubricant and in a metallic bright condition; and

subjecting said thus lubricated advancing bundle of sheathed wires to a plastic reduction working operation, and thereby reducing the cross-sectional area of said wires to form reinforcing fibers, while mechanically bonding said sheaths into a uniform homogeneous matrix, to thus form said shaped element of homogeneous matrix substance having embedded therein said fibers, and thereby reinforcing said matrix.

3,882,588

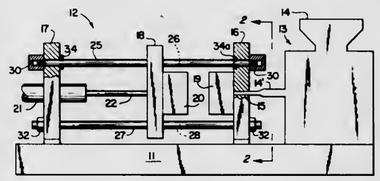
METHOD FOR HANDLING TIE RODS ON AN INJECTION MOLDING MACHINE

Patrick M. McFalls, Rockford, Ill.; David W. McCarty, and Robert B. Hare, both of Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed May 14, 1973, Ser. No. 359,691

Int. Cl. B23p *19/02*

U.S. Cl. 29—427 **13 Claims**



1. A method of moving a tie rod longitudinally along its axis in an injection molding apparatus of the type including a stationary platen and a movable platen carrying mating mold halves, a stationary cylinder base plate on the side of the movable platen opposite from the stationary platen, a plurality of tie rods extending between the stationary platen and the cylinder base plate with the movable platen movably mountd on said tie rods, coupling means fixedly connecting the tie rods against movement relative to the cylinder base plate and the stationary platen, and a power means for moving the movable platen along the tie rods towards and away from the stationary platen to close and open the mold halves, comprising the steps of: securing a releasable clamp onto a tie rod adjacent the movable platen, on the side thereof facing the cylinder base plate,

disconnecting the tie rod at the stationary platen so as to permit movement of the tie rod in a direction from the stationary platen towards the cylinder base plate,

and moving the movable platen longitudinally towards the cylinder base plate to move it against the clamp to thus move the clamp which in turn moves the tie rod longitudinally with it.

3,882,589

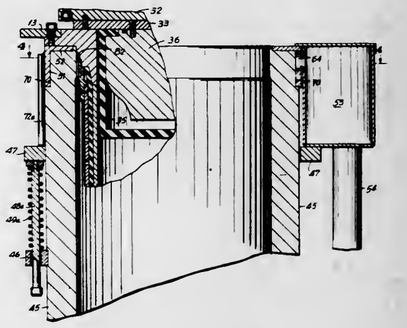
ISOSTATIC PRESS

Arnold G. Bowles, Warren, Pa., assignor to National Forge Company, Irvine, Pa.

Division of Ser. No. 288,703, Sept. 13, 1972, Pat. No. 3,832,103. This application June 28, 1974, Ser. No. 483,960

Int. Cl. B23p *19/00;* **B30b** *5/02, 11/02;* **B28b** *3/00*

U.S. Cl. 29—428 **2 Claims**



1. In an isostatic press including a mold with a mold plate, a pressure cylinder, a bearing plate and means for providing a seal between said mold and said pressure cylinder, the improvement in the method of sealing said pressure cylinder with respect to said mold which comprises the step of resiliently clamping said mold plate against said bearing plate before sealing said pressure cylinder with respect to said mold.

2. In an isostatic press including a mold with a mold plate, a pressure cylinder, a bearing plate and means for providing a seal between said mold and said pressure cylinder, the improvement in the method of sealing said pressure cylinder with respect to said mold which comprises:

a. lifting the mold plate upward and into engagement with said bearing plate;

b. pressing said mold plate against said bearing plate; and, then,

c. sealing said pressure cylinder with respect to said mold.

3,882,590

METHOD OF ASSEMBLING ENERGY ABSORBERS

Bernard Mazelsky, West Covina, Calif., assignor to ARA, Inc., West Covina, Calif.

Division of Ser. No. 311,299, Dec. 1, 1972, Pat. No. 3,851,374. This application Aug. 29, 1974, Ser. No. 501,837

Int. Cl. B23p *11/02*

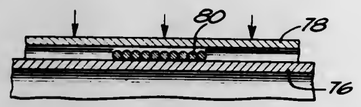
U.S. Cl. 29—447 **6 Claims**

1. A method of assembling energy absorbers of the type comprising cylindrical inner and outer telescoping members having circular energy absorbing means positioned in the

annular space between the members, comprising the steps of: positioning said circular energy absorbing means on said inner telescoping member;

expanding said outer telescoping member to have an inner diameter larger than the outer diameter of said circular energy absorbing means positioned on said inner telescoping member;

positioning said expanded outer telescoping member around said circular energy absorbing means on said inner telescoping member; and



shrinking said outer telescoping member onto said circular energy absorbing means.

3,882,591

METHOD OF CONSTRUCTING A LOW TEMPERATURE LIQUEFIED GAS TANK OF A MEMBRANE TYPE

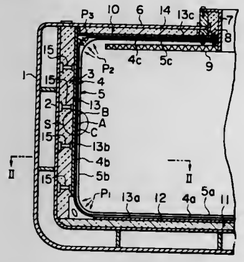
Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan

Filed Mar. 22, 1973, Ser. No. 343,703

Claims priority, application Japan, Mar. 27, 1972, 47-29807

Int. Cl. B21d *39/00*

U.S. Cl. 29—455 **10 Claims**



1. A method of constructing a low temperature liquefied gas tank of the membrane type, said tank comprising an other vessel of a rigid structure, a heat insulating layer provided at the inside of said outer vessel, flat side wall portions provided at the inside of said heat insulating layer and an inner membranous vessel provided further at the inside of said flat side wall portions, said inner membranous vessel being formed to have curved edge portions and at least one substantially flat seam at the flat side wall portions thereof, characterized by the steps of provisionally forming said inner membranous vessel in two parts to be connected with each other along said seam, said two parts being formed as oversized portions so that the adjacent edge portions of said two parts overlap with each other by an amount corresponding to the contraction of said inner membranous vessel at low temperature operating conditions, displacing the side wall portions of said two parts relative to each other along the surface thereof so as to eliminate the overlapping of said adjacent edge portions, said displacing being effected by provisionally shortening the radius of curvature of said curved edge portions, connecting said adjacent edge portions with each other to form said seam while keeping said side wall portions displaced, and filling up a space left between said outer vessel and said wall portions of said inner membranous vessel with a heat insulating material having compression resisting characteristics to form said heat insulating layer while still maintaining said side wall portions in a displaced state.

3,882,592

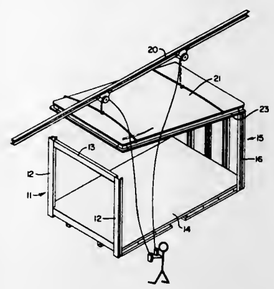
METHOD OF ASSEMBLYING A TRUCK BODY

Edward L. Mooney, and Kenneth L. Pritchard, both of Baltimore, Md., assignors to Pritchard-King, Inc., Baltimore, Md.

Filed Mar. 5, 1974, Ser. No. 448,197

Int. Cl. B23p *21/00*

U.S. Cl. 29—469 **8 Claims**



1. A method of assembling a truck body from prefabricated parts comprising the steps of

placing and attaching front wall and rear frame assemblies on an underframe assembly,

attaching a roof onto one and lowering the opposite end of the roof on the other of said front wall and rear frame assemblies,

attaching sidewall assemblies on opposite sides of said roof and mating the vertical edges of said sidewall assemblies with corner posts on said front wall and rear frame assemblies,

and attaching said sidewall assemblies to said underframe.

3,882,593

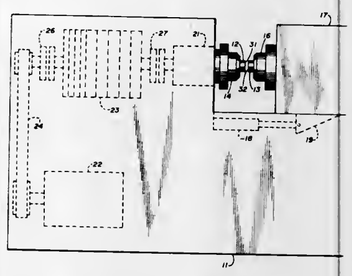
METHOD OF INERTIA WELDING

Stanley B. Lucas, Shreveport, La., assignor to E. Mickey Hubbard, Dallas, Tex. and Wilkinson, Woods, Carmody, Meadows & Hall, Shreveport, La., part interest to each

Filed Aug. 28, 1969, Ser. No. 853,840

Int. Cl. B23k *19/00*

U.S. Cl. 228—113 **8 Claims**



1. In a method of bonding two relatively rotatable workpieces, of the type wherein the workpieces are axially engaged at a common interface with sufficient force to permit friction bonding of the workpieces at their interface and wherein one of the workpieces is associated for rotation with a rotatable inertia mass and rotational energy is transferred from the rotatable mass to the one workpiece in sufficient quantity and at suitable rotational speed of the one workpiece relative to the other workpiece to effectively bond the axially engaged workpieces at their interface, the improvement comprising the sequence of applying the total axial load required to bond the

workpieces prior to initiating any relative rotation between the workpieces and then driving the workpieces in relative rotation totally by the rotatable inertia mass to produce the transfer of the rotational energy.

3,882,594

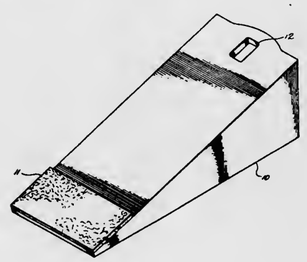
METHOD OF FORMING A HARD FACING ON THE BODY OF A TOOL

Hewy E. Jackson, Livingston, and Howard B. Myers, Humble, both of Tex., assignors to Servco Company, a division of Smith International, Inc., Long Beach, Calif.

Division of Ser. No. 227,777, Feb. 22, 1972, Pat. No. 3,790,353. This application June 21, 1973, Ser. No. 372,212

Int. Cl. B23l *31/02*

U.S. Cl. 228—122 **6 Claims**



1. A method for forming a hard facing on a less wear-resistant substrate comprising the steps of:

dispersing a plurality of particles of relatively higher density cemented metal carbide in a size range of from about 6 to 30 U.S. Sieve throughout a relatively lower density metal matrix, said particles having a sufficiently non-uniform size distribution to be present in a proportion in the range of from about 70 to 85% by volume;

freezing the metal matrix having particles of cemented carbide dispersed therein in a relatively thin large area pad having an upper surface and a lower surface;

placing the pad on a substrate with the as-frozen upper surface adjacent the substrate; and

melting the matrix metal for bonding to the substrate.

3,882,595

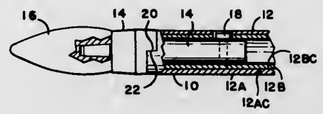
METHOD OF PRODUCING SEAMLESS TUBING

Bertrand M. Reiley, Canfield; Edwin J. Muccillo, Youngstown, and Robert G. Griffith, Poland, all of Ohio, assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Apr. 20, 1973, Ser. No. 352,928

Int. Cl. B23k *19/00*; B21d *39/04*; B21b *19/04*

U.S. Cl. 228—158 **3 Claims**



1. The method of producing seamless tubing, comprising:

a. inserting a first tube inside a second tube to form a combination;

b. heating said combination to hot working temperature;

c. stretch reducing said combination to a degree sufficient to form a laminated mandrel;

d. adding a piercer point to said laminated mandrel to form a piercer mandrel assembly;

e. rolling a billet of metal between the piercer rolls of a piercer rolling mill and causing said metal to flow about and around said piercer point supported by said mandrel and thereby form a seamless tube.

3,882,596

METHOD OF FLUX-FREE SOLDERING OF ALUMINUM-ONTAINING WORKPIECES IN A CONTROLLED ATMOSPHERE

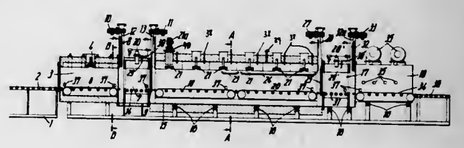
Keinz Kendziora, Bonn; Johannes Nenner, Bornheim-Merten; Heinz Schoer, Alfter, and Werner Schultze, Bonn, all of Germany, assignors to Vereinigte Aluminium-Werke AG, Bonn, Germany

Division of Ser. No. 411,383, Oct. 31, 1973. This application Sept. 5, 1974, Ser. No. 503,242

Claims priority, application Germany, Nov. 9, 1972, 2254769

Int. Cl. B23k *31/02*

U.S. Cl. 228—200 **9 Claims**



1. In a method of flux-free soldering of aluminum-containing workpieces in a controlled atmosphere, the steps of admitting the workpieces to be soldered into a preheating chamber; preheating said workpieces to at most 500°C in said preheating chamber; admitting the thus preheated workpieces into a lock chamber containing a protective gas; admitting said workpieces from said lock chamber into a gas-tight muffle containing a controlled atmosphere, and effecting soldering in said controlled atmosphere; and discharging the soldered workpiece from said muffle through an additional lock chamber containing a protective gas, into a cooling zone or chamber.

3,882,597

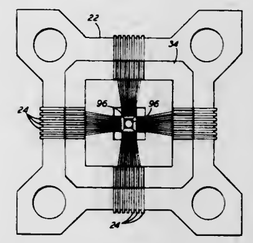
METHOD FOR MAKING A TEST PROBE FOR SEMICONDUCTOR DEVICES

George A. Chayka, Northampton; Eric J. Persson, Bethlehem, and Norbert M. Ziobro, Dupont, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 209,243, Dec. 17, 1971, Pat. No. 3,810,016. This application Jan. 31, 1974, Ser. No. 438,319

Int. Cl. H05k *3/00*

U.S. Cl. 29—624 **15 Claims**



5. A method of producing a test probe having a plurality of cantilevered contact elements supported on an insulator in a desired array with the ends of the elements adapted to contact individual leads of an article to be tested, comprising the steps of:

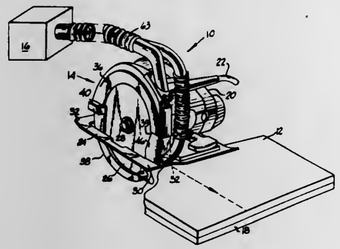
selectively removing portions of a planar conductive member to produce the contact elements, a frame portion and an expandable portion connecting the contact elements with the frame portion; and

shaping the contact elements into a non-planar configuration while holding the frame portion, said shaping being facilitated by an increase in length of the expandable portion.

3,882,598
DUST CONTROL CUTTING ASSEMBLY FOR CUTTING SHEET MATERIAL

Paul Lewis Earle, Denver; Timothy Howard Seeber, Evergreen, and Milton French Trosper, Jr., Thornton, all of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed June 17, 1974, Ser. No. 479,956
Int. Cl. B27b *9/00*; **B27g** *19/04*
U.S. Cl. 30—390 **11 Claims**



1. A circular saw including a horizontally extending flat base having a front end and a back end, a circular saw blade, means for supporting said blade partially above and partially below said base in a predetermined vertical plane, means for rotating said blade in a direction which causes the outer edge of said blade to rotate up at the front end of said base and down at the back end of said base, a top blade guard fixedly located relative to and around a top outer edge portion of said blade and having a front end vertically spaced above the front end of said base, and a bottom blade guard located around a bottom outer edge portion of said blade and movable towards and around the back end of said base, the improvement comprising:

a. a shroud having a substantially U-shaped cross section and being positioned around an outer edge portion of said blade between said front end of said top blade guard and the front end of said base, said shroud having one end substantially vacuum seal connected with said front end of said top blade guard, an opposite end substantially vacuum seal connected with the front end of said base and an opening extending through said shroud; and

b. a main suction conveyance tube having one open end adapted for connection with suction producing means and the other open end vacuum seal conected with said shroud around said opening through said shroud, said other open end defining a suction tube opening located approximately in the plane of and in front of said saw blade adjacent said base and said blade.

3,882,599
PRUNING SHEARS

Raymond W. Plum, 1935 John St., Selma, Calif. 93662

Filed Dec. 19, 1973, Ser. No. 426,204
Int. Cl. B26b *13/28*
U.S. Cl. 30—270 **6 Claims**

1. Improved pruning shears comprising:

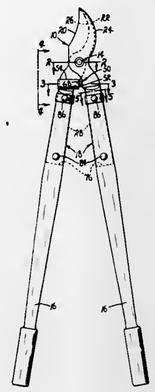
a hook blade having a pivot bore intermediate a cutting end and a handle end;

a shear blade having a pivot bore intermediate a cutting end and a handle end;

a pivot stud affixed to a first of said blades and disposed to extend through the pivot bores of each of said blades when said blades are positioned with their adjacent surfaces face to face, ensuring relationship with their pivot holes aligned;

a counterbore in said pivot bore of the other of said blades having a convex frustroconical bearing surface disposed with its smaller diameter toward said adjacent surface of said blade;

a washer having a peripheral frustroconical bearing surface mated to said frustroconical counterbore surface and an axial thickness substantially greater than the axial depth of said counterbore;



means connecting said washer to said pivot stud, said means including a center bore in said washer disposed to pass said pivot stud therethrough and having a bearing surface, a bearing surface on the periphery of said pivot stud where said pivot stud passes through said washer's center bore whereby said washer is free to move rotatably with respect to said pivot stud, and securing means interconnected with said stud adjacent said washer and disposed to hold said washer in said counterbore; and

a pair of handles each connected to the handle end of one of said blades.

3,882,600
COMPOSITION IN METHOD FOR TREATING TEETH

Richard W. Plymale, 1480 Griffin Rd., Davison, Mich. 48423

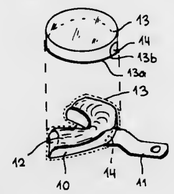
Filed Apr. 1, 1971, Ser. No. 130,438
Int. Cl. A61k *5/00*
U.S. Cl. 32—15 **16 Claims**

1. A method for treating teeth or bone tissue including the step of bonding thereto a bone or dental filling composition including at least a small but effective amount of an unsaturated aliphatic addition-polymerizable organic phosphoryl monofluoride thereby to increase the bond strength of said composition to said tissue, the organic radical of said phosphoryl monofluoride containing only oxygen, hydrogen and carbon atoms.

3,882,601
INTERSTICE DEVICE FOR DENTURE DOUBLE IMPRESSIONS

Ulrich W. K. Jahn, Wehrda, Germany, assignor to Firma A. Kettenbach

Filed July 30, 1973, Ser. No. 384,100
Claims priority, application Germany, Mar. 6, 1973, 7308438
Int. Cl. A61c *9/00*
U.S. Cl. 32—17 **8 Claims**

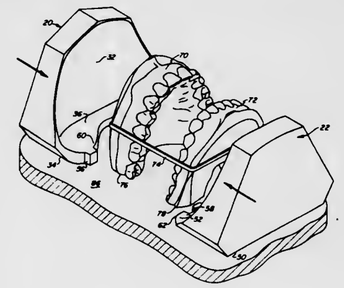


1. A method of taking dental double impressions comprising the steps of filling a dental impression tray with a primary impression material and forming said primary impression material as a mass defining an impression surface against which teeth may be pressed, covering said primary impression material by placing over said impression surface a laminar sheet of resilient strip material, forming primary dental impressions in said primary impression material by pressing teeth against said resilient strip material so that impressions are formed thereby in said primary impression material, removing said sheet material from said primary impression material, recovering said primary impression material by placing secondary impression material thereover, and forming secondary dental impressions by pressing teeth against said secondary impression material.

3,882,602
APPARATUS AND METHOD FOR MOUNTING DENTAL CASTS

Julio R. Polanco, 1 E. Harriet Ave., Palisades Park, N.J. 07650

Filed Nov. 13, 1973, Ser. No. 415,422
Int. Cl. A22c *7/00*
U.S. Cl. 32—32 **13 Claims**



1. Apparatus for use in mounting complementary maxillary and mandibular dental casts in desired occluded arrangement, said dental casts each having a planar posterior locating surface, said apparatus comprising:

a pair of shell-like bases, each having a bottom, side walls, an anterior wall and a posterior wall, all integral with the bottom and extending therefrom to establish a cavity, said posterior wall having an external planar surface, an opposite internal locator surface and a peripheral edge surface between said external and internal surfaces; and

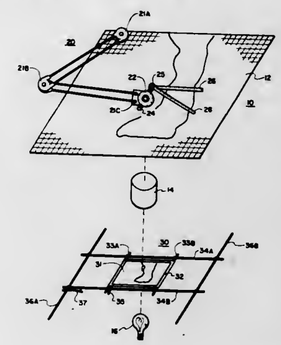
complementary interengagable means in the peripheral edge surface of each base, each said complementary means extending in a direction generally parallel to the external planar surface of each base such that upon location of each said planar surface in a common plane and interengagement of said complementary means, the pair of bases will be in a prescribed relative alignment and location;

each said internal locator surface being planar and parallel to the external planar surface of the posterior wall of the corresponding base such that the dental casts will be in said desired occluded arrangement when the bases are in said prescribed relative alignment and location.

3,882,603
SELF-CONTAINED NAVIGATION DEVICE

Maurice Distel, 38 Wyckham Rd., New Shrewsbury, N.J. 07724

Filed Aug. 2, 1974, Ser. No. 494,023
Int. Cl. G03b *21/00*; **B43l** *13/02*
U.S. Cl. 33—79 A **9 Claims**



1. A navigation device for use with a microfilm reader having a rear projection screen, said microfilm reader having movable means for mounting and projecting a portion of a mcirofilmed map on said rear projection screen; said navigation device comprising a parallel-linkage mechanism having one end rigid and an other end free to move with respect to said rear projection screen; a combination of special plotting arms including at least an offset arm, a primary course bearing arm, and a secondary course bearing arm; means for slidably and rotatably securing the center portion of said offset arm to said other end of said parallel-linkage mechanism; means for rotatably securing one end of said primary course bearing arm to one end of said offset arm; means for rotatably securing one end of said secondary course bearing arm to said one end of said offset arm.

3,882,604
SPLINE MEASURING UNIT

Bruce A. Macklyn, Detroit, Mich., assignor to Zero Gage Company, Detroit, Mich.

Filed Mar. 7, 1973, Ser. No. 338,958
Int. Cl. G01b *5/12*
U.S. Cl. 33—147 K **5 Claims**

1. A spline or broach diameter measuring unit adapted for insertion in the socket of a conventional dial indicator gauge holder containing a dial indicator with a reciprocable operating plunger and a reciprocable rearward motion-transmitting member operatively engageable with said plunger, said unit comprising

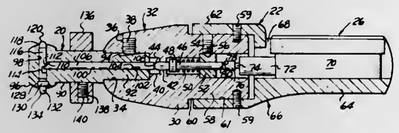
a hollow stem having a rearward portion configured to fit said socket and having a longitudinal bore therein,

a laterally-enlarged head structure on the forward end of said stem having a transverse bore therein communicating with said longitudinal bore,

a fixed measuring member stationarily mounted on said head coaxial with said transverse bore,

a movable measuring member slidably mounted in said transverse bore for motion toward and away from said fixed measuring member,

a forward motion-transmitting device slidably mounted in said longitudinal bore and adapted to operatively engage the rearward motion-transmitting member of the dial indicator gauge holder,



and motion-converting mechanism operatively connecting said movable measuring member to said forward motion-transmitting device and adapted to convert transverse motion of said movable measuring member into longitudinal motion of said forward motion-transmitting device,

said transverse measuring members having substantially hemispherical tips adapted to engage the inclined side surfaces of the spline grooves,

said measuring members having body portions disposed within said head structure and having tapered clearance portions cut away to avoid contact thereof with the spline and connecting said body portions to said substantially hemispherical tips.

3,882,605

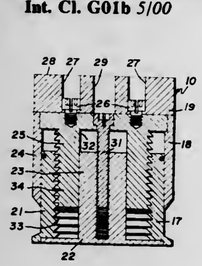
MACHINING GAUGE

George V. Lindgren, 139 Highland St., Townsend, Mass. 01469

Continuation of Ser. No. 183,165, Sept. 23, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,431

Int. Cl. G01b *5/00*

U.S. Cl. 33—170 **6 Claims**



1. A machinging gauge for setting a grinder comprising:

a. a base adapted to rest on a machine table, the base being formed of magnetizable material,

b. an upper member including an inner member adjustably engaged with the base for adjusting the total length of the base and upper member,

c. a replaceable block mounted on the upper member and having a broad, substantially uninterrupted surface to which a marking compound can be applied for the setting of the grinder,

d. means for fixing the block to the upper member said means extending upwardly from the member into the block but terminating a substantial distance from the upper surface,

e. a locking means independent of the adjusting means serving to secure the base and upper member against relative movement, and

f. a central post extending from the base and slidably engaged with a bore formed in the inner member, the locking means extending from the upper member into the upper end of the post.

3,882,606

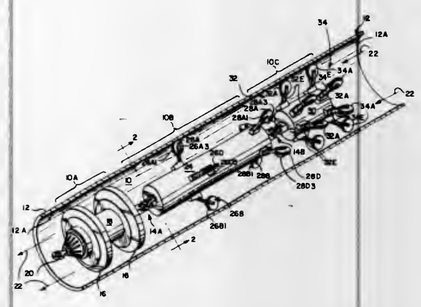
METHOD AND APPARATUS FOR MEASURING CURVATURE AND CURVATURE VARIATIONS IN PIPELINES AND THE LIKE

Reginald A. Kaenel, Weston, Conn., and Alfred E. Crouch, Friendswood, Tex., assignors to AMF Incorporated, White Plains, N.Y.

Filed May 16, 1973, Ser. No. 360,899

Int. Cl. G01b *7/28*

U.S. Cl. 33—174 L **78 Claims**



62. Transducer means for generating and retaining data representative of the curvature of a pipe section on a given cross-sectional diameter thereof comprising:

first and second distance sensing means positioned at the inner wall of said pipe section at opposite ends of said given diameter;

means for moving said distance sensing means through said pipe section to cause said distance sensing means to traverse said inner wall in a plane defined by said given diameter and the longitudinal axis of said pipe section;

encoder means for generating data representative of the distance travelled by each said distance sensing means along a predetermined finite length of said pipe section; and

recording means for receiving and retaining said data for subsequent calculation.

3,882,607

MOBILE TRACK SURVEY APPARATUS

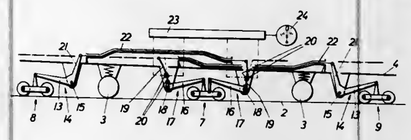
Erna Plasser; Josef Theurer, both of Johannesgasse 3, Vienna, Austria (A-101d), and Franz Egleseer, Kleinreith Nr. 32, Vienna, Austria (A-4694)

Filed July 23, 1973, Ser. No. 381,499

Claims priority, application Austria, Aug. 3, 1972, 6693/72

Int. Cl. B61k *9/00*

U.S. Cl. 33—174 R **7 Claims**



1. In mobile apparatus for surveying the vertical position or warpage of the rails of a track whereon the apparatus is adapted to run, comprising a frame, undercarriages supporting the frame for movement on the track, three rail sensing means for each of the rails, the rail sensing means being spaced apart in the direction of track elongation and being vertically movably mounted on, and in respect of, the frame for surveying the rails, transducer means for converting any relative movement of the rail sensing means in respect of each other into an electrical error signal proportional to the relative movement, and recording means connected to the transducer means for indicating the error signals, the improvement of

1. the transducer means consisting of two transducers,

2. means operatively connecting the two transducers to one of the rail sensing means for movement therewith,

3. two connecting elements each having a first end connected to a respective one of the transducer connecting means and a second end connected to a respective one of the two rail sensing means other than said one rail sensing means,

a. the connecting elements operatively connecting each of the transducers to the respective other rail sensing means for movement therewith, and

4. two motion transmitting elements mounted on the frame and extending oppositely in the direction of track elongation,

a. connected at one end to a respective transducer connecting means and connected at the other end to said rail sensing means.

3,882,608

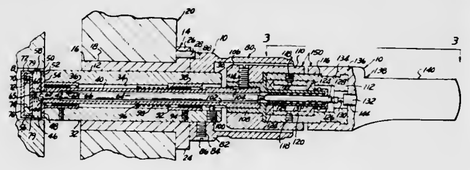
DIFFERENTIAL-PROBE HOLE-LOCATION OR CONCENTRICITY GAUGE

Bruce A. Macklyn, Detroit, Mich., assignor to Zero Gage Company, Detroit, Mich.

Filed Jan. 16, 1974, Ser. No. 433,718

Int. Cl. G01b *5/25*

U.S. Cl. 33—174 Q **10 Claims**



1. A differential-probe hole-location gauge adapted to be rotatably mounted in a reference bore of a master fixture to activate the plunger of a conventional dial indicator for measuring the location or concentricity of a workpiece bore relatively to said reference bore, said gauge comprising

an elongated probe-supporting structure having means engageable with the reference bore for aligning said structure therewith and having a longitudinal bore therethrough and having a forward portion containing a probe bore disposed transversely to said longitudinal bore and communicating therewith,

first and second workkpiece bore probes slidably mounted in said probe bore for transverse differential motion therein relatively to one another,

first and second motion-transmitting members reciprocably mounted in said longitudinal bore with forward portions extending into said transverse bore,

a first tranverse-to-longitudinal motion-converting device disposed between said first probe and said forward portion of said first motion-transmitting member,

a second transverse-to-longitudinal motion-converting device disposed between said second probe and said forward portion of said second motion-transmitting member,

a dial indicator holder and a coupling structure connected to one another and also connected to one of said motion-transmitting members for travel unitarily therewith,

and means adapted to operatively connect the other of said motion-transmitting members to the plunger of the dial indicator to indicate relative displacement between said first and second motion-transmitting members.

3,882,609

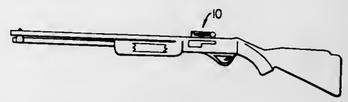
TELESCOPIC SIGHT MOUNTING MEANS

James D. Troutman, Rt. No. 2, Keyser, W. Va. 26726

Filed July 23, 1973, Ser. No. 381,591

Int. Cl. F41g *1/38*

U.S. Cl. 33—260 **3 Claims**



1. A mounting for telescopic sights for use with a firearm comprising an elongated base member having top and bottom surfaces, a channel extending longitudinally in the bottom surface thereof adapted to receive a conventional mounting block of a firearm, a first pair of ears extending vertically from the top surface of said base member at its one end, a second pair of ears extending vertically from the top surface of said base member at its other end, a support member adapted to receive a telescopic sight, said support being pivotally mounted on a pin extending between said first pair of ears, a pair of vertical tabs extending from the upper surface of said base member, rotatable cam means journaled on a pin extending between said vertical tabs, said rotatable cam means comprising a hub, means to rotate said hub, a plurality of cams mounted on said hub and being spaced circumferentially about the surface of the hub, each cam being adjustable to project from said hub a variable distance to engage and to pivot the support member relative to the base member, and a screw extending between said second pair of ears for drawing said ears toward each other to grip the support member when positioned therebetween.

3,882,610

FREEZE-DRYING PROCESS AND APPARATUS

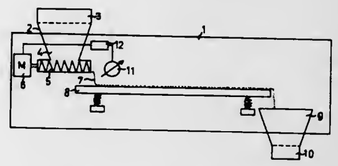
Jean-Pierre Bouldoires, La Tour-De-Peilz, and Jacques Bally, Savigny, both of Switzerland, assignors to Societe d'Assistance Technique Pour Produits, Nestle S.A., Lausanne, Switzerland

Filed Jan. 28, 1974, Ser. No. 436,959

Claims priority, application Switzerland, Feb. 5, 1973, 1591/73

Int. Cl. F26b *5/06*

U.S. Cl. 34—5 **7 Claims**



1. In a freeze-drying process, comprising continuously feeding frozen product into a freeze-drying chamber and withdrawing dried product therefrom, the improvement which comprises measuring the pressure within the chamber at at least one point therein, and continuously adjusting the rate of feed of frozen product into the chamber to maintain the measured pressure substantially constant.

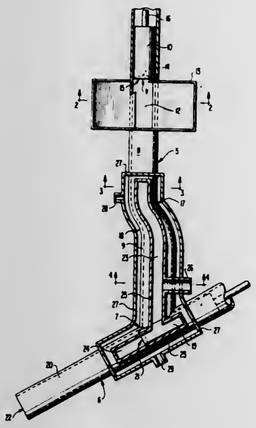
4. A freeze-drying apparatus, comprising means for continuously feeding frozen product into a drying chamber, and means for measuring the pressure at at least one point within the chamber, there further being means for controlling the feed rate of the feeding means as a function of the pressure,

the controlling means being electrically connected between the pressure measuring means and the feeding means.

3,882,611
DRYER FOR FORAGE AND LIKE MATERIALS AND METHOD

Roy Donald Eykamp, Medway, Quirindi, New South Wales, Australia (2343)

Filed Jan. 3, 1974, Ser. No. 430,551
Claims priority, application Australia, Jan. 5, 1973, 1816/73
Int. Cl. F26b *5/04*
U.S. Cl. 34—15 **10 Claims**



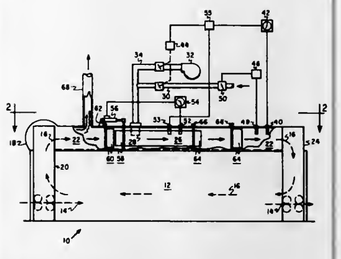
1. A method of drying forage comprising the steps of:
depositing forage to be dried into a first conduit,
compressing the forage in the first conduit to form a compacted mass of forage in substantial fluid-tight sealing relation about the first conduit,
advancing the compacted mass along the first conduit into a vacuum chamber,
diffusing the compacted mass in the vacuum chamber,
introducing a sub-atmospheric pressure in the vacuum chamber,
advancing the diffused mass along the vacuum chamber,
repeatedly removing portions of the diffused mass from the leading end thereof as the diffused mass advances through the vacuum chamber,
delivering the removed portions of the diffused mass to a second conduit in communication with the first conduit through the vacuum chamber,
compressing the removed mass portions in the second conduit to form a second compacted mass of forage in substantial fluid-tight sealing relation about the second conduit whereby the vacuum chamber is substantially sealed by the fluid-tight substantial sealing engagement of the first and second compacted masses in their respective first and second conduits, and
advancing the second compacted mass along the second conduit to a discharge remote from the vacuum chamber.

4. Forage drying apparatus comprising:
a first tubular conduit including an upstream compacting tube and a down stream vacuum chamber, the lateral cross-sectional area of said vacuum chamber being greater than the cross-sectional area of said compacting tube,
a second tubular conduit coupled to said first conduit and in communication with the downstream end of said vacuum chamber,
said second conduit having a discharge,
means for feeding forage to be dried into said compacting tube,
means carried by said first conduit for compacting forage in said compacting tube thereby to seal said first conduit with the compacted forage and for advancing the compacted forage into and through said vacuum chamber,
means carried by said second conduit for recompacting the forage received therein from the vacuum chamber thereby to seal said second conduit with the recompacted forage and for advancing such forage toward said discharge, and
means for establishing and maintaining a sub-atmospheric pressure in said vacuum chamber between the seals formed in the first and second conduits.

3,882,612
METHOD AND APPARATUS FOR LIMITING THE CONCENTRATION OF COMBUSTIBLE VOLATILES IN DRYER EMISSIONS

Robert W. Try, Tigard, and David W. Campbell, Tualatin, both of Oreg., assignors to Moore Dry Kiln Company of Oregon, Portland, Oreg.

Filed July 27, 1973, Ser. No. 383,401
Int. Cl. F26b *3/02*
U.S. Cl. 34—27 **17 Claims**

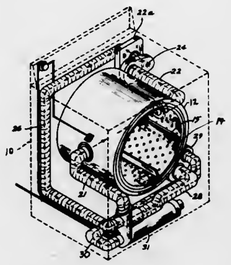


1. A dryer for drying materials containing combustible volatiles by the recirculation of heated drying gases through a chamber containing said materials, said dryer having a system for both heating said drying gases to a predetermined operating temperature range suitable for drying said materials and simultaneously incinerating a portion of said combustible volatiles drawn from said materials during drying so as to limit the concentration of said volatiles in the stack gases emitted from said dryer, said dryer comprising:
a. heater duct means for accepting a portion, less than all, of said drying gases from said drying chamber after said gases have been passed over said materials, said heater duct including means for heating said portion of said gases at least to a predetermined minimum required combustion temperature of said volatiles, said combustion temperature being substantially greater than said predetermined operating temperature range, and further including means for supplying at least the majority of the heat requirement of all of said drying gases;
b. bypass duct means for accepting a separate portion of said drying gases from said drying chamber;
c. means for intermixing said respective portions of said drying gases emitted from said respective duct means and for conducting the resultant mixture of said drying gases through said drying chamber for passage over said materials;
d. means automatically responsive to the temperature of said resultant mixture of drying gases for modulating the heat output from said heating means so as to maintain the temperature of said resultant mixture within said predetermined operating temperature range; and
e. variable gas flow modulating means automatically responsive to the temperature of said gases within said heater duct means for decreasing the volumetric flow rate of said portion of said gases passing through said heater duct means whenever the temperature of said gases within said heater duct means falls below said predetermined minimum required combustion temperature of said volatiles.

3,882,613
CLOTHES DRYER

Joseph M. Wilson, 133 Cornwall St., Salinas, Calif. 93901

Filed May 20, 1974, Ser. No. 471,503
Int. Cl. F23b *19/00*
U.S. Cl. 34—48 **4 Claims**

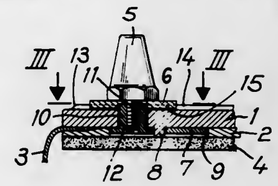


1. A clothes dryer having a drying system that includes, in combination,
a. a heat generating chamber having heat generating means therein;
b. a clothes tumbling and drying chamber;
c. a first conduit running from the heat generating chamber to the tumbling and drying chamber and communicating exclusively with said chamber so that essentially all gaseous drying medium introduced through the heat generating chamber is required to pass to and through the tumbling and drying chamber;
d. a second conduit means connected to conduct the gaseous drying medium from the tumbling and drying chamber to a reheating chamber which surrounds the heat generating chamber in intimate heat exchanging relation therewith;
e. a third conduit means connected to deliver the drying medium from the reheating chamber to a neutral chamber having discharge openings, one from which it may be discharged to the atmosphere, and the other connected to said heat generating chamber so that part of said drying medium may be returned for recirculation through the heat generating chamber;
f. drying medium impelling means in certain of said conduits for causing the drying medium to progress as described;
g. thermostatic switch means associated with the tumbling and drying chamber and responsive to the temperature thereof; and
h. means responsive to said thermostatic switch means for activating the heat generating means and causing drying medium to be freshly introduced from the heat generating chamber for transmittal in its entirety to and through the tumbling and drying chamber so long as the temperature in the tumbling and drying chamber has not attained a predetermined maximum value, but effective upon the attainment of such maximum value to cut off the furnishing of fresh drying medium through the heat generating chamber and to suspend the generation of heat in said chamber, with the consequence that drying medium already in the system at such cut-off is caused to recirculate through said chambers, including particularly the heat generating chamber, until the temperature in the tumbling and drying chamber has fallen to a predetermined minimum, at which point the thermostatic means reinstitutes the generation of heat in the heat generating chamber and the delivery of fresh drying medium therefrom.

3,882,614
STUDDED OR SPIKED SPORTS SHOES

Pierre Albaladejo, Bois de Boulogne, 40100 Dax, France

Filed Apr. 9, 1973, Ser. No. 348,991
Claims priority, application France, Apr. 24, 1972, 72.14525
Int. Cl. A43c *15/00*
U.S. Cl. 36—67 D **10 Claims**

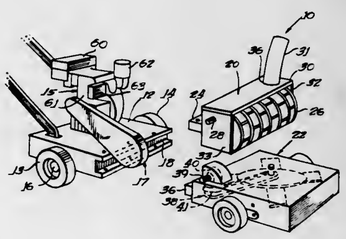


1. A sports shoe including a sole having a plurality of projections mounted thereon; and means in said sole for mounting at least one of said projections on the sole separately and independently of the remainder of said projections, said mounting means including means for adjusting the longitudinal position of said at least one projection independently with respect to the remainder of the projections; and means cooperating with said one projection for locking said projection in its adjusted position against movement during use of the shoe by the wearer.

3,882,615
COMBINED SNOW-MOWER

Larry W. Williams, 4507 S. Woodward, Downers Grove, Ill. 60515

Filed June 12, 1973, Ser. No. 369,288
Int. Cl. E01h *5/09*
U.S. Cl. 37—43 L **3 Claims**



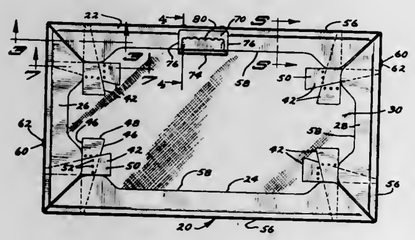
1. An apparatus comprising in combination:
a wheeled power housing including a pair of spaced apart wheel means supported at the ends of axle shaft members secured to and extending from said wheeled power housing, an engine mounted to the upper portion of said housing, said engine having a drive shaft extending horizontally therefrom, a drive coupling member extending from the engine, said drive coupling member including a shielded passage, a power train means connected between the drive shaft of said engine and an output end of said drive coupling member, said output end including a splined gear, a channel formed in said wheeled power housing and positioned within the said housing so as to be in accessible registry with said drive coupling member; and
an adapter unit to be secured to said wheeled power housing by means secured to said channel formed in said wheeled power housing, and driven therefrom by coupling with

said drive coupling member, said adapter unit including an elongated channel engaging strip means which extends from side to side of the adapter unit an extent corresponding substantially to the spacing between said wheel means, a working member associated with said adapter unit including a splined shaft arranged for engagement with a splined gear at the output end of said drive coupling member when said adapter unit is inserted into said channel formed in said wheeled power housing thereby drivingly connecting said adapter unit to said wheeled power housing.

3,882,616
STRETCHER FRAME FOR ARTIST'S CANVAS

Eugene J. Starzyk, 3901 Polk St. N.E., Minneapolis, Minn. 55421

Filed July 31, 1974, Ser. No. 493,241
Int. Cl. D06c *3/08*
U.S. Cl. 38—102.1 **8 Claims**



1. In combination with an artist's canvas, a stretcher frame for stretching said canvas, said frame having four elongated stretchers, two each being the same length, and each having a tongue and a groove at each end of configuration to fit together tongue and groove with said adjacent stretchers to form a flat, rectangular structure adapted to receive said canvas, each of said grooves when assembled with one of said tongues continuing past said tongue to provide an inwardly diverging, wedge-receiving slot bounded by the end of said tongue, two flat parallel groove-defining walls and a camming surface, said walls and surface being constituted as part of said stretcher, said slot being open to an inside edge of said stretcher, said slot being open to an inside edge of said stretcher, means for fastening said canvas to outside edges of each of said stretchers, and in combination with substantially flat wedges of configuration to fit into said slots and having edges of configuration to tend to move said tongues away from said camming surfaces as said wedges are forced farther into said slots; the improvements including:

A. constituting each of the stretchers and each of the wedges of suitable plastic material;

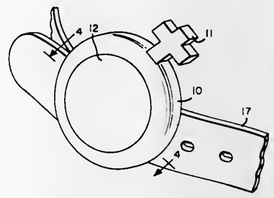
B. at least one substantially flat surface of each of said wedges being provided with a plurality of spaced-apart, upstanding bumps thereon, the overall thickness of said bumps and of each of said wedges being sufficiently greater than the transverse dimension between the two groove-defining walls of its associated slot so that the wedge will be retained in place by said walls as it is and after it has been forced into said slot to achieve the tensioning of said canvas; and

C. the dimensioning of the wedges and bumps and of the groove-defining walls of the slots and the physical properties of the plastic of the stretchers and of the plastic of the wedges being such that the slot walls and bumps will deform when said wedges are forced into said slots and will completely regain their original shape and dimensions shortly after said wedges are removed from said slots.

3,882,617
BELT BUCKLE

Joseph L. Gagner, P.O. Box 1406, 110 N. Santa Cruz Ave., Los Gatos, Calif. 95030

Filed Mar. 25, 1974, Ser. No. 454,688
Int. Cl. G09f *3/14*
U.S. Cl. 40—21 C **4 Claims**

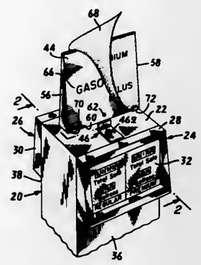


1. A belt buckle having an adjustable member with an indicator attached thereto, the combination comprising a base member having means on its backside for gripping a belt, said base member having a cavity in the center thereof extending away from said belt, said cavity being surrounded by wall structure of predetermined external geometric shape, an adjustable member positioned on the outside of said base member, said adjustable member having a recess facing said base member, said recess being of said predetermined geometric shape for receiving said wall structure, a front member having a stud attached thereto, a portion of said stud extending into said cavity, means attached to said stud for engaging said adjustable member so that the recess of said adjustable member is dislodged from said wall structure when pressure is applied to said stud and said adjustable member is free to rotate to position the indicator thereof in any one of a plurality of predetermined positions.

3,882,618
ADVERTISING AND DISPLAY DEVICE

William S. Hart, 22 Suttonwood Dr., Commack, N.Y. 11725

Filed Sept. 17, 1973, Ser. No. 397,825
Int. Cl. G09f *07/00*
U.S. Cl. 40—125 H **5 Claims**



1. Apparatus for supporting an advertising or display sign or the like atop a gasoline pump having a substantially flat top surface and a pair of oppositely disposed vertical side surfaces, each of said side surfaces including a window assembly releasably secured thereto, said window assembly having a window portion retained within a frame, the frame adapted to bear against the pump side surface and maintain the window portion spaced therefrom when said window assembly is secured in place on said pump, said supporting apparatus comprising, mounting means for retaining said display device in an upright position when said supporting apparatus is positioned on the pump,

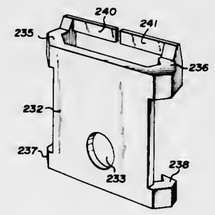
a pair of rigid elongated members extending from opposite sides of said mounting means, said members adapted to rest on the top surface of said pump and maintain said mounting means in position to retain said display device in its upright position,

and leg means at the free ends of each of said elongated members extending downwardly from said top surface when said members rest on said top surface, said leg means being shaped and dimensioned to be firmly retained between said pump and the frames of said window assemblies when said window assemblies are attached to their respective side surfaces, whereby said supporting apparatus is locked against movement relative to said pump.

3,882,619
SAMPLE TUBE DEVICE

Pierre Durand, Fresnes, and Gerard Lartigue, Fontenay-aux-Roses, both of France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 263,537, June 16, 1972, abandoned. This application June 20, 1974, Ser. No. 481,264
Claims priority, application France, June 24, 1971, 71.23072
Int. Cl. G09f *3/20*
U.S. Cl. 40—310 **4 Claims**



1. Apparatus for use in machine automated analysis of samples such as blood and with which there is associated an information-carrying member and a tube containing the sample to be analyzed, comprising

a main body defining a receptacle for a tube containing the sample to be analyzed,

a panel unitarily provided on said body, said panel having a plane surface and projecting longitudinal edges of predetermined shape,

a clip member detachably securable to said panel and including a plate portion having cooperating shape with said panel for enabling an information-carrying member to be kept between said plane surface of said panel and said plate,

a plurality of resilient grasping lugs provided on the periphery of said plate portion, said grasping lugs being adapted to engage with said longitudinal edges, and

a pair of resilient tongues extending from the uppermost pair of grasping lugs substantially parallel to the plane defined by said plate portion, said resilient tongues being arranged to bear upon the said tube when housed in said receptacle.

3,882,620
APPARATUS AND METHOD FOR PRESENTATION OF READING MATERIALS

Paul D. Grindle, 2225 Mass. Ave., Cambridge, Mass. 02140

Filed May 2, 1973, Ser. No. 356,412
Int. Cl. G09f *11/28*
U.S. Cl. 40—343 **5 Claims**

1. An apparatus for presenting reading material in the form of a plurality of pages to be read by direct viewing under ambient light, comprising:

a. a single sheet having all the pages of said material to be read printed thereon in a predetermined order;

b. index marks disposed on said sheet for indicating the position of each of said pages;

c. enclosure means for enclosing said single sheet, said enclosure means defining an aperture large enough for a portion of said sheet corresponding to at least one page of said reading material to be displayed for reading;

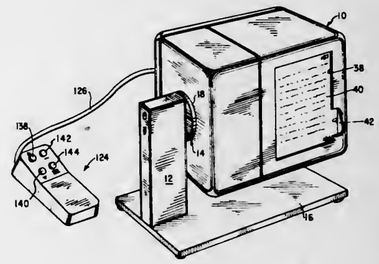
d. feed spool means for supporting said single sheet in roll form within said enclosure;

e. means for guiding said sheet along a path extending from said feed spool means, said path lying subadjacent said aperture;

f. take-up spool means for taking up said sheet from the guide means and unwinding said sheet from said support means by advancing said sheet along said path past said aperture whereby successive pages of said reading material are displayed through said aperture in said predetermined order;

g. motor means having a source of power;

h. transmission means having first and second modes for coupling said motor alternately to either said feed spool means or said take-up spool means, respectively, said transmission means comprising:



I. a first gear mounted for rotation with said feed spool;

II. a second gear mounted for rotation with said take-up spool;

III. plate means pivotally mounted in said enclosure;

IV. gear means mounted on said plate means for coupling power from said motor to either said first gear in said first mode when said plate is in a first position or said second gear in said second mode when said plate is in a second position;

V. a spring for urging said plate into one of said positions; and

VI. a solenoid for urging the plate into the other position in response to said control means;

i. remote switch means adapted to be actuated into a plurality of switch configurations by a handicapped person from a location which is remote from said enclosure means;

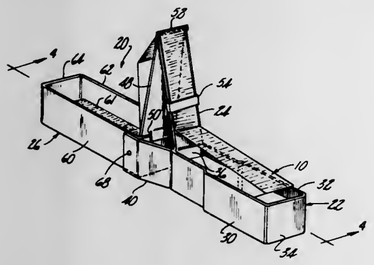
j. means for detecting said index marks; and

k. control means responsive to said remote switch means and said means for detecting said index marks on each of said pages for controlling said motor means and said transmission means in response to said remote switch means to cause the selective unwinding and winding of said sheet and the successive display of each of said pages.

3,882,621
DISPLAY DEVICE

Clement Farber, 16300 W. Nine Mile Rd., Apt. 710, Southfield, Mich. 48075

Filed Sept. 10, 1973, Ser. No. 395,852
Int. Cl. B41j 11/58
U.S. Cl. 40—352 2 Claims

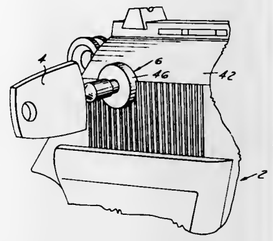


1. A display device for facilitating the reading of an elongated recording member comprising:
an elongated rectangular container;
a rectangularly shaped cover for enclosing said container, said container and said cover being positionable in an end-to-end fashion with the interiors of said cover and said container facing upwardly;
a display member vertically positionable between the adjacent ends of said container and said cover when said cover and said container are in said end-to-end fashion, said display member connecting said cover to said container and comprising a first elongated rectangular element, one end of which is pivotally attached to said adjacent end of said container such that said display member may be pivoted from a first position wherein it is disposed within said container to a second vertically raised position, a second elongated rectangular element having one end pivotally attached to the other end of said first rectangular element, the other end of said second retangular element having means for releasably engaging said adjacent end of said cover to support said display member in said vertically raised position;
an elongated foldable recording member;
means carried by said display member for holding a portion of said recording member thereon to facilitate the reading of said portion of said recording member and to facilitate the selective hand movement of said recording member from said container to said cover for storage therewithin, said last mentioned means comprising a securing element slidably carried along the length of said first rectangular element for securing said recording member to said first rectangular element such that said recording member may be slidably moved across the exposed face of said first rectangular element, said securing element being fabricated from a transparent material to permit viewing and magnification of said recording member thereunder; and
means carried by said container for releasably engaging said adjacent end of said cover and to secure said container and said cover in said end-to-end fashion, said releasable engaging means comprises a pair of laterally disposed flaps with one end of each said flap being pivotally attached along the vertically opposed corners of said adjacent end of said container, and the opposite end of each said flap having an aperture which cooperates with a projection on the vertically opposed sides of the said cover;
said adjacent end of said container having a reduced cross-section so as to define recesses on the opposite sides of said container which are adapted to receive said flaps and which results in a uniformly shaped container, said cover being adapted to enclose the interior of said container when said flaps are received in said reduced cross-sectioned recesses, respectively, and the display and recording members are located within the container, so as to form a self-contained box-like enclosure.

3,882,622
LOCKING MEANS FOR FIREARMS

George T. Perlotto, 22630 Overlake Ave., St. Clair Shores, Mich. 48080

Filed July 16, 1973, Ser. No. 379,811
Int. Cl. F41c 17/08
U.S. Cl. 42—1 LP 4 Claims

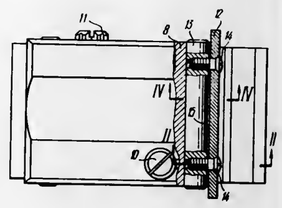


1. A locking mechanism for a firearm comprising a safety lever, means for locking said safety lever with a key operable lock, a locking cam having a cam surface, a proper key to rotate said lock and locking cam, a locking plunger whereby movement of the locking cam moves said locking plunger releasing said safety lever, said locking cam having a key operable lock at one end whereby said locking cam is rotated when the proper key is inserted and turned.

3,882,623
SIGHTING DEVICE FOR SPORTING FIREARMS

Efim Leontievich Khaidurov, ulitsa Glagoleva, 25, korpus 2, kv. 138, Moscow, and Vladimir Alexandrovich Razorenov, ulitsa Ponomareva, 4a, kv. 51, Minsk, both of U.S.S.R.

Filed Jan. 30, 1974, Ser. No. 437,955
Int. Cl. F41g 1/16
U.S. Cl. 42—1 S 1 Claim

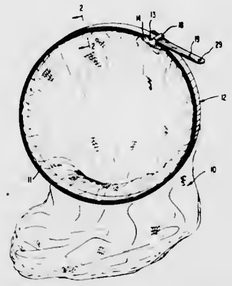


1. A sighting device for a sporting firearm, comprising: a base; a housing mounted on said base for adjustment-wise rotation and reciprocation relative thereto at ranging of said firearm; a backsight adjoining an end face of said housing; a through opening made in said housing adjacent to said end face thereof; a through slot made in said housing, adjoining said opening along the generatrix surface of said opening; a pin accommodated in said opening; screw means adapted to urge said pin and said backsight against said housing, passing through said slot toward said pin, whereby said backsight may be adjusted jointly with said pin relative to said housing within a broad range at ranging of said firearm.

3,882,624
BAIT NET

William D. Pityo, St. Petersburg, Fla., assignor to Reel Power Equipment, Inc., St. Petersburg, Fla.

Filed Oct. 29, 1973, Ser. No. 410,357
Int. Cl. A01k 77/00
U.S. Cl. 43—12 2 Claims



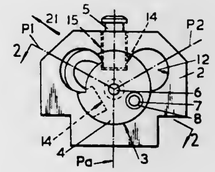
1. A bait net comprising a net body having an expansible and contractable mouth and having a tubular hem portion adjacent said mouth, and expansible and contractable frame for the bait net consisting of a unitary elongated thin strip of uniform cross section and formed of resilient material, said tubular hem portion being adapted to receive said frame therethrough loosely and movably, a guiding and locking unit for said expansible and contractable frame including a rigid body having a relatively narrow slot formed therethrough from end-to-end, said slot conforming substantially to the cross sectional shape of said strip so that the opposite ends of the strip may enter the slot in generally close fitting relation therewith, said rigid body having a relatively deep channel passage formed therethrough from end-to-end outwardly of said slot in relation to said frame and tubular hem, said channel passage being deep enough to receive plural convolutions of said strip therein in radially superposed relation and said channel passage being of a width to prevent appreciable edgewise displacement of said convolutions, said slot and channel passage being parallel and extending generally circumferentially of the net mouth and said frame, a transverse retainer bar on said rigid body spanning the outer open side of said channel passage and serving to retain said plural convolutions therein while allowing them to slide lengthwise in the channel passage, the opposite ends of said strip being apertured, a longitudinal leaf spring element on the interior side of said rigid body remote from the channel passage, an anchoring screw for said leaf spring element engaged threadably in said rigid body and extending through the aperture near one end of said strip for locking said one end in said relatively narrow slot, and a locking pin element on the leaf spring element spaced from said screw and received by an opening in the interior side of the rigid body and adapted to enter the aperture near the other end of said strip when the other end is engaged in said slot to releasably lock the other end in said slot when said bait net is in a fully expanded condition.

3,882,625
BREECH MECHANISM FOR GUNS

Paul Emile Francois Tellie, 20, rue, Bergson, 42000 Saint Entenne, France

Filed Jan. 23, 1974, Ser. No. 435,994
Claims priority, application France, Jan. 29, 1973, 73.02966
Int. Cl. F41c 15/00
U.S. Cl. 42—25 11 Claims

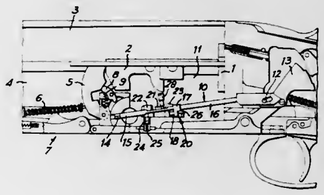
1. A breech mechanism adapted for mounting in a gun and comprising; an extractor which is engageable with an ammunition casing to effect withdrawal of the casing and to effect ejection of the casing laterally of the gun when the breech mechanism is mounted in the gun; and housing means provided by the mechanism to form a pair of locations for the extractor, the extractor being positionable in a selected location of said pair of locations, and one of said locations providing for ejection of a casing to one side of the mechanism when the extractor is positioned in said one location and the other of said location providing for ejection of casing to the other side of the mechanism when the extractor is positioned in said other location.



3,882,626
EJECTION SELECTOR FOR HINGED FIREARMS

Ernest Henri Vervier, Oupeve, Belgium, assignor to Fabrique Nationale Herstal S.A., Herstal-lez-Liege, Belgium

Filed June 12, 1973, Ser. No. 369,291
Claims priority, application Belgium, July 11, 1972, 52037
Int. Cl. F41c 15/04
U.S. Cl. 42—47 4 Claims



1. In a hinged firearm having a hinge action, an ejector normally operable when the firearm is broken, an ejector control means, an ejector pushrod traversing the firearm hinge action and normally engaging the ejector control means when the firearm is broken, and an actuator for said pushrod; the improvement comprising an ejector pushrod formed at least in two pieces, the total length of said pieces when juxtaposed end to end being such that said pushrod is incapabble of engaging said ejector control means when said pushrod is axially displaced by said actuator when the forearm is broken; and a movable ejector selector means for selectively positively spreading said pushrod pieces apart for extending the effective length of said pushrod sufficiently to enable said pushrod to engage said ejector control means when the pushrod is axially displaced by said actuator when the firearm is broken.

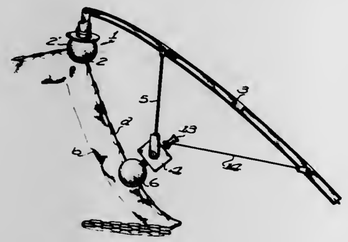
3,882,627
DRAGNET FOLDING DEVICE

Daigo Takamura, 73, Azatateshita, Iwaki, Japan

Filed July 27, 1973, Ser. No. 383,136
Int. Cl. A01k 73/12
U.S. Cl. 43—8 2 Claims

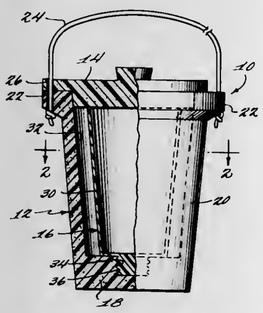
1. A device for folding a dragnet on a deck, which comprises;
a pair of spherical ball rotors, each of which has an outer surface of elastic rubber and each of which is elastically pressed towards the other so as to frictionally engage a drag rope introduced between said rotors;

a reciprocatable housing supporting said pair of rotors and enclosing means for rotating each of said spherical ball rotors in directions opposite to each other; and



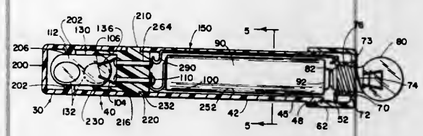
means for reciprocating said housing above said deck.

3,882,628
BAIT BUCKET ASSEMBLY
Virgil E. Stouder, 313 N. 18th St., Independence, Kans. 67301
Filed Jan. 12, 1973, Ser. No. 323,311
Int. Cl. A01k *97/04*
U.S. Cl. 43—55 **3 Claims**



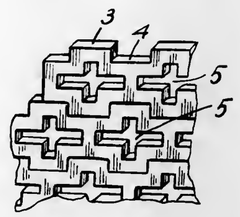
1. In a bait bucket assembly of the type including a container molded of foamed plastic having a bottom wall and peripheral wall means extending upwardly from the periphery of said bottom wall and lid means molded of foamed plastic movable between opened and closed relation with said container so as to define an accessible insulated interior chamber therein, the improvement which comprises in combination therewith, said bottom wall having interior surface means formed in the central portion thereof and provided with a plastic annular insert having a threaded configuration secured within an annular recess formed in the bottom wall of said container and spaced inwardly from a juncture of said peripheral wall means therewith, and a bait receptacle having a bottom wall and a peripheral wall means extending upwardly from the periphery thereof, the bottom portion of said bait receptacle having exterior surface means of threaded configuration complementary with said interior surface means for detachable threaded engagement therewith to fixedly secure said bait receptacle within said chamber in an operative position therein wherein the peripheral wall means thereof extends upwardly from the bottom wall of said container in annularly spaced relation with the peripheral wall means thereof, the exterior size of said bait receptacle being substantially less than the interior size of said chamber so as to provide a substantial space within said chamber exteriorly of the peripheral wall means of said bait receptacle for the support of a solid cooling agent therein capable of maintaining bait and the like disposed within said bait receptacle in a fresh condition for an extended period of time.

3,882,629
FISHING ROD SIGNAL LIGHT
John A. Kaye, 4363 S. 42nd St., Omaha, Nebr.
Filed Oct. 9, 1973, Ser. No. 404,240
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **13 Claims**



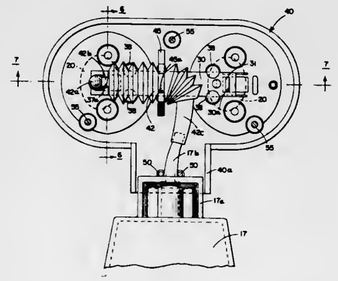
1. A bite signal assembly for fishing for attachment to a fishing rod comprising: a casing, a battery carried by said casing, an electrically operated signal means delivering a signal whenever said signal means is electrically energized, and a tilt-switch having a frame mounted on said casing, said tilt-switch having two contacts on said frame, said switch having a bridging element moving by gravity and carried by said frame toward and away from electrical contact with said contacts as said frame is tilted in each of two directions, and means electrically interconnecting said switch contacts, battery, and signal assembly in a manner such that when said casing is tipped in said directions said battery will be placed into and out of electrical connection with said signal means, attachment means for adjustably attaching said casing to a fishing rod having a first section attachable to a fishing rod and a second section attached to said casing and a third section interconnecting said first and second sections, said second section being angularly adjustable relative to said first section at said third section to adjust the angle of tilt of said second section relative to said first section.

3,882,630
STRUCTURAL ELEMENT FOR COMPOSABLE TOY CONSTRUCTIONS
Natale Bianco, Zuccarello, Italy, assignor to Brabo-Matic S.p.A., Milan, Italy
Filed Sept. 10, 1973, Ser. No. 395,878
Claims priority, application Italy, Sept. 14, 1972, 23101/72
Int. Cl. A63h *33/08*
U.S. Cl. 46—28 **2 Claims**



1. A structural element for composable toy constructions, comprising a substantially flat elongated body having spaced apart land portions defining a first transverse dimension of the element and arranged in regular intervals over the length of the elongated body and recessed portions therebetween defining a second transverse dimension of the element, the land portions each having a first longitudinal extension thereof and the recessed portions each having a second longitudinal extension thereof, the elongated body further comprising a number of cross-shaped apertures spaced apart over the length of the elongated body and each defined by a longitudinal and a transverse slot, said cross-shaped apertures each having a longitudinal span having a magnitude equal to said first transverse dimension and a transverse span having a magnitude equal to said second transverse dimension, said first longitudinal extension being equal to said transverse span and said second longitudinal extension being equal to said second transverse dimension.

3,882,631
DOLL WITH PNEUMATIC MEANS FOR RECIPROCALLY MOVING EYES
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316
Filed Feb. 19, 1974, Ser. No. 443,858
Int. Cl. A63h *3/40, 29/16*
U.S. Cl. 46—44 **11 Claims**



9. A doll having at least a torso portion and a head portion with movable eyes mounted in said head portion, the improvement comprising pneumatic actuating means in said doll for reciprocally moving said eyes including:

a slider bar mounted for reciprocating slidable motion in said head portion, the eyes being coupled to the slider bar for motion therewith,

a resilient bellows coupled to said slider bar, said bellows resiliently holding the eyes in a predetermined at-rest position, said bellows having a bulb portion formed on one end thereof and a neck portion adjacent to said bulb portion, there being a bracket mounted on the slider bar and having a slot formed therein, said neck portion being fitted into said slot,

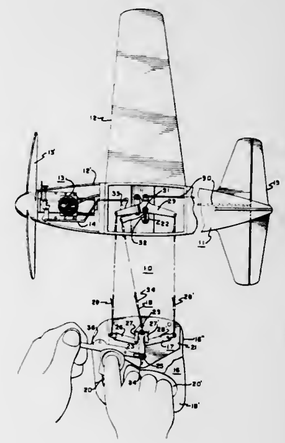
a pliable air bottle adapted to be manually compressed, and means for providing fluid communication between the bellows and the air bottle,

whereby when the air bottle is compressed and released, the bellows expands and contracts to reciprocally drive the slider bar and eyes.

3,882,632
MODEL AIRCRAFT CONTROL
Milbert Quinzer, Rt. No. 2, Meridian, Idaho 83642
Filed Jan. 2, 1974, Ser. No. 430,268
Int. Cl. A63h *27/04*
U.S. Cl. 46—77 **1 Claim**

1. In combination with model aircraft having wings, fuselage, a motor assembly and throttle valve lever, and a pivotally mounted elevator, a control comprising:

a handle housing being fabricated in complementary section halves which follow a line of cut corresponding to the center line of the thickness dimension of said housing, said halves forming a grip portion having a cavity into which the index finger maybe disposed and a second cavity into which the remaining fingers of the controller maybe disposed, and a hollow housing portion including a center bar disposed in substantial alignment with the radius formed by said model aircraft, said center bar being slidably mounted in a slot disposed in said housing portion along where said radius, a pair of radius arms being disposed distally from the terminal end adjacent said aircraft and projected sidewardly from said center bar and being pivotally mounted at the terminal end opposite said center bar to said handle portion, said radius arms and said handle bar being pivotally connected by links, said handle-housing including operating lever disposed journally perpendicularly to said center bar to the side of said handle housing having said index finger cavity and being pivotally mounted distally adjacent said index finger housing, said operating lever having a rectilinearly disposed slot in its terminal end opposite said pivot point to ride on a pin of the terminal end opposite of center bar opposite said radius arms, said operating lever being provided with a portion projecting from the exterior side of said housing as a handle and with a finger pull ring fastened to the terminal side of said operating lever adjacent said grip portion in registry with said index finger cavity;



in said aircraft a T-plate having its central leg disposed transversely of said fuselage away from said housing-handle and the arms of said plate being slightly angularly disposed toward said housing handle, said T-plate being carried at its center or fulcrum point on a pin which is itself slidably carried in a slot which is cut transversely of said fuselage, an asymmetrical U-shaped plate having one leg longer and somewhat straighter than the other in the manner of a hook, and being fastened on the terminal end of the longer leg on said pin fastening and between said T-plate and said portion of said fuselage having said slot, said hooked portion of said U-shaped plate being disposed forwardly with respect to said mounting slot, and a link pivotally fastened distally from the terminal end of said longer leg of said U-shaped plate and a connecting portion which projects away from said housing handle and forwardly with respect to said fuselage;

control lines including a pair of elevator control lines fastened substantially parallelly from corresponding ends of said radius arms and the terminal end of said arms of said T-plate and a connecting rod connecting said central portion of said T-plate to said elevator or actuating said elevator and a throttle control cable fastened to the terminal end adjacent said aircraft of said center bar to the terminal end of said shorter leg of said U-shaped plate adjacent said housing-handle, the terminal end opposite said control cable of said shorter leg being connected to said throttle valve lever.

3,882,633
DOLL

at least one pair of arms respectively affixed to opposite

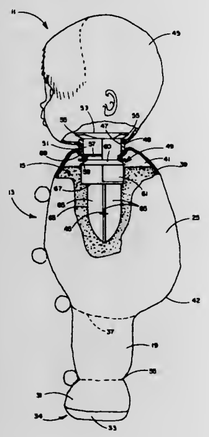
charged with a nickel reforming catalyst, the hourly rate

3,882,638

3,882,633
DOLL

Adolph E. Goldfarb, Tarzana; Judith D. Strader, and George C. Strader, both of San Dimas, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Division of Ser. No. 107,016, Jan. 18, 1971, Pat. No. 3,678,616. This application Dec. 6, 1971, Ser. No. 204,913The portion of the term of this patent subsequent to July 25, 1989, has been disclaimed.
Int. Cl. A63h
U.S. Cl. 46—151 7 Claims



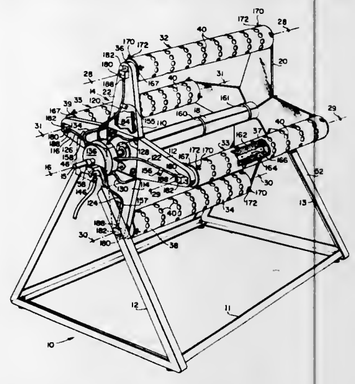
1. A doll comprising:
a hollow body formed of a flexible material, said body having a hollow torso, and a pair of hollow legs connected at their upper ends to and depending from a bottom end of said torso,
solid particulate filler material disposed within and partly filling said body,
said torso having a front side and a rear side, said torso having a rearwardly protruding portion extending from the rear side adjacent the bottom end of said torso to provide a substantially enlarged cross-section through said torso at said bottom end, the doll thereby being provided with a relatively low center of gravity and a consequent high degree of stability against sideward tilting,
the upper ends of the hollow legs each being open and in internal communication with the bottom end of said torso to permit the ready flow of particulate filler material between the torso and legs to facilitate arranging the doll in a relatively stable, upright, balanced position.

3,882,634
ROTARY PLANT GROWTH ACCELERATING APPARATUS

Richard D. Dedolph, Northfield, Ill., assignor to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 27, 1973, Ser. No. 428,995
Int. Cl. A01g 31/00
U.S. Cl. 47—1.2 16 Claims

1. Rotary plant growth accelerating apparatus, comprising:
a mounting stand including a pair of spaced apart support members;
an elongated drive shaft supported by said mounting stand and having opposite ends journaled to respective ones of said pair of support members, the longitudinal axis of said drive shaft defining a primary axis about which said shaft may be rotated;
at least one pair of arms respectively affixed to opposite ends of said drive shaft and extending radially away from said drive shaft, said arms being rotatable about said primary axis with said drive shaft;
plant bed means having opposite ends journaled to the distal ends of the respective ones of said arms, said plant bed means being rotatable about a planetary axis oriented in spaced apart parallel relationship with said primary axis;
drive means for causing said drive shaft and said arms to



rotate about said primary axis and carry said plant bed means in a planetary path around said primary axis;
planetary drive means responsive to rotation of said drive shaft and operative to cause said plant bed means to rotate about said planetary axis as it is moved over said planetary path; and
means for supplying liquids to said plant bed means while they are being moved around said primary axis and rotated about said planetary axis.

3,882,635
METHOD OF PRODUCING CELLS OF ALGAE

Shigeru Yamanaka, and Koji Mitsugi, both of Yokohama, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 29, 1974, Ser. No. 455,967
Claims priority, application Japan, Mar. 30, 1973, 48-35598
Int. Cl. A01g 7/00
U.S. Cl. 47—1.4 2 Claims

1. A method of producing algal cells which comprises culturing *Prototheca sphaerica* FERM P-1943 in an aqueous culture medium containing assimilable sources of carbon and nitrogen, inorganic salts, and minor organic nutrients until the cells of said *Prototheca sphaerica* multiply in said culture medium, and recovering the multiplied cells from said medium.

3,882,636
TWO-STAGE STEAM REFORMING PROCESS OF HYDROCARBONS

Akira Horie; Seiichi Matsuoka, and Kenzo Yamamoto, all of Yokohama, Japan, assignors to Japan Gasoline Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1972, Ser. No. 295,120
Claims priority, application Japan, Oct. 7, 1971, 46-78348
Int. Cl. C01b 2/14
U.S. Cl. 48—214 8 Claims

1. A process for producing a methane-rich gas by the steam reforming of feed hydrocarbons having two or more carbon atoms per molecule and capable of being steam reformed, comprising:
A. supplying a preheated gaseous mixture consisting of said feed hydrocarbon and steam, at a temperature in the range of 350° to 550°C, to a first reforming reaction zone charged with a nickel reforming catalyst, the hourly rate of supplying such mixture being such that the following equation is satisfied:

$W_1/F = 0.04\alpha$ to 0.22α

wherein
W_1 = weight of charged catalyst
F = weight of supplied hydrocarbon per hour
$\alpha = 0.5 + 0.5\times10^{-5}\times M^{2.77}$
M = mean average boiling point of feed hydrocarbons in °C,
to effect an incomplete adiabatic reforming reaction in said first reaction zone to react from 20 to 80% of said feed hydrocarbon and with the remainder of said feed hydrocarbon being unreacted, thereby to produce a first gaseous reaction product containing unreacted feed hydrocarbon and unreacted steam,
B. withdrawing said first reaction product from said first reforming reaction zone and introducing it directly into a heating zone and heating it in said heating zone sufficiently to add to said first reaction product from 10 to 72 Kcal per Kg of said first reaction product to produce a heated reaction mixture, and
C. introducing said heated reaction mixture into a second reforming reaction zone charged with a nickel reforming catalyst at the rate such that

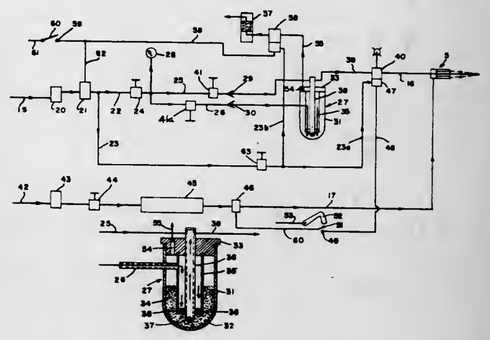
W_2/F = 1 to 20 times W_1/F

wherein
W_2 = weight of charged catalyst in the second reforming reaction zone, and
W_1 and F are as defined above,
to effect a second adiabatic reforming reaction of said heated reaction mixture to complete reaction of said feed hydrocarbon, thereby to produce a final gaseous product in which the carbon compounds present therein connsist essentially of CH_4, CO and CO_2, said final gaseous product at the exit end of the second reforming reaction zone having a temperature in the range of 350° to 550°C, and withdrawing said final gaseous product from said second reforming reaction zone.

3,882,638
AIR-ABRASIVE PROPHYLAXIS EQUIPMENT

Robert B. Black, 2925 Denrer, Corpus Christi, Tex. 78404

Filed Oct. 4, 1973, Ser. No. 403,436
Int. Cl. B24c 7/00
U.S. Cl. 51—12 6 Claims

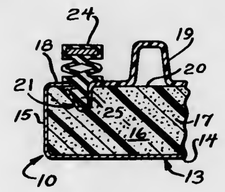


1. A system for handling and feeding abrasive particles comprising means for mixing abrasive particles with a gaseous stream, first nozzle means for delivering the abrasive laden stream to a point of use, controllable supply means for starting and stopping the abrasive laden stream, second nozzle means in predetermined relation to the first nozzle means for delivering a stream of liquid adjacent said point of use, controllable supply means for starting and stopping the stream of liquid and control means for the supply means including means providing for substantially concurrently starting and stopping of the discharge of the gaseous and liquid streams from the nozzle means.

3,882,637
REFRIGERATOR DOOR CONSTRUCTION AND METHOD OF FORMING THE SAME

Robert E. Lindenschmidt, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 12, 1973, Ser. No. 414,864
Int. Cl. E06b 3/00
U.S. Cl. 49—501 19 Claims

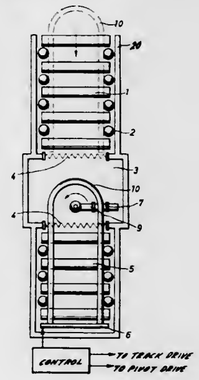


1. An insulated door construction comprising: an outer panel having an inturned peripheral flange means defining an insulation space adjacent said panel; insulation within said space; means on said flange defining a retaining shoulder overlying a peripheral portion of said space; an inner liner having a resilient peripheral lip portion defining an inwardly opening channel resiliently snapped under said shoulder, said inner liner covering said first space and retained in place by said snapped under relationship with said shoulder, said channel being disposed adjacent said shoulder; and door gasket means having a portion received in said channel with an edge thereof underlying said shoulder to be retained by said shoulder for sealing said liner to said outer panel.

3,882,639
JET SAND BLASTING OF BENT TUBES OR RODS

Wilhelm Kollbach, Erkrath-Unterbach, Germany, assignor to Mannesmannrohren-Werke AG, Dusseldorf; Kraftwerk Union AG, Erlangen, both of, Germany and Sandvik Aktiebolaget, Sandviken, Sweden

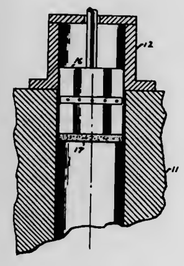
Filed July 30, 1974, Ser. No. 493,090
Claims priority, application Germany, July 30, 1973, 2338994
Int. Cl. B24c 3/12, 3/32
U.S. Cl. 51—14 4 Claims



1. Apparatus for sandblasting hairpin bent tubes or rods comprising:
a blasting chamber with aligned entrance and exit;

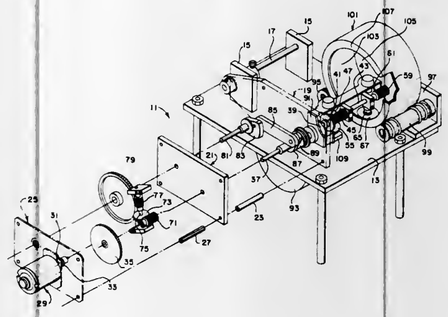
a first roller track disposed for moving such tubes or rods to and into the blasting chamber through the entrance;
a second roller track disposed for moving the tubes or rods from the blasting chamber when emerging from the exit;
an annular duct with radially inwardly directed blasting nozzles disposed in the blasting chamber so that one leg of a bent tube or rod, when moved into the chamber by the first roller track, traverses the annular duct for sand-blasting through jets as ejected from the nozzles; and
means for pivotally mounting the annular duct for moving the annular duct with nozzles along the bent axis of the curved portion of the tube or rod for sandblasting the said curved portion.

3,882,640
PORTABLE PRECISION HOLE FINISHING DEVICE
Gordon James Watt, Apt. 106, 245 Unquowa Rd., Fairfield, Conn. 06430
Continuation of Ser. No. 172,985, Aug. 19, 1971, abandoned.
This application Sept. 27, 1973, Ser. No. 401,531
Int. Cl. B24b *5/40*
U.S. Cl. 51—34 H **5 Claims**



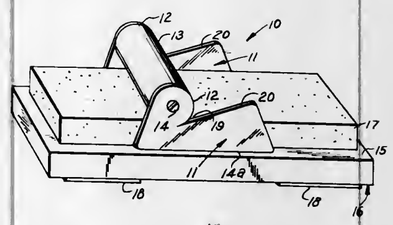
1. In a hole finishing apparatus having a rotatably supported, elongated, generally cylindrical member, the cylindrical surface of which constitutes a hydrostatic bearing surface adapted to cooperate with a complementary surface of a hole in a workpiece for maintaining the elongated member coaxial with the hole, the elongated member having mounting means which supports a hole finishing tool near the leading end of the member, the member being connected behind its leading end to a rotatable and axially translatable hollow drive shaft through which pressurized lubricating fluid may be fed to clearance between the cooperating surfaces, wherein:
a. the hydrostatic bearing surface constituted by the cylindrical surface of the elongated member includes respective outlet restrictor edges at the leading end and trailing end of the member, whereby the concentricity of the hydrostatic bearing surface with the complementary surface of the hole during operation of the apparatus is maintained by restoring forces which are derived from lubricating fluid pressure changes at the outlet restrictor edges and imparted to the main bearing areas therebetween;
b. the hole finishing tool is a grinding wheel mounted directly adjacent the outlet restrictor edge at the leading end by the mounting means, said mounting means being arranged to produce a mass imbalance at the tool mounting region with respect to the longitudinal axis of the elongated member during rotation thereof; and
c. the hollow shaft is flexible and is connected to the elongated member by a coupling capable of transmitting pressurized lubricating fluid from the drive shaft to passageway means in the elongated member leading to respective inlet edges of the hydrostatic bearing surface associated with said outlet restrictor edges thereof.

3,882,641
CABOCHON GEM GRINDER
Earl D. Montgomery, and Jan Michael Montgomery, both of Warrington, Pa., assignors to The American Standard Corporation, Trevose, Pa.
Filed Dec. 28, 1973, Ser. No. 429,084
Int. Cl. B24b *7/00, 9/00, 1/00*
U.S. Cl. 51—73 R **5 Claims**



1. A cabochon gem grinding machine comprising a drum having a cylindrical wall and a lip extending inwardly from the sides of the wall for retaining a slurry of abrasive material, means mounting the drum so that its axis is horizontal and for rotating the drum to distribute and maintain the slurry against the inner wall of the drum, dop means for holding a gem to be ground in contact with the slurry at a desired angle to the vertical to grind a desired area of the gem, and pattern means connected to the dop means for indicating the desired shape of the gem.

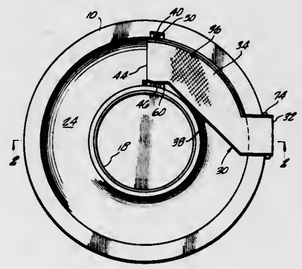
3,882,642
KNIFE SHARPENER
C. S. Sykes, P.O. Box 12573, Fort Worth, Tex. 76116
Filed Dec. 20, 1973, Ser. No. 426,805
Int. Cl. B24b *3/36*
U.S. Cl. 51—157 **2 Claims**



1. A knife sharpening device comprising:
a sharpening stone having a generally flat top sharpening surface and a given length and width with elongated parallel sides defining the width thereof,
support structure for supporting said stone and having a width and length greater than the width and length respectively of said stone,
said support structure being adapted to support said stone in a position to locate the sides defining the width and length of said stone inward of the sides defining the width and length of said support structure and to locate said top sharpening surface of said stone above the top surface of said support structure,
the top surfaces of said support structure on the elongated sides of said stone being generally parallel with each other and with the top sharpening surface of said stone,

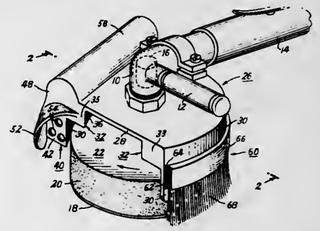
a pair of leg members having straight bottom edges for slidably engaging the top surfaces of said support structure on the elongated sides of said stone,
said leg members each having first and second portions comprising a generally circular edge and a generally straight and oblique edge respectively adapted to extend above the top surface of said stone when their bottom edges engage the top surfaces of said support structure on the elongated sides of said stone,
said generally circular edge and said generally straight and oblique edge of each leg member meet to form a generally V-shaped groove,
said generally straight and oblique edges defining acute angles relative to lines parallel to the bottom edges of said leg members respectively,
a cylindrical member having opposite ends connected to said first portions of said leg members respectively for spacing said leg members apart in generally parallel relationship with each other,
said cylindrical member being connected to said first portions at positions to have its surface generally flush with said circular edges of said first portions of said leg members,
said cylindrical member having a length such that said leg members may straddle the width of said stone to allow the bottom edges of said leg members to slidably engage said top surfaces of said support structure on the elongated sides of said stone,
said cylindrical member being connected to said first portions of said leg members at positions to allow said cylindrical member to be located above the top surface of said stone whereby said leg members may be slid along the length of said top surfaces of said support member on the elongated sides of said stone to move said cylindrical member above the top surface of said stone,
said V-shaped grooves of said leg members being adapted to receive the blade edge of a knife to allow it to be sharpened by said stone,
said two leg members with said cylindrical member connected therebetween being adapted to be removed from said support structure by lifting upward and to be located in reverse positions relative to said support structure and said stone.

3,882,643
LOCKING MECHANISM FOR A VIBRATORY MILL
Jon A. Knartzer, Buena Park, Calif., assignor to Sweco, Inc., Los Angeles, Calif.
Filed May 4, 1973, Ser. No. 357,512
Int. Cl. B24b *31/12*
U.S. Cl. 51—163 **9 Claims**



1. A lock mechanism for supporting and locking equipment on a vibratory mill, comprising
two non-circular pins rigidly fixed to the equipment having mutually coincident axes;
receiving means for receiving said non-circular pins, said receiving means including two rigid brackets having U-shaped channels cut therethrough and resilient receiving elements lining said channels into which said non-circular pins can be positioned; and
said non circular pins each having a minor cross-sectional dimension which fits within each resilient receiving element and a major cross-sectional dimension which is wider than said U-shaped channel with said resilient receiving element in position, said non-circular pins and said resilient receiving elements being capable of interlocking engagement by placement of said non-circular pins in said U-shaped channels and by rotation of the equipment relative to said vibratory mill about an axis coincident with the axes of the non-circular pins, said non-circular pins being forced along the major cross-sectional dimension thereof into interlocking engagement with said resilient receiving elements.

3,882,644
DUST COLLECTOR FOR PORTABLE ROTARY DISC GRINDER
Guy F. Cusumano, Englishtown, N.J., assignor to Clarkson Industries, Inc., New York, N.Y.
Continuation of Ser. No. 368,102, June 8, 1973, abandoned.
This application May 24, 1974, Ser. No. 473,234
Int. Cl. B24b *23/02, 55/06*
U.S. Cl. 51—170 T **14 Claims**

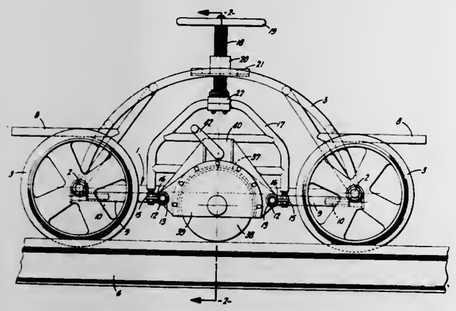


13. A dust-extracting device adapted to be used in conjunction with a motor driven rotary grinder to collect dust formed during operation of said grinder, said dust-extracting device comprising a truncated circular dust-extracting hood adapted to be positioned between said motor and disc and to overlie said disc, said hood including a depending arcuate skirt a dust induction chamber formed at one end of said skirt, said chamber having a front wall substantially perpendicular to said skirt, said wall having a series of holes formed therein and being positioned to receive dust particles generated by operation of said grinder, an arcuate brush mounted on the skirt of said hood and extending downwardly therefrom and a suction conduit connected to said chamber for drawing air and dust particles formed during operation of said grinder through said chamber and away from said hood.

3,882,645
RAILROAD RAIL GRINDING MACHINE
Willard J. Duecker, Stockton, Calif., assignor to Colberg, Inc., Stockton, Calif.
Filed June 10, 1974, Ser. No. 478,074
Int. Cl. B24b *23/02*
U.S. Cl. 51—178 **7 Claims**

1. A railroad rail grinding machine comprising a frame having transversely spaced, rail engageable wheels adjacent the ends thereof, a transverse shaft disposed intermediate the frame ends, a grinding wheel on the shaft adjacent one of the rails which the wheels engage, an engine connected in driving relation to the shaft, and means mounting the shaft and engine in supported connection with the frame and for vertical and axial adjustment of the shaft, selectively and independently, whereby to correspondingly adjust the grinding wheel relative to said one rail; said mounting means including a longitudinal

rock-shaft journaled on the frame laterally of said one rail, spaced mounting rods fixed on the rock-shaft and projecting toward said one rail, a sliding structure on the mounting rods, the shaft being journaled on and the engine supported by such sliding structure, means between the frame and mounting rods



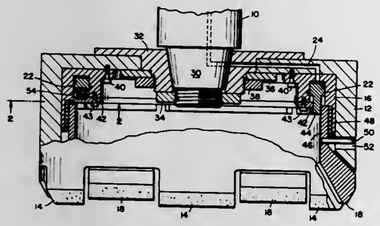
operative to adjust the latter vertically and about the rock-shaft as an axis, and other means between the mounting rods and said sliding structure to adjust the latter along said rods, whereby to effect said vertical and axial adjustments, respectively, of the shaft.

3,882,646

GRINDING WHEEL ASSEMBLY HAVING MULTIPLE GRINDING SURFACES FOR SELECTIVE ENGAGEMENT WITH A WORKPIECE

Gene A. Stritzel, Webster, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Mar. 6, 1974, Ser. No. 448,782
Int. Cl. B24d *7/14, 7/18*
U.S. Cl. 51—204 **10 Claims**



1. A cup-shaped grinding wheel assembly for grinding tooth slots into face coupling members, comprising

a first cup-shaped member having a first series of spaced grinding surfaces formed on a projecting rim portion therof,

a second cup-shaped member having a second series of grinding surfaces arranged in positions between the positions of said first series of grinding surfaces, said second cup-shaped member being fitted within said first cup-shaped member for carrying said second series of grinding surfaces for axial movement relative to the first cup-shaped member,

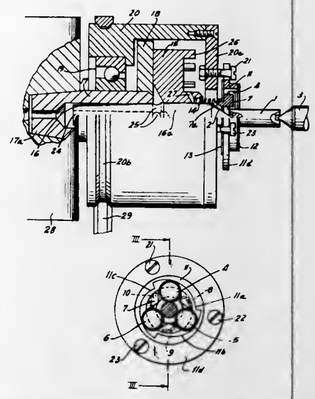
actuating means for advancing and retracting said second series of grinding surfaces into and out of grinding positions relative to the positions of said first series of grinding surfaces, whereby the second series of grinding surfaces can be brought into engagement with a workpiece while the first series of grinding surfaces are out of engagement with the workpiece, and then the first series of grinding surfaces can be brought into engagement with workpiece while the second series of grinding surfaces are out of engagement with the workpiece.

3,882,647

WORKPIECE HOLDER

Ekkehard Flaischlen, Stuttgart, Germany, assignor to Fortuna-Werke Maschinenfabrik AG, Stuttgart, Germany

Filed Apr. 4, 1973, Ser. No. 347,918
Claims priority, application Germany, Apr. 12, 1972, 2217432
Int. Cl. B24b *5/04*; **B23b** *33/00, 5/08, 31/12*
U.S. Cl. 51—237 R **8 Claims**



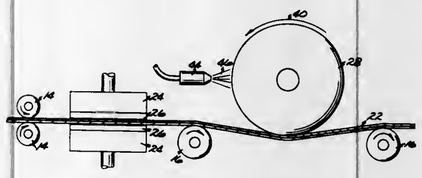
1. A workpiece holder, comprising an annular member having an opening bounded by at least three curved cam portions each extending circumferentially and from a point farthest spaced from to a point closest to the center axis of said opening; at least three gripping rollers in said opening and each associated with one of said cam portions, said rollers defining between themselves a workpiece-receiving passage coaxial with said central axis; spring means permanently biasing said rollers radially outwardly and into engagement with said cam portions; a guide member mounting said rollers and guiding the same for movement relative to said annular member in direction closer to and further from said central axis; rotating means for rotating said annular member about said central axis; and retarding means operable for retarding said guide member against rotation in unison with said annular member.

3,882,648

METHOD FOR IMPROVING THE STAINLESS STEEL SURFACE FINISH ON A COMPOSITE METAL LAMINATE

Joseph J. Buchinski, Wrentham, and Thaddeus Smletana, Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 17, 1972, Ser. No. 307,708
Int. Cl. B24b *1/00*
U.S. Cl. 51—328 **4 Claims**



1. Method for providing a high quality surface finish corresponding to AISI Surface Finish No. 8 on the stainless steel surface of a composite roll-bonded stainless-steel-aluminum-laminate strip material where said stainless steel surface is characterized by a matte finish and by a root mean square surface roughness of about 20 R.M.S. and is substantially free

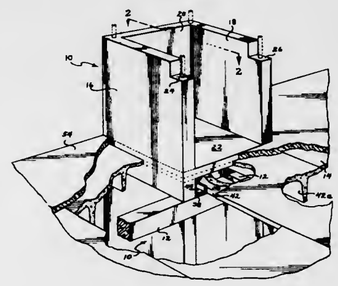
of surface defects of a depth greater than about 30 micro-inches, said method comprising the steps of advancing said strip material over a series of spaced supporting rolls under substantial tension with said stainless steel surface facing away from said supporting rolls, rotating a series of fabric buffing rolls of moderate abrading properties in the direction of advance of said strip material on axes disposed normal to said direction of advance while oscillating said buffing rolls to a controlled limited extent along said buffing roll axes and while pressing said buffing rolls against said stainless steel surface with sufficient force between respective pairs of said supporting rolls for obtaining a wrap of an arc of between 20° and 40° of said tensioned strip material against the peripheral surfaces of each of said buffing rolls to provide substantial areas of buffing engagement between said stainless steel surface and said buffing rolls, and intermittently projecting abrasive particles of moderate abrading properties free of a gaseous carrier medium at a force in excess of about 600 pounds per square inch substantially radially onto respective surfaces of said fabric buffing rolls to penetrate said buffing rolls to a significant extent with said abrasive particles for assuring that said abrasive particles are carried by said buffing rolls throughout said areas of buffing engagement.

3,882,649

INTERLOCKED MODULAR BUILDING SYSTEM

Francis Mah, 1682 Lawrence Pl., Memphis, Tenn. 38112; Walk C. Jones, III, 360 Tara Ln., Memphis, Tenn. 38111, and William J. LeMessurier, 402 Linden St., Wellesley, Mass. 02181

Continuation of Ser. No. 121,465, March 5, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 354,986
Int. Cl. E04b *1/348*
U.S. Cl. 52—79 **21 Claims**



1. A modular building structure, comprising:

a plurality of fixedly interconnected structural elements, aligned connecting means on each of said structural elements fixedly connecting said structural elements together, said structural elements including vertically extending modules, horizontally extending beams, and horizontally extending floor elements, means fixedly connecting each of said beams and floor elements at at least spaced points thereon to at least another one of said structural elements,

said modules each being substantially U-shaped in horizontal cross section and including a pair of vertically extending side walls and a vertically extending back wall connected to the side walls, said side walls each having an upper marginal edge surface and a lower portion with at least one beam receiving recess in each of said upper marginal edge surfaces,

said beam receiving recesses being located in the front marginal edges or corners of the upper edge surfaces of the side walls and comprising step recesses having a depth and width corresponding to the cross sectional thickness of a beam so that a beam positioned in a recess is flush with the edge surfaces of the modules,

at least some of said beams received in said recesses and each fixedly connected at at least two spaced points thereon to said modules, and each fixedly connected at a third point thereon to another one of said structural elements,

said floor elements each being elongate and substantially rectangularly shaped and supported on said beams in a horizontal position, each of said floor elements being fixedly connected at at least two spaced points thereon to at least one other of said structural elements, and fixedly connected at a third point thereon to another one of said structural elements,

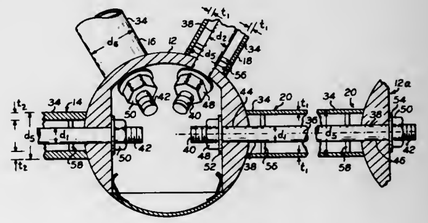
adjacent connecting means on said structural elements being aligned and operatively secured together to fixedly secure said beams, modules, and floor elements together to define a three-dimensional space frame which resists horizontal and vertical loads.

3,882,650

PIPE-AND-BALL TRUSS ARRAY

Paul F. Gugliotta, 39 E. 20th St., New York, N.Y. 10003

Filed May 21, 1974, Ser. No. 471,874
Int. Cl. E04b *1/56*
U.S. Cl. 52—223 R **14 Claims**

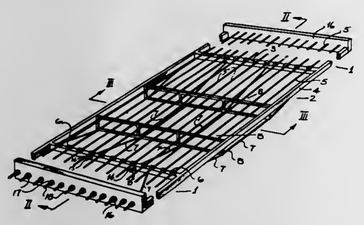


1. A pipe-and-ball truss array comprising a plurality of truss members, at least a first hollow spherical member portion common to said plurality of truss members and first means for joining said plurality of truss members to said first spherical member portion, each of said truss members comprising a outer hollow pipe element having a longitudinal axis and first and second ends and an inner rod element extending through said outer hollow pipe element along said longitudinal axis, said inner rod element having first and second ends, said first spherical member portion having a plurality of spaced apart apertures extending from the exterior surface thereof to the interior thereof, each of said inner rod element first ends extending beyond said outer hollow pipe element first end and through an associated one of said first spherical member portion apertures and having threads thereon, each of said outer hollow pipe element first ends bearing against said first spherical member portion exterior surface, said first joining means comprising first threadable nut means threadably mounted in said first spherical member portion interior on said inner rod element threaded first ends and bearing against the interior surface of said first spherical member portion for simultaneously placing said inner rod element of said truss member in tension and said outer hollow pipe element of the same truss member in compression, whereby applied tensile, compressive and axial forces are transferrable between said joined truss members through said first spherical member.

3,882,651
FLOOR SUPPORTING FRAMEWORK

Timothy Michael Gilchrist, Mavis Bank, Newrath, Waterford, Ireland

Filed June 14, 1973, Ser. No. 369,935
Claims priority, application Ireland, June 19, 1972, 854/72
Int. Cl. E04c *3/26*
U.S. Cl. 52—226 **7 Claims**



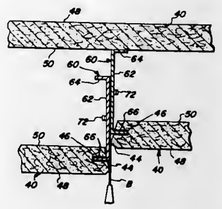
1. A floor supporting framework which comprises in combination:
A. a rigid self-supporting peripheral frame defined by four joining beam members,
B. a plurality of first and second anchorage members disposed on opposing beam members of said frame,
C. a plurality of first tensioned elements mounted in a plane between the first anchorage members, said first tensioned elements disposed to support a floor surface,
D. a plurality of second tensioned elements mounted between the second anchorage members,
E. a rigid load transferring frame defined by four joining lattice beams disposed intermediate the first tensioned elements and the second tensioned elements, said rigid load transferring frame disposed within the said peripheral frame between opposing beam members opposite that containing said first and second anchorage members, and
F. a plurality of rigid intermediate anchorage beams each disposed between a rigid load transferring member and said beam members containing said first and second anchorage members, said intermediate anchorage beams being positioned within the said peripheral frame between opposing beam members opposite that containing said first and second anchorage members, means disposed on said intermediate anchorage beams for anchorage of said first tensioned elements, said second tensioned elements being disposed through said intermediate anchorage beams.

3,882,652
DEMOUNTABLE PARTITION ASSEMBLY AND STUDS THEREFOR

Maurice J. Marchello, Hickory Hills, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 384,820, Aug. 2, 1973, Pat. No. 3,844,085.
This application June 19, 1974, Ser. No. 480,982
Int. Cl. E04b *2/82*
U.S. Cl. 52—481 **9 Claims**

1. A partition assembly including first and second stud members each having a web portion, said stud members being positioned with said web portions thereof in parallel closely adjacent opposed relation to one another, and first and second partition members along one side of said stud members, said partition members having edges adjacent one another to define a joint therebetween in substantial alignment with the interface between said web portions, and each of said partition members forming said joint being attached to the respective adjacent stud member, each of said web portions having an opening therethrough, portions of said openings in said opposed web portions being in registry with one another, a locking tab having one end resiliently attached to said web portion of said first stud member adjacent said opening therein and extending longitudinally of said web portion from said one end in registry with said registered portions of said openings and being otherwise unattached, said tab including an intermediate locking portion normally projecting into said opening in said second stud member, said tab engaging the lateral sides of said opening in said second stud member to interlock said

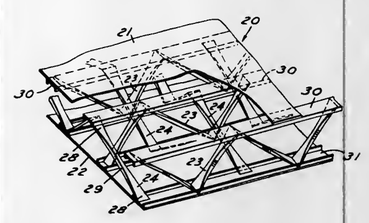


pair of stud members against relative lateral movement therebetween, and said tab being resiliently retractable into said opening in said web of said first stud member from said opening in said second stud member for disengagement from said second stud member to permit relative lateral movement between said pair of stud members for selective removal from said assembly of one of said stud members and said partition member attached thereto.

3,882,653
TRUSS CONSTRUCTION

Melvin L. Ollman, Detroit, Mich., assignor to C-O, Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 158,567, June 30, 1971, abandoned, which is a continuation of Ser. No. 864,982, Oct. 9, 1969, abandoned. This application Mar. 16, 1973, Ser. No. 342,199
Int. Cl. E04c *3/02*; **E04b** *1/343*
U.S. Cl. 52—694 **24 Claims**

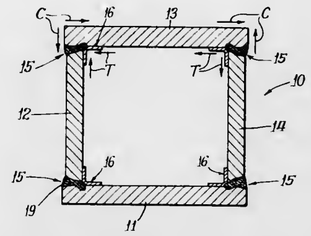


1. The combination comprising an undulating member comprising a strip of substantially uniformly thick material having a greater width than thickness,
said undulating member comprising alternating first and second apices connected by legs,
the first apices of said undulating member being bonded to said first channel,
a second channel comprising a base and spaced side walls, the second apices of said undulating member being bonded to said second channel,
the walls of one of said channels are cut substantially throughout their widths adjacent an apex and the walls of the other of said channels are cut substantially throughout their widths intermediate a pair of apices opposed to said apex of said one channel, the bases of each said channel being bent inwardly at said cut portions.

3,882,654
STRESS-RELIEVED WELDMENT FOR BOX SECTIONS

John W. Yancey, Aurora, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Apr. 9, 1973, Ser. No. 348,926
Int. Cl. E04c *3/00*
U.S. Cl. 52—758 B **4 Claims**

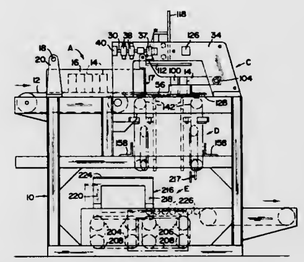


1. A stress-relieved weldment comprising a pair of transversely disposed first and second plates, with an edge of said second plate being disposed in edge facing relationship relative to the inner surfaces of said first plate,
an L-shaped angle bar having first and second legs abutting inner surfaces of said first and second plates, respectively, the thickness of each of the legs of said angle bar being from one-eighth to one-third of the thickness of a respective one of said plates and
common weld means securing said plates and said angle bar together wherein said weld means penetrates through said second plate and has a root that penetrates through an apex of said angle bar, joining the first and second legs thereof together, and into said first plate.

3,882,655
METHOD AND APPARATUS FOR ERECTING AND FILLING TRAY BLANKS

Alfred C. Monaghan, 9 Gentry Dr., Warren, N.J. 07060

Filed Jan. 19, 1973, Ser. No. 325,084
Int. Cl. B65b *11/08*
U.S. Cl. 53—3 **11 Claims**

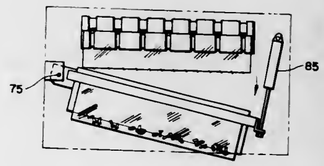


1. Apparatus for erecting and filling tray blanks with articles comprising:
a frame having an article collecting area,
means for feeding a tray blank to said article collecting area, means on said frame to slide or feed articles onto a tray blank at said article collecting area,
a plurality of endless means having vertical operative courses to engage a tray blank and move edge and end flanges thereon upwardly,
driven pusher means on said frame to engage the tops of articles at said article collecting area and force them and their supporting tray blank downwardly into engagement with said belt means,
a second plurality of endless belt means having vertical operative courses to engage corner tabs on said blank and move them up into operative positions when said first belt means are engaging said tray blank, and
discharge means below said endless belt means to receive trays as released thereby.

3,882,656
PACKAGING METHOD AND APPARATUS

Bernard Lerner, Hudson, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Division of Ser. No. 139,453, May 3, 1971, Pat. No. 3,815,318.
This application Dec. 6, 1973, Ser. No. 422,281
Int. Cl.² B65B *43/12, 43/36, 51/00*
U.S. Cl. 53—29 **4 Claims**



1. A method of packaging comprising the steps of:
a. providing structure defining a loading station;
b. feeding packaging web along a feed path to the loading station;
c. registering a container formed on the web with the loading station; and
d. while said container is at the loading station and without moving said container into registry with another station:
i. loading said container;
ii. closing said loaded container;
iii. gripping a portion of said closed loaded container in such fashion as will effectively isolate an adjacent portion of said container from stress producing forces imposed on another portion of said container; and,
iv. while said container is so gripped, initiating the performance of an operation on said container which will impose stress producing forces on said another portions, whereby said adjacent portion remains effectively isolated from said forces.

3,882,657
BAG FEEDING APPARATUS FOR BAG CLOSING MACHINE

Harold Fischbein, Edina; I. George Fischbein, and Sam Shark, both of Minneapolis, all of Minn., assignors to Dave Fischbein Manufacturing Co., Minneapolis, Minn.

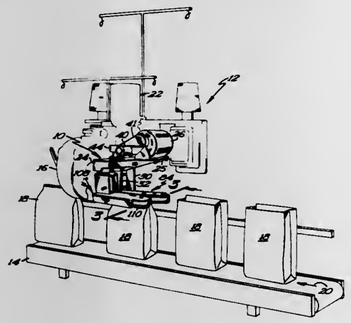
Filed Aug. 2, 1973, Ser. No. 385,105
Int. Cl. B65b *7/06, 57/00*
U.S. Cl. 53—77 **10 Claims**

10. A bag feeding apparatus usable with a bag closing machine having a sewing head and drive means wherein open-topped bags are carried along a path at a predetermined, linear velocity past the sewing head comprising:
a mechanical transmission drivingly connectable to the drive means to receive rotational energy therefrom,
a pair of bag guiding assemblies positionable along the path in side-by-side relationship on opposite sides thereof, each of said guiding assemblies including a moveably mounted endless bag engaging belt drivingly connected to

said mechanical transmission and each of said belts has

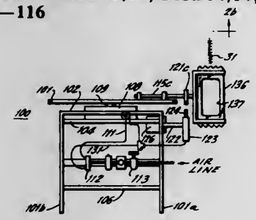
said mechanical transmission and each of said belts having a segment substantially parallel to and closely adjacent the path, said segments of said guiding assemblies being on opposed lateral sides of the path in confronting relationship with one another, said endless belts moving at a velocity compatible with the linear velocity at which the bags are carried along the path and cooperating so as to closely engage bag tops as the bags are carried along the path and to guide the bags to the sewing head for stitching; and

means mounting at least one of said bag guiding assemblies for freely floating movement of the entire bag guiding assembly between a rest position, wherein said movably



mounted assembly is closely adjacent the other one of said assemblies to thereby permit closely engaging a bag top therebetween, and a displaced position, wherein said movably mounted bag guiding assembly is spaced from the other one of said bag guiding assemblies to permit an oversized object exceeding the thickness of a bag top to pass between said assemblies, said movably mounted bag guiding assembly freely floatable between said rest position and displaced position during guiding of bag tops along the path by said bag guiding assemblies, said parallel belt segments remaining substantially parallel to the path during said floating movement of said movably mounted assembly.

3,882,658
APPARATUS FOR WRAPPING AND CUTTING MATERIAL OF INDETERMINATE LENGTH
William B. Cleary, Philadelphia, Pa., assignor to Abraham S. Kinderman, Philadelphia, Pa.
Filed Mar. 16, 1973, Ser. No. 342,177
Int. Cl. B65b *63/04*; **B65h** *54/14, 54/24*
U.S. Cl. 53—116 **13 Claims**



9. Apparatus for winding elongated filamentary material of indeterminate length comprising:

means for selectively dispensing said material in a downward direction;

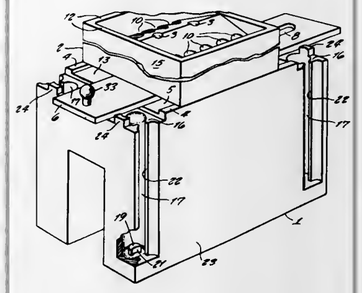
a thin flat rectangular shaped insert having a large central opening;

means for slidably receiving said insert near opposite parallel ends of said insert;

means for rotating said receiving means, thereby rotating said insert;

said receiving means being positioned beneath said dispensing means enabling the free end of said material to pass through said opening as said receiving means is rotated to automatically wrap said material about said insert.

3,882,659
COIN COUNTING AND PACKING DEVICE
Herbert Charlop, 245 E. 19th St., New York, N.Y. 10003
Filed July 16, 1973, Ser. No. 379,616
Int. Cl. B65b *5/10*
U.S. Cl. 53—254 **10 Claims**

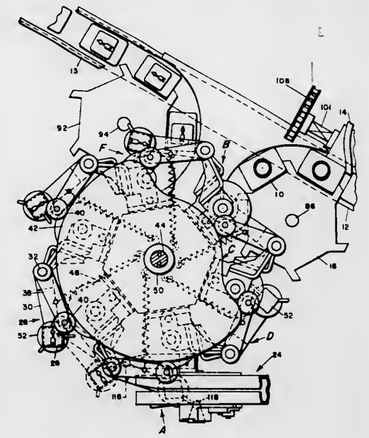


1. A coin-counting device having means for stacking coins of a similar size in a cylindrical stack and means for transporting said coins from said stack to a receptacle, in which the first said means comprises a hopper with a cylindrical chamber adapted for stacking coins of similar size and in which the second said means comprises a coin transporter, a base and a stationary coin-guide, said base including a stationary surface transverse to and spaced from said cylindrical chamber with said coin transporter slidably mounted therebetween guided for movement along said surface transversly through the space between said chamber and said surface by a stationary transporter guide projecting from said base surface, said transporter including coin-engagement means, whereby actuation of said transporter will move a coin through said space in the direction of transporter movement due to the guiding coaction of said transporter, said surface and said coin and transporter guides.

3,882,660
CAPPER WITH ORIENTING ATTACHMENT
Walter S. Sterling, Quincy, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.
Filed May 9, 1974, Ser. No. 468,485
Int. Cl. B67b *3/06, 3/062*; **B65b** *7/28*
U.S. Cl. 53—308 **18 Claims**

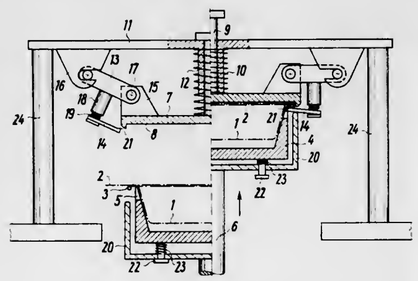
1. Apparatus for applying closures to containers wherein the containers are supported standing up in a predetermined position of orientation for movement along a predetermined path and closures are delivered one at a time to a position close to said path in a predetermined position of orientation relative to the containers, comprising a transfer arm supported for angular movement about a vertical axis from said path to said position and back to said path, said transfer arm being adapted to support a closure at said path for application to a container and means for rotating the closure about a vertical

axis as the transfer arm moves from said position to said path to re-orient the position of the closure by the amount it be-



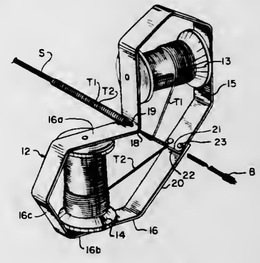
came displaced by such angular movement of the transfer arm.

3,882,661
APPARATUS FOR BENDING THE EDGE OF A FOIL AROUND THE EDGE OF A TRAY
Eugen Schierle, In den Ringelgarten 58, D-7000 Stuttgart, Germany
Filed Oct. 19, 1973, Ser. No. 408,111
Claims priority, application Germany, Oct. 27, 1972, 2252927
Int. Cl.[2] **B65B** *7/28*; **B67B** *3/14*
U.S. Cl. 53—354 **11 Claims**



1. An apparatus for bending the edge of a foil of aluminium or a similar material around an outwardly projecting edge of a tray, the tray being provided with straight edge portions and corner portions connecting the straight edge portions, the apparatus comprising: a base plate means, a centering basket means for receiving and holding the tray with the foil disposed thereover, a stop plate means disposed above and spaced from said centering basket means, means for selectively displacing said centering basket means into engagement with said stop plate means, means for mounting said stop plate means to permit limited displacement thereof by said centering basket means, a plurality of slide means for contacting and bending the respective edges of the foil from the outside thereof, pivot means connected with said base plate means and said stop plate means for pivotally mounting said slide means to permit at least a portion of said slide means to effect successive movement in a first direction toward the tray and in a second direction substantially perpendicular to the edge of the tray, the movement of said slide means in the first direction being effected by the limited displacement of said stop plate means by said centering basket means, and a closing bracket means movable with said centering basket means for contacting said slide means to effect movement of said slide means in the second direction after said centering basket means contacts said stop plate means.

3,882,662
DUAL LINE BOWSTRING SERVER
Loren Richard Hazelwood, 544 S. Xavier, Denver, Colo. 80219
Filed Aug. 7, 1972, Ser. No. 278,550
Int. Cl. B65h *81/06*
U.S. Cl. 57—10 **8 Claims**



5. In a bowstring server for simultaneously serving line from two spools about core strands, a frame for the spools having:

a. a pair of spool support sections arranged in an angularly disposed relation facing one another, each said spool support section having bearing means for supporting the spools for rotation about axes substantially perpendicular to each other at a substantially uniform tension during payout of the line from the spool,

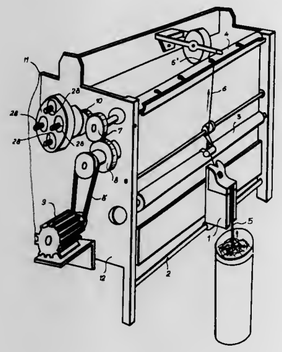
b. line guide means to direct the line away from the spools during payout, and

c. a serving head with a discharge aperture located between said spool support sections at substantially the center of gravity of the frame with the spools in place thereon and through which the lines pass whereby the frame and spools will rotate about the strands to simultaneously form two wraps arranged side by side on the core strands.

3,882,663
DEVICE FOR SEQUENTIAL STARTING AND STOPPING SEPARATE GROUPS OF OPERATING MEANS IN ADJUSTABLE TIME INTERVALS
Jiri Soukup; Julius Varga; Jan Sterba, and Ladislav Bures, all of Usti Nad Orlici, Czechoslovakia, assignors to ELITEX, Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia
Filed Aug. 28, 1973, Ser. No. 392,338
Claims priority, application Czechoslovakia, Aug. 30, 1972, 5952-72
Int. Cl. D01h *1/28, 1/08, 15/00*
U.S. Cl. 57—34 R **5 Claims**

1. In an open end spinning machine having a plurality of groups of open end spinning units, each such group having means for withdrawing yarns from the spinning units of such group and means for winding the yarns withdrawn from the spinning units of such groups, and common driving elements for the yarn withdrawing and winding means of each such group, a common element for driving the yarn withdrawing and yarn winding means of each group of spinning units, mass piecing being performed by reversing the run of both the yarn withdrawing and the yarn winding elements, the improvement which comprises electrical controlled mechanism provided with a plurality of switch elements, each switch element being

operatively associated with a respective group of spinning units and each switch element being adjustable to determine the time of operation of the yarn withdrawing and the yarn winding means of the respective group of spinning units, at



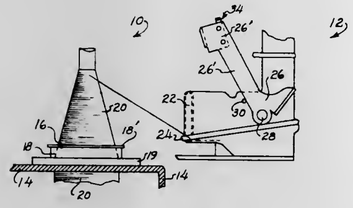
least one driven control element for each of the switch elements, means for driving the control elements from one of the common driving elements and a controllable clutch interposed between said one of the common driving elements and said control elements.

3,882,664

YARN DEFLECTING MEANS FOR AUTOMATIC YARN PIECING APPARATUS

Luther A. Cleland, Westminster, S.C., assignor to Saco Lowell Corporation, Easley, S.C.

Filed Oct. 17, 1973, Ser. No. 407,126
Int. Cl. D01h *15/00*
U.S. Cl. 57—34 R **10 Claims**



1. In combination with an automatic yarn piecing apparatus servicing a textile spinning machine, including a spinning ring having a traveler flange encircling a yarn collection package, said apparatus including yarn positioning means for establishing a length of yarn extending from said package to and across said flange of said spinning ring, and traveler threading means for moving a traveler about said ring flange and onto said yarn extending across said flange, the improvement comprising:

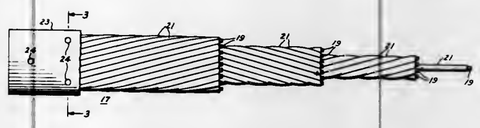
yarn deflecting means for engaging said length of yarn at a location thereon intermediate said package and said ring flange and at desired times during operation of sid traveler threading means, and for deflecting a section of said yarn adjacent to and inwardly of said spinning ring flange into a position favorable to the mounting of said yarn by said traveler upon movement thereof about said ring flange by said traveler threading means.

3,882,665

FLEXIBLE PUMPING STRAND AND METHOD OF MAKING

Charles R. Hughes, Hellertown, and James M. Doll, Allentown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 19, 1974, Ser. No. 443,930
Int. Cl. D07b *1/16, 7/14*
U.S. Cl. 57—149 **24 Claims**



1. A flexible pumping strand comprising:

a. a plurality of wires collected together into a linear member,

b. a polymeric coating on the exterior of each of said wires, said polymer being substantially inert to an oil well fluid, substantially impermeable to the water and gaseous corrodants and being resistant to fretting and abrasion between said wires,

c. said polymeric coating being closely bonded to the surface of said wires through a thin film of an intermediate primer,

d. an outer plastic jacket coating the outside of said strand,

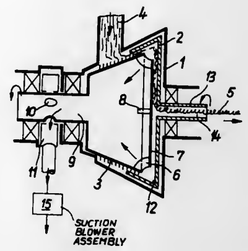
e. said outer plastic jacket having perforations throughout its length such that free passage of an oil well fluid through the plastic jacket is assured.

3,882,666

METHOD OF SPINNING YARNS IN SPINNING TURBINES

Peter Müller, Lesum, Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

Filed Dec. 6, 1973, Ser. No. 422,144
Claims priority, application Germany, Dec. 28, 1972, 2263730
Int. Cl. D01h *1/12*
U.S. Cl. 57—156 **6 Claims**



1. In a method for independently extracting air from an open-end spinning turbine having an inlet region and a yarn extraction region spaced axially therefrom, during the formation of yarn from a stream of fibers fed into the turbine at the inlet region, in which air is drawn into the turbine together with such fibers, is guided into the turbine by a surface of a hollow body at least partially enclosed by the turbine, and is sucked out of the turbine in a direction having an axial component directed toward the inlet region, the improvement wherein the sucking of air out of the turbine comprises: sucking air through an annular gap provided in the body ; and directing the air from the region of such gap toward the axis of rotation of the turbine.

3,882,667

METHOD OF MAKING A COMPOSITE YARN

Gerald F. Barry, Barrington, R.I., assignor to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 19,442, March 13, 1970. This application Mar. 5, 1973, Ser. No. 337,937
Int. Cl. D02g *3/12, 3/04*
U.S. Cl. 57—157 AS **2 Claims**



1. A method of making a composite textile yarn comprising the steps of:

a. spinning a blended yarn of metallic and non-metallic staple fibers

b. combining a non-metallic continuous filament yarn with the blended yarn; to form a composite yarn; and

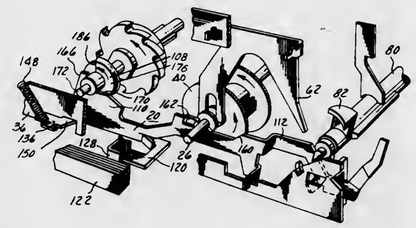
c. removing said non-metallic staple fibers while leaving said metallic staple fibers trapped in said composite.

3,882,668

ALARM CLOCK TIMER

Robert L. Boyles, Wayland, Mass., assignor to General Electric Company, Bridgeport, Conn.

Filed Aug. 16, 1973, Ser. No. 388,770
Int. Cl. G04b *25/00*
U.S. Cl. 58—22 **8 Claims**



1. An alarm clock mechanism comprising:

a. a timing mechanism;

b. a supporting structure;

c. a member for sounding an alarm connected to said supporting structure and movable to an alarm on or an alarm off position;

d. an elongated alarm control lever mounted on said supporting structure and movable into engagement with said member for shutting off the alarm, said elongated alarm control lever having a central portion and two end portions;

e. spring means connected to said elongated alarm control lever for urging said lever to a first alarm position;

f. a latch integrally formed on said alarm control lever for holding said alarm control lever in the other alarm position;

g. said alarm control lever being mounted for longitudinal movement to move said member to an alarm sounding position or an alarm off position, said alarm control lever being mounted for tilting movement, and said alarm control lever being mounted for transverse movement;

h. a first cam means driven by said timing mechanism in selective engagement with an end portion of said alarm control lever for moving said lever transversely at a preset time to disengage said latch to permit said elongated alarm control lever to move longitudinally under the force of said spring means to move said member to said first alarm position at a preset time; and

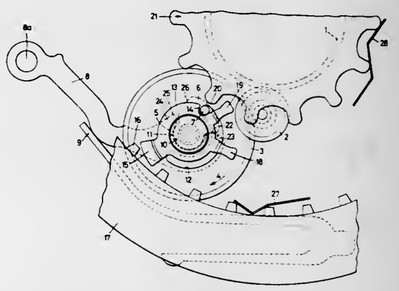
i. a second cam means driven by said timing mechanism in selective engagement with the central portion of said alarm control lever for tilting said alarm control lever into engagement with said first cam means a short time prior to said preset time.

3,882,669

DEVICE FOR DRIVING DAY AND DATE INDICATORS IN A WRIST-WATCH

Edwin Jakob, Grenchen, Switzerland, assignor to ETA Ebauches Fabrik, Grenchen, Switzerland

Filed May 29, 1974, Ser. No. 474,348
Claims priority, application Switzerland, June 5, 1973, 8141/73
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **6 Claims**



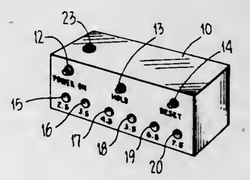
1. A watch including day and date indicators, and a device for driving the day and date indicators, comprising a calendar-wheel for rotating at the rate of one revolution every 24 hours, a cam coupled to the calendar-wheel in such a way as to be able to rotate freely with respect to the said wheel through a certain angle, and a control member cooperating with an incline of said cam for causing the cam to shift by rotating abruptly through said angle, wherein the control member comprises a shifting element which cooperates with the incline of the cam, and a banking element separate from said shifting element, the shifting element describing during the shift a path passing beyond the point of rotation of the cam, while the banking element strikes against a concentric portion of the cam at the conclusion of the shift, and a shifting member which is coupled rigidly to the cam and has a drive element for the date indicator and at least one drive element for the day indicator.

3,882,670

TELEPHONE TIMER

Robert E. Woolley, Alameda, Calif., assignor to Linda Bradbury, San Francisco, Calif.

Filed Aug. 6, 1973, Ser. No. 385,771
Int. Cl. G04b *5/20;* **G04f** *3/06*
U.S. Cl. 58—145 K **11 Claims**



1. A telephone timing and display unit for providing an indication of a final interval of predetermined duration of

each of a number of toll charge intervals during a telephone call, said unit comprising:

clock means for providing a reference clock signal train;

means for generating a succession of final interval signals of predetermined duration from said reference clock signal train, each succeeding final interval signal beginning a fixed time interval after the end of the previous final interval signal;

manually actuatable means for initializing said generating means at the beginning of said telephone call;

a plurality of display lamps, each for specifying a different one of said final intervals; and

means for energizing a different one of said lamps at a rate related to said clock signal train for each of said final intervals in response to the generation of each of said final interval signals so that each of said lamps is intermittently energized only during the final portion of a different toll charge interval.

3,882,671

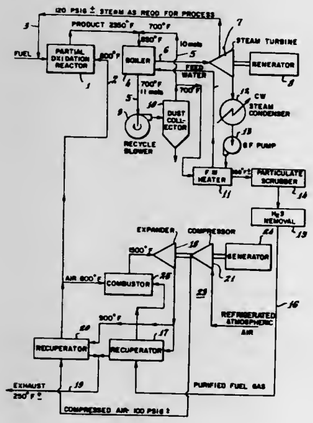
GASIFICATION METHOD WITH FUEL GAS COOLING

William H. Nebgen, Woodside, N.Y., assignor to Brayton Cycle Improvement Associaton, New York, N.Y.

Division of Ser. No. 180,282, Sept. 14, 1971, Pat. No. 3,788,066, which is a continuation-in-part of Ser. No. 34,717, May 5, 1970, Pat. No. 3,668,884, and Ser. No. 44,673, June 9, 1970, abandoned. This application Jan. 2, 1974, Ser. No. 429,531

Int. Cl. F02b *43/12*

U.S. Cl. 60—39.02 **6 Claims**



1. In a Brayton cycle including air compression, combustion, and combustion gas expansion in an expander, such as a gas turbine, the improvement which includes, in combustion,

a. heating the compressed air,

b. gasifying dirty fuel with a portion of heated compressed air, said fuel on gasification comprising contaminants which are chemically corrosive to steel at temperatures at least as low as the operating temperature of the expander,

c. cooling and purifying the gasified fuel by removing said chemically corrosive contaminants, the cooling being effected at least in a major degree by mixing a portion of the cooled gasified fuel with the uncooled gasified fuel,

d. combusting the thus purified gasified fuel with a second portion of the heated compressed air, and

e. expanding the products of combustion in the expander.

3,882,672

SYSTEM ARRANGEMENT FOR GOVERNING GAS TURBINE ENGINES, ESPECIALLY GAS TURBINE AERO-ENGINES

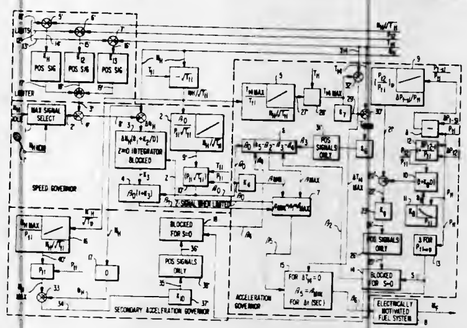
Klaus Bauerfeind, Munich, Germany, assignor to Motoren-und Turbinen-Union Munchen GmbH, Munich, Germany

Filed Feb. 5, 1973, Ser. No. 329,314

Claims priority, application Germany, Feb. 5, 1972, 2205445

Int. Cl. F02c *9/08*

U.S. Cl. 60—39.28 R **30 Claims**



1. System arrangement for the control of acceleration processes in gas turbine engines, especially gas turbine aero engines of the type having a compressor operating in front of a combustion chamber and a turbine operating behind the combustion chamber, the system arrangement comprising means for measuring the actual ratio of pressures at the outlet and inlet of the compressor and providing output signal values indicative thereof, means for comparing the actual measured compressor pressure ratio signal values with a set of predetermined pressure ratio signal values for an operating range of the engine which predetermined pressure ratio signal values are set below the ratio level signal value corresponding to compressor surge over the operating range of the engine, and means responsive to the actual measured signal value of the compressor ratio exceeding the predetermined pressure ratio signal value for controlling the metered fuel value β from a speed governor of the engine to provide a maximum value of β_{max} during acceleration and to provide a minimum value of β_{min} during deceleration of the engine.

3,882,673

METHOD OF USING LIQUID OXIDANTS TO OBTAIN PURIFIED GASES FROM SOLID PROPELLANTS

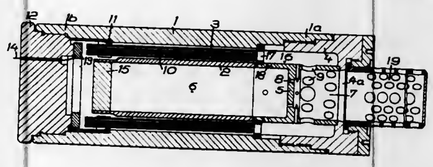
Bernard Doin, and Bernard Plantif, both of Saint-Medard-en-Jalles, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 6, 1971, Ser. No. 205,046

Claims priority, application France, Dec. 11, 1970, 70.44838

Int. Cl. C06d *5/06, 5/08;* **B60n**

U.S. Cl. 60—207 **5 Claims**



1. A method of obtaining the release of a large amount of purified gases at a moderate temperature in an extremely short time, wherein a solid propellant is burned and the gases resulting from this combustion are placed in contact with a vaporisable cooling liquid, said liquid being an oxidizing compound which is an aqueous solution of hydrogen peroxide, potassium permanganate or potassium nitrate so as simultaneously to oxidize at least a substantial proportion toxic substances present in the combustion gases and cause purification of the said combustion gases by oxidation of the noxious ingredients in these gases into non-harmful products at high temperature and pressure, and cooling of these gases by mixing with the said liquid and vaporisation of the latter.

3,882,674

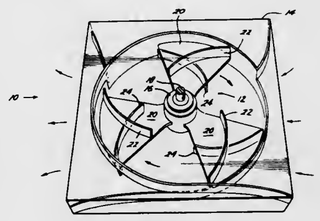
VORTEX PROPELLER

Robert Taggart, 3930 Walnut, Fairfax, Va. 22030

Filed May 24, 1973, Ser. No. 363,375

Int. Cl. B63h *11/02*

U.S. Cl. 60—221 **16 Claims**



1. A propulsion unit for operation in a fluid comprising,

a cylindrical housing having a first axis,

a propeller in said housing mounted for rotation about said first axis,

inlet means in said housing for the generally radial flow of fluid into the propeller from the periphery of the propeller, and

outlet means in said housing for the flow of fluid peripherally out of the propeller,

said inlet and outlet means being located on opposite sides of the housing,

said propeller further including fluid acceleration means for acceleration of the fluid radially inwardly as it flows into the propeller, axially of the propeller and radially outwardly as it flows out of the propeller.

3,882,675

DEVICE FOR PROGRAMMING THE AFTERBURNING-INITIATION PHASE IN A TURBOJET ENGINE

Pierre Michel Andre Galmiche, Le Mee-sur-Seine; Henri Jacques Jourdier, Moissy-Cramayel, and Pierre Paul Louis Odeyer, Paris, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

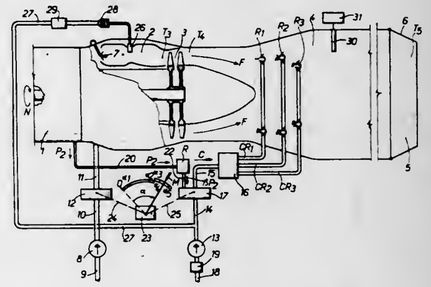
Filed Feb. 16, 1973, Ser. No. 333,371

Claims priority, application France, Feb. 18, 1972, 72.05566

Int. Cl. F02k *3/10*

U.S. Cl. 60—243 **16 Claims**

1. In and for a turbojet engine comprising a compressor, an afterburning duct, means for supplying said afterburning duct with fuel, and means for metering the flow of fuel injected into said duct, said flow-metering means being sensitive to a parameter βP_2, in which P_2 is a characteristic working pressure of said compressor, and β is a coefficient which is lower than, or at most equal to one, in combination, a device for programming the afterburning-initiation phase comprising, means for modifying said coefficient β to temporarily reduce said coefficient β during the afterburning-initiation phase, and means for automatically disabling said β-modifying means after the moment at which ignition of the fuel has actually been obtained in the afterburning duct.



3,882,676

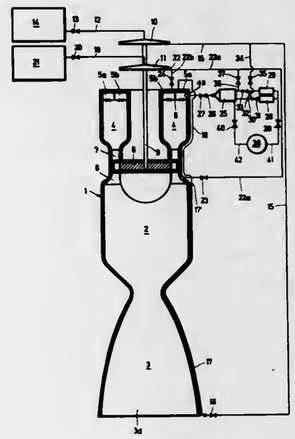
MAIN STREAM LIQUID-FUEL ROCKET ENGINE CONSTRUCTION

Gunther Schmidt, Unterhaching, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Germany

Division of Ser. No. 302,772, Nov. 1, 1972. This application Apr. 19, 1974, Ser. No. 462,531

Int. Cl. F02k *9/02*

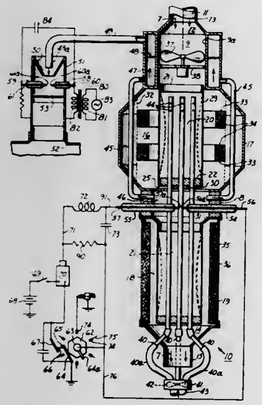
U.S. Cl. 60—245 **6 Claims**



1. A liquid-fuel rocket engine comprising wall means defining a precombustion chamber and a main combustion chamber having a thrust nozzle with a thrust discharge with gas passage means therebetween, a turbine having blades disposed in said gas passage means and being rotatable by said gas passing therethrough, propellant pump means connected to said turbine for rotation thereby for pumping at least two separate propellant components, means defining an ignition chamber adjacent said precombustion chamber having a connection to said precombustion chamber for discharging gases thereto, means for regulating the flow of gases from said ignition chamber to said precombustion chamber, gas pressure operated propellant component supply means for supplying at least two separate propellant components under pressure to said ignition chamber for ignition therein to generate heating gases, means for selectively connecting a propellant component from said propellant component pump means to

said ignition chamber, to said precombustion chamber, and to said combustion chamber for separately supplying a propellant component to said precombustion chamber, said ignition chamber, and directly into said main combustion chamber and means for selectively connecting another propellant component from said propellant component pump means to said ignition chamber and to said precombustion chamber.

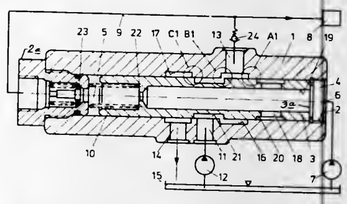
3,882,677
POLLUTION MINIMIZING DEVICE FOR INTERNAL COMBUSTION ENGINES
Hrant Eknayan, 7528 Columbia, Rosemead, Calif. 91770
Filed July 25, 1973, Ser. No. 382,373
Int. Cl. F01n *3/14*
U.S. Cl. 60—298 **11 Claims**



1. A pollution control device for reducing the quantity of pollutant mixed with the gaseous products of combustion of hydrocarbon fuel in an internal combustion engine, comprising:
a chamber having an inlet for entry of the combustion products into the chamber and an outlet for exhaust of gases from the chamber so that gases flow through the chamber from the inlet to the outlet;
a plurality of baskets arranged in tandem and spaced from each other, each basket being open at its upstream end and closed at its downstream end;
each basket having a side wall comprising copper which provides openings for passage of gas therethrough;
means for introducing atmospheric air into a first of said baskets located upstream from a second of said baskets;
means comprising spaced electrodes forming a spark gap located in the region between said first and second baskets; and
means producing intermittent sparks across said gap.

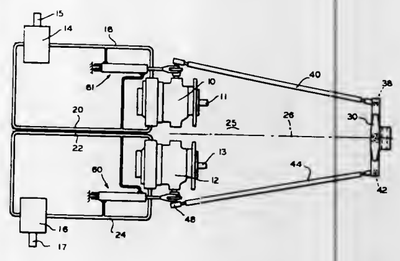
3,882,678
AUTOMATIC CONNECTING VALVES FOR RESERVE PUMPS
Rolf Fassbender, Mutlangen, Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Postfach, Germany
Filed June 5, 1974, Ser. No. 476,432
Claims priority, application Germany, June 8, 1973, 2329328
Int. Cl. F15b *20/00*
U.S. Cl. 60—405 **12 Claims**

1. A valve for controlling main flow from a main pump and reserve flow from a reserve pump, to a consumer unit;
comprising a housing having a main pump inlet and a reserve pump inlet;
said valve having passage means for a pilot stream and main flow from said main pump;
outlet means for main flow from said main pump and reserve flow from said reserve pump to a consumer unit;
actuable valve means in said housing;
said valve means and said housing having coacting elements relatively positionable to open main flow to said outlet means and close reserve flow or to close main flow and open reserve flow to said outlet means;
bias means normally biasing said valve means to close main flow and open reserve flow to said outlet means;



pressure differential means comprising upstream and downstream pressure chamber means operative to actuate said valve means to overcome said bias means to open main flow and close reserve flow upon increase of pressure differential; further comprising choke passage means operable to pass said pilot stream from said upstream to said downstream pressure chamber means; and a connection from said downstream pressure chamber means to said outlet means whereby a reduction in pressure differential to a predetermined value permits said bias means to actuate said valve means to effect reserve flow to said consumer unit.

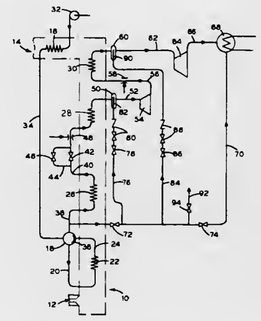
3,882,679
CONTROL FOR DUAL PATH HYDROSTATIC DRIVE
William Aplin Williamson, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Filed Feb. 28, 1974, Ser. No. 446,998
Int. Cl. F16h *39/46*
U.S. Cl. 60—484 **9 Claims**



1. A control mechanism for a dual path hydrostatic drive system having two variable displacement swash plate type pumps connected individually in circuit with two motors, comprising a single vertically disposed control lever pivotable about a horizontally disposed axis and about a vertically disposed axis, a transverse portion rigidly secured to the said control lever and extending outwardly relative to the said vertically disposed axis, a pair of operating rods connected between the said transverse portion and the swash plates of the respective pumps, and a pair of hydraulic power assist devices mechanically connected respectively to the swash plates, each of said devices having hydraulic connections to the pressure and suction chambers of its respective pump and

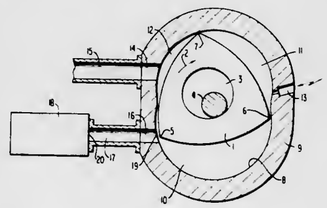
arranged to apply a force to the swash plate of its respective pump which is additive to the force applied by the respective operating rod when the swash plate is in other than its neutral condition.

3,882,680
BY-PASS SYSTEM
Oliver W. Durrant, and Kurt H. Haller, both of Akron, Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.
Filed Apr. 18, 1972, Ser. No. 245,214
Int. Cl. F01k *13/02*
U.S. Cl. 60—646 **4 Claims**



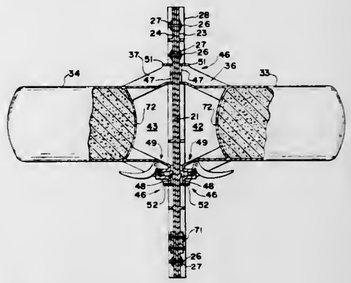
1. In a power plant system having vapor generating means, turbine means flow connected therewith, vapor superheating means flow connectedly interposed between the generating and turbine means, and condenser means disposed in flow receiving relation with the turbine means, the improvement comprising conduit means by-passing said superheating and turbine means, valve means for adjusting the vapor flow through the superheating and conduit means, said conduit means including means for admixing at least a portion of the by-passed vapor with the superheated vapor to maintain the vapor temperature entering the turbine means within a given limit, and means for discharging the remaining by-passed vapor into the condenser means.

3,882,681
EXHAUST INSTALLATION FOR A ROTARY PISTON INTERNAL COMBUSTION ENGINE
Karl-Walter Schmidt, Beutelsbach, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany
Filed Nov. 27, 1972, Ser. No. 309,916
Claims priority, application Germany, Nov. 27, 1971, 2158963
Int. Cl. F02b *53/00*
U.S. Cl. 60—901 **12 Claims**



1. An exhaust installation for a rotary piston internal combustion engine having at least one disk, each disk having polygonal piston means rotating within a housing means provided with internal trochoidal running surface means, each polygonal piston means including spaced corner portions sliding along said internal trochoidal surface means, and working chamber means formed between the housing means and the respective corner portions of said polygonal piston means, one inlet channel means and one exhaust channel means being provided in the housing means for each disk, the installation comprising: an exhaust pipe means being connected to a respective exhaust channel means, at least one reflection surface means provided in said exhaust gas pipe means at a predetermined distance from the working chamber means to reflect the exhaust gases, the exhaust channel means and said exhaust pipe means having a predetermined cross section to cause the flow of exhaust gases therein at nearly the speed of sound at substantially full load and at approximately maximum rotational speed of the engine, the length of said exhaust channel means and said exhaust pipe means constituting said predetermined distance to said at least one reflection surface means, whereby, at substantially full load and approximately maximum rotational speed, one of the corner portions of the polygonal piston means sliding along said internal trochoidal running surface means slides past the beginning of said exhaust channel means and releases the exhaust gases from said working chamber means into said exhaust channel means creating a pressure front travelling in the exhaust gases at substantially the speed of sound relative to the flowing exhaust gases, said pressure front starts travelling from the beginning of the exhaust channel means within the same and within said exhaust pipe means and reaches after reflection at said reflection surface means the beginning of the exhaust channel means of a disk at the instant at which said one of the corner portions of the polygonal piston means slides past the beginning of said inlet channel means in said last-mentioned disk.

3,882,682
FLOATING BOOM WITH DEMOUNTABLE FLOATS
Harold R. Appelblom, 2310 Carlmont Dr., Belmont, Calif. 94002, and Francois Emile de Bourguignon, 1269 Ridgeley Dr., Campbell, Calif. 95008
Filed Apr. 16, 1973, Ser. No. 351,519
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **7 Claims**



1. In a floating boom having a sheet-like partition means and a plurality of float means demountably secured to said partition means at relatively spaced intervals thereon, said float means including a frame member engaging said partition means, a pair of arms mounted to said frame member and extending outwardly therefrom to positions on each side of said partition means, and a float element mounted to each of said arms at a spaced distance from said partition means to define a passageway between said float element and said partition means, the improvement comprising:
said frame member being relatively permanently mounted in engagement with said partition means; and
said float means further including coupling means formed as interengaging and mating cleats formed on said frame and foot portions formed on said arms and latch means formed to selectively lock said foot portions and said cleats in interengagement, whereby selective coupling

and uncoupling of said float elements to said frame mem-

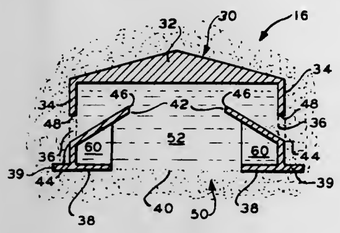
veyance having a plurality of upright vertically elongated

second conveying means while said carrier member is moving

3,882,688

and uncoupling of said float elements to said frame member can be achieved.

3,882,683
DRAIN EXTENSION
Robert M. Purcell, 22 Ronald Ln., Sayville, N.Y. 11782
Filed July 30, 1973, Ser. No. 384,027
Int. Cl. E02b *13/00*
U.S. Cl. 61—13 **9 Claims**



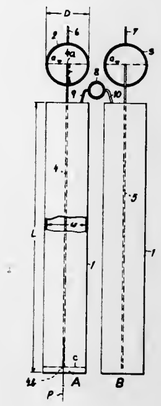
1. A drainage arrangement including drain means, said drain means comprising:
a first side wall of predetermined height and length;
a second side wall of predetermined height and length disposed opposed to and spaced from said first side wall;
said side walls having upper, lower and edge extremeties;
surface means interconnecting said first side wall and said second side wall proximate said upper extremeties thereof so as to form therewith a substantially U-shaped channel like member;
at least one aperture extending through at least one of said side walls; and
louver like means extending inwardly and upwardly from the lower edge of said aperture, into said channel like member, and terminating spaced from said side wall at a level above the level of the upper edge of said aperture.

3,882,684
TWO-COMPARTMENT CARTRIDGE ADAPTED FOR USE IN STRENGTHENING COAL OR STONE WALLS
Frank Meyer, Essen, Germany; Alfons Jankowski, Mauren, Liechtenstein; Otto-Ernst Glaesmann, Castrop-Rauxel, and Gerhard Haake, Essen, both of Germany, assignors to Bergwerksverband GmbH, Essen, Germany
Filed Sept. 9, 1974, Ser. No. 504,538
Claims priority, application Germany, Sept. 12, 1973, 2345913
Int. Cl. E21d *20/02*
U.S. Cl. 61—45 B **9 Claims**

1. A two-compartment pierceable cartridge adapted for reinforcing a stone or coal wall by insertion into a hole that had been bored into the wall, one compartment of which contains a polyisocyanate of diphenylmethane and the other compartment of which contains a mixture of a polyetherglycol having a hydroxyl number between 200 and 400, between 10 and 20 percent by weight of a plasticizer, and between 0.3 and 5.0 percent by weight of water.

3,882,685
METHOD OF AND APPARATUS FOR THE LOW-TEMPERATURE LIQUEFIED GAS
Rudolf Becker, Munich, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed Dec. 17, 1973, Ser. No. 425,131
Claims priority, application Germany, Dec. 22, 1972, 2263063; Nov. 12, 1973, 2356395
Int. Cl. F17c *7/02*
U.S. Cl. 62—55 **10 Claims**

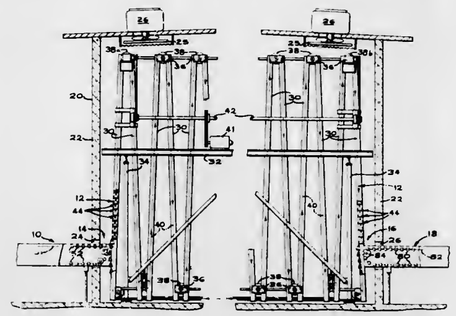
1. In the transport of a liquefied gas at a temperature below its boiling point in an insulated cargo compartment of a conveyance having a plurality of upright vertically elongated storage vessels disposed in said compartment with a horizontally extending receptacle overlying said vessels, connected thereto by a riser tube and in heat-exchanging relationship with ambient gases around upper portions of said vessels between a location in which the liquefied gas is loaded into said vessels and at a location at which the liquefied gas is discharged from the vessels, the improvement which comprises the following steps:
a. maintaining in said vessels a level of said liquefied gas above the base of said vertically elongated storage vessels to cool the vessels to preclude the necessity of recooling of the vessels when the vessels are to be charged with the liquefied gas at the filling station;



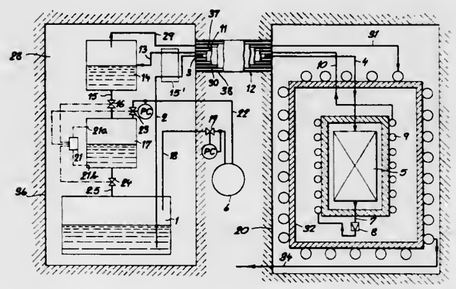
b. filling the vertically elongated storage vessels from said level to their tops and filling the horizontally extending receptacle overlying said vessels to a location at an intermediate distance between the bottom and the top of said horizontal receptacle with the liquefied gas to form a liquid-gas interface at said location; and
c. maintaining the level of the liquid-interface in the horizontal receptacle substantially at said location to insure an adequate amount of the liquefied gas is available in said horizontal receptacle to effect heat exchange with said vertically elongated storage vessels by vaporization of the liquid-gas interface.

3,882,686
METHOD AND APPARATUS FOR COOLING EGGS
Boyd W. Rose, 5413 Granada St., Riverside, Calif. 92504
Continuation of Ser. No. 205,154, Dec. 6, 1971, abandoned.
Filed Dec. 26, 1973, Ser. No. 427,741
Int. Cl. F25d *13/06*
U.S. Cl. 62—63 **19 Claims**

1. Apparatus for cooling eggs comprising first conveying means comprising a series of uniformly spaced rollers for conveying spaced rows of eggs in a generally horizontal plane, second conveying means for receiving said rows of eggs from said first conveying means and for conveying said eggs through a series of parallel vertical runs, said second conveying means including a plurality of uniformly spaced carrier members each having a plurality of pockets therein for receiving a row of eggs, means for mounting said carrier members to said conveying means so that they generally maintain a constant spacial orientation as they pass through said series of parallel runs, means for applying cooling air to the eggs while they are carried by said second conveying means, third conveying means comprising a series of uniformly spaced rollers for receiving said rows of eggs from said second conveying means and for conveying said eggs in a generally horizontal plane, means for gently delivering each row of eggs from said first conveying means to one of said carrier members of said second conveying means while said carrier member is moving vertically upwardly, and means for gently delivering said row of eggs from each of said carrier members to said third conveying means while said carrier member is moving vertically downwardly.

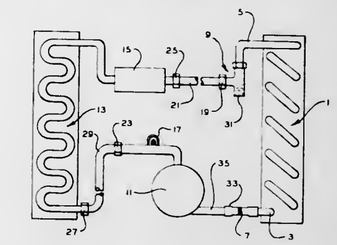


3,882,687
METHOD OF AND APPARATUS FOR THE COOLING OF AN OBJECT
Stefan Asztalos, Munich; Rudolf Kneuer, Walchstadt, Icking; Alfred Stephan, and Reinhard Glatthaar, both of Munich, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed Jan. 23, 1974, Ser. No. 435,856
Claims priority, application Germany, Jan. 25, 1973, 2303663
Int. Cl. F25d *17/02*
U.S. Cl. 62—64 **12 Claims**



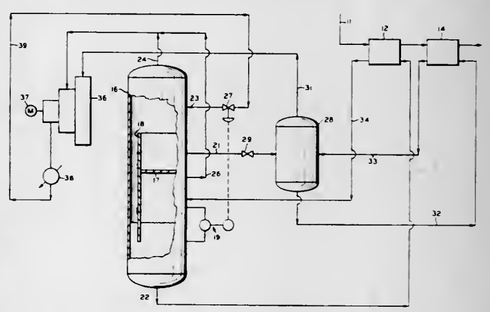
1. A method of cooling an object to be maintained at a cryogenic temperature comprising the steps of: continuously feeding a liquid cryogen from a supply vessel to said object; maintaining a pressure in said vessel sufficient to displace said liquid cryogen to said object; expanding liquid cryogen upon its passage to said object to form a vapor/liquid phase mixture of the liquid cryogen; separating said phase mixture into a liquid phase and a vapor phase in a second vessel; transferring the liquid phase from said second vessel directly to a third storage vessel; and at least intermittently feeding said liquid cryogen from said storage vessel to said supply vessel upon the liquid level in said storage vessel attaining a predetermined height and at substantially the pressure in said supply vessel.

3,882,688
CONNECTING APPARATUS AND METHOD FOR A PRECHARGED REFRIGERATION SYSTEM
Fred V. Honnold, Jr., North Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed June 1, 1973, Ser. No. 366,226
Int. Cl. F25b *45/00*
U.S. Cl. 62—77 **2 Claims**



1. A method for connecting a refrigerant-charged condenser portion of a compression refrigeration system to the balance of the system, the condenser portion having an outlet line with a fusible sealing plug mounted therein and an inlet line with a valve for selectively opening and closing the inlet line to refrigerant flow, and the balance of the refrigeration system having corresponding inlet and outlet lines and being substantially devoid of condensible contaminants, to establish a refrigerant circuit, said method comprising the steps of:
a. connecting the inlet and outlet lines of said condenser portion with the corresponding inlet and outlet lines of the balance of the refrigeration system;
b. opening the valve in the inlet line to the condenser portion to equalize the refrigerant pressure across the fusible plug; and
c. applying heat to the outlet line from the condenser portion to melt the fusible plug and to thereby establish a refrigerant circuit in the refrigeration system.

3,882,689
FLASHING LIQUID REFRIGERANT AND ACCUMULATING UNVAPORIZED PORTIONS AT DIFFERENT LEVELS OF A SINGLE VESSEL
Ronald S. Rogers, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Dec. 27, 1972, Ser. No. 318,707
Int. Cl. F25b *1/00*
U.S. Cl. 62—115 **10 Claims**



1. A refrigeration method comprising the steps of:
a. flashing a liquid refrigerant into the upper portion of an enclosed chamber thereby vaporizing a portion of said refrigerant;
b. accumulating unvaporized liquid refrigerant at an intermediate level in said chamber thereby establishing a first body of liquid refrigerant in said chamber;

c. flowing accumulated unvaporized liquid from a level above said intermediate level to a lower level in said chamber, thereby limiting the maximum level of said first body of liquid refrigerant and establishing a second body of liquid refrigerant at said lower level;

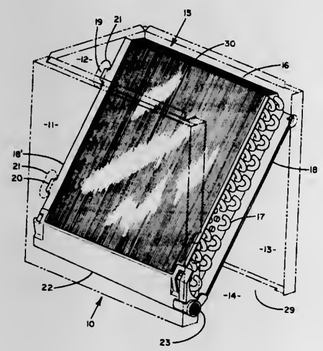
d. utilizing liquid from said first body and said second body of liquid refrigerant in separate refrigeration stages at different pressures;

wherein a first vapor stream is removed from said chamber through a conduit in the upper portion thereof above said first body of liquid refrigerant and a second vapor stream is removed from said chamber through a conduit in the lower portion thereof below said first body of liquid refrigerant and above said second body of liquid refrigerant.

3,882,690
HEAT EXCHANGE ASSEMBLY

Richard J. Duell, Syracuse, and Fred V. Honnold, Jr., North Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 28, 1973, Ser. No. 401,733
Int. Cl. F25d *21/14*
U.S. Cl. 62—288 **6 Claims**



1. A heat exchange assembly comprising:

a. heat transfer means having a relatively cold heat exchange fluid passing therethrough, said heat transfer means including at least one tab means extending from each surface defining the ends of said heat transfer means;

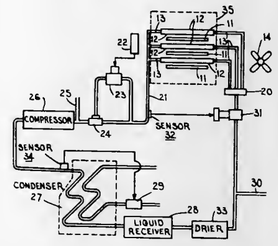
b. means to pass a relatively warm medium in heat transfer relation with the relatively cold heat exchange medium passing through said heat transfer means, said warm medium being cooled thereby resulting in the formation of condensate on said heat transfer means; and

c. means to collect said condensate, said collection means being disposed below and extending substantially coextensive with the lower surface of said heat transfer means to permit said condensate to drain into said collection means, said collection means including means defining a slot at each end thereof, each of said slot defining means receiving one of said tab means extending from said heat transfer means to secure said collection means to said heat transfer means.

3,882,691
APPARATUS FOR COOLING ELECTRICAL CIRCUIT COMPONENTS

Donald Baines, and Godfrey Roger Houseman, both of Stockport, England

Filed June 8, 1972, Ser. No. 263,346
Claims priority, application United Kingdom, June 10, 1971, 27363/71
Int. Cl. F25b *41/04*
U.S. Cl. 62—225 **5 Claims**

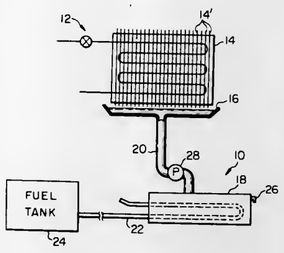


1. An electrical circuit arrangement comprising: a support member; a plurality of electrical components mounted on a support surface of said support member; a cooling member positioned adjacent to and spaced from said components, said cooling member having a cooling surface which faces said support surface; means for maintaining said cooling member at a temperature lower than a desired operational temperature of the components; means for producing a turbulent flow of gas between said surfaces thereby promoting convective transfer of heat from said components to said cooling surface; and means for controlling the rate of absorbtion of heat by said cooling means such that the temperature of the gas after passing between said surfaces is substantially the same as the temperature of the gas before passing between said surfaces.

3,882,692
FUEL COOLING DEVICE IN AN AUTOMOTIVE VEHICLE EQUIPPED WITH AN AIR CONDITIONER

Takeaki Watanabe, Yokosuka; Hiroshi Sakasegawa, and Kuniyuki Tanabe, both of Yokohama, all of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed June 11, 1974, Ser. No. 478,260
Claims priority, application Japan, June 13, 1973, 48-69882
Int. Cl. F28d *5/00*
U.S. Cl. 62—316 **5 Claims**

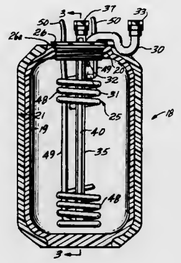


1. A fuel cooling device in an automotive vehicle equipped with an air conditioner including a refrigerant evaporator, comprising a heat exchanger disposed in contact with fuel for cooling thereof; conduit means fluidly connecting a reservoir and said heat exchanger; said reservoir being disposed to collect cool condensed water from the refrigerant evaporator.

3,882,693
WATER COOLER

Donald E. Hiller, Santa Barbara, Calif., assignor to Rayne International, Santa Barbara, Calif.

Filed Feb. 1, 1974, Ser. No. 438,869
Int. Cl. B67d *5/62*
U.S. Cl. 62—394 **6 Claims**



1. A water cooler comprising:

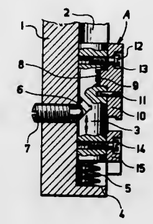
a container for receiving water to be chilled; and

a double-tube cooling coil supported within the container to be immersed in the water to be chilled, the coil being helically wound and having an inner tube to receive a refrigerant fluid, and an outer tube which isolates the inner tube from water in the container to prevent water contamination should the inner tube fail, the outer tube having an open end venting outside the container, the inner and outer tubes having substantially uniform wall thicknesses and having cross-sections deformed into generally elliptical shape by the helical winding to place a portion of an outer surface of the inner tube in contact with a portion of an inner surface of the outer tube along the length of the helical coil.

3,882,694
ADJUSTABLE NEEDLE CAM SUPPORT

Bohumil Stepanek, and Rudolf Bandoch, both of Brno, Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Mar. 14, 1973, Ser. No. 341,036
Int. Cl. D04b *15/32*
U.S. Cl. 66—54 **5 Claims**



1. A supporting device for the needle cams on knitting machines, comprising a supporting frame member, a slide mounted on the frame member for adjustment along a first path parallel to the direction of knitting movement of the knitting needles, means for adjusting the slide along the said first path, a stitch cam and means connecting the stitch cam to the slide for sliding movement with respect thereto along a second path transverse to the direction of the knitting movement of the knitting needles, said last named means comprising interfitting relatively laterally slidable guiding tongue and horizontally groove formations on the slide and stitch cam, said formations extending transversely to the direction of knitting movement of the knitting needles, and means for securing the stitch cam to the slide in a selected position along said second path.

3,882,695
WEAR-RESISTANCE OF KNITTING MACHINE SUPPORT MEMBERS

Howard D. Flicker, Miami, Fla., assignor to The Singer Company, New York, N.Y.

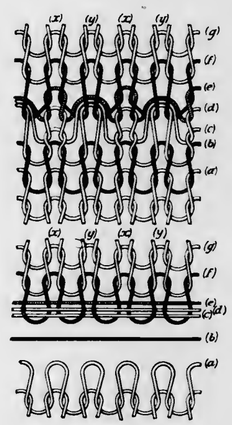
Filed Nov. 5, 1973, Ser. No. 413,018
Int. Cl. B04b *15/00*
U.S. Cl. 66—115 **19 Claims**

1. A needle cylinder for a circular knitting machine having a plurality of needle accomodating slots therein, the needle-bearing base of each of said slots being provided with a wear-resistant non-ferrous metal coating comprising nickel phosphide which exhibits a Rockwell C-scale hardness of at least 70 and is of substantially uniform thickness of at least 0.002 inches, said coating being bonded to the substrate by means of a network of interstices in the surface thereof.

3,882,696
METHOD OF KNITTING

Keith Jeffcoat, Nuneaton, and Robert Scott, Gilmorton near Rugby, both of England, assignors to Courtaulds Limited, London, England

Continuation of Ser. No. 197,288, Nov. 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 33,375, April 30, 1970, abandoned. This application Aug. 31, 1973, Ser. No. 393,280
Int. Cl. D04b *9/46*
U.S. Cl. 66—172 R **7 Claims**



1. A method of knitting on needles of a single bed of a knitting machine, an unroveable set-up comprising starting courses for a piece of fabric to be knitted on the machine, said method comprising the steps of

a. knitting a first starting course by taking yarn into the hooks of all of said needles and holding said first starting course against unroving,

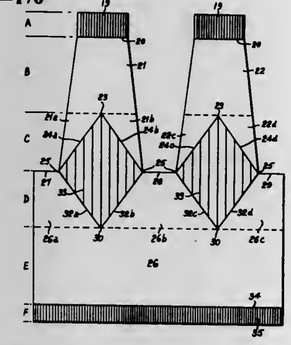
b. knitting at least one subsequent starting course by taking yarn into the hooks of all of said needles, pulling alternate loops of said subsequent starting course through alternate loops of said first starting course and retaining the remaining loops of said subsequent starting course on the needles with the remaining loops of said first starting course,

c. knitting a final starting course by taking yarn into the hooks of all of said needles, and pulling alternate loops of

said final starting course through said retained loops of the previous courses, and

d. releasing said hold on the first starting course, leaving at least said first final starting courses interlaced, thus to prevent unroving of said final starting course.

3,882,697
KNITTING OF GARMENTS
Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England
Continuation-in-part of Ser. No. 126,521, March 22, 1971, abandoned. This application Dec. 6, 1972, Ser. No. 312,710
Claims priority, application United Kingdom, Dec. 7, 1971, 56765/71
Int. Cl. A41b *9/06*
U.S. Cl. 66—176 **22 Claims**



1. A method of knitting a blank for production of a garment having sleeves and a body portion with a waist and a neck, comprising the steps, carried out in either order, of

a. knitting a piece of non-tubular fabric comprising substantially all parts of the front and rear of the body portions, so that the wales in said fabric piece run in a direction between the waist and the neck of the garment and

b. forming both sleeves for the garment substantially contemporaneously by knitting non-tubular sleeve fabric having knitted wales extending in the longitudinal direction of the sleeves, said sleeve fabric including pieces of fabric each of which comprises substantially the whole fabric for a sleeve,

said method being further characterized by taking needles out of action, during knitting, progressively along one sleeve-body join line whilst maintaining knitted loops on said needles and then progressively reintroducing said needles to knitting action, whereby wales of the sleeve fabric are joined at an angle to wales of the body fabric in the finished blank and the sleeve fabric is knit integrally with the body fabric.

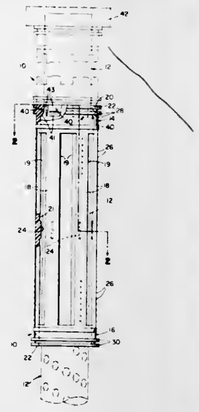
3,882,698
FLEXIBLE DYE TUBE
Stanley Livingstone, Charlotte, and Neal E. Sellers, Mount Holly, both of N.C., assignors to American & Efird Thread Mills, Inc., Mount Holly, N.C.
Filed June 27, 1973, Ser. No. 373,982
Int. Cl. B65h *75/22*; **B05c** *7/00*
U.S. Cl. 68—198 **10 Claims**

1. A tube for use on a perforated dyeing spindle, for supporting for dyeing a package of yarn wound therearound, said tube having a longitudinal axis and comprising:

a plurality of flexible uprights spaced circumferentially around said axis, and

top and bottom base portions of the tube,

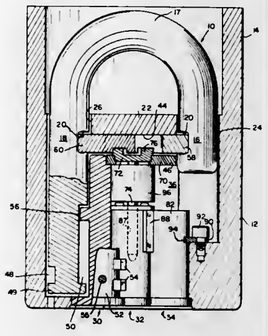
each said upright being joined at opposite ends to said base portions, respectively, and unsupported between said base portions, said uprights being sufficiently resilient so that they will bow under radially compressive forces and recover their original shape upon removal of said forces, each said upright having an inner surface and a portion protruding from said inner surface toward said axis, to prevent contact of said upright with said spindle except at said portion of said upright, thus minimizing blockage of



the perforations in said spindle by said uprights and limiting the area of contact between said spindle and said uprights upon shrinkage of said yarn,

said spaced uprights and base portions cooperatively defining a plurality of dye openings through the tube.

3,882,699
ATTACK-RESISTANT PADLOCK
Max L. Flack; William R. Foshee, and Ralph E. Le Tourneau, all of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.
Filed July 23, 1973, Ser. No. 381,925
Int. Cl. E05b *67/22*
U.S. Cl. 70—38 A **15 Claims**



1. A padlock, comprising

a case having two parallel holes for reception of the spaced legs of a shackle, and a transverse bolt slideway extending between and intersecting said holes,

a shackle receivable in said holes and having bolt-receiving notches in its legs,

a pair of L-shaped bolts longitudinally slidable in said slideway between projected and retracted positions,

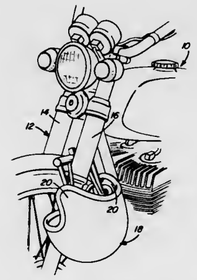
said bolts having head ends which in said projected position extend into said shackle notches to secure the shackle against retraction from the case,

said bolts having inward projecting legs lying on opposite sides of an interface plane in passing side-by-side relationship, the legs having transverse slots therein for engagement by a throw member,

a throw member rotatably mounted in said case on an axis substantially in said interface plane and having eccentric drive lugs thereon engaged in said bolt slots,

said lugs each having an external surface on an arc about the center of rotation of the throw member and being movable substantially to a position intersecting said interface plane, the bolt slots having outer side faces substantially normal to said interface plane and tangent to said external lug surfaces when the throw member and bolts are in bolt projected position so as substantially to deadlock said bolts against forced retraction.

3,882,700
HELMENT LOCK FOR MOTORCYCLES
Weldon C. Dunlap, 5780 Gena Ln., and Thomas R. Philips, 215 Berkshire Ln., both of Beaumont, Tex. 77707
Filed Feb. 1, 1974, Ser. No. 438,798
Int. Cl. E05b *69/00*
U.S. Cl. 70—59 **9 Claims**



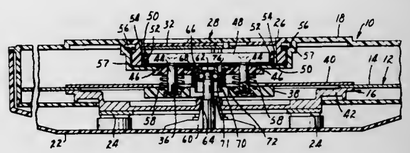
1. A helmet lock comprising a generally U-shaped body including generally parallel legs interconnected at one pair of corresponding ends by means of an elongated bight portion assembly extending and secured therebetween, the free end portions of the legs of said U-shaped body including oppositely outwardly facing and projecting abutment members adapted to engage the inner surface portions of the portions of a safety helmet covering the ears of the wearer of the helmet, said bight portion assembly including opposite end sections thereof from which the corresponding legs are supported, said end sections being guidingly supported from each other for adjustment of said legs toward and away from each other and including coacting lock means operable to releasably lock said end sections in adjusted relative positions against relative adjustment thereof to shift said legs toward each other.

3,882,701
LOCKING LATCH FOR A DISK CARTRIDGE
Wayne M. Wirth, North Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Nov. 28, 1973, Ser. No. 419,711
Int. Cl. E05b *65/48*
U.S. Cl. 70—63 **4 Claims**

1. A cartridge for a recording disk having a hub with a central opening, said cartridge including separable mating top and bottom covers coupled by a releasable catch mechanism operable by a handle mounted on the top cover for movement between open and closed positions, wherein the improvement comprises:

a centrally positioned projection on said bottom cover having an enlarged end adapted to pass through the central opening in said hub when the covers are mated;

a latch assembly mounted centrally on said top cover and positioned for engagement by the projection, including a plurality of balls mounted therein for radial movement between inner engaged positions against the projection on the side of the enlarged end adjacent the bottom cover and outer release positions spaced from the projection to afford movement of the enlarged end therebetween; and cam means operably coupled to said handle for moving said balls to their engaged positions when said handle is moved to its closed position, and for affording movement

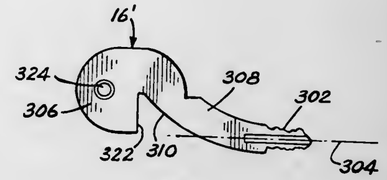


of the balls to their release positions, when said handle is in its open position;

a pin tumbler lock mechanism including a key operated plug mounted in the top cover for rotation between locked and unlocked positions; and

bolt means coupled to the plug for engaging and preventing movement of the handle from its closed position when the plug is rotated to its locked position.

3,882,702
KEY FOR LOCK ANTI-PICK DEVICE
Max Wiczer, 9122 Kedvale, Skokie, Ill. 60652
Division of Ser. No. 294,385, Oct. 2, 1973, Pat. No. 3,765,199. This application July 27, 1973, Ser. No. 383,184
Int. Cl. E05b *19/04*
U.S. Cl. 70—406 **2 Claims**



1. A key for use with a lock of the type having a key holder disposed ahead of the key slot and a key receiving recess in the holder having a curved key supporting wall extending from an outer periphery of the holder to a location adjacent the key slot, said key having:

a. a straight tumbler engaging portion along a straight axis for insertion into the key slot of the lock, said tumbler engaging portion being disposed on at least one edge surface of said key, spaced from, but generally parallel to, said straight axis,

b. a gripping portion,

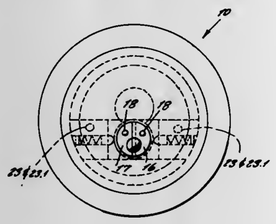
c. a stem joining the gripping portion to said tumbler engaging portion, said stem having a curved bearing surface generally complementary to the curved supporting wall of the holder to facilitate sliding insertion of the key into the key slot, and

d. an edge located generally between said gripping portion and said stem and extending generally transverse to said axis so as to contact an end surface of said key holder when the key is inserted therein.

3,882,703
PICK-PROOF LOCK MECHANISM

Robert Hermann, P.O. Box 218, Stronghurst, Ill. 61480

Filed Jan. 29, 1974, Ser. No. 437,613
Int. Cl. E05b 63/00
U.S. Cl. 70—419 2 Claims

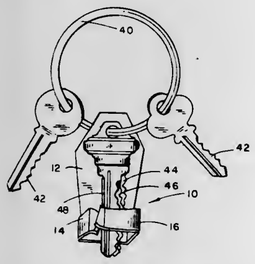


1. A pick-proof lock mechanism, comprising in combination, a cylinder and core assembly for application to a door or the like, said cylinder and core assembly having a crush resistant ring, said cylinder and core assembly including a pair of separateable door members, said door members having over lapping step portions for making engagement with each other, said cylinder and core assembly including a pair of plugs having holes that slidably carry a pin which is springly urged inward of said lock mechanism by means of coil springs, said lock mechanism including a two piece key comprised of a first member and a second member, said first member having a series of projections on an end thereof, said projections being receivable in openings upon an end of said second member, said lock mechanism including a slip band of tubular character having long and terminal grooves and protrustions in a central opening thereof, said grooves and protrusions corresponding to a configuration of said two piece key in order to fit on said key and hold said key together, lugs on a rear of said doors riding within a groove of said cylinder and core assembly, said plug being in said groove alongside said door members and being held in place by said pins which are fitted holes located in said grooves, said coil springs being positioned over each said pin, and a press fit cap being positioned over said spring.

3,882,704
KEY MOUNTING DEVICE FOR HOLDING A GROUP OF SELECTED KEYS IN A PREDETERMINED ARRANGEMENT

Victor Shanok; Jesse P. Shanok, both of Brooklyn, and Joseph Laszlo, New York, all of N.Y., assignors to Silvatrim Associates, South Plainfield, N.J.

Filed Apr. 11, 1974, Ser. No. 460,096
Int. Cl. A47g 29/10
U.S. Cl. 70—456 R 10 Claims

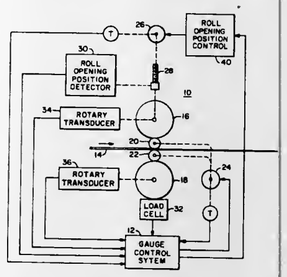


1. A key mounting device for holding a group of selected keys in a predetermined arrangement, said device comprising a body member upon which the keys can rest, aperture means through one end portion of said body member for receiving a key ring, tab means at an opposite portion for holding the keys relative to said body member, said tab means including a pair of leg members, a first section of one of said leg members being disposed over a second section of the other of said leg members, whereby the keys are passed between said first and second sections when being positioned on said body member and when being removed therefrom.

3,882,705
ROLL ECCENTRICITY CORRECTION SYSTEM AND METHOD

Richard Q. Fox, Orlando, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 7, 1974, Ser. No. 448,869
Int. Cl. B21b 37/00
U.S. Cl. 72—11 9 Claims



1. A method of controlling the delivery gauge of a workpiece passing through a rolling mill stand having a pair of work rolls between which said workpiece is passed, with said work rolls respectively being operative with a pair of back-up rolls having eccentricity, said method including the steps of:

establishing values of said eccentricity of at least one back-up roll in relation to first and second angular positions of the other said back-up roll and in accordance with a predetermined relationship including the roll force between said work rolls and the angle of rotation for each of said first and second angular positions of said other back-up roll before said workpiece is passed between said work rolls,

measuring the angular position of said one back-up roll with said workpiece passing between said work rolls for selecting one of said values of eccentricity in relation to said measured angular position, and

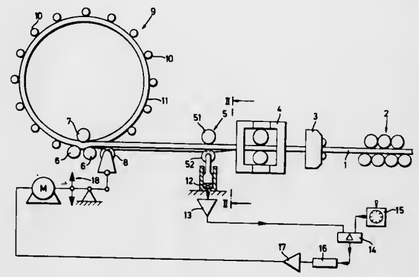
controlling the delivery gauge of said workpiece passed between said work rolls in relation to the measured unloaded roll opening between said work rolls, the roll force between said work rolls, said selected value of eccentricity and the known modulus of elasticity of said roll stand.

3,882,706
METHOD AND APPARATUS FOR PRODUCING HELICAL SEAM WELDED STEEL

Heinz Gross, Reichsmarkstrasse 142, 4600 Dortmund-Syburg, Germany; Harry C. Wade, 1205 Fennel St. E., Apt. 104, Hamilton, Ontario, and John W. Witts, 20 Damode Dr., Foothill, Ontario, both of Canada

Division of Ser. No. 355,663, April 30, 1973, Pat. No. 3,851,376. This application Aug. 2, 1974, Ser. No. 494,279
Claims priority, application Germany, May 4, 1972, 2221776
Int. Cl. B21c 37/02
U.S. Cl. 72—17 3 Claims

1. Apparatus for producing helical seam welded pipe from strip material including a strip bending machine comprising a three-roll bending device and a roll located adjacent said three-roll bending device and spaced upstream from it relative to the direction of movement of the strip material, the rolls of said three-roll bending device being fixed and said rolls adjacent to them being movable transverse to the direction of movement of the strip material for controlling the entrance

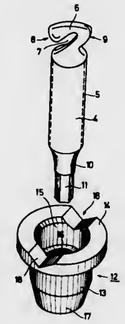


angle of the strip into said three-roll bending device, and means for controlling the movement of said roll based on measurements of the deformation resistance of said strip material made at a position upstream from said roll.

3,882,707
APPARATUS FOR FORMING NECKS ON PIPES

Gunter Rothenberger, Bad Homburg, Germany, assignor to Ing. Edwin Rothenberger, a/k/a Schweibtechnik- und Industrie-Bedarf, Frankfurt, Germany

Filed Oct. 29, 1973, Ser. No. 410,872
Claims priority, application Germany, Mar. 26, 1973, 7311408; June 13, 1973, 7322019
Int. Cl. B21d 51/40
U.S. Cl. 72—117 11 Claims

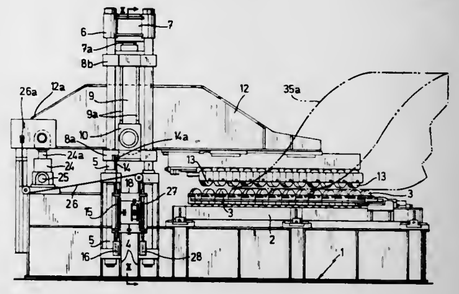


1. An arrangement for forming cylindrical-shaped attachments of the periphery of pipe-shaped members comprising, in combination, a threaded bolt member having a hook-shaped head; a sleeve member coaxial with the axis of said bolt member and having a threaded portion for receiving said bolt member, said sleeve member having a cylindrical recess for the passage thereinto of said hook-shaped head; and a bearing rim on said sleeve member and having diametrically oppositely lying recesses, each recess extending the full width of the rim, said sleeve member contacting said pipe-shaped members at four contact lines.

3,882,708
MACHINE FOR MANUFACTURING TUBES BY HELICALLY WINDING A METAL SHEET

Albert Pierre Ghislain Schaaps, Embourg, Belgium, assignor to Societe Anonyme des Ateliers de Construction de la Meuse, Sclessin-Ougree, Belgium

Filed Oct. 15, 1973, Ser. No. 406,662
Int. Cl. B21d 11/06
U.S. Cl. 72—135 6 Claims

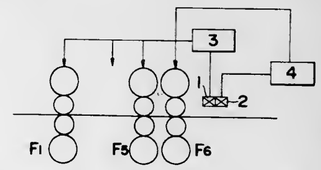


1. Machine for manufacturing tubes by helically winding a metal sheet, comprising a rigid frame, two parallel series of rollers disposed on said frame and forming outer bending members, vertical columns on said frame, a bearing beam suspended on said columns, a series of rollers at one end of said bearing beam forming an inner bending member parallel to said two outer bending members, a horizontal shaft supporting said beam and about the axis of which said beam pivots intermediate the ends of the beam, means guiding the shaft for vertical movement on said columns, a first hydraulic pressure jack having a vertical rod for raising and lower said shaft, means for supplying hydraulic fluid to said first jack, means responsive to vertical movement of said shaft in one direction to control said supply of hydraulic fluid to said first jack to return said shaft to a predetermined position, a second hydraulic jack articulated to the end of said beam remote from said rollers, and means responsive to variation in the inclination of said beam to operate said second jack to return said beam to a predetermined inclination.

3,882,709
METHOD FOR CONTROLLING THE PROFILE OF WORKPIECES ON ROLLING MILLS

Toshiharu Kawamoto; Yoji Itoh; Kouji Hiyoudo, all of Sakai, and Kenya Fukushima, Himeji, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 15, 1973, Ser. No. 406,352
Claims priority, application Japan, Oct. 16, 1972, 47-102771
Int. Cl. B21b 1/22, 37/00
U.S. Cl. 72—234 10 Claims



1. A method of controlling the crown of a workpiece passing through a rolling mill comprising the steps of roughly adjusting the crown by means of a first roughing stage of the rolling mill to produce a profile on the workpiece which is

within an allowable predetermined range for a successive

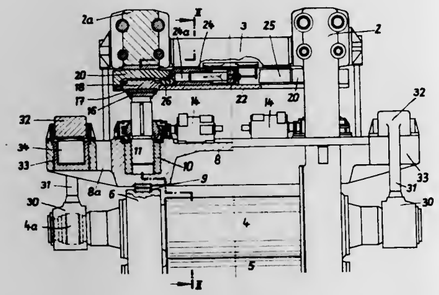
collector circuit of said first transistor means, thereby

within an allowable predetermined range for a successive second finishing stage of the rolling mill, and finely adjusting the crown by means of said second, finishing stage of the rolling mill to produce the desired profile on the workpiece by utilizing all but the final stand within said finishing stage.

3,882,710
ROLL STAND

Emil Friedrich Kersting, Dusseldorf, Germany, assignor to Maschinenfabrik Sack GmbH, Dusseldorf-Rath, Germany

Filed July 8, 1974, Ser. No. 486,606.
Claims priority, application Germany, July 6, 1973, 2334442
Int. Cl. B21b *31/02, 31/08, 31/32*
U.S. Cl. 72—238 **5 Claims**



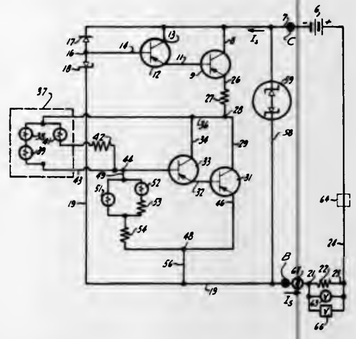
1. A roll stand comprising two lateral frames arranged in spaced parallel relationship; a window opening in each frame; a plurality of chocks in said window openings; a plurality of rolls extending between said lateral frames and journalled in said chocks; a laterally removable screwdown cross-beam extending between said lateral frames and through said window openings between the top of each frame and an uppermost roll; and associated with each frame, a screw-down mechanism removable with the cross beam and comprising: a nut fixedly mounted on the cross beam, a thrust member in screw-threaded engagement with said nut, and a drive mechanism mounted on said cross beam for imparting a rotary motion to said thrust member while permitting movement thereof relative to said nut; the cross beam in the screwed-down condition being braced against the upper part of the frame by means of said thrust members.

3,882,711
ELECTRONIC TEMPERATURE SENSOR AND INDICATOR

Newton W. Crawford, 3751 Dell Rd., Carmichael, Calif. 95608

Filed Dec. 11, 1972, Ser. No. 313,840
Int. Cl. G01k *7/24*
U.S. Cl. 73—362 AR **9 Claims**

1. Electronic temperature measuring apparatus for providing an electrical current directly proportional to sensed temperatures comprising:
   a. a D.C. power source,
   b. means for regulating voltage from said power source to provide a regulated voltage output,
   c. first transistor means having an emitter, base and collector, said emitter and collector connected to said regulated voltage output,
   d. temperature measuring means having an effective electrical resistance responsive to the sensed temperature, said temperature measuring means connected to said collector and coupled to the base of said first transistor means whereby the effective resistance of said temperature measuring means controls current through the emitter-collector circuit of said first transistor means, thereby defining an effective resistance versus current characteristic function,
   e. said temperature measuring means having an effective resistance versus temperature characteristic function approximately equal to said effective resistance versus current characteristic function,



   f. means connected to the emitter of said first transistor means and coupled to said base for biasing the emitter-base junction of said first transistor means, and
   g. means responsive to the current through said first transistor means for measuring the sensed temperature.

3,882,712
PROCESSING COPPER BASE ALLOYS

Stanley Shapiro, New Haven, and Ronald N. Caron, Branford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 1, 1973, Ser. No. 402,479
Int. Cl. B21b *3/00*
U.S. Cl. 72—364 **10 Claims**

1. A method for obtaining improved 0.01 percent offset yield strength characteristics in copper or copper base alloy formed parts which comprises:
   A. providing a copper base alloy material in plate form having a thickness of from 0.300 to 1.800 inches;
   B. cold rolling said material to a total reduction of at least 65 percent;
   C. heat treating said material at 100° to 350°C for from 30 minutes to 8 hours to decrease the tensile strength and increase the 0.01 percent offset yield strength while retaining the cold worked matrix;
   D. forming said material after said heat treatment step into a formed part; and
   E. heat treating the formed part at 100° to 350°C for from 30 minutes to 8 hours to decrease the tensile strength and increase the 0.01 percent offset yield strength while retaining the cold worked matrix,

thereby providing a formed part having high yield strength characteristics.

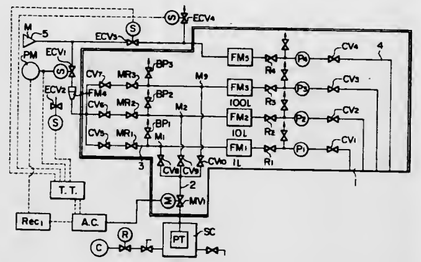
3,882,713
DEVICE FOR MEASURING SENSUOUS DEGREE OF ODOR

Kazuko Nishida, Shiga-ken; Kazuji Bota, Ohmihachiman, and Tadao Ando, Kusatsu, all of Japan, assignors to Nippon Airwick Service Co., Ltd., Ohmihachiman-shi, Japan

Filed June 18, 1973, Ser. No. 371,114
Int. Cl. G01n *31/00*
U.S. Cl. 73—23 **2 Claims**

1. A device for measuring sensuous degree of odor comprising at least two first conduit means for flowing non-odorous air, means for flowing said non-odorous air at a predetermined flow rate, a source of odorous air, second conduit means

connected to one of said first conduit means for adding the odorous air from said source to the flowing non-odorous air, means for controlling continuously the amount of odorous air to be added to the flowing non-odorous air, means for automatically recording the amount of added odorous air, third conduit means for the odorous air-containing air extending from said first conduit means for non-odorous air, a mask

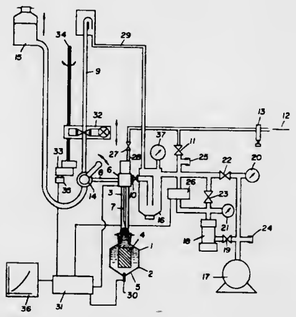


connected to the other first conduit means for non-odorous air and said third conduit means for odorous air-containing air, means for discharging the non-odorous air and odorous air-containing air alternately at a predetermined time interval, through said mask into the nostrils of a person determining the point when an odor is smelled and when the odor is not smelled, and means for recording the amount of odorous air added at the smelling point and at the non-smelling point.

3,882,714
POROSIMETER

Werner Libal, and Robert Hausner, both of Leoben, Austria, assignors to Veitscher Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

Filed Nov. 13, 1973, Ser. No. 415,303
Claims priority, application Austria, Nov. 29, 1972, 10174/72
Int. Cl. G01n *15/08*
U.S. Cl. 73—38 **23 Claims**

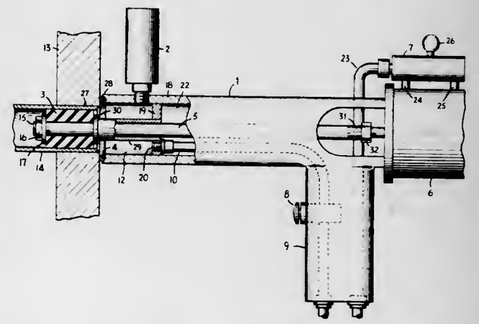


1. A porosimeter comprising
1. a source of fluid pressure,
2. a source of vacuum,
3. a dilatometer consisting essentially of
   a. a vessel for receiving a porous sample and a measuring liquid which does not wet the sample,
   b. a capillary tube removably placed on the vessel and forming a fluid-tight seal therewith, and
   c. a filling capillary having a tip inserted in the capillary tube,
4. a measuring capillary containing the measuring liquid,
5. a first multi-way valve selectively connecting the filling capillary to the measuring capillary and to the fluid pressure source,
   a. valve means being arranged for selective disconnection of the fluid pressure source from, and connection of the vacuum source to, the multi-way valve,
   b. connection of the filling capillary to the measuring capillary causing the measuring liquid to flow from the measuring capillary through the filling capillary into the dilatometer to raise the level of the measuring liquid therein until it reaches the tip of the filling capillary, and
   c. connection of the filling capillary to the fluid pressure source raising the fluid pressure in the dilatometer and thus depressing the measuring liquid level in correspondence to the increased fluid pressure, this pressure causing the measuring liquid to enter the pores of the sample, and
6. control means for maintaining the measuring liquid level in the dilatometer substantially constant.

3,882,715
AIR LEAK DETECTOR

William R. Slinger, Kearney, N.J., assignor to Treadwell Corporation, New York, N.Y.

Filed July 5, 1973, Ser. No. 376,745
Int. Cl. G01m *3/28*
U.S. Cl. 73—46 **1 Claim**



1. A device for detecting leaks in a joint between a tube sheet and a tube end fitted into an opening in said sheet comprising a barrel having an internal diameter larger than the external diameter of said tube, and sealing means surrounding said barrel at one end thereof adapted to seal said barrel to said sheet when said barrel is placed against said sheet, a draw rod in said barrel having an end extending beyond said barrel, a radially expandable plug surrounding at least a portion of the draw rod which extends from said barrel, said plug fitting inside said tube, means for expanding said plug to seal said tube, a chamber located at the end of said barrel, the sheet and plug defining one wall of said chamber, and a barrel plate internal to and spaced from said plug defining the other wall of said chamber, means for evacuating said chamber to a pressure below atmospheric pressure, gauge means connected to said chamber for reading increases in pressure in said chamber after evacuation, means for isolating said chamber from the vacuum source, and means for reciprocating said rod which means comprises a cylinder, a piston in said cylinder, means for selectively introducing a fluid on either side of said piston, said piston being attached to the end of said rod at a position remote from the end of said barrel.

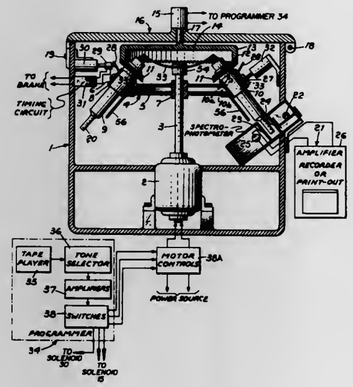
3,882,716

setting an average bias level, and means responsive to the

3,882,719

with said table and said disc, a third shaft coupled to said

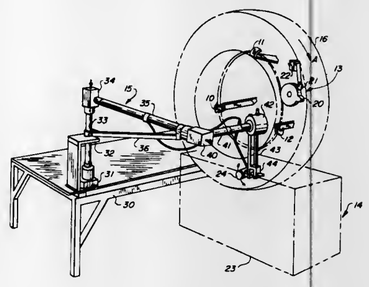
3,882,716
CENTRIFUGAL APPARATUS AND CELL
Elliott Beiman, 305-A White Ave., Northvale, N.J. 07647
Filed July 17, 1972, Ser. No. 272,563
Int. Cl. G01n *31/02*
U.S. Cl. 73—61.4 **11 Claims**



1. A centrifuge comprising:
a housing,
drive means mounted in said housing and including a rotatable longitudinal shaft having a central axis,
a rotatable support member mounted on said shaft,
a plurality of cells mounted on said support member at an acute angle to said shaft for centrifugal rotation with said support member about said central axis,
peripheral means secured around each said cell for rotating each of said cells about its own respective axis on said support member, each said cell having a portion adapted for detecting the contents thereof,
an annular axially movable non-rotatable member selectively engageable with said peripheral means around said cells to rotate said plurality of cells simultaneously about their respective axes,
read out means disposed within said housing adjacent the path of said cells for detecting the contents of said cells, and
control means for sequentially positioning said cells adjacent said read out means.

3,882,717
SELF-ADJUSTING ULTRASONIC TIRE INSPECTION DEVICE
Porter T. McCauley, Winnetka, Ill., assignor to James Electronics Inc., Chicago, Ill.
Filed June 20, 1973, Ser. No. 371,601
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 S **14 Claims**

1. An ultrasonic tire inspection device comprising means for rotating a tire, an ultrasonic transmitting transducer, an ultrasonic receiving transducer, means for supporting said ultrasonic transmitting transducer on one side of the tire casing and said ultrasonic receiving transducer on the opposite side of the tire casing, means for rotating said tire through at least two complete 360° revolutions, means responsive to the output of said receiving transducer during a first 360° revolution for setting an average bias level, and means responsive to the output of the receiving transducer on another of said 360° revolutions for recording significant variations from said average bias level.



3,882,718
NONCONTACTING PRESSURE MEASURING APPARATUS
Anthony R. Kriebel, Menlo Park, Calif., assignor to American Optical Corporation, Southbridge, Mass.
Filed May 5, 1971, Ser. No. 140,359
Int. Cl. A61b *3/16*
U.S. Cl. 73—80 **12 Claims**

1. A noncontacting apparatus for measuring internal pressure within an eyeball having a deformable wall surface comprising:
stimulus generating means developing continuously oscillating pressure waves of a fluid and for directing such waves upon said deformable wall surface of the eyeball under test to cause responsive vibratory deflection thereof, said pressure waves having an oscillating frequency variable over a range of frequencies including a resonant frequency of said eyeball and said stimulus generating means being spaced apart from said eyeball by said fluid;
means for directing a beam of light upon said surface to develop a reflected light beam;
light detecting means responsive to said reflected light beam and operative to develop an electrical signal commensurate with the deflection of said surface; and
indicating means responsive to said electrical signals and operative to indicate said resonant frequency.

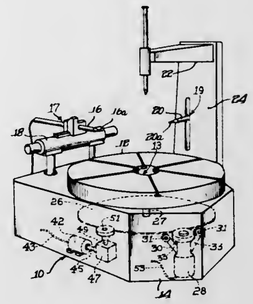
3,882,719
DEVICE FOR USE IN LOADING TENSION MEMBERS
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and Walter T. Appleberry, Long Beach, Calif.
Filed May 10, 1973, Ser. No. 359,156
Int. Cl. G01l *5/04*
U.S. Cl. 73—143 **1 Claim**



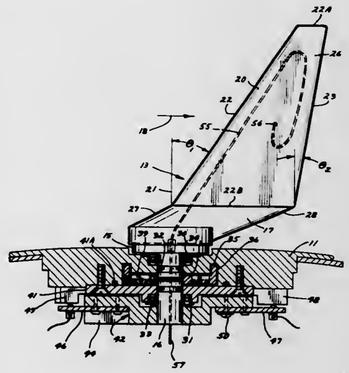
1. A prestressed device for use in loading tension members comprising:
an elongated elastic body having at least a portion thereof of circular cross section and having a pair of shanks extended from the opposite ends thereof for coupling said body with means adapted to apply tensile force to said body;
means defining on the external surface of said portion of said elastic body an annular shoulder;
means defining in space relation with said annular shoulder a screw-thread extended along the surface of said elastic body;
an internally screw-threaded nut seated in mated relationship with said screw-thread;
a rigid sleeve telescopically received on said circular portion of said elastic body and having one end thereof disposed in abutting engagement with said annular shoulder and the opposite end thereof disposed in juxtaposition with said nut so that as a tensile force is applied to said shanks, the elastic body is caused to elongate, whereby a repositioning of the nut into abutting engagement with said sleeve is facilitated for supporting the elastic body in a prestressed condition, subsequent to removal of applied tensile force;
said sleeve being circular in cross section and having an internal diameter substantially equal to the external diameter of said circular portion of said elastic body whereby said sleeve fits snugly with said portion of said body;
said sleeve being freely rotatable relative to said body when said nut is not pressing against said opposite end of said sleeve thereby providing a tactily detectable indication as to when a tensile force exceeding such prestress force is reapplied to said body.

3,882,720
GEAR CHECKING MACHINE HAVING A FRICTIONALLY DRIVEN SUPPORT TABLE AND POSITION ENCODER
Edward Francis Fabish, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Dec. 17, 1973, Ser. No. 425,436
Int. Cl. G01m *13/02*
U.S. Cl. 73—162 **5 Claims**

1. A gear checking machine comprising a frame, indicating means, a table rotatably mounted in said frame for supporting a gear to be checked, sensing means mounted adjacent said gear for supplying a signal to said indicating means which is indicative of the surface variations of said gear, a first shaft, a relatively large diameter circular disc coupled to said table by said first shaft and supported below said table by said first shaft, first and second small circular wheels each having a diameter substantially smaller than the diameter of said large disc, said first small wheel having its periphery in engagement with the periphery of said large disc, disc drive means coupled to said second shaft for simultaneously revolving said first and second small wheel, said table and said large disc, sensing drive means for driving said sensing means in synchronism with said table and said disc, a third shaft coupled to said second small wheel and encoder means coupled to said third shaft for supplying output signals which are a function of the rotation of said table.



3,882,721
VANE TYPE AIRFLOW SENSOR
Donald M. Neary, and John A. Doremus, both of Wayzata, Mich., assignors to Rosemount Inc., Minneapolis, Minn.
Filed Nov. 16, 1973, Ser. No. 416,360
Int. Cl. G01w *1/10*
U.S. Cl. 73—188 **14 Claims**

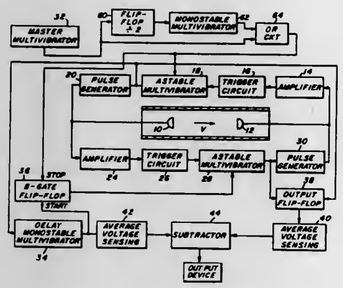


1. An airflow sensor suitable for use on an aircraft comprising a support housing having an outwardly facing surface, a shaft rotatably mounted in said housing about a shaft axis, a vane mounted on said shaft and extending outwardly from said outwardly facing surface of said housing in a preselected orientation thereto, said vane being positioned to be assymmetrically located with respect to said axis and having a leading edge swept rearwardly with respect to normal fluid flow at a first acute angle, and said vane further having a trailing edge swept rearwardly at an angle less than said first acute angle whereby said vane swept edges converge in direction outwardly from said outwardly facing surface, counterweight means mounted on said shaft and positioned on the interior of said housing for counterbalancing said vane, and means to sense movement of said shaft from a first preselected rotational position.

3,882,722
MULTIPLE TIME DIFFERENCE ULTRASONIC FLOWMETERS

James L. McShane, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 7, 1973, Ser. No. 395,318
Int. Cl. G01f 1/00
U.S. Cl. 73—194 A 3 Claims



1. In a flowmeter of the type wherein at least one pair of oppositely disposed ultrasonic transducer means are located in acoustic contact with a fluid stream and in upstream-downstream relation thereto; a first feedback path couples the output of a first of said tranducer means to the input of a second of the transducer means such that upon one acoustic signal being transmitted upstream from the second transducer means to the first transducer means the transmission of another acoustic signal upstream is initiated from said second transducer means when said one upstream acoustic signal is received by said first transducer means, thus generating an upstream train of acoustic signals in sing-around fashion; a second feedback path couples the output of said second transducer means to the input of said first transducer means such that upon one acoustic signal being transmitted downstream from said first transducer means to the second tranducer means the transmission of another acoustic signal downstream is initiated from said first transducer means when said one downstream acoustic signal is received by said transducer means, thus generating a downstream train of acoustic signals in sing-around fashion; the combination of:

gating means for causing said upstream and downstream trains of acoustic signals to occur between said first and second transducer means during respective and successive first and second predetermined time intervals, said first and second predetermined time intervals being different from each other;

means for deriving from the acoustic signals in each of said trains an elementary time interval characteristic of the fluid stream velocity; said elementary time interval increasing by Δt increments from one transmitted acoustic signal to the next;

means coupled to said deriving means for generating a first sum signal representing the sum of said elementary time intervals through said first predetermined time interval proportional to:

$$\Delta t + 2\Delta t + 3\Delta t + \ldots + N\Delta t$$

where Δt is the elementary time interval for the first acoustic signal in the corresponding train of acoustic signals and N is the number of acoustic signals transmitted and received successively occurring during said first predetermined time interval and for generating a second sum signal representing the sum of said elementary time intervals through said second predetermined time interval proportional to:

$\Delta t + 2\Delta t + 3\Delta t + \ldots + N'\Delta t$ *where* Δt is the elementary time interval for the first acoustic signal in the corresponding train of acoustic signals and N' is the number of acoustic signals transmitted and received successively occurring during said second predetermined time interval; and

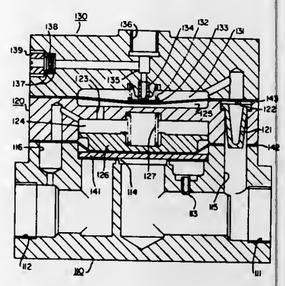
means responsive to said sum representing signal for each of said different predetermined time intervals for deriving first and second sum signals for providing signal combination thereof;

said first and second predetermined time intervals being such that $N=N'$, and the difference between said first and second predetermined time intervals being less than the nominal travel time between said first and second tranducer means for the condition of no fluid flow therebetween, thereby to compensate for deviations in each of said sum signals due to change in the speed of sound.

3,882,723
FLUID PRESSURE APPARATUS

David John Wickham, London, England, assignor to Westinghouse Brake and Signal Co., Ltd., London, England

Filed Oct. 8, 1971, Ser. No. 187,614
Claims priority, application United Kingdom, Oct. 26, 1970, 50800/70; Apr. 2, 1971, 08507/71; Apr. 2, 1971, 08508/71
Int. Cl. G01f 1/00; G01p 5/14
U.S. Cl. 73—199 11 Claims

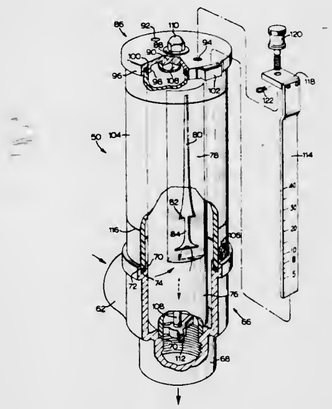


1. Fluid pressure responsive apparatus for sensing measuring and controlling fluid flow in a conduit, comprising a fluid tight vessel internally divided into a first and a second chamber by a pressure responsive member, said first chamber having a first port for a first fluid pressure signal, said second chamber having a second port for a second fluid pressure signal, and said second chamber having a third port, said pressure responsive member comprising a flexible fluid-tight membrane with a surface portion deformable to itself close said third port when the force exerted on said pressure responsive member, including the pressure in the first chamber, exceeds the opposing force exerted on said member, including the pressure in the second chamber, the third port being vented through a restricted passage to atmosphere, the fluid pressure in said passage from said second chamber depending on the degree of closure of the third port by the deformation of the member in response to said excess force, the flow in said passage giving rise to a third fluid pressure signal indicative of the difference between the first and second pressures, a fluid pressure signal utilization arrangement responsive to said third signal, said first port being connected to a first point on said fluid pressure conduit and said second port being connected to a second point on said fluid pressure conduit upstream from a first flow restrictor, which is itself upstream from said first point, through a second flow restrictor of similar flow characteristics to said first flow restrictor such that the flow through one simulates the flow through the other under the same conditions, the fluid pressure utilization arrangement being responsive to the magnitude of said third signal to indicate the flow in said fluid pressure conduit, said fluid pressure conduit having a full-bore by-passing the first restrictor and including a valve for said by-pass controlled by a closure element operable in response to the pressure difference across the first restrictor produced by fluid flow through the restrictor to the downstream part of the conduit.

3,882,724
FLOWMETER

William Rouse Hearn, Box 306, Clinton, Ontario, Canada

Filed May 4, 1973, Ser. No. 357,460
Int. Cl. G01f 1/00
U.S. Cl. 73—215 1 Claim



1. A gravity feed meter to measure the flow of liquid material from a supply comprising a first chamber having a vertically disposed wall, a first proportional weir in said wall, a second chamber surrounding first chamber in spaced apart relationship, the lower end of one of the said chambers being connected to said supply, said one chamber having an opening to atmosphere with said liquid material flowing upward therein, through said weir into and downward by gravity out to the other chamber, a vertically disposed scale on one of said chambers, said wier being calibrated to deliver predetermined amounts of liquid material at a predetermined temperature at levels indicated on said scale; a second proportional weir below said first proportional weir in said wall of said first chamber, the top of said second proportional weir communicating with the bottom of said first proportional weir, said second proportional weir facilitating the reading of smaller amounts of liquid material than that passing through the first proportional weir.

3,882,725
TEMPERATURE MEASURING APPARATUS AND METHOD WITH RESISTANCE AMPLIFIER

Dhulipala M. Rao, Penn Hills, and James F. Sutherland, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 5, 1972, Ser. No. 268,952
Int. Cl. G01k 7/20; G05f 1/46
U.S. Cl. 73—342 12 Claims

1. Apparatus for generating a signal as a function of the resistance change of a resistance temperature detector element comprising:

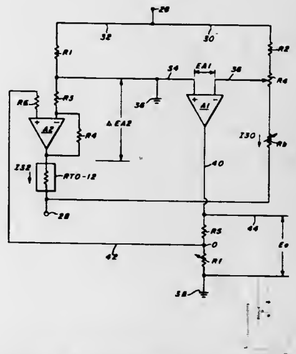
a. a resistance bridge network having its inputs connected to a constant current source;

b. a resistance temperature detector element connected in one leg of the bridge;

c. a first operational amplifier connected across the outputs of said bridge to generate an output signal;

d. a second operational amplifier having one input terminal and its output terminal connected in series with the resistance temperature detector element in said one leg of said bridge, and

e. means for applying a feedback signal derived from the output of said first operation amplifier to the other input

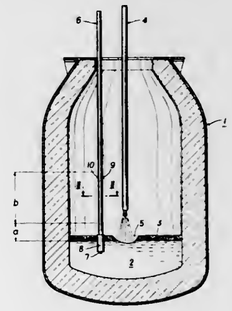


of said second operational amplifier whereby the second operational amplifier will balance the bridge by adding an incremental potential to said one leg to compensate for any potential change in said leg caused by a change in the resistance of said resistance temperature detector.

3,882,726
WATER-COOLED LANCE OR PROBE DESTINED TO BE INSERTED INTO METALLURGICAL FURNACES

Hellmuth Smejkal, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Aug. 6, 1973, Ser. No. 385,724
Claims priority, application Austria, Aug. 7, 1972, 6789/72
Int. Cl. G01k 1/12, 7/04
U.S. Cl. 73—343 R 8 Claims



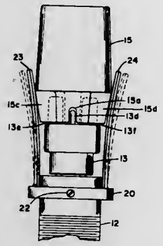
1. A water-cooled lance for use in metallurgical technology, such as a probe for continuously measuring the temperature of a metal bath, comprising an inner tube, a concentric outer tube, an intermediate guiding tube arranged between the inner and outer tubes so as to define inner and outer annular passages through which a coolant can be circulated, and means for effecting differential cooling of two different portions of a circumference of the lance along at least a part of the length of the lance, whereby a side of the lance exposed to a greater heat than an opposite side of the lance can be correspondingly cooled to a greater degree than said opposite side.

3,882,727

COOLING CURVE APPARATUS

Alexander H. Clark, Norristown, Pa., and Richard J. Hance, Philadelphia, Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed July 3, 1974, Ser. No. 485,665
Int. Cl. G01k *13/12*; **G01n** *25/04*
U.S. Cl. 73—354 **9 Claims**



1. A holder for an expendable mold for phase change detection apparatus of the type wherein a mold containing a heat sensing element has electromechanical contact structure for plug-in engagement with mating electromechanical contact structure of a test stand, said holder comprising:

temperature responsive means to engage and provide a holding force on an expendable mold when said mold and said temperature responsive means are at substantially the ambient temperature of a test location and release said holding force when said temperature responsive means is heated to a temperature substantially higher than said ambient temperature by molten material poured into said mold, and

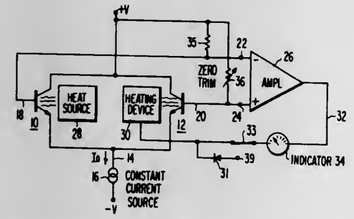
means for securing said temperature responsive means to said test stand in a position to engage and release said mold.

3,882,728

TEMPERATURE SENSING CIRCUIT

Harold Allen Wittlinger, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 6, 1973, Ser. No. 385,645
Int. Cl. G01k *7/00*
U.S. Cl. 73—362 SC **10 Claims**



1. A measuring circuit comprising, in combination:

two semiconductor devices, each including an input electrode and an output electrode, connected at their input electrodes, said devices being physically separated and thermally isolated from one another, the first of said devices being located next to an object whose temperature it is desired to measure relative to that of the second device and the second device being at a second location, said two semiconductor devices comprising transistors, each having an emitter electrode, a base electrode and a collector electrode, said input electrodes comprising said emitter electrodes and said output electrodes comprising said base electrodes;

means connected to said input electrodes for applying one portion of a constant current to the first of said devices and the remainder of said constant current to the second of said devices, the ratio of said currents being a given value when the two devices are at the same temperature;

means connected to said output electrodes for producing an output signal having a parameter at a reference value when the two devices are both at a reference temperature and responsive to a change from said given value of the ratio of the currents passing through said devices which occurs when said first device is heated by said object to a higher temperature than said second device, for producing an output signal having a parameter proportional to the change in temperature of said first device; and

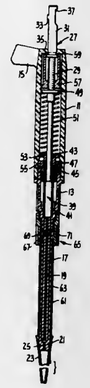
indicator means responsive to said output signal for producing an indication proportional to the value of said parameter.

3,882,729

LIQUID TRANSFER PIPETTING DEVICE WITH A FACTORY ADJUSTABLE AND SEALABLE CALIBRATION STOP

William J. Roach, Foster City, Calif., assignor to Oxford Laboratories, Foster City, Calif.

Filed May 30, 1973, Ser. No. 365,227
Claims priority, application Germany, Apr. 16, 1973, 2319175
Int. Cl. B01l *3/02*
U.S. Cl. 73—425.6 **5 Claims**



3. In a liquid transfer pipetting device that includes a hollow barrel shaped handle member, a piston chamber within said barrel, a piston element within said piston chamber and extending outward through one end of said piston chamber, an elongated plunger extending through one end of said barrel member for imparting reciprocal motion to said piston, resilient means within said barrel for normally urging said piston toward said one end of said piston chamber, and means extending from an opposite end of said barrel for engaging a hollow detachable tip and for providing fluid communication between another end of said piston chamber and an internal portion of said tip, the improvement comprising:

a calibration stop threadedly attached to said elongated plunger within the barrel member for limiting travel of the piston and plunger toward said one end of the barrel member by engaging an internal barrel member surface at its said one end, whereby the piston stroke can be calibrated by turning said calibration stop with respect to said plunger, and

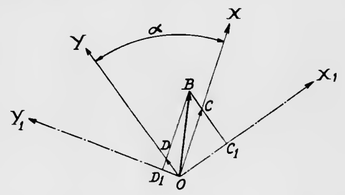
means fixing said calibration stop to said plunger for preventing rotation therebetween, whereby the calibrated piston stroke is maintained.

3,882,730

METHOD OF DETERMINING THE CORRECTION COMPONENTS OF THE OUT-OF-BALANCE WEIGHT, MAKING ANY ANGLE BETWEEN THEM, ON A DYNAMIC BALANCING MACHINE

Louis Laguna, and Christian Langlois, both of Castres, France, assignors to Regie Nationale des Usines Renault, Billancourt, France

Filed Sept. 7, 1973, Ser. No. 395,159
Claims priority, application France, Oct. 16, 1972, 72.36608
Int. Cl. G01m *1/14*
U.S. Cl. 73—462 **3 Claims**



2. A method of determining the correction components of an out-of-balance weight vector on a dynamic balancing machine, said components lying at an angle α between one another, said method comprising:

defining in each plane of correction two axes of measurement OX_1, OY_1 associated with each of two axes of correction of OX and OY and such that the axis OX_1 is perpendicular to the axis OY and the axis OY_1 is perpendicular to the axis OX;

deriving a signal from measurements made along each of said axes of measurement OX_1, OY_1, said signal defining correcting factors associated with the respective measurement axes OX_1, OY_1; and

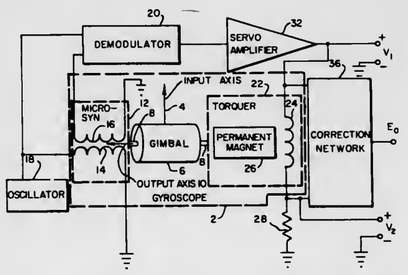
deriving vector components of correction along axes OX and OY, by multiplying the projections on axes OX_1 and OY_1 multiplied by a coefficient $1/\sin \alpha$ where α is the angle between OX and OY.

3,882,731

TORQUER SCALE FACTOR TEMPERATURE CORRECTION MEANS

Menno G. Koning, Dover, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

Filed July 31, 1973, Ser. No. 384,246
Int. Cl. G01p *15/08*; **G01c** *19/28*
U.S. Cl. 73—497 **8 Claims**



1. In a system for measuring an applied input function having a torque-to-balance feedback servo loop, said loop including a torquer having a permanent magnet and a driving coil magnetically coupled thereto, the resistance of said coil being a linear function of temperature over a predetermined temperature range, said coil being connected in series to a substantially low temperature coefficient resistor, wherein the measure of an applied input function is equal to the product of a torquer scale factor and a drive current passing through said coil, said torquer scale factor being a linear function of the temperature of said torquer over said temperature range, the improvement comprising:

a generating means connected to said torquer driving coil and said resistor for generating an output signal representative of said applied input function, said output signal being substantially independent of the temperature variation of said torquer scale factor over said temperature range wherein said generating means includes

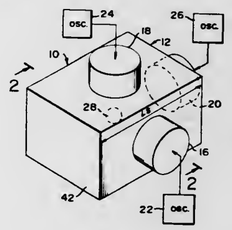
a weighted sum network having first and second input terminals and an output terminal, said second input terminal being connected to the junction point of one terminal of said coil and one terminal of said resistor, said first input terminal being connected to the terminal at the opposite end of said coil from said junction point, and wherein said output signal at said output terminal is proportional to a weighted sum of the voltages across said first and second input terminals, said output signal and said voltages being measured with respect to the terminal at the opposite end of said resistor from said junction point.

3,882,732

MATERIAL SUSPENSION WITHIN AN ACOUSTICALLY EXCITED RESONANT CHAMBER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Taylor G. Wang, Glendale, Calif.; Melvin M. Saffren, Altadena, Calif., and Daniel D. Elleman, La Canada, Calif.

Filed Aug. 31, 1973, Ser. No. 393,523
Int. Cl. G01c *19/16*, *1/00*
U.S. Cl. 73—505 **11 Claims**



9. A method for positioning an object comprising:

establishing the object in a chamber of substantially rectangular cross-section that contains a fluid, with a first pair of walls of the chamber extending substantially parallel to each other and perpendicular to a second set of walls, and with the separation of the first walls different than the separation of the second walls; and

applying acoustic energy to the fluid in a first mode which is in a direction substantially perpendicular to the first pair of walls and at a frequency that is resonant to the separation distance of the first pair of walls, and in a second mode which is in a direction substantially perpendicular to the second pair of walls at a frequency that is resonant to the separation distance of the second walls.

3,882,733

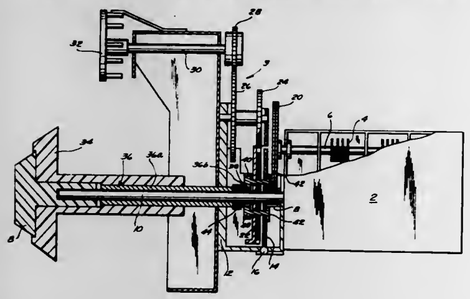
FINE TUNING SHAFT FOR TV TUNER

Kanji Fukui, and Akira Otsuki, both of Kakuda, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1974, Ser. No. 434,789
Claims priority, application Japan, Jan. 30, 1973, 48-13265
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.54 **12 Claims**

1. In a tuner comprising a tuning element, a coarse tuning input member, a fine tuning input member, and means opera-

tively connecting said members and said element so that actuation of either member causes movement of said element and actuation of said coarse tuning input member also causes movement of said fine tuning input member; the improvement which comprises said connecting means between said fine tuning input member and said element comprises a first sec-



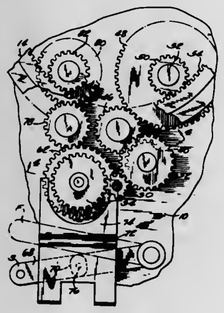
tion operatively connected to said fine tuning input member to be driven thereby, a second section operatively connected to said element to drive the latter, and a resilient force-transmitting member drivingly interposed between said sections, whereby the position of said fine tuning input member relative to said coarse tuning input member does not shift appreciably when the latter is moved.

3,882,734

TWO-SPEED CONSTANT DRIVE TIMER

George Obermann, Niles, and John Willigman, Elk Grove Village, both of Ill., assignors to Controls Company of America, Schiller Park, Ill.

Filed Nov. 19, 1973, Ser. No. 416,982
Int. Cl. F16h *5/06*
U.S. Cl. 74—337.5 **1 Claim**



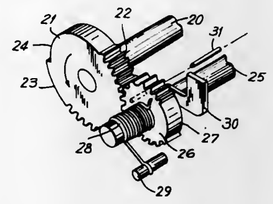
1. A two-speed timer including
a frame,
a timing cam rotatably mounted in the frame,
a motor mounted in the frame and having a drive pinion,
a slow speed gear train having an input gear driven by the drive pinion and including an overrunning clutch having an input and an output and located at the input to the gear train with the clutch input driven by said input gear and the clutch biased into engagement with the clutch input with an overrunning ratchet drive between the clutch input and output so the clutch output overruns the clutch input if rotated faster than the clutch input,
a selectively operable high speed clutch including an input and an output and having its input continuously driven by the pinion,
said high speed clutch output being rotatably mounted on the frame and axially movable on its rotational axis into engagement with the high speed clutch input,
a coil spring acting between the frame and the high speed clutch output biasing the high speed clutch output into engagement with the high speed clutch input,
a beam-type spring mounted on the frame and bearing on the high speed clutch output and operative to overcome said coil spring to move the high speed clutch output out of engagement with the high speed clutch input,
a lever pivoted on the frame and manually movable from an inoperative position to an operative position in which it acts on the beam-type spring to move it to an inoperative position whereby the high speed clutch is engaged,
said high speed clutch output including a gear driving a high speed gear train,
the output of both gear trains driving a common gear operatively connected to the timing cam whereby the slow speed gear train drives back to the overrunning clutch output during operation of the high speed drive.

3,882,735

DEVICE FOR ROTATING RECIPROCALLY

Tadayoshi Shimodaira, and Kazuto Tamai, both of Matsumoto, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Nagano, both of, Japan

Filed Nov. 20, 1973, Ser. No. 417,661
Claims priority, application Japan, Nov. 20, 1972, 47-115619
Int. Cl. F16h *55/04*
U.S. Cl. 74—435 **5 Claims**



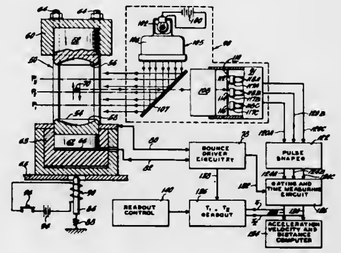
1. A device for translating unidirectional rotation into reciprocal motion comprising a unidirectionally rotatable first shaft, a driving wheel mounted on said first shaft and rotatable therewith, said driving wheel having a periphery including a plurality of gear teeth provided in a first portion thereof, said gear teeth having substantially equi-height top and bottom lands, a cam provided in a second portion thereof adjacent said first portion, said cam radially extending on said driving wheel periphery, said second portion of said driving wheel having a radius which extends substantially to said top lands of said first portion, and a third portion between said first and second portions and contiguous therewith having a radius which extends no longer than to said bottom lands provided in said first portion, a second shaft, a driven wheel mounted on said second shaft for rotation therewith and having a plurality of gear teeth provided in a continuous portion of the periphery thereof, said gear teeth on said second wheel being substantially complementary with said gear teeth provided in said driving wheel said first and second shafts being in spaced relationship, one to the other, said driving wheel and said driven wheel being respectively aligned thereon for meshing engagement of respective gear teeth provided therein so as to permit said driving wheel to rotate said driven wheel in a first direction, said gear teeth provided in said driven wheel defining a concomitant plurality of top and bottom lands therein, said driven wheel having a remaining peripheral sector having a radius which extends no farther than said bottom lands provided in said continuous portion thereof, and a biasing means connected to said driven wheel for rotatably biasing said driven wheel in a direction opposite to that in which said driven wheel is driven by said driving wheel.

3,882,736

APPARATUS FOR MAINTAINING AN OBJECT IN BOUNCING MOTION, AND FOR SENSING AND INDICATING THE POSITION AND/OR MOTION THEREOF

Theodore D. Jayne, Swarthmore, Pa., assignor to General Technical Services, Inc., Upper Darby, Pa.

Filed July 26, 1968, Ser. No. 749,521
Int. Cl. G01p *3/42*
U.S. Cl. 73—505 **15 Claims**



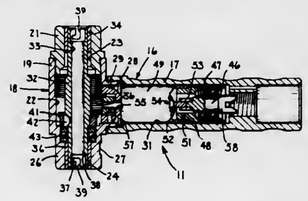
1. In inertial sensor apparatus comprising means for bouncing a body repetitively between a pair of generally opposed surfaces and for permitting said body to move substantially free of constraints and contacts between successive bounces, and further comprising means for sensing and indicating the position and/or motion of said body between said successive bounces, the improvement according to which one of said generally opposed surfaces has a non-planar configuration for opposing departures toward an edge of said one surface of the point thereof on which said body bounces.

3,882,737

DRILL-LIKE DRIVING DEVICE

Paul E. Crim, Portage, and Wayne Warfield, Kalamazoo Township, Kalamazoo County, both of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Division of Ser. No. 229,680, Feb. 28, 1972, Pat. No. 3,797,497. This application Dec. 27, 1973, Ser. No. 428,843
Int. Cl. F16h *37/06*
U.S. Cl. 74—665 S **4 Claims**



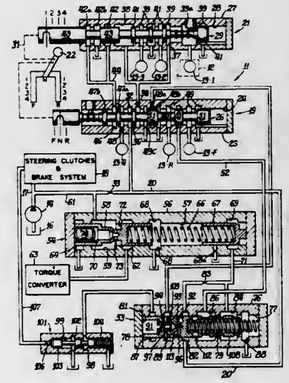
1. A drill-like driving assembly, comprising:
substantially T-shaped casing means having a main housing part and a handle part fixedly secured to said main housing part at a location disposed intermediate the ends thereof, said main housing part and said handle part comprising elongated tubular members disposed with their longitudinally extending axes positioned to substantially intersect one another at substantially right angles;
input means rotatably supported within the interior of said handle part, said input means having a rotatable coupling member disposed adjacent the free end of said handle part adapted for connection to an external power source;
elongated output shaft means rotatably disposed within and extending longitudinally of said main housing part, said output shaft means having an opening extending continuously therethrough in a direction substantially parallel to the longitudinally extending direction of said main housing part, said output shaft means also having first and second torque transmitting coupling portions provided thereon adjacent the opposite free ends thereof; gear means drivingly connected between said input means and said output shaft means for transmitting rotation therebetween, said gear means being disposed adjacent the junction of said main housing part and said handle part and including first and second meshing gear members mounted for rotation about axes substantially perpendicular to one another; and
driven means detachably connectible to said output shaft means and rotatable thereby, said driven means including a stationary housing member releasably attached to said casing means and driven shaft means rotatably supported within said housing member, said driven shaft means including means for releasably and nonrotatably engaging a working element, said driven shaft means also having coupling means associated therewith and releasably engageable with one of said first and second coupling portions for drivingly connecting said driven shaft means to said output shaft means.

3,882,738

SIMPLIFIED FLUID CIRCUIT FOR SHIFTING A TRANSMISSION

Sidney J. Audiffred, Jr., Washington, and Harold A. Mathes, Tremont, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Dec. 3, 1973, Ser. No. 421,065
Int. Cl. F16h *57/10;* **F16d** *25/00*
U.S. Cl. 74—753 **10 Claims**



1. A fluid circuit for shifting a multispeed transmission having a first and second group of fluid pressure actuated drive establishing devices, wherein at least one of said first group of devices is pressurized to select the drive ratio through said transmission while at least one of said second group of devices is pressurized to select the drive direction through said transmission, comprising:
a source of pressurized fluid,
a speed delector valve receiving pressurized fluid from said source through a first flow path and having means moveable to direct said fluid to any selected one of said first group of devices,
a directional selector valve having an inlet for receiving pressurized fluid and having valve means moveable to

direct fluid from said inlet to any selected one of said second group of devices and being moveable to a neutral setting,

a pressure modulating valve having an inlet communicated with said first flow path, and having flow controlling means moveable to control the pressure of fluid in said first flow path and further having modulating means shiftable to exert a changing force on said flow controlling means for gradually raising said fluid pressure in said flow path,

means forming a constricted fluid passage from said first flow path to said modulating means of said pressure modulating valve for gradually shifting said modulating means in response to rising fluid pressure in said first flow path, and

a safety differential valve having an inlet communicated with said first flow path and having an outlet communicated with said inlet of said directional selector valve and having a valve member moveable to control fluid flow from said inlet to said outlet, said safety differential valve having resilient means for uring said valve member towards a first position at which flow from said inlet to said outlet is blocked and having means for causing fluid pressure from said inlet to urge said valve member away from said first position towards a fluid metering position at which fluid may pass from said inlet to said outlet and having means for causing fluid pressure from said outlet to supplement the force of said resilient means on said valve member when said valve member is at said metering position whereby the pressure at said outlet is caused to have a predetermined relationship to the pressure at said inlet,

said safety differential valve further having means on said valve member thereof for relieving said fluid pressure at said outlet when said valve member shifts from said metering position towards said first position in response to a predetermined pressure drop at said inlet and having reset means on said valve member for relieving said fluid pressure on said modulating means when said valve member shifts in the opposite direction past said metering position in response to a subsequent pressure rise at said inlet following said relief of said pressure at said outlet.

3,882,739
DRIVE UNIT WITH AN INTERNAL COMBUSTION ENGINE AND WITH AN AUTOMATIC CHANGE-SPEED TRANSMISSION CONNECTED IN THE OUTPUT THEREOF

Georg Eltze, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Nov. 16, 1972, Ser. No. 307,198

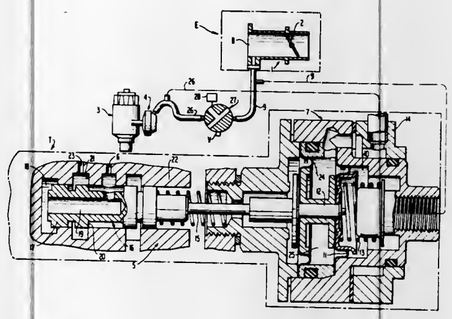
Claims priority, application Germany, Nov. 17, 1971, 2157028

Int. Cl. B60k *23/00*

U.S. Cl. 74—867 **12 Claims**

1. A drive unit arrangement with an internal combustion engine, an automatic change-speed transmission connected in the output of the internal combustion engine, an externally controlled ignition for operating the internal combustion engine, a suction pipe provided on the internal combustion engine in which the vacuum varies with the engine load, the change-speed transmission including shifting means for controlling the shifting operation in dependence on the engine load, a modulating pressure means influenced by the vacuum in the suction pipe for effecting the shifting operation, the arrangement comprising: ignition-adjusting means for adjusting the ignition for "delayed" ignition for the purposes of exhaust decontamination, and means operatively connected with said ignition-adjusting means for controlling the magnitude of the modulating control pressure upon adjustment of said ignition adjustment means toward "delayed" to correspond to the reduction of the engine torque which occurs as a result of the ignition adjustment.

12. A drive unit arrangement which includes an internal combustion engine, an automatic change-speed transmission connected in the output of the internal combustion engine, a vacuum means provided on the engine, means varying the vacuum in dependence upon the engine load, the change-speed transmission including automatic shifting means, modulating pressure means responsive to the engine load, the engine being further provided with an ignition distributor means and adjusting means for adjusting the engine ignition for "delayed" ignition for purposes of decontamination of the exhaust gases under certain circumstances resulting in a decrease of the engine torque, the arrangement comprising: means for controlling the magnitude of the modulating pressure, means operatively connected with said control means for operating the same to provide a modulating pressure corresponding to the reduction of the engine torque established by the adjusting means when the latter adjusts the ignition to "delayed" ignition.



3,882,740
PROCESS FOR CONTROLLING THE WORKING OIL PRESSURE AS A FUNCTION OF ENGINE TORQUE FOR SHIFTING ELEMENTS OF AUTOMATICALLY SHIFTED TRANSMISSIONS, ESPECIALLY FOR MOTOR VEHICLES

Hans-Joachim M. Förster; Hans Steinbrenner; Georg Eltze, all of Stuttgart, and Hans-Jörg Florus, Goppingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

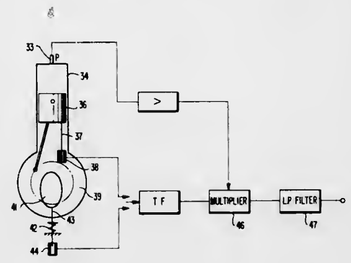
Filed June 30, 1972, Ser. No. 268,112

Claims priority, application Germany, June 30, 1971, 2132397

Int. Cl. B60k ; F16h *3/74*

U.S. Cl. 74—866 **34 Claims**

1. A method for controlling the working oil pressure as a function of torque of an engine for shifting elements of automatically shifted change-speed transmissions comprising the steps of producing a signal having a value representative of torque of the engine, producing at least one function magnitude signal having a value representative of at least one operating characteristic of one of the transmission and the engine, applying the torque signal and the at least one function magnitude signal to logic circuits for controlling the torque signal in accordance with the function magnitude signal to provide an output signal, and applying the output signal to the shifting element for controlling the working oil pressure for the shifting elements of the transmission.



3,882,742
METHOD AND APPARATUS FOR BANDSAWING OPERATION WITH PROFILING MECHANISM CAPABLE OF AUTOMATIC COPYING OF A MODEL

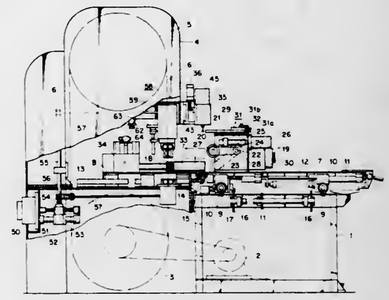
Toshihiro Fukami, Toyohashi, Japan, assignor to Fukami Co., Ltd., Toyohashi, Japan

Filed June 6, 1973, Ser. No. 367,568

Claims priority, application Japan, June 15, 1972, 47-059873

Int. Cl. B27b *13/10*

U.S. Cl. 83—56 **5 Claims**



1. A method of cutting a work by using a band sawing machine with a profiling mechanism incorporated therein and having a movable profile sensing member disposed in engagement with a work model having the desired profile on the outer periphery thereof, and a bandsaw blade deflection operating member adapted to function in response to the actuation of said profile sensing member, characterized in that it comprises the steps of converting the movement of said profile sensing member into an electrical signal which is a function of the quantity and the sense of movement of the profile sensing member, supplying said electrical signal to an electrical motor for causing a quantity and a sense of rotation thereof which is in relationship to said electrical signal, driving said bandsaw blade deflection operating member according to said quantity and the sensing of rotation of said motor, orienting said bandsaw blade to a required quantity of orientation by said blade deflection operating member in accordance with the given profile of the work model around the cutting edge portion of said bandsaw blade as the center of said orientation, and feeding back the orientating motion of said bandsaw blade to said profile sensing member.

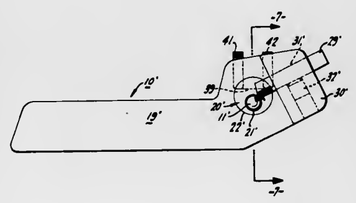
3,882,741
SUPPORT- AND -CUTTING-TOOL ASSEMBLY

Lloyd D. Cowdin, 563 Pala Ave., San Leandro, Calif. 94577

Filed Apr. 25, 1973, Ser. No. 354,347

Int. Cl. B23b *29/00*

U.S. Cl. 82—35 **6 Claims**



1. A support-and-cutting-tool assembly for machining elongated stock and like workpieces, comprising:

a. carrier shaving an opening therein adapted to be secured to the carriage of a lathe and be displaced thereby along an axially extending path having the collet of such lathe located adjacent one end thereof;

b. support block removably mounted within said opening and providing a passage of selective sizes to snugly fit the elongated stock being machined, said passage being axially disposed through said support block and alignable with such collet so as to be rotatably driven thereby; said support block being angularly displaceable within said opening about the center thereof and said passage is eccentrically disposed relative to said center;

c. cutting bit mounted upon said carrier;

d. and adjustment means for varying the relative positions of said cutting bit and passage to establish the depth of cut and amount of material machined from a workpiece extending through said passage, said adjustment means further including means for accurately adjusting the angular position of said support block relative to said carrier to establish accurately the position of said passage and any workpiece extending therethrough relative to said bit.

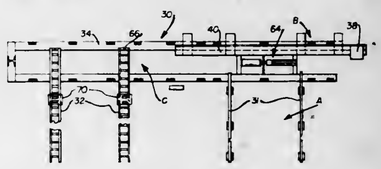
3,882,743
APPARATUS FOR MAKING SLOT DRAINAGE CULVERT

Ralph E. Evans, Middletown, Ohio, and Howard E. Blower, Oakland, Calif., assignors to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 307,137, Nov. 16, 1972, Pat. No. 3,815,213, which is a division of Ser. No. 60,516, Aug. 3, 1970, Pat. No. 3,714,786. This application Mar. 15, 1974, Ser. No. 451,435

Int. Cl. B23d *45/02*

U.S. Cl. 83—156 **8 Claims**



1. An apparatus for making an open slot culvert, for positioning in a drainage area with the open slot at the top so that

any surface drainage water will flow through the slot and directly into the culvert, the culvert being satisfactorily backfilled by utilizing any suitable material with the upper surface of the drainage area being substantially on a level with the upper surface of the open slot of the culvert, of the type having a metallic, pipe section, split longitudinally along its upper side to form a narrow slot, and grate means secured in said slot, said grate means comprising two spaced, vertical bearing members substantially normal to the axis of said pipe section and extending longitudinally over the major portion of the length of said slot and being joined by spacer means substantially normal to said vertical bearing members and substantially at the neutral axis of the pipe section wall, which comprises:

a. a plurality of spaced, parallel rails for feeding pipe sections;

b. a support means substantially perpendicular to said rails, one end of each of said rails being affixed to said support means;

c. a plurality of pairs of opposed support rolls mounted along said support means, each support roll being inclined toward the center line axis of said support means and being individually adjustable in both a vertical and a horizontal plane;

d. saw means mounted for movement along the length of said support means over substantially the center thereof;

e. a plurality of pairs of opposed side clamps mounted along said support means, said side clamps being provided with adjustable clamp fixtures at the ends thereof, said side clamps of each pair being movable toward and away from each other from a first disengaged position, wherein they do not contact the sides of a pipe section on said support rolls on said support means, to a second engaged position, wherein they contact the sides of said pipe section;

f. means for moving said side clamps in each of said pairs from said first disengaged position to said second engaged position and back again; and

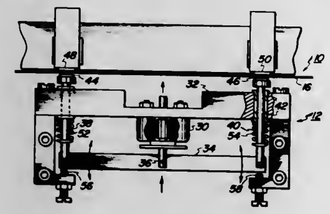
g. a plurality of spaced, parallel roller conveyors for removing fabricated culverts.

3,882,744

ELECTROSTATOGRAPHIC WEB FEEDING APPARATUS

Alan F. McCarroll, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1973, Ser. No. 391,176
Int. Cl. B26d *5/42*
U.S. Cl. 83—262 **8 Claims**



1. In electrostatographic web feeding apparatus for feeding downstream a web of image supporting material from a web supply to an imaging means for transfer of an image from said imaging means to said web in registration, including registered web cutter means for cutting said web into individual sheets, the improvement comprising:

first web feed means for feeding said web from said web supply into said cutter means;

said cutter means being located downstream from said first web feed means;

web brake means for rapidly and evenly stopping said web at said cutter means and preventing skewing of said web relative to said cutter means,

said web brake means providing, upon actuation, substantially simultaneous and automatically even pressure stopping engagement with said web at at least two spaced points transversely of said web,

said web brake means being actuated in conjunction with said cutter means;

bubble means associated with said brake means for formation of an expandable bubble of said web to prevent interruption of web feeding while said web is stopped by said web brake means; and

second web feed means for feeding said web downstream from said brake means and said cutter means; wherein said brake means comprises:

brake drive means;

an elongated teeter arm connected to said drive means and extending transverse the direction of movement of said web;

pivotal connecting means providing connection for movement by said drive means of said teeter arm toward said web, but free intermediately pivotable movement of said teeter arm relative to said web;

and at least two independent web engaging means, each including frictional web brake surfaces, respectively connected to said teeter arm on opposite sides of said pivotal connecting means for relative pivotal movement on said teeter arm relative to said web in response to uneven pressures on said web brake surfaces;

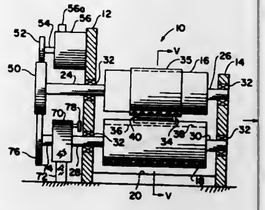
said web engaging means both being connected to said teeter arm for movement therewith toward said web by said brake drive means.

3,882,745

METHOD AND APPARATUS FOR ACCURATE DIE-CUTTING

Clyde Barner Garrett, Lanham, and William Stansbury Thayer, Lutherville, both of Md., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Dec. 29, 1972, Ser. No. 319,163
Int. Cl. B23d *25/16*; **B26d** *1/56*
U.S. Cl. 83—311 **10 Claims**



1. Apparatus for controlling the accuracy of cuts made in a paperboard blank passing between a pair of cooperating die and anvil cylinders comprising:

first drive means for rotating said die cylinder at a first angular velocity;

second drive means for rotating said anvil cylinder at a second angular velocity; and

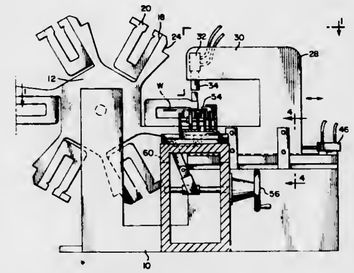
selection means for controlling second second drive means to selectively change and maintain the second velocity equal to, faster, or slower than said first angular velocity; for controlling the velocity of said blank.

3,882,746

VERTICAL TURRET IRONWORKER

Dennis Daniels, Bellevue, Wash., assignor to U.S. Amada, Ltd., Seattle, Wash.

Filed June 5, 1974, Ser. No. 476,414
Int. Cl. B21d *28/26*, *28/36*; **B26f** *1/04*
U.S. Cl. 83—552 **6 Claims**



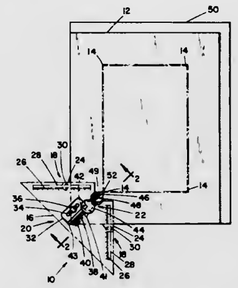
1. An ironworker having a base, a tool-carrying turret mounted on said base for rotation about a horizontal axis, a ram holder on said base, said ram holder having a striker for engaging a tool on said turret at a punching station beneath said striker and ram means for driving said striker against said tool, tool-support means aligned below said striker, means for moving said ram holder away from said punching station so as to allow passage of said turret for positioning a tool at said punching station and for moving said ram holder toward said punching station to align said striker and tool support with said tool, means for rotating said turret, and means for supporting a workpiece beneath said tool at said punching station.

3,882,747

DIMENSIONALLY AND ANGULARLY ADJUSTABLE TEMPLATE DEVICE FOR INTERIOR CORNER CUTTING OF PICTURE FRAME MATS

Othmar Carli, 341 Baltimore St., Gettysburg, Pa. 17325

Filed Aug. 12, 1974, Ser. No. 496,479
Int. Cl. B26d *3/02*
U.S. Cl. 83—561 **4 Claims**



1. A dimensionally and angularly adjustable template device for interior corner cutting of the four corners of the window section of a picture frame mat, said device comprising in combination a dimensionally adjustable base plate member having guide slots therein disposed at a right angle to each other, an L-shaped cutting blade guide and support having as component elements thereof a threadably lockable slotted base member to which is perpendicularly attached a vertically extending leg member having a series of threaded holes therein along an arcuate pattern, said leg having a pivotally connected guide arm member attached thereto at one end of said guide arm member and at the other end thereof having a V-shaped slotted blade guide, a V-shaped blade sharpened at one end and slidably positioned within the slot of said guide, said blade having a handle on the opposite end thereof, a threaded wing bolt horizontally inserted through an opening in said guide arm member between the pivot point connection of said guide arm to said leg member and said slotted blade guide at the other end thereof whereby said guide arm by means of said pivoted connection to said leg member may be angularly adjusted relative to the vertical plane to a desired vertical angular setting and be securely locked in such adjusted position at one of various vertically angular position settings by means of rotatably inserting said wing bolt into one of said threaded holes in said vertically extending leg member of said L-shaped cutting blade guide assembly, whereby the blade assembly of said device may be slidably moved along said V-shaped slotted blade guide and the cutting edge of said blade assembly into cutting engagement with said picture frame mat and the handle of said blade then impacted to effect an interior corner cut for the window section of said picture frame mat.

3,882,748

CABLE CUTTER ASSEMBLY

Daniel M. Moore, Glendora, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1974, Ser. No. 454,654
Int. Cl. B26d *5/08*
U.S. Cl. 83—623 **10 Claims**

1. A cable cutter assembly comprising:

a support;

a pair of blocks, each of said blocks having a cutting edge at a foremost end of the block;

each of said blocks having a curved surface at an opposite end of the block from the cutting edge with the curve of the curved surface being in a plane which is substantially perpendicular to the respective cutting edge so that the cable can extend smoothly about the curved surface on an end of the block which is opposite from the respective cutting edge;

means mounting the pair of blocks on said support for individual slidable reciprocatory movement with the entire cutting edges located substantially coextensively in a single plane in a facing relationship and the curved surfaces facing in substantially diametrically opposite directions with respect to one another; and

the slidable reciprocatory movement being from an open spaced apart position of the cutting edges to a closed cutting position of the cutting edges so that in the spaced apart position the cable can extend between the cutting edges and in the closed position the cutting edges will cut the cable,

whereby upon placing the cable about the curved surfaces and between the cutting edges the cable will be cut when a predetermined loading of the cable has been exceeded.

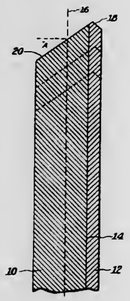
3,882,749

with its minor axis substantially perpendicular thereto, said

3,882,749
BEAVERTOOTH CUTTING EDGE

James C. Tourek, 55 Samson Ave., Madison, N.J. 07940

Filed Oct. 10, 1973, Ser. No. 405,013
Int. Cl. B26d 1/00
U.S. Cl. 83—651 3 Claims

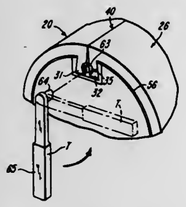


1. An elongated cutting member composed of at least two separate elongated sections of different and dissimilar metals or alloys disposed side by side, extending in the longitudinal direction of the member and bonded together along a common interface, which extends in said direction, one section being relatively thick and characterized by rapid wear during cutting, the other section being relatively thin and characterized by slow wear during cutting, one end of the member defining a cutting edge, said edge defining a line intersecting the longitudinal axis of the member at an acute angle and having a lead region or point disposed in said other section, the edge being formed from exposed portions of both sections.

3,882,750
ROTARY ANVIL CONSTRUCTION

John C. Duckett, and Rufus Neal Ensley, both of Clyde, N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed July 22, 1974, Ser. No. 490,458
Int. Cl. B26d 7/20, 7/26
U.S. Cl. 83—659 20 Claims

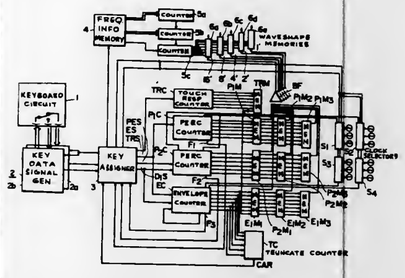


1. In combination: a rotary anvil having an outer substantially cylindrical surface and having a pair of spaced holding surfaces extending inwardly from said cylindrical surface and defining opposed walls of a longitudinal groove in said anvil, a die-cutting mat made of a compressible resilient elastomeric material attached against said anvil, said mat comprising a main central portion having opposite end portions provided with a pair of identical locking flanges extending from said end portions and being received within said groove, and a wedge between said flanges, said wedge having a major and a minor-sectional axis, said wedge having a comparatively large dimension across its major axis and being arranged substantially perpendicular said holding surfaces and thereby urging said flanges tightly against said holding surfaces to tighten and lock said mat against said anvil while simultaneously moving associated outer edges of said mat firmly against each other to provide a single line contact therebetween, said wedge having a comparatively small dimension across its minor axis and thus being adapted to be initially arranged between said flanges with its minor axis substantially perpendicular thereto, said wedge being adapted to be rotated approximately 90° to position its major axis and comparatively large dimension in said perpendicular arrangement.

3,882,751
ELECTRONIC MUSICAL INSTRUMENT EMPLOYING WAVESHAPE MEMORIES

Norio Tomisawa, Hamamatsu; Yasuji Uchiyama, Hamakita; Takatoshi Okumura, Toshiotakeda, both of Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha

Filed Dec. 11, 1973, Ser. No. 423,846
Claims priority, application Japan, July 6, 1973, 48-125513; Dec. 14, 1972, 47-125514; Dec. 14, 1972, 47-125515; Dec. 14, 1972, 47-125516; Apr. 13, 1973, 48-41964; July 6, 1973, 48-76397; July 6, 1973, 48-76398
Int. Cl. G10h 1/02, 5/02
U.S. Cl. 84—1.01 25 Claims



1. An electronic musical instrument comprising a key data signal generator which produces, in response to depression and release of a key, a key data signal corresponding to said key in a given key time period of a cyclically repeating plurality of key time periods, a key assigner including means which produce, upon receipt of said key data signal, a key address code corresponding to said key and means which concomitantly produce control signals indicating the depression and release of said key during said given key time period with respect to each of a number of channels which are portions of said time period shared by a maximum number of tones to be reproduced simultaneously, a musical tone waveshape generator means which produce a musical tone waveshape corresponding to the key address code produced from said key assigner, envelope waveshape generator means which produce an envelope waveshape upon receipt of the control signals from said key assigner and means for imparting said envelope waveshape to said musical tone waveshape, said key assigner, musical tone waveshape generating means and envelope waveshape generator means including shift registers having a number of stages corresponding to said number of channels for time-sharing processing of information in said channels and being driven in synchronization with each other.

3,882,752
CONTROLLED-DRIVE SEALING FASTENER

Charles E. Gutshall, Schaumburg, Ill., assignor to Elco Industries, Inc., Rockford, Ill.

Division of Ser. No. 222,576, Feb. 1, 1972, Pat. No. 3,788,185.
This application Oct. 25, 1973, Ser. No. 409,732
Int. Cl. F16b 43/00
U.S. Cl. 85—1 JP 6 Claims

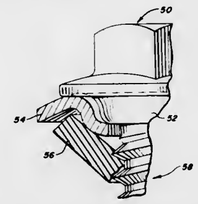
1. A controlled-drive sealing fastener comprising in combination:

a. an elongated shank threaded at least along a portion thereof and having an entering end at one extremity;

b. a head of expanded cross section integral with said shank adjacent the other extremity;

c. a centrally apertured, substantially rigid washer assembled on the shank adjacent to, and extending at least to the radial extremity of, said head, the aperture being sufficient in size to accommodate the shank adjacent the head but insufficient to pass the head and smaller than the maximum outer diameter of the threads on said threaded shank, said washer having at least an annular convex portion intermediate the radial peripheries thereof and disposed generally towards the head and a complementary annular concave portion disposed generally towards the entering end;

d. a centrally apertured, substantially resilient, normally flat-sided, right-circular cylindrical washer assembled on

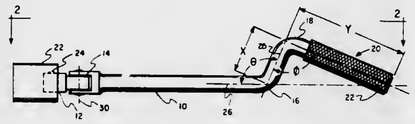


said shank adjacent said substantially rigid washer and within the radial confines thereof prior to tightening of said fastener, the periphery of the aperture of said substantially resilient washer being stretched to resiliently grip said shank, outer portions of said substantially resilient washer being relatively unstretched prior to tightening of said fastener, the resulting differential stresses holding the normally flat-sided, right-circular cylindrical washer in a inverted generally frustoconical configuration relative to said substantially rigid washer and said head; said substantially resilient washer thus being disposed to sealingly engage said shank, said substantially rigid washer and an underlying workpiece surface upon tightening of the fastener thereagainst.

3,882,753
SPEED WRENCH TOOL

Charles R. Svensen, Rt. 2, Box 92, Philomath, Oreg. 97370

Filed Oct. 18, 1973, Ser. No. 407,644
Int. Cl. B25b 13/00
U.S. Cl. 81—177 ST 2 Claims

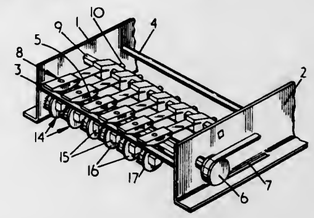


1. A speed wrench tool for single-handed rapid tightening of threaded fasteners by rotation thereof comprising a generally longitudinally-extending arm member, head means for releasably engaging a threaded fastener, coupling means for pivotally connecting said head means to an end of said arm member by a pivot axis permitting said arm member to be pivotally articulated between a position substantially collinear with the axis of rotation of said fastener and a position at substantially 90° thereto, an elongate grip handle at the other end of said arm member, and a zig-zag pair of coplanar bends in said arm member near the grip handle end thereof so as to present said grip handle end at an acute angle with and terminating proximate to the extension of the longitudinal axis of said arm member, said pivot axis of articulation being substantially in the plane defined by said pair of bends, whereby said grip end may be grasped and said arm member initially aligned substantially collinear with the axis of rotation of said fastener for rapid axial rotation and tightening of said fastener substantially by a wrist action alone, and said arm member thereafter pivoted substantially 90° therefrom for applying relatively high torque to complete the tightening of said fastener.

3,882,754
APPARATUS FOR PLAYING MUSICAL INSTRUMENTS

Kevin Michael Godley, 25 Sheepfoot Ln., Manchester, and Laurence Neil Creme, White Cottage, White Fold, New Mills, both of England

Filed Mar. 27, 1974, Ser. No. 455,424
Claims priority, application United Kingdom, Apr. 25, 1973, 19760/73
Int. Cl. G10d 3/16
U.S. Cl. 84—320 15 Claims

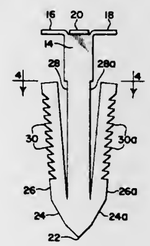


1. An apparatus for playing a stringed musical instrument comprising: at least one rotatable member adapted for location on the instrument adjacent a string; a rotatable shaft having its axis located transverse to the strings and substantially parallel to the axis of rotation of the at least one rotatable member; means to continuously rotate the rotatable shaft; and manually operable means adapted bodily to move the rotatable member into peripheral contact with its adjacent string and the rotatable shaft such that the shaft causes said member to rotate.

3,882,755
SHEET METAL DRIVE FASTENER

Robert Victor Enstrom, Oak Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

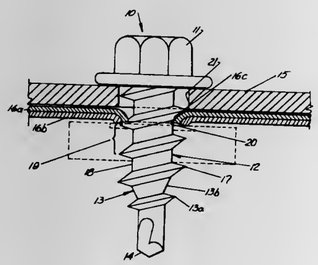
Filed Nov. 15, 1973, Ser. No. 416,302
Int. Cl. F16b 15/06
U.S. Cl. 85—11 5 Claims



1. A one-piece fastener for piercing a sheet metal panel or the like and securing thereto an insulation sheet or the like; and comprising an arcuate shank portion with head means at one end thereof and with a piercing point portion having a substantially arcuate cross section located at the opposite end thereof; and a pair of planar wings diverging outwardly from the associated longitudinal side edges of the shank portion spacing the inner edges of the wings from the adjacent side edges of the shank portion for maximum resistance to movement of the wings in the planes thereof toward the adjacent edges of the shank portion when the fastener is driven to securing position, said wings diverging from the point portion toward and terminating short of the head means and having serrations along the outer edges thereof providing shoulders

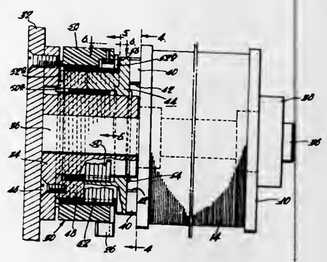
for locking engagement with a panel after piercing thereof by the point portion, said wings lying generally in planes which include the side edges of the shank and said planes being generally tangent to the imaginary surface of revolution which includes the arcuate shank, said penetrating point adapted to form an arcuate slot which tends to force the wings inwardly toward the side edges of the shank and generally wedge in the arcuate configuration of the slot when the fastener is driven to securing position.

3,882,756
SELF PIERCING STRUCTURAL FASTENER HAVING A WORKING TRANSITION SECTION
Gilbert F. Sauer, Franklin, and Donald M. Taylor, Ross, both of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
Continuation of Ser. No. 171,255, Aug. 12, 1971, abandoned. This application May 3, 1973, Ser. No. 356,934
Int. Cl. F16b *25/00*
U.S. Cl. 85—41 **2 Claims**



1. A self piercing structural fastener, for fastening relatively heavy gauge material to relatively light gauge material, comprising a threaded main body having constant major and root diameters of the thread of said threaded main body, said root diameter being about two-thirds of said major diameter, a drill point for initially piercing the light gauge material and the diameter of which drill point does not exceed approximately one-half the said major diameter of the said threaded main body, a tapered and threaded working transition section extending between said drill point and said main body, the length of said transition being at least the dimension of the said drill point diameter, the major and root diameters of the thread of said tapered and threaded transition section increasing gradually and uniformly from the said drill point diameter throughout the said transition section so as to blend respectively with the major and root diameters of said threaded main body, the said root diameter of said threaded main body being approximately one and one-third times the said diameter of said drill point, whereby said light gauge material is stretch-extruded as said transition section passes through the hole initially pierced by said drill point, and the pitch dimension of said threaded main body being sufficient to cooperatively receive the total thickness of said light gauge material as stretch-extruded by said transition section, whereby said stretch-extruded light gauge material will be in intimate contact with the said root diameter of said main body, and whereby said fastener may be passed through a preformed hole in said heavy gauge material of greater diameter than the major diameter of said main body and into the hole initially pierced in said light gauge material so that said main body may thread its way into said initially pierced hole as stretch-extruded by said transition section speedily and with a minimum of pressure while achieving good holding power.

3,882,757
TEXTILE MACHINE CLUTCH
John H. Weatherby, Sewell, N.J., assignor to Warner Electric Brake & Clutch Company, Beloit, Wis.
Filed Feb. 11, 1970, Ser. No. 10,457
Int. Cl. D04c *3/14*; **F16d** *11/06*
U.S. Cl. 87—57 **2 Claims**

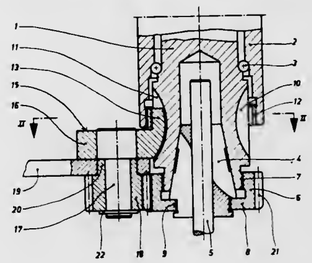


1. Apparatus for controlling the feed of a filament from a spool, said apparatus having, in combination, a frame, means for supporting a spool of filament on said frame for rotation about a predetermined axis, control means through which the filament passes as it leaves said spool, said control means including a tensioning device and an actuator movable in response to the tensioning device, a ring rigid with said frame and having a first outer cylindrical surface concentric with said axis, a brake member mounted on said frame to rotate about said axis and adapted to be drivingly connected to said spool, said brake member having a hub with a second cylindrical surface axially alined with said first surface, an annular member mounted on said brake member for rotation relative to the brake member and about said axis, a helical brake spring wound around both of said surfaces with one end anchored to said frame and the other end anchored to said annular member, said spring being stressed and of a hand normally to wind down on said surfaces to hold the brake member and hence the spool against turning, and a part rigid with said annular member and engageable by said actuator when said tensioning device is in a preselected position, said part being operable upon engagement by said actuator to turn said annular member in a direction to unwind said spring whereby said brake member and said spool are free to turn, said ring and said hub having axially alined inner surfaces concentric with said axis and said outer cylindrical surfaces, a second helical spring extending across said inner surfaces with one end anchored to said frame, said second spring being of the same hand as said brake spring and stressed to wrap out against said inner surfaces whereby rotation of the frame hub and spool in the unwinding direction tends to loosen said second spring and rotation of the frame hub in the opposite direction tends to tighten said second spring against said inner surfaces and hold the frame hub and said spool against turning.

3,882,758
TOOL SPINDLE HAVING A CLAMPING DEVICE FOR MILLING TOOLS
Johann Muller, deceased, late of Unterhaching, Germany (by Katharina Muller, legal representative), assignor to Friedrich Deckel Aktiengesellschaft, Munich, Germany
Filed May 11, 1973, Ser. No. 359,256
Claims priority, application Germany, May 29, 1972, 2226001
Int. Cl. B23b *5/26*
U.S. Cl. 90—11 A **9 Claims**

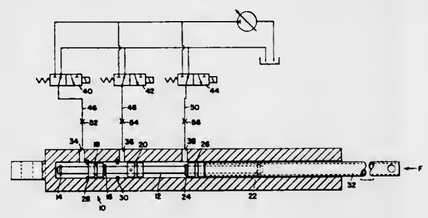
1. A tool spindle, comprising:
stationary hollow sleeve means;

a hollow spindle rotatably supported in said stationary hollow sleeve means;
clamping means for clamping a tool mounted in said hollow spindle, said clamping means including a collet movable axially of said spindle to release and grip said tool therein;
a cap for holding said collet in said hollow spindle;
first fastening means for securing said cap to said hollow spindle;
second fastening means for securing said cap to said collet, said cap being rotatably supported for rotatable movement relative to said hollow spindle by said first fastening means and being further movable axially relative to said hollow spindle in response to said rotation thereof;



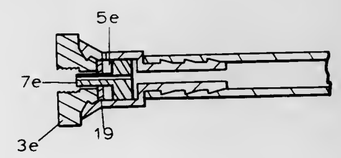
key means for connecting said hollow spindle to said hollow sleeve means to prevent said hollow spindle from rotating relative to said hollow sleeve means;
first toothed gear means supported for rotation on said key means and lever means for effecting a manual driving of said first toothed gear means for rotation; and
second toothed gear means mounted on said cap, the teeth of said second toothed gear means engaging the teeth of said first toothed gear means so that a rotation of said first toothed gear means will effect a rotation of said cap and a movement of said cap axially of said hollow spindle to move said collet relative to said hollow spindle.

3,882,759
FLUID ACTUATED CONTROL DEVICE
Charles William Formwalt, Cedar Falls; John Lewis Frank, Waterloo, and Allen Paul Schneider, Hudson, all of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Jan. 17, 1974, Ser. No. 434,090
Int. Cl. F15b *11/18*
U.S. Cl. 91—167 **12 Claims**



1. A fluid actuated control device comprising: a cylinder body having a longitudinally extending bore provided therein and open to one end; a piston rod of a diameter less than the diameter of the bore positioned in the bore; a first stop means on the inner end of the rod; a second stop means on the rod between and spaced from the first stop means and the outer end of the rod; a first piston slidably mounted in the bore and on the rod for relative movement between the first and second stop means; a third stop means on the outer end of the rod; a fourth stop means on the rod between and spaced from the second stop means and the third stop means; an additional piston slidably mounted in the bore and on the rod for relative movement between the third and fourth stop means; inner stop means in the bore limiting inward movement of the first piston; outer stop means in the bore limiting outward movement of the first piston; rod means operatively associated with the additional piston for movement therewith, slidably mounted in the bore and projecting from the one end thereof; first fluid passage means communicating with the bore inwardly of the inner stop means; and additional fluid passage means communicating with the bore between the outer stop means and the additional piston; and means for selectively supplying and exhausting fluid from either or both of the fluid passage means.

3,882,760
VALVE ACTUATORS
Roger D. Pass, 1119 W. Montana Ave., St. Paul, Minn. 55108
Filed Aug. 24, 1973, Ser. No. 391,502
Int. Cl. F15b *11/08*
U.S. Cl. 91—422 **2 Claims**

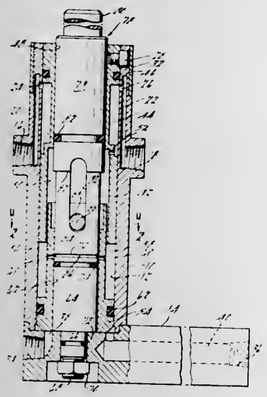


1. A valve actuator consisting of a casing having inlet and outlet connector means, a cylindrical chamber provided within said casing and vented to the outside atmosphere by a vent, a piston movably contained within said cylindrical chamber, a piston rod extending from one end of said piston and a flow passage extending through said piston and said piston rod, wherein said outlet connector means is capable of attachment to a tire valve, said piston and said piston rod are reciprocally operable by differential pressure, said piston rod is capable of extending through the outlet opening of said outlet connector means and is capable of depressing the spring biased valve core stem of a tire valve when the tire valve is in attachment to said outlet connector means, and said piston rod along at least part of its length is of a substantially smaller diameter than the diameter of said outlet opening of said outlet connector means, the lower portion of said piston rod having sealing means to provide an air tight seal between the lower outer circumferential portion of said piston rod and the inner circumference of said outlet opening only when said piston rod is at its forward limit of travel.

3,882,761
FLUID STOP MECHANISM
Joseph D. Snitgen, 18828 Hillcrest, Birmingham, Mich.
Filed Nov. 14, 1973, Ser. No. 415,815
Int. Cl. F01b *9/00*
U.S. Cl. 92—29 **11 Claims**

2. A fluid stop mechanism comprising a housing; a stop member reciprocally mounted for longitudinal movement in said housing and adapted to engage a workpiece or the like; expansible chamber motor means in said housing for moving said stop member into or out of engagement with a workpiece or the like, said motor means including a first expansible chamber; a second expansible chamber; a fluid chamber in said housing adapted to receive a substantially incompressible fluid; an element in said fluid chamber connected for movement with said stop member for altering the volume of said fluid chamber upon movement of said stop member; fluid control means having a passageway for controlling the flow of fluid between said fluid chamber and said second expansible chamber and being movable between an opened position

permitting flow in either direction through said passageway and a closed position wherein said passageway is moved out of communication with said fluid chamber and fluid is trapped in said fluid chamber to thereby become a locking fluid, said motor means being responsive to engagement of said stop member with a workpiece or the like to move said fluid control means from its opened position to its closed position upon such engagement for locking fluid within said fluid chamber to thereby resist movement of said stop member in a reverse



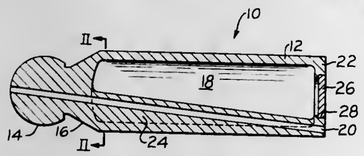
direction; a reservoir in said housing for supplying fluid to and from said fluid chamber, said reservoir having a fluid capacity at least as great as the maximum operable volume of said fluid chamber and communication means between said reservoir and said second expansible chamber, said communication means effecting a pressure in said second expansible chamber upon movement of said motor means, whereby a pressure differential is created between said second expansible chamber and said fluid chamber so that fluid will flow into said fluid chamber.

3,882,762

CAST PISTON WITH HOLLOW CORE AND HEAD COVER

Allyn John Hein, Joliet, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Nov. 23, 1973, Ser. No. 418,190
Int. Cl. F16j 1/08
U.S. Cl. 92—181 **4 Claims**



1. A piston of the type generally used in hydraulic translating units, wherein said piston comprises a body comprising a generally elongate cylindrical body portion, a first end portion having a first face for engaging the piston to the hydraulic translating unit, and a second end portion having a second face and including an opening therethrough, means closing off said opening;

said cylindrical body portion defining a hollow cavity therewithin;

said elongate cylindrical body portion defining a rib extending from said first end portion to said second end portion and extending from the cylindrical body portion along its entire length inwardly of the cavity and formed as one piece with the cylindrical body portion whereby a u-shaped cavity is formed;

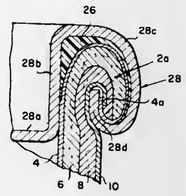
said rib defining an elongate passage therein longitudinally traversing the cavity from the first face on said first end portion to the second face on said second end portion.

3,882,763

METHOD FOR FORMING END SEAM CONSTRUCTION FOR COMPOSITE CONTAINERS

Donald H. Ellerbrock, Florissant, and John E. Bacon, St. Charles, both of Mo., assignors to Boise Cascade Corporation, Boise, Idaho

Filed Feb. 14, 1974, Ser. No. 442,399
Int. Cl. B31b 1/74
U.S. Cl. 93—55.1 M **11 Claims**



1. The method of connecting a metal end member to the body wall member of a composite container, said metal end member including a central end wall portion, a generally tubular chuck wall portion connected at one end with and extending axially from the outer periphery of said end wall portion, an annular seaming panel portion connected at its inner periphery with the other end of said chuck wall portion, and a generally tubular inwardly-facing curl portion connected at one end with the outer periphery of said seaming panel portion and arranged in concentrically spaced relation about said chuck wall portion, said body wall member including a tubular layer formed of fibrous material, and a tubular inner liner layer formed of metal bonded to the inner wall surface of said fibrous layer, which comprises the steps of:

a. removing at at least one end of said body wall member a given length of at least the outer peripheral portion of said fibrous layer, whereby said metal liner layer projects axially said given length beyond the remaining outer peripheral portion of said fibrous layer;

b. deforming said one end of said body wall radially outwardly to define a funnel-shaped fibrous flange portion about at least a portion of the external surface of which said projecting metal liner portion is reversely deformed;

c. mounting said metal end member on the compressed metal-lined flange portion of said body wall member, the central end wall portion of said metal end member being seated within the body wall member; and

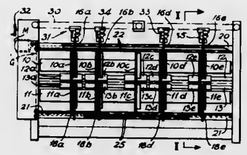
d. rolling together and radially-inwardly compressing the seaming panel and curl portions of said metal end member with the metal-lined flange portion of said body wall member, thereby to cause said metal-lined flange portion of said body wall member to be compressed between the curl and seaming panel portions of said metal end member, and the portion of said body wall member adjacent said flange portion to be compressed between the curl and chuck wall portions of said end member, the length of the projecting metal liner portion being such that said projecting liner portion is compressed in metal-to-metal surface engagement with at least that surface of said curl portion that faces the seaming panel portion of said metal end.

3,882,764

CASE MAKING MACHINERY

Frederick Paul Johnson, Audenshaw, England, assignor to Henry Simon Limited, Stockport, Cheshire, England

Filed Apr. 6, 1973, Ser. No. 348,612
Claims priority, application United Kingdom, Apr. 27, 1972, 19710/72
Int. Cl. B31b 1/14
U.S. Cl. 93—58.2 R **14 Claims**



1. In a converting machine having a tool adapted to perform an operation upon work passed through the machine in a predetermined direction, a support for said tool, means mounting said tool for adjustment along said support laterally of said direction, an adjustment member mounted for displacement laterally of said direction and having a motion transmitting connection with said tool, an electric motor operably connected to said adjustment member and selectively operable to positively laterally displace said adjustment member for positioning said tool laterally of said direction, a tool positional control device mounted for movement laterally of said direction independently of said adjustment member, stop switch means in circuit with said motor and cooperating stop switch actuating means, one being mounted to be movable with said tool and the other being mounted to be movable with said device, directional switch means in circuit with said motor and cooperating directional switch actuating means, one being mounted to be movable with said tool and the other being mounted to be movable with said device, means for adjusting said device to set it in a desired position corresponding to that to be assumed by said tool and at the same time automatically setting said motor directional switch means so that when the motor is next energized it will effect movement of said tool in the required direction toward said desired position, and means for energizing said motor for adjusting said tool toward said desired position, said stop switch means and the switch actuating means therefor being so constructed and arranged that said motor is stopped when said tool reaches said desired position.

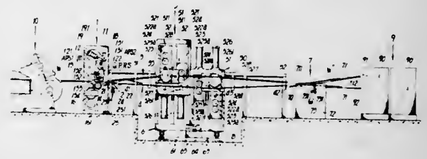
3,882,765

SLITTING AND SCORING APPARATUS

Masateru Tokuno, Hyogo, Japan, assignor to Rengo Co., Ltd., Osaka, Japan

Filed May 20, 1974, Ser. No. 471,792
Claims priority, application Japan, Sept. 21, 1973, 48-107279
Int. Cl. B26d 3/08, 11/00
U.S. Cl. 93—58.2 R **6 Claims**

1. Slitting and scoring apparatus for slitting and scoring a web of material fed continuously in its running direction, comprising; a rotary shear capable of cutting off, at a stroke, the web transversely; a front guide plate for receiving the web at the outlet of the rotary shear and guiding the web rearward, front end of the front guide plate being faced close to the outlet of the rotary shear and rear end of the front guide plate being made to be raised and lowered at a stroke between its first position and its second position situated higher than the first position; an upper guide plate for receiving the web from the front guide plate with its rear end situated in said second position and guiding the web rearward, the front end of the upper guide plate is projected to said second position or between said first position and said second position, and the upper guide plate portion between the both ends thereof being provided with an opening; a lower guide plate for receiving the web from the front guide plate with its rear end situated in said first position and guiding the web rearward, said lower guide plate being placed below the upper guide plate, and the front end of the lower guide plate being projected towards said first position or a position below it, and the lower guide plate being provided with an opening; an upper slitter-scorer provided



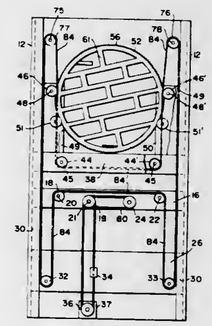
with more than two slitting and scoring units, each of the slitting and scoring units being able to enter the opening of the upper guide plate to slit and score the web guided into it by the upper guide plate or to get out thereof; a lower slitter-scorer provided with more than two slitting and scoring units, each of which being able to enter the opening of the lower guide plate to slit and score the web guided into it by the lower guide plate and to get out thereof; and a rear guide plate for receiving the slitted and scored web from the upper guide plate or the lower guide plate and guiding it rearward, front end of the rear guide plate being projected towards the rear end of the lower guide plate or a position below it.

3,882,766

AUTOMATIC OVEN

Abraham J. Matlen, 15347 Lauder, Detroit, Mich. 48227

Filed Oct. 15, 1973, Ser. No. 406,157
Int. Cl. A47j 37/04, 27/62
U.S. Cl. 99—327 **5 Claims**



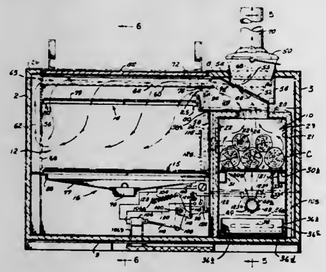
1. In an oven for automatically broiling and selfbasting foods including a support frame, an upper cooking station and a lower rest station both within the frame, said upper cooking station including opposed electrically operated heating means adapted to receive the food therebetween, the improvement comprising:

a rotatable food retainer; and

dual drive means including a closed-loop chain for operably engaging and continuously rotating said food retainer whereby the juice from the food being cooked therein self-bastes the food and only minimal amounts of juice are wasted;

said dual drive means further including a counterbalance slidably mounted in said support frame and said chain further operably engages said counterbalance for selectively raising and lowering said food retainer between said cooking station and said rest station, whereby the sliding movement of said counterbalance regulates the effective length of said chain between a reference level and said food retainer thereby raising and lowering said food retainer, and whereby the food, when properly cooked, is lowered to said rest station.

3,882,767
AUTOMATIC COOKING APPARATUS
Herbert J. Oyler, deceased, late of Dallas, Tex., and by Margaret Frances Oyler, executrix, 5108 Elkridge Dr., Dallas, Tex. 75227
Filed Feb. 15, 1974, Ser. No. 442,968
Int. Cl. A21b *1/24*; F24b *7/04*
U.S. Cl. 99—339 **6 Claims**



1. Cooking apparatus comprising: a housing having a top, bottom, sidewalls, frontwall, backwall, and first and second outlet openings extending through said top; a partition in said housing forming a cooking compartment and a fire box compartment; a duct extending between said fire box compartment and said cooking compartment, said duct having an inlet passage communicating with said fire box compartment, a first outlet passage communicating with said first outlet opening extending through the top of the housing, and a second outlet passage communicating with said cooking compartment adjacent the top of the housing; a first damper in said first passage; a second damper in said second passage; a rack in said cooking compartment supported intermediate said top and bottom; and means having an exhaust passage formed therein, said exhaust passage communicating with said cooking compartment below said rack and with said second outlet opening in the top of the housing.

3,882,768
AUTOMATIC DONUT MAKING SYSTEM
George A. Troisi, Andover, and Julian D. Gordon, Marblehead, both of Mass., assignors to Dunkin' Donuts Incorporated, Randolph, Mass.
Filed Feb. 25, 1974, Ser. No. 445,430
Int. Cl. A21b *5/08*; A21c *13/02*
U.S. Cl. 99—352 **5 Claims**

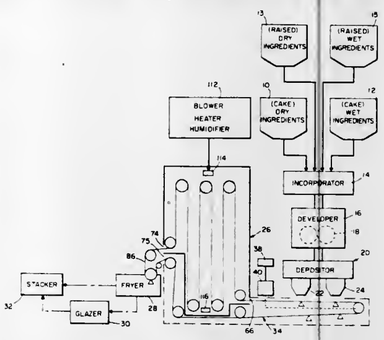
1. In a donut making system having discharge means for successively discharging shaped dough units, a proofer chamber providing predetermined conditions of temperature and humidity, and a fryer for cooking said dough units into donuts, the combination comprising

endless conveyer means having a first path portion effectively exposed within said proofer chamber and between said discharge means and said fryer, and a further path portion effectively not exposed within said proofer chamber and between said discharge means and said fryer,

reversible drive means connected to said conveyer means for driving said conveyer means in either of two directions, and

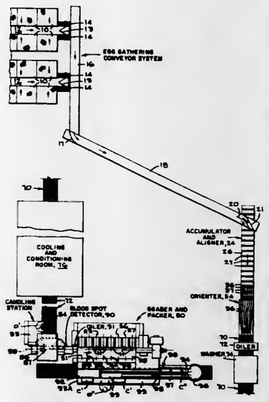
control means connected to said drive means for selecting either of two directions of drive,

whereby said dough units are moved from said discharge means through said first path portion effectively exposed within said proofer chamber for raising of the dough and



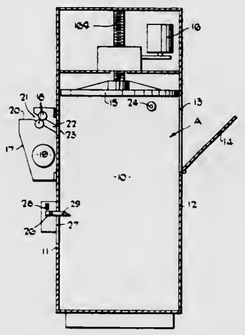
to said fryer when said conveyer means is driven in one direction, and said dough units are moved from said discharge means to said fryer through said further path portion effectively not exposed within said proofer chamber when said conveyer means is driven in the opposite direction.

3,882,769
EGG HANDLING SYSTEM
John R. Weber, 2102 Oak Crest Dr., Riverside, Calif. 92506; Richard L. Miller, Jr., 7460 Cabrillo Ave., La Jolla, Calif. 93501, and David R. Copple, 459 W. 11th St., Claremont, Calif. 91711
Filed Dec. 7, 1971, Ser. No. 205,561
Int. Cl. A23b *5/06*; A01k *43/00*
U.S. Cl. 99—484 **10 Claims**



1. An in-line egg handling system comprising a bulk conveyor means for automatically gathering eggs from the locations where they are laid, accumulating and aligning means where receiving eggs from said bulk conveyor means and for placing said eggs in a uniform arrangement, means for continuously conveying said eggs while they remain in said uniform arrangement, means for applying a first light coating of oil to the surface of said eggs, means for washing said eggs after said application of said first coating of oil, means for cooling said eggs to an internal temperature in the range of from about 55°F. to about 65°F., means for applying a second light coating of oil to said eggs following the cooling thereof, and means for grading and packing said cooled eggs.

3,882,770
COMBINED SHREDDER AND BALER
Steven Francis Bleasdale, Huddersfield, England, assignor to Edwin Mills & Son Limited, Huddersfield York, England
Filed Aug. 31, 1973, Ser. No. 393,485
Int. Cl. B30b *15/14*
U.S. Cl. 100—49 **3 Claims**



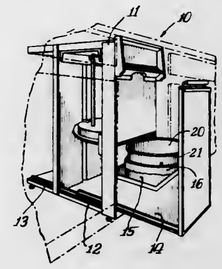
1. The combination comprising a baling machine for compressing paper and the like and shredding apparatus wherein: the baling machine comprises a body which defines a baling chamber and an inlet aperture in a lateral wall of the chamber, a ram which is mounted for vertical reciprocation in the baling chamber between an upper position in which it is situated above said inlet aperture and a lower position in which it is situated below the inlet aperture and ram drive means for causing said reciprocation of the ram,

the shredding apparatus comprises a pair of relatively rotatable cutters between which paper and the like can be fed to cut same into narrow strips, a discharge passageway leading from the cutters to said inlet aperture and shredder drive means for driving the cutters,

and there is further provided control means for so controlling operation of both said drive means that the cutters and the ram are not operated simultaneously, the control means including level detector means arranged in an upper portion of the baling chamber and responsive to accumulation of material in the baling chamber to a predetermined level to initiate operation of said ram and interrupt operation of said cutters.

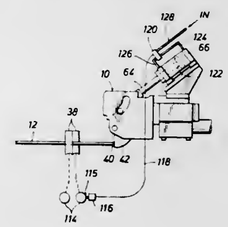
3,882,771
COMPACTOR APPARATUS
Edwin H. Frohbieter, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Sept. 4, 1973, Ser. No. 394,332
Int. Cl. B30b *1/18*
U.S. Cl. 100—53 **15 Claims**

11. Apparatus for compacting refuse comprising: a tubular sleeve; means defining an end wall; means for disposing the sleeve with one end adjacent the end wall; a ram; means for moving the ram through the sleeve for compacting refuse placed therein; and single powered means for moving the ram to a retracted position spaced from the compacted refuse and subsequently moving the sleeve from about the compacted refuse to about the retracted ram to dispose the sleeve in a



withdrawn disposition permitting access to the compacted refuse for withdrawal from the apparatus.

3,882,772
METHOD AND APPARATUS FOR IMPRESSING IDENTIFYING CHARACTERS INTO METAL BAR STOCK
Bernard H. Geisow, 443 Hollow Dr., Houston, Tex. 77024, and Lamon Harrelson, 12125 Palm Springs, Houston, Tex. 77034
Filed Jan. 19, 1973, Ser. No. 325,145
Int. Cl. B44b *5/00*; B26d *3/16*
U.S. Cl. 101—4 **10 Claims**



1. In combination with a bolt cutting machine, apparatus for impressing identifying characters on the end face of advancing bolt blank bar stock as the bar stock is supplied to said cutting machine, comprising

a die with selected identification characters thereon,

switch means connected to the cutting machine for generating a signal just prior to the time the cutting machine cuts the bar stock into a bolt blank,

a housing disposed in fixed relation to said bolt cutting machine,

a die positioning member supported by said housing, said die positioning member carrying said die and adapated for pivotal movement to position said die in the axial path of the advancing bar stock and to remove said die from the axial path of the bar stock,

a reciprocating drive means having a drive shaft attached thereto, said reciprocating drive means having signal responsive control means connected to said switch means and operating said shaft in response to said signals from said switch means,

toggle links being connected to said housing and to said die positioning member, said toggle links being connected to said drive shaft for positioning and locking said member and said die into the axial path of the advancing bar stock upon movement of said reciprocating drive means to a locking position thereof and unlocking and retracting said

member to position said die out of the axial path of the bar stock upon movement of said reciprocating drive means to an unlocking position thereof, and

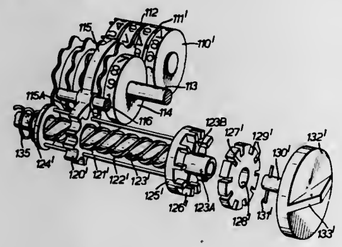
said reciprocating drive means receiving said signal from said switch means and in response thereto moving to said unlocking position unlocking said die and repositioning said die out of the axial path of the bar stock to relieve said pressure between the end face of the bar stock and said die after impression of the identifying characters on the end face said movement of said reciprocating drive means to said unlocking position occuring just prior to the bar stock being cut into a blot blank by the cutting machine.

3,882,773

ADJUSTABLE FACET PRINT MECHANISMS

John E. Cook; Brian Nicholson, and Lawrence S.,Dabbs, all of Boston, England, assignors to Norprint Limited, England

Continuation of Ser. No. 300,374, Oct. 24, 1972, abandoned.
This application Feb. 22, 1974, Ser. No. 444,852
Claims priority, application United Kingdom, Oct. 26, 1971, 49609/71
Int. Cl. B41j *1/60*
U.S. Cl. 101—110 **6 Claims**



1. In an adjustable-facet print mechanism, a plurality of print-facet carriers arranged side-by-side, each said carrier including a plurality of print-facets, adjustment means common to said carriers for adjusting the operative print-facet of a selected one of said carriers, selection means for selecting one of said carriers for adjustment by said adjustment means, said selection means serving to move said adjustment means relative to said carriers to a position wherein said adjustment means can act to adjust a selected carrier, and a single rotatable member common to both said adjustment means and said selection means and constituting the sole actuating member for both thereof, said single rotatable member being selectively axially displaceable between two positions and operable, in one of said positions, to operate only said selection means and, in the other of said positions, to operate only said adjustment means.

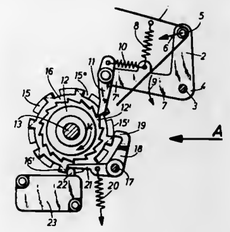
3,882,774

DEVICE FOR REVERSING THE DIRECTION OF DRIVE OF AN INKED RIBBON IN A HIGH-SPEED PRINTER

Albert Pfiz, Niederstotzingen, Germany, assignor to Walther Buromaschinen GmbH, Gerstetten, Germany

Filed Oct. 5, 1973, Ser. No. 403,780
Claims priority, application Germany, Oct. 6, 1972, 2249111
Int. Cl. B41j *33/516*
U.S. Cl. 101—336 **3 Claims**

1. A device for reversing the direction of drive of an inked ribbon in a high-speed printer for data processing machines and the like comprising a pivotally mounted crank arm having first and second lever arms, a guide pin extending laterally from said first lever arm and adapted to guide an inked ribbon thereon, a feed pawl pivotally mounted on said second lever arm, a rotatably mounted ratchet wheel and interconnected first and second cam wheels rotatable therewith, spring means continuously urging said feed pawl into engagement with said ratchet wheel, a cam lever operatively engagable by said cam wheels, a microswitch engagable by said cam lever to be actuated thereby, and a synchronous motor drivingly con-



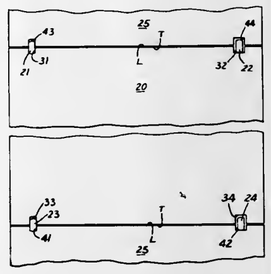
nected to said inked ribbon and electrically connected to said microswitch so as to be reversible thereby, said microswitch actuated by said cam lever in response to said cam wheels upon angular movement of said ratchet wheel by said feed pawl when said crank arm is pivoted in response to a pull by the ribbon on the guide pin prior to rewinding of the ribbon.

3,882,775

REGISTRATION SYSTEM FOR THIN MAGNETIC PRINTING PLATES

Gerald H. Lytle, and F. John Littleton, both of Effingham, Ill., assignors to World Color Press, Inc., Maryland Heights, Mo.

Filed July 2, 1973, Ser. No. 375,799
Int. Cl. B41f *27/02, 13/12*
U.S. Cl. 101—415.1 **1 Claim**



1. A registration system for accommodating printing plates in multiple around a plate cylinder comprising, in combination, a magnetic cylinder, a plurality of thin plates each having a magnetic backing and superimposed printing surface, each of the plates being of rectangular shape presenting straight axially facing ends and straight peripherally facing leading and trailing edges, the plates being dimensioned so that the leading and trailing edges of adjacent plates are spaced slightly edge to edge on the cylinder to define plate junctions, first and second pins at each junction, the pins being spaced to lie in the corner positions of the adjacent plates, each of the pins being of shallow height presenting flat axially facing surfaces as well as peripherally facing surfaces, the leading and trailing edges of each plate being notched to registeringly accommodate the pins, one of the notches in the leading edge of each plate being dimensioned to engage the two axial surfaces and a peripheral surface on its associated pin and the remaining notch in such edge being dimensioned to engage only a peripheral surface on its associated pin, one of the notches in the trailing edge of each plate being dimensioned to engage only the two axial surfaces of its associated pin while the remaining notch in such edge provides clearance in all directions about its associated pin, the pins all being peripherally elongated and centered on

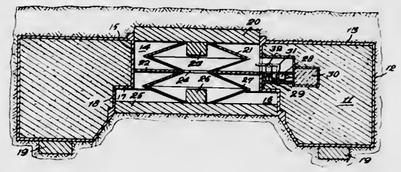
the junctions to extend therefrom equally in both peripheral directions into the edges of the adjacent plates so that each pin while registered in notches of two adjacent plates performs differing functions on behalf of such plates, thereby to achieve register of the plates with freedom from buckling notwithstanding initial error in the spacing of the notches with respect to the pins and notwithstanding slight changes in the axial and peripheral dimensions of the plates occurring incident to a printing run.

3,882,776

BLAST PROOF MINES

John Ewart Clemens, Xenia; Ben B. Johnstone, Dayton, both of Ohio, and Heinz E. Strohmeyer, Beverly, Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 23, 1960, Ser. No. 78,191
Int. Cl. F42b *23/04*
U.S. Cl. 102—8 **2 Claims**



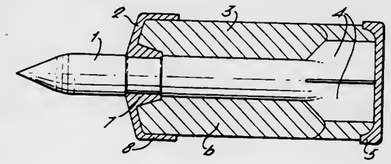
1. In a mine adapted to be implanted in-the soil, said mine including an explosive charge and a cavity therethrough; an upwardly biased active member slidably mounted in said cavity; a downwardly biased preventive pressure member slidably mounted in said cavity, said preventive pressure member having a greater area than said active member; a firing mechanism for exploding said mine mounted in said mine and adapted to be activated by said active member upon a downward pressure applied thereon, and said preventive pressure member acting upon an air blast above the soil to prevent said active member from activating said firing mechanism.

3,882,777

CARTRIDGE FOR FIREARMS

Gad Anders Rausing, Lund, Sweden, assignor to Ladco Enterprises Limited, Lund, Sweden

Filed Apr. 16, 1973, Ser. No. 351,313
Claims priority, application Switzerland, Apr. 20, 1972, 5163/72
Int. Cl. F42b *5/02*
U.S. Cl. 102—38 **4 Claims**



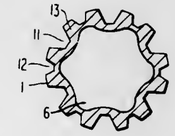
1. A cartridge for firearms comprising a projectile having a cross-sectional area smaller than the cross-sectional area of the bore of the weapon in which the cartridge is to be used and provided with an annular recess thereabout, a plurality of metal sabot sections forming together a sabot surrounding and engaging the annular recess of said projectile, said sabot sections when assembled including an annular recess on the rear face of said sabot, the outer circumference of said sections forming a close seal with the bore of the weapon and means of combustible material engaging the annular recess in the rear face of the assembled sabot sections for securing said sabot sections together around said projectile, said combustile securing means being consumed by combustion when the weapon is fired before the projectile leaves the muzzle of the bore whereby the sabot sections disengage from said projectile after leaving the bore of the weapon.

3,882,778

BLANK CARTRIDGE FOR TRAINING PURPOSES

Heinz Gawlick, and Rudolf Stahlmann, both of Furth, Bay, Germany, assignors to Dynamit Nobel Aktiengesellschaft

Filed Mar. 21, 1973, Ser. No. 343,186
Claims priority, application Germany, Mar. 23, 1972, 2214092
Int. Cl. F42b *5/20, 5/30*
U.S. Cl. 102—39 **27 Claims**



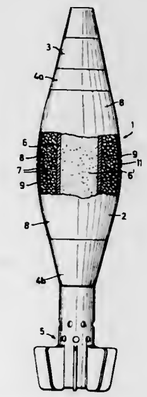
1. Blank cartridge for training purposes comprising an elongated case of thermoplastic synthetic resin, said case forming an elongated hollow simulated projectile and a powder chamber, longitudinal extending rupturing means provided in the wall of said case and extending from the tip of said simulated projectile over at least substantially the entire length of said simulated projectile, said rupturing means being rupturable along the length thereof in response to a predetermined internal gas pressure, and longitudinal extending weakening means provided in the wall of said case for enhancing the deformability of said case, said weakening means being constructed so that the wall portion provided with said weakening means remains intact at the predetermined gas pressure.

3,882,779

EXPLOSIVE PROJECTILE

Amos Frostig, Haifa, Israel, assignor to Etablissement Salgad, Vaduz, Liechtenstein

Filed Mar. 21, 1973, Ser. No. 343,317
Claims priority, application Germany, Mar. 22, 1972, 2213832
Int. Cl. F42b *13/22, 13/48*
U.S. Cl. 102—49.1 **1 Claim**



1. A fin-stabilized projectile consisting essentially of
a. a frame structure including an elongated metallic tubular member, a conical head portion secured to one end of said tubular member and a cylindrical tail portion having

a plurality of radially projecting fins and secured to the opposite end of said tubular member, the diameters of said head and tail portions adjacent said tubular member being greater than the cross-section of said tubular member;

b. an explosive charge in the interior of said tubular member;

c. an annular solid body surrounding and being secured to said tubular member and extending between said head and tail portions, the circumferential surface of said body at the opposite ends thereof having substantially the same diameter as the adjacent parts of said head and tail portions respectively, and a portion of the circumferential surface spaced from and intermediate the ends of said body having a greater diameter than either end thereof and a greater diameter than the radial length of said fins from the axis of said tail portion, said annular body comprising a multiplicity of fragments uniformly distributed and embedded in a synthetic resin;

d. a protective, thin, fibrous, reinforcing, porous, net web embedded in the surface of said annular body, the composition of said web being selected from the group consisting of textile, glass and metal; and

e. said intermediate portion of said body having a greater diameter comprising a narrow annular ring member embedded in the surface of said body, said annular ring member being selected from the group consisting of metal and plastic and including a plurality of annular grooves in the circumferential surface thereof providing guide elements for said projectile;

f. said synthetic resin of said body and said thin porous web giving no appreciable resistance and the axial length of said ring member being insufficient to give appreciable resistance to acceleration of said fragments following detonation of said explosive charge.

3,882,780

RIFLE GRENADE, PARTICULARLY FOR FIRING TEAR GAS OR FLARE PROJECTILES

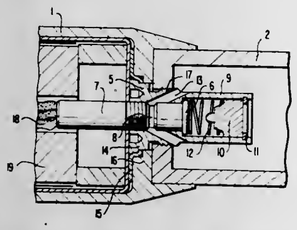
Heinz Gawlick; Rudolf Stahlmann, and Ernst Jensen, all of Furth, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed Dec. 7, 1973, Ser. No. 422,724

Claims priority, application Germany, Dec. 7, 1972, 2259861

Int. Cl. F42b *13/46, 11/42*

U.S. Cl. 102—65.2 **26 Claims**



1. Rifle grenade comprising a grenade body, launching tube means disposed at one end of said grenade body, and detonator means for said grenade, said detonator means including an impact-initiatable igniter disposed proximate to the one end of the grenade body facing the launching tube means, a striker means for impacting on said igniter being spaced from said igniter in a safety position and being responsive to the launching of the grenade for moving forwardly toward said igniter to impact thereupon, delay means responsive to the initiation of said igniter for igniting material carried by said grenade body after a predetermined time delay, said delay means including a pyrotechnic delay train operationally disposed between said igniter and the material carried by said grenade body, said detonator means further including means for carrying said igniter, said carrying means including a member having a central continuous bore extending therethrough, said igniter being positioned in the bore from one end thereof and said pyrotechnic delay train being disposed within a sleeve member, said sleeve member being positioned at least partially within the bore from the other end thereof, said igniter and said delay train being spaced from one another within the central bore of said carrying means and said carrying means being provided with at least one gas discharge duct extending outwardly from the central bore in the region between said igniter and said delay train.

3,882,781

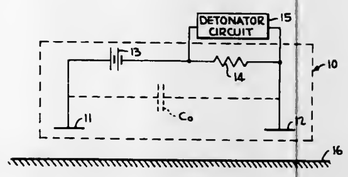
CAPACITANCE FUZE

Philip Krupen, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 14, 1962, Ser. No. 237,764

Int. Cl. F42c *13/00*

U.S. Cl. 102—70.2 P **1 Claim**



1. A proximity fuze comprising:

a. a first conducting body and a second conducting body, said first conducting body separated from said second conducting body, said first and second conducting bodies lying substantially in an edgewise relation on the outer surface of a projectile,

b. a source of direct current potential connected between said first conducting body and said second conducting body, said source of direct current potential establishing an electric field between said bodies with a positive charge on said first conducting body and a negative charge on said second conducting body, said electric field extending into the medium surrounding said conducting bodies and said projectile,

c. detonating circuit means including vacuum tube means having an anode, a cathode, and a grid, said first conducting body connected to said grid, and said second conducting body connected to said cathode, said detonating circuit means being responsive to a time rate of change in the charge on said bodies resulting from a change in the electric field configuration surrounding said conducting bodies and said projectile.

3,882,782

MECHANICALLY OPERATED FUSE FOR GYRATORY MISSILES

Robert Simmen, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed Sept. 26, 1972, Ser. No. 292,293

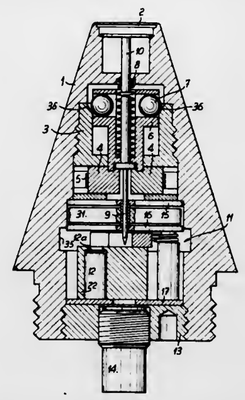
Claims priority, application Switzerland, Oct. 11, 1971, 14791/71

Int. Cl. F42b *15/22*

U.S. Cl. 102—79 **6 Claims**

1. A fuse for a gyratory missile comprising inside of a hollow body a detonator (14), a striker (9) adapted to move axially of the fuse towards said detonator, a primer-carrier (22), a pivot member (21) whose axis is located parallel with the path of movement of a striker and on which said primer-carrier (22) is pivotally mounted, said primer-carrier (22) movable

out of an inoperative position and into an operative position under the action of centrifugal force, the center of gravity (34) of said primer-carrier (22) when inoperative, lying on the side of a straight line connecting the axis of rotation of the fuse with the pivot member (21) of the primer-carrier (22), the effect of centrifugal force tending to maintain the primer-carrier (22) in inoperative position, a primer (12) extending through said carrier along a line parallel with said primer-carrier axis and assuming an operative position between the striker (9) and the detonator (14) when the primer-carrier (22) assumes its operative position, a spring (33) releasably



holding the primer-carrier in its inoperative position, a movable member (23) mounted on said primer-carrier pivot member above said primer-carrier (22) and in engagement therewith, said movable member (23) being shiftable centrifugally to thereby cause the primer-carrier (22) to enter a position for which the center of gravity thereof lies on the other side of said straight line and the primer-carrier is urged by centrifugal force into its operative position, and an escapement mechanism (29) cooperating with said movable member (23) to slow down its movement towards its centrifugally instigated position.

3,882,783

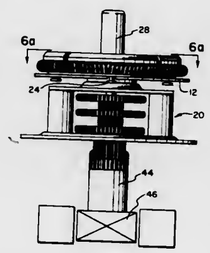
SPEED DISCRIMINATION CLUTCH

William H. Reams, Boonsboro, Md.

Division of Ser. No. 235,205, March 26, 1972, Pat. No. 3,804,222. This application Dec. 17, 1973, Ser. No. 425,428

Int. Cl. F42c *15/26*

U.S. Cl. 102—79 **6 Claims**



1. A centrifugal clutch for transmitting rotary motion from a first rotating shaft to a second rotatable member only when said first rotating shaft has an angular speed of a value between predetermined upper and lower angular speeds comprising:

a first circular plate fixed to said first rotating shaft and perpendicularly disposed thereto;

first means including at least one pivotally-mounted, spring-biased member having a shoulder formed on the outer edge thereof, said shoulder normally overlaying said first circular plate and extendable beyond the perimeter of said first plate only after said first plate is rotated at said predetermined lower angular speed;

a second plate coupled to said second member;

second means receivable of said first circular plate and first means, including at least one arcuate shoe having an inwardly-extending projection formed thereon, slidably coupled to said second plate for moving outwardly thereon only after said second plate is rotated at said predetermined upper angular speed; and

said second plate is coupled through a gear train to an explosive element normally in an out-of-line position in an explosive train,

said first means and said second means are adapted so that said shoulder contacts said inwardly extending projection when said first plate is rotating at a speed greater than said predetermined lower speed and disengages when said second plate rotates at a speed greater than said predetermined upper speed.

3,882,784

NITROESTER PROPELLANT, CASING, AND LINER OF AN EPOXY-POLYAMIDE COPOLYMER CONTAINING A STABILIZER

George W. Nauflett, Oxon Hill, and Craig E. Johnson, Indian Head, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 3, 1972, Ser. No. 270,794

Int. Cl. F42b *1/00;* **C06d** *5/06*

U.S. Cl. 102—103 **6 Claims**

1. A lined propellant device consisting essentially of:

a solid nitroester propellant;

a casing enclosing said solid nitroester propellant; and

a liner which coats the inner surface of said casing and which is in contact with said propellant; wherein said liner comprises (1) the cured reaction product of an epoxy resin having an epoxide equivalent of 170 to 800, a melting point of 55° to 165°C, a Gardner Holt viscosity (40 percent epoxy resin in butyl carbitol) ranging from D to J and a specific gravity from about 1.1 to 1.3, with a polyamide which contains free amine groups and has an amine value of 210–260, a viscosity at 40°C of 450–1400 poise and a specific gravity of 0.90–0.99, and (2) about 2 to about 10 percent, based on the weight of said liner, of a stabilizer selected from the group consisting of amyl alcohol, 2 nitrodiphenylamine, naphthalene, nitronaphthalene and a mixture of ethyl centralite and resorcinol in a ratio of from about 1:2 to 2:1.

3,882,785

METHOD AND APPARATUS FOR SETTING RAILROAD TIE PLATES

Delton James Rowe, R.F.D. 2, Syracuse, Nebr. 68446

Filed Feb. 28, 1974, Ser. No. 446,603

Int. Cl. E01b *29/24*

U.S. Cl. 104—16 **4 Claims**

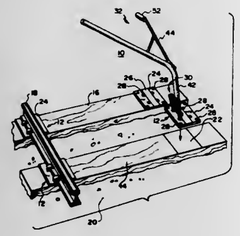
1. A method of setting railroad tie plates onto ties of a railroad track comprising the steps of:

placing railroad tie plates on ballast material near railroad ties;

inserting at least one elongated pointed member through at least one aperture in the tie plate and into said ballast material;

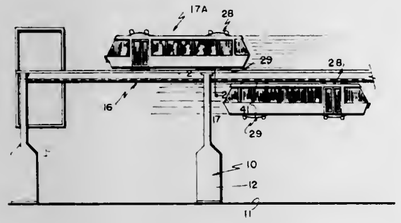
lifting said elongated member and said tie plate;

positioning said tie plate over a railroad tie with said pointed, elongated member; and



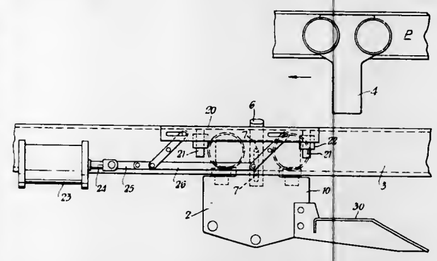
permitting said tie plate to slide from said elongated member.

3,882,786
TRANSIT SYSTEM
Gordon Woligrocki, 170 Scotia St., Winnipeg, Manitoba, Canada
Filed May 14, 1973, Ser. No. 359,766
Int. Cl. B61b *3/00*
U.S. Cl. 104—89 **7 Claims**



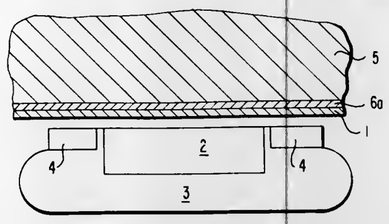
1. A transit system comprising in combination a plurality of support columns spacially disposed from one another and anchored to a support medium, a pair of spaced and parallel rail assemblies spanning said support columns above said supporting medium, said rail assemblies including upper and lower vehicle carrying surfaces, and at least one transit vehicle, said vehicle having at least one wheeled bogey on the upper side thereof and at least one wheeled bogey on the under side thereof, said wheeled bogey on the under side thereof engaging said upper vehicle engaging surface of said rail when said vehicle is running on said upper vehicle engaging surfaces, said wheeled bogey on the upper side thereof engaging said lower vehicle engaging surface when said vehicle is running on said lower wheel engaging surfaces, said rail assembly including said upper vehicle surface being substantially planar, and flanged wheels on said wheeled bogey on the under side of said vehicle, said rail assembly including said lower vehicle engaging surface having a major vertical leg portion, a planar portion extending by one side thereof from the lower end of said major leg portion and a minor leg portion extending upwardly from the other side of said planar portion in spaced and parallel relationship to said major leg portion.

3,882,787
CONVEYOR SYSTEMS
John Turner, Argyle Works, Stevenage, England, assignor to Geo. W. King Limited
Filed Mar. 13, 1973, Ser. No. 340,836
Claims priority, application United Kingdom, Nov. 26, 1972, 53050/72
Int. Cl. B65g *17/42*
U.S. Cl. 104—96 **9 Claims**



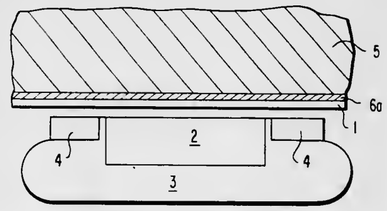
1. A conveyor system, comprising carriers, a main path along which the carriers travel, a branch path which branches from the main path at a transfer region and along which the carriers travel, a chain track extending along said main path at a spacing therefrom, an endless propelling chain supported by said chain track, pushers on the propelling chain arranged to push the carriers along the main path, a dog on each carrier displaceable between an operative position in and an inoperative position out of the path of movement of the pushers, and a dog-operating member movable to displace the dogs between their operative positions and their inoperative positions, and means which is actuated by a carrier in said transfer region when a leading portion of the carrier takes said branch path, but not by a carrier in said region continuing on said main path, to move said dog-operating member from an initial position to displace the dog on the carrier between its operative position and its inoperative position, and which is actuated by the carrier when a trailing portion of the carrier leaves said main path to return said dog-operating member to said initial position.

3,882,788
ELECTROMAGNETICALLY DRIVEN HIGH-SPEED ELEVATED RAILWAY CAR SYSTEM
Michael Simon, Reginbaldstrasse 4, 8 Munich-Obermenzing, and Rolf-Dieter Rose, Kochstrasse 11, 85 Nurnberg, both of Germany
Filed Oct. 27, 1972, Ser. No. 301,294
Claims priority, application Germany, Oct. 29, 1971, 2153928
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 LM **16 Claims**



1. An electromagnetically driven high-speed elevated railway system arrangement having a vehicle arranged for guiding movement along guide beam means, comprising linear induction motor means including first and second cooperating parts and a separate lifting means including first and second cooperating parts for spacing the vehicle from the guide beam means, the first part of each of the motor means and lifting means being mounted on the guide beam means, and the second part of each of the motor means and the lifting means being mounted on the vehicle and being positioned with respect to the respective cooperating first part such that the distance between each of the first and second cooperating parts of the motor means and lifting means increases upon failure of the lifting means, each of the second parts of the motor means and the lifting means being a magnet means, and the magnet means of the motor means and the lifting means being positioned in line one behind the other in the longitudinal direction of the vehicle.

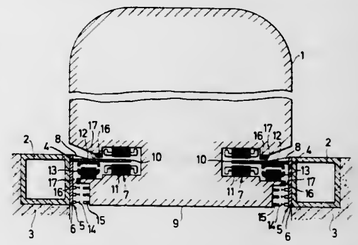
3,882,789
ELECTROMAGNETICALLY OPERATED OVERHUNG AND/OR UNDERHUNG SUSPENSION VEHICLE
Michael Simon, Reginbaldstrasse 4, 8 Munich-Obermenzing, and Rolf-Dieter Rose, Kochstrasse 11, 85 Nurnberg, both of Germany
Filed Jan. 15, 1973, Ser. No. 323,415
Claims priority, application Germany, Jan. 15, 1972, 2201923
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 MS **22 Claims**



1. An electromagnetically operated suspension vehicle which is operatively associated with a guide-way means and which includes an asynchronous linear motor means and lift magnet means cooperating with reaction rail means and including electrical coil means characterized in that the guide-way means has an underside and in that the lift magnet means and the linear motor means together with the reaction rail means with which they cooperate are arranged on the underside of the guide-way means in such a manner that the vertical distance between the lift magnet means and the linear motor means, on the one hand, and the reaction rail means, on the other, will increase in case of failure of the lift magnet means, and further characterized in that the same electrical coil means are used for the lift magnet means and the linear motor means and in that a.d.c. current generating a d.c. field is provided for producing the lift while an a.c. current producing a traveling a.c. field serving for the propulsion is superimposed on the d.c. current.

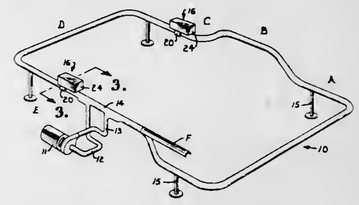
3,882,790
RAIL SYSTEM FOR MAGNETIC SUSPENSION VEHICLES
Günther Winkle, Munich; Peter Schwärzler, Furstenfeldbruck; Peter H. Otto, Munich; Peter Molzer, Herbertshausen, and Christian Walkner, Dachau, all of Germany, assignors to Krauss-Maffei A.G., Munich, Germany
Filed July 13, 1973, Ser. No. 378,966
Claims priority, application Germany, July 17, 1972, 2235036; Jan. 25, 1973, 2303552
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 MS **2 Claims**

1. In a levitation-type vehicle system comprising a track and a vehicle displaceable along a path on said track, said vehicle including at least two of the elements (a) to (e), said elements being (a) electromotor means for propelling said vehicle along said track, (b) electromagnetic suspension means for magnetically supporting said vehicle on said track, (c) electromagnetic guide means for laterally positioning said vehicle relative to said track, (d) contact-shoe means for effecting an electrical connection between said track and said vehicle and (e) emergency support means engageable with said track upon failure of said electromagnetic suspension means, said track comprising a support extending generally continuously along the vehicle path and at least two generally continuous rail members respectively cooperating with said two elements of



said vehicle, the improvement which comprises mounting members common to said at least two rail members and anchored to said support at least at spaced-apart locations along said track, said rail members including an electromagnetic suspension armature rail cooperating with the electromagnetic-suspension means of said vehicle, a reaction rail cooperating with said electric motor means of said vehicle, a current-carrying rail cooperating with said contact-shoe means of said vehicle, and an emergency support rail engageable with said vehicle upon failure of the electromagnetic-suspension means all on said mounting members.

3,882,791
COMBINED FLUID AND MAGNETIC TRANSMISSION SYSTEM
Richard L. Youngscap, Lincoln, Nebr., assignor to ETS, Ltd., Santa Monica, Calif.
Filed Oct. 1, 1973, Ser. No. 401,997
Int. Cl. B61b *13/00*
U.S. Cl. 104—154 **7 Claims**



1. A system for transmitting mechanical energy from one location to another in a defined path, said system comprising, in combination

a conduit of nonmagnetic and nonmagnetizable material;

means for pumping fluid through the conduit;

a slug in the form of a stable, nondeformable ferromagnetic mass, said slug located within said conduit and free to move with said fluid and so shaped that it includes a portion which substantially conforms in cross sectional configuration to the configuration of the interior of the conduit whereby to inhibit any substantial by-pass of fluid past the slug thereby to cause the fluid to impart a velocity to the slug substantially equal to that of the slug; and

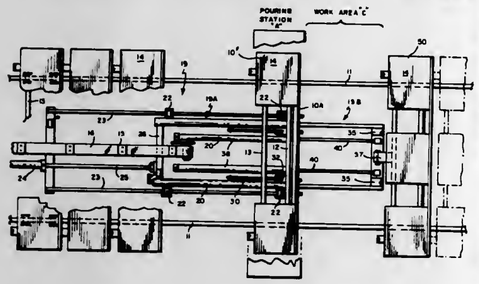
a permanent magnet located outside the conduit and supported for movement along the conduit, said perma-

nent magnet moving with the slug when the latter is in the magnetic field of the magnet.

3,882,792
AUTOMATIC PALLET CAR CONVEYOR

Edwin Ralph McIntier, Madison, Conn., assignor to Richard G. Sweitzer, Madison, Conn.

Filed May 3, 1974, Ser. No. 466,785
Int. Cl. B65g *25/10*
U.S. Cl. 104—162 **9 Claims**



1. An apparatus for automatically conveying pallet cars, each carrying at least one mold thereon, from a mold loading station to a mold pouring station, said apparatus comprising

means for moving said pallet cars from said loading station to a pick-up station;

carriage means at said pick-up station, said carriage means including means for latching pallet car on to said carriage means so that the molds thereon are locked in position thereon;

means for moving said latched pallet car from said pick-up station to said pouring station, said movement causing the molds on said pallet car to be positioned at a preselected location at said pouring station and further causing a pallet car previously positioned at said pouring station to be moved therefrom to a position adjacent said pouring station;

means for further moving said carriage means to cause said previously positioned pallet car to be moved from said adjacent position to a position more remote from said pouring station and further to cause said latched pallet car to be unlatched from said carriage means whereby said unlatched pallet car and the molds thereon remain at said preselected location at said pouring station; and

means for retracting said carriage means to its initial position at said pick-up station.

3,882,793
TOW CONVEYOR

Takao Wakabayashi, Osaka, Japan, assignor to Nakanishi Metal Works Co., Ltd.

Filed July 10, 1973, Ser. No. 378,005
Claims priority, application Japan, July 10, 1972, 47-69295
Int. Cl. B61b *13/00*
U.S. Cl. 104—170 **6 Claims**

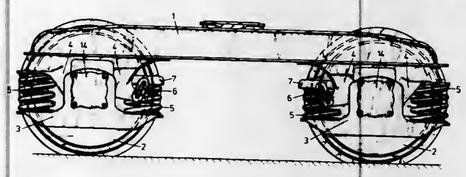


4. A tow conveyor comprising the combination of at least one carrier, first rails disposed close to the floor, second rails disposed on the first rails in parallel thereto, an engaging means connected to the carrier pivotally movable in the horizontal and vertical directions and having rollers in rolling contact with the second rails, at least one trolley including rollers in rolling contact with the first rails, a drive means connected to the trolley to move the trolley along the first rails, and a pusher mounted on the trolley for engagement with the engaging means and projecting upward from the first rails to connect the carrier to the trolley and to thereby move the carrier along with the trolley, wherein the engaging means is positioned in front of the carrier and a disengaging means is provided in the rear of the carrier, the disengaging means being connected to the carrier pivotally movable in the horizontal and vertical directions and having rollers in rolling contact with the second rails, the trolley further including a pusher tilting dog mounted thereon in front of a pusher and projecting upward from the first rails to disengage the pusher from the engaging means by being pivotally forced down by the disengaging means of a preceding carrier and to thereby separate the carrier from the trolley, and which includes a fixing means for holding the engaging means and the disengaging means to the under face of the carrier, respectively.

3,882,794
SNUBBED AXLE RAILWAY BOGIE

Gerhard Stieler, Minden; Alfred Sinhoff, Wurselen; Otto Halmschlag, Oberforstbach, and Ferdinand Weckmann, Aachen, all of Germany, assignors to Waggonfabrik Talbot, Aachen, Germany

Filed Feb. 12, 1973, Ser. No. 331,546
Claims priority, application Germany, Feb. 10, 1972, 2206290
Int. Cl. B61f *5/36, 5/56, 15/06*
U.S. Cl. 105—224 R **12 Claims**

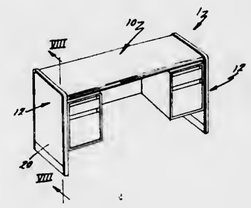


1. A bogie for rail vehicles, which includes in combination a bogie frame, a pair of wheel axles, axle bearing means for said axles, two pairs of helical springs respectively associated with said wheel axles, said bogie frame resting in said wheel axles through the intervention of said pairs of springs, housing means for said axle bearing means, guiding means arranged in said bogie frame for vertically and horizontally guiding said wheel axles together with said housing means for said axle bearing means to cushion and absorb the transverse shocks occurring during the drive of said bogie, said helical springs being arranged on one side of each of said housing means directly between said axle bearing guiding means and said axle bearing housing means, said spring means including an upper spring dish located on the other side of said housing means, spring link means inclined to the respective adjacent wheel axle and linking said spring dish to the axle bearing guiding means, pushrod means displaceably mounted in said axle bearing guiding means and operatively connected to said axle bearing guiding means through said upper spring dish so as to be adapted to be pressed against said axle bearing housing means, friction lining means having entirely separate friction surfaces interposed between said pushrod and said axle bearing housing means on one hand and said guiding means for said axle bearing means and said axle bearing housing means on the other hand for purposes of differently cushioning the vertical and horizontal movements of said housing independently for said axle bearing means, two carriages respectively arranged between said pushrod means and said axle bearing housing means and between said guiding means for said axle bearing means and said axle bearing housing means, and interengaging channel-shaped members separated by at least one pressure roller journalled to one of the members as provided between each carriage and the pertaining axle bearing housing and adapted in vertical direction to roll therebetween.

3,882,795
TILTABLE DESK TOP

Donald D. Korell, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed June 1, 1973, Ser. No. 366,161
Int. Cl. A47b *13/00*
U.S. Cl. 108—1 **18 Claims**

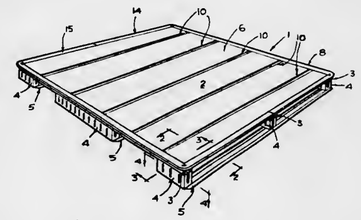


1. A desk, table or the like comprising: a top; an end support panel at each end of said top for supporting said top; fasteners for securing said top to said end support panels; cooperating means on said top for releasably cooperating with said fasteners to secure said top to said end support panel; said panels having apertures through which said fasteners pass whereby said top is located on one side of said end support panel and said fasteners are located on the other side and pass through said apertures to engage said cooperating means; a cover generally coextensive with said end support panel and being releasably secured to said end support panel, said cover covering said fasteners; said cover including means for releasing it from said end support panel whereby said cover can be removed to provide access to said fasteners; said cooperating means having at least two alternative cooperating positions for cooperating with said fasteners, a first in which said top is oriented generally horizontally and a second in which said top is oriented on a slope, said end panels having sufficient width and height that the ends of said top are concealed from view by said end support panel in either of said cooperating positions.

3,882,796
METAL PALLET

Joseph I. Andreini, Troy, Mich., and David P. Riley, Fairfield, Ohio, assignors to Metal Pallets Company, Cincinnati, Ohio

Filed July 2, 1974, Ser. No. 485,693
Int. Cl. B65d *19/28*
U.S. Cl. 108—51 **10 Claims**

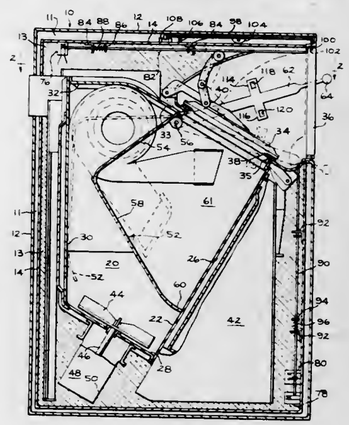


1. A metal pallet having a top deck of generally rectangular form, a plurality of runners, a plurality of legs and a bottom deck, said top deck consisting of a top skin of sheet metal having therein a plurality of elongate embossments, elongate reinforcing means cooperating with said embossments and rigidly attached to said top skin and a rim extending around the entire periphery of said top skin and rigidly attached to said top skin and to said reinforcing means, said runners being arranged in spaced parallel relationship transversely of said elongate reinforcing means and being rigidly attached to said top deck, said legs being rigidly attached to said runners and extending from said runners downwardly away from said top deck and said bottom deck being rigidly attached to the lower end of said legs.

3,882,797
EXPANSION GRATE FOR INCINERATOR

Christian A. Eff, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed June 20, 1974, Ser. No. 481,103
Int. Cl. F23g *5/10*
U.S. Cl. 110—8 E **8 Claims**



1. In an incinerator comprising a combustion chamber, a loading door for the incinerator, and heating means for incinerating combustible materials disposed within the combustion chamber, the improvement comprising:

an expansion grate disposed within said incinerator, said expansion grate being mounted in said incinerator for movement between a first position in which said expansion grate defines a loading chamber to limit the amount of combustible materials which may be placed in the incinerator and a second position in which said combustible materials are discharged from said loading chamber into said incinerator.

3,882,798
SECONDARY BED ELUTRIATION ARRESTOR FOR A FLUID BED DISPOSAL METHOD AND APPARATUS

Richard G. Reese, Woodside, Calif., assignor to Combustion Power Company, Inc., Menlo Park, Calif.

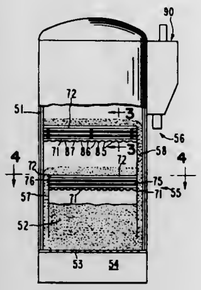
Continuation-in-part of Ser. No. 247,829, April 26, 1972, Pat. No. 3,818,846. This application June 24, 1974, Ser. No. 482,620
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 F **5 Claims**

1. In a waste disposal apparatus for consuming waste with minimal residue and a substantially pollution free gaseous output including a combustion housing, a bed of granular material, means for supporting the bed of granular material within the housing, means for providing combustion air to the bottom of the bed for maintaining the granular material in a fluidized state and an obstruction of labyrinth construction positioned within the housing above the bed, the improvement in the labyrinth construction comprising:

lower and upper vertically spaced-apart perforate retention plates,

at least first and second vertically spaced-apart grates positioned between said lower and upper plates,

means spacing said first and second grates from each other and from said lower and upper plates,



each of said first and second grates including a plurality of spaced-apart grate bars, the grate bars of the upper of said grates positioned above the spacing between the grate bars of the lower of said grates.

3,882,799

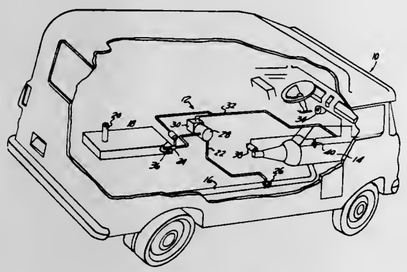
WASTE DISPOSAL SYSTEM AND METHOD

Charles L. Sargent, Ypsilanti, and John A. Hoffman, Brighton, both of Mich., assignors to Thermasan Corporation, Ann Arbor, Mich.

Division of Ser. No. 206,711, Dec. 10, 1971, abandoned. This application May 31, 1973, Ser. No. 365,511

Int. Cl. A47k *11/02*

U.S. Cl. 110—9 R **6 Claims**



1. In a waste disposal system for use with a fuel burning engine that discharges waste heated gases through an exhaust pipe, said exhaust pipe having an aperture in the wall thereof, waste injection apparatus comprising a screen in the form of a sleeve with an open end extending diametrically into said pipe through said aperture, a waste inlet conduit extending through said aperture into said screen and terminating a remote distance from the open end of the screen, and means for feeding waste material at a controlled rate through said waste inlet conduit.

3,882,800

AUTOMOTIVE UNIT FOR THE COLLECTION AND INCINERATION OF HOUSEHOLD OR INDUSTRIAL REFUSE

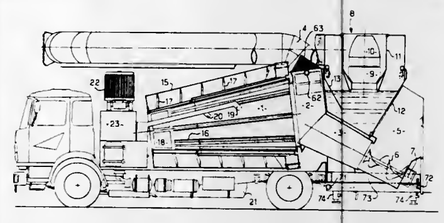
Michel G. J. du Chambon, Versailles, France, assignor to Locaner, Buthiers, France

Filed Feb. 13, 1974, Ser. No. 442,017

Claims priority, application France, Feb. 16, 1973, 73.05630

Int. Cl. F23g *5/06*

U.S. Cl. 110—14 **14 Claims**



1. An automotive unit for the collection and incineration of refuse, for instance household or industrial refuse, comprising a substantially fluid-tight incineration assembly in turn comprising a double walled rotary furnace substantially in the shape of a truncated cone and having one end forming a refuse charging hole and an other end forming an ash and incineration residue discharge hole, burners arranged in the furnace for the incineration of the refuse, an outer casing extending in coaxial relationship to the said furnace and turning jointly with the latter, said outer casing being closed at both its ends and extending beyond the furnace refuse charging hole so as to form an ash storage receptacle, means for charging refuse into the furnace and comprising a substantially fluid-tight device including an endless screw, a charging conduit substantially in the shape of a truncated cone between said endless screw and the charging end of the furnace for leading refuse advanced by said screw into the charging end of the furnace, a fume discharge sheath connected in a substantially fluid-tight manner to one end of the furnace, and means in operative communication with said sheath for the after-burning and cleaning of the fumes and combustion gases.

3,882,801

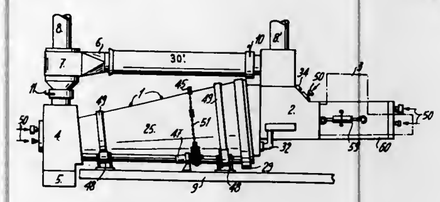
INCINERATOR FOR DOMESTIC AND INDUSTRIAL SOLID, SEMI-LIQUID OR LIQUID WASTE

Daniel Bolle, Geneva, Switzerland, assignor to Etablissement Manitra, Vaduz, Liechtenstein

Filed Nov. 16, 1973, Ser. No. 416,645

Int. Cl. F23g *5/06*

U.S. Cl. 110—14 **5 Claims**



1. An incinerator for domestic and industrial waste comprising, a frame, a rotary oven mounted on said frame, said oven being in the shape of a truncated cone, means for rotating said oven, a stationary pre-combustion chamber connected to one end of said oven and communicating therewith, a stationary post-combustion chamber connected to the other end of said oven and communicating therewith, burners associated with each of said chambers, said precombustion chamber receiving said waste to be incinerated, an exhaust cyclone, gas exhaust ducts connecting each of said chambers to said cyclone, a damper isolating each of said chambers from the gas exhaust ducts and said cyclone whereby the burned gases may be directed against the direction of flow of waste or with the direction of flow of waste in the oven by the selective closing of one damper and the opening of the other damper or vice versa.

3,882,802

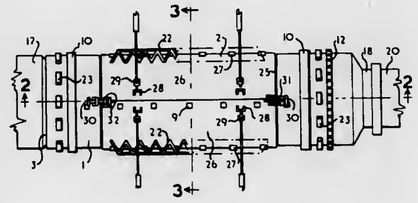
SOLID WASTE INCINERATOR

Earl A. Stewart, 29 Albert St., Aylmer East, Quebec, and William Joseph Gaboury, 111 Maple Grove Rd., Lucerne, Quebec, both of Canada

Filed May 20, 1974, Ser. No. 471,369

Int. Cl. F23g *5/06*

U.S. Cl. 110—14 **10 Claims**



1. A solid waste incinerator comprising an elongated cylindrical retort rotatable about a horizontal axis, rollers supporting said retort and means for rotating said retort on said supporting rollers, said cylindrical retort having a hatchway which extends in the circumferential direction along substantially one-half the circumference of the retort, and a closure for said hatchway which can be opened only at top center and bottom center positions for loading the waste material and unloading the burned material respectively, said closure, in its open position, permitting full passage of the material through said hatchway whose width is equal to the full interior diameter of said retort.

3,882,803

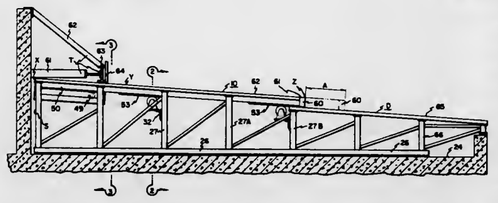
GRATE STRUCTURE FOR INCINERATION PLANTS

Grant L. Anderson, Ogden, Utah, and Wilbur W. Hish, Elgin, Ill., assignors to Clear Air, Inc., Ogden, Utah

Filed Apr. 18, 1974, Ser. No. 461,956

Int. Cl. F23b *1/22*

U.S. Cl. 110—18 R **9 Claims**



1. A grate installation for incinerator plants including, in combination, a reciprocable support plate structure having forward and rear ends and a receiving area proximate the latter for receiving materials dropped from above thereon; structural means for supporting said support plate structure for back-and-forth movements thereover; fixed upright reaction baffle means transversely disposed above said support plate structure proximate and rearwardly of the receiving area thereof; means for translationally reciprocating said support plate structure, said baffle means comprising the sole means, with the dropping of succeeding materials, for advancing prior-dropped materials forwardly along said support plate structure; and bed structure operably disposed forwardly of and overlapping underneath the forward end of said support plate structure, said support plate structure having transverse kicker plate means at its forward end for advancing forwardly materials dropping over said forward end of said support plate structure onto said bed structure.

3,882,804

TWO HOOK SEWING MACHINE NEEDLE FOR ROOTING HAIR AND AN APPARATUS FOR ROOTING HAIR

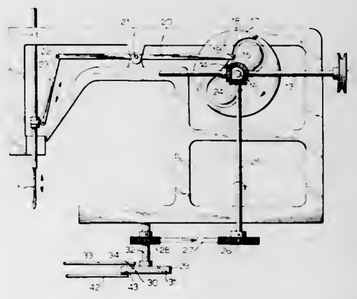
Yoshitsugu Matsumura, Nara, Japan, assignor to Kanegafuchi Chemical Industry Co., Ltd., Japan

Filed Aug. 24, 1973, Ser. No. 391,485

Claims priority, application Japan, Nov. 15, 1972, 47-132119

Int. Cl. D05c *15/02*

U.S. Cl. 112—79.5 **6 Claims**

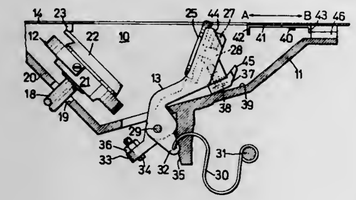


5. A hair rooting apparatus for rooting hair in a fabric-like material, comprising a needle having a pointed tip and a first relatively small hair engaging hook adjacent thereto of a size sufficient for engaging only a single or a few hairs from a bundle of parallel hairs, and a single further hair engaging hook spaced along the needle from the tip and having a size larger than said first hook sufficient for engaging double the number of strands of hair that are engaged by said first hook, needle raising and lowering means on which said needle is mounted for repeatedly lowering said needle to a lowest position, then raising it to an upper position, then lowering it to an intermediate position above said lowest position, and finally raising it to an uppermost position, a hair bundle holding means positioned below said needle at the lowest position of the needle tip and holding a bundle of hairs lying parallel to each other and transverse to the direction of raising and lowering movement of said needle so that the first hook extends into the bundle of hairs when the needle is at the lowest position, a pair of plates between said needle and said hair bundle holding means, one of said plates positioned slightly above the position of said further hook when said needle is in the intermediate lowered position and the other of said plates positioned slightly below the position of said further hook when said needle is in the intermediate lowered position, plate moving means on which said plates are mounted for moving said plates toward and away from each other in a direction perpendicular to the direction of raising and lowering movement of said needle and back and forth in a direction transverse to the movement of said plates toward and away from each other, said upper plate having a plurality of hooks at intervals along the edge thereof toward the lower plate and the lower plate having holes at corresponding intervals along the edge thereof toward the upper plate, the hooks and holes being aligned in the path of movement of said needle when the plates are in their closest position to each other.

3,882,805
HOOK GATE FOR FLAT BED SEWING MACHINES

Nereo Bianchi, Pavia, Italy, assignor to Necchi, S.p.A., Pavia, Italy

Continuation of Ser. No. 268,795, July 3, 1972, abandoned.
This application Nov. 7, 1973, Ser. No. 413,572
Claims priority, application Italy, July 20, 1971, 42956/71
Int. Cl. D05b *57/26*
U.S. Cl. 112—180 3 Claims



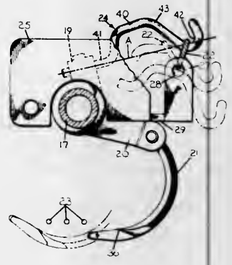
1. A hook gate apparatus for flat bed sewing machines comprising:
- a large recess formed in a sewing machine bed;
- a hook gate body disposed in said recess at an inclined angle to the flat surface of said bed;
- a latch bracket pivotally mounted in said recess for engagement with said hook gate body;
- a sliding plate slideable on said bed over said recess and capable of covering and uncovering said recess;
- contact means fixed to said sliding plate for coming temporarily into contact with said latch bracket during the sliding movements of said sliding plate from a closed to an open position and from an open to a closed position to initiate disengagement and engagement, respectively, of said latch bracket with said hook gate body, said contact means comprising a first member disposed on said sliding plate and extending vertically downwardly into said recess for temporarily contacting said latch bracket and a second member disposed on said sliding plate and extending vertically downwardly into said recess for contacting a stop member on said bed to limit the opening stroke of said sliding plate;
- mounting means for said latch bracket at the bottom of said recess permitting said latch bracket to be swung within said recess from a closed to an open position; and
- spring means attached to said bed and latch bracket to bias said latch bracket in a closed and open position.

3,882,806
COVER THREAD PULLING AND TAKE-UP DEVICE FOR MULTINEEDLE SEWING MACHINES

Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy

Filed Oct. 10, 1973, Ser. No. 405,033
Claims priority, application Italy, Oct. 20, 1972, 30712/72
Int. Cl. D05b *49/00*
U.S. Cl. 112—243 4 Claims

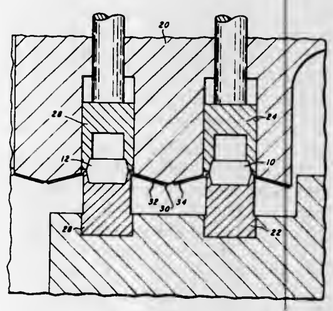
1. A cover stitch device for sewing machines of the multineedle type comprising:
- a. an oscillatable drive shaft having an upper looper carried on one end of and moveable with said drive shaft;
- b. a thread pulling element operatively connected to said drive shaft and movable with said upper looper in a first direction to draw and hold under tension a predetermined amount of cover thread from its source and in a second direction to release the cover thread to the upper looper for its presentation to the stitches being formed by the needles of the sewing machine.



3,882,807
METHOD OF SEPARATING DUAL INLINE PACKAGES FROM A STRIP

Robert Matteson Montgomery, Sherman, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 8, 1974, Ser. No. 458,943
Int. Cl. B21d *53/00*
U.S. Cl. 113—119 2 Claims

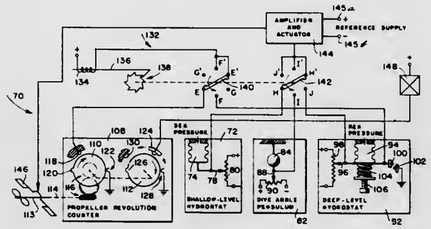


1. A method of severing leads of adjacent lead frames which comprises the steps of:
- a. providing at least a pair of adjacent lead frames on a ladder-like assembly, each lead frame having a plurality of leads of an essentially uniform thickness, the corresponding opposing leads of said adjacent lead frames being connected together through a a reduced-width section of said leads located essentially midway between the centerlines of said adjacent lead frames;
- b. securing said pair of adjacent lead frames between form anvils and clamps leaving said opposing leads accessible; and
- c. applying a force concurrently to all of said opposing leads in the region of said reduced-width section in a direction generally normal to the common plane of said adjacent lead frames until said leads rupture.

3,882,808
TORPEDO CONTROL

Robert E. Francois, Mountlake Terrace; William R. Davis, and Wayne M. Sandstrom, both of Seattle, all of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1962, Ser. No. 234,584
Int. Cl. F42b *19/00*, *19/04*
U.S. Cl. 114—20 R 3 Claims

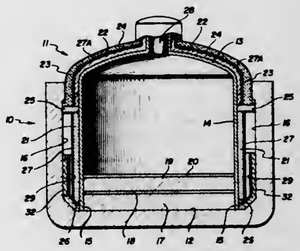


1. The method of effecting control and guidance of an anti-submarine torpedo of the type having a high yield warhead, said torpedo being launched from a hunter submarine against a submerged target submarine, said warhead when exploded beneath the surface of the water having explosive properties such that the maximum distance at which a predetermined damage inflicting effect occurs increases in a predetermined manner in accordance with the depth at which the warhead is exploded, said method comprising the steps:
- a. placing the hunter submarine at a torpedo launching depth and launching the torpedo thereat and thereafter maintaining the hunter submarine at said depth or above until the warhead is exploded, said launching depth being above a predetermined depth from the surface of the water, said explosive properties defining a hunter submarine safety surface of revolution, said surface of revolution being generated by an upwardly convex curve, the upper end of which is rotated about the periphery of a circle on the surface of the water formed around a vertical axis passing through the hunter submarine, the volume of water within and the volume of water surrounding the hunter submarine safety surface of revolution constituting an unsafe-to-detonate volume of water, and a safe-to-detonate volume of water, respectively,
- b. guiding the torpedo outwardly from the hunter submarine along a first substantially horizontal course,
- c. guiding said torpedo downwardly and outwardly through the safe-to-detonate volume along a second slant dive course at a fixed dive angle after the torpedo travels across said surface of revolution and into the safe-to-detonate volume,
- d. guiding the torpedo along a third horizontal course at a desired explosion depth after the torpedo dives to said explosion depth, said desired explosion depth being chosen to provide optimum damage inflicting effects upon the target submarine at various depths within said predetermined range of depths over which the target submarine may maneuver, and
- e. detonating the warhead at a desired distance from the hunter submarine along said second or third courses within said safe-to-detonate volume.

3,882,809
STORAGE VESSEL FOR SHIP TRANSPORT OF LIQUEFIED GAS

Paul Richard Johnson, Oak Lawn; Elmer Weyman Rothrock, Hinsdale; Kenneth Wilson Lange, Burr Ridge; Willis James Kircik, Hinsdale, and Robert Newton Davis, Bolingbrook, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Nov. 30, 1973, Ser. No. 420,603
Int. Cl. B63b *25/08*
U.S. Cl. 114—74 A 16 Claims



1. In combination:
- a ship having a hold with a bottom and walls; and
- a tank, for transporting a cryogenic liquefied gas, having a structurally self-supporting wall and roof and which is spaced or separated from the ship hold walls;
- said tank comprising a metal shell with a walled portion and a roof portion;
- the walled portion having a horizontal circular bottom edge and a surface of revolution generated by the movement of a generatrix line which moves in a path touching the horizontal circular bottom edge and is constantly in the same spaced relationship to a straight vertical line perpendicular and central to the horizontal circular bottom edge;
- the bottom edge of the walled portion being in direct contact with, and continuously joined to, the ship hold bottom;
- a metal secondary bottom in the tank spaced above the ship hold bottom and extending to the shell walled portion;
- means supporting the secondary bottom in position above the ship hold bottom;
- insulation between the secondary bottom and the ship hold bottom;
- a metal primary bottom in the tank spaced above the secondary bottom and extending to the shell walled portion; and
- storage load support means supporting the metal primary bottom in position above the secondary bottom.

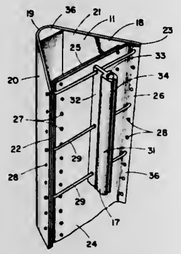
3,882,810
MAST WITH MOVABLE SAIL ATTACHING MEANS

John O. Roeser, Arlington Heights, Ill., assignor to Otto Engineering, Inc., Carpentersville, Ill.

Filed Feb. 25, 1974, Ser. No. 445,215
Int. Cl. B63n *9/08*
U.S. Cl. 114—112 10 Claims

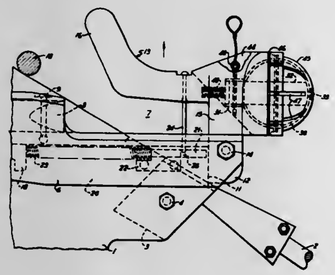
1. A mast comprising an elongated body having a top and a bottom and a forward portion and an aft portion, a pair of sides extending rearwardly from the forward portion, and sail-attaching means extending longitudinally adjacent the aft portion of the body and attached thereto for attaching a sail to the mast, the sail-attaching means including luff-attaching means for holding the luff of a sail and slide means extending transversely across the aft portion of the mast for slidably supporting the luff-attaching means for lateral movement said

luff attaching means whereby the luff-attaching means and the luff can move laterally from one side of the mast to the other



on the slide means as the direction of the wind relative to the mast changes.

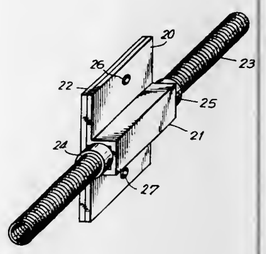
3,882,811
BUOYANT SIGNAL FLARE
Robert Temple, Swissvale, Pa., assignor to Mine Safety Appliance Company, Pittsburgh, Pa.
Filed Feb. 18, 1957, Ser. No. 640,754
Int. Cl. F42b *21/20;* **B63b** *9/00*
U.S. Cl. 114—221 A **16 Claims**



16. A flare device for use with an explosively actuated mine anchor-line cutter, comprising a buoyant flare, and means for attaching the flare to such a cutter, said means being separable from the cutter by the firing of the cutter under water to sever an anchor-line, whereby the flare will be released, the flare including a gas-producing chemical, water-pressure responsive means sealing the chemical away from water as long as the flare is in deep water, and means for moving said water-pressure responsive means out of said sealing position when the flare rises out of said deep water.

3,882,812
GAFF HOLDER
Anthony Tarantino, 364 Chestnut St., Ridgefield, N.J. 07657
Filed June 10, 1974, Ser. No. 477,555
Int. Cl. B63b *17/00*
U.S. Cl. 114—221 R **7 Claims**

1. A gaff holder comprising:
- a flexible tubing means of length greater than twice the distance from the tip of the gaff to the mid-point of the hook and of internal diameter sufficient to permit movement of said hook along said tube and a flexibility sufficient to grip said gaff when said gaff is disposed within the said tube;
- a backing plate to mount said gaff holder;
- a mounting means centrally located of said tube to mount said tube on said backing plate said mounting means being along the outer surface of said tube but occupying along said tube a distance less than that which would

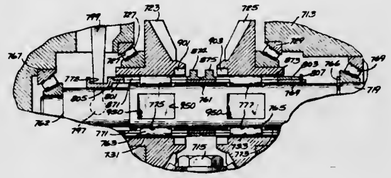


interfere with free flexibility of the tube to accommodate the gaff.

3,882,813
WATERCRAFT COUPLING SYSTEM
Hans-Georg Janssen, Bremerhaven, Germany, assignor to Aktiengesellschaft "Weser", Bremen, Germany
Continuation of Ser. No. 104,249, Jan. 6, 1971, abandoned. This application May 21, 1973, Ser. No. 362,185
Claims priority, application Germany, Jan. 17, 1970, 2001996; Mar. 14, 1970, 2012289; Nov. 30, 1970, 2058738
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 R **1 Claim**

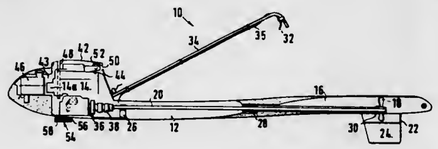
1. A watercraft coupling system, particularly for coupling tugs and barges, comprising a first watercraft having a bow; a second watercraft having a stern; a plurality of vertical guide tracks on said stern, including a center guide track and a pair of lateral guide tracks at opposite sides of said center guide track and located in the respective edge regions of the stern; a traverse member articulately connected to said bow and extending transversely of said guide tracks and having end portions located adjacent to the respective lateral guide tracks; guided elements mounted on said tranverse member and extending into the respective tracks, so that said traverse member is guided by all of said tracks for vertical displacement relative to said stern; elongated flexible coupling elements releasably secured to and extending along said first watercraft and having free ends located adjacent the respective end portins of said traverse member; and connecting means connecting each of said free ends with one of said end portions so as to move with said traverse member when the latter becomes displaced along said guide tracks in response to vertical movements of said watercraft relative to one another.

3,882,814
MARINE PROPULSION REVERSING MECHANISM
William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Division of Ser. No. 132,401, April 8, 1971, Pat. No. 3,818,855. This application Oct. 12, 1973, Ser. No. 406,014
Int. Cl. B63h *5/12*
U.S. Cl. 115—34 R **2 Claims**



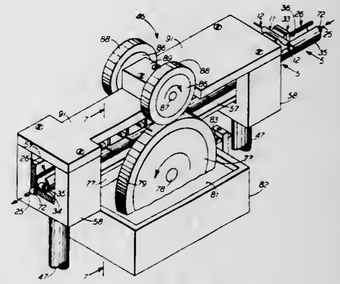
1. A marine propulsion device comprising a drive shaft housing, a drive shaft in said housing, a propeller shaft rotatably mounted in said drive shaft housing and drivingly connected to said drive shaft, a propeller carried by said propeller shaft, a power shaft rotatably supported by said device, a gear rotatably mounted in co-axial relation to and around said power shaft and drivingly connected to said drive shaft, means for drivingly connecting said power shaft to said gear including a roller having an axis extending parallel to the rotational axis of said power shaft and movable relative to a position of driving engagement between said power shaft and said gear, and means carried by said device for selectively displacing said roller relative to said position and comprising a roller retainer located between said power shaft and said gear, an actuator located between said power shaft and said gear, means on said actuator and on said power shaft for affording axial movement of said actuator relative to said power shaft and for preventing relative rotary movement between said actuator and said power shaft, means on said retainer and on said actuator for affording common axial movement thereof relative to said power shaft while affording relative rotary movement between said retainer and said actuator, engageable means on said retainer and on said gear, operable in response to axial movement of said actuator relative to said power shaft in one direction, for rotating said retainer relative to said power shaft to locate said roller in said position, and means on said power shaft and on said retainer, operable in response to axial movement of said actuator relative to said power shaft in the other direction, for disengaging said retainer from rotary engagement with said gear and for rotating said retainer so as to displace said roller from said position.

3,882,815
WATERCRAFT
David Bennett, Meipham, England, assignor to North Hants Engineering Company Limited
Filed July 18, 1973, Ser. No. 380,234
Claims priority, application United Kingdom, July 26, 1972, 34890/72; Oct. 11, 1972, 46942/72
Int. Cl. B63b *35/00*
U.S. Cl. 115—70 **1 Claim**



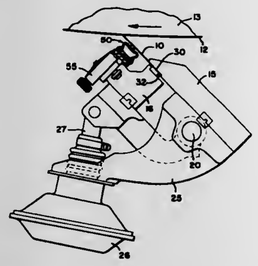
1. A watercraft comprising an elongate hull, an engine mounted in the forward part of the hull, the cross-section of the hull rearwardly of the engine having a width substantially greater than its depth to provide a craft user with an appreciable upper surface area on which to lay, sit or stand, a propeller shaft extending rearwardly of the engine and located in a housing provided by the hull, a propellor fixedly connected to the rear end of the propellor shaft, handle means connected to the hull by elongate tension means to enable the craft user to grasp the handle means while standing on said upper surface area, means enabling the engine to remain running for at least a limited period of time following inversion of the attitude of the craft, a fuel supply means having a main reservoir for supplying fuel under gravity to the engine carburettor when the hull is correctly afloat, and an auxiliary reservoir disposed below the main reservoir and in communication therewith via a tube depending downwardly therefrom, the tube being operable to retain fuel in the auxiliary tank when the hull is upside down to enable fuel to be fed under gravity from the auxiliary fuel tank to the carburettor, the main reservoir having a fuel filling opening, a non-vented cap for closing said opening, a bleed valve for venting the main reservoir, and wherein a bleed tube connects the top of the main reservoir with a fuel feed tubing connecting the carburettor to the auxiliary reservoir, and wherein a one-way valve is incorporated into the bleed tube to permit air to bleed from the feed tubing to the main reservoir when the attitude of the craft is corrected from an inverted position.

3,882,816
APPARATUS FOR FORMING LAYERS OF FUSIBLE METAL ON ARTICLES
David L. Rooz, Allentown; Ford J. Brown, Kutztown, and Richard J. Merwarth, Easton, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.
Filed Sept. 22, 1972, Ser. No. 291,482
Int. Cl. B05c *1/02, 11/12*
U.S. Cl. 118—57 **13 Claims**



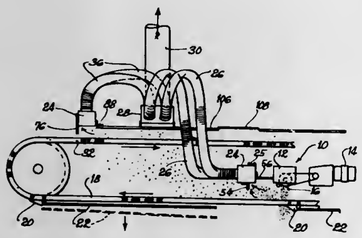
1. An apparatus for forming layers of a fusible metal on articles, comprising:
- an elongated member forming an enclosure and having a surface and a slot formed in the surface and extending longitudinally along the member;
- a strand-like member extending within the enclosure;
- means for applying on each article a mixture of the metal and a flux;
- means connected to the strand-like member and passing through the slot, including grooved portions supported by and engaging the edges of such slot, for mounting each article to the strand-like member;
- means for heating at least the fusible metal of the mixture to melt it; and
- means for advancing the strand-like member along the elongated member to move the mounting means longitudinally along the slot to convey each article through the applying means to apply the mixture on each article, and to convey each article with the mixture thereon through the heating means to melt at least the fusible metal of the mixture and thereby form the layers of the fusible metal on the articles.

3,882,817
DOCTOR BLADE ASSEMBLY
Stanley C. Zink, Fulton, N.Y., assignor to The Black Clawson Company, Middletown, Ohio
Filed Jan. 11, 1974, Ser. No. 432,504
Int. Cl. B05c 11/04
U.S. Cl. 118—126 7 Claims



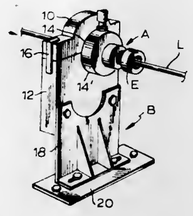
1. In a blade type coater in which a cantilever-supported blade is urged against a moving web to control the weight of the coating applied thereto, the improvement comprising a transversely elongated flexible tube, means supporting said tube adjacent said blade between the supported end and the free end thereof, said tube being formed with a collapsible wall section adjacent said blade and a blade-engaging extension which is formed with an integral part of said wall section, said extension being movable by said wall section transversely of said tube upon the application of fluid pressure thereto and engageable with said blade at a relatively fixed location on said blade, the effective area of said wall section subject to pressure remaining substantially constant with movement of said wall section, and the location on said blade upon the application of force by said extension remaining substantially constant so that the weight of coating applied varies approximately as an inverse function of fluid pressure applied to said tube, and pressure regulating means for applying a regulated fluid pressure source to the interior of said tube.

3,882,818
POWDER COLLECTOR CONSTRUCTION
Kenneth D. Mowbray, Des Plaines, Ill., assignor to Electro Sprayer Systems, Inc., Rosemont, Ill.
Filed Dec. 17, 1973, Ser. No. 425,334
Int. Cl. B05b 15/04; B05c 11/10
U.S. Cl. 118—312 18 Claims



1. In a system for applying powder to a moving surface wherein the powder is sprayed from an applicator, the improvement comprising means located adjacent the applicator for collecting excess powder from around the applicator to thereby reduce the presence of the powder in the surrounding atmosphere, said collecting means comprising a plurality of modules, each module comprising enclosing walls including end walls and interconnected side walls, inlet and outlet openings defined by each module, means supporting the modules in end-to-end assembly adjacent said applicator, the assembly of nozzles extending substantially across said moving surface, individual conduits connected to each of said outlet openings, and suction means connected to said conduits whereby powder in the air around the applicator is pulled simultaneously into the respective inlet openings and collected through said conduits.

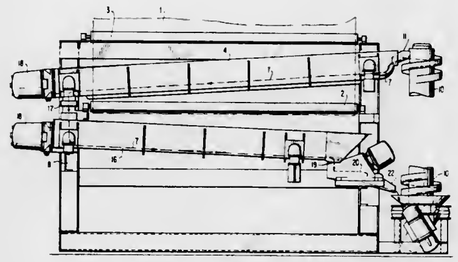
3,882,819
DEVICE FOR COATING ELEMENTS OF CONTINUOUS LENGTH
William Ronald Skeeters, Shelbyville, Tenn., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Apr. 17, 1974, Ser. No. 461,747
Int. Cl. B05c 3/12
U.S. Cl. 118—405 9 Claims



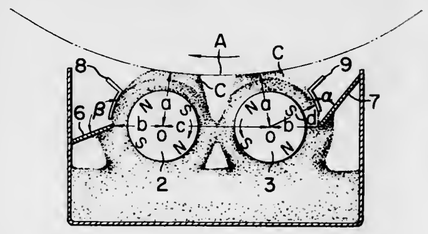
1. A device for applying a liquid coating composition to an element of continuous length comprising a body member including an intermediate wall having an aperture to allow passage of the element to be coated, a first axial bore in the body member in communication with and on one side of the aperture, a die member within said bore, an adjustable pressure member within said bore for engagement with the die member, a second axial bore in the body member in communication with the aperture and on the opposite side of the intermediate wall, an inlet opening in the body member to allow a coating composition to be fed to the second bore, and valve means within said second bore for regulating the flow of coating composition to the die member, the valve means comprising an annular wall extending axially from said intermediate wall into said second bore and surrounding said aperture, the free edge of the annular wall providing a valve element, and an adjustable valve member in the second bore cooperable with said valve element, the die member, adjustable pressure member and valve member having openings therethrough in alignment with said aperture.

3,882,820
COATING APPARATUS
Karl Höck; Alfred Nieroba, both of Troisdorf, and Karl Heinz Weiper, Schladern, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft
Filed Aug. 30, 1973, Ser. No. 393,195
Claims priority, application Germany, Aug. 31, 1972, 2242953
Int. Cl. B05c 11/10
U.S. Cl. 118—603 27 Claims

1. Apparatus for the bilateral powdering of a film web comprising:
a conveying chute,
powder supplying means for supplying powder to said conveying chute,
conveying chute vibrator means for vibrating said conveying chute such that said powder travels along the length of the conveying chute in a conveying direction,
an elongated slot formed in the bottom of said conveying chute,
and film web conducting means for conducting a film web through said slot in an upward direction and upwardly through said conveying chute such that said film web is contacted on both sides thereof by the powder in said conveying chute as it passes through said conveying chute.

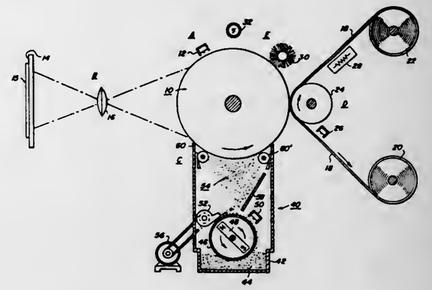


3,882,821
DEVELOPING DEVICE FOR ELECTROPHOTOGRAPHY
Hajime Katayama, Kawasaki, and Toru Takahashi, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 276,312, July 31, 1972, abandoned, which is a continuation of Ser. No. 16,288, March 4, 1970, abandoned. This application Mar. 12, 1973, Ser. No. 340,299
Int. Cl. G03g 13/08
U.S. Cl. 118—637 4 Claims



1. An electrophotographic developing device for forming a toner image on a photosensitive member comprising a developer chamber for storing electrophotographic developer including magnetic carrier and toner, at least one rotary magnetic roller positioned in said developer chamber, said magnetic roller having a plurality of N- and S-poles alternately arranged in the circumferential direction of said roller, magnetic brush shaping plate means disposed adjacent to the surface of the magnetic brush formed of said developer on said magnetic roller for shaping a hard magnetic brush layer to a predetermined thickness which will not contact with an image developing surface of a sensitized member, and magnetic field adjusting plate means made of a magnetic material for uniformly, strongly and continuously raising soft brushes upon said hard brush layer, and wherein the leading edge of said magnetic field adjusting plate means is spaced apart from the center of said magnetic roller by a distance longer than that between the center of said magnetic roller and the leading edge of said magnetic brush shaping plate means and said magnetic field adjusting plate means is diverged radially outwardly from said leading edge of said magnetic field adjusting plate means in the direction of rotation of said magnetic roller.

3,882,822
APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGES
William A. Sullivan, Jr., Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 285,986, Sept. 5, 1972, Pat. No. 3,791,730, which is a division of Ser. No. 105,887, Jan. 12, 1971, Pat. No. 3,707,390. This application Jan. 11, 1974, Ser. No. 432,734
Int. Cl. G03g 15/08
U.S. Cl. 118—637 4 Claims

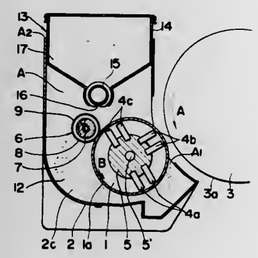


1. An apparatus for developing electrostatic latent images previously formed on a support member comprising:
a reservoir for storing a supply of magnetic toner particles
a chamber having one end positioned to receive said electrostatic latent image-bearing support member and an opposed end terminated in said reservoir;
a drum positioned partially within said reservoir in position to contact the magnetic toner particles therein;
means situated within said drum for producing a magnetic field poled to attract magnetic toner particles and rotating in a predetermined direction, whereby toner particles are carried in said direction from said reservoir circumferentially across the surface of said drum;
means for imposing a charge upon said magnetic particles of opposite polarity to the electrostatic latent image; and
blower means within said chamber for directing a jet of gaseous material across the surface of said drum to dislodge the magnetic particles from the surface thereof, thereby forming a suspension of said magnetic particles in said gaseous material,
whereby development of said electrostatic latent image is effected upon contact of said magnetic toner particles in said suspension with said latent image.

3,882,823
STIRRING AND SCRAPING DEVICE FOR DEVELOPING MATERIAL
Susumu Tanaka, Sakai; Yuji Enoguchi, Osaka, and Hidetoshi Kawabata, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed July 9, 1974, Ser. No. 486,839
Claims priority, application Japan, Aug. 2, 1973, 48-91615
Int. Cl. G03g 13/08
U.S. Cl. 118—637 13 Claims

1. In a developing device for use in an electrophotographic copying apparatus which comprises a developing roller rotatably provided adjacent to a photoreceptor having a photoreceptor surface on the outer periphery thereof, said developing roller including a rotatable outer cylinder, and a plurality of stationary magnets enclosed in said outer cylinder and disposed in such positions that magnetic fields of said magnets intersect to attract and feed developing material onto said outer cylinder so as to form magnetic brush bristles on said outer cylinder for developing an electrostatic latent image formed on said photoreceptor surface into a visible toner

powder image, a toner dispenser provided above said outer cylinder for replenishing said developing material with fresh toner powder, and a sump for said developing material provided below said developing roller, an improvement thereof for efficient stirring and mixing of said developer material with said fresh toner powder and scraping of said developer material off said outer cylinder after said developing comprises a stirring and scraping device composed of a rotary member provided below a toner dispenser and adjacent to an outer periphery of said outer cylinder, said rotary member which is provided with a plurality of grooves and square edges on an outer periphery thereof being adapted, during rotation



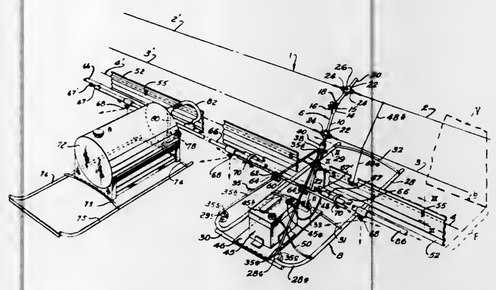
thereof, to contact said developing material on said outer cylinder and to be magnetized by the magnetic force of said stationary magnets, said developing material being attracted onto said rotary member by magnetic force of the latter concentrating on said square edges and by a difference of strength of magnetic force between said square edges and said grooves, and subsequently dislodged from said rotary member by centrifugal force and decreasing magnetic force due to rotation of said rotary member and by the own weight of said developing material, during which process said developing material is stirred and mixed with said fresh toner powder from said toner dispenser.

3,882,824
GROOMING AID FOR HAIRY ANIMALS
Gwendolyn Kay Acquaviva, 982 Ledge Rd., Medina, Ohio 44256
Filed Oct. 16, 1973, Ser. No. 405,561
Int. Cl. A01k *29/00*
U.S. Cl. 119—156 **5 Claims**

1. A method of grooming the coats covering the bodies of four-legged animals to provide a soil-resistant surface and improve the appearance of the coat which comprises:
a. cleaning the hair of the coat of the animal,
b. applying a polish consisting essentially of water and from about 1 to about 40% by weight of an alkyl polysiloxane to the coat of the animal, and
c. allowing the coat to dry to develop the desired soil-resistant polished finish on the coat of the animal.

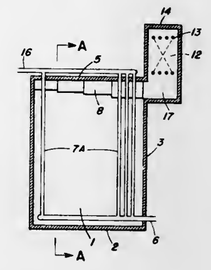
3,882,825
METHOD AND APPARATUS TO METER FORAGE
Vergil McFadden, Rt. 3, Paris, Tex. 75460
Filed June 6, 1973, Ser. No. 367,652
Int. Cl. A01k *3/00*
U.S. Cl. 119—20 **6 Claims**

1. A method of feeding animals comprising:
positioning a fence having a plurality of strands of wire strung between inclined posts across the ground such that animals are restrained from walking in a feeding area bounded on one side by a vertical plane in which the upper most strand of wire is disposed; positioning the fence such that upper ends of the posts are inclined toward the feeding area; spraying liquid nutrient on the feeding area; moving the fence to establish a new feeding



area; and delivering electricity to each of said strands of wire.

3,882,826
FLUE GAS DISTRIBUTOR AND RADIATOR FOR UNIFORM HEAT TRANSFER
George F. Feldner, Westwood, N.J., assignor to The Lummus Company, Bloomfield, N.J.
Continuation-in-part of Ser. No. 472,328, May 22, 1974, abandoned. This application Aug. 21, 1974, Ser. No. 499,113
Int. Cl. F22b *21/00*
U.S. Cl. 122—333 **15 Claims**

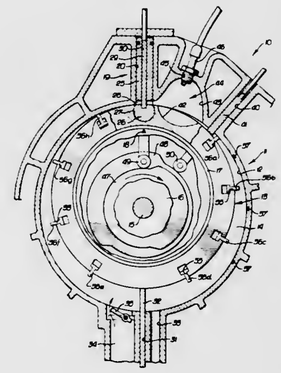


1. In an apparatus for indirect heating of fluids having a radiant chamber and a convection chamber connected to the upper portion of the radiant chamber and laterally offset therefrom, the radiant chamber containing at least one row of tubes for passing a fluid to be heated therethrough, and means for providing radiant heat to the tubes and the fluid passing therethrough, the improvement comprising a plurality of horizontally disposed elongated ducts, located in the upper portion of the radiant chamber, disposed parallel to the row of tubes and extending substantially across the radiant chamber, means for admitting combustion gases from the radiant heating means into the ducts, and means for transmitting combustion gases from the ducts to the convection chamber.

3,882,827
FOUR-PHASE CYCLE PLANETATING PISTON INTERNAL COMBUSTION ENGINE
Robert H. Williams, Rt. 2, Bandera, Tex. 78003
Filed Mar. 12, 1974, Ser. No. 450,290
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.27 **6 Claims**

1. In a four-phase cycle planetating piston internal combustion engine, the combination of:
a stator having a cylindrical bore closed by end walls providing a pair of bearings co-axial with said bore;
a shaft journalling in said bearings;

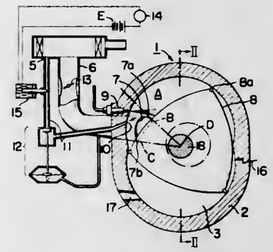
an eccentric fixed on said shaft;
a cylindrical annular piston within which said eccentric journals, said piston being co-extensive axially with said bore and of such an outside diameter as to remain in a progressively shifting approximately tangentially sealing contact with said bore as said shaft rotates;
first, second and third abutment means radially biased respectively at about 12 o'clock, 1:20 o'clock and 6 o'clock to seal off the free space between said piston and bore at said respective circumferentially spaced points to produce a fuel vapor suction and compression chamber extending clockwise from 6 to 12 o'clock, a fuel vapor expansion and exhaust chamber extending clockwise from 12 to 6 o'clock, and a fuel charge confinement and ignition sub-chamber extending clockwise between 12 and 1:20 o'clock;



means in said stator providing an exhaust port opening from said bore at an advanced point in said expansion and exhaust chamber;
means in said stator providing a fuel inlet port for admitting gaseous fuel into said suction and compression chamber when the latter is in its suction phase;
first cam controlled passage means delivering compressed gaseous fuel directly from said suction-compression chamber to said ignition sub-chamber, and then shutting said passage means;
second cam controlled means for opening said second abutment means in timely relation with and following the shutting of said passage means;
a timely actuated ignition means for igniting a fuel charge confined by said ignition sub-chamber at the beginning of a power stroke; and
tethering means connected peripherally to said piston to limit the rotation of said piston relative to said stator to a planetating movement in said bore.

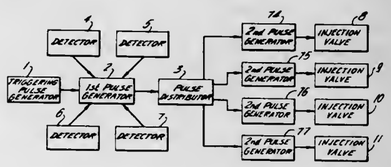
3,882,828
FUEL INJECTION TYPE ROTARY PISTON ENGINE
Yoshinori Honiden, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan
Filed Sept. 27, 1973, Ser. No. 401,255
Claims priority, application Japan, Sept. 27, 1972, 47-112000
Int. Cl. F02b *53/10*
U.S. Cl. 123—8.09 **10 Claims**

1. A rotary piston type internal combustion engine comprising a casing including a rotor housing having a trochoidal inner peripheral wall surface and a pair of side housings airtightly secured to the opposite sides of said rotor housing, a polygonal rotor having apices sealingly contacting the inner peripheral surface of said rotor housing so as to provide working chambers between said rotor and said rotor housing, means for rotating said rotor so as to effect volumetric changes of each working chamber through intake, compression, combustion and exhaust strokes, intake port means provided in at least one of said side housings for introducing fresh air into the working chamber which is in the intake



stroke, fuel injection means provided in said rotor housing for injecting fuel into the working chamber which is in the intake stroke, and means provided in the rotor housing for introducing auxiliary air into said working chamber, said means for introducing auxiliary air being spaced apart from said fuel injection means on said rotor housing and being positioned so that the auxiliary air flow intersects the injected fuel stream within said working chamber.

3,882,829
FUEL INJECTION CONTROL DEVICE
Takeo Sasaki, 840 Chiyoda-cho, Himeju, Hyogo, Japan
Continuation-in-part of Ser. No. 78,111, Oct. 5, 1970. This application Sept. 13, 1972, Ser. No. 288,760
Claims priority, application Japan, Oct. 8, 1969, 44-80572
Int. Cl. F02d *5/04*
U.S. Cl. 123—32 EA **5 Claims**



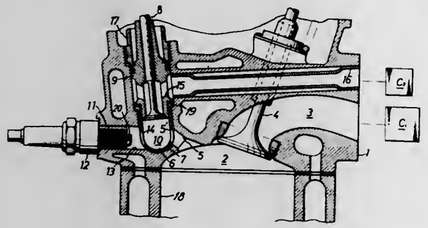
1. A fuel injection control device for use in internal combustion engines comprising a plurality of valve means each having at least one fuel injection valve connected to an internal combustion engine, triggering pulse generator means for generating triggering pulses in response to a predetermined rotational angle of the engine, first pulse generator means for generating a train of first pulse signals wherein each said first pulse signal is produced in response to each of said triggering pulses, dividing means connected to said first pulse generator means and having a plurality of outputs for dividing pulses of said first pulse signals successively between said plurality of outputs, a plurality of second pulse generators each having an input connected to a respective one of said dividing means outputs for generating respective second pulse signals responsive to the divided train of first pulse signals, means for controlling in common the pulse widths of said second pulse signals, and a plurality of combining means each connected to a respective one of said dividing means outputs and a respective one of said second pulse generators for producing a sum signal of said first and second pulse signals, each said combining means having an output connected to a respective one of said valve means for controlling the actuating period of each of said valve means, whereby each of said valve means is capable of actuating independently of the other of said valve

means, continuously for periods greater than 720° of engine rotation and the injection period of one of the valve means is capable of overlapping that of another said valve means independently of said another said valve means.

3,882,830
COMBUSTION CHAMBER DEVICE FOR INTERNAL COMBUSTION ENGINES

Tadashi Kume, and Kimio Shimmura, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 29, 1973, Ser. No. 374,868
Int. Cl. F02b *19/00, 19/10, 19/18*
U.S. Cl. 123—75 B **5 Claims**



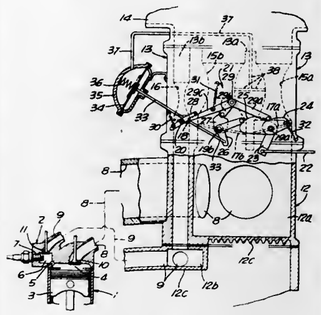
1. In an internal combustion engine having a main combustion chamber, the combination of: walls forming a cavity, a cup having a cylindrical side wall closed at one end by a bottom wall, the cup being insertable into the cavity along the axis of the cylindrical wall, to define an auxiliary combustion chamber within the cup, means forming a restricted torch nozzle passage connecting the auxiliary chamber and the main chamber, said passage including a first aperture positioned in said cup at one side of the said axis, said cavity walls forming an ignition recess adjacent said cup, a spark plug having electrodes positioned in said recess spaced from and outside said cup, said cup having a second aperture communicating with said ignition recess, whereby alignment of said second aperture with said ignition recess insures proper orientation of said first aperture, and means including a valved intake passage for supplying a rich combustible mixture into the interior of said cup.

3,882,831
INTAKE CONTROL FOR INTERNAL COMBUSTION ENGINES

Tasuku Date, Tokyo; Shizuo Yagi, and Kiyoshi Miyaki, both of Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1974, Ser. No. 451,584
Claims priority, application Japan, Mar. 19, 1973, 48-30862
Int. Cl. F02b *75/02*
U.S. Cl. 123—75 B **3 Claims**

1. An intake control device for internal combustion engines of the type including a main combustion chamber and an auxiliary combustion chamber, the latter having a spark plug, the chambers being joined by a torch passage and being connected respectively to an inlet valve controlled main intake passage and auxiliary intake passage, said intake control device comprising: a main carburetor including a main primary passageway having a first throttle valve and a main secondary passageway having a second throttle valve, said primary and secondary passageways adapted to produce a lean air-fuel mixture and connected in common to said main intake passage, an auxiliary carburetor including an auxiliary passageway having a third throttle valve, said auxiliary passageway adapted to produce a rich air-fuel mixture and connected to said auxiliary intake passage; and interconnecting means operable under light engine load conditions to coordinatively open the first and third throttle valves, and operable to open said second throttle valve under a range of heavy engine load

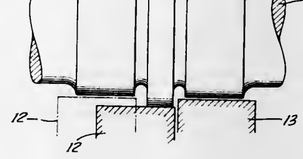


conditions continuing from the range of light engine load conditions, whereby the third throttle valve opens coordinatively with the turning movement of the second throttle valve.

3,882,832
VALVE OPERATING CAM DEVICE FOR INTERNAL COMBUSTION ENGINE

Kiyoshi Ohsaki, Toda, and Morio Takahashi, Toyohashi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 16, 1974, Ser. No. 488,917
Claims priority, application Japan, July 31, 1973, 48-89872
Int. Cl. F011 *1/04*
U.S. Cl. 123—90.6 **2 Claims**



1. For use with an internal combustion piston engine having a main combustion chamber provided with a main intake valve and an exhaust valve, and having an auxiliary combustion chamber provided with an auxiliary intake valve, the improvement comprising: a rotary camshaft having three axially spaced cam lobes integrally formed thereon for actuating said three valves, respectively, one cam lobe being positioned between the other two cam lobes and having greater radial dimensions than one of the other cam lobes at every angular position of the shaft.

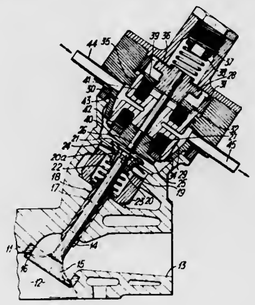
3,882,833
INTERNAL COMBUSTION ENGINES

Kenneth Longstaff, Alcester, and Stanley Holmes, Flyford Flavel, both of England, assignors to British Leyland (Austin-Morris) Limited, Longbridge, Birmingham, England

Filed July 12, 1973, Ser. No. 378,668
Claims priority, application United Kingdom, July 12, 1972, 32480/72
Int. Cl. F011 *9/04*
U.S. Cl. 123—90.11 **5 Claims**

1. An internal combustion engine having:

a. a block including at least one cylinder;
b. the block defining a duct providing access to the cylinder;
c. a tappet valve having a stem and a valve head, the stem being disposed in, and slidable relative to, the block for movement between a closed position in which the valve head isolates the duct from the cylinder and an open position in which the valve head allows the passage of fluid between the duct and cylinder;
d. magnetic means linked to the valve stem;
e. a magnetic field generator mounted on the block and adapted to generate a magnetic field to retain the valve,

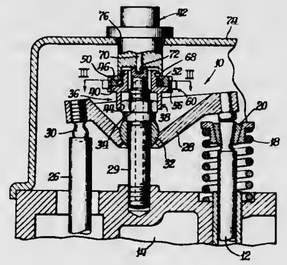


by way of the magnetic means, in the open or the closed position; and
f. resilient means disposed on the block, and adapted to act between valve and block to bias the valve against the action of the magnetic field of the generator, said resilient means comprising first and second belleville spring washers so disposed between valve and block that, in the open position, the first belleville spring washer is fully compressed while the second belleville spring washer is uncompressed and, in the closed position, the second belleville spring washer is fully compressed while the first belleville washer is uncompressed.

3,882,834
VALVE LASH ADJUSTER

Alexander Goloff, East Peoria, and Mark F. Sommars, Peoria, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Jan. 28, 1974, Ser. No. 437,384
Int. Cl. F011 *1/20*
U.S. Cl. 123—90.43 **8 Claims**

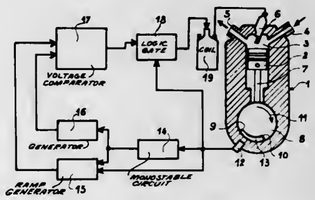


1. In a system having a rocker arm pivotable about a pivot member to actuate a valve, and adjusting means associated with said rocker arm and pivot member and movable in first and second directions to respectively decrease and increase lash between the valve and rocker arm, an adjustment member, and means interconnecting the adjustment member and adjusting means for providing that (i) the adjustment member is movable in one direction to move the adjusting means in said first direction to decrease said lash to a level of substantially zero, with further movement of said adjustment member in said one direction providing no further movement of said adjusting means in said first direction, and (ii) movable in another direction to move the adjusting means in said second direction to increase said lash.

3,882,835
ELECTRIC PULSE GENERATING APPARATUS FOR INTERNAL COMBUSTION ENGINES

Williams Randriamanentena, Villejuif, France, assignor to Compteurs Schlumberger, Montrouge, France

Filed Mar. 16, 1973, Ser. No. 342,117
Claims priority, application France, Mar. 24, 1972, 72.10355
Int. Cl. F02g *5/08*
U.S. Cl. 123—117 R **2 Claims**



1. In combination with the ignition system of an internal combustion engine of the type having at least one piston moving in a cylinder and going through a position defining a "top dead center," said piston imparting a rotation to a crankshaft, an apparatus for generating electric pulses said apparatus including:
piston position detector means for delivering a first, variable duration voltage pulse during the interval when the piston moves between two predetermined positions, the duration of the voltage pulse being representative of engine speed, the end of said pulse substantially coinciding with the instant the piston goes through the top dead center in the cylinder;
monostable circuit means coupled to said detector means and being responsive to the end of the variable duration pulse delivered by said detector for delivering a pulse of constant duration;
first ramp generator circuit means connected to said monostable circuit means and being responsive to each said pulse of constant duration for delivering a second voltage pulse whose leading edge has a slope substantially proportional to the speed of rotation of said crankshaft driven by said piston, and whose trailing edge has a steep slope, said second voltage pulse being delivered during the interval of time when said detector delivers said first voltage pulse;
second generator circuit means connected to the output of said monostable circuit means and responsive to said pulse of constant duration for producing a voltage having a level substantially inversely proportional to the speed of rotation of the crankshaft;
voltage comparator circuit means connected to said first and second generator circuit means for comparing the values of the voltages delivered by said first and second generator circuit means,
said comparator delivering a pulse when the voltage produced by said second generator means is lower than a value obtained by the voltage of the leading edge of the pulse delivered by said first generator means,
the beginning of the pulse delivered by said comparator circuit means being coincident with equality between the value of the voltage of the leading edge of the pulse delivered by said first generator means and the value of the pulse delivered by said second generator means, the

pulse delivered by said comparator constituting an energy controlling signal to control said engine ignition system; and

means connected to said second generator circuit means and to said comparator circuit means for producing and for applying to the input of said comparator circuit means, for at least one predetermined value of the speed of rotation of said crankshaft, an auxiliary reference voltage of predetermined value replacing the voltage delivered by said second generator.

3,882,836

SPARK ADVANCE MECHANISM FOR IGNITION DISTRIBUTORS OF INTERNAL COMBUSTION ENGINES

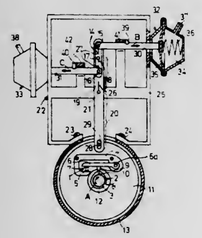
Joseph Heine, Leonberg, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 3, 1973, Ser. No. 403,171

Claims priority, application Germany, Oct. 6, 1972, 2249128

Int. Cl. F02p *5/10*

U.S. Cl. 123—117 A **19 Claims**



1. In an ignition distributor for internal combustion engines, a combination comprising a rotary driving shaft; at least one signal generating device adjacent to said driving shaft; an actuating device receiving torque from said driving shaft and arranged to actuate said signal generating device at least once during each revolution of said driving shaft; a carrier for said signal generating device, said carrier being movable angularly from a neutral position about said driving shaft to thereby change the timing of actuation of said signal generating device; and regulating means for changing the angular position of said carrier, including a displacing member pivotable about a fixed pivot axis and having a first portion operatively connected with said carrier and a second portion, a motion transmitting member mounted on said second portion pivotable about a second pivot axia and having first and second arms, and first and second adjusting members respectively connected at first and second points to the first and second arms and operable to pivot said displacing member through the medium of said motion transmitting member, whereby said displacing member changes the angular position of said carrier, a first line which is normal to and intersects said fixed pivot axis and said second pivot axis and a second line connecting said first and said second points extent when said carrier is in said neutral position, substantially in the same direction and in radial direction of said driving shaft, and the direction of the forces produced by said adjusting members on said first and second points being substantially normal to both of said lines.

3,882,837

EXHAUST GAS RECIRCULATION CONTROL DEVICE FOR INTERNAL COMBUSTION

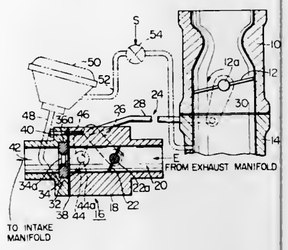
Masakazu Horie, Tokyo; Takao Fukuhara, and Tetuya Harada, both of Yokohama City, all of Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed Mar. 1, 1973, Ser. No. 337,198

Claims priority, application Japan, Mar. 2, 1972, 47-21728

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **3 Claims**



1. In an exhaust gas recirculation system of an internal combustion engine having a carburetor throttle valve and an intake manifold, a flow control device for controlling the amount of exhaust recirculation to said intake manifold, said device comprising, in combination, passage means for recirculating engine exhaust gases to said intake manifold, valve means disposed in said passage means and responsive to the opening degree of said throttle valve for varying the effective cross sectional area of said passage means, and flow restricting means located in said passage means in series with, and downstream of said valve means, said flow restricting means including a butterfly valve downstream of said valve means, a diaphragm type actuator responsive to intake manifold vacuum, a butterfly valve arm linked to said actuator, a passageway connecting said intake manifold to said actuator, a solenoid valve located in said passageway in response to a signal indicative of said engine operating under light load and cold condition causing said actuator to close said butterfly valve through movement of said throttle valve arm linked to said actuator.

3,882,838

CHARGE FORMING METHOD AND APPARATUS WITH OVERSPEED GOVERNOR

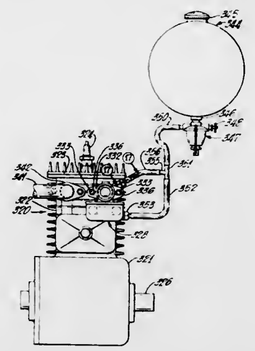
Warren D. Nutten, Grafton, Wis., and Bernard C. Phillips, Toledo, Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 302,902, Nov. 1, 1972, Pat. No. 3,822,685, which is a division of Ser. No. 74,812, Sept. 23, 1970, Pat. No. 3,738,608, which is a division of Ser. No. 766,580, Oct. 10, 1968, abandoned. This application Mar. 25, 1974, Ser. No. 454,211

Int. Cl. F02m *13/06*

U.S. Cl. 123—127 **18 Claims**

1. A fuel flow control construction for use with the induction system of an internal combustion engine for delivering excess fuel from a supply to the engine including, in combination, means providing a chamber, a relatively movable valve member in said chamber being solely responsive to engine structural vibration transmitted through the engine frame, said valve member having a spherically curved surface region, a valve seat surface disposed to be engaged by the spherically curved surface region of the valve member, said valve seat surface being configurated to define a fuel port, spring means providing the sole force normally biasing the valve member to port-closing position, fuel passage means in communication with said chamber, said valve member being of a mass to be vibrated away from the valve seat surface under the influence of engine structural vibration of a predetermined frequency to effect flow of fuel from the supply through said port.



3,882,839

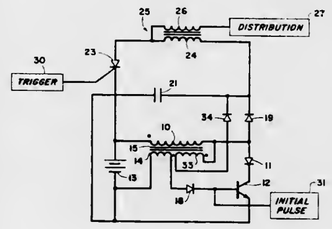
CAPACITIVE DISCHARGE IGNITION SYSTEM UTILIZING A FEEDBACK CONTROLLED OSCILLATOR

David P. Ganoung, 3410 Smith Southeast, Apt. C., Albuquerque, N. Mex. 87106

Filed Aug. 27, 1973, Ser. No. 391,630

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 R **9 Claims**



1. A capacitor-discharge ignition circuit comprising:
a capacitor,
an inductor,
an ignition coil having a primary winding
a source of direct current potential, and
a unidirectional current passing device,
said primary winding and said source of direct current potential each being switchably connected in parallel across a winding of said inductor, and said capacitor being switchably connected in parallel across said primary winding,
said unidirectional current passing device and said capacitor being connected in series, the series being connected in parallel with said winding of said inductor, and being oriented to receive and store a current maintaining voltage generated in said winding of said inductor.

3,882,840

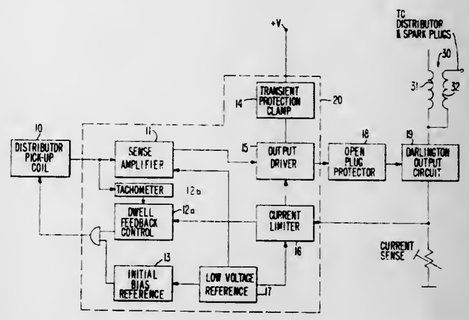
AUTOMOTIVE IGNITION CONTROL

Andrew A. Adamian, Sunnyvale; David K. Long, and Donald E. Pezzolo, both of Mountain View, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Continuation of Ser. No. 241,752, April 6, 1972, abandoned. This application Nov. 26, 1973, Ser. No. 419,172

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E **12 Claims**



1. An ignition control system for use in an internal combustion engine having at least one means for igniting fuel, said system comprising:

a. means for producing a control signal alternating in timed relationship with an engine;

b. an energy storing ignition coil possessing a primary and a secondary side, said secondary side being cyclically coupled to said means for igniting in timed relationship with said engine;

c. a power output circuit coupled to the primary side of said coil for drawing current through said coil;

d. means coupled to said power output circuit and responsive to said control signal for switching said power output circuit off to discharge said coil through said means for igniting;

e. means for limiting the maximum current drawn by said power output circuit through said ignition coil;

f. means for dissipating energy stored in said coil when said energy fails to discharge through said means for igniting, said means for dissipating comprising at least one diode connected from a reference potential to the primary side of said coil, siad diode coupled so as to conduct current when said primary side is at a selected lower potential than said reference potential; and

g. means for turning or maintaining OFF said power output circuit when said means for producing a control signal is either open-circuited or short-circuited.

3,882,841

GLOW PLATE FOR INTERNAL COMBUSTION ENGINE

Abraham Silverstein, 1810 Metzeroth Rd., Adelphi, Md. 20783

Filed Sept. 19, 1973, Ser. No. 398,775

Int. Cl. F02f *3/02, 3/12*

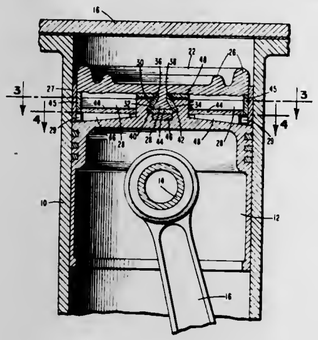
U.S. Cl. 123—193 CP **10 Claims**

1. A device for increasing the efficiency of an internal combustion engine having a cylinder and a moveable member therein comprising:

a. a thermally conductive plate carried by the moveable member said plate and member having surfaces facing each other;

b. means between the plate and member to hold the plate in spaced apart relation from the member while permitting thermal expansion of the plate comprising a plurality

of discrete rail means projecting from one of said surfaces along lines of thermal expansion of the plate, the other



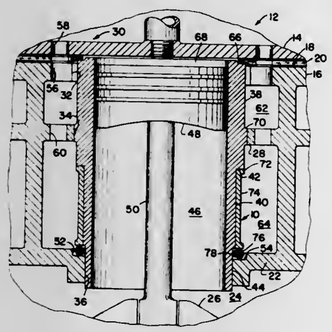
surface having complementary rail retaining means receiving said rail means.

3,882,842

CYLINDER LINER SUPPORT

John M. Bailey, Dunlap; Michael K. Stratton, Peoria, and Alan W. Wells, Edelstein, all of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Jan. 28, 1974, Ser. No. 437,204
Int. Cl. F01j *11/04*; F02f *1/02*
U.S. Cl. 123—193 C **6 Claims**



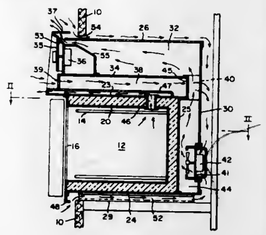
1. In an internal combustion engine, a cylinder head mounted on a cylinder block, said block defining a top deck portion, a cylinder bore in said cylinder block, a generally cylindrical cylinder liner disposed within said cylinder bore, a reduced diameter portion of said cylinder liner defining an annular shoulder intermediate said top deck and said shelf, means for supporting said cylinder liner comprising a support sleeve circumscribing said reduced diameter portion of said cylinder liner having an end thereof in abutment with said annular shoulder, wherein said support sleeve is relatively thin walled with respect to said cylinder liner whereby it possesses a relatively lower spring rate with respect to said sleeve, and further including means for preventing radial movement of said cylinder liner in said block comprising a shelf in said block intermediate said top deck and lower wall defining a bore, and an annular flange on said cylinder liner closely fitted within said last-named bore.

3,882,843

SELF-CLEANING WALL OVEN WITH AIR FLOW SYSTEM

Eugene J. Barnett, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 24, 1974, Ser. No. 482,196
Int. Cl. F24c *15/32*
U.S. Cl. 126—273 A **4 Claims**



1. An oven assembly of the pyrolytic self-cleaning type for wall installation in a cabinet having an opening sufficiently large that a perimetric air inlet is defined between the boundaries of said opening and at least the top and opposite sides of the oven assembly, comprising:

outer housing means including top, bottom, rear and opposite side walls;

a thermally-insulated oven liner having an open front disposed in said housing and presenting top, bottom, rear and opposite side outer faces, the rear and opposite side outer faces being spaced inwardly from the respectively facing walls of said outer housing to define air flow passages therebetween;

a control chamber in the top part of said outer housing and having a top front air outlet, the bottom of said control chamber defining an intermediate passage with the top outer face of said oven liner, said intermediate passage having an air inlet opening at its front and an air outlet opening to the space behind said housing rear wall at its rear;

duct means connecting said air flow passage at the rear of said liner to the interior of said control chamber; and

fan means in the air flow passage at the rear of said oven liner and having a suction side in communication with the space to the rear of said rear housing wall for drawing air through said perimetric air inlet and past the exterior of said top and opposite side walls of said housing, and through said intermediate passage, and forcing air from the discharge side of said fan means through said air flow passage at the rear of said oven liner, through said control chamber, and through said air flow passages at the opposite sides of said liner from rear to front.

3,882,844

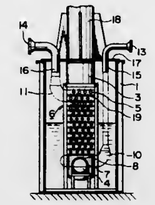
SUBMERGED HOT GAS HEAT EXCHANGER

Akira Ohara, 591-4 Niina, Minoo City, Osaka, and Masa Takahashi, 3-41-8 Taito, Taito-ku, Tokyo, both of Japan

Claims priority, application Japan, June 28, 1972, 47/76990
Filed June 22, 1973, Ser. No. 372,584
Int. Cl. F24h *1/20*
U.S. Cl. 126—360 A **1 Claim**

1. A submerged hot gas heat exchanger, comprising, a tank containing a heat exchanging liquid, a burner mounted at the upper end of said tank, a combustion gas shroud connected with said burner and extending into the lower portion of said tank, a combustion gas sparge pipe connected with said shroud at its lower end, said sparge pipe having a plurality of apertures along its upper surface for jetting air and combustion gases into the liquid, a tube located within said tank above said sparge pipe, said tube being bent into a plurality of parallel tube sections for the passing of a process liquid therethrough, upper and lower vertical fins attached to said tube

sections, inlet and outlet header tanks connected to opposite ends of said tube, said tanks along with a part of said tubes forming a heat exchanging portion and means for preventing film boiling being provided in the said heat exchanging portion, wherein said means includes a small diameter tube located within said inlet header tank, said tube having a plurality of orifices along its lower surface for delivering a liquid to be treated.

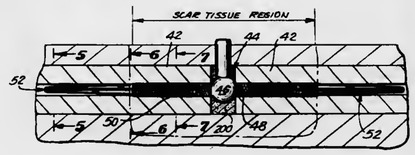


3,882,845

METHODS AND DEVICES FOR REDUCING LUMEN CONSTRICTION

Louis Bucalo, Holbrook, N.Y., assignor to Investors In Ventures, Inc., New York, N.Y.

Filed Dec. 17, 1973, Ser. No. 424,927
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R **24 Claims**



1. In a surgical method to be performed at the region of a tubular body organ, the steps of performing surgical procedures at the region of the tubular body organ for obtaining access to the interior thereof, so that subsequent to the surgical procedure scar tissue will form at the latter region during healing of tissue at said region, and introducing into the tubular body organ after access is obtained thereto by the surgical procedures a tubular implant which is longer than said region, the implant having an intermediate portion for opposing constriction by scar tissue which forms at said region and for performing a specific function for which the implant is designed and a pair of opposed elongated flexible portions extending in opposite directions beyond the intermediate portion and while being substantially less rigid than said intermediate portion and bendable with respect thereto also having sufficient rigidity to support the wall of the tubular organ in the interior thereof for opposing constriction and preventing kinking of the tubular organ in opposite directions beyond the intermediate portion of the implant while providing beyond the intermediate portion of the implant in the lumen of the tubular organ a clearance sufficient to permit fluid to flow through the tubular organ, and introducing the implant into the tubular organ with the intermediate portion thereof situated at the region where scar tissue forms while locating said elongated flexible portions at regions extending along the interior of the tubular organ in opposite directions beyond opposed ends of the intermediate portion situated at said region where scar tissue forms.

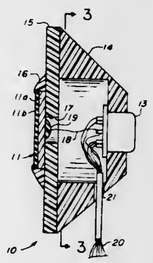
7. An implant to be introduced into a tubular organ after surgical procedures are performed to give access to the interior of the tubular organ at a region along the tubular organ where scar tissue will form during healing subsequent to the introduction of the implant into the tubular organ, said implant having a length which is greater than the length required to occupy the interior of the tubular organ at the region thereof where the scar tissue subsequently grows and said implant including elongated tubular means for permitting a body fluid to flow along the interior of the tubular organ through the implant, said tubular means having a rigidity sufficiently great to support the tubular organ and oppose substantial constriction thereof by the scar tissues the implant further including a pair of elongated flexible means of substantially greater flexibility than said tubular means connected with and extending in opposite directions beyond opposed ends of said tubular means for extending therefrom respectively beyond said opposed ends into regions of the tubular organ beyond the region where scar tissue subsequently grows, said pair of elongated flexible means while being bendable nevertheless having sufficient rigidity to support the wall of the tubular organ and permit curving thereof without kinking at regions beyond the region where scar tissue subsequently grows, and said pair of flexible means each having a cross section adapted to occupy only part of the cross section of the lumen of the tubular organ for leaving therein a clearance extending longitudinally along the lumen sufficiently great for fluid to flow therethrough.

3,882,846

INSULATED ELECTROCARDIOGRAPHIC ELECTRODES

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; Robert M. David, Austin, and William M. Portnoy, Lubbock, both of Tex.

Filed Apr. 4, 1973, Ser. No. 347,953
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E **5 Claims**



1. An electrode for detecting bioelectric potentials comprising:

a. housing means made of substantially non-electrically conductive material and having a flat outer surface portion;

b. an electrically conductive substrate having a front face and a back face mounted in a fixed relationship to said outer surface portion of said housing means such that said substrate and said outer surface portion of said housing means are essentially parallel;

c. a substantially non-electrically conductive dielectric material mechanically bonded to and completely covering said front face of said substrate by means of radio-frequency sputtering techniques and wherein said resulting substrate is mounted on said outer surface portion of said housing means such that said dielectric material will be in intimate contact with an external body when said electrode is placed thereon and said back face of said substrate is exposed to the internal environment of said housing means;

d. electrically insulative encasing material extending continuously along and completely covering the edges of said substrate for preventing electrical current flow between said substrate and the external body;

e. an impedance transforming means mounted within said housing means and electrically connected to said back

face of said substrate for providing said electrode with a relatively low output impedance and a relatively high input impedance whereby the impedance of said electrode may be matched with and connected directly to conventional monitoring equipment having a relatively low input impedance; and,

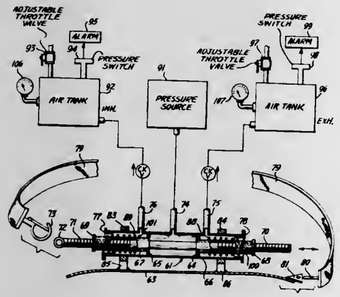
f. means for connecting said transforming means to the monitoring equipment.

3,882,847

LOW-COST PNEUMATIC APNEA OR RESPIRATION MONITOR

Harvey Barry Jacobs, 11607 Foxclove Rd., Hunters Woods, Reston, Va. 20091

Filed Dec. 11, 1973, Ser. No. 423,762
Int. Cl. A61b *5/10*; **A61m** *16/00*
U.S. Cl. 128—2 S **9 Claims**



1. A pressure fluid breathing monitor for a patient comprising:

a support,

a valve means having two relatively movable valve parts;

a body belt adapted to partly surround the patient's chest; means connecting one end of the belt to one valve part and means for connecting the other end of the belt to said support;

said valve parts moving relatively to each other in response to the inhalation and exhalation motions of the chest;

a source of pressure fluid connected to the valve means;

pressure fluid operated alarm means including two alarm devices, each connected to said valve means by a separate conduit means, one alarm responding to abnormal inhalation motion and the other to abnormal exhalation motion; conduit means connecting said alarm means to said valve means to receive pressure fluid therefrom for operation of said alarm device;

delay means connected to said conduit means to control the time interval wherein the pressure fluid effects the activation of the alarm means; and,

said relatively movable valve parts controlling the flow from said pressure fluid source to said conduit means in response to the inhalation and exhalation motions of the chest.

3,882,848

TEST PROBE FOR AN IMPEDANCE AUDIOMETER

Irwin Klar, New City, and Erwin H. Rock, Ardsley, both of N.Y., assignors to American Electromedics Corporation, Dobbs Ferry, N.Y.

Filed Jan. 24, 1974, Ser. No. 436,105
Int. Cl. A61b *10/00*
U.S. Cl. 122—2 Z **7 Claims**

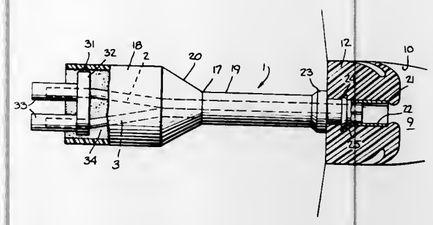
1. An improved ear test probe for use in evaluating hearing losses comprising the combination of:

a hollow casing including an open inner end portion for insertion into a patient's outer ear canal,

means at the casing inner end to seal the casing and said outer ear canal,

a plurality of hollow tubes extending through said casing from an outer end,

potting material within said casing and surrounding said tubes, and



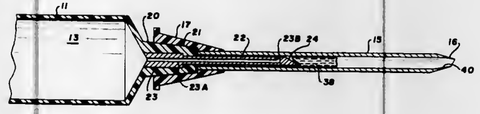
said hollow tubes having inner ends spaced inwardly from the inner end of said casing whereby a substantial cavity is provided at the inner end of said probe between said tube ends and said casing inner end.

3,882,849

SOFT TISSUE BIOPSY DEVICE

Khosrow Jamshidi, 610 Winston Ct., St. Paul, Minn. 55118

Filed Mar. 25, 1974, Ser. No. 454,064
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **9 Claims**



1. Biopsy aspirating means for gathering soft tissue samples comprising:

a. syringe means having a barrel, a reciprocable plunger sealingly received within such barrel and forming a controllably variable volume chamber with the interior of said barrel, a sample-receiving hollow needle having a sharpened tip, and needle mounting boss means at the base of said barrel and extending from said barrel and having a means receiving the hub of said sample-receiving needle thereon;

b. a gripping shaft coupled to said plunger and extending outwardly from said barrel, guide plate means disposed at the proximate end of said barrel and having an opening formed therein to receive said gripping shaft, said gripping shaft having locking lug means formed thereon and arranged to releasably engage the outer surface of said guide plate means for retaining said plunger in a position removed from said barrel tip means;

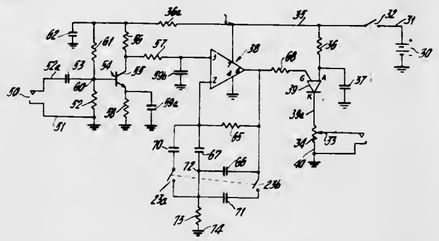
c. said needle mounting boss means having a central bore formed therein, a rigid needle mounting shaft disposed within said bore, said needle mounting shaft having an angularly disposed biopsy sample abutment surface at the forward end thereof, a bore formed within said needle mounting shaft and providing communication between said barrel and said hollow needle shaft at an orifice at the end of said needle mounting shaft bore, said orifice being disposed at a point spaced a finite distance from said angularly disposed sample abutment surface, said angularly disposed abutment surface being received within the bore of said hollow needle and being disposed along said needle shaft at a point removed from the tip end of said needle.

3,882,850

BRAIN WAVE FEEDBACK INSTRUMENT

Howard Bailin, 725 E. 84th St., Brooklyn, N.Y. 11236, and John Labenski, Stewartstown, Pa. 17363

Filed May 9, 1973, Ser. No. 358,723
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 B **8 Claims**



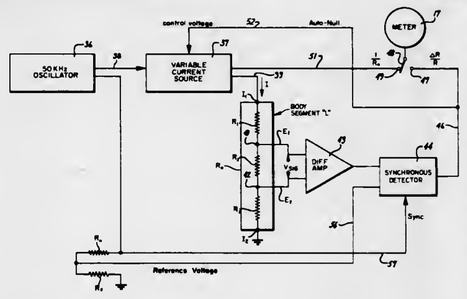
1. A brain wave bio-feedback instrument comprising an adjustable headband, an electrode supported by said headband, a second electrode, means for clipping the second electrode on a subject's ear and including a spring-operated clip, a control device, a first switch mounted on said control device, a single battery cell positioned within said control device and connected to said first switch and to a ground, an operational amplifier having an input and an output, means connecting one of said electrodes in series with said operational amplifier input, means connecting the other electrode to ground, a set of biasing resistors connected to said operational amplifier and biasing said operational amplifier for operation at about the mid-point of the voltage of said battery cell, a resistor-capacitor band-pass means connected between the input and output of said operational amplifier and comprising an active filter network with said operational amplifier, a voltage controlled oscillator, said voltage controlled oscillator being connected to the output of said operational amplifier so that the oscillator's frequency is thereby modulated by the output voltage of said operational amplifier, a sound transducer connected to said voltage controlled oscillator, and a second switch mounted on said control device to provide selection between Alpha and non-Alpha waves and connected to said band-pass means to selectively alter the operating elements of said band-pass means.

3,882,851

IMPEDANCE PLETHYSMOGRAPH

Frederick J. Sigworth, Orinda, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Continuation of Ser. No. 190,900, Oct. 20, 1971, abandoned. This application Aug. 15, 1973, Ser. No. 388,541
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 Z **5 Claims**



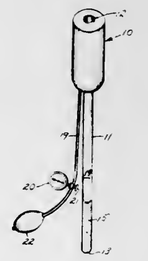
3. In a plethysmograph first and second current input electrodes, first and second voltage drop measuring electrodes adapted to be applied in pairs across a biological segment with one current electrode adjacent one voltage electrode and the other current electrode being adjacent the other voltage electrode, an oscillator having a high frequency output, a variable current source connected to the oscillator and to the first and second current input electrodes for receiving a timing signal from the oscillator so that an output oscillatory current is provided to the current input electrodes, amplifier means coupled to said first and second voltage drop electrodes for receiving the voltage developed across said voltage drop electrodes and producing an output responsive thereto, means for providing a predetermined reference voltage, means coupled to the amplifier means for detecting the output of the amplifier means and providing an output responsive thereto, said means for detecting receiving said predetermined reference voltage, means for supplying the output of the means for detecting to the variable current source to provide a control voltage for the variable current source so that the output from the variable current source provides an output from the amplifier means matching said predetermined reference voltage, wherein said current source includes a logarithmic function generator electrically coupled between the control voltage input and the oscillatory current output so that the plethysmograph will have a constant response time regardless of the biological segment resistance and the current level supplied to the biological segment, the output of the means for detecting providing a percent deviation signal which represents a percent of change of resistance value of the biological segment, and indicating means for receiving the percent deviation signal from the means for detecting and for indicating the percent change of resistance.

3,882,852

SURGICAL DILATORS HAVING INSUFFLATING MEANS

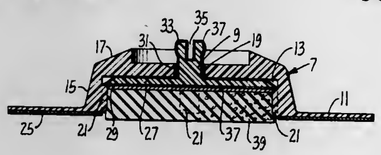
Manfred Sinnreich, 160 Fort Hill Rd., Scarsdale, N.Y. 10583

Filed Jan. 11, 1974, Ser. No. 432,666
Int. Cl. A61m *3/00*, *29/00*
U.S. Cl. 128—4 **5 Claims**



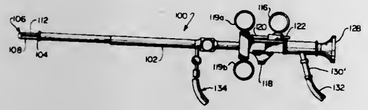
1. A combination surgical dilating and endoscopic device comprising: a rigid shaft element having proximal and distal ends bordering an outer surface, an expandable element surrounding said shaft element and secured to said outer surface, means supplying an inflating medium to said expandable element communicating therewith, and means for determining the degree of inflation of said inflatable element, said shaft element penetrating said inflatable element and defining a longitudinal bore extending substantailly the length thereof; and an endoscopic element having an elongated barrel within the bore of said rigid shaft element and capable of longitudinal movement relative thereto; whereby said device may be inserted into a body opening to a position in which said inflatable element is positioned within a body cavity, following which said expandable element is expanded to correspondingly expand said body cavity, and said endoscope is manipulated relative to said rigid shaft element to perform a required surgical function.

3,882,853
BIOMEDICAL ELECTRODE
John W. Gofman, and Richard F. Gianni, both of Dublin, Calif., assignors to Cardiodynamics, Inc., Dublin, Calif.
Continuation of Ser. No. 332,720, Feb. 15, 1973, abandoned. This application June 13, 1974, Ser. No. 479,112
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 E 8 Claims



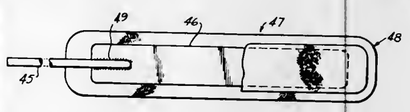
1. A body electrode comprising in combination:
a. a base member made of a single piece of a flexible, soft plastic having a thin flexible rim portion and a rigid center flat bottomed cup-like member defined by heavy sidewalls and a heavy top,
b. a snap comprising a relatively thin flat disc of conductive material lying on the flat bottom of the cup-like member, and having a terminal extending through the face of the cup-like member,
c. a thin sheet of porous non-conductive material of substantially the same size as the flat bottom of the cup-like member, and having one surface in contact with said disc,
d. a thick disc of porous foam-like material in contact with said porous nonconductive material and filling the remainder of the cavity of the cup-like member and extending a substantial distance beyond the open end of the cup-like member, said foam-like material being saturated with an electrically conductive material, and
e. means for attaching said cup to a human body by the outer thin wide rim whereby said foam-like material is brought into compression within the cup-like member by pressure from the body.

3,882,854
SURGICAL CLIP AND APPLICATOR
Jaroslav Fabian Hulka, Chapel Hill, N.C., and George Selden Clemens, Northfield, Ill., assignors to Research Corporation, New York, N.Y.
Filed Aug. 23, 1973, Ser. No. 390,861
Int. Cl. A16b 1/06; A61b 17/08, 17/10
U.S. Cl. 128—6 10 Claims



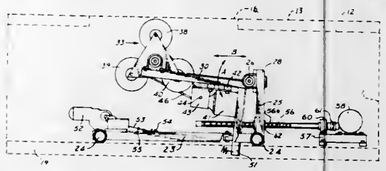
1. A surgical clip and actuator for occluding tubes in a living animal said clip comprising first and second jaw members; means adjacent one end of each jaw member pivotally mounting the other ends of said jaw members for movement toward and away from each other; a generally U-shaped spring member engaging remote surfaces of each jaw member and slidable from a first position on one side of the said pivotal mounting, to urge said jaw members into the open arrangement, to a second position on the other side of the said pivotal mounting, to urge said jaw members into the closed position; and said actuator including a cradle for said clip and first and second manually operable rods; said first rod adapted to contact a top surface of said first jaw member and to urge said jaw member toward said second jaw member against the urging of said U-shaped spring when said spring is in said first position; and said second rod positioned to urge said U-shaped spring into said second position.

3,882,855
RETRACTOR FOR SOFT TISSUE FOR EXAMPLE BRAIN TISSUE
Rudolf R. Schulte, Goleta, Calif., and Harold D. Portnoy, Bloomfield Hills, Mich., assignors to Heyer-Schulte Corporation, Goleta, Calif.
Filed Nov. 12, 1973, Ser. No. 414,909
Int. Cl. A61b 17/02
U.S. Cl. 128—20 12 Claims



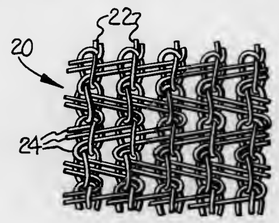
1. A retractor for tissue comprising: a deformable metal blade having a pair of opposite faces and a peripheral edge bounding and interconnecting said faces; and a sheath enveloping at least a part of said blade, said sheath comprising a cover portion covering at least said part of both faces of said blade and having an exposed bearing face for bearing against brain tissue, and a skirt portion extending from said cover portion and projecting to a free edge beyond said peripheral edge, said portions comprising a material which is non-adherent to brain tissue the skirt being thinner adjacent to its free edge than it is adjacent to the peripheral edge of the blade and being sufficiently flexible as to bend upon contact with soft tissue such as brain tissue without cutting, tearing, or bruising said tissue.

3,882,856
THERAPEUTIC MANIPULATING MACHINE FOR THE HUMAN BODY
Gordon D. Heuser, 2514 Stacy Ct., Colorado Springs, Colo. 80915, and Rolla J. Pennell, 3320 Coyster Dr., Independence, Mo. 64052
Filed Nov. 23, 1973, Ser. No. 418,362
Int. Cl. A61h 15/00
U.S. Cl. 128—57 3 Claims



1. A therapeutic manipulating machine for massaging and manipulating portions of a patient's body, such as the spinal column, to release joint fixations and condition muscles, the machine comprising:
a. a table means having a flat, planar, upper surface and a centrally located, elongated rectangular opening therein, said table means being supported above a floor surface by a suitable framework means,
b. a carriage means disposed below said table means and mounted on parallel, longitudinal guide rail means positioned along each side of said framework means for longitudinal movement with respect to said rectangular opening,
c. massaging and manipulating means rotatably mounted on said carriage means and arranged to extend upwardly through said opening to massage and manipulate a portion of a patient's body lying on said table means, said massaging and manipulating means includes a first power means for rotating said massaging and manipulating means during operation, said massaging and manipulating means includes at least about three parallel rollers having a length generally corresponding to the width of said rectangular opening and mounting means supporting said rollers in a polygonal drum-like configuration with their axes aligned with said rectangular opening so that, as the mounting means is rotated, each of said rollers will freely rotate and sequentially rotate through said rectangular opening and press against said body portion so as to provide an oscillating pressing action against said body portion,
d. means for adjusting the upward force with which said massaging and manipulating means presses against said body portion, so as to vary the massaging and manipulating action, and
e. reciprocating means for moving said massaging and manipulating means continuously in a back and forth motion longitudinally along said opening to massage and manipulate a large area of the body.

3,882,857
ORTHOPEDIC CAST HAVING PROTECTIVE SLEEVE
Hubert C. Woodall, Jr., Winston-Salem, N.C., assignor to Carolina Narrow Fabric Company, Winston-Salem, N.C.
Filed Dec. 29, 1969, Ser. No. 888,441
Int. Cl. A61f 13/04
U.S. Cl. 128—90 4 Claims

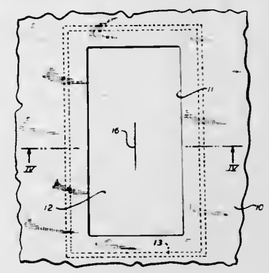


1. An immobilizing orthopedic cast characterized by air permeability and non-wettability and thereby permitting air ventilation to the surface of the skin of a wearer and being quick to dry upon exposure to water, said cast comprising,
an inner protective sleeve adapted to be positioned about a portion of the body of a wearer and comprising a relatively open, soft, resilient, air permeable fabric formed of interknit non-wetting, polymeric yarns, and
an outer immobilizing structure surrounding said sleeve and comprising a plurality of superposed, rigid layers of a relatively open, air permeable non-wetting fabric adhered together and including interlaced glass yarns.

3,882,858
SURGICAL SYNTHETIC-RESIN MATERIAL AND METHOD OF TREATING OSTEOMYELITIS
Klaus Klemm, Frankfurt/Main, Germany, assignor to Merck Patent Gesellschaft mit/beschraenkter Haftung, Darmstadt, Germany
Filed Apr. 17, 1974, Ser. No. 461,654
Claims priority, application Germany, Apr. 21, 1973, 2320373
Int. Cl. A61f 5/04
U.S. Cl. 128—92 G 15 Claims

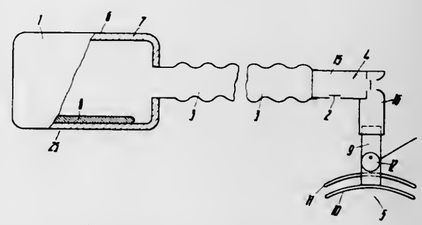
1. A method of treating osteomyelitis which comprises implanting in an osteomyelitic cavity sterile particles having a diameter of 1 – 20 mm. of a solid physiologically acceptable bone cement impregnated with at least one topically effective antibiotic.

3,882,859
ELASTIC FENESTRATED DRAPE
Richard E. Ericson, Nashua, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed June 4, 1973, Ser. No. 366,746
Int. Cl. A61f 13/00
U.S. Cl. 128—132 D 2 Claims



1. A surgical drape for use over a patient, which comprises a main cover formed from thin material resistant to the passage of bacterial organisms there-through, said cover having a large fenestration therein; and a thin sheet of elastomeric material secured to the under surface of said cover along a seal line adjacent to the edge of said fenestration, said latter material being limp for conforming to the adjacent body surface of said patient and having lower and upper anti-skid surfaces for non-skid engagement with said body surface to retain said drape on said patient, and to provide a non-skid instrument receiving field and being formed from stretchable material to permit the area of an opening cut therein to be increased for exposing an operative site on the patient's body wherein the elastomeric material is a copolymer of styrene and butadiene.

3,882,860
REANIMATION DEVICE
Eckart Frimberger, Cramer-Klettstrasse 2, D-8014 Neubiberg, Germany
Filed Apr. 12, 1973, Ser. No. 350,519
Claims priority, application Germany, Apr. 12, 1972, 2217614; Sept. 20, 1972, 2245993
Int. Cl. A61h 31/00
U.S. Cl. 128—145.7 13 Claims



1. In a resuscitation device for an alternative respiration and external cardiac massage of a patient, comprising a compressible and self-expanding reanimation bag, an adaptation piece for the breathing passage of a patient, a connecting tube connecting said bag to said adaptation piece, a one-way suction valve provided in the assembly defined by said bag and said connecting tube to fill said bag with fresh air during the expansion stroke of said bag, and a double valve provided between said connecting tube and said adaptation piece and adapted to allow the flow of fresh air from said bag into the lungs of the patient when the bag is being compressed, and the

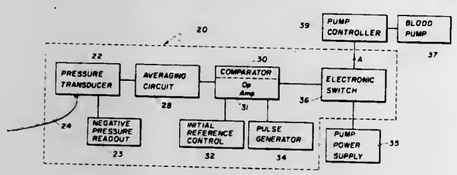
re-flow of said air from the lungs of the patient to the ambient air as soon as the bag has reached its collapsed condition, the improvement residing in that said double valve comprises a housing having a first opening leading to the ambient air, a second opening leading to said bag and a third opening leading to the patient, said first and second openings being aligned and provided in opposite walls of said housing and surrounded by inwardly extending tubular posts, the inner ends of which are aligned in spaced relationship, the tubular post of said second opening bearing on its inner end a peripheral flange provided with through-holes, said inner ends of said tubular posts forming valve seats for an elastic membrane, which is fastened to said peripheral flange in the peripheral area thereof and which alternatively cooperates with one of said tubular posts to alternate between two positions and to act as a double valve, said elastic membrane being biased into its first position by its elastic force, in which first position the elastic membrane sealingly covers said peripheral flange and said inner end of said second tubular post to connect said first opening to said third opening to thereby connect the lungs of the patient to the ambient air, and said elastic membrane being brought into its second position by the air flow from said bag, in which second position the elastic membrane sealingly covers the tubular post of said first opening to connect said second opening via said through-holes to said third opening to thereby connect said bag with the lungs of the patient, the cross-sectional area of the tubular post of said second opening leading to said bag being the same or larger than the total cross-sectional area of said through-holes in said peripheral flange.

3,882,861

AUXILIARY CONTROL FOR A BLOOD PUMP

Donald E. Kettering, Salt Lake City, and Morris E. Jones, Bountiful, both of Utah, assignors to Vital Assists, Inc., Salt Lake City, Utah

Filed Sept. 24, 1973, Ser. No. 399,904
Int. Cl. A61m *01/03*
U.S. Cl. 128—214 E **7 Claims**



1. A blood pump controller responsive to changes in blood flow comprising:

a conventional blood pump for displacing blood through an extracorporeal hemodialysis system including a blood-conducting conduit;

a conventional power source and means for delivering electrical power to the blood pump, the pumping capacity of the pump being proportional to the electrical power delivered to the pump;

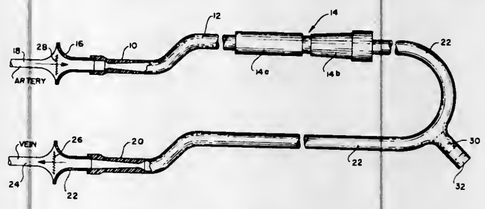
means electrically interposed between the power source and the blood pump said means comprising an attachment site means for detachably coupling the blood pump to the power source through the said means; sensing means in said blood-conducting conduit for monitoring the availability of extracorporeal blood to the pump upstream from the pump; and means responsive to the sensing means for selectively and continuously varying the amount of electrical power delivered to the blood pump from the power source thereby continuously varying the pumping flow rate of the blood pump, the magnitude of pumping variation being constantly proportional to extracorporeal blood flow upstream from the blood pump during the course of dialysis.

3,882,862

ARTERIOVENOUS SHUNT

Olga Berend, 6311 Drexel Ave., Los Angeles, Calif. 90048

Filed Jan. 11, 1974, Ser. No. 432,462
Int. Cl. A61m *05/00*
U.S. Cl. 128—214 R **5 Claims**



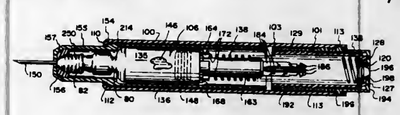
1. An arteriovenous shunt for hemodialysis patients, and the like, comprising: elongated tubular means having an entrance end and an exit end creating a fluid-circulating path between the entrance end and the exit end; an elongated tube having one end attached to the entrance end of said elongated tubular means and having an inner surface flared outwardly from the other end thereof towards said one end to create a Venturi effect and thereby prevent turbulence in the fluid circulating therethrough; and a flexible tubular cuff having one end attached to the other end of said elongated tube and having an outwardly flared opposite end to be sutured to a severed duct in the body of the patient.

3,882,863

HYPODERMIC INJECTION DEVICE HAVING CANNULA COVERED WITH RESILIENT SHEATH

Stanley J. Sarnoff, and George B. Calkins, both of Bethesda, Md., assignors to Survival Technology, Inc., Bethesda, Md.

Filed Aug. 1, 1973, Ser. No. 384,682. The portion of the term of this patent subsequent to Mar. 19, 1991, has been disclaimed.
Int. Cl. A61m *5/20*
U.S. Cl. 128—218 F **7 Claims**



1. In a hypodermic injection device comprising a gun, a cartridge holder in operative relationship to the gun, a cartridge within the holder, said gun comprising a sleeve open at one end thereof, a plunger positioned within the sleeve, spring power means acting on said plunger tending to move it out the open end of the sleeve, restraining means cooperating with said plunger to prevent plunger movement, safety means acting on said restraining means to render it inoperative, said cartridge holder comprising a hollow shell acting as a prolongation of the gun sleeve, said cartridge including an ampoule comprising a hollow cylindrical sleeve, a piston slidably positioned in one end thereof and means mounting a cannula extending from and closing off the other end, a fluid within the cylindrical sleeve between the piston and the cannula, the cartridge fitting within the cartridge holder with the free end of the cannula within the end of the holder remote from the gun, the improvement comprising:

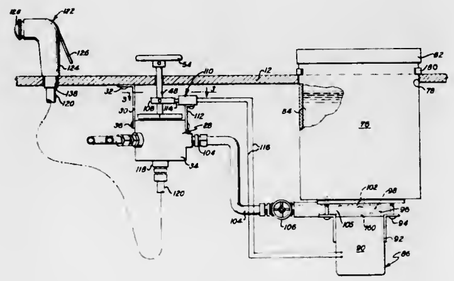
a resilient sheath covering the cannula, said sheath having a closed end and an open end, the length of the sheath being sized such that when assembled on the cannula the closed end of the sheath is not pierced by the cannula end, and means for preventing forward movement of the closed end of the sheath whereby when the power means forces the cartridge forward the cannula will pierce the closed end of the sheath and deliver the fluid medicament from the ampoule sleeve.

3,882,864

SELECTIVELY OPERATED PRESSURIZED LIQUID APPLICATOR FOR SINK INSTALLATION

George R. Montgomery, 1152 Okeechobee Rd., West Palm Beach, Fla. 33401

Filed Aug. 17, 1973, Ser. No. 389,344
Int. Cl. A61m *1/00*
U.S. Cl. 128—230 **6 Claims**



6. A pressurized liquid applicator system comprising a support, a rotary selector valve assembly attached to the support and having a manipulating handle, a tank for a liquid medicament mounted on the support and including a delivery pump, said rotary selector valve assembly having a liquid inlet which is fluid coupled with said delivery pump, hot and cold water conduits adjacent said support, said selector valve assembly having additional liquid inlets which are fluid coupled to said conduits, said rotary selector valve assembly having a liquid outlet common to said first and second named liquid inlets, said valve assembly including a rotary member coupled to said manipulating handle and having a port movable selectively into registration with any one of said liquid inlets and having a passage communicating with said port and being in registration with said liquid outlet, an extensible hose terminating in a liquid applicator and coupled with said liquid outlet of said selector valve assembly, said support including a rest portion for the liquid applicator of the hose, and control means for said delivery pump activated in response to rotation of said manipulating handle.

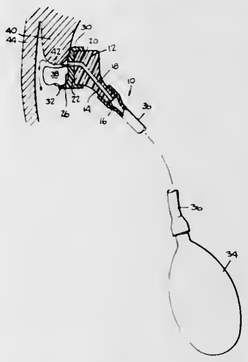
3,882,865

FLUSHING DEVICE FOR DENTAL BRIDGES

George Christou Hatzitheodorou, 93-27 Elderts Ln., New York, N.Y. 11421

Filed June 4, 1974, Ser. No. 476,202
Int. Cl. A61m *1/00*
U.S. Cl. 128—232 **17 Claims**

1. A flushing device for a dental bridge comprising a flushing head tapering rearwardly to define a reduced neck, the head provided with a broad, substantially flat, frontal surface for abutment against the side of the bridge and the corresponding gum and provided intermediately with a transverse slot adapted to come in registry with the interspace between the bridge and the gum, a central channel disposed through the head to provide intercommunication between the neck and the discharge slot, with the channel enlarging in the direction of the discharge slot to the configuration thereof, a liquid source adapted for discharge under pressure, and a flexible tube connecting the liquid source with the neck of the flushing head, whereby liquid is directed through the discharge slot under pressure to flush the interspace.



3,882,866

ENEMA SYRINGE

Eli A. Zackheim, 120 Platt Ave, Norwich, Conn. 06360

Continuation of Ser. No. 150,988, June 8, 1971, abandoned. This application July 20, 1973, Ser. No. 381,063
Int. Cl. A61m *1/00*
U.S. Cl. 128—235 **5 Claims**



1. A disposable catheter for use in flushing a body cavity comprising:

1. a syringe barrel open at one end and a cannula fixed thereto at the other end thereof;
2. said barrel adapted to have placed and contained therein a flushing solution;
3. a through bore in said cannula communicating with said barrel and the solution therein;
4. a movable plug positioned to close off the open end of the barrel and having engageable means at one end thereof facing said open end of the barrel;
5. a cannula cover mounted on said cannula, said cover having an innercross section along its entire length which is greater than the cross section of the cannula to define a discreet annular space between the cover and the cannula along its entire length, and an inner plug formed in one end of said cover and inserted in said through bore

of said cannula when the cover is positioned thereon for sealing said bore;

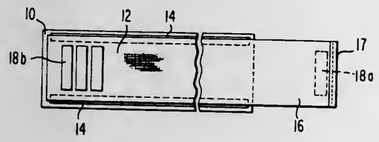
6. a lubricant contained in said cover and surrounding and coating the outer surface portion of the cannula in the space between the cannula and cover, said cover having first and second cooperating means formed thereon, one of which is located in the end of said cover remote from said inner plug and the other of which is located on said cannula adjacent said barrel for removably securing the cover to the cannula without disturbing the lubricant thereon; and

7. means on the outer surface of said one end of said cover, adjacent said inner plug, adapted to engage the engageable means of said plug in siad barrel, whereby said cover may be removed from said cannula exposing the lubricated portion thereof and said cover may function as a plunger for the plug to expel the enema solution through the cananula opening.

3,882,867
LEG WRAP

Harold J. Moran, Trenton, N.J., assignor to Troy Equine Products, Bordentown, N.J.

Filed Feb. 13, 1974, Ser. No. 442,054
Int. Cl. A61f *7/00*
U.S. Cl. 128—254 **12 Claims**

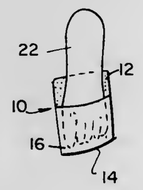


1. A wrap for use as a compress comprising a layer of dry absorbent material characterized by its ability to expand when moistened and dimensioned to be wrapped around an appendage of an animal, and a layer of reinforcing material overlying said layer of absorbent material and secured thereto to hold the absorbent material confined in contact with the surface to which it is applied, said reinforcing material having means thereon for holding the wrap in place when moistened to cause the absorbent material to expand.

3,882,868
DISPOSABLE FOOT CARE ARTICLE AND METHOD OF MANUFACTURE THEREOF

Werner O. Tundermann, Colonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,297
Int. Cl. A61m *35/00, 37/00*
U.S. Cl. 128—260 **11 Claims**



1. A disposable toe cover of non-woven material comprising a single sheet impregnated with anti-microbial and deodorant agents on one surface thereof, said sheet being folded to define a front edge with an upper portion and a lower sole portion having the impregnated surfaces facing each other said upper portion being continuous and coextensive with said sole portion, and said folded sheet having its side edges sealed to each other, said side edges being defined by parallel straight lines, one of said side edges extending at an acute angle from said front edge, the other of said side edges extending at an obtuse angle from said front edge.

3,882,869
WATER-DISPERSIBLE PLASTIC TAMPON INSERTION TUBES AND THE LIKE

David E. Hanke, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

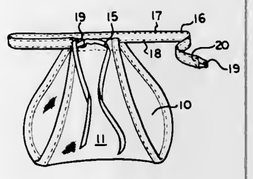
Continuation of Ser. No. 21,195, March 19, 1970, abandoned. This application Jan. 31, 1972, Ser. No. 222,117
Int. Cl. C08h *9/00;* **C08b** *27/44*
U.S. Cl. 128—263 **7 Claims**

1. An improved water-dispersible insertion device for tampons and the like comprising at least one thin-walled tubular member in which the walls thereof are comprised of a thermoformed, injection-molded water-soluble polymer compounded with water-insoluble fillers, said polymer being selected from the group consisting of polyethylene oxide polymers having a molecular weight from about 100,000 to about 2 million and an hydroxypropyl cellulose polymer having a molecular value of from about 75,000 to about 375,000 said filler being present in the amount of from about 50 to about 75% by weight, and said filler being selected from the group consisting of talc, clay, and hydrated silicates.

3,882,870
DIAPER

Lucille Hathaway, 4855 Monroe St., Lot 612, Toledo, Ohio 43623

Division of Ser. No. 161,140, July 9, 1971, abandoned. This application Feb. 22, 1974, Ser. No. 444,898
Int. Cl. A61f *13/16, 5/44*
U.S. Cl. 128—284 **4 Claims**



1. A diaper particularly adapted for adult use, comprising

a textile fabric body of bias cut to afford lateral resilient flexiblity and having a front panel flap, the upper marginal edge of said fabric body being slightly wider than the upper marginal edge of said front panel and that rear portion of the fabric body adjacent the upper marginal edge portion of the fabric body having side edges outwardly contoured to afford a larger seat area, the front panel being folded toward the rear body portion when in position of use,

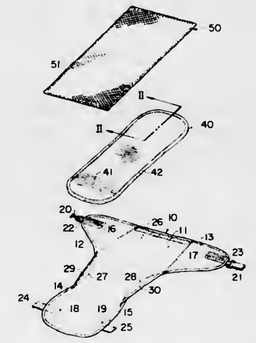
a waist band of textile fabric secured intermediate its ends to the edge portion of said upper end portion of the fabric body with the free end portions thereof extending outwardly in opposite directions substantially beyond the upper end portion of the fabric body and constituting the principal waist-engaging portion of the diaper,

an apertured device on each free end of said waist band, and a single tie string secured intermediate its ends to the free end portion of said front panel, thereby providing two tie portions adapted to be threaded respectively through the said apertured devices of the waist band and then tied together for securing the diaper upon the body of the wearer thereof.

3,882,871
DIAPER SET

Takasi Taniguchi, 8-26-2, Miyakajim-Hondori, Miyakojima-ku, Osaka-shi, Japan

Filed May 15, 1973, Ser. No. 360,476
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **2 Claims**



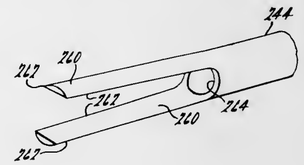
1. An infant's diaper set comprising, in a freely separable combination: a water-repellent but gas-permeable cover generally trapezoidal in outline; said cover having arcuate cutaways along its side edges to provide leg openings when applied to an infant; a pad consisting of a cotton fabric having a number of parallel corrugations of high density formed on its faces; and a hydrophobic net fabric for direct contact with the infant's body; said cover being made of a fabric formed of synthetic-fiber yarns coated with an organosilicone polymer and provided at said cutaways with additionally outwardly extending attaching members to enclose the infant's legs, attached with seams to said cutaways in a stretched condition; said cover further including a fastening member secured to the inner side thereof at its widest upper points and to its outer side at the widest lower points, to thereby form a fastening assembly when engaging each other, so that said upper and said lower cover portions are secured in a closed position in use on the infant's body; said fastening members at said lower points being marginally outwardly extended with the absence of fastening piles secured thereto, thereby to prevent a certain number of disengaging fastening piles on the corresponding fastening member on said upper portion from directly contacting the infant's body; said net fabric being formed of filamentary yarns of a polyvinyl-chloride material.

3,882,872
METHOD AND APPARATUS FOR CATARACT SURGERY

Nicholas G. Douvas, 4200 N. Gratiot, Port Huron, Mich. 48050, and Henry T. Dinkelkamp, 200 W. Ardard Place, Prospect, Ill. 60056

Continuation-in-part of Ser. No. 643, Jan. 5, 1970, abandoned. This application Apr. 25, 1973, Ser. No. 354,376
Int. Cl. A61b *17/32*
U.S. Cl. 128—305 **36 Claims**

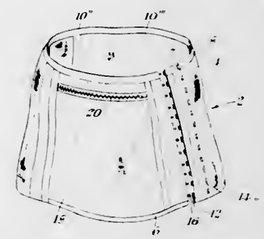
1. An axially-extending cutting tip for a surgical instrument having a body and a rotary shaft mounted on said body, said cutting tip comprising a stator tube, an opening in the side wall of said stator tube defining a generally axially extending sharp cutting edge, and a rotor within said stator tube comprising at least one axially extending finger at the forward end thereof, a generally axially extending sharp cutting edge on said finger cooperative with the cutting edge of said stator tube when said rotor rotates within said stator tube, said finger being constrained by said stator tube to bias said finger cutting edge against the side wall of said stator tube.



3,882,873
HEAT AND COLD APPLICATOR

Olga Arango, Miami, Fla.

Filed July 24, 1972, Ser. No. 274,267
Int. Cl. A61m *5/00*
U.S. Cl. 128—379 **4 Claims**



1. A body support garment for altering temperature of portions of a human torso comprising:

a band of fabric having a length and width sized to encircle a human torso, said band having an elastic portion for supporting the abdominal area of the torso;

a connecting means coupled to the distal ends of said band for securing said band about the human torso, said band having an elastic pocket disposed over the elastic portion; and

a flexible, water retaining bag removeably disposed in said pocket.

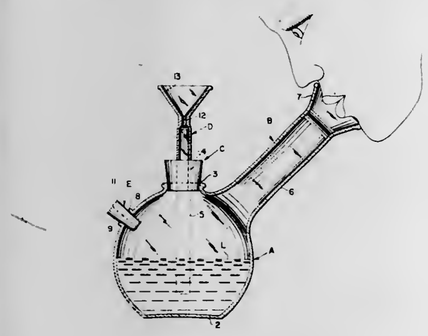
3,882,874
TOBACCO EXPANSION PROCESS

James D. Frederickson; Ella Sue Hickman, and Edward D. Harper, all of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Division of Ser. No. 860,014, Sept. 22, 1969, abandoned. This application June 1, 1972, Ser. No. 258,747
Int. Cl. A24b *3/18, 15/00*
U.S. Cl. 131—140 P **4 Claims**

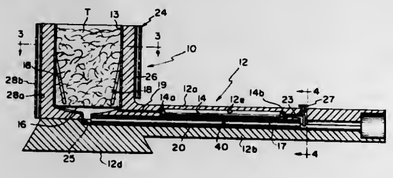
1. A process of increasing the filling capacity of tobacco which comprises impregnating at substantially ambient pressure a mass of discrete tobacco particles in the form of shreds, strips, leaves or stems with an organic dicarboxylic acid or a derivative thereof, rapidly heating the mass of impregnated tobacco to an elevated temperature whereby said organic compound is chemically decomposed to liberate a gas within the individual tobacco particles and said discrete particles are thereby expanded without appreciable disintegration.

3,882,875
SMOKING PIPE
Charles W. Frost, c/o Donald F. Frost, 26 S.W. 6th St., Miami, Fla. 33130
Filed Sept. 20, 1973, Ser. No. 399,330
Int. Cl. A24f *01/30*
U.S. Cl. 131—173 **10 Claims**



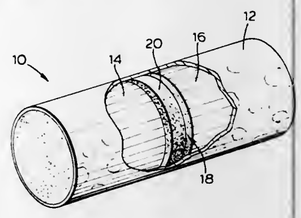
1. A smoking pipe having a portion adapted to contain a liquid through which smoke can be drawn, said pipe including means defining a liquid-receiving chamber having a bottom, a projecting mouthpiece connected to and extending from an upper portion of said chamber and directly and uninterruptedly communicating therewith, a tube means connected to said chamber in spaced relation to said mouthpiece and including a first portion above said chamber and another portion extending vertically downwardly into said chamber in sealing relation therewith and terminating at a point above the bottom thereof, a vertically disposed smoking material-receiving bowl having a lower outlet orifice directly and uninterruptedly communicating with the first portion of said tube means and said chamber having at least one finger controllable atmospheric air-admitting orifice means spaced from said mouthpiece and tube means, located at and communicating with the interior of an upper portion of said chamber.

3,882,876
SMOKING PIPE
Edwin G. Covington, 3401 Roberts St., Saginaw, Mich. 48601
Filed Oct. 23, 1973, Ser. No. 408,389
Int. Cl. A24f *01/00, 03/00*
U.S. Cl. 131—185 **6 Claims**



1. A smoking pipe comprising:
a. an upstanding tobacco receiving bowl having a tobacco receiving chamber defined by a side wall and a lower end;
b. generally horizontally extending hollow stem means which define a passage having an axis and having means communicating with said chamber, said stem means comprising first and second partible stem sections which are axially split, a first stem section being integrally formed with said bowl and a second stem section being axially slidably movable thereon between a remote position and a position in which said stem sections cooperate to define said passage;
c. electrically energizable tobacco igniting means in the lower portion of the bowl, battery means mounted in one of said stem sections and electrical conductive means lining the inside of the other stem section and connected in circuit with said battery means and said igniting means; and
d. tubular port means provided in said side wall for introducing air to tobacco received within said chamber, said port means downwardly depending from an interior surface of said side wall and leading to said lower end of said bowl adjacent to and above said energizable igniting means.

3,882,877
FILTER FOR TOBACCO SMOKE
Warren A. Brackmann, Cooksville, Ontario, and Daniel Dilanni, Toronto, Ontario, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Ontario, Canada
Filed Apr. 20, 1973, Ser. No. 352,868
Claims priority, application United Kingdom, Apr. 26, 1972, 19495/72
Int. Cl. A24b *15/02*
U.S. Cl. 131—266 **5 Claims**

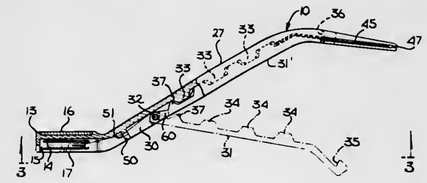


1. A self-sustaining filter for tobacco smoke comprising a plurality of filter elements, and including a substantially air-tight tubular holder, a pair of cylindrical cellulose acetate filter elements positioned within and in contact with the inner wall of the holder, said pair of filter elements being spaced apart from each other to define a gap therebetween, said pair of filter elements and said tubular holder combining to provide sufficient crush-resistance to provide a self-sustaining filter, and a third filter element consisting wholly of a plurality of randomly-oriented, non-crimped, smooth-surfaced, solid fibers of a thermoplastic polymeric non-absorbent material selected from polyolefins, polyesters, polyamides and polystyrene, each of said fibers having a uniform diameter less than about 5 microns, with substantially all of the fibers being below 2 microns in diameter and having an average fiber diameter of about 1 micron, the majority of the said fibers being oriented transverse to the flow of the tobacco smoke, said third filter element being positioned in the gap between said pair of filter elements, said third filter element having a diameter substantially that of said tubular holder and being in engagement with said inner wall.

3,882,878
METHOD FOR PREPARING CIGARETTE FILTER OF CELLULOSE ACETATE FIBERS
Hideo Sawada, and Junji Kawamoto, both of Sakai, Japan, assignors to Daicel Ltd., Osaka, Japan
Filed Aug. 22, 1973, Ser. No. 389,084
Int. Cl. A24b *15/02*
U.S. Cl. 131—267 **10 Claims**

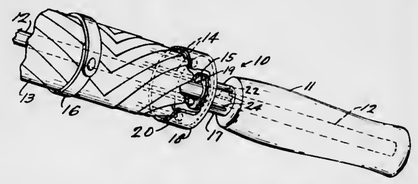
1. A method for preparing a cigarette filter of cellulose acetate fibers which comprises blooming a tow composed of cellulose acetate fibers, distributing uniformly throughout the bloomed tow from 1 to 20% by weight, based on the cellulose acetate fibers, of a plasticizer comprising as an ingredient at least one member selected from the group consisting of the diacetate, dipropionate and dibutyrate esters of 1,3-butylene glycol, and gathering the thus-treated bloomed tow to form a filter.

3,882,879
DENTAL FLOSSING INSTRUMENTS
Jack R. Lucas, 6500 Sepulveda Blvd., No. 103, Van Nuys, Calif. 91401
Filed Apr. 2, 1973, Ser. No. 346,725
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 R **14 Claims**



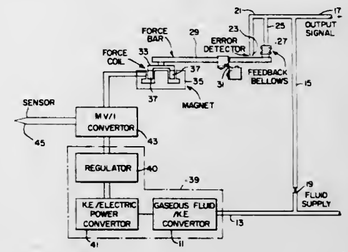
1. A dental flossing instrument which comprises:
a. a body;
b. a pair of spaced tines protruding from said body, said tines being spaced a predetermined distance and adapted to hold a span of floss therebetween;
c. means for securing a length of floss at two spaced points along said length of floss, said spaced points encompassing said span of floss; and
d. means for generating tension in said length of floss between said secured points which comprises a pair of mating members, the path of said length of floss being between the mating portion of said mating members, said portion of said length of floss being engaged by said mating members to cause the path of said portion of said length of floss to deviate from a straight line thereby increasing path length.

3,882,880
UMBRELLA TIP CUP
H. Franklin Waltz, Toledo, Ohio, assignor to Haas-Jordan Company, Toledo, Ohio
Filed June 14, 1974, Ser. No. 479,466
Int. Cl. A45b *25/00*
U.S. Cl. 135—44 **6 Claims**



1. In an umbrella having a central pole, collapsible over material and a plurality of support ribs depending from the upper part of the pole, such support ribs having tips at their lower ends which, in the closed configuration of the umbrella, conjoin together about the pole, the improvement comprising an annular tip cup and an annular cup-supporting sleeve concentrically positioned on the pole adjacent the rib tips, said tip cup having an outer tip-engaging annular flange and a central bore defining an inner annulus, said support sleeve having means superimposed on its outer surface for slidably receiving the inner annulus of said tip cup in an interference fit when said tip cup is moved axially upward in concentric relationship over said support sleeve to engage the rib tips, and spacer means on its inner surface, peripherally spaced from said superimposed outer sleeve means, for engaging the pole and maintaining a spacing between the pole and the inner annulus of the sleeve when said tip cup is received by said superimposed outer sleeve means in such interference fit, whereby upon receiving said tip cup, said support sleeve is deflected by inward pressure on said superimposed outer surface means and exerts an outward pressure on the inner annulus of said tip cup.

3,882,881
PNEUMATIC TRANSMITTER OF ELECTRICAL PHENOMENA
Donald D. MacKenzie, Middlebury, and John L. Russell, Waterbury, both of Conn., assignors to American Chain & Cable Company, Inc., Bridgeport, Conn.
Filed Jan. 12, 1973, Ser. No. 323,284
Int. Cl. G05d *10/16, 23/22*
U.S. Cl. 137—14 **15 Claims**

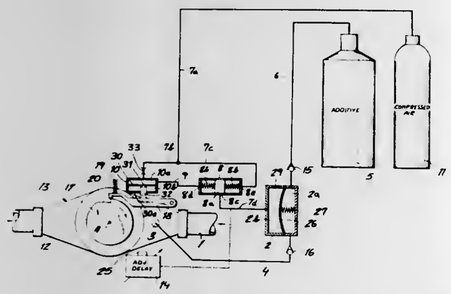


1. An apparatus for converting an electrical signal for the fluid transmission thereof comprising: a source of fluid under pressure, means for converting the energy of said fluid to electrical energy, said electrical energy being in the form of a DC current, means for sensing a physical condition and for generating an electrical signal representative thereof, means for modulating said DC current in accordance with said electrical signal representative of said sensed condition, conduit means for channelling off a portion of said fluid at said source, said channelled fluid having an input pressure and output pressure, and means for varying the output pressure of said channelled fluid in accordance with said modulated electrical current.

3,882,882
SYSTEM FOR METERING A SUBSTANCE INTO LIQUID FLOWING IN A CONDUIT
Jurg Preisig, Herisau, Switzerland, assignor to Dr. Wrede & Co., Standard-Messgerate Fabrikation, Werl, Germany
Filed Aug. 24, 1973, Ser. No. 391,160
Claims priority, application Germany, Aug. 26, 1972, 2242165
Int. Cl. B67d *5/08*; **G01f** *11/08*
U.S. Cl. 137—98 **6 Claims**

1. A system for introducing an additive into fluid passing through a conduit, siad system comprising:
flowmeter means in said conduit having an operating element which rotates at a rate proportional to volume rate of fluid flow in said conduit for generating a periodic output having a frequency proportional to said volume rate of flow;
pneumatically operable pump means connected to a source of said additive and including a fluid line connected to said conduit for injecting a predetermined quantity of said additive into said conduit through said fluid line;
valve means including a pilot valve connected to said flowmeter means and to said source of pressurized gas and a follower valve connected to said pilot valve, to said source of pressurized gas and to said pump means for

pneumatically operating said pump means each time said flowmeter means generates an output, said pilot valve having a membrane formed with a pinpoint orifice; and



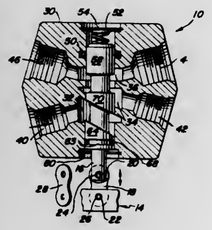
reset means connected to said valve means for closing said follower valve and thereby halting operating of said pump after a predetermined period of said operating element being in a position wherein said flowmeter means generates an output.

3,882,883

CLOSED-OPEN CENTER HYDRAULIC VALVE ASSEMBLY

James T. Droegemueller, Welcome, Minn., assignor to Fairmont Railway Motors, Inc., Fairmont, Minn.

Filed Nov. 19, 1973, Ser. No. 417,410
Int. Cl. F16k *11/07, 3/24*
U.S. Cl. 137—270 **10 Claims**



1. A valve for use in fluid control systems comprising a valve body, a valve spool and means for reciprocally moving the spool between predetermined off and on positions in said valve body;

a. said valve body comprising a housing having a plurality of chambers therein and an interrupted bore for receiving said valve spool and connecting said chambers so as to provide fluid communication therebetween depending upon the reciprocal movement of said spool and the angular disposition thereof about the common axis of the spool and bore, said chambers including,

i. a receiving chamber having an inlet for receiving fluid from a source thereof, and

ii. an adjacent chamber disposed to receive the fluid from the receiving chamber via said bore,

the walls of the bore between said receiving chamber and said adjacent chamber being obliquely aligned with the axis of the bore so as to present a longitudinally offset surface;

b. said valve spool having at least a first land thereon configured so that,

i. in the off position said land sealingly registers with said obliquely aligned wall in at least a first angular disposition of the spool about said common axis whereby the passage of the bore between said receiving and said adjacent chambers is substantially closed to fluid flow,

ii. in the off position said land is out of sealing registration with at least a substantial portion of said obliquely aligned wall in at least a second angular disposition of the spool about said common axis whereby the fluid may flow through the passage of the bore between said receiving chamber and said adjacent chamber, and

iii. in the on position said land is out of sealing registration with at least a substantial portion of said obliquely aligned wall in both said first and said second angular dispositions of the spool; and

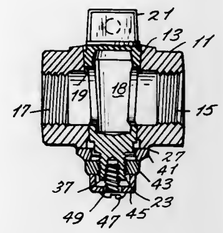
c. said means for reciprocally moving the spool between the off and on positions including means for selectively and releasably securing said spool in said first angular disposition and in said second angular disposition.

3,882,884

TAMPERPROOF OPEN BOTTOM STOP ASSEMBLIES

Wilbur R. Leopold, Jr.; Carl E. Floren, both of Decatur, and William L. Hauffe, Warrensburg, all of Ill., assignors to Mueller Co., Decatur, Ill.

Filed Dec. 4, 1973, Ser. No. 421,727
Int. Cl. F16k *39/00*
U.S. Cl. 137—327 **10 Claims**



1. A tamperproof open bottom valve comprising:

a housing member having a circular tapered valve seat provided with at least one flow passage therethrough,

a tapered plug member rotatable in said seat and having a flow passage movable into and out of registration with said flow passage of said housing to open and close said valve, respectively,

means for maintaining said tapered plug tightly seated against said tapered valve seat,

means for inhibiting the relative movement of said tapered plug and said means for maintaining said tapered plug seated against said valve seat to thereby prevent said maintaining means from being released from said plug, and

means including said inhibiting means for further moving said tapered plug downwardly against said seat as said plug and said seat wear with use.

3,882,885

METHOD OF HANDLING A LARGE DIAMETER SLURRY HOSE SYSTEM

David L. McCain, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

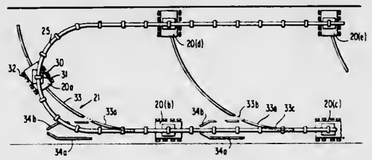
Filed July 25, 1973, Ser. No. 382,423
Int. Cl. B62d *3/00*
U.S. Cl. 137—344 **8 Claims**

1. In an apparatus for hauling a slurry system having a flexible hose system which extends from a fixed end to a movable end and a portion of the system is led through a storage and active loop to control slack of said hose system during movement of the slurry system movable end, the apparatus including motive means for supporting said hose system

from the floor of a mine, an improvement in said support system comprising:

a. a plurality of carts, each having means for powered locomotion;

b. clamping means for attaching each of said carts to said flexible hose system, said clamping means being rotatable in the horizontal plane relative to said carts; and



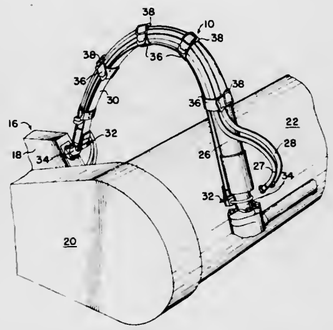
c. means for selectively energizing said means for said powered locomotion to reversibly move selected ones of said carts between storage position and an angularly oriented active position to maintain uniform loop of said hose system.

3,882,886

SUPPORT DEVICE FOR FLEXIBLE HOSES

Ronald E. Ely, and Warner G. Richardson, both of Joliet, Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Apr. 1, 1974, Ser. No. 456,972
Int. Cl. F16l *13/04*
U.S. Cl. 137—344 **9 Claims**



1. A supporting system for a flexible member extending between first and second relatively movable members and attached to said first and second relatively movable members at first and second ends of said flexible member, said supporting system including non-metallic band means extending between said first and second relatively movable members and attached respectively at opposite ends thereof for movement with said first and second movable members, said non-metallic band means including flexible strap means for flexible attachment to said flexible member, said flexible member and said non-metallic band means when secured together by means of said strap means form a self-supporting bundle capable of appreciable flexure in only one predetermined plane.

3,882,887

OPTICAL SELF-CHECKING LEVEL DETECTOR

Andre Rekai, Scarborough, Ontario, Canada, assignor to Honeywell Inc., Minneapolis, Minn.

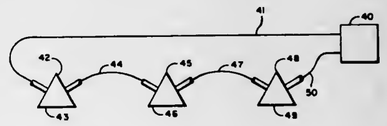
Filed Oct. 31, 1973, Ser. No. 411,587
Claims priority, application Canada, Feb. 26, 1973, 164562
Int. Cl. F16k *37/00*
U.S. Cl. 137—386 **10 Claims**

1. An optical level sensing system for sensing the level of a material comprising:

means for supplying pulsating light;

light responsive sensor means;

transmitting means for transmitting said pulses of light to said light responsive sensor only as long as said material is below a predetermined level;



load terminals adapted to be connected to a load; and,

output means connected to said sensor for providing an output to said load terminals only upon cessation of said pulsating light.

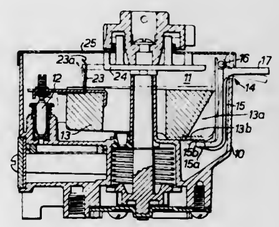
4. The optical level sensing system of claim **1** wherein said load terminals are connected to a valve means.

3,882,888

FUEL OIL FLOW CONTROLS

Jacobus van der Waals, and Petrus J. J. Toonen, both of Nijmegen, Netherlands, assignors to Controls Company of America, Schiller Park, Ill.

Filed Nov. 16, 1973, Ser. No. 416,413
Claims priority, application United Kingdom, Nov. 23, 1972, 54205/72
Int. Cl. F16k *31/26*
U.S. Cl. 137—410 **8 Claims**



1. An oil flow control device comprising

a housing defining a chamber for containing oil and having an inlet thereto,

an inlet valve,

a float,

means operatively connecting the float to the inlet valve to maintain a constant level of oil in the chamber, and

a safety device operable when the oil level exceeds a predetermined height to apply an upward force to the float, characterized in that the safety device comprises

a lever mounted on a horizontal pivot and comprising an operative arm and a counterbalance arm,

the operative arm of the lever, during operation of the device, extending downwardly and being partially immersed in the oil within the chamber, and

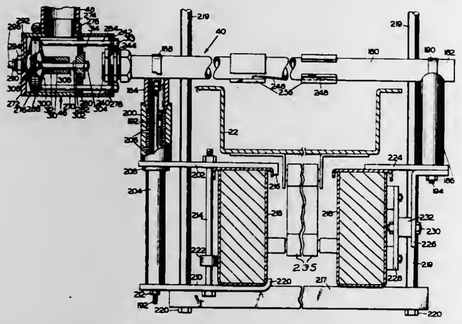
the counterbalance arm of the lever being located at all times above the oil level in the chamber,

the operative arm normally having no connection with the float and being movable away from the vertical, under the effect of an increase in its buoyancy resulting from an increase in oil level above said height, into a position in which it engages the float and applies an upward force thereto.

3,882,889
FLOW CONTROLLING SYSTEM

Kenneth M. Allen, and Chester H. Harper, both of Newberg, Oreg., assignors to Allen-Harper, Inc., Newberg, Oreg.

Division of Ser. No. 146,299, May 24, 1971, which is a division of Ser. No. 23,093, April 6, 1970, abandoned, which is a continuation of Ser. No. 713,932, March 18, 1968, abandoned. This application Feb. 19, 1974, Ser. No. 443,423
Int. Cl. F16k *51/00*
U.S. Cl. 137—454.2 **4 Claims**

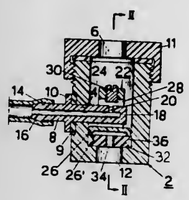


1. In a valve device,
a cylindrical housing having an inlet at one side thereof and having an outlet end and a second end,
a partition disc fitting in the housing and positioned between the outlet end and the inlet end and having an orifice therethrough,
a diaphragm including a housing member positioned in the portion of the housing adjacent the second end thereof, an outlet disc adapted to bear against the outlet end of the housing,
a third disc adapted to bear against the second end of the housing,
connector means connecting the housing member to the third disc,
tie rod means connecting the housing member to the outlet disc to press the outlet disc against the outlet end of the housing,
a valve closure member adapted to close the orifice,
and a valve rod member mounting the closure member and carried by and operable by the diaphragm.

3,882,890
FLUID REGULATING DEVICES

Peretz Rosenberg, Moshav Bet Shearim, Israel

Filed July 5, 1972, Ser. No. 269,256
Claims priority, application Israel, July 9, 1971, 37275; Jan. 7, 1972, 38523; May 24, 1972, 39521
Int. Cl. G05d *16/06*
U.S. Cl. 137—505.44 **1 Claim**

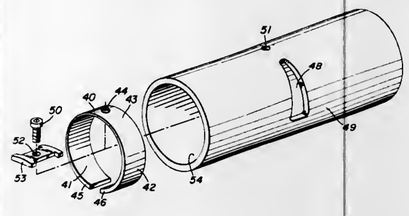


1. A fluid regulating device, comprising: a housing defining a fluid chamber and formed with an inlet opening, an outlet opening, and a vent opening; a tube having an axial passageway for the incoming fluid and an opening extending radially through the wall of the tube in communication with the axial passageway, said tube passing through the housing inlet opening with the radial opening of the tube within the fluid chamber; a regulating ring disposed within the fluid chamber, said regulating ring being formed with an opening of larger cross-sectional area than the outer cross-sectional area of the tube and surrounding the tube in alignment with the radial opening thereof; and a resilient gasket mounted over the housing vent opening and having an opening aligned therewith, the inner face of the gasket contacting a face of the regulating ring, the latter face being formed with a recess aligned with the vent opening and circumscribed by a peripheral projection sealing the housing chamber with respect to the vent opening, whereby changes in the pressure at the inlet opening tending to produce changes in the fluid pressure within the housing chamber cause the resilient member to deform and the regulating ring to move towards and away from the radial opening of the tube in a radial direction with respect to the tube to regulate the flow of the fluid therethrough into the housing fluid chamber and thereby to regulate the pressure therein.

3,882,891
CHECK VALVE

Alan H Viles, and Gary C. Smith, Jr., both of Columbus, Ohio, assignors to Abex Corporation, New York, N.Y.

Filed June 19, 1974, Ser. No. 480,795
Int. Cl. F16k *15/14*
U.S. Cl. 137—512.15 **1 Claim**



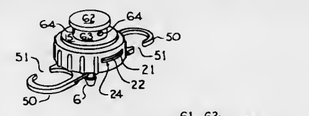
1. In a check valve for a cylindrical fluid conductor having a pair of radial ports formed in the fluid conductor; the improvement comprising a resilient partially cylindrical member having a pair of legs joined by a common area and biased against a surface of the conductor to close the ports against fluid flow in one direction but responsive to pressurized fluid in the ports to move away from the fluid conductor to open the ports to enable fluid flow therethrough in the other direction; the resilient member biased against the inner surface of the fluid conductor; means for retaining the resilient member against the inner surface, whereby the pressurized fluid in the ports biases both legs inwardly to open both ports and enable fluid to flow into the fluid conductor; the thickness of each leg increases from the common area to its outer end, each port is tapered such that a larger area is covered by the outer end of a leg and the pressurized fluid in the ports causes the legs to bend mainly at the common area such that the outer ends of the legs will move a greater distance from the inner surface to allow greater fluid flow through the larger port area.

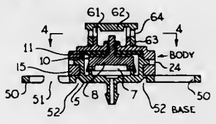
3,882,892
BUTTON DRIP FEED DEVICE

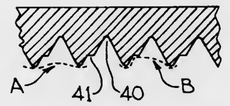
Stanley W. O. Menzel, Elizabeth, Australia, assignor to Iplex Plastic Industries Pty. Ltd., Elizabeth, Australia

Filed Feb. 6, 1974, Ser. No. 439,903
Claims priority, application Australia, Feb. 14, 1973, 2251/73
Int. Cl. B05b *1/32*
U.S. Cl. 137—513.3 **11 Claims**

1. A button drip feed device comprising a body having within it a hollow, an outlet from the hollow of said body, a base engageable on said body to seal said body and close said hollow, an inlet nipple on said base communicating with the hollow within said body to allow water to be fed into said hollow when said nipple is engaged through an aperture in a supply line, means to hold said base to said supply line comprising an upstanding annular wall on said base coaxial with the said inlet nipple and arranged to project into the hollow of the said body, lugs on the said upstanding wall projecting outwardly therefrom, platforms on the said body to receive said lugs when said lugs are moved through spaces between





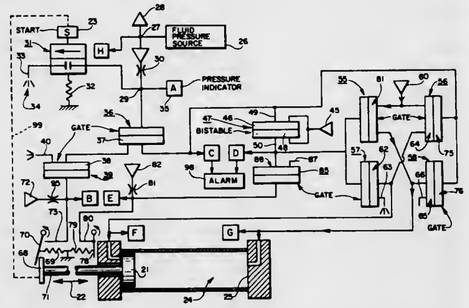


said platforms and the said base is rotated relative to the said body to position the lugs on said platforms to lock the said base to said body, sealing means between said upstanding annular wall and said body, flow control means within said hollow regulating flow from said hollow to said outlet from the hollow, said flow control means comprising a resilient pad and an associated elongated groove defined between said pad and a contiguous face and having one end communicating with said hollow and the other end communicating with said outlet, and means to maintain the said pad and face in contact.

3,882,893
FLUID OPERABLE BINARY CONTROL SYSTEM WITH DIAGNOSTIC INDICATORS

Charles William Brouwer, East Greenwich, and Larry Clyde Cowan, Saunderstown, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed Apr. 9, 1973, Ser. No. 349,634
Int. Cl. F01k *13/02;* **F16k** *37/00*
U.S. Cl. 137—557 **24 Claims**

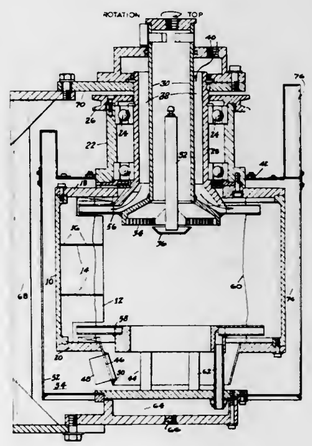


11. A digital fluid operable control system for automatically cycling through a series of control steps of an operation cycle, comprising in combination, means providing fluid at two different pressures, a plurality of logical elements responsive to control pulses of fluid flow therethrough changing between said two pressures to attain a specified state in response to said control pulses, a flow network connecting said logical elements to said means providing fluid to establish at least one controllable flow path through a plurality of the elements, control means responsive to said control pulses of said fluid at predetermined control positions influencing the state of selected ones of said logic elements, a sequence control network responsive to said control means interconnecting said logical elements to cause changes of state of one element to produce a control pulse for another element thereby to produce an automatic control sequence cycle controlling the flow of fluid through said flow path and trigger means coupled to said fluid means to produce a temporary change between said two pressures providing a control pulse at a single one of said elements thereby to effect said control sequence in response to a single trigger input control pulse at one element, wherein a plurality of said logic elements have connected thereto indicators identifying the one of said two pressure conditions established at a flow path controlled by said logic element, including means identifying an invalid combination of pressures at said indicators and the nature of system malfunctions establishing the invalid combination.

3,882,894
DIRECT FIRED WATER HEATER

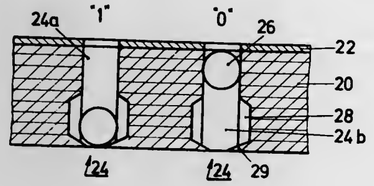
Lothar A. Huettner, c/o International Continental Corporation, 193 W. Boylston, Boylston, Mass. 01583

Division of Ser. No. 228,290, Feb. 22, 1972, Pat. No. 3,786,798. This application Oct. 11, 1973, Ser. No. 405,540
Int. Cl. F24h *1/10*
U.S. Cl. 137—581 **4 Claims**



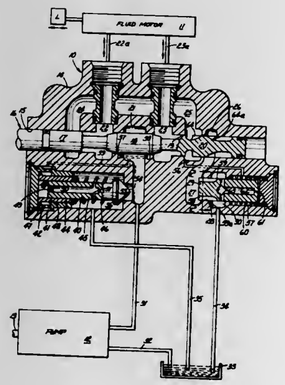
1. A liquid receptacle comprising a rotary cylindrical drum, said drum comprising a wall, closures for the drum at each end of the wall, means to rotate the drum, an inlet stator in the drum between the axis of the drum and the wall thereof, an outlet stator in the drum between the axis of the drum and the same wall thereof, the stators being open at their peripheries to provide for flow of liquid therethrough; the outlet stator periphery being closer to the wall than the inlet stator, the rotation of the drum causing liquid in the drum to form a ring along the drum wall, the stators being normally submerged at their outer peripheries within the ring of liquid, the stators each comprise a pair of spaced annular flat plates located in generally transverse planes relative to the axis of the drum.

3,882,895
PROGRAM-CARRIER FOR USE IN FLUID-OPERATED PROGRAMMING SYSTEMS
Hans-Heinrich Glattli, Kusnacht, Switzerland, and Walter Klink, Schmiden, Germany, assignors to Pneumotech AG, Fallanden, Switzerland
Filed Mar. 26, 1973, Ser. No. 345,206
Claims priority, application Germany, Mar. 30, 1972, 2215672; Mar. 9, 1973, 2311768
Int. Cl. G11b *23/00, 25/04*
U.S. Cl. 137—594 **10 Claims**



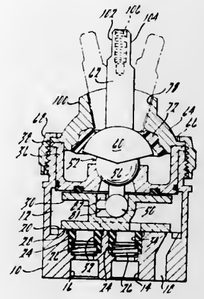
1. An information storage carrier for use in fluid-operated programming systems, comprising a plurality of blocking elements, an essentially two dimensional carrier member, at least one of said carrier member and blocking elements being at least in part from elastomeric material, said carrier member being provided with a plurality of fluid passages configured for accommodating respective ones of said blocking element, each of said fluid passages comprising two axially adjacent passage sections, one of said passage sections having a cross-section slightly smaller than and the other of said passage sections having a cross-section larger than the cross-section of an associated blocking element, so that the blocking element will block the passage against fluid flow when received in said one passage section, and permit flow of fluid through said passage when received in said other passage section.

3,882,896
LOAD RESPONSIVE CONTROL VALVE
Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022
Continuation-in-part of Ser. No. 185,146, Sept. 30, 1971, Pat. No. 3,744,517. This application July 6, 1973, Ser. No. 377,044
Int. Cl. F16k *11/00*
U.S. Cl. 137—596.1 **27 Claims**



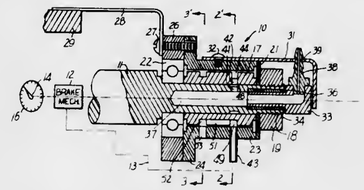
1. A valve assembly comprising a housing having a fluid inlet chamber, a fluid load chamber, a fluid outlet chamber and fluid exhaust means, first valve means for selectively interconnecting said load chamber with said inlet chamber and said outlet chamber, variable orifice means between said outlet chamber and said exhaust means and responsive to movement of said first valve means, and second valve means disposed to throttle fluid between said outlet chamber and said exhaust means and means to operate said second valve means to maintain a constant pressure difference across said variable orifice means when said load chamber and said outlet chamber are interconnected and said outlet chamber is pressurized.

3,882,897
MIXING VALVE
Alex Manoogian, Groose Pointe Farms, and Eric V. Pullen, Southfield, both of Mich., assignors to Masco Corporation, Taylor, Mich.
Filed Aug. 13, 1973, Ser. No. 387,786
Int. Cl. F16k *11/06*
U.S. Cl. 137—625.4 **19 Claims**



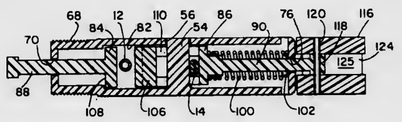
1. A hot and cold water mixing valve comprising a valve body having a mixing chamber therein, one wall of which has a hot water inlet port and a cold water inlet port therein, an outlet port opening from said mixing chamber, a valve member in said mixing chamber having a surface thereof seated against said one wall of said mixing chamber, porting means in said valve member to communicate said inlet ports with said outlet ports, said porting means in said valve member extending over said surface in a generally circular pattern extending through substantially in excess of 180° but less than 360°, operating means for said valve member including a handle projecting outwardly from said valve body and mechanical interconnecting means between said handle and said valve member causing linear movement of said valve member in the direction of a line joining the centers of said inlet ports in response to rotation of said handle about a first axis of rotation and causing rotation of said valve member on an axis normal to said surface and passing through the center of said circular porting means in response to rotation of said handle about a second axis of rotation, said valve member being movable by said handle and interconnecting means in said linear direction between a closed position in which said axis of rotation of said valve member is aligned with one of said inlet ports whereby both of said inlet ports remain closed by said valve member in any rotational position of said valve member, and an open position in which said porting means intersects either one or both of said inlet ports, depending upon the rotational position of said valve member, rotation of said valve member on its axis of rotation when in said open position varying the extent of opening of said inlet ports to regulate the temperature of the mixture discharged through said outlet port.

3,882,898
ROTARY VALVE FOR A POSITION SENSING
Jack Lamar Pickle, Jr., El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.
Filed Aug. 23, 1973, Ser. No. 390,855
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.24 **5 Claims**



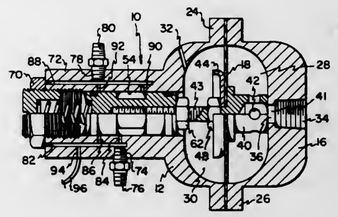
1. A rotary valve comprising:
A. a cylindrical body with an axial channel therethrough, said body having a cylindrical wall;
B. a pneumatic coupling extending into one end of said channel, said body being rotatable with respect to said coupling;
C. a second channel in said body extending from said axial channel through an arcuately and axially limited section of the cylindrical wall thereof;
D. a housing having a cylindrical recess to receive said cylindrical body;
E. low-friction bearing means supporting said housing from said body to permit free relative rotation between said body and said housing;
F. a housing channel through said housing extending through the cylindrical wall of said recess to communicate with the second channel; and
G. a groove in the outer surface of said cylindrical wall extending part of the way around said body in an annular direction and communicating with said second channel to permit pneumatic fluid to pass through said coupling, said axial channel, said second channel, and said housing channel over a limited range of relative rotation at least substantially equal to the included arc of said groove.

3,882,899
PINCH VALVE CONSTRUCTION
Guenter Ginsberg, Miami; Thomas John Godin, Hollywood, and Ronald Olin Simpson, Miami, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.
Filed July 26, 1973, Ser. No. 382,741
Int. Cl. F16k *11/14*
U.S. Cl. 137—627.5 **9 Claims**



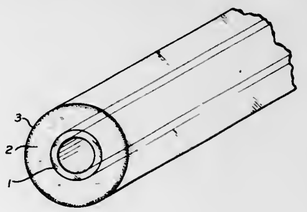
1. A pinch valve of the make-before-break type operable upon at least a pair of flexible conduits each capable of carrying a liquid, said pinch valve comprising: a valve shell having side and end walls, first and second pistons linearly movable sequentially therein and a stop member on said shell interposed between said first and second pistons, said shell having window means in opposite side walls thereof and said flexible conduits being threaded through said window means between said pistons, actuating means coupled to said first piston for moving same in a first direction and biasing means coupled to said second piston for urging the second piston in a direction opposed to said first direction, said first piston being linearly drivable toward said second piston, first to change the condition of one of said flexible conduits while maintaining the condition of the other of said flexible conduits, thereafter continuing linear movement in the first direction to overcome the biasing means and changing the condition of the other of said flexible conduits.

3,882,900
PRESSURE SENSING AND RESPONDING DEVICE
Horace A. Williams, 6123 Rodeo La., Salt Lake City, Utah 84121
Filed June 4, 1973, Ser. No. 366,450
Int. Cl. F16k *11/07, 51/00*
U.S. Cl. 137—625.34 **12 Claims**



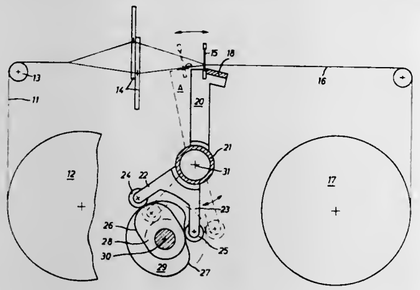
1. A pressure sensing valve comprising a valve housing, a pressure sensing means carried within said housing, a porous valve means responsive to said pressure sensing means and a series of ports connected to fluid carrying passageways bored within said housing, said ports being exposed or covered by said valve means as pressure changes are sensed by said pressure sensing sending means.

3,882,901
TUBULAR QUARTZ GLASS BODY
Karl Seiler, and Karlheinz Rau, both of Hanau am Main, Germany, assignors to Heraeus-Schott Quarzschmelze GmbH, Hanau am Main, Germany
Filed July 30, 1973, Ser. No. 384,329
Claims priority, application Germany, Aug. 5, 1972, 7229058[U]
Int. Cl. F16l *9/14, 9/10;* **B32b** *17/06*
U.S. Cl. 138—141 **3 Claims**



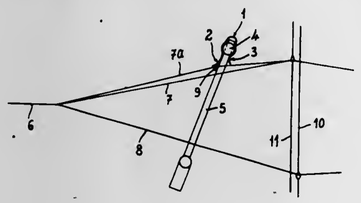
1. Diffusion tube comprising an inner tubular portion of high-purity synthetic quartz glass fused to a surrounding portion of quartz glass, said inner portion having a wall thickness of at least 0.05 mm, said surrounding portion consisting of a quartz glass manufactured by fusion of quartz crystals in granular or powder form and having an outer layer of finely crystalline cristobalite or in the outer surface layer thereof crystallization promoting nuclei capable of forming an outer layer of crystalline silica, said nuclei having a rate of diffusion in quartz glass less than that of sodium at elevated temperatures, and said surrounding portion having a wall thickness amounting to at least 50% of the total wall thickness of the diffusion tube.

3,882,902
ADJUSTABLE SLEY SWORD PIVOTING BEARING
Erhard Freisler, Bubikon, and Karl Jud, Ruti, Zunich, both of Switzerland, assignors to Ruti Machinery Works Ltd., Ruti/ZH, Switzerland
Filed Sept. 17, 1973, Ser. No. 398,079
Claims priority, application Switzerland, Sept. 19, 1972, 13663/72
Int. Cl. D03d 49/60
U.S. Cl. 139—190 **5 Claims**



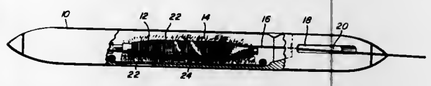
1. Loom having a sley carried by sley swords, wherein each sley sword is operatively connected to two drive arms each carrying a cam roller at its free end, each of said cam rollers traveling on the face of a cam disc so as to impart to the sley a continuous pivoting movement which takes place about a first shaft, characterized in that the said first shaft is carried for rotation by a second shaft and is arranged eccentrically relative to said second shaft, in that the said second shaft is rotational and is carried by a third shaft and is arranged eccentrically relative to said third shaft, and in that said third shaft is attached for rotation in stationary bearings positioned in the frame of said loom.

3,882,903
DEVICE ADAPTABLE TO THE REED OF A WEAVING LOOM
Albert Deborde, 13, Rue Belle Rine, Bourgoin-Jallieu, France
Filed May 21, 1973, Ser. No. 362,077
Claims priority, application France, June 16, 1972, 72.22470
Int. Cl. D03d 49/62
U.S. Cl. 139—192 **4 Claims**



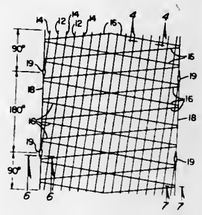
1. A device for use with the reed of a loom, the reed having an upper binding with depending teeth, the device being adapted to be fitted on the upper binding of the reed, said device comprising a body of inverted trough section having a central portion and downwardly extending opposite wings, said body being made of a material of adequate rigidity but having nevertheless an elasticity sufficient to permit fitting of the body on the reed binding by simple clipping action so that the wings straddle the reed on opposite sides thereof, at least one of said wings including a lower rounded portion which is outflared in a direction away from the central portion in such a position as to extend tangentially to warp threads of the upper sheet passing through the reed and at a level substantially below the upper binding and adjacent the teeth of the reed to constitute a barrier to stop a knot in a warp thread in upward movement thereof at a level adjacent the teeth whereat the teeth can spread and permit passage of the knot therebetween without damage to the thread.

3,882,904
SHUTTLE FUR
Isidore Bergner, 855 Avenue of the Americas, New York, N.Y. 10001
Filed Aug. 16, 1973, Ser. No. 389,006
Int. Cl. D03j 5/24
U.S. Cl. 139—213 **10 Claims**



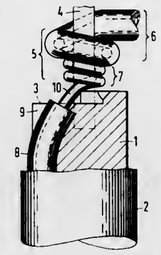
1. Improved shuttle fur comprising a relatively thin longitudinal strip of natural animal or synthetic fur having fur fibers connected to the animal skin or a base sheet and means stitching said fibers to said skin or base sheet along at least one longitudinal edge of said strip, which means acts on the base of the stitched fur fibers to force the base of said stitched fur fibers toward the longitudinal center of said strip and to urge said stitched fur fibers against their natural tendency to bend over the edge away from the longitudinal center of said strip to thereby increase the fur density of said fur fibers.

3,882,905
REINFORCING CAGE
Kenneth E. James, Denver, Colo., assignor to Stressed Pipe Research, Inc., Englewood, Colo.
Division of Ser. No. 340,019, March 12, 1973, Pat. No. 3,841,356. This application July 29, 1974, Ser. No. 492,424
Int. Cl. B21f 3/04, 15/04, 27/02
U.S. Cl. 140—92.1 **5 Claims**



1. A method of making a reinforcing cage, circular in cross section, for use within the wall of cylindrical concrete pipe, comprising the steps of:
a. winding a first strand of reinforcing material, such as steel wire or rod, around a circular mandrel to form a first coil axially spaced convolutions;
b. disposing longitudinally extending pairs of like strands on top of the first coil at angular positions therearound and in a configuration such that each pair forms right and left hand helices;
c. winding a second like strand to form a second coil, the convolutions of which are disposed between the convolutions of the first coil, the winding being under sufficient tension to distort the longitudinally extending strands at their points of crossing with both coils into a generally sinusoidal form having valleys therealong, the valleys forming locks to maintain the two coils in axially spaced relationship; and
d. securing the ends of the two coils together to form an end ring at each end of the cage.

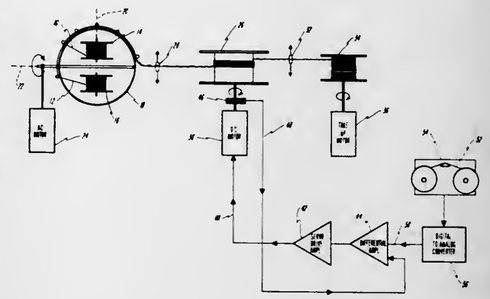
3,882,906
WIRE WINDING MACHINE
Ewald Steiner, Allmannshausen, and Hans Scholtholt, Munich-Lohhof, both of Germany, assignors to Siemens Aktiengesellschaft, Postfach 261, Germany
Filed June 26, 1973, Ser. No. 373,736
Claims priority, application Germany, June 30, 1972, 2232246
Int. Cl. B21f 15/00
U.S. Cl. 140—124 **17 Claims**



1. A wire winding machine for connecting insulated jumper wires to contact pins by means of a winding spindle rotatable in a sleeve about a winding axis, said winding spindle including a wire guiding channel running toward a frontal surface of said spindle, said channel including a first portion terminating in an end surface lying at an angle with said frontal surface of said spindle and forming a wedge-shaped intersection with the frontal surface of said winding spindle to form first cutting edges for stripping the insulation from said wire, said wire guiding channel further including a U-shaped recess extending from said end surface to said frontal surface, the core of said wire issuing from said recess to be connected to said pin, the boundary of said U-shaped recess (**21, 32, 44**) having at least a cutting edge formed by the intersection of said boundary with a surface (**26, 41, 47**) inclined with respect to said frontal surface, said recess cutting edges meeting said first cutting edges (**20, 23**) substantially at right angles, said first cutting edges and said recess cutting edges being disposed inwardly from the wire guiding channel toward the winding axis of the spindle.

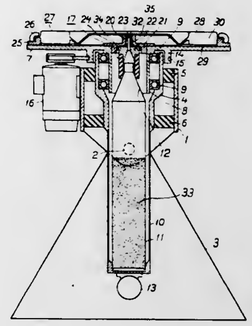
3,882,907
TWISTED CONDUCTOR FABRICATION
Donald S. Degen, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed June 18, 1973, Ser. No. 371,311
Int. Cl. B21f 7/00
U.S. Cl. 140—149 **3 Claims**

1. In a method of forming a pair of twisted conductors comprising the steps of:
drawing the conductors through a twisting mechanism under the control of a drawing mechanism operating at a first speed, which is dependent upon the magnitudes of signals applied to an input of the drawing mechanism and being arranged to draw the wires at the first speed;
operating the twisting mechanism at a second speed, which is substantially constant, to twist the conductors around each other;
successively providing individual values of drawing speed selected at random from a set of unique and permissible drawing speeds;
converting the selected individual values of drawing speed to signals which are representative of the selected individual values, and
applying the signals representative of the successively provided values to the input, the improvement comprising the step of:



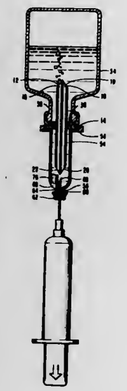
providing the individual values of drawing speed so that each value of drawing speed is other than an odd multiple of the immediately preceding and the immediately succeeding values of drawing speed.

3,882,908
CENTRIFUGAL MACHINE FOR FILLING OF POWDER CAPSULES
Sten Henrik Danieli, and Arne Sundstrand, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Dec. 3, 1973, Ser. No. 420,921
Claims priority, application Sweden, Dec. 5, 1972, 15815/72
Int. Cl. B65b 1/14; B22f 3/06; B33d 13/00
U.S. Cl. 141—34 **3 Claims**



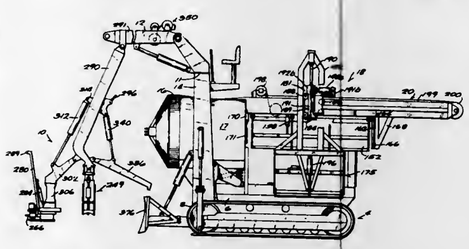
1. A centrifugal machine for filling powder into capsules having an annular forming space for forming a powder body which is to be converted into a solid body with high density by pressing at high temperature, comprising a frame, a rotatable unit rotatably carried by the frame, means for fixing a capsule upon said unit, means for driving said unit, a replaceable powder receptacle, a holder carried by said frame for holding said receptacle stationarily with respect to the frame, and an elastomeric sleeve into which one end of the receptacle is inserted forming a substantially gas-tight a connection between said receptacle and a capsule fixed upon the rotatable unit for transferring powder from the receptacle to the capsule.

3,882,909
TRANS-A-JET 1
Robert W. Ogle, Newport Beach, Calif., assignor to IMS Limited, South El Monte, Calif.
Filed July 5, 1973, Ser. No. 376,587
Int. Cl. B65b *3/04*
U.S. Cl. 141—286 1 Claim



1. The combination of a fluid transfer device comprising two parallel fluid passages within a single elongated rigid member having cutting ends, said rigid member being carried by a generally disk-like flange disposed midway between the ends of said rigid member which is generally perpendicular to said passages, said two fluid passages being of equal length and coterminous, and the openings at the cutting ends of adjacent fluid passages being oppositely facing, and a common cover for the one end of each said fluid passages, said cover abutting said flange and forming a fluid tight seal with the exterior of said rigid member by an interference or press fit between the interior of said cover and the exterior of said rigid member, the combination of a fluid transfer device comprising two parallel fluid passages within a single elongated rigid member having cutting ends, said rigid member being carried by a generally disk-like flange disposed midway between the ends of said rigid member which is generally perpendicular to said passages, said two fluid passages being of equal length and coterminous, and the openings at the cutting ends of adjacent fluid passages being oppositely facing, and a common cover for the one end of each of said fluid passages, said cover abutting said flange and forming a fluid tight seal with the exterior of said rigid member by an interference or press fit between the interior of said cover and the exterior of said rigid member, said cover being provided at the end thereof opposite said flange with an imperforate removable resilient cap which can be pierced by a needle and an adjacent airway provided with air filtration means, and a medicament container having an open end, an imperforate rubber stopper in said open end which seals said container, the other end of said rigid member piercing said stopper and said flange abutting the exterior of said stopper, and said cover sealing the interior of said container against contamination.

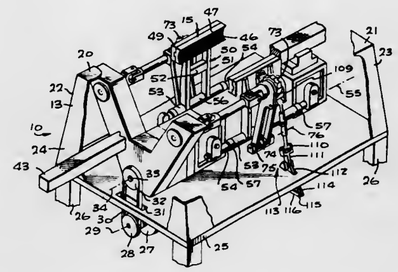
3,882,910
TIMBER HARVESTER
Waino Peltola, Rt. 1, Tripoli, Wis. 54564, and Ervin W. Braski, Brantwood, Wis. 54513
Division of Ser. No. 57,281, July 22, 1970. This application Aug. 7, 1972, Ser. No. 278,333
Int. Cl. A01g *23/08*
U.S. Cl. 144—3 D 1 Claim



1. A timber harvester comprising in unitary assembly a main frame, a sub-frame pivotally mounted on said main frame for swinging movement about a vertical axis, a forward boom pivotally mounted on one of said main frame and sub-frame, a grapple assembly, means mounting said grapple assembly on said main boom, a saw carrier frame, means for mounting said carrier frame on said forward boom to afford vertical swinging movement of said carrier frame about a first horizontal axis, means for mounting said carrier frame to said forward boom for vertical swinging movement about a second horizontal axis, means for turning said carrier frame about a generally vertical axis, a saw bracket, a cutter bar mounted on said saw bracket, a cutter chain carried by said cutter bar, a motor mounted on said saw bracket, said motor having an output shaft in driving engagement with said saw chain, means for mounting said saw bracket on said carrier frame to afford movement of said cutter bar in a linear cutting path, a guide member resiliently and elastomerically mounted on and cantilevered from said carrier frame and extending from said carrier frame and a sleeve on said saw bracket reciprocable on said guide member to guide linear movement of said cutter bar, a spike bar mounted on said carrier frame adapted to engage a tree trunk, a delimber mounted on said sub-frame, feed means adapted to withdraw timber through said delimber, said feed means being located aft of said delimber, a log unloading assembly comprising a log receiving chamber located aft of said feed means to receive logs from said feed means, a cut-off saw located between said feed means and said log receiving chamber, means mounting said cut-off saw for movement of said saw into the feed path of logs to cut a log extending through said delimber and into said log receiving chamber, means at the rearward end of said log receiving chamber adapted to engage the butt end of a log moving through said single log receiving chamber and energize said cut-off saw, said log unloading assembly further including a log accumulator bucket, and means mounting said bucket on said sub-frame, said bucket being upwardly open to receive logs discharged from said log receiving chamber.

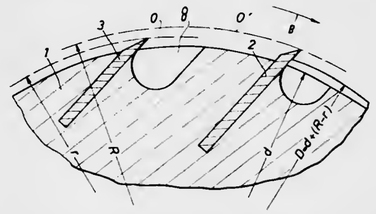
3,882,911
APPARATUS FOR CUTTING PATTERN IN GUN STOCK OR OTHER WORK PIECE
Frank A. Pachmayr, Los Angeles, and Edward B. Miller, Harbor City, both of Calif., assignors to Pachmayr Gun Works, Inc.
Filed June 25, 1971, Ser. No. 156,655
Int. Cl. B44b *5/00*; B27m *3/00*
U.S. Cl. 144—136 J 25 Claims

1. Appartus comprising a cutter structure having cutting edges arranged in a predetermined pattern which is to be essentially reproduced on a work piece, and means for producing relative vibratory movement between said cutter structure and said work piece, while the cutter structure is positioned for contact with the work piece, and in a relation pregressively cutting said pattern on the work piece, said means including a hammer positioned to apply a series of



successive hammer blows to said cutter structure and thereby cause vibration thereof, and a wheel having a series of actuating elements operable upon rotation to actuate said hammer to apply said hammer blows to the cutter structure.

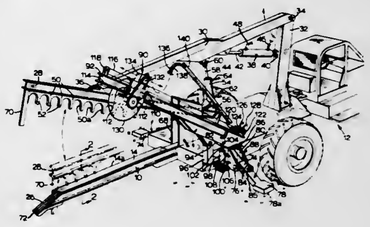
3,882,912
CUTTER FOR WOOD CHIPPER HAVING RADIALLY OFFSET BLADES
Hans Sybertz, Hargesheim, Germany, assignor to Hombak Maschinenfabrik KG, Bad Kreuznach, Germany
Filed Aug. 24, 1973, Ser. No. 391,159
Claims priority, application Germany, Aug. 25, 1972, 2241938
Int. Cl. B27c *1/00*
U.S. Cl. 144—172 3 Claims



1. A cutter for a wood-chipping apparatus, said cutter comprising an arbor rotatable about an axis, at least one first blade secured to said arbor and having an edge projecting from said arbor and defining on rotation thereof an inner orbit, and at least one second blade secured to said arbor and having a plurality of axially spaced and aligned outer edges projecting from said arbor and defining on rotation thereof an outer orbit radially outside said inner orbit, said arbor having relative to the rotation direction thereof a diameter in front of said second blade equal to the diameter in back of the second blade plus the radial distance between said inner and outer orbits.

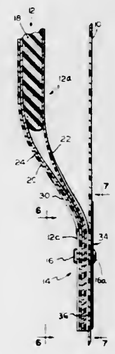
3,882,913
METHOD FOR DELIMBING FELLED TREES
Benoit L. Morin, Hornepayne, Ontario, Canada, assignor to Morard Pulpwood Company Limited, Hornepayne, Ontario, Canada
Division of Ser. No. 259,013, June 2, 1972, Pat. No. 3,805,858. This application Mar. 4, 1974, Ser. No. 447,776
Int. Cl. A01g *23/00*
U.S. Cl. 144—309 AC 4 Claims

1. A method of delimbing felled trees, comprising locating a plurality of trunks of felled trees transversely of a first beam, lowering a second beam towards the first beam to spread the trunks over the first beam and form between the beams a plurality of side by side passageways having peripheral cutting edges around different ones of the trunks, and then moving



said trunks lengthwise through the passageways between the beams thus causing limbs on the trunks to be severed by the cutting edges.

3,882,914
CARRYING STRAP CONSTRUCTION
Glenn L. Strutz, Madras, Oreg., assignor to Tote Pak Co., Madras, Oreg.
Filed July 16, 1973, Ser. No. 379,716
Int. Cl. A63b *55/00*
U.S. Cl. 150—1.5 R 6 Claims



5. A carrying strap construction comprising:
a first thin, soft, pliable strip forming a first surface layer of said strap;
a second thin, soft, pliable strip overlying said first strip and forming a second surface layer of said strap;
a thin, flexible strip of high-strength material resistant to stretching forming an inner load-bearing layer of said strap between said first and second surface layers;
at least one end portion of said strap including said first and second surface layers and said inner layer being fastened to a carrying bag by attachment means comprising at least two side-by-side rivets, extending through said surface layers and said load-bearing inner layer and through the material of said bag and through a backing patch member on an inside surface portion of said bag material with said rivets compressing the aforesaid layers of said strap and bag between the opposite enlarged ends of said rivets;
and cross-stitching extending across the width of said strap end portion and through said surface and inner layers of said strap and through said bag material and said backing member at a position on said strap spaced toward the end of said strap from said rivets.

3,882,915
PROTECTIVE DEVICE FOR WALLETS, PURSES AND THE LIKE

Anna M. Filipski, and Roman F. Filipski, 2835 N. Damen, Chicago, Ill. 60618

Filed Nov. 5, 1973, Ser. No. 412,697
Int. Cl. A45c *1/06*
U.S. Cl. 150—35 **2 Claims**

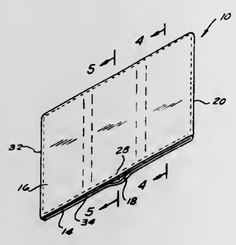


1. In combination:
a foldable wallet; and
a rectangular steel compression spring constituted by a plurality of brightly colored like square sections secured end to end and foldable side by side, one upon the other, said spring being normally disposed in folded state within the folded wallet, said spring, when the wallet is unfolded, automatically unfolding into a rectangular strip, one end of the strip being secured to the wallet.

3,882,916
BILLFOLD

Joseph Margolis, 500 E. 85th St., New York, N.Y. 10028

Filed Feb. 7, 1974, Ser. No. 440,530
Int. Cl. A45c *1/06*
U.S. Cl. 150—38 **8 Claims**

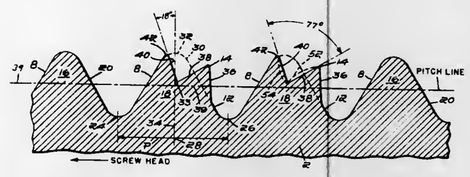


1. A natural fold billfold comprising:
a substantially rectangular panel having a longitudinal length and a lateral width,
said panel having a lateral fold line, said fold line separating a first substantially rectangular subpanel and a second substantially rectangular subpanel, the longitudinal distance of said second subpanel being greater than the longitudinal distance of said first subpanel,
the lateral edge of said first subpanel most removed from said fold line and the lateral edge of said second subpanel most removed from said fold line being joined to each other providing a joined edge,
a longitudinal edge of said first subpanel being joined to the corresponding longitudinal edge of said second subpanel along a first distance extending less than halfway from said joined edge to said fold line and along a second distance extending less than halfway from said fold line to said joined edge, at least one unjoined distance inwards of said first and second distances being sufficient to accommodate and define at least one belly zone for said second and longer subpanel providing at least one natural fold when said second subpanel is folded as the outer surface of a billfold.

3,882,917
SELF-LOCKING THREAD

Roger W. Orlomoski, North Brookfield, Mass., assignor to Litton Industrial Products, Inc., Holden, Mass.

Continuation-in-part of Ser. No. 26,529, April 3, 1970, abandoned, and a continuation-in-part of Ser. No. 734,833, May 3, 1968, Pat. No. 3,517,717, Continuation-in-part of Ser. No. 26,520, April 3, 1970, Pat. No. 3,653,241. This application Apr. 14, 1972, Ser. No. 243,932The portion of the term of this patent subsequent to June 30, 1987, has been disclaimed.
Int. Cl. F16b *39/30*
U.S. Cl. 151—22 **18 Claims**

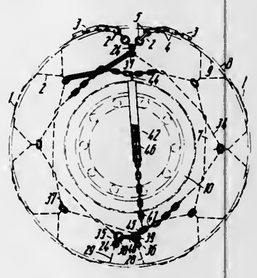


1. A self-locking thread characterized by a massive rib on one flank only of the thread, said rib having an outer wall commencing at the said one flank along an arcuate line intermediate the pitch line and root of said thread, said rib having an inner wall commencing nearer to the intersection of said pitch line and transverse mid-section of said thread than to the original line of said one flank, said outer and inner walls intersecting along an arcuate line substantially outside of the normal flank of said thread which line is generally midway in an axial direction between the root of said one flank and the crest of said one flank, and a third wall commencing at the inner edge of said inner wall, said third wall extending away from the thread axis and sloping toward said other flank and terminating at or close to said crest.

3,882,918
TIRE CHAIN

Anton Müller, Unterkochen, Germany, assignor to Eisen- und Drahtwerk Erlau Aktiengesellschaft, Germany

Filed Nov. 2, 1973, Ser. No. 412,497
Claims priority, application Germany, Nov. 3, 1972, 2253813
Int. Cl. B60c *27/12, 27/06*
U.S. Cl. 152—213 R **27 Claims**



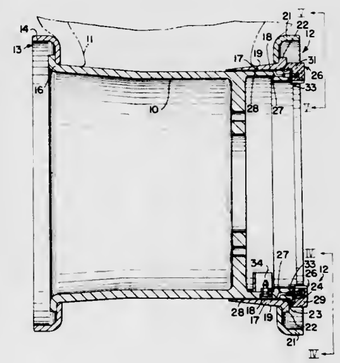
1. In combination with an anti-skid chain for a tire, said chain having a running part for resting on the tire tread and inner and outer annular marginal portions having spaced points connected to opposite side edges of the running part and disposed at opposite sides of the tire when the chain is mounted thereon including reaching behind the tire during

chain assembly therewith, the inner one of said marginal portions including separable connector means, the outer one of said marginal portions being flexible in the radial direction of the tire, and a bar member for holding and pulling use in assembling the chain on a tire and adapted to extend diametrically of the tire, and means for securing the said bar member to the chain in structurally operative condition when disposed diametrically of said tire including a flexible strand movably linked to said outer marginal portion.

3,882,919
SAFETY RIM

Charles C. Sons, Jr., Peoria, and Danny L. Johnston, Morton, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Dec. 13, 1973, Ser. No. 418,401
Int. Cl. B60c *5/00*
U.S. Cl. 152—410 **9 Claims**

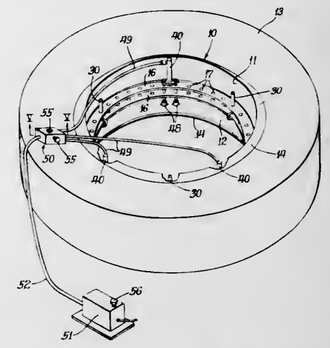


1. A pneumatic tire wheel comprising a cylindrical rim base, said base having a rim at one axial end thereof for supporting one side of a tire on said base and including a safety rim assembly at the other axial end thereof for supporting the other side of the tire on said base and for preventing hazardous dislodgement of the components of said assembly during tire inflation and disassembly, said safety rim assembly including support means for supporting the tire on said base, said support means including a bead seat band annularly disposed around the outer periphery of said rim base having a bead seat for sealing engagement with the tire, and an annular flange disposed against an outer peripheral lip of said bead seat band so that inflation of the tire presses said flange against said lip, locking means including a lock ring seated in an annular groove formed in the outer periphery of said rim base and disposed against said bead seat band so that said support means are locked in position during tire inflation, and retaining means for retaining said lock ring in said groove including a retainer block removably securable to said rim base adjacent said lock ring, said lock ring and said block having their adjacent surfaces in substantially mating relationship so that improper seating of said lock ring in said groove prevents proper installation of said retainer block, passage means communicating between the atmosphere and the rim base intermediate said rim and said safety rim assembly and sealing means for sealingly closing said passage means during functioning of said locking means to lock said support means, thereby permitting inflation of the tire, and wherein improper seating of said lock ring in said groove prevents said sealing means from sealingly closing said passage means.

3,882,920
TUBE-TIRE AND RIM MOUNTING TOOL

Dwaine Ralph Barnes, Peoria, and John Frederick Lindquist, Morton, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Nov. 19, 1973, Ser. No. 416,952
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.1 **5 Claims**

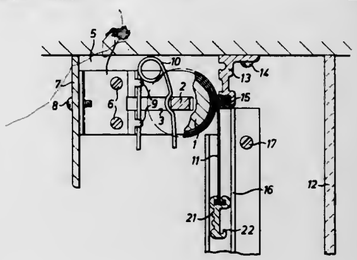


1. A tube-tire rim mounting tool for parallel closure of split rim halves used with tube-tires comprising:
a plurality of ram pullers, each having a ram and a cylinder with a connected cross head means;
pull rods connected to each cross head means operable to mechanically connect said cross head when it is adjacent to one rim flange to a rim flange remote from said cross head;
a control unit connected through separate connections to each of said cylinders, said control unit including separate control means operable to independently control each of said cylinders; and
a source of power for said cylinders connected to said control unit whereby said separate control means can be independently employed to control the several said rams in a manner that several rim flanges of a split rim to which the ram pullers are attached can be closed while maintaining a substantially parallel relationship.

3,882,921
ROLLER SCREEN ASSEMBLY FOR AN APERTURE

Ronald Ernest Sandall, Aylesbury, England, assignor to Beauty Blinds Limited, Winslow, England

Filed July 30, 1973, Ser. No. 383,477
Claims priority, application United Kingdom, Aug. 4, 1972, 36521/72
Int. Cl. E06b *9/17*
U.S. Cl. 160—266 **2 Claims**



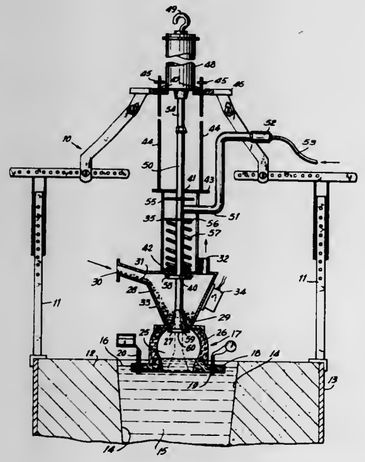
1. A roller screen assembly for an aperture, comprising:
a spring-return roller having a flexible glazing screen wound thereon;

a headboard adjacent said roller, having a sealing member thereon positioned to sealingly engage the outer turn of the screen on said roller;
said roller having coaxial trunnions thereon extending from the ends thereof and into slots at opposite sides of said aperture;
resilient means urging said trunnions and roller along said slots toward said sealing means to maintain said screen in contact with said sealing means;
the edges of said screen extending slidably into guide channels at opposite sides of said aperture;
a bottom strip fixed to and extending across the lower edge of said screen defining a hook means throughout its length; and
a hook shaped lower strip at the bottom of said aperture, engageable with said hook means of said bottom strip to sealingly hold said screen in extended position.

3,882,922
TREATING OF CAST MATERIALS IN THE MOLTEN STATE

Liviu B. Wiener, 105-40 62nd Rd., Forest Hills, N.Y. 11375

Filed July 23, 1973, Ser. No. 381,510
Int. Cl. B22d *27/06*
U.S. Cl. 164—53 **7 Claims**

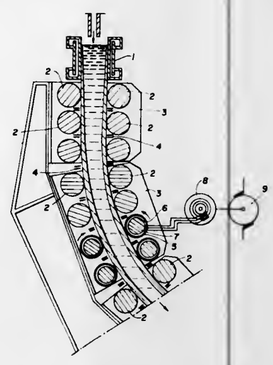


1. The method of treating a molten cast body beneath the surface of the molten metal in the riser portion comprising the steps of introducing a first refractory member beneath the surface of the molten metal in the riser portion of said molten cast body so as to form a chamber which is substantially segregated from the atmosphere, introducing a second refractory member within the confines of said chamber, moving said second refractory member beneath the surface of said molten cast body, and supplying a bubbling gas through said second refractory member.

3,882,923
APPARATUS FOR MAGNETIC STIRRING OF CONTINUOUS CASTINGS

Robert Alberny, Metz, and Jean Delassus, Montmorency, both of France, assignors to Institut de Recherches de la Siderurgie Francaise (IRSID), St. Germain-en-Laye and Compagnie Electro-Mecanique (CEM), Paris, both of, France

Filed June 4, 1973, Ser. No. 366,592
Claims priority, application France, June 8, 1972, 72.20546; June 8, 1972, 72.20545; May 29, 1973, 73.19399; May 29, 1973, 73.19400
Int. Cl. B22d *11/12*
U.S. Cl. 164—250 **8 Claims**



1. In a casting apparatus for continuously casting a metal ingot of an elongated transverse cross section, which comprises an open-ended casting mold and a plurality of supporting and guiding elements arranged in succession adjacent the mold for engaging respective ones of the ingot faces as the cast ingot emerges from the mold, the succession of elements supporting and guiding the cast ingot through a treatment zone wherein the interior of the cast ingot contains molten metal, the improvement including
1. at least one of the supporting and guiding elements defining an interior cavity,
2. an electrical inductor structure arranged within the cavity, and
3. a source of multi-phase current,
a. the inductor structure being connected to the current source for generating a mobile magnetic field extending through the supporting and guiding element wherein the inductor structure is arranged into the molten interior of the cast ingot for magnetically stirring the molten metal in the interior while the cast ingot is supported and guided through the treatment zone.

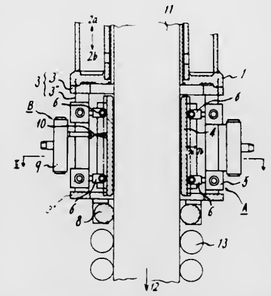
3,882,924
CAST PIECE SUPPORTING APPARATUS FOR A CONTINUOUS CASTING MACHINE

Yasuo Fujikawa, Hiroshima, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1973, Ser. No. 419,101
Claims priority, application Japan, Dec. 18, 1972, 47-126183; Oct. 15, 1973, 48-114687
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 R **8 Claims**

1. In apparatus for carrying out a continuous casting process wherein molten metal is continously moulded into a cast piece which is supported and cooled, and is drawn at a selected speed from downstream of where the cast piece is moulded, supported and cooled,
a cast piece supporting apparatus for a continuous casting machine for drawing the cast piece, comprising:

a downwardly opening mould;
means connected to said mold for cyclically vertically raising the mould faster than the selected drawing speed to an upper position and for permitting the mould to descend to a lower position as a cast piece issues downwardly therefrom whereby the mould is vertically reciprocated;
said means connected to said mold including means for regulating the speed of descent of the mould to equalize the speed of descent of the mould with the selected speed of drawing of the cast piece;
cast piece supporting means including plate means engageable with the periphery of the cast piece adjacent where the cast piece issues from the mould;

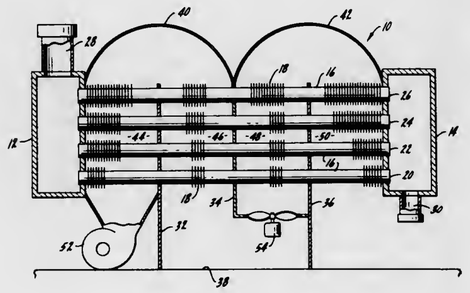


means co-mounting the cast piece supporting means with the mould for vertically reciprocating the cast piece support means in synchronism with the vertical reciprocation of the mould;
means for cooling the cast piece located adjacent where the cast piece issues from the mould; and
means connected to said plate means for laterally moving the plate means into and out of engagement with the cast piece in synchronism with the vertical reciprocation of the mould according to a plan wherein the plate means are engaged with the cast piece so long as the mould is lowering and are retracted out of contact with the cast piece so long as the mould is being raised.

3,882,925
METHOD AND APPARATUS FOR CONDENSING STEAM

Ferdinand V. Huber, Canton, Ohio, assignor to Ecodyne Corporation, Lincolnshire, Ill.

Filed June 17, 1974, Ser. No. 479,722
Int. Cl. F28b *1/06*
U.S. Cl. 165—1 **7 Claims**

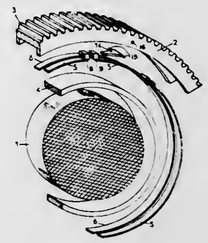


1. A method for condensing steam in an air cooled steam condenser having a plurality of substantially identical heat exchange tubes arranged in a plurality of generally parallel rows, comprising the steps of: passing steam through each of said tubes at substantially the same flow rate; and passing cooling air across the initial lengths of the heat exchange tubes in one direction and then back across succeeding lengths of the heat exchange tubes in an opposite direction so as to mollify the effects of temperature differential of the cooling air as it passes from one row of tubes to the next.

3,882,926
ROTARY HEAT EXCHANGER, IN PARTICULAR FOR A GAS TURBINE

Jack Guillot, Juvisy-sur-Orge, France, assignor to Bennes Marrel, Saint-Etienne (Loire), France

Filed Oct. 15, 1973, Ser. No. 406,419
Claims priority, application France, Oct. 18, 1972, 72.37572
Int. Cl. F28d *19/00*
U.S. Cl. 165—8 **5 Claims**

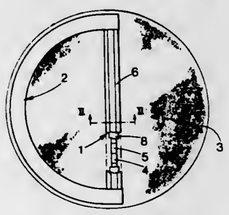


1. A rotary heat exchanger comprising a disc of porous ceramic material having a uniform circular peripheral surface, an annular layer of deformable refractory material disposed about the periphery of said disc, a plurality of split annular collars disposed about said refractory material in side by side relation, clamping means engaging the ends of said collars for clamping said collars and said refractory material to the periphery of said disc, an annular gear ring surrounding said collars in radially spaced relation thereto and link means pivotally interconnected between said collars and said gearing whereby rotary motion imparted to said gear ring would be transmitted through said link means, said collars and said refractory material to said disc.

3,882,927
SEAL FOR ROTARY REGENERATIVE HEAT EXCHANGER

Robert Noel Penny, 12 Alderbrook, Solihull, England

Filed Mar. 27, 1973, Ser. No. 345,272
Claims priority, application United Kingdom, Mar. 28, 1972, 14406/72
Int. Cl. F28d *19/00*
U.S. Cl. 165—9 **6 Claims**



1. A rotary regenerative heat exchanger having a disk-like rotatable matrix and including a pair of seals of which one engages one end face of the matrix and the other engages the other end face of the matrix, at least a portion of one of the seals being formed from a plurality of blocks of which some are made of one material and at least some of the remaining

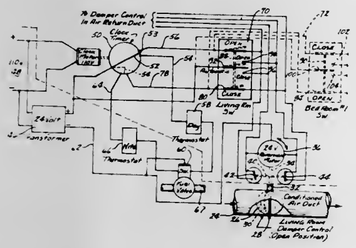
blocks are made of another material having a different coefficient of linear expansion, said blocks arranged end-to-end in a guide housing, adjacent end faces of the blocks being shaped to form a joint permitting articulation of adjacent blocks about a pivotal axis extending transversely of the blocks and parallel with the plane of the end face of the matrix, the blocks being of sufficiently short length and sufficient in number to permit said portion of the seal to conform to the surface profile of the end face of the matrix, and the materials and the lengths of the respective blocks being such that the effective coefficient of linear expansion of the seal is substantially the same as that of the guide housing.

3,882,928

BUILDING HEATING AND COOLING SYSTEM

Joseph F. Gazzo, 1303 McKinley Ave., Des Moines, Iowa 50315

Filed Mar. 1, 1974, Ser. No. 447,380
Int. Cl. F24f *3/00*
U.S. Cl. 165—12 **10 Claims**



1. A building heating and cooling system for providing conditioned air alternately to two zones of the building comprising,

a conditioned air source having an electrical control means movable between open and closed positions,

an output conditioned air duct connected between each zone and said air source,

a damper in each duct having a reversible motor for moving said damper between open and closed positions,

a pair of limit switches alternately opened and closed by said damper as it moves between said open and closed positions,

a thermostat for each zone,

a clock timer connected to an electrical power source and including alternate circuits therethrough for operating said damper motors,

a first circuit for operating said electrical control means including said power source, one timer circuit, a thermostat for one zone and said electrical control means,

a second circuit for operating said electrical control means including said power source, the other timer circuit, the thermostat for the other zone and said electrical control means whereby said electrical control means at times set on said timer is operated by said one circuit and at other times by said second circuit,

a third circuit for operating said damper motors and opening said dampers in one zone and closing them in the other zone including said electrical power source, said one timer circuit, one of said limit switches and said damper motor,

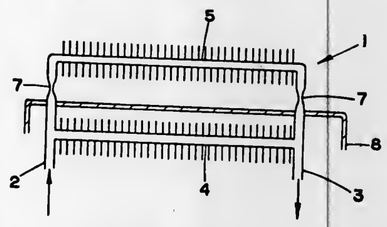
a fourth circuit for operating said damper motors and closing said dampers in one zone and opening them in the other zone including said electrical power source, the other timer circuit, the other of said limit switches and said damper motor whereby at times said conditioned air source supplied conditioned air only to said one zone of said building having dampers open and at other times supplies air only to said other zone having dampers open.

3,882,929

HEAT REJECTION SYSTEM

Lucien Yehuda Bronicki, Rehovoth, Israel, assignor to Ormat Turbines (1965) Ltd., Yavne, Israel

Filed Aug. 16, 1973, Ser. No. 388,862
Int. Cl. B60h *1/00*
U.S. Cl. 165—40 **1 Claim**



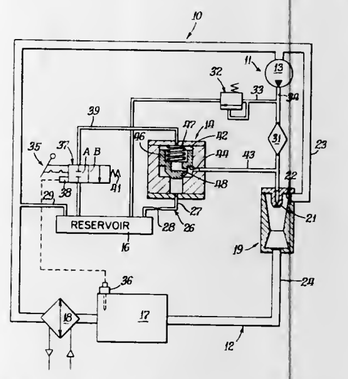
1. A heat rejection system for a freezable circulating fluid, comprising two heat exchange sections connected in parallel with the intermediary of temperature responsive control means in the form of a conduit having a portion of reduced cross-section that enhances the local freezing of the fluid thereby blocking its flow between the heat exchange sections when the ambient temperature is below the freezing point of the fluid.

3,882,930

COOLING SYSTEM FOR BRAKES

Lawrence F. Schexnayder, Joliet, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Nov. 1, 1973, Ser. No. 411,776
Int. Cl. F28d *15/00*
U.S. Cl. 165—40 **9 Claims**



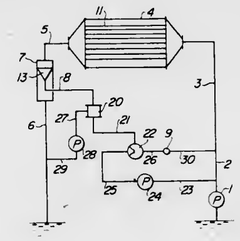
1. A cooling system comprising a fluid flow circuit including a pumping sub-circuit, a closed loop cooling sub-circuit, and siphon means interconnecting the pumping and cooling sub-circuits for initiating high-volume fluid flow within the cooling sub-circuit in response to increased fluid flow from said pumping sub-circuit into said siphon means, said pumping sub-circuit including pumping means for circulating fluid within said fluid flow circuit, valve means for controlling fluid flow into said siphon means and reservoir means for storing reserve fluid, and said cooling sub-circuit including heat generating means and cooling means for cooling fluid heated by said heat generating means, said fluid circulating at least primarily within said pumping sub-circuit when cooling flow requirements are sufficiently low, said valve means including a dump valve and said actuating means including control valve means disposed between said dump valve and said reservoir means for regulating fluid flow from said dump valve into said reservoir means whereby adjustment of said control valve means to evacuate fluid from said dump valve into said reservoir increases fluid flow into said siphon means, wherein said fluid flow circuit further includes temperature-sensitive actuating means for actuating said valve means to increase fluid flow into said siphon means in response to increased temperatures in said heat generating means, whereby high-volume fluid flow is initiated in said cooling sub-circuit by said siphon means.

3,882,931

MEANS FOR CLEANING HEAT CONDUCTIVE CONDUITS OF A HEAT EXCHANGER

Yoshio Kumagai, Takahagi, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 20, 1973, Ser. No. 343,036
Claims priority, application Japan, Mar. 24, 1972, 47-28949
Int. Cl. F28g *1/12*
U.S. Cl. 165—95 **12 Claims**



1. Cleaning apparatus for cleaninng heat conductive conduit means of a heat exchanger of the type having heat conductive conduit means, inlet conduit means for supplying heat exchange fluid to said heat conductive conduit means, and outlet conduit means for exhausting the heat exchange fluid from the heat conductive conduit means, said cleaning apparatus comprising:

recovering means provided in said outlet conduit means for recovering conduit cleaning elements present in said heat exchange fluid, separating means connected with the recovering means in fluid flow relationship for separating a portion of the heat exchange fluid from the conduit cleaning elements, and suction means receiving the conduit cleaning elements and remaining heat exchange fluid from said separating means for directing said conduit cleaning elements and remaining heat exchange fluid from the separating means into said inlet conduit means, wherein said suction means comprises a suction pump including nozzle means for injecting fluid into said pump so as to produce a suction pressure portion in said suction pump, suction-inlet means for drawing the conduit cleaning elements with the remaining heat exchange fluid from the separating means under the influence of the suction pressure produced by said nozzle means, and an outlet section connected with said inlet conduit means for discharging the conduit cleaning elements into said inlet conduit means.

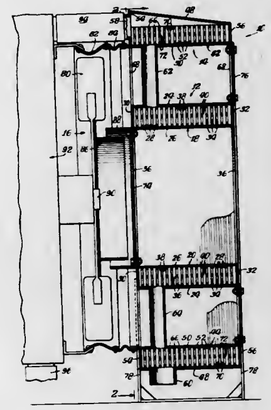
3,882,932

RADIATOR ASSEMBLY

Vernon N. Tramontini, Indianapolis, Ind., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Feb. 25, 1974, Ser. No. 445,085
Int. Cl. F28f *13/12*
U.S. Cl. 165—126 **4 Claims**

1. A radiator assembly, comprising; an inner annular radiator having a plurality of axially spaced generally arcuate fluid carrying core elements, arcuate radial flow air passageway means between said core elements, an outer annular radiator surrounding said inner radiator and having a plurality of axially spaced arcuate fluid carrying core elements, arcuate radial flow air passageway means between said outer radiator core elements, an axially extending substantially unobstructed annular space between the inner and outer radiators, fan



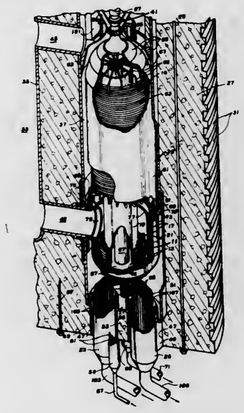
means positioned to convey air axially through said annular space, and means for directing the conveyed air simultaneously radially in one direction through the air passageway means in said inner annular radiator and in the opposite direction through the air passageways means in the outer annular radiator.

3,882,933

HEAT EXCHANGER

Leonard J. Kube, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

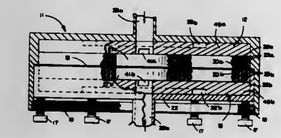
Filed Oct. 28, 1971, Ser. No. 193,371
Int. Cl. F28d *7/10*
U.S. Cl. 165—163 **4 Claims**

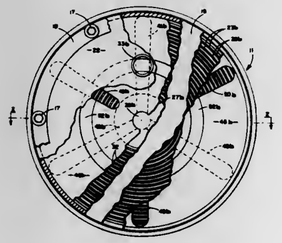


1. A heat exchanger comprising a plurality of tube bundles, at least one tube bundle comprising a reheater having a plurality of helical heat exchanger tubes, said tubes being arranged in a plurality of coaxial annular rows along a vertical axis with each tube being in a single row, each row comprising a plurality of said tubes with said tubes in each row being wound helically with respect to the axis of said annular rows, duct means for directing a flow of a heated first fluid downwardly over said tubes along the axis of the helix toward the lower end of said tube bundle and then upwardly through the space

defined by the inner one of said annular rows, means at the upper end of said tube bundle interconnecting the ends of respective pairs of said tubes, said interconnected ends being uniformly spaced circumferentially around the top of said annular rows, a first tube sheet and a plurality of interconnecting tubes extending from said first tube sheet, each to one tube in a respective one of said tube pairs, and a second tube sheet and a plurality of connecting tubes extending from said second tube sheet, each to the other tube in the respective ones of said tube pairs, said connecting tubes intersecting the respective tubes to which they extend at different positions uniformly spaced circumferentially around the bottom of said annular rows.

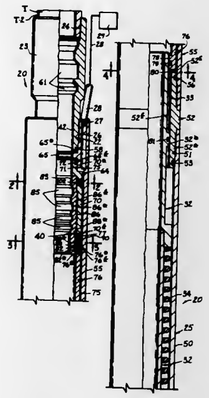
3,882,934
HEAT EXCHANGER
Stellan Knoos, Malibu, Calif.; Soren F. S. Ljungdahl, Taby, and Bertil Ingemar Bostrom, Danderyd, both of Sweden, assignors to AGA Aktiebolag, Taby, Sweden and Stellan Knoos, Malibu, Calif., part interest to each
Filed June 2, 1972, Ser. No. 259,009
Int. Cl. F28d *9/04*
U.S. Cl. 165—164 **21 Claims**





1. A heat exchanger comprising:
a fluid,
inlet means and outlet means for said fluid,
a heat exchange element for receiving the flow of said fluid, said heat exchange element comprising a member having a plurality of coextensive narrow fluid channels formed on a single surface thereof, said channels being defined by walls extending from said surface, multiple distributor means spaced at intervals along said channels for distributing the fluid from said inlet means to all of said fluid channels in parallel, multiple collector means spaced from said distributor means at intervals along said channels for collecting the fluid in all of said channels in common channels at intermediate positions along said fluid channels located at distances from the distributor means which are substantially less in extent than the full length of said coextensive channels and means for feeding the fluid from said last mentioned common channel to said outlet means, and
means for transferring thermal energy between said heat exchange element and a heat conductive medium, the ends of said channel walls away from said surface abutting against said last mentioned means in fluid tight relationship, whereby thermal energy is transferred between said channel wall ends and said last mentioned means.

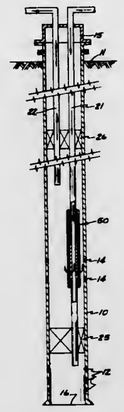
3,882,935
SUBSURFACE SAFETY VALVE WITH AUXILIARY CONTROL FLUID PASSAGE OPENABLE IN RESPONSE TO AN INCREASE IN CONTROL FLUID PRESSURE
Michael B. Calhoun, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Dec. 26, 1973, Ser. No. 427,795
Int. Cl. E21b *43/12*
U.S. Cl. 166—224 A **15 Claims**



1. A well flow conductor valve including: a housing having means for connecting it in flow communication with a well flow conductor; valve means disposed in the housing and movable therein between open and closed positions for controlling flow through the housing; operating means in said housing movable longitudinally thereof for actuating said valve to move the same between the open and closed positions; locking means in the housing initially in an inoperative position spaced from said operating means and movable to a position engaging said valve operating means to positively lock said valve operating means in position holding said valve in open position; fluid pressure responsive means on said operating means; means for conducting control fluid pressure to said valve housing for acting on said fluid pressure responsive means to control movement of said operating means in response to such control fluid pressure; means at the surface for controlling fluid pressure conducted through said control fluid conductor means to the valve in response to predetermined conditions; and means providing a control fluid passage into the interior of the valve housing responsive to an increased control fluid pressure after said locking means has been moved to position locking said valve means in open position, said increased control fluid pressure being substantially higher than the control fluid pressure required to operate said operating means.

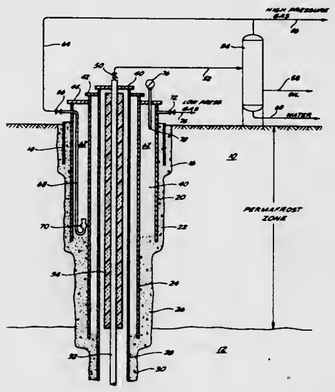
3,882,936
APPARATUS FOR EVACUATING DRILLING FLUIDS FROM A WELL
Chudleigh B. Cochran, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.
Division of Ser. No. 186,994, Oct. 6, 1971, Pat. No. 3,799,268.
This application Jan. 18, 1974, Ser. No. 434,838
Int. Cl. E21b *43/12*
U.S. Cl. 166—224 **16 Claims**

1. Pressure operated apparatus comprising:
a. tubular body means having port means through the walls thereof;
b. sleeve means surrounding said body means in a first position blocking fluid flow through said port means, said sleeve means including a skirt member axially movable on the existence of a predetermined pressure level in said body means to unblock flow through said port means; and
c. expansible chamber means between said body means and said sleeve means, pressure operable after said unblocking of said port means to axially reposition said sleeve in a second position blocking flow through said port means;



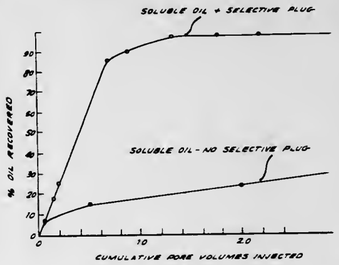
d. said skirt member having an annular surface thereon which in said first position forms a portion of a pressure chamber communicating with the interior of said body means through said port means, said skirt member being fastened to the rest of said sleeve means in said first position by connection means, said connection means being releasable on exposure of said annular surface to said predetermined pressure level to permit said axial movement of said skirt means to unblock said port means.

3,882,937
METHOD AND APPARATUS FOR REFRIGERATING WELLS BY GAS EXPANSION
Joel P. Robinson, Los Angeles, Calif., assignor to Union Oil Company of California, Brea, Calif.
Filed Sept. 4, 1973, Ser. No. 393,892
Int. Cl. E21b *43/24*, *43/00*
U.S. Cl. 166—267 **19 Claims**



1. A refrigerated well extending from the surface to an underlying petroleum reservoir for conducting hot fluids through a permafrost zone, which comprises:
a closed annular refrigeration chamber defined by inner and outer concentric casings extending a substantial distance into said permafrost zone, said refrigeration chamber lying between said hot fluids conducted through said well and said permafrost;
a production tubing within said inner casing to conduct fluids from said underlying petroleum reservoir to the surface, or vice versa;
at least one gas expansion nozzle located within said refrigeration chamber and adjacent to the bottom thereof, and discharging into said chamber;
gas conduit means to conduct high pressure gas from a source of high pressure gas to said gas expansion nozzle; and
means for exhausting low pressure gas from said refrigeration chamber;
whereby high pressure gas discharged through said gas expansion nozzle into said refrigeration chamber is cooled to a temperature below the permafrost temperature and flowed upwardly through said refrigeration chamber to prevent the transfer of heat from said hot fluids conducted through said well to the surrounding permafrost.

3,882,938
PROCESS FOR RECOVERING OIL FROM HETEROGENEOUS RESERVOIRS
George G. Bernard, La Mirada, Calif., assignor to Union Oil Company of California, Brea, Calif.
Filed July 17, 1972, Ser. No. 272,558
Int. Cl. E21b *43/22*, *43/27*
U.S. Cl. 166—270 **9 Claims**



1. In the method of recovering petroleum from heterogeneous subterranean reservoirs having strata of widely varying permeabilities wherein a substantial proportion of the oil is in the more permeable strata and in which a soluble oil miscible with both the connate reservoir oil and with water is first injected into the reservoir through an injection well, and thereafter an aqueous flooding medium is injected to drive the soluble oil towards a spaced production well from which fluids are recovered, the improvement which comprises injecting through said injection well and into said reservoir a first portion of said soluble oil, next injecting one or more aqueous solutions of reagents that react together in the reservoir to form a plugging material that substantially reduces the permeability of the more permeable strata of the formation, and thereafter injecting a second portion of said soluble oil.

3,882,939
MOBILITY CONTROL IN ADJACENT WELLBORES
Richard W. McAtee, Littleton, and Marvin A. Svaldi, Morrison, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed May 14, 1973, Ser. No. 359,816
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **6 Claims**

1. In a process of flooding a hydrocarbon containing reservoir having an injection means in fluid communication with a

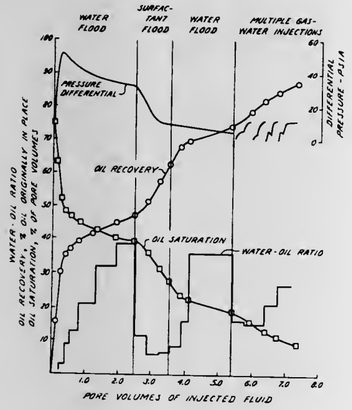
production means and wherein an aqueous biopolymer solution is injected into the reservoir and displaced toward the production means to recover hydrocarbon therethrough, the improvement comprising incorporating into only the front portion of the biopolymer solution a polyalkylene oxide polymer to obtain improved mobility control in areas near the injection means.

3,882,940

TERTIARY OIL RECOVERY PROCESS INVOLVING MULTIPLE CYCLES OF GAS-WATER INJECTION AFTER SURFACTANT FLOOD

Joseph T. Carlin, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 17, 1973, Ser. No. 425,593
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **9 Claims**



1. In a method for recovering petroleum from a subterranean, petroleum containing, porous formation penetrated by at least one injection well and at least one production well, both wells being in fluid communication with the formation, said recovery method being of the type wherein an aqueous surfactant solution is injected into the formation and an aqueous solution of hydrophilic, viscosity increasing polymer is injected into the formation following the surfactant solution and oil displaced by the injected fluids is recovered from the formation via the production well, wherein the improvement comprises:
   a. injecting from about 2 to about 8 slugs of gas the volume of which is from about 0.2 to about 20.0 pore volume percent with a slug of from about 5 to about 50 pore volume percent water injected between succeeding gas slugs into the formation after injection of the solution of the hydrophilic viscosity increasing polymer; and
   b. injecting water into the formation after injection of all of the slugs of gas to displace the gas, surfactant solution and solution of hydrophilic viscosity increasing buffer and formation petroleum toward the production well.

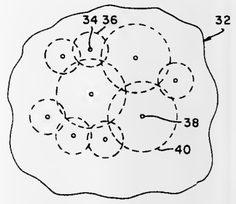
3,882,941

IN SITU PRODUCTION OF BITUMEN FROM OIL SHALE

Arnold H. Pelofsky, East Brunswick, N.J., assignor to Cities Service Research & Development Co., Cranbury, N.J.

Filed Dec. 17, 1973, Ser. No. 425,449
Int. Cl. E21b *43/24*
U.S. Cl. 166—303 **6 Claims**

1. A process for recovering hydrocarbon product from asubterranean deposit of oil shale which comprises the steps of:
   a. introducing heat energy in the form of hot fluids not containing oxygen into said deposit through one or more wells extending into the deposit, said heat energy being introduced in quantities sufficient to heat the deposit in the vicinity of the wells to more than about 50°F above its transition temperature and until the pressure at the bottom of the wells is from at least 200 to about 1,000 psi about the formation pressure of the deposit;



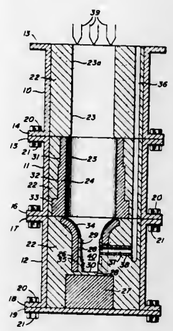
   b. then shutting in said wells until the temperature in the vicinity of the wells drops to less than about 50°F above the transition temperature of the deposit until the pressure at the bottom thereof drops to less than about 50 psi above formation pressure, with the shutting in period lasting from about two weeks to about 6 months;
   c. repeating steps (a) and (b) for a period of from about 1 to about 10 years; and
   d. producing bitumen through said wells.

3,882,942

MOLD MODIFICATIONS FOR ELIMINATING FRECKLE DEFECTS IN ROLL CASTINGS

Pradeep Kumar Rohatgi, Bangalore, India, and Louis R. Woodyatt, Whitehall, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 24, 1973, Ser. No. 363,682
Int. Cl. B22d *15/00*
U.S. Cl. 164—353 **7 Claims**



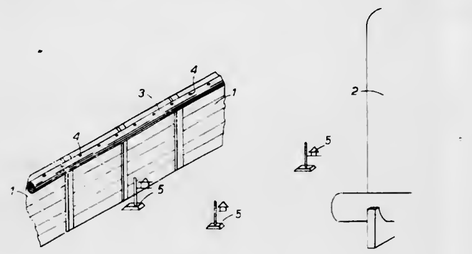
1. In a mold forming a cavity for vertically casting a rolling mill roll, or the like, having a central body portion separating upper and lower journal portions, a sinkhead positioned above the upper journal portion, sand to contact the sinkhead and upper journal portions, a first metal chill to contact the central body portion, a second metal chill having a facing of sand thereon to contact the vertical section of the lower journal portion and the improvement comprising a third metal chill having a continuous flat upper face and a facing of sand thereon to contact the horizontal terminus of the lower journal portion so as to provide for the casting of a rolling mill roll free of freckle defects.

3,882,943

DISPERSAL OF FLAMMABLE MATERIALS

Arthur Leslie Cude, and Henry George Simpson, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 145,714, May 21, 1971. This application Aug. 20, 1973, Ser. No. 389,540
Claims priority, application United Kingdom, May 27, 1970, 25528/70
Int. Cl. A62c *3/00*
U.S. Cl. 169—60 **6 Claims**



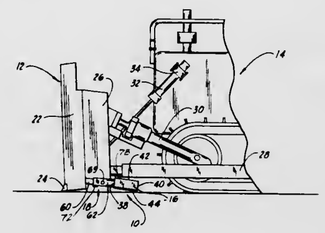
1. Equipment for dispersing a cloud of flammable vapour which comprises a solid vertical barrier at ground level and spaced from a potential source of said flammable vapour, means associated with the solid barrier for ejecting jets of steam at a high velocity upward from the ground, said means comprising at least one pipe of a length at least as great as the distance between the potential source of flammable vapour and the solid barrier, thereby dispersing the vapour cloud by entrainment of the vapour with air, vapour detectors positioned between the potential source of flammable vapour and the solid barrier and actuation means for the steam jet system responsive to a signal from the detectors.

3,882,944

DOZER DRAG-BEAM

Donald Zimmerman, P.O. Box X, Arma, Kans. 66712

Filed Nov. 12, 1973, Ser. No. 414,896
Int. Cl. A01b *49/02*
U.S. Cl. 172—199 **4 Claims**



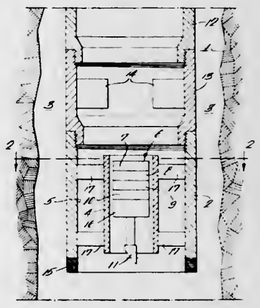
1. A drag-beam means for an earthworking blade, comprising:
   a. an earthworking blade;
   b. a drag-beam having a leading edge portion and a trailing edge portion;
   c. mounting means on a rear side portion of said earthworking blade constructed and adapted to receive and mount said drag-beam, said mounting means having a first mounting portion secured to said rear side portion of said earthworking blade and having a second mounting portion pivotally mounted on said first mount portion,
   d. said mounting means has means to limit upward and downward pivotal motion of said drag-beam relative to said earthworking blade such that when said earthworking blade has its cutting edge portion in cutting position on a ground surface said beam trailing edge portion is disposed horizontally above said cutting edge portion and said beam leading edge portion is horizontally disposed above said beam trailing edge portion, and
   e. said drag-beam mounted on said second mounting portion, and extending substantially from opposite ends of said earthworking blade when mounted thereon.

3,882,945

COMBINATION LASER BEAM AND SONIC DRILL

Bernard J. Keenan, Jr., West Chester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Nov. 2, 1973, Ser. No. 412,212
Int. Cl. E21b *7/00*
U.S. Cl. 175—16 **7 Claims**



1. A method for recovering liquid reserves from a subterranean formation through a wellbore containing a drill string comprising
   a. attaching a laser beam and sonic housing to the lower most section of the drill string,
   b. positioning a self-contained laser beam and sonic assembly within the laser beam and sonic housing containing a voltage generator, a laser beam generator electrically connected to and deriving its power from the voltage generator and a sonic generator electrically connected to and deriving power from the voltage generator,
   c. actuating the voltage generator by drilling fluid passing through the drill string,
   d. generating a sonic beam and transmitting it through the drilling fluid into the formation,
   e. separating the drilling fluid entering the formation cavity into a plurality of jet streams, and
   f. generating a laser beam and projecting it into the formation.

3,882,946

TURBODRILL

Rolen Arsenievich Ioannesian, naberezhnaya Tarasa Shevchenko, 1/2, kv. 49, and Jury Rolenovich Ioanesian, Matveevskaya ulitsa, 18, korpus 2, kv. 63, both of Moscow, U.S.S.R.

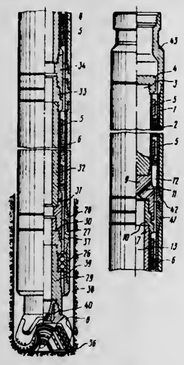
Filed Apr. 24, 1974, Ser. No. 463,796
Int. Cl. E21b *3/12*
U.S. Cl. 175—107 **19 Claims**

14. A turbodrill for drilling gas an oil wells in an assembly with a drilling unit comprising drill pipes, through which a drilling fluid is supplied into the turbodrill, and a mud pump for delivering said drilling fluid into said drill pipes; said turbodrill comprising in combination, a housing, two multistage hydraulic turbines operating with different speeds and hydrodynamic braking stages arranged in said housing one after another and operating in succession; the first element along the path of the drilling fluid coming from said drill pipes being

the low-speed turbine and the hydro-dynamic braking stages

moves toward said position and for movement inward of

the low-speed turbine and the hydro-dynamic braking stages which pass the total flow of said fluid; the next element along the path of said drilling fluid being a high-speed turbine capable of utilizing a high pressure drop and developing a high torque; a hollow shaft mounting said high-speed turbine and



one end of which is connected to a bit; and a device dividing the fluid coming from said low-speed turbine and hydrodanymic braking stages into two flows, one of which is directed into said high-speed turbine and the other is directed through said hollow shaft to said bit so the turbodrill operates with a hydraulic effect.

3,882,947

PORTABLE JEWELER'S BALANCE

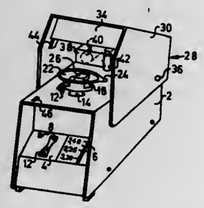
Max Karl Appius, Berneck, Switzerland, and Adolf Ast, Messtetten, Germany, assignors to Mettler Instrumente AG, Greifensee-Zurich, Switzerland

Filed Feb. 11, 1974, Ser. No. 441,672

Claims priority, application Switzerland, June 15, 1973, 8687/73

Int. Cl. G01g *23/32*

U.S. Cl. 177—246 **10 Claims**



1. A top-loading inclination balance comprising, in combination:

a. a housing;

b. a main bearing in said housing;

c. a balance beam normally fulcrumed on said main bearing and having two arms in said housing;

d. a pan carrier assembly;

e. an outer bearing on one of said arms pivotally supporting said assembly, a portion of said assembly movably passing outward of said housing in an upward direction when said balance is in the normal operating condition;

f. a weighing pan on said portion of said assembly outside said housing;

g. a cover pivotally mounted on said housing for movement in an arcuate path toward and away from a closed position in which said cover envelops said weighing pan and said portion of said assembly, said cover, when remote from said position, providing access to said weighing pan;

h. a locking member projecting from said housing into said path for engagement with said cover when the cover moves toward said position and for movement inward of said cover in response to further movement of said cover toward said position;

i. motion transmitting means in said housing connecting said locking member to said beam and to said assembly for disengaging said main bearing and said outer bearing in response to said inward movement of said locking member, and for securing said beam and said assembly in a fixed position relative to said housing;

k. a balance weight carrying a mark representative of the weight thereof; and

l. securing means on said portion of said assembly and on said housing for alternatively securing said balance weight to said assembly and to said housing.

3,882,948

STEERING COLUMN CONSTRUCTION

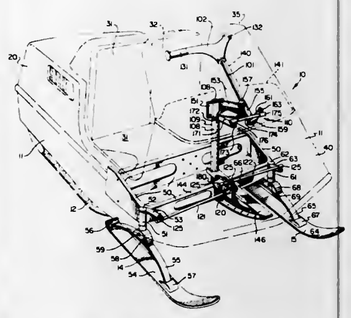
Bertrand Southiere, Valcourt, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed May 9, 1973, Ser. No. 358,645

Claims priority, application Canada, May 2, 1973, 170280

Int. Cl. B62m *27/02*

U.S. Cl. 180—5 R **7 Claims**



1. A steering mechanism for a relatively small off-the-road vehicle comprising a steering control for manual operation by the operator of said vehicle, ground contacting direction elements angularly displaceable relative to the longitudinal axis of said vehicle for varying the direction of travel of said vehicle, and link means for interconnecting said steering controls and said direction elements to relate the angular position of said direction elements to the angular position of said steering control, said link means comprising a steering column extending generally forwardly and downwardly in a vertical plane extending parallel to the longitudinal centerline of the vehicle, carrying at its upper rear end said steering control, and mounted to the structure of said vehicle in a freely rotatable manner, and a generally vertically extending shaft mounted to said structure in a freely rotatable manner and disposed in a vertical plane parallel to and spaced apart from said first mentioned plane, the lower end of the column being located forward of a transverse plane through the axis of said vertical shaft, a generally upright leg member for each said direction element, crank arm and tie rod means interconnecting the lower end of said shaft with each leg member such that rotation of said shaft causes angular displacement of said direction element which, however, always remain generally parallel to one another, a first crank arm secured to the lower free end of said steering column and extending forwardly therefrom, a second crank arm secured to the upper end of said shaft and extending forwardly therefrom and a tie rod extending transversely across in front of both said column and said shaft and pivotally interconnecting said first and second crank arms, said crank arm and tie rod means and said first and second crank arms being positioned and dimensioned such that when said steering control is at the middle point of its total angular displacement, said direction elements extend parallel to the longitudinal axis of said vehicle.

3,882,949

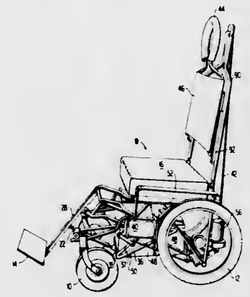
UNIVERSAL WHEELCHAIR FOR THE SEVERELY DISABLED

David M. Anderson, Oakland, Calif., assignor to Government of the United States, Washington, D.C.

Filed Nov. 16, 1972, Ser. No. 307,202

Int. Cl. B62d *63/02*

U.S. Cl. 180—8 A **36 Claims**



1. A universal wheelchair for the severely disabled, comprising:

four wheels;

a frame connecting said wheels;

a seat;

raising and lowering means connected to said frame and said seat for causing the height of said seat to be continuously adjusted between a lowered position 8 inches above ground and a raised position about 24 inches above ground, said raising and lowering means comprising an actuator, connecting said frame and said seat, and power means connected to said actuator for lengthening and shortening said actuator thereby raising and lowering said seat;

power means connected to said frame for propelling the wheelchair; and

curb climbing means connected thereto for causing the powered climbing of the wheelchair onto and off of curbs while keeping said seat substantially level, said curb climbing means being powered by the lengthening and shortening of said actuator.

3,882,950

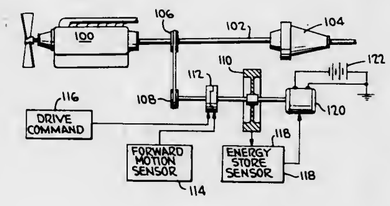
VEHICLE POWER SYSTEM FOR LIMITED VEHICLE MOVEMENT WITHOUT USE OF FUEL

James Neil Strohlein, 11618 Hitching Post Ln., Rockville, Md. 20852

Filed July 11, 1972, Ser. No. 270,867

Int. Cl. B60k *9/00*

U.S. Cl. 180—54 R **11 Claims**



1. A power system for a vehicle having a body and a power-responsive motion producing means connected with the body for producing movement thereof, said power system including,

engine means for operative connection with the motion producing means to supply power thereto for movement of the body,

power takeoff means connected with said engine means for diverting a portion of the power output of said engine means,

mechanical power storage means, connected with said power takeoff means, for accumulating and storing the power diverted by said power takeoff means in an amount sufficient to propel said vehicle for limited distances when the velocity of said vehicle has diminished to a predetermined speed, or from a standstill, utilizing only said accumulated power, and

first selectively operable power connection means, independent of said power takeoff means, for operatively connecting only said mechanical power storage means directly with the motion producing means to supply stored power to the motion producing means when the speed of said vehicle is less than the predetermined speed while simultaneously rendering said engine means inoperative.

3,882,951

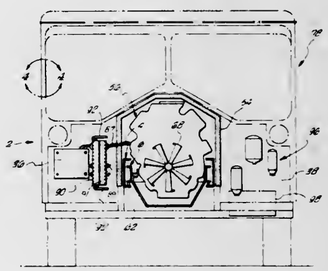
QUIET SLIDE OUT ENGINE VEHICLE

Challie Conley, West Covina, Calif., assignor to Hallamore Inc., Fountain Valley, Calif.

Filed Jan. 22, 1973, Ser. No. 325,513

Int. Cl. B60k *5/10*

U.S. Cl. 180—64 L **12 Claims**



1. A vehicle having a housing body, an engine connected to a drive train for moving the vehicle, a source of electrical power such as electrical batteries, electrical power means extending between the engine and the vehicle housing and fluid conduit means extending between the engine and the vehicle housing comprising:

a chassis frame member including two interconnected parallel chassis rails mounted on the housing body;

a movable engine mounting member including two parallel mounting rails interconnected and supporting the engine and a lower supporting member connected to and movable with the two mounting rails, the lower supporting member supporting the source of electrical power;

roller means positioned between the respective chassis rails and the mounting rails for permitting the mounting rails to be relatively movable on the chassis frame whereby the engine can be moved along the chassis frame member out of the housing body adjacent a first end of the chassis frame member;

means for interlocking the chassis frame member and the movable engine mounting member;

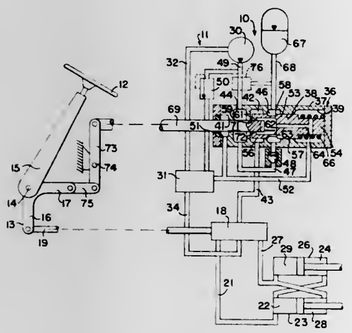
means for alignment of the engine mounting member with the chassis frame member, and

means adjacent the movable engine mounting member for disconnecting the electrical power means and the fluid conduit means between the engine and the vehicle housing.

3,882,952
STEERING SYSTEM WITH SECONDARY STEERING MEANS

Elmer R. Crabb, Pekin, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Oct. 26, 1973, Ser. No. 409,866
Int. Cl. B62d *5/08*
U.S. Cl. 180—79.2 R **10 Claims**

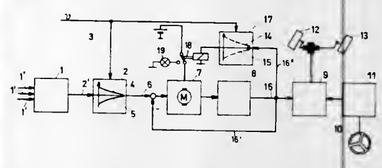


1. In a vehicular steering system having; a source of fluid under pressure, steering motor means, primary control valve means, fluid communication means for communicating said pressure source with said primary control valve means, and for communicating said primary control valve means with said steering motor means, steering mechanism means for actuating said primary control valve means to control the flow of pressure fluid to and from said steering motor means, the improvement comprising; secondary steering means for providing a supply of pressure fluid for operating said steering motor means in the event of failure of said source of fluid under pressure to supply said steering motors, said secondary steering means including accumulator means supplied by said source for storing fluid under pressure for selective passage to said steering motor means, secondary control valve means for controlling fluid flow from said source to said accumulator means and from said accumulator means to said steering motor means, said secondary control valve means operative for automatically permitting fluid flow from said source to said accumulator means while concurrently blocking flow from said accumulator means to said steering motor means when the pressure of said source is above a first predetermined value, said secondary control valve means being further operative for communicating flow from said accumulator means to said steering motor means while concurrently blocking flow from said source to said steering motor means when the pressure of said source is below said first predetermined value, said steering mechanism means including mechanical linkage means directly connected to said secondary control valve means and to said primary control valve means for actuating said secondary control valve means concurrently with said primary control valve means to provide immediate mechanical control of fluid flow from said accumulator means to said steering motor means when the pressure of said source drops below said first predetermined value.

3,882,953
COMPENSATION OF SIDE WIND FORCES TENDING TO UNDESIRABLY MOVE A VEHICLE LATERALLY

Wolfgang Maisch, Schwieberdingen, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Nov. 5, 1973, Ser. No. 413,059
Claims priority, application Germany, Nov. 13, 1972, 2255602
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 **8 Claims**

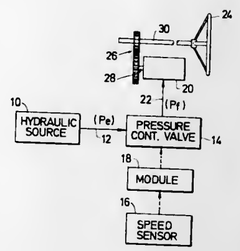


1. In a vehicle having turnable wheels, in an arrangement of the type operative for compensating against forces tending to undesirably move the vehicle laterally, particularly for compensating against side wind forces tending to undesirably move the vehicle laterally, of the type including means for effecting an automatic compensatory turning of said vehicle wheels in a direction and to an extent counteracting the tendency of such forces to undesirably move the vehicle laterally, an arrangement, comprising, in combination, speed-determining means for determining the speed of said vehicle; and compensation-limiting means connected to said speed-determining means and connected to said means for effecting an automatic compensatory turning of said vehicle wheels, and operative for establishing a vehicle-speed-dependent upper limit upon the extent of said automatic compensatory turning of said vehicle wheels.

3,882,954
REACTION TORQUE GENERATOR FOR VEHICLE STEERING SYSTEM

Naohiko Inoue, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Mar. 26, 1974, Ser. No. 454,796
Claims priority, application Japan, Mar. 27, 1973, 48-34133
Int. Cl. B62d *5/00*
U.S. Cl. 180—79.2 **4 Claims**

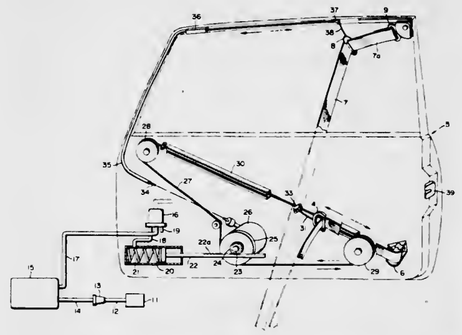


1. A reaction torque generator for a steering system for a vehicle having a manually rotatable steering shaft and source means operative to supply fluid at a pressure which increases with the vehicle speed, said generator comprising:
a casing defining therein a chamber having a first stop formed on the inner surface thereof;
a shaft having a first section rotatable within said chamber and a second section sealingly extending externally through said casing for rotatable engagement with the steering shaft, said first section having a second stop formed thereon and arranged such that the steering shaft is in a position to steer the vehicle in a straight line when said first and second stops are angularly aligned; and
first and second members slidably disposed in said chamber, each being exposed at one end thereof to fluid from the source means, said first member being engagable at its other end with the sides of said first and second stops facing in one direction about the axis of said shaft and said second member being engagable with the sides of said first and second stops facing in the opposite direction about the axis of said shaft to urge said second stop toward angular alignment with said first stop.

3,882,955
SAFETY BELT DEVICE FOR VEHICLES

Yuichiro Kaneko, Nagoyo, and Takfhiko Nishikawa, Inazawa, both of Aichi, Japan, assignors to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho, Aichi-pref., Japan

Filed June 19, 1973, Ser. No. 371,562
Claims priority, application Japan, June 22, 1972, 47-062612; June 22, 1972, 47-062613; June 22, 1972, 47-062614
Int. Cl. B60r *21/10*
U.S. Cl. 180—82 C **4 Claims**



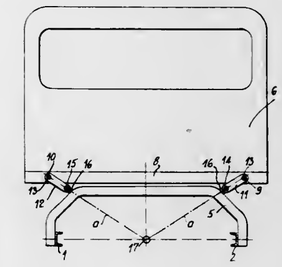
1. A safety belt device for vehicles, comprising a door switch operating when a door is opened and closed, a solenoid valve actuated by the operation of said door switch, vacuum cylinder means connected through said solenoid valve to a vacuum tank which is connected to an intake manifold and including a pistion disposed therein for a reciprocal motion, guide ring means operated by said vacuum cylinder means, and belt means loosely passed through and operated by said guide ring means, said piston being constantly urged to one end of said vacuum cylinder means by a coiled spring and having a free end portion formed with a rack gear which is engaged with a pinion gear fixedly mounted on a drive shaft.

3,882,956
SUSPENSION DEVICE FOR VEHICLE DRIVERS CAB

Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Continuation of Ser. No. 135,230, April 19, 1971, abandoned. This application Mar. 28, 1973, Ser. No. 345,686
Claims priority, application France, June 18, 1970, 70.22489
Int. Cl. B62d *27/06*, *33/06*
U.S. Cl. 180—89 A **4 Claims**

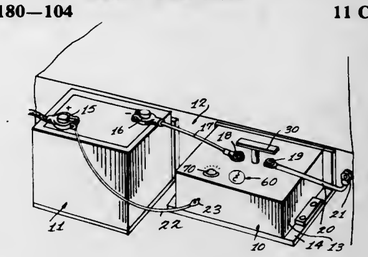
1. A car over engine vehicle comprising a frame including spaced side members interconnected by a front end member and a cross-member spaced rearwardly of said front end member, said frame having a longitudinal axis about which twisting of the frame occurs during movement of the vehicle, and an engine unit supported by said frame between said side members, and a cab mounted on said frame above said engine unit when in operating position, said cab being mounted at its front end of said frame adjacent said front end member, and means mounting the rear end of said cab on said cross-member for constraining said cab and said cross-member to preclude movement therebetween normal to said longitudinal axis while enabling relative angular movement therebetween about said longitudinal axis, said means comprising exclusively a pair of rigid links, one at each side of said frame, supporting said cab in spaced relation above said cross-member, said links connected by pivot means to said cab and to said cross-member for unimpeded relative motion therebetween, the pivots for each link being spaced vertically in the same direction from the longitudinal axis of the frame, and said links being disposed, when the cab is in normal operating position, so that imaginary straight lines passing through the pivot axes of the respective links intersect at the longitudinal axis of the frame so that the rear of the cab can pivot relative to the frame and crossbar about said longitudinal axis to eliminate twisting of the cab as a result of twisting of the frame.



3,882,957
VEHICLE ROLL-OVER PROTECTION DEVICE

Charles H. Fritz, Woodbury Heights, N.J., assignor to SGL Industries, Inc., Haddonfield, N.J.

Filed June 20, 1974, Ser. No. 481,340
Int. Cl. B60r *18/02*
U.S. Cl. 180—104 **11 Claims**



1. An assembly for stopping and preventing a vehicle having an engine compartment and an engine therein from running in the event of vehicle tilt or roll-over, said assembly comprising
a. a system essential for engine operation,
b. a means for selectively interrupting and completing said essential system to thereby respectively stop said vehicle engine operation and allow said vehicle engine operation, said means including (i) a movable member selectively movable into and out of engagement with means within said essential system for respectively completing and interrupting said system, said member normally biased out of engagement with said means within said essential system, (ii) a main solenoid operatively associated with said member for moving said member into and out of engagement with said essential system means (iii) a module, said module comprising a unitary assembly of

a pilot relay operatively associated with said main solenoid

a pilot relay operatively associated with said main solenoid, said pilot relay including an armature operatively connected to relay contact, and first and second solenoids acting in opposition on said armature to move said armature into either a first or a second position respectively, said armature remaining latched in the position to which it is moved until acted upon by the other solenoid,

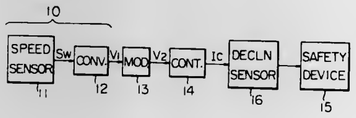
a tilt switch operatively associated with said second solenoid for providing energization of said second solenoid when said vehicle is tilted more than a predetermined amount, said tilt switch always connected to a source of electircal power, and

a plurality of terminals for facilitating electrical connection between said pilot relay and said tilt switch, and between said pilot relay and tilt switch and of the components of said means for selectively interrupting and completing said essential system, and (iv) a 3-position operating switch having "off", "on", and "reset" positions, said operating switch having a contact thereof connected to a source of electrical power, said switch in the "off" position thereof supplying no current from said source to said relay contact, said switch in the "on" position thereof supplying current from said source to said first solenoid.

3,882,958
COLLISION SENSOR FOR MOTOR VEHICLE SAFETY DEVICE

Akio Hosaka, and Kosaku Baba, both of Yokohama, Japan, assignors to Nissan Motor Company Limited, Yokohma City, Japan

Filed Nov. 21, 1972, Ser. No. 308,560
Claims priority, application Japan, Feb. 1, 1972, 47-12824
Int. Cl. B60r *21/02*
U.S. Cl. 180—105 E **9 Claims**



1. A collision sensor for sensing a collision condition of the motor vehicle to actuate a safety device mounted thereon, said sensor comprising:

a normally open switch for actuating said safety device when closed, a weight member of magnetic material for moving said switch to a closed position in response to inertial force of deceleration, magnetic means for producing a magnetic biasing force for normally biasing said weight member in the normally opened position, and

means for varying said magnetic biasing force according to vehicle speed so that said biasing force is reduced as the vehicle speed increases, said means for varying said magnetic biasing force comprising:

means for generating a first signal of a magnitude proportional to the rotational speed of a vehicle wheel;

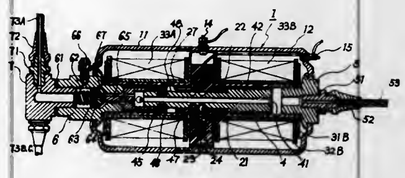
means for generating a second signal responsive to said first signal, the magnitude of said second signal being arranged to follow that of said first signal during an increase and a slow decrease in magnitude of said first signal but to decrease at a predetermined rate during a rapid decrease in magnitude of said first signal;

means for generating a third signal of a magnitude controlled by said second signal, said third signal being received by said magnetic means, for varying said magnetic biasing force, whereby said magnetic member is movable to its switch closing position only at the time the inertial force is of such magnitude as to overcome the magnetic biasing force.

3,882,959
SAFETY DEVICE FOR CAR BRAKE SYSTEM

Ching-Chang Hsieh, Taipei, China /Taiwan, assignor to Safety Drive Industrial Co., Ltd., Taipei, China /Taiwan

Filed Apr. 30, 1973, Ser. No. 355,709
Int. Cl. B60r *25/08*
U.S. Cl. 180—114 **9 Claims**

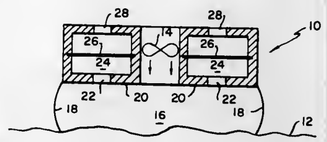


1. An auxiliary safety device for a car brake system comprising a center core of insulation material having a hole therethrough, a plunger slidably disposed longitudinally through the core hole, a pair of coils disposed at each side of the said core operable to give opposite polarities, and a main inlet and a main outlet, said coils be adapted to be selectively energized to produce an electromagnet effect to operate the plunger to open or close a brake fluid flow channel which starts from the main inlet and extends through a center path of the plunger toward the main outlet, said device being operable to detect leakage or loss of brake fluid pressure, reinforce brake power, and protect the car from theft.

3,882,960
RIDE QUALITY CONTROL FOR SURFACE EFFECTS CRAFT

Freddie W. Wilson, Silver Spring; Albert H. Robbins, Severn; Allen G. Ford, Rockville, and Robert A. Wilson, College Park, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1974, Ser. No. 462,013
Int. Cl. B60v *1/16*
U.S. Cl. 180—118 **4 Claims**



1. A system for improving ride quality of surface effect craft having an air cushion volume comprising:

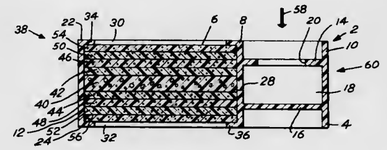
means for automatically varying the volume of the air cushion volume to minimize cushion pressure flucuations and attenuate vertical accelerations when surface irregularities are encountered; and

air flow modulating vent holes coacting with said means for automatically varying the volume of the air cushion volume.

3,882,961
MUFFLER FOR VACUUM-INDUCING MOTOR

Bernard M. Cannan, Downers Grove, and Daniel A. DeBoo, West Chicago, both of Ill., assignors to Servicemaster Industries Inc., Downers Grove, Ill.

Filed Apr. 1, 1974, Ser. No. 456,541
Int. Cl. F01m *1/10*
U.S. Cl. 181—50 **11 Claims**



1. An air-filtering, sound-attenuating muffler for a vacuum-inducing motor comprising, in combination:

an attenuator box having an inlet and an outlet, said inlet being in direct communication with said motor for receiving a flow of air from said motor, said attenuator box defining a muffler cavity;

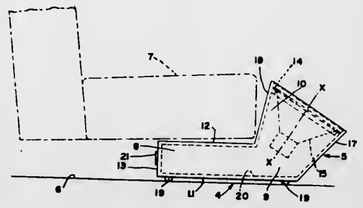
a muffler filler within said muffler cavity, said muffler filler including a series of reticulated foam layers of varying pore densities, said layers being arranged in order of increasing pore density, a first layer having the lowest pore density; and

air control means for directing said flow of air from said inlet into said first layer of said muffler material and through said series of layers and said outlet, whereby the noise produced by said motor and carried by said air is substantially absorbed and attenuated by said muffler.

3,882,962
LOUDSPEAKER EQUIPMENT

Warren Ripple, 2839 Sterling La., Sarasota, Fla. 33581

Filed Oct. 3, 1973, Ser. No. 402,975
Int. Cl. H04r *1/28;* **G10k** *13/00*
U.S. Cl. 181—154 **3 Claims**

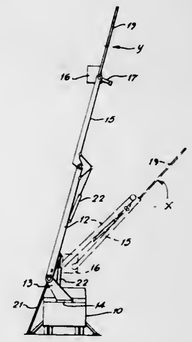


1. Loudspeaker equipment comprising a speaker and a speaker enclosure, the enclosure having enclosure walls including walls defining a speaker chamber one end of which is generally rectangular and of relatively small vertical dimension in relation to its length and is adapted to be accommodated under an automobile seat, the upper and lower enclosure walls diverging to define an enlargement of the chamber at the other end thereof of relatively large dimension and having an opening presented upwardly and forwardly with respect to the automobile seat, and an apertured wall element in said opening with the speaker mounted thereon and exposed through the aperture in the wall and with its axis presented upwardly and forwardly with respect to the automobile seat.

3,882,963
ACCESS EQUIPMENT

Denis Henry Ashworth, Dudley, England, assignor to Simon Engineering Dudley Limited, Stockport, Cheshire, England

Filed June 17, 1974, Ser. No. 480,249
Claims priority, application United Kingdom, June 27, 1973, 30699/73
Int. Cl. B66f *11/04;* **E06c** *5/04*
U.S. Cl. 182—2 **15 Claims**

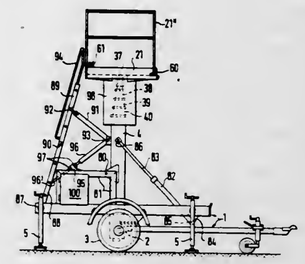


1. Access equipment including an articulated boom structure pivotally mounted at one end on a supporting structure for manipulation relative thereto, and comprising a plurality of articulated booms each of which is equipped with ladder means extending along its length, there being further ladder means telescopically extendible from either end of the outermost boom of the boom structure.

3,882,964
MOBILE LEVER ARRANGEMENT

Heinz Schellenberg, Bahnhofstrasse 31, Wetzikon, Switzerland

Filed Apr. 3, 1973, Ser. No. 347,441
Claims priority, application Switzerland, Apr. 6, 1972, 5082/72; Apr. 6, 1972, 5083/72
Int. Cl. E04g *1/22*
U.S. Cl. 182—63 **19 Claims**



1. A mobile lifter arrangement comprising:

a telescope assembly including a plurality of concentric telescoping tubes;

an undercarriage connected to the outermost said tube;

means for pivotally supporting said telescope assembly on said undercarriage for pivotable movement about a first axis extending transversely of said telescope assembly;

lifting means for effecting pivotation of said tubes about said first axis between raised and lowered positions;

a platform supported by said telescope assembly;

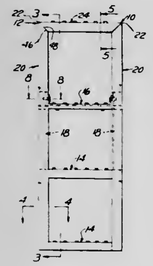
a railing structure around said platform;

pivot means connecting said railing structure to said platform for allowing pivotation of said railing structure relative to said platform about a second axis adjacent and

substantially parallel to one edge of said platform, whereby when said tubes are in their lowered position as aforesaid, said railing structure is pivotable about said second axis onto said undercarriage; and

means for releasably securing said railing structure to said undercarriage.

3,882,965
TRUCK LADDER
Charles M. Loomis, R No. 3, Box 92, and Gerald M. Loomis, 1017 N. Ninth St., both of Arkansas City, Kans. 67005
Filed Oct. 12, 1973, Ser. No. 405,826
Int. Cl. E06c *5/02*
U.S. Cl. 182—93 **6 Claims**



1. A truck ladder adapted to be mounted on a truck body, said ladder comprising

a border frame structure composed of inwardly-facing channel members and including a pair of elongated vertical channel side members disposed in laterally-spaced parallel relationship and a channel top step member interconnecting the upper ends of said side members;

and a plurality of fixed step members extending between and secured to said side members in vertically-spaced parallel relationship and having opposite end portions extending into the interiors of said channel side members, said channel top member being integral with said channel members and said channel top member and said channel side members having opposite side walls terminating in upper ends with meeting edges disposed obliquely to said members,

said obliquely-disposed meeting edges being fixedly secured to one another therealong.

3,882,966
LADDER ADAPTER DEVICE
Osvaldo Fasano, Villarbasse, Italy, assignor to Giosue Migliavacca, Origgio, Italy
Filed Sept. 13, 1974, Ser. No. 505,552
Claims priority, application Italy, Sept. 10, 1974, 69799/73
Int. Cl. E06c *7/44*
U.S. Cl. 182—205 **9 Claims**

1. An adapter device for a ladder having two uprights and a plurality of rungs, the device comprising:

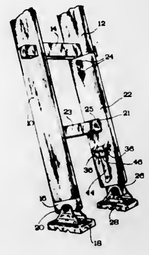
a tubular guide adapted to be rigidly connected to an upright of the ladder;

a pawl pivotally mounted on the guide;

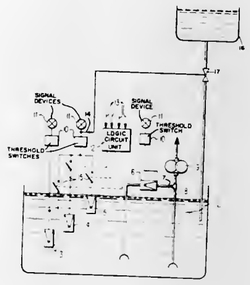
a hollow slide received in the guide and having a longitudinal slot through which the pawl can penetrate the slide;

a rack rigidly connected to an inner surface of the hollow slide and bearing teeth opposite the slot;

the pawl being operable to engage a tooth of the rack to resist forces tending to move the guide with respect to the slide in a predetermined direction.

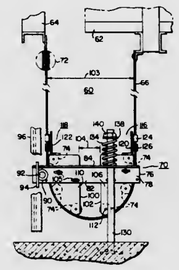


3,882,967
DEVICE FOR LEVEL AND/OR TEMPERATURE CONTROL OF LIQUIDS
Peter Gulla, Grossheppach, and Dieter Schützenauer, Schorndorf, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany
Filed Jan. 15, 1973, Ser. No. 323,416
Claims priority, application Germany, Jan. 15, 1972, 2201910
Int. Cl. F01m *11/06, 11/12*
U.S. Cl. 184—103 R **27 Claims**



1. An installation for the level and/or temperature control of liquids in vehicles with the use of temperature dependent resistance means, comprising a plurality of sensor means, each of said sensor means including said resistance means being arranged at predetermined points in the liquid to be controlled which is contained in a vehicle container, at least one electronic threshold switching means, control means responsive to at least operating level and/or temperature parameters of the vehicle for selectively closing switching means for connecting at least one of said sensor means with at least one of said electronic threshold switching means in accordance with predetermined input signal values of the operating parameters for ensuring that an unequivocal signal indicative of level and/or temperature of the liquid is produced by said connected sensor means via said electronic threshold switching means for application to an indicating means and/or controlling means under all operating signal valve parameters of the vehicle irrespective of whether the engine is running or the position of the vehicle.

3,882,968
ELEVATOR SYSTEM
John Suozzo, Hackensack, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 1, 1973, Ser. No. 366,234
Int. Cl. B66b *11/08*
U.S. Cl. 187—22 **5 Claims**



1. An elevator system comprising:

an elevator car;

a counterweight,

motive means mounted above said car and counterweight, hoisting roping disposed in frictional contact with said motive means and interconnecting said car and counterweight; said car and counterweight being moved vertically responsive to said motive means, with said hoisting roping adding weight to said car and counterweight responsive to their relative positions;

compensating means, said compensating means including at least one metallic strip extending from said car to said counterweight in a loop disposed below said car and counterweight, said at least one metallic strip being dimensioned to provide a predetermined weight per unit length selected to substantially reduce the weight unbalance between said car and counterweight caused by said hoisting roping as the relative positions of said car and counterweight change,

tensioning means disposed below the elevator car and counterweight for tensioning and guiding the at least one metallic loop, said tensioning means including support means,

a plurality of first rollers, means mounting said first rollers in spaced relation on said support means, with the at least one metallic strip disposed to contact said first rollers,

bias means for biasing said support means to tension the at least one metallic strip,

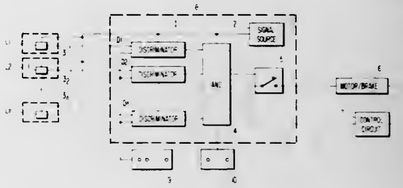
and a plurality of second rollers disposed to contact the edges of the at least one metallic strip and guide the at least one metallic strip as it enters and leaves the first rollers.

3,882,969
SAFETY SYSTEM FOR CONTROLLING THE START-UP OF ELEVATORS
Abelardo Podcameni, Rua Raimundo Correia 71/801; Aldo Alves Goncalves, Vila Rialma 156/101, and Sebastiao Kirk, Av. Atlantica 478/308, all of Rio de Janeiro, Brazil
Filed June 14, 1973, Ser. No. 370,186
Claims priority, application Brazil, June 14, 1972, 3809
Int. Cl. B66b *5/00*
U.S. Cl. 187—29 R **6 Claims**

1. In an elevator system including a vertical shaft extending through a plurality of building floors and having a shaft opening at each floor to permit passenger access, door means at each floor for closing the respective shaft openings, an elevator cab suspended in the shaft for bidirectional vertical movement therein, control means, and drive motor/brake means for moving the cab in response to the control means, an improved safety circuit comprising:

a. a plurality of electro-mechanical lock means individually and operatively associated with each door means,

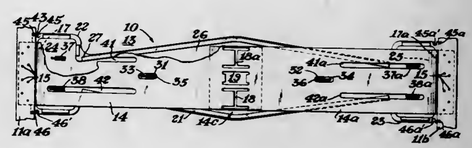
b. means for supplying an electrical signal to each of the lock means, the same signal being supplied to each of the lock means and said signal having substantially constant identifying characteristics,



c. a plurality of signal modification means individually included in each lock means for modifying at least one of the signal identifying characteristics in response to the closure of the associated door means, and

d. means for detecting the modification of all of the electrical signals and for enabling the operation of the drive motor/brake means in response thereto.

3,882,970
IMPACT ABSORBING STRUCTURE
Ritchey O. Newman, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Oct. 15, 1973, Ser. No. 406,712
Int. Cl. F16f *7/12*
U.S. Cl. 188—1 C **6 Claims**



1. A structure which is subject to impact, the structure having

at least a supporting frame, the supporting frame enclosing therein

a region of probable impact,

first and

second frame portions generally oppositely disposed and having therebetween

the region of probable impact,

at least one deformable strap means disposed against and affixed to each frame portion,

a beam member extending generally between the frame portions generally adjacent said straps, the beam member terminating in curved friction surfaces, and

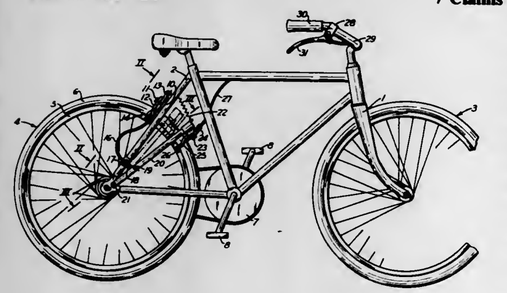
at least one strap movement resisting means in engagement with said strap permitting sliding motion of the said strap over said beam curved friction surfaces and offering a generally predetermined resistance to movement of the strap over the beam.

3,882,971

3,882,971
BICYCLE POWER BRAKE

Victor A. Peckham, Jr., 1151 Fifth St., Manhattan Beach, Calif. 90266

Filed Mar. 13, 1974, Ser. No. 450,886
Int. Cl. B62l 1/12
U.S. Cl. 188—24 7 Claims

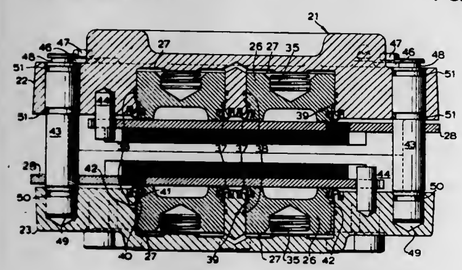


1. In a bicycle having a frame with a fork supported by a wheel rotatably mounted therein, a brake mounted on said fork and straddling the peripheral portion of the wheel, an arm beside the wheel extending substantially radially thereof with its outer end located forward of said brake, means pivotally connecting the inner end of the arm with said fork adjacent the axis of the wheel to allow the outer end of the arm to swing forward and backward in an arc, a floating clamp straddling the peripheral portion of the wheel in front of the brake and normally disengaged from the wheel, means mounting the entire clamp on the outer end of said arm, the arm forming the sole support for the clamp, manually operable means connected with the clamp for clamping it against the forwardly rotating wheel so that the outer end of said arm will be swung forward by the wheel, a brake-actuating wire having one end connected to said brake, and means connecting the opposite end of the wire to said arm adjacent its inner end for applying the brake to the wheel when said arm is swung forward.

3,882,972
DISC BRAKE WITH IDENTICAL REMOVABLE FRICTION PADS

Charles Newstead, Walsall, and Andrew Charles Walden Wright, Lapworth, both of England, assignors to Girling Limited, Birmingham, England

Filed June 20, 1972, Ser. No. 264,533
Claims priority, application United Kingdom, June 22, 1971, 29295/71
Int. Cl. F16d 55/228
U.S. Cl. 188—72.5 7 Claims

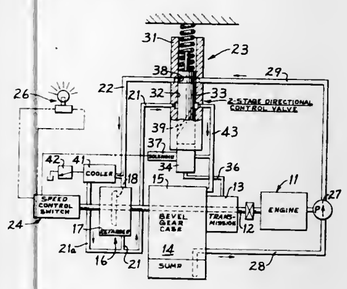


1. A disc brake assembly for co-operation with a brake disc mounted co-axially with, and on one side of a road wheel, the assembly comprising a fixed housing having two parts with a gap between the parts for the passage of the periphery of the disc, the housing being symmetrical about its mid-plane which includes the axis of rotation of the disc, a pair of identical arcuate friction pads moveable relative to the housing and having friction linings which face each other and are arranged to abut on opposite faces of the disc, each pad having leading and trailing ends in relation to one direction of rotation of the disc and having a single lug-like projection intended to extend outside the diameter of the disc at one end and a slot at the other, since the pads are arranged so that the linings face each other the lug-like projections of the pads will lie one at a leading end and one at a trailing end of its respective pad, a pair of removable drag-taking pins each engaged in holes provided therefor in both parts of the housing outside the periphery of a disc and in a hole in one of said lug-like projections, a pair of pins engaged each in a single part of the housing within the diameter of the disc and projecting from the respective part into the slot of the respective pad but remaining clear of the intended position of the disc, and means in said housing for urging the pads towards each other the arrangement of the drag-taking pins and the respective holes in the housing parts being such that the drag-taking pins are insertable and removable from that side of the housing which is remote from the road wheel.

3,882,973
AUTOMATIC RETARDER CONTROL SYSTEM

Gary A. Hakes, Peoria Heights, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Continuation of Ser. No. 273,183, July 19, 1972, abandoned.
This application Aug. 9, 1973, Ser. No. 387,159
Int. Cl. B60t 8/12
U.S. Cl. 188—181 R 1 Claim

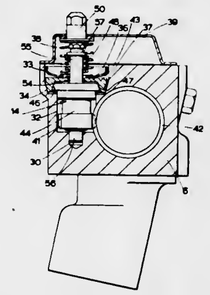


1. A retarder system for a vehicular drive train including a transmission gear ratio means having a power input shaft coupled with a prime mover and a power output means for driving the vehicle, comprising
a retarder of maximum power absorption capacity having a rotor means coupled for rotation with the power input shaft, the retarder also having an inlet conduit and an outlet conduit,
a bypass conduit communicating the retarder inlet and outlet conduits,
a heat exchanger in the bypass conduit and including a relief valve for selectively communicating the heat exchanger with a fluid sump,
speed sensing means associated with a rotating part in the drive train,
a valve coupled for response to the speed sensing means, the valve being responsive to the speed sensing means for movement to a first power absorption position for communicating the source with the retarder inlet conduit, fluid from the source flowing through the retarder, the heat exchanger and the relief valve included therein, and for movement to another position for communicating the source with the retarder outlet conduit and also for communicating the retarder inlet conduit with a fluid sump in order to substantially bypass the retarder while directing fluid through the heat exchanger and maintaining reduced fluid flow through the retarder for cooling and lubrication, and
signal means operatively coupled with the retarder to indicate when its maximum capacity is being employed.

3,882,974
AUTOMATIC SLACK ADJUSTER FOR A VEHICLE BRAKE

Albert Charles Hill, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Dec. 7, 1973, Ser. No. 422,967
Claims priority, application United Kingdom, Jan. 23, 1973, 3304/73
Int. Cl. F16d 65/56
U.S. Cl. 188—196 D 11 Claims



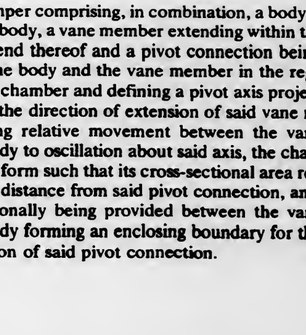
1. An automatic slack adjuster for a vehicle brake having a friction member, and a rotatable braking member with which said friction member is adapted to engage, said slack adjuster comprising a strut assembly having a first part, a second part, and a non-reversible screw-threaded connection between said first and second parts, rotatable adjusting means for rotating said parts relatively to each other to increase the effective length of said strut assembly to maintain at a substantially constant value braking clearance between said friction member and said braking member, a first helical gear on one of said first and second parts, a second helical gear on said adjusting means in mesh at all times with said first helical gear, and means defining between said gears a degree of back-lash of a predetermined value equal to said braking clearance and a normal brake applying movement, said adjusting means normally being located in a first datum position but rotatable into a second datum position only when movement of said strut assembly in a brake applying direction exceeds a said predetermined value to take up said back-lash, whereafter movement of said strut assembly in an opposite direction first takes up the back-lash and then said gears engage to cause the said one part to rotate with respect to said adjusting means which is held fast, and with respect to the other part thereby increasing the effective length of said strut assembly.

3,882,975
BRAKE AND MOUNTING STRUCTURE FOR NONDRIVEN VEHICLE WHEEL

Rudolf Jedlitschka, and Manfred Goeft, both of Friedrichshafen, Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed Mar. 26, 1973, Ser. No. 345,175
Int. Cl. F16d 63/00
U.S. Cl. 188—271 4 Claims

1. A vehicular wheel mounting comprising:
an axle fixedly secured to the body of a vehicle;
supporting means secured to an extremity of said axle;
a retarder including a stationary member carried on said supporting means, a shaft in line with said axle rotatably mounted on said supporting means, and a movable member mounted on said shaft adjacent said stationary member;
a sleeve forming a fixed extension of said supporting means beyond said retarder, said shaft being journaled in said sleeve and projecting therefrom with a free end;

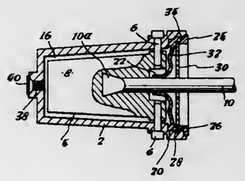


a hollow hub rigid with a wheel rim rotatably journaled on said sleeve, said hub forming a gear housing around said free end and a substantially cylindrical extension of said gear housing immediately surrounding said retarder; and
a planetary-gear train in said gear housing said gear train including a planet carrier integral with said hub, a sun gear on said free end and a ring gear fixedly secured to said sleeve.

3,882,976
ARCUATELY OSCILLATING DAMPER

Alan Richard Brine Nash, 39, Abbott's Ride, Farnham, England

Filed Feb. 15, 1973, Ser. No. 332,588
Claims priority, application United Kingdom, Feb. 18, 1972, 7619/72
Int. Cl. F16d 57/02
U.S. Cl. 188—306 10 Claims

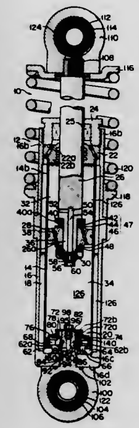


1. A damper comprising, in combination, a body, a chamber within the body, a vane member extending within the chamber from one end thereof and a pivot connection being provided between the body and the vane member in the region of said end of the chamber and defining a pivot axis projecting transversely to the direction of extension of said vane member for constraining relative movement between the vane member and the body to oscillation about said axis, the chamber being of tapered form such that its cross-sectional area reduces with increasing distance from said pivot connection, and a flexible seal additionally being provided between the vane member and the body forming an enclosing boundary for the chamber in the region of said pivot connection.

3,882,977
HYDRAULIC SHOCK ABSORBER

Masae Watanabe, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iawata-shi, Shizuoka-ken, Japan

Filed Apr. 24, 1973, Ser. No. 353,988
Claims priority, application Japan, Apr. 25, 1972, 47-48926
Int. Cl. F16f 9/19
U.S. Cl. 188—322 7 Claims

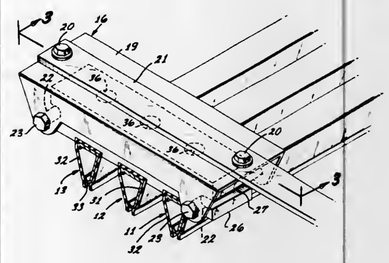


5. A hydraulic shock absorber including:
a cylinder assembly;
a sealing head fixed to one end of the cylinder assembly;
a piston reciprocatingly inserted into the cylinder assembly;
a foot-valve assembly housed in the cylinder assembly near the other end thereof;
a piston rod secured to the piston and passing through the sealing head;
a first chamber defined by the cylinder assembly, piston and sealing head;
a second chamber defined by the cylinder assembly, piston and foot-valve assembly;
a third chamber defined by the cylinder assembly, foot-valve assembly and the other end of the cylinder assembly;
damping oil filled in the first, second and third chambers;
a first by-pass extending through the piston from one end of the piston rod adjacent to the second chamber to an intermediate portion of the piston rod so as to effect communication between the first and second chambers;
a first jet detachably mounted on said one end of the piston rod so as to communicate with one end of the first by-pass adjacent to the second chamber;
the foot-valve assembly being provided with a through hole disposed axial with the first jet and communicating at the respective ends thereof with the second and third chambers, said through hole having a larger diameter than the outer diameter of the first jet;
a second by-pass for effecting communication between the second and third chambers;
mounting means provided in the foot-valve assembly for inserting the second by-pass in the through hole;
the cylinder assembly being provided in the other end with an opening which has a larger diameter than the outer diameter of the first jet and the mounting means and is substantially coaxial with the first jet and through hole; and
a second jet mounted in said mounting means so as to communicate with one end of the second by-pass, whereby the mounting means is drawn out of the cylinder assembly together with the second jet through the opening, and thereafter the first jet is drawn out of the cylinder assembly through the through hole and opening.

3,882,978
TROLLEY MULTI-CONDUCTOR SYSTEM

Arthur M. Cookston, 1340 Watson Ave., Costa Mesa, Calif. 92626

Filed May 3, 1974, Ser. No. 466,811
Int. Cl. B60m 1/30
U.S. Cl. 191—32 13 Claims

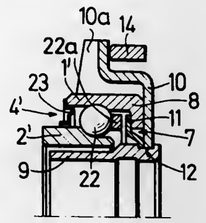


1. An overhead support for a multi-conductor trolley system comprising:
a plurality of conductor sections, each having an insulation sheath substantially covering each respective section;
each of said sheaths having an axially parallel slit formed thereon;
a pair of insulating bar means, each fixed in spaced apart relationship to each one of said conductor sections, so that said conductor sections are disposed substantially parallel and the open slit of each sheath is disposed opposite said bar means, forming a conductor sub-assembly unit;
at least two mounting means, each fixed in spaced apart relationship and disposed overhead;
each of said bar means and the respective ones of said mounting means, each including securing means for securing the two together.

3,882,979
SELF-ALIGNING CLUTCH RELEASE BEARING ARRANGEMENT

Bernhard Limbacher, and Kurt Fadler, both of Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed June 14, 1973, Ser. No. 370,044
Claims priority, application Germany, June 24, 1972, 2230992
Int. Cl. F16d 19/00, 23/00, 13/60
U.S. Cl. 192—98 14 Claims



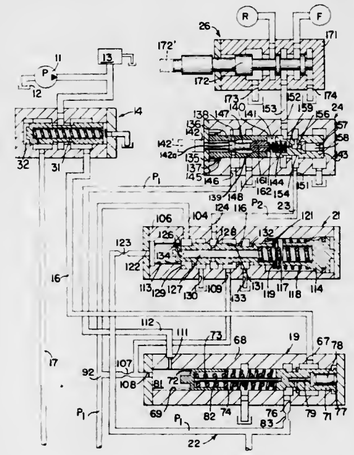
1. A clutch release bearing arrangement comprising:
a. a first bearing ring having a first axis;
b. a second bearing ring;
c. a plurality of bearing elements of circular cross section angularly distributed about said axis and radially interposed between said bearing rings in simultaneous rolling engagement for rotation of said second bearing ring about said axis,

1. said second bearing ring having an exposed abutment face extending radially relative to said axis,
d. a carrier member having a second axis,
1. said second bearing ring rotatably enveloping said carrier member with sufficient radial clearance for permitting joint radial movement of said bearing rings toward and away from a position in which said first and second axes coincide,
2. respective portions of said first bearing ring and of said carrier member being axially coextensive and axially projecting beyond said second bearing ring in radially spaced relationship;
e. groove bounding means on one of said portions bounding an annular groove about said axes in two opposite axial directions when said axes coincide, said groove being radially open toward the other one of said portions; and
f. a flange radially projecting from said other portion and being received in said groove with sufficient axial clearance to guide said joint movement of said bearing members.

3,882,980
TRANSMISSION CONTROL SYSTEM WITH DUAL PURPOSE MODULATING

William Wayne Blake, Wyoming, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Apr. 27, 1973, Ser. No. 355,191
Int. Cl. B60k 21/00
U.S. Cl. 192—3.57 14 Claims

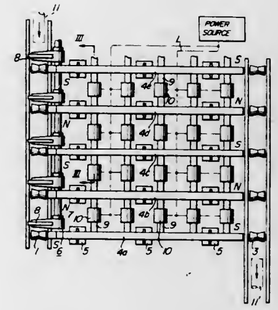


4. A hydraulic transmission control circuit for selectively actuating at least one of a plurality of speed ratio clutches with hydraulic fluid at a first pressure and for selectively actuating one of a plurality of directional clutches at a second differential pressure, comprising
a fluid source,
a speed ratio selector valve means for communicating fluid at the first pressure to one of the speed ratio clutches,
a directional selector valve for communicating fluid at the second differential pressure to one of the directional clutches,
a differential valve in communication with the fluid source, the differential valve including means to communicate hydraulic fluid at the second differential pressure to the directional selector valve,
a first pressure modulating valve in communication with the source and the differential valve for modulating hydraulic fluid at the first pressure, and
a manually controlled modulating valve arranged to communicate fluid at the differential pressure from the differential valve to the directional selector valve, the manually controlled modulating valve including means for selectively modulating the second differential pressure in two discreet operating modes in order to provide more precise regulating of clutch engagement under different operating conditions, said two discreet operating modes being characterized by the selective modulating means in the manual modulating valve being operable to vary the second differential pressure at two different rates of modulation in order to selectively regulate the degree of engagement in the directional clutches,
the manually controlled modulating valve further comprising relief means in operative communication with the first pressure modulating valve to selectively reduce the first fluid pressure during selective modulation of the second differential pressure by the manually controlled modulating valve.

3,882,981
SILENCING MEANS FOR STEEL PIPE PRODUCTION LINES

Akio Izumidate, Kitakyushu, and Susumu Itoh, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 16, 1972, Ser. No. 253,756
Claims priority, application Japan, May 17, 1971, 46-33487; Nov. 24, 1971, 46-93615; Nov. 24, 1971, 46-93616
Int. Cl. B65g 11/20
U.S. Cl. 193—40 20 Claims

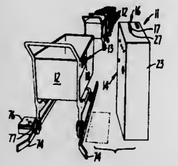


1. A silencing means for use in steel pipe production line skid stations, said means comprising a plurality of skid rails for rolling a plurality of steel pipes, said rails being spaced from one another and inclined downwardly from a steel pipe feed-in end to a feed-out end, in use the steel pipes being fed to said steel pipe feed-in end one after another, said skid rails being provided with a plurality of non-magnetic regions dividing each said skid rail into a plurality of magnetic regions, magnetic bodies magnetically coupling corresponding magnetic regions of adjacent skid rails, exciting coils for providing predetermined magnetic flux extending in magnetic circuits each formed by the associated magnetic body, one of said steel pipes, and the magnetic regions of said adjacent skid rails, and means for continuously energizing said exciting coils such that said skid rails assume opposite magnetic polarities on opposite sides of each of said non-magnetic regions.

3,882,982
METHOD AND APPARATUS FOR ENCOURAGING RETURN OF SHOPPING CARTS

Robert M. Smith, Daly City, Calif., assignor to Charles Cara, San Francisco, Calif., a part interest

Filed Mar. 7, 1969, Ser. No. 805,200
Int. Cl. G07f 1/06
U.S. Cl. 194—4 C 8 Claims



1. A device for detecting movement of shopping carts through a location on a passageway and dispensing an article in response to said movement, comprising

an indicia carried on each of the shopping carts to be detected,

a detector for detecting movement of shopping carts carrying said indicia through said location,

said detector comprising

a light source positioned to provide reflective light from said indicia in a form discriminating from ambient light emanating from said location,

a photosensitive cell located in position to receive said reflective light and be selectively responsive to the light reflected from said indicia, and

an electric circuit including said photosensitive cell and switch means operated by said cell, and

a dispenser operatively associated with said circuit and its switch means for dispensing an award medium in response to the operation of the detector caused by movement of a shopping cart carrying said indicia through said location,

said dispenser being located a sufficient distance from the detector that a person pushing the shopping cart through the detector location cannot reach the article dispensed without continuing along the passageway beyond the operative location.

3,882,983
LOCK

Donald H. Smith, Crystal, and Walter H. Krueger, Wilmette, both of Ill., assignors to Walter H. Krueger, Wilmette, Ill.

Filed June 27, 1974, Ser. No. 483,787
Int. Cl. G07f 5/26
U.S. Cl. 194—51 4 Claims

1. A coin operated, key actuated lock wherein the key is retained in unlocked position and released in locked position, the improvement comprising:

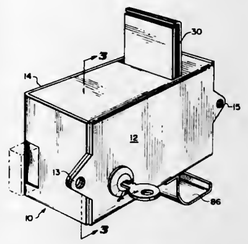
a. a housing having front, back, top, side and bottom walls;

b. a vertically-extending coin chute mounted to said top wall and extending upwardly from said wall and interiorly in said housing and terminating short of said bottom wall;

c. a toggle catch having an inverted U-shaped member and an integrally-formed arm on said member extending at right angles thereto, the free end of said arm terminating partially interiorly in said chute, said arm pivotally secured adjacent said chute;

d. an integrally-formed slide bolt, cam block, blocking post and coin retention plate adapted to be shifted laterally as one piece;

e. said inverted U-shaped member seated on said blocking post to retain said bolt in inactivated position;



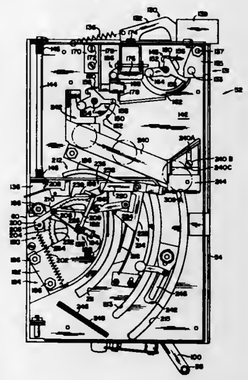
f. tumbler means on said front wall having a removable key, said key and tumbler means actuatable only when a coin is in said chute; and

g. cam pin means on said tumbler means seated in said cam block whereby, when a coin is inserted in the chute, it will impinge upon the free end of said arm to pivot said inverted U-shaped member upwardly about said pivot and release the blocking post to activate said lock.

3,882,984
COIN MECHANISM TOTALIZER

Karl Knickerbocker, 400 Baycrest Dr., Venice, Fla. 33595

Filed Sept. 10, 1973, Ser. No. 396,070
Int. Cl. G07f 5/08
U.S. Cl. 194—94 16 Claims



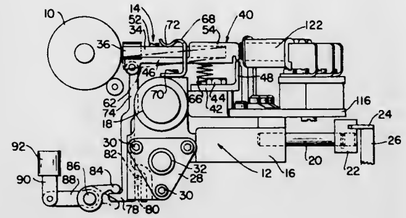
1. A coin controlled mechanism for use in combination with a dispensing machine including an access door having a latch means attached thereto to control the opening of the access door to permit dispensing of products from the dispensing machine upon receipt of the correct amount of coins in said coin controlled mechanism, said coin controlled mechanism comprising actuator means and coin chute means, said actuator means including latch control means disposed to engage the latch means of the dispensing machine, said latch control

means movable between a dispensing and non-dispensing position, said actuator means also including a totalizer operator means a totalizer register means operatively interconnected to one another, said totalizer operative means disposed to engage said latch control means to control movement of said latch control means from said non-dispensing to said dispensing position, totalizer control means including register actuator means said register actuator means movable betweeen a first and second position in response to coins passing through said coin chute means, said register actuator means disposed to selectively engage said totalizer register means to control movement thereof in response to coins passing through said coin chute means and register control means comprising at least one register actuator stop means disposed to engage said register actuator means to control the movement thereof, said coin chute means comprising a plurality of coin passage to control the direction of coins inserted therein with respect to at least the dimension of the coin inserted therein, said register actuator means disposed to engage coins inserted into said coin chute means to at least partially control movement thereof, said register actuator means being disposed relative to said totalizer register means and said register actuator stop means to simultaneously engage said totalizer register means and said register actuator stop means when in said second position in response to coins passing through each respective coin passage to selectively control the extent of movement of said totalizer register means relative to said latch control means whereby said totalizer means advances incrementally to permit movement of said latch control means to said dispensing position when the proper combination of coins registered by said totalizer means register means.

3,882,985
TILTABLE MATRIX PRINT HEAD TO PERMIT VIEWING OF THE CHARACTERS

George N. Liles, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed July 23, 1973, Ser. No. 381,974
Int. Cl. B41j 3/04
U.S. Cl. 197—1 R 8 Claims



1. In a wire matrix printer having a platen, a carriage means, and traversing means for traversing said carriage means along a line of printing on said platen, the improvement comprising:

a wire guide housing having a front end located adjacent to said platen, and a rear end;

mounting means for pivotally mounting said housing at said rear end to said carriage means to enable the housing to be pivoted between a first position in which said front end is aligned with said line of printing and a second position in which said front end dips below said line of printing to enable said line of printing to be viewed;

wire plungers slidably mounted in said housing;

plunger actuator means connected to said wire plungers and said carriage means to actuate said plungers to print in response to a control means;

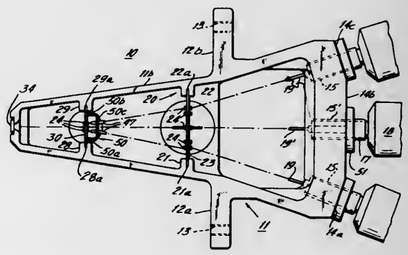
said wire plungers each having one end extending from said rear end, in a straight line and lying in a plane which is parallel to said line of printing, and being secured to said plunger actuator means;

pivoting means to pivot said front end of said housing between said first and second positions to pivot only said housing and the plungers therein to provide a low inertia print head in which the housing and the wire plungers therein pivot relative to said carriage means between said first and second positions, but said actuator means remain fixed relative to said carriage means.

3,882,986
JEWEL BEARINGS FOR PRINTER HEADS AND THE LIKE

Robert Howard, Roslyn, N.Y., assignor to Centronics Data Computer Corporation, Hudson, N.H.

Division of Ser. No. 179,627, Sept. 13, 1971, Pat. No. 3,802,543. This application Feb. 11, 1974, Ser. No. 441,467
Int. Cl. B41j 3/06
U.S. Cl. 197—1 R 9 Claims



1. A movable unitary printer head assembly for use in impact printers of the dot matrix type comprising:

a housing having front and rear walls joined by a pair of side walls and a floor defining a hollow interior;

a plurality of print wire driving means secured to said rear walls;

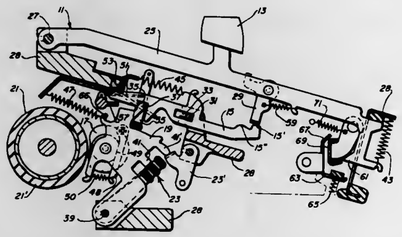
each of said driving means including a print wire extending through said housing rear wall with their forward free ends extending through said hollow interior and terminating adjacent said front wall;

spacing means secured within said front wall for maintaining the free ends of said print wires in a predetermined alignment;

first and second print wire positioning and guiding assemblies mounted in a stationary fashion at spaced intervals within said housing and adjacent said front and rear walls respectively;

jewel bearing means secured to said guiding assemblies and having openings each adapted to receive an associated print wire therethrough for substantially restraining transverse movement of the print wires and maintaining a plurality of said print wires in a predetermined pattern to retain the gradual curvature assumed by the print wires between said front and rear walls while significantly reducing wear of said wires even after long and repeated high speed operation and use, each of said guiding assemblies being further comprised of hollow curved guide tubes having a toroidal shaped jewel member secured to one end of each guide tube; said guide tubes being secured to each of said spacing means.

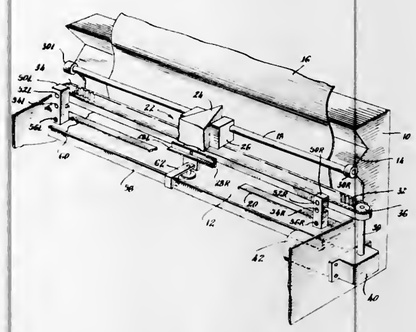
3,882,987
SINGLE ELEMENT TYPE ACTION ARRANGEMENT
Manfred Link, Nurnberg, Germany, assignor to Triumph Werke Nurnberg A.G., Nurnberg, Germany
Filed Feb. 25, 1974, Ser. No. 445,561
Claims priority, application Germany, Mar. 2, 1973, 2310593
Int. Cl. B41j *5/22*
U.S. Cl. 197—16 **7 Claims**



1. In a printer having a single print element with a plurality of different type characters at different positions, the combination comprising:
- a plurality of character selection members supported for movement to determine the orientation of the single print element,
- a drive lever associated with one of the different type characters on the single print element and having means for engaging and moving selected character selection members,
- said drive lever being pivotally supported about an axis for movement from a rest position toward and for effecting movement of said character selectioh members,
- a first resilient biasing means for urging said drive lever toward said rest position and beyond,
- a control lever supported for movement about a pivot point and having a portion for normally engaging said drive lever and establishing said rest position thereof,
- a second resilient biasing means for urging said control lever toward engagement with said drive lever,
- a continuously rotatable power roll,
- a drive cam rotatably supported on said drive lever for being cyclically rotatably frictionally driven when engaged with said power roll to move said drive lever toward and to effect movement of said character selection members to a single print element orienting position, to maintain said orienting position for a time to permit printing of a selected character, and to permit return movement of said drive lever toward said rest position, and
- keylever means depressible to a first limit position for pivoting said control lever to a release position against the urging of said second resilient biasing means to release and enable movement of said drive lever beyond said rest position under the urging of said first resilient biasing means thereby to bring said drive cam into frictional engagement with said power roll.

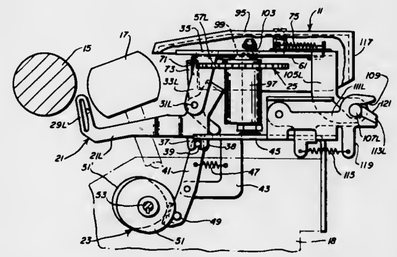
3,882,988
MECHANISM FOR BI-DIRECTIONALLY DRIVING A PRINT HEAD
Charles T. Sloan, Cheshire, and Nicholas V. Zaccagnino, Stamford, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Aug. 6, 1973, Ser. No. 386,077
Int. Cl. B41j *19/70*
U.S. Cl. 197—66 **21 Claims**

1. In a line printer adapted for printing a material on the fly, a mechanism for bi-directionally driving a print head across a print line with the print head being operated to provide a plurality of successive print strokes in a print line when the print head is driven in at least a first direction, said mechanism comprising:
- a bi-directional motor adapted to be continuously energized in one direction for continuously running in one direction and continuously energized in another direction for continuously running in another direction;
- means for coupling said motor to said print head, said means for coupling being operative to continuously drive said print head in said first direction when said motor is running in one direction and being operative to continuously drive the print head in the opposite direction when the motor is running in the other direction;
- means moved with said print head for controlling each print stroke in accordance with the print head position to apply print to said material while said print head is driven in said first direction;
- means operative when a print operation is to be performed for starting said motor running continuously in said one direction to continuously drive said print head in said first direction with said print head operated to provide a plurality of successive print strokes;



- first detecting means operated while said print head is driven in said first direction and after said print head is operated to provide a plurality of successive print strokes in a print line for detecting said print head reaching a predetermined point of a print line when said print head is driven in said first direction;
- means operated responsive to the operation of said first detecting means for continuously energizing said motor in said other direction to brake said motor and then continuously run said motor in said other direction, while the inertia of the print head carryies said print head a distance in said first direction past said predetermined point before said print head stops and is thereafter continuously driven in said opposite direction by said motor energized in said other direction;
- second detecting means operated for detecting said print head reaching another predetermined point on a print line when said print head is driven in said opposite direction; and
- means operated responsive to the operation of said second detecting means for energizing said motor to again run in said one direction for a period of time sufficient to substantially stop said print head.

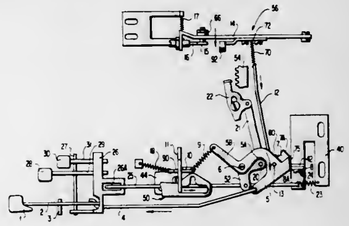
3,882,989
TYPEWRITER RIBBON LOADING ARRANGEMENT TO FACILITATE REPLACEMENT OR SUBSTITUTION OF RIBBON
Joseph L. Morelli, Hartford, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Jan. 28, 1974, Ser. No. 436,902
Int. Cl. B41j *33/14*
U.S. Cl. 197—151 **5 Claims**



1. In a business machine having a type element supported on a carriage for impacting against a platen in a printing operation, and a ribbon lifting and feeding arrangement for lifting a ribbon from a lowered rest position to a printing position adjacent the platen prior to the impacting of the type element and for advancing a length of the ribbon past the type element with each printing operation, the improvement comprising:
- said ribbon lifting and feeding arrangement including an upper portion serving as a holder for the ribbon and a lower portion mounted fixedly on said carriage for supporting said upper portion in an operating position,
- said upper portion having a ribbon lifter movably supported thereon for carrying a portion of the ribbon adjacent the type element for movement between the rest position and the printing position,
- said lower portion having a ribbon lifting drive means operably associated with the ribbon lifter of said upper portion in the operating position for driving the ribbon lifter from the lowered rest position to the printing position, and
- said upper portion being coupled to said lower portion for guided movement from the operating position adjacent the type element to a generally inverted loading position facilitating the replacement of the ribbon with the ribbon lifter being guided past the type element on the carriage during movement between the operating position and the inverted loading position.

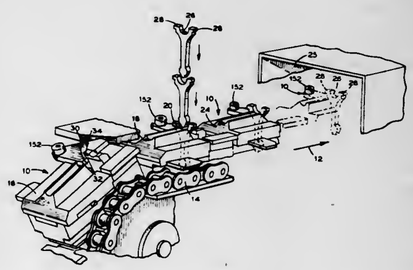
3,882,990
ERROR CORRECTION SYSTEM FOR TYPEWRITERS OR PRINTING DEVICES
Jesus F. Genesio, Alqueirao, Portugal, assignor to Messa-Maquinas de Escrever, S.A.R.L., Mem Martins, Portugal
Filed Feb. 8, 1973, Ser. No. 330,648
Claims priority, application Portugal, May 25, 1972, 57870
Int. Cl. B41j *29/16*
U.S. Cl. 197—181 **8 Claims**

1. In a typewriter for use with ribbons providing a printing field and a print-obliterating field, said typewriter including a printing means comprising a plurality of character keys for printing on paper:
- means to support the paper;
- means for normal advancement of said paper support means during the printing operation including an escapement impeller and a space arch operatively connected to said escapement impeller to effect advancement of said paper support means when any of said character keys is depressed;
- advancing means for advancing said paper support means independent of said space arch, said advancing means including a space bar operatively connected to said escapement impeller for advancing said paper support means independent of said space arch;
- means for positioning a ribbon between said printing means and the paper on said paper support means;
- means to select the ribbon field; and
- means to backspace said paper support means, the improvement comprising:



correction means comprising means to simultaneously (1) operate said backspace means, (2) operate said means to select the ribbon field to shift to a print-obliterating field and (3) bypass advancement of said paper support means by preventing operation of said escapement impeller by said space arch and without interference with said means for advancing said paper support means independent of said space arch, so that said paper support means can be moved, by said means for advancing said paper support means independent of said space arch, after engagement of said correction means, while operation of said space arch does not effect operation of said means for normal advancement of said paper support means.

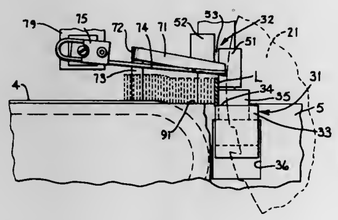
3,882,991
LOADING MECHANISM FOR A MACHINE TOOL
Joseph P. Chayka, Rochester, and David J. Cartner, Royal Oak, both of Mich., assignors to The Babcock & Wilcox Company, New York, N.Y.
Filed Jan. 12, 1973, Ser. No. 323,004
Int. Cl. B23q *7/00*
U.S. Cl. 198—19 **3 Claims**



1. A machine tool having a plurality of workpiece holding pallets, means for moving the pallets sequentially past a fixed raw workpiece loading station and past at least one workpiece working position at a controlled substantially constant rate; each of the workpiece holding pallets having a first fixed jaw and a second moveable jaw defining a recess to receive the workpiece; the second jaw being moveable relative to the first jaw in a direction parallel to and opposite the direction of pallet movement; the improvement comprising loading means at the loading station for holding workpieces and adapted for moving a workpiece normal to the direction of movement of

a movement of a pallet; first cam-actuated means responsive to the position of a pallet for causing the loading means to insert a workpiece into the work receiving recess of a pallet while that pallet is passing the loading station; second cam-actuated means responsive to the position of the pallet for moving the second jaw toward the first jaw while the pallet is passing the loading station; the second jaw includes guide means on the face thereof adjacent the first jaw to restrain lateral movement of the workpiece and to properly position the workpiece when clamped between the jaws; the first and second cam-actuated means being coordinated so that the workpiece initially enters the work receiving recess close to the second jaw and the workpiece remains close to the second jaw throughout the time that the recess between the two clamping jaws is being reduced by movement of the pallet to a clamping engagement with the workpiece.

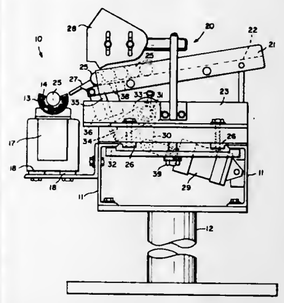
3,882,992
GRID FEEDER
Ronald C. Van Linder, Watervliet, and Basil R. Van Linder, Kalamazoo, both of Mich., assignors to Kalamazoo Manufacturing Company, Kalamazoo, Mich.
Filed Aug. 9, 1973, Ser. No. 387,107
Int. Cl. B65g *47/00*
U.S. Cl. 198—24 **13 Claims**



1. Transfer mechanism for effecting transfer of panels from a position of vertical alignment onto the upwardly moving teeth of continuously rotating toothed transfer wheels, comprising in combination:
conveyor means for supporting said panels in vertical parallel alignment and drive means coupled to said conveyor means for advancing said panels forwardly toward said wheels;
fixed stop means for limiting said forward advancement at a fixed point adjacent said wheels but radially beyond the periphery of the teeth thereof;
lifting means for lifting a predetermined number of said panels upwardly to a level above the top of said stop means and having a lifting edge sidewardly offset from and extending chordally inward of said wheel to overlap the path of the roots of said upwardly moving teeth;
guide means including an upstanding slot for (1) forwarding said panels when in such lifted position along said lifting edge directly into the path of the roots of said upwardly moving teeth, and for (2) positively guiding said panels in said root path while upwardly moving teeth lift said panels from said lifting means.

3,882,993
VIBRATORY BAR FEEDER
Dennis E. Mead, Cupertino, Calif., assignor to Lipe Rollway Corporation, Syracuse, N.Y.
Filed Nov. 16, 1973, Ser. No. 416,380
Int. Cl. B65g *47/00*
U.S. Cl. 198—26 **8 Claims**

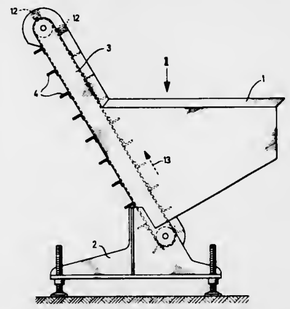
1. A vibratory bar feeder for feeding bars axially to a bar working machine, said vibratory bar feeder comprising:
a. a magazine for storing a plurality of said bars;
b. means for dropping said bars one at a time from said magazine;
c. a trough below said magazine for receiving said bars dropped from said magazine:
d. said trough having a cylindrical bottom and extending beyond said magazine toward said bar working machine;
e. the inside of said trough being covered with a pile material having flexible filaments uniformly inclined by about 5° – 25° from a vertical transverse plane toward said bar working machine along the length of said trough;
f. said filaments having uniform length and thickness and a sufficient density so that only the tips of said filaments support said bars for feeding;



g. means for vibrating said trough in a generally reciprocal motion in the general direction of the inclination of said filaments;
h. said filaments being sufficiently resilient to flex under said bars during upward movement of said trough in said vibratory motion so said filaments translate said vibratory motion of said trough into feeding speed and force moving said bars toward said bar-working machine;
i. means for sensing the movement of one of said bars out from under said magazine; and
j. means for operating said bar-dropping means in response to said sensing means.

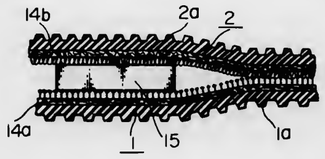
3,882,994
APPARATUS FOR CONVEYING AND ORIENTING AEROSOL VALVES
Karl Mecks, Gau-Oderaheim, and Hugo Schindel, Saulheim, both of Germany, assignors to Rationator-Maschinenbau GmbH, Hillesheim, Rheinhessen, Germany
Filed Oct. 26, 1973, Ser. No. 410,294
Claims priority, application Germany, July 14, 1973, 2336001
Int. Cl. B65g *47/24*
U.S. Cl. 198—253 **6 Claims**

1. An apparatus for sorting aerosol valves or closures and the like elongated narrow parts having a head and a bendable long narrow portion extending therefrom, comprising the combination of
1. a funnel-shaped hopper having an open side, the hopper being arranged to receive the parts;
2. an obliquely upwardly extending conveyor band closing the open side,
a. a series of transversely extending entrainment elements mounted on the conveyor band and projecting into the hopper for lengthwise supporting and entraining respective ones of the parts received in the hopper;
b. the conveyor band being movable in an upward direction toward an upper end thereof;
3. another hopper arranged adjacent the upper end of the conveyor band for receiving the parts entrained by the entrainment elements;
4. a gravity tube having an upper and a lower end, the upper end being in communication with the other hopper to receive the parts therefrom and to convey them to the lower end by gravity; and
5. a vibrating trough in communication with the lower tube end to receive the gravity-conveyed parts therefrom,
a. the depth of the trough corresponding substantially to the length of the long narrow part portions, and



b. a plurality of webs extending longitudinally of the trough and dividing the same into a plurality of elongated compartments, the trough having an inlet end in communication with the gravity tube and a common outlet end into which all of said compartments feed.

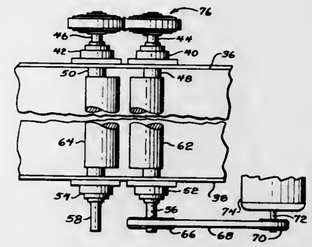
3,882,995
BELT CONVEYER
Toru Uraya, Kobe, Japan, assignor to Kanebo Ltd., Japan
Filed Mar. 15, 1973, Ser. No. 341,751
Claims priority, application Japan, Mar. 17, 1972, 47-32775[U]
Int. Cl. B65g *15/14*
U.S. Cl. 198—165 **15 Claims**



1. A belt conveyer for conveying articles along a conveying path having an upright passage, comprising: first and second belts, each having two surfaces; means for guiding and driving said belts along the conveying path, and for guiding them opposite one another in the upright passage; means for admitting articles to the conveying path in variable, relative positions for conveying the articles along the path; interlockable fastener elements substantially covering an entire one of the surfaces of each belt; and means for interlocking said fastener elements of the two belts, about each article admitted to the path, to fix the relative positions of the articles throughout the conveying path, including the upright passage.

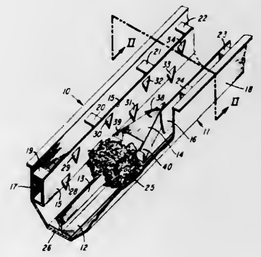
3,882,996
VIBRATORY MATERIAL HANDLING APPARATUS
Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.
Filed Mar. 22, 1973, Ser. No. 343,918
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 DB **6 Claims**

1. In a vibratory material handling device including a material engaging surface adapted to engage material to be handled, and means for vibrating the surface including a pair of rotary shafts each mounting an eccentric weight, a prime mover for rotating one of the shafts, an interconnecting means extending between the shafts whereby when the one shaft is rotated, the other will be rotated in the opposite direction, the improvement wherein said interconnecting means comprises



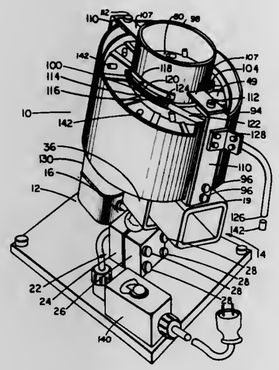
means for establishing a substantially positive driving connection while allowing limited slippage so that said eccentric weights may synchronize relative to each other to impart a vibratory force to said surface passing through the center of gravity of said apparatus.

3,882,997
COMBINATION HARPOON-TYPE CONVEYOR AND COOLANT LIQUID TROUGH
Russell D. Dudley, Kalamazoo, Mich., assignor to Prab Conveyors, Inc., Kalamazoo, Mich.
Continuation-in-part of Ser. No. 274,437, July 24, 1972, abandoned. This application May 29, 1973, Ser. No. 364,735
Int. Cl. B65g *25/08*
U.S. Cl. 198—224 **6 Claims**



1. Combination harpoon-type conveyor and coolant liquid trough which comprises
a conveyor trough means having a pair of upstanding side walls and a bottom;
a reciprocating conveying means in said trough means and adapted for reciprocating movement therein; and
a partition member mounted in said trough means alongside at least one of said upstanding side walls, spaced inwardly from said side wall and above said bottom, and extending longitudinally along said side wall for at least a portion thereof, the space intermediate said side wall and said partition member being in communication with the space in said trough along substantially the entire length of said partition member providing unobstructed flow passageways for liquid.

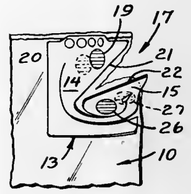
3,882,998
ROTARY FEEDER APPARATUS
George T. Hunter, 512 Avon, Pontiac, Mich. 48053
Filed Sept. 10, 1973, Ser. No. 395,645
Int. Cl. B65g 47/24
U.S. Cl. 198—287 13 Claims



1. A rotary feeder apparatus to orient workpieces for subsequent operations to be performed on them and to feed the workpieces to subsequent work stations, comprising:
a drive shaft rotatably mounted in the apparatus;
an outer disc rotatably mounted in the apparatus, the axis of said outer disc being disposed at a predetermined angle to the longitudinal axis of said drive shaft,
said outer disc being in driving engagement with said drive shaft for rotation therewith;
an inner disc coaxially disposed and connected to said drive shaft for rotation therewith;
a first barrier disposed around the periphery of said outer disc to project above the top surface of said outer disc;
a generally arcuately shaped second barrier disposed above the top surface of said inner disc and eccentric with said inner disc;
a workpiece discharge means operatively associated with the portion of said inner disc disposed to the convex side of said eccentrically disposed second barrier; and
means for rotating said drive shaft to rotate said inner disc and said outer disc.

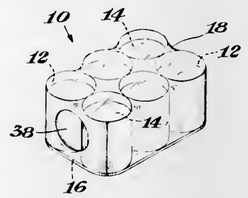
3,882,999
OPENER/RE-CLOSER FOR SEALED CONTAINERS
Lester R. Wellman, 110 Lakerwood Pl., Highland Park, Ill. 60035
Continuation of Ser. No. 233,037, March 9, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,376
Int. Cl. B67b 7/24
U.S. Cl. 206—216 7 Claims

1. In combination, a sealed bag of flexible material, and a cutting device secured inside the bag, said cutting device comprising a first member providing a reaction base adapted to be held in one hand, said first member defining a first cutting edge, a cutting member adapted to be manipulated in the other hand and defining a second cutting edge adjacent said first cutting edge, and hinge means interconnecting said reaction base and said cutting member for permitting relative movement between the two, whereby relative rotation of said cutting member out of the plane of said reaction base causes



said first and second cutting edges to part said bag material in a shearing motion.

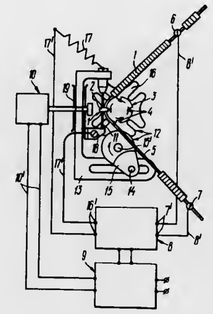
3,883,000
SHIPPING PACKAGE
F. Jack Gibbs, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 13, 1972, Ser. No. 234,134
Int. Cl. B65d 65/16, 85/62
U.S. Cl. 206—432 1 Claim



1. A shipping and/or storage receptacle comprising a plurality of hollow and open-ended sleeves of generally uniform height, the opposite ends of such sleeves being generally coplanar, said sleeves comprising a paperboard including a corrugating medium, the longitudinal axis of the waves of said corrugating medium being aligned generally with the axis of said sleeves, an object contained in each such sleeve, respectively, a support member generally flushly disposed against the coplanar ends of such sleeves at one of such opposite ends, a flexible envelope in heat induced tension about such sleeves and support member, and bundling the same together, said objects comprising formed plastic containers filled with product, and wherein such objects rest against such support member, and are recessed within said sleeves.

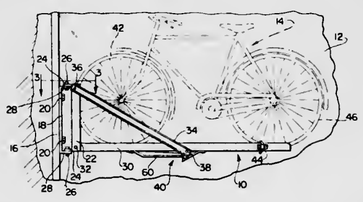
3,883,001
APPARATUS FOR SORTING FERRITE CORES
Jury Alexandrovich Burkin, Tsvetnoi proezd, 29, kv. 24, and Jury Emelyanovich Seleznev, Vesenny proezd, 4-a, kv. 16, both of Novosibirsk, U.S.S.R.
Filed Dec. 5, 1973, Ser. No. 422,070
Claims priority, application U.S.S.R., Dec. 11, 1972, 1855278
Int. Cl. B07c
U.S. Cl. 209—81 A 1 Claim

1. An apparatus for sorting ferrite cores comprising a measuring station for testing the electrical parameters of said ferrite cores; means for piece-by-piece feeding of said ferrite cores to said measuring station; an intermittent motion drive of said means for piece-by-piece feeding of said ferrite cores; a tester; contacts of the tester; a two-wire probe extending through each said ferrite core and connected therebehind with said contacts of said tester; separate conductors of said measuring two-wire probe; a circuit conductor which is one of said separate conductors of said measuring two-wire probe and extends through said means for piece-by-piece feeding of the ferrite cores; said circuit conductor supporting said ferrite cores to be tested and which are strung thereon; a needle of a single-wire probe which is the other conductor of said measuring two-wire probe; said needle of the single-wire probe



being operatively connected to said intermittent motion drive of said means for piece-by-piece feeding of said ferrite cores and electrically coupled to said tester; a sorting unit for said ferrite cores for classifying them into those finished and defective; and electromagnetic means for crushing said defective ferrite core coupled to said sorting unit.

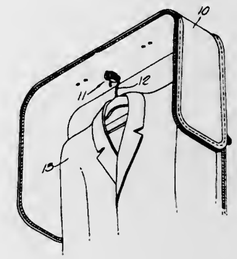
3,883,002
BICYCLE RACK
Myron C. Moore, 700 Tanglewood, Dunedin, Fla. 33520
Filed Jan. 28, 1974, Ser. No. 437,476
Int. Cl. B62h 3/08
U.S. Cl. 211—18 6 Claims



1. A bicycle support comprising, a track for holding the wheels of the bicycle, a support for the track, means mounting an end portion of the track on the track support for generally vertical movement between a storage position and a position inclined downwardly from the track support for moving the bicycle onto and off of the track, means including a member secured to a portion of the track support above the mounting means and to an intermediate portion of the track for engaging a wheel of the bicycle and retaining the bicycle in a generally vertical position on the track, and cooperating latch means on the member and the track releasably holding the track in its storage position.

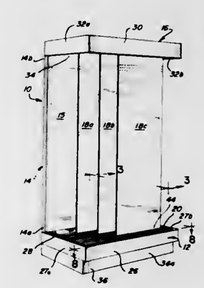
3,883,003
LUGGAGE CASE HANGER APPARATUS
Clair A. Samhammer, Irvine; David E. Workman, Orange, both of Calif., and Marvin M. King, Denver, Colo., assignors to Samsonite Corporation, Denver, Colo.
Filed May 13, 1974, Ser. No. 469,392
Int. Cl. A45c 13/10
U.S. Cl. 211—113 6 Claims

1. Luggage case hanger mounting apparatus comprising:
a flat metal body formed into a substantial U-shape with first and second parallel legs separated by a curved end wall;
the end portion of the first leg being formed toward the second leg and obstructing only part of the opening between the legs;



the end of the second leg being formed in a direction away from the first leg, said second leg end portion including an opening passing therethrough; and
a finger operated control rotatably mounted onto the U-shaped metal body via parts of the control extending through the second leg end portion opening, said control including other parts formed into a clasp which engages the first leg end portion during a limited extent of the control rotation.

3,883,004
CANTILEVER MOVABLE PANEL DISPLAY RACK
Case J. Slaga, Hinsdale, Ill., assignor to Advertising Metal Display Co., Chicago, Ill.
Filed Jan. 2, 1973, Ser. No. 320,181
Int. Cl. A47f 5/10
U.S. Cl. 211—162 9 Claims



1. A sliding panel display rack of cantilever construction having sliding display panels which are adjustable in front to rear relationship, which comprises:
a. a generally rectangular base having front, rear and side frame elements;
b. vertical wall support means secured to the rear portion of the base at its one lower end;
c. a top frame support member of generally open rectangular configuration having front, rear and side wall elements secured to the top of the supporting wall means in cantilevered relationship thereto and extendng outwardly in spaced overhanging and opposed relationship to said base defining a display space being completely open at the front and sides thereof;

d. track supporting and adjustment means mounted on the inner surface of the top frame side members in parallel opposed relationship to each other and having formed therein a plurality of regularly spaced track receiving and holding means adjustably securing the ends of track elements extending transversely across the space between the side members and associated supporting means;

e. at least one track means which is "C" shaped in cross section in a vertical direction adapted for holding roller means in rolling relationship therein, said track means extending horizontally and transversely across the interior space defined by the walls of said top member and adjustably secured at its ends by said track securing and holding means, the track in said secured position being normal to the side walls and parallel to the front and rear walls of the top frame;

f. a guide means unit affixed to the upper portions of said base, said guide means defining channels for receiving the bottom portion of a panel, the channels being generally parallel to the front of the base and extending across the width thereof; and

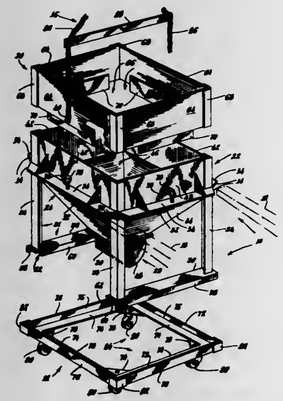
g. at least one display panel of generally rectangular configuration having a top, bottom and sides, the dimensions between the sides being less than the side-to-side dimension of the top and base, said panel having at least two rollers mounted adjacent the top edge thereof secured by and within the track elements and carrying the therefrom suspended panel which is confined at its bottom end in the guide means to permit reciprocating lateral movement of the panel on the rollers and within the guide means while maintaining the panel in generally vertically disposed relationship to the base and top frame, said display rack being further characterized by essentially supporting the entire load of the panels by the top frame, rear support wall and base and being open and free from obstructions support, and wall elements at the side and front portions thereof in the space defined by the said top frame, base and joining rear support wall, said construction being further characterized in maintaining the reciprocally movable display panels vertically and parallel to the rear wall within the space defined by the top frame and base.

3,883,005

TRANSPORTABLE STORAGE CONTAINERS

Robert K. Stevens, 696 Beach Rd., Fairfield, Conn. 06430

Filed Feb. 8, 1973, Ser. No. 330,710
Int. Cl. B65g *67/02*
U.S. Cl. 214—1 N **13 Claims**



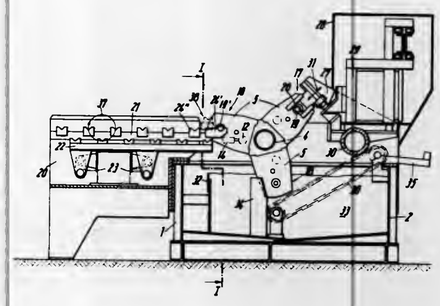
1. In a container of the type used for transportable storage of high volume parts, the improvement comprising: brackets affixed on said container intermediate to the top and bottom thereof each said bracket including a horizontal bearing surface for interfacing with fork lift prongs and means for connecting to an overhead lifting yoke, said horizontal bearing surfaces extending externally from the horizontal extremities of said container perpendicularly to the vertical axis thereof and being disposed on a common horizontal plane through said container.

3,883,006

MACHINE FOR TREATING, PARTICULARLY FOR INDUCTIVELY HARDENING WORKPIECES

Friedhelm Emde, Huckeswagen, and Edgar Stengel, Wuppertal-Hahnerberg, both of Germany, assignors to AEG-Elotherm GmbH, Remscheid, Germany

Filed Sept. 26, 1973, Ser. No. 400,835
Claims priority, application Germany, Sept. 30, 1972, 2248053
Int. Cl. B65g *25/04*
U.S. Cl. 214—1 BD **1 Claim**



1. In an apparatus for treating and particularly for inductively hardening workpieces having an axis of rotation mounted between a pair of carrier arms of an indexable spider, said arms being fitted with spindle centers which can be moved in opposite directions to grip the workpieces between them and intermittently to convey the workpieces from a loading station to one or more treating stations and then to an unloading station, the improvement comprising

energy storage devices mounted with the centers for urging the same into work gripping position,

actuators at the loading and unloading stations for transferring the centers into their work releasing position,

monitoring means for checking whether a workpiece has been correctly received after loading,

a lifting beam conveyor comprising a stationary beam and a lifting beam for feeding the workpieces in a foreward and rearward direction relative to the loading station, each beam comprising a plurality of workpiece rests, the last workpiece rest on the stationary beam of the lifting beam conveyor aligning with the centers which have arrived at the loading station,

drive means for generating lifting beam motion in both directions and

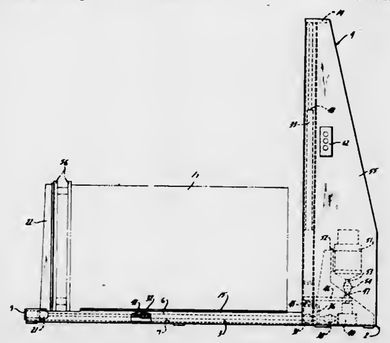
control means responsive to said monitoring means for stopping the lifting beam in a first rest position below the stationary beam, which serves as a starting and end position for a conveying step and in a second rest position above the stationary beam, and for reversing the direction of motion of the drive means at either of the two rest positions of the lifting beam.

3,883,007

MATERIALS HANDLING APPARATUS

Stephen L. Hirschboeck, New London, Wis., assignor to Upenders, Inc., New London, Wis.

Continuation of Ser. No. 163,621, July 19, 1971, abandoned, Continuation-in-part of Ser. No. 16,676, March 5, 1970, abandoned. This application Oct. 3, 1973, Ser. No. 403,100
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 Q **5 Claims**



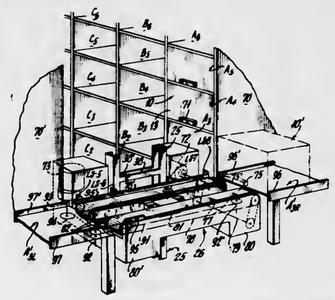
1. In a materials handling apparatus for orienting a load between the horizontal and vertical positions, a generally L-shaped frame having a horizontal and vertical leg, a first track provided on the horizontal leg of said frame, a second track provided on the vertical leg of said frame, a movable generally L-shaped load carrying member having first and second load supporting surfaces disposed generally normal to each other and corresponding to the horizontal and vertical positions for a given load, one of said load supporting surfaces comprising a transversely extending plate member and the other load supporting surface comprising transversely spaced and aligned arms, first carriage means at one end of the first load supporting surface of the load carrying member and guided by the horizontal track, second carriage means at the opposite end of the first load supporting surface of the load carrying member and guided by the vertical track, and means for driving the respective carriage means along the corresponding tracks to move the load carrying member to provide for the desired orientation for a load from the one load supporting surface to the other load supporting surface of said member.

3,883,008

ARTICLE TRANSFER DEVICE

John A. Castaldi, Brooklyn, N.Y., assignor to Supreme Equipment & Systems Corp., Brooklyn, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,286
Int. Cl. B25j *3/00*
U.S. Cl. 214—1 BB **13 Claims**



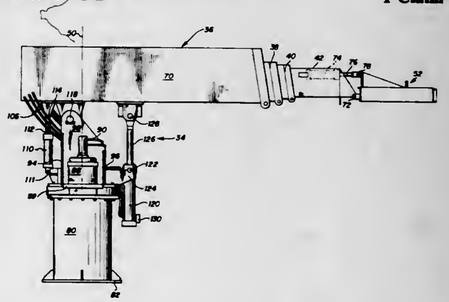
1. Load-handling mechanism for an elevator platform having an elongate rectangular surface to be selectively right-left loaded and unloaded with one of a plurality of containers, said platform including endless-belt conveyor means having an upper horizontal course defining the general plane of said surface and extending longitudinally from end to end of said platform, first reversible-drive means for driving said conveyor means, elongate guide means parallel to the course of said conveyor mean and laterally offset therefrom, a slide slidable in said guide means within the longitudinal confines of said platform and confined to an elevation range beneath said plane, second reversible drive means for positioning said slide along said guide means, container-end engaging means retractably carried by said slide, said container means including an element having a longitudinal lost-motion connection to said slide, actuating means for selectively displacing said end-engaging means between a projected container-engageable position above said plane and a retracted position below said plane, and automatic load-unload cycle-control means including longitudinally arrayed container-presence sensing means and longitudinally arrayed slide-presence sensing means governing belt transport of a container essentially for those positions when a container is at least primarily supported on said conveyor means, said control means further responding to the sensed location and degree of container loading on said conveyor means for governing actuation of said container-engaging means to projected position only (a) when the container is less than primarily supported on said conveyor means and (b) when said slide is in a position longitudinally offset from the container.

3,883,009

RACKING ARM FOR PIPE SECTIONS, DRILL COLLARS, RISER PIPE, AND THE LIKE USED IN WELL DRILLING OPERATIONS

John J. Swoboda, Jr., and Norman L. Swoboda, both of P.O. Box 1939, Victoria, Tex. 77901

Division of Ser. No. 377,321, July 9, 1973, Pat. No. 3,840,128. This application Jan. 17, 1974, Ser. No. 434,199
Int. Cl. E21b *19/02*
U.S. Cl. 214—1 B **1 Claim**



1. An extendable racker arm assembly comprising:

an extendable boom having a supported end pivotable about a vertical axis and having a free end movable upwardly and downwardly,

pipe gripper means on said free end of said boom for gripping oil well pipe sections,

said boom including an outer housing having first, second and first telescoping sections relatively movable from said housing to extend and retract said boom, the inner of said sections having smaller cross-sections than the outer of said sections,

a first fluid cylinder connected between said outer housing and the upper portion of the first outermost section,

a second fluid cylinder connected between said first and second sections,

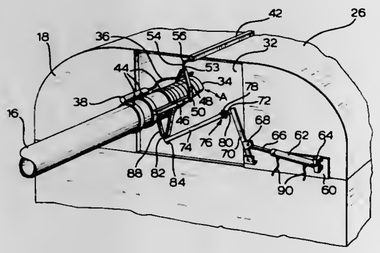
a third fluid cylinder connected between said second section and the third innermost section,

control means for sequentially applying fluid to said cylinders to control the outward movement of said telescoping

sections such that said first outermost section is first extended, said second section is next outwardly extended, and said third innermost section is subsequently outwardly extended,

said control means also operative when said boom is fully extended to first retract said third innermost section, then said second section and then said first outermost section in order to provide optimum stability to said boom due to the largest and strongest sections being first extended and last retracted.

3,883,010
STACK FORMING MECHANISM
Lorne C. Heslop, 52 Debere Dr., Guelph, Ontario, Canada
Filed Apr. 4, 1973, Ser. No. 347,694
Int. Cl. B65g *53/40*
U.S. Cl. 214—9 **5 Claims**



1. For apparatus for building a stack, such apparatus being of the kind including: an elongated conduit section having a first inlet end and a second discharge end; means for blowing material into said first end of said conduit section; a covered stack forming structure for receiving material from said second end of said conduit section, said structure including a roof having downwardly sloping sides, and a front wall extending to said roof and having an opening therein adjacent said roof; and support means connecting said conduit section to said means for blowing, for limited side to side and vertical movement of said second end of said conduit section relative to said structure; an improved mechanism for reciprocating said conduit section from side to side to distribute said material in said structure, said mechanism comprising:

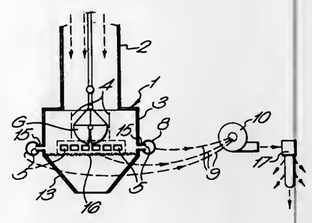
a. a support member extending forwardly from said roof and substantially centred over said opening;

b. suspension means connected between said second end of said conduit section and said structure for hanging said second end of said conduit section from a pivot point above said conduit section, said support means and said suspension means supporting said conduit section with the axis of said conduit section substantially horizontal with said second end discharging in a direction having a substantial horizontal component, and said substantial horizontal component, and said suspension means allowing pivotal movement of said second end of said conduit section from side to side in a substantially circular arc about said pivot point, the ends of said arc being located above the middle of said arc,

c. linkage means for connection to said second end of said conduit section for reciprocating said second end of said conduit section from side to side in said arc,

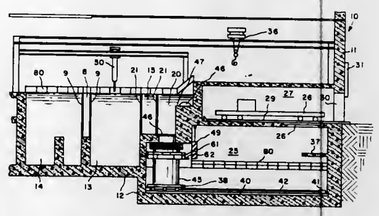
d. and power means for connection to said linkage means for actuating said linkage means, whereby as said material is blown through said conduit section, some of said material is directed to the upper portions of the sides of said structure to improve the formation of the top of said stack.

3,883,011
HOPPER INSTALLATION
Anthony Robin Pennell, Gravesend, England, assignor to The Associated Portland Cement Manufacturers Limited, London, England
Filed Mar. 14, 1973, Ser. No. 341,062
Claims priority, application United Kingdom, Mar. 14, 1972, 11777/72
Int. Cl. B65g *65/30*
U.S. Cl. 214—17 B **13 Claims**



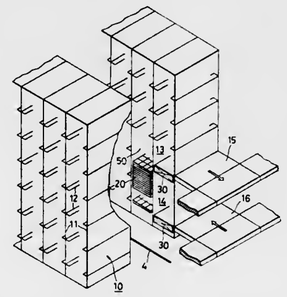
1. In a hopper installation for handling particulate material containing a fine dust fraction comprising a hopper body which is open at its upper end to receive a grab containing material to be discharged, the hopper having a bottom discharge opening, the improvement in which the hopper body comprises an elongated intake section which is open at its upper end and which is connected at its lower end with and opens into a discharge chamber of increased cross section, said intake section providing an unobstructed passage for introduction therethrough into the chamber of the grab containing material to be discharged, and air extracting means connected to said chambers for withdrawing air from the wall area of said chamber to produce an air flow pattern surrounding a neutral or negative pressure central zone of minimum flow therein within which the grab or bucket can be lowered to release its contents.

3,883,012
DRY CASK HANDLING SYSTEM FOR SHIPPING NUCLEAR FUEL
Cecil R. Jones, Orange, Conn., assignor to Transfer Systems Incorporated, North Haven, Conn.
Continuation-in-part of Ser. No. 191,247, Oct. 21, 1971, Pat. No. 3,765,549. This application Oct. 9, 1973, Ser. No. 404,434
Int. Cl. B66c *17/00*
U.S. Cl. 214—17 B **9 Claims**



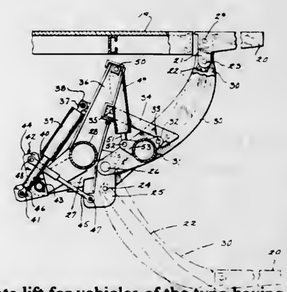
1. In a facility for handling radioactive nuclear fuel elements and comprising a structure having at a first location a fluid pool for receiving the fuel and at a second location a dry area for receiving a shielded shipping cask for transport of the fuel, and connecting the first and second locations a fuel transfer canal and means for flooding the fuel transfer canal whereby the fuel can be transferred between the locations via the flooded fuel transfer canal while maintaining the cask exterior dry, the improvement comprising a tank sized to receive the cask means for fluid-sealing the cask when within the tank to the tank in such manner that the cask exterior is isolated from the fuel transfer canal, and means for fluid-sealing the tank to the fuel transfer canal when the tank is provided adjacent thereto within the second location.

3,883,013
APPARATUS OF APPLYING SKIDS OF GRATING STRUCTURE AND REMOVING THE SAME
Taro Nakanishi; Katsumi Takagi, and Teiji Ametani, all of Nishinomiya, Hyogo, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha
Filed Apr. 16, 1973, Ser. No. 351,608
Claims priority, application Japan, Apr. 19, 1972, 47-38713
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A **8 Claims**



1. Apparatus for receiving, storing and discharging items, such as palletized cargo containers, for example, said apparatus comprising, in combination, a plurality of storage racks aligned in horizontal rows and vertical columns along at least one side of at least one aisle, the racks opening toward the associated aisle and each having a pair of laterally spaced horizontal rails extending perpendicularly to the associated aisle; a plurality of skids each comprising a grated frame constituted by a rectangular grid of rectilinear longitudinal and lateral components defining rectangular openings in the frame; a receiving station and a discharge station at one end of each line of racks, each station being aligned with a respective rows of racks and said stations being spaced vertically from each other, with each station having a pair of laterally spaced horizontal rails extending perpendicularly to the associated aisle; an item receiving conveyor extending to said receiving station; an item discharge conveyor extending from said discharge station; respective fork lift means movable longitudinally of each aisle to transfer items, supported on skids, between said racks and said stations; respective skidders mounted for vertical displacement at each station for movement into and out of horizontal alignment with the respective rails at the associated station, each skidder having a main frame to receive and support a grid, and a secondary frame movable vertically relative to said main frame and carrying rollers movable through openings of said main frame and through the openings in a grid supported on said main frame to engage, lift and support an item resting on the grid supported on said frame; and a skid feeder laterally adjacent said station and extending vertically therebetween, said skid feeder including means operable to receive unloaded skids from the skidder at said discharge station, move the unloaded skids vertically to said receiving station, and feed the unloaded skids onto the skidder at said receiving station; the skidder at said receiving station, prior to delivery of an item thereto on said item receiving container, being raised into horizontal alignment with the rails at the receiving station to receive and support an unloaded skid fed from said skid feeder, and its secondary frame being moved upwardly to project its rollers through the openings of the skid to receive the item from said receiving conveyor, after which the secondary frame is lowered for the item to rest on the grid and the skidder at the receiving station is lowered in its entirety to rest the skid on the rails at the receiving station for removal of the loaded skid from the receiving station by the associated fork lift means; the skidder at said discharge station, upon delivery of a skid-supported item to said discharge station by the associated fork lift means to rest on the rails of said discharge station being raised into alignment with the rails to support the skid and the item, and its secondary frame being moved upwardly to project its rollers upwardly through the openings in the grid to engage and lift the item on the grid for transfer to said discharge conveyor, the secondary frame then being lowered and the unloaded grid being moved from the skidder at the discharge station to said skid feeder.

3,883,014
TAILGATE LIFT MECHANISM
Norman J. Glomski, New Berlin, and Kim K. Jackman, Waukesha, both of Wis., assignors to The Heil Co., Milwaukee, Wis.
Filed Nov. 5, 1973, Ser. No. 413,087
Int. Cl. B60p *1/44*
U.S. Cl. 214—77 P **7 Claims**

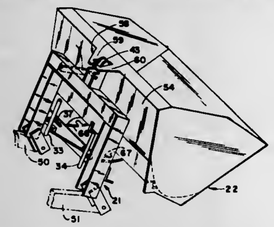


1. In a tailgate lift for vehicles of the type having a bed with a tailgate opening for receiving loads, in which said lift has a fixed frame, has a platform, has linkage for movably connecting said platform to said frame and has power-operated means for moving said platform from ground level to bed level, the improving comprising: separate power-operated means on said frame for controlling movement of the platform from bed level to an upright tailgate-closing position, an element pivoted to said fixed frame, a fluid pressure operated ram having one end pivotally connected to the fixed frame and having its other end pivotally connected to said pivoted element to swing the latter, and a connecting element pivoted at one end to said pivotal element and at its other end to said linkage, said connecting element having an intermediate knee pivot which is movable over center with respect to the pivotal connection for said pivoted element and with respect to the pivotal connection with said linkage.

3,883,015
QUICK DETACHABLE BUCKET
Oliver L. Gorby, Fargo, N. Dak., assignor to Dynamic Industries, Inc., Barnesville, Minn.
Filed Aug. 27, 1973, Ser. No. 391,601
Int. Cl. E02f *3/60*
U.S. Cl. 214—145 **2 Claims**

1. A quick detachable bucket for a front end loader having lifting arms and a movable plate member movably mounted on the lifting arms, a loading frame having its lower outer corners pivotally mounted to the outer ends of the lifting arms and its upper portions pivotally mounted to the plate member for movement of the loading frame by the loader, said bucket

having an open mouth at its forward edge and a rear wall, central upper spike means and eyelet means with said spike means receivable in said eyelet means to interengage one another and with one of said means mounted to the central upper edge of said rear wall and the other of said means mounted to the central upper front edge of said frame, said bucket and frame having lower outer hook means and lower outer spring biased rod means comprising two rods pivoted about a horizontal axis, with one of said means mounted to the bucket and the other of said means mounted to the frame and



coacting with one another to automatically latch the bucket to the frame upon impact of the lower portion of the bucket to the frame, whereby the spike may be inserted into the eyelet and the frame may lift the bucket upward and rearward to cause the bucket to swing down and impact against the frame to latch the bucket to the bucket to the frame at its lower outer corners by the latch and rod means, camming means acting to cam the rods relative to the frame in opposing directions along a path laterally between the lower outer corners of the bucket and frame to facilitate the latching of the lower outer corners of the bucket to the frame.

3,883,016

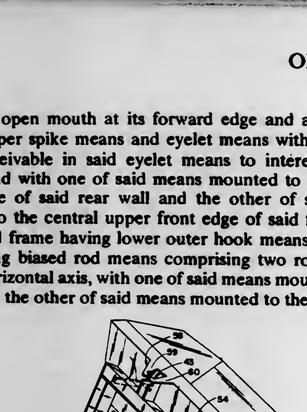
ROTARY EXTRACTOR METHOD AND APPARATUS

Anthony V. Simpatico, Palisades Park, N.J., assignor to Avon Products, Inc., Suffern, N.Y.

Division of Ser. No. 242,337, April 10, 1972, Pat. No. 3,797,683. This application Dec. 19, 1973, Ser. No. 425,968

Int. Cl. B65g *65/04*

U.S. Cl. 214—152 **3 Claims**



1. A method of extracting a formed pomade from a mold carried on a first conveyor and for positioning the extracted pomade into a conveyor unit on a second and separately moving conveyor for further processing comprising the steps of; passing said pomade and said mold on the first conveyor in a first direction directly onto and then away from a rotating turret, passing said conveyor unit on said second conveyor directly onto and away from the rotating turret in a second direction which is opposite the first direction, grasping said pomade, raising said pomade away from said mold, inverting said pomade, lowering said pomade into said conveyor unit and transporting said pomade for further processing.

3,883,017

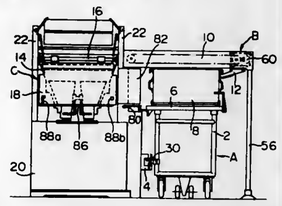
APPARATUS FOR AUTOMATICALLY FEEDING CIGARETTES INTO A HOPPER OF A CIGARETTE PACKING MACHINE

Haruji Shirai, Tokyo; Sumio Honda, and Hisasi Kugua, both of Nagareyama, all of Japan, assignors to Tokyo Automatic Machinery Works Ltd., Tokyo, Japan

Filed Aug. 2, 1973, Ser. No. 384,944

Int. Cl. B65g *59/02*

U.S. Cl. 214—302 **9 Claims**



1. An apparatus for automatically feeding cigarettes into a hopper of a cigarette packing machine from a cigarette tray, which comprises a cigarette tray feeding means, a cigarette tray transferring and withdrawing means, and a cigarette tray inverting means, wherein said cigarette tray feeding means is disposed alongside said cigarette tray inverting means and carries cigarette trays at predetermined intervals and feeds them intermittently; said cigarette tray transferring and withdrawing means is disposed above said tray feeding means and reciprocates in a direction at right angles to the direction of the intermittent feeding of said tray feeding means for transferring cigarette trays from said tray feeding means to said tray inverting means and withdrawing them from said tray inverting means and transferring them to said tray feeding means, when said cigarette tray inverting means is at halt; and said cigarette tray inverting means, while holding the cigarette trays, swings between the upright position of said tray, the upright position being defined as the position in which the cigarette trays are transferred and withdrawn and an upside-down position in which the cigarettes in the trays are fed into a hopper, said cigarette tray inverting means includes a inverting plate capable of swinging between the upright position and the upside-down position, a receiver stand having a cigarette tray supporting member and connected to said inverting plate and being vertically movable relative thereto, and a lift means for lifting said receiver stand when the inverting plate is in the upside-down position and causing it to descend when the inverting plate is on the way from the upside-down position to the upright position.

3,883,018

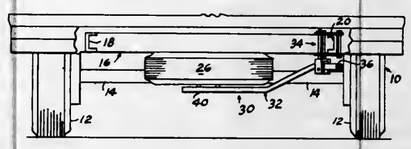
SPARE TIRE CARRIER

Edward C. Hoisington, 2704 Ona, Boise, Idaho 83705

Filed Apr. 29, 1974, Ser. No. 465,386

Int. Cl. B62c *43/00*

U.S. Cl. 214—454 **4 Claims**



1. A spare tire and wheel carrier for vehicles having a rearwardly projecting frame including spaced side members interconnected by spaced cross members, comprising:

an elongated support arm;

a wheel mounting pad secured to one end portion of said arm; latch means connecting said wheel mounting pad with the frame of a vehicle in wheel and tire stored position,

said latch means including,

an upstanding substantially J-shaped locking hook pivotally connected at its depending end portion with said mounting pad for vertical pivoting movement, and,

a locking bar adapted to be vertically secured at its upper end portion with an under surface of said vehicle,

said locking bar projecting downwardly toward said locking hook,

said locking bar having an aperture in its depending end portion supportably receiving the J-hook shaped end portions of said locking hook; and,

clevis means pivotally connecting the other end portion of said support arm with said vehicle frame, adjacent the periphery thereof, permitting horizontal pivoting movement of said one end portion of said support arm from a tire and wheel stored position to a position outwardly of the periphery of the vehicle,

said clevis means including,

clamp means connected with the rearwardly projecting end portion of one said frame side member,

said clamp means including a pair of plates respectively overlying and underlying the respective upper and lower limits of said frame side member,

said pair of plates cooperatively projecting laterally of said frame side member,

a vertical shaft extending through and rotatably supported by said laterally projecting plate end portions, and,

a clevis secured to the depending end of said shaft and straddling said support arm,

said clevis having a pin forming a bearing for said support arm for vertical pivoting movement of said support arm about the axis of said pin.

3,883,019

POWER ACTUATED FOLDING GOOSE NECK TRAILER

O. Duane Hansen, Jr., Route 3, Canton, S. Dak. 57013

Filed Sept. 4, 1973, Ser. No. 393,674

Int. Cl. B60p *1/04*

U.S. Cl. 214—506 **1 Claim**



1. A flat bed trailer, comprising:

a. a hitch platform;

b. a flat bed;

c. an intermediate section;

d. means for pivotally joining the rear of the hitch platform to the front of the intermediate section, said means including a first pivot pin adjacent to top surffaces of the hitch platform and the intermediate section;

e. means for pivotally joining the rear of the intermediate section to the front of the flat bed, said means including a second pivot pin adjacent to bottom surfaces of the intermediate section and the flat bed;

f. means for independently locking both joining means in predetermined positions, said locking means including a first pin positioned generally below the first pivot pin, and a second pin positioned generally above the second pivot pin;

g. a first source of mechanical energy interconnected between the hitch platform and the intermediate section for bi-directionally rotating the hitch platform with respect to the intermediate section; and

h. a second source of mechanical energy interconnected between the intermediate section and the flat bed for bi-directionally rotating the intermediate section with respect to the flat bed.

3,883,020

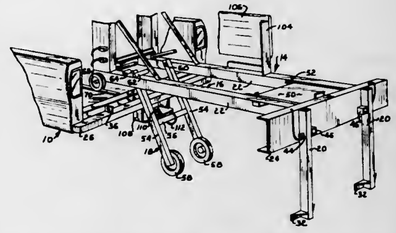
REMOVABLE TRUCK-MOUNTED IMPLEMENT CARRYING FRAME AND METHOD OF LOADING AND UNLOADING SAME

Freddie H. Dehn, 69 Highway, Excelsior Springs, Mo. 64024

Filed Jan. 28, 1974, Ser. No. 437,345

Int. Cl. B60p *1/64*

U.S. Cl. 214—515 **17 Claims**



1. Apparatus for removably mounting an implement on a flat bed of a truck type vehicle normally used for carrying cargo, without interfering with the cargo-carrying capacity of the vehicle, and capable of being installed and removed by a single operator, said apparatus comprising:

a base frame adapted to be moved across and positioned on said bed and coupled to said vehicle for supporting said implement in a working position on the bed;

first stanchion means pivotally coupled with said frame toward the forward end thereof and movable, when said frame has been partially removed from said bed, from a folded position adjacent the frame to a ground engaging position for supporting said frame; and

second stanchion means adapted to be coupled with the frame toward the rear thereof in spaced relationship to said first stanchion means and adapted to engage the ground and operable to raise the rear portion of the frame off the bed in response to movement of the vehicle in one direction to support the frame in said raised position.

3,883,021

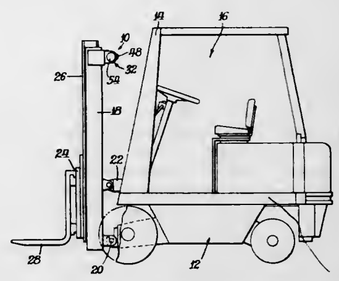
FORK LEVEL INDICATOR FOR A LIFT TRUCK

William G. Wilhelm, Painesville, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Feb. 19, 1974, Ser. No. 443,334

Int. Cl. B65g *47/00*

U.S. Cl. 214—672 **4 Claims**



1. In combination with a vehicle having a mast pivotable relative to the vehicle about a pivot axis, means to pivot said

mast, load carrying means movable upwardly and downwardly

a second U-shaped rail having two outwardly opening side

mast, load carrying means movable upwardly and downwardly on said mast and a device for indicating the levelness of said mast and load carrying means in a plurality of load carrying conditions comprising:

a first body fixed on said mast;

a cylindrical body having its center of gravity spaced from the longitudinal axis of said cylindrical body;

means pivotally interconnecting the cylindrical body and first body so that the cylindrical body is pivotable relative to the first body about the longitudinal axis of said cylindrical body, the cylindrical body being further positioned so that said longitudinal axis of the cylinder is substantially parallel to the pivot axis of the mast;

first and second indicia means fixed relative to the first body to indicate the levelness of said mast and load carrying means when they are in a first and second load carrying condition, respectively; and

third indicia means fixed relative to the cylindrical body and movable therewith upon pivoting thereof, variations in the levelness of the mast and load carrying means due to pivoting of the mast about the pivot axis thereof being indicated by variations of the relative position of the first and second indicia means relative to said third indicia means.

3,883,022

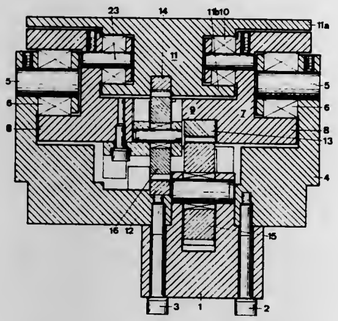
LOAD DISPLACEMENT APPARATUS

Hermann Grebenstein, Erlinsbach, Switzerland, assignor to Oehler-Syhlen-Lagertechnik A.G., Aarau, Switzerland

Continuation of Ser. No. 290,893, Sept. 21, 1972, abandoned. This application May 1, 1974, Ser. No. 465,893

Int. Cl. B66f 9/14

U.S. Cl. 214—750 **1 Claim**



1. A loading attachment adapted for close tolerance table lifting and forklifting movement by movable rails at least partly insertable therein for the movement of pallets to storage which is attachable to each of the movable lifting arms of a stacking machine comprising:

a supporting beam fixedly secured to the lifting arms of the stacker;

a first fixed rail of U cross-section to said supporting beam, the internal width of said U section being slightly wider than the width of said rail insertable therein;

the said walls of said U-shaped rails being provided with inwardly projected extensions to accommodate a spindle which extends parallel to the side walls of said first fixed rail;

roller and spindle means fitted in said side walls of said first rail to horizontally guide said insertable rail which is telescopically movable over the first rail and to also guide a third rail which is telescopically movable over the second rail;

a second U-shaped rail having two outwardly opening side parts each of U-shaped cross-section;

a connecting web bridging said oppositely positioned openings in said second rail;

roller and spindle means fitted in the side parts of said second rail for vertically guiding a third displaceable rail;

a third displaceable rail of I-shaped cross-section having top and bottom surfaces and a connecting web therebetween, the top dimension being greater than the bottom dimension;

said third displaceable rail being mounted for horizontal movement in the side parts of said second rail on the roller and spindle means therein;

said wider surface serving as the load bearing surface to support the pallet being moved while the web of the third rail is dimensioned to correspond to the roller fitted in said second rail;

a rack means rigidly secured to said first rail, said second rail and said third rail and gear wheel means formed of tough fine-finished extruded steel mounted on said supporting beam which meshes with said rack means and with the fixed first rail on one side and the second and third rails on the other side so that the gear wheel means is thereby arranged to laterally displace the rack and extend the second displaceable rail and further extend the third displaceable rail to result in telescopic movement of said second and third rails relative to said first rail;

and, shoulder means on said first, second and third rails for supporting the racks and guide rollers associates therewith said shoulder means being formed of extruded steel for a surface finish which is adapted to close fitting movement for the roller means which is guided and tracked in said rails.

3,883,023

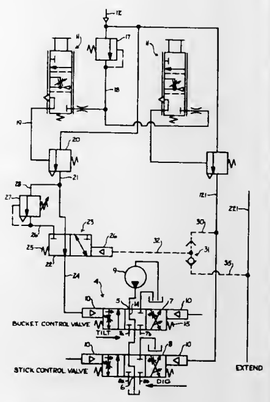
CONTROL MEANS FOR A PAIR OF FLUID MOTORS

Gerald W. Bernhoft, Wauwatosa, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed June 12, 1972, Ser. No. 262,024

Int. Cl. E02f 3/32

U.S. Cl. 214—762 **5 Claims**



1. In a material handling device including a pivotally mounted arm, a tool pivotally mounted on the arm, first and second fluid motor means for independently pivotally moving the arm and the tool, respectively, pump means for directing fluid to the first and second motor means, first valve means movable from a closed to an open position for directing fluid from said pump means to one of said first and second motor means, second valve means movable from a closed to an open position for directing fluid from said pump means to the other of said first and second motor means and manual actuator means for each of said first and second valve means; the improvement comprising: control means, including a separate source of fluid pressure and pressure operated means communicating with said separate source for moving said first and second valve means between open and closed positions, operatively connected between said first and second valve means for moving said first valve means to a partially closed position in response to opening of said second valve means whereby said arm and said tool are pivoted simultaneously at a reduced speed.

3,883,024

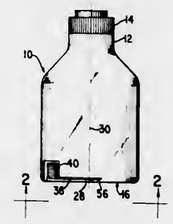
DISPENSER COMBINED WITH HANGING CLIP FOR INVERTED SUPPORT

Douglas W. Thomas, Toms River, N.J., assignor to American Home Products Corporation, New York, N.Y.

Filed Mar. 11, 1974, Ser. No. 449,796

Int. Cl. B65d 23/12

U.S. Cl. 215—100 **7 Claims**



1. An assembly for supporting a container in an inverted position comprising:

A. A container having a discharge orifice at one end and an end wall at the opposite end;

1. A recess defined in said end wall;

2. Means on said end wall to support a hanger device located in the said recess section off center of the vertical axis of said container;

B. A hanger device rotatably connected to said support means and further comprising:

1. A first planar portion, and a second planar portion substantially at right angles to said first planar portion;

2. Means defined in said first planar portion adjacent the end opposite said second planar portion to rotatably connect said hanger device to said container support means whereby said hanger rotates in the plane of said first planar portion;

3. The length of said first planar portion from said connecting means to said second portion being greater than the distance from said connecting means to the most distant portion of said end wall.

3,883,025

GASKETS FOR CONTAINER CLOSURES

John Adrian Lancaster Jemmett, Ilfracombe, Devon, England, assignor to W. R. Grace & Co., Cambridge, Mass.

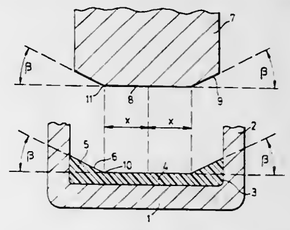
Filed Apr. 3, 1974, Ser. No. 457,690

Claims priority, application United Kingdom, Apr. 12, 1973, 17646/73

Int. Cl. B65d 53/00

U.S. Cl. 215—341 **11 Claims**

1. In a container closure, suitable for a container having a threaded neck, said closure having a top portion, an integral skirt which extends downwardly from the top portion and is adapted to be secured on the container by threads complementary to said threads on the container neck and a gasket within the closure which, considered in its configuration before the closure is closed onto the container, has a substantially flat central panel and a peripheral portion adjoining said panel at an adjoinment edge, the improvement which comprises a said peripheral portion having a thickness which is at all points greater than the thickness of the central panel and



increases continuously, stepwise, or part-continuously and part-stepwise, radially outwards from the adjoinment point to the skirt of the closure, the radial length (x) between the centre of the closure and the adjoinment edge being from 25 to 45% of the maximum internal diameter of the closure (d).

3,883,026

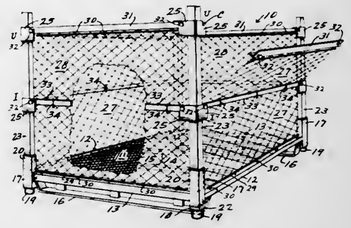
COLLAPSIBLE WALL CONTAINER

John C. Selz, 2628 Middlesex Dr., Toledo, Ohio 43606

Filed Apr. 23, 1973, Ser. No. 353,398

Int. Cl. B65d 7/24

U.S. Cl. 220—6 **6 Claims**



1. A container comprising a floor, support members connected to said floor, vertical posts removably received by said support members, a resilient wall member having a first lower edge connected adjacent a periphery of said floor, said wall member being vertically stretchable from a first, non-stressed condition to a second, stressed condition, catch means connected adjacent a second upper edge of said wall members and means on each of said posts for receiving said catch means only when said wall member is stretched to the second stressed condition; whereby said wall member urges said catch means within said receiving means to resiliently lock said wall member in an upright position.

3,883,027

CONTAINER IN PARTICULAR FOR USE AS BATHROOM CABINET

Walter Schneider, Wildenbuhlstr. 54, CH 8135 Langnau am Albis, Switzerland

Filed Oct. 11, 1973, Ser. No. 405,566

Claims priority, application Switzerland, Oct. 26, 1972, 15780/72

Int. Cl. A47b 67/02; B65d 25/36, 25/14

U.S. Cl. 220—9 F **4 Claims**

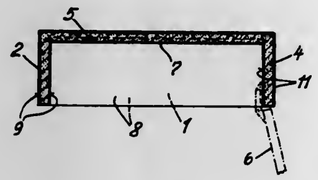
1. A box-like container adapted to be used as a bathroom cabinet comprising:

a one-piece molded hard-foam plastic core of rectangular outline and a back wall portion with four side wall por-

tions contiguous with one another and projecting for-

tions contiguous with one another and projecting forwardly from said back wall portion;

a sheet metal member overlying the innerface of said back wall portion and reaching substantially to said side wall portions around its periphery;



substantially U-profile sheet metal side wall members pushed onto said side wall portions and having inner legs reaching to said back wall member, webs overlying the forward edges of said side wall portions, outer legs flanking said side wall portions and reaching to the rear face of said back wall portion, and inwardly turned flanges overlying and engaging said rear face.

3,883,028

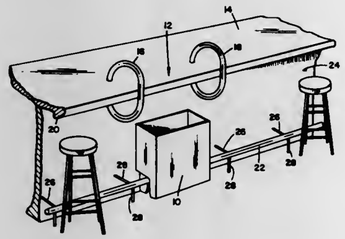
TRASH RECEPTACLE

John A. Kittelson, 1970 Filbert, San Francisco, Calif. 94123

Filed Feb. 22, 1974, Ser. No. 444,632

Int. Cl. B65d *25/24*

U.S. Cl. 220—18 **8 Claims**



1. A trash receptacle placeable at the front face of a bar or similar counter having a foot rail, said foot rail being mounted to the front face of the bar by means of support struts projecting from the bar and connected to the foot rail, said receptacle comprising a chamber having a downwardly closed base portion adapted to override the foot rail and an upwardly open body portion extending upwardly from said base portion, said base portion including a forward section depending from the body portion and adapted to abut the floor on the front side of the foot rail opposite from the front face of the bar, a central downwardly concave section adapted to overlie the foot rail and a rear section comprising at least one pair of narrow depending segments at least one of which is adapted to abut the floor between the front face of the counter and the foot rail, said pair of depending segments defining a space therebetween adapted to receive one of the support struts therein so that said chamber can be placed over the foot rail with both the forward section and the aft section of the base portion in abutment with the floor to provide a solid support for said chamber, one of the support struts being engaged between the depending segments of the rear section of the base portion of the chamber so that transverse movement of the chamber is prevented.

3,883,029

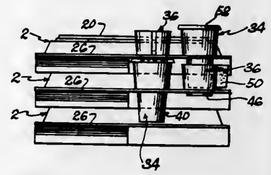
STACKABLE TRAYS AND CUPS

William B. Wyatt, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Filed Nov. 30, 1972, Ser. No. 310,684

Int. Cl. B65d *1/34*; **A47g** *19/00*

U.S. Cl. 220—23.83 **1 Claim**



1. A food service system comprising a stack of trays, each tray having a central portion and a ledge extending from said central portion and having upper and lower surfaces, said ledges being spaced vertically from each other, each ledge having a pair of holes formed therein to form two vertical columns of such holes, a pair of vertical columns of containers carried on said ledges and having portions extending through said holes, each vertical column of containers comprising alternating first relatively tall containers, each with a supporting surface intermediate its length in contact with an upper surface of a ledge, and second relatively short containers, each with a supporting surface intermediate its length in contact with an upper surface of a ledge, and wherein the portion of a first container below a ledge is disposed within a second container carried on a ledge below, and wherein the portion of a second container below a ledge extends only slightly below that ledge out of contact with a first container on a ledge below.

3,883,030

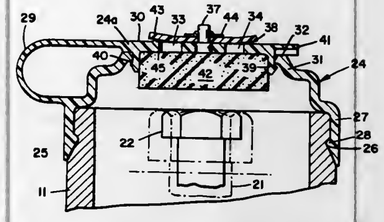
BREATHER CAP APPARATUS FOR A SPRING-ACTUATED BRAKE MECHANISM

George P. Mathews, 16947 Kinross Rd., Birmingham, Mich. 48009, and Robert B. Hutter, 14180 Susanna, Livonia, Mich. 48154

Continuation-in-part of Ser. No. 179,843, Sept. 13, 1971. This application Jan. 15, 1973, Ser. No. 323,517

Int. Cl. B65d *51/16*; **F16k** *17/00*

U.S. Cl. 220—204 **15 Claims**



1. Breather cap apparatus for closing off from the atmosphere the spring chamber of a brake mechanism comprising: a cap member comprised of a ring-shaped portion and a disc-shaped portion integrally connected;

said ring-shaped portion including airtight means thereon for connecting said member to said spring chamber;

said disc-shaped portion including leakproof means thereon for coupling said disc-shaped portion to said ring-shaped portion in a manner selectively sealing off the interior of said spring chamber from the atmosphere;

air flow means associated with said disc-shaped portion for permitting free breathing in one air flow direction, from the interior of said spring chamber to said atmosphere, said air flow means including a plurality of spaced apertures in said disc-shaped portion and a resilient valve operatively connected to said disc-shaped portion, said valve closing off said apertures when seated in position on said disc-shaped portion, said disc-shaped portion including a raised, beaded ring thereon outside of said spaced apertures with said valve being sprung against said beaded ring to thereby be in a normally closed position; and

said valve including means thereon at least at the point of contact with said beaded ring to prevent a perfect airtight seal between said beaded ring and said valve and permit a selectively controlled amount of air leakage therepast.

3,883,031

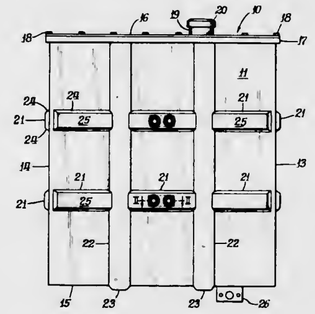
HYDRAULIC TANK WITH WALL STRESSING MEANS

William D. McMillan, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 19, 1974, Ser. No. 462,333

Int. Cl. B65d *7/44*

U.S. Cl. 220—71 **7 Claims**



1. In a tank for a heavy duty hydraulic system which may produce pressure variations within the tank, said tank having generally parallel major walls connected by side walls and a bottom wall, an open top, and a removable closure for the open top, and wall stiffeners bonded to at least the major walls, adjustable wall stressing means comprising, in combination:

a pair of mounting members secured to opposed areas on the inner surfaces of the major walls, said mounting members having aligned facing bores and being manually accessible through the open top of the tank;

a tie rod which has its end portions rotatably interengaged within said bores;

and screw thread means functionally related to said tie rod so that rotation of the tie rod in one direction moves said major walls apart at the mounting members and rotation of the tie rod in the opposite direction draws the major walls toward one another at said mounting members through the interengagement of the tie rod in the bores.

3,883,032

AUTOMATIC DRAIN VALVE FOR A FLOATING ROOF

Walter Fisher, Willowdale, Ontario, Canada, assignor to Texaco Canada Limited, Montreal, Canada

Filed Apr. 22, 1974, Ser. No. 462,913

Int. Cl. B65d *87/18*

U.S. Cl. 220—219 **1 Claim**

1. In combination with a buoyancy-type floating roof for an atmospheric liquid storage tank, an automatic drain comprising

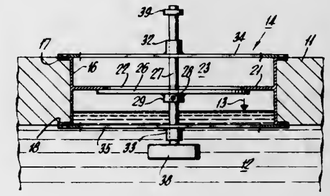
a circular housing mounted integrally flush with the top and bottom surfaces of said roof,

said housing incorporating an integral flat partition located midway relative to the thickness of said roof and having a cylindrical walled circular orifice coaxially located therein, and

a closure member for maintaining said orifice closed under normal floating conditions of said roof,

said closure member comprising

a thin flat disk having a cylindrical edge with the diameter thereof greater than the diameter of said orifice and being located underneath said partition,



a vertically situated shaft under normal floating conditions of said roof and having said flat disk attached centrally thereon,

a pair of diametrically located relatively narrow strips having bearings centrally attached thereto for slidably supporting said shaft and disk for free vertical movement, and

a float attached to the bottom of said shaft situated below the lower one of said strips and having sufficient buoyancy when immersed in said liquid to bias said disk into closing contact with said partition.

3,883,033

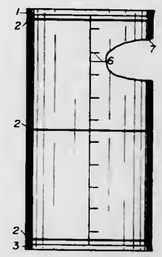
INSTANT TWISTOPEN CAN

Roland Clough Brown, 425 Stratford Ct., Del Mar, Calif. 92014

Filed Mar. 15, 1974, Ser. No. 451,420

Int. Cl. B65d *41/32*

U.S. Cl. 220—266 **12 Claims**



1. An improvement on a fabricated metal container for product contents, consisting of a formed center part of length desired and of geometrically-shaped cross-section, fitted with a top and a bottom captive cover part means to match the cross-section of the said center part, crimped onto the center part at each end, said center part with scored mark means at points desired around its outer surface to weaken the section of the said metal thickness below the scoring for easy breaking under torsional stress from twisting action by the user between the upper and lower portions of the said container, just above and below a selected score mark, thus opening the said container and allowing access to its said contents, all without the assistance of any accessory device by the user except the said container itself.

3,883,034

NON-RETURNABLE PACKING CONTAINERS

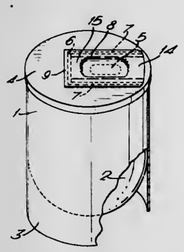
Anders Ruben Rausing, Via Kenia 22-24, Rome, Italy

Filed Sept. 13, 1973, Ser. No. 396,726

Claims priority, application Switzerland, Oct. 18, 1972, 15198/72

Int. Cl. B65d *41/32, 41/00*

U.S. Cl. 220—268 **3 Claims**



1. A non-returnable packing container having at least one substantially plane end wall, a pouring opening provided in said end wall, an inner cover strip affixed to the inside of said end wall to cover the pouring opening, a longitudinal outer cover strip disposed over the pouring opening against the outside of said end wall, said outer cover strip being affixed to said inner cover strip in the area of the pouring opening by a strong seal joint, said outer cover strip being affixed to the outside of said end wall along longitudinal sealing zones on opposed sides of and spaced from the edge of the pouring opening, said outer cover strip having two substantially parallel lines of perforations located on opposed sides of the pouring opening between the edge of the pouring opening and said longitudinal sealing zones, said longitudinal outer cover strip being affixed by a strong seal joint at one end thereof to said end wall along a sealing zone which extends transversely of the lines of perforation, whereby said outer cover strip will normally remain affixed to said end wall after opening the packing container by lifting said outer cover strip and tearing along said lines of perforation to remove the inner cover strip in the area of the pouring opening.

3,883,035

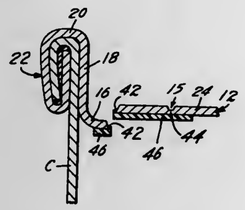
EASY OPENING CONTAINER WITH SAFETY EDGE COMPOUNDS

Kenneth Richard Rentmeester, Barrington, and Joseph Lambert Godar, Jr., Wauconda, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Sept. 19, 1973, Ser. No. 399,123

Int. Cl. B65d *41/32*

U.S. Cl. 220—270 **18 Claims**



1. In a metal container wherein a full-open end closure is seamed to a container body, wherein the end closure includes a peripheral countersink wall, full-open removable central panel defined by a substantially peripheral score line and an opening tab secured to the central panel and operative upon manipulation to cause a rupture in the score to leave a rim between the countersink wall and the score, the improvement which comprises:

a safety edge compound having sufficient elongation, tear and tensile characteristics to tear without substantial fragmenting or stringing upon removal of the central panel derived from a composition comprising from about 5 to about 30 percent of an elastomeric polymer, liquid vehicle and from about 95 to 70 percent filler, said compound covering the score and tearing to protect the metal edges of the removable panel section and the rim upon rupture of the score.

3,883,036

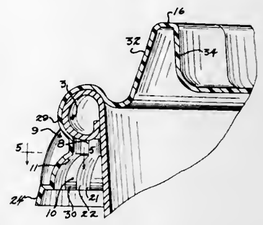
SNAP-ON LID

John W. Mahaffy, Three Rivers, Mich., and Herm L. Haven, Atlanta, Ga., assignors to Continental Can Company, Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,423

Int. Cl. B65d *43/10, 21/02, 41/18*

U.S. Cl. 220—306 **17 Claims**



1. A snap-over cover for containers having an external peripheral bead around the upper edge thereof, said cover being formed of an easily flexed material and comprising:

a top wall;

a depending peripheral conical skirt;

an inverted peripheral channel connecting said top wall to said peripheral skirt for receiving the external peripheral bead formation of a container;

an arcuate in cross section bead intermediate said top wall and said channel and having an inner edge and an outer edge;

a plurality of circumferentially spaced inwardly directed projections formed in said skirt and adapted to form a waist to underlie the peripheral bead of a container to retain the cover thereon and form spring pressed detent means; and

an inwardly facing arcuate land below each projection extending normal to said channel and shaped to provide a camming surface when forcing the cover onto a container and to matingly fit onto the outer side of the channel of another cover stacked in nested relation therewith to prevent lateral movement between nested covers.

3,883,037

DISPLAY UNIT

Pierre Francois Xavier Seiller, Ain, France, assignor to Societe a Responsabilite Limitee dite: Le Presentoir Seiller, Ain, France

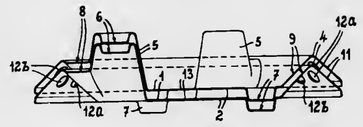
Filed Mar. 28, 1973, Ser. No. 345,723

Claims priority, application France, Mar. 30, 1972, 72.11995; Feb. 7, 1973, 73.05078

Int. Cl. B65d *21/04*

U.S. Cl. 206—5 **6 Claims**

1. A display unit for articles to be mounted along its periphery, comprising a stack of identical thin-wall members of circular outline and provided with a pluarlity of angularly equispaced formations projecting from one axial side of each member and forming concavities at the opposite axial side thereof, said formations of pairs of adjacent members nesting in one relative angular position of the adjacent members with a projecting side of each formation of one member of the pair fitting into the concavity of a respective formation of the other member of the pair, the formations of the adjacent members of the pair spacing said members apart in another relative angular position to expand the stack, said members each being provided along its periphery with means for mounting said articles thereon, said formations including three angularly equispaced bosses, each member being of disk shape and further formed with three angularly equispaced recessed portions projecting from the said other side of the member, each boss being located between two recessed portions and at the same angular distance from each of them, each boss being formed at its upper end with a cup capable of receiving one such recessed portion, the cups of said bosses and said recessed portions having their centers located on a common circle centered on the axis of the disk such that when two adjacent members have the same angular position, the bosses of one fit into the bosses of the other and, when the adjacent members are angularly offset through one sixth of a revolution, the recessed portions of an upper member are received in the cups of the bosses of a lower member of the pair.



3,883,038

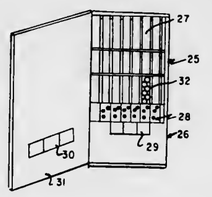
CAN AND BOTTLE VENDOR

Floyd V. Bookout, Long Grove, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill.

Filed Nov. 12, 1973, Ser. No. 414,752

Int. Cl. B65g *59/00*

U.S. Cl. 221—67 **12 Claims**



11. In an automatic coin controlled vending machine for dispensing canned or bottled articles from vertical open bottom magazines in which articles are stored in serpentine stacks, improved dispensing means comprising: an upper vend gate assembly mounted in blocking position over the open bottom of said magazine and comprising a pair of horizontal rod means positioned to underengage the bottommost article of a stack thereover, a lower vend gate assembly mounted horizontally beneath said upper assembly to define an article receiving escrow chamber therebetween, means effecting alternate periodic oscillating movement of each said rod means relative to the other along a path about the upper end of said chamber and non-interferingly with the interior thereof such that the resulting separation of said rod means permits the passage of a said bottommost article therebetween for entry into said chamber; said lower assembly comprising gate means pivotal about a horizontal axis for movement toward and away from said rod means and sequentially to and between a raised position adjacent said rod means whereat the same underengages and supports said bottommost article as it enters said chamber, an intermediate position to which it carries and at which the same holds said article in said chamber, and a lowered position whereat articles thereon are released from said chamber; and means sequentially operating said rod and gate means to effect movement of said gate means from said raised to said intermediate position for each cycle of oscillating movement of said rod means and subsequent movement thereof to said lowered position.

3,883,039

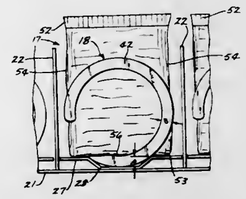
VENDING MACHINE FLAT HELIX DISCHARGE UNIT

Francis A. Wittern, Des Moines; Henry J. Albright, West Des Moines, and Arthur N. Wirstlin, Altoona, all of Iowa, assignors to Fawn Engineering Co., Des Moines, Iowa

Continuation of Ser. No. 326,780, Jan. 26, 1973, abandoned. This application Apr. 1, 1974, Ser. No. 456,742

Int. Cl. G07f *11/36*

U.S. Cl. 221—75 **1 Claim**



1. In a vending machine having a cabinet and within one portion of which is mounted an item discharge chute for dispensing items in flexible packages to be withdrawn from the machine, a plurality of item discharge units mounted in a side-by-side, horizontally disposed arrangement, each item discharge unit comprising:

tray means having a base, laterally spaced side walls, a rear end, and a front end open to the discharge chute, said tray means adapted to hold a plurality of flexibly wrapped items, said base having a depression formed laterally centrally thereof and extended longitudinally thereof;

helical means including a helix having a plurality of convolutions disposed within and extended longitudinally of said tray means, each of said convolutions nested within said depression in sliding contact with a bottom portion of said depression, each convolution portion having a radial thickness equal to the depth of said depression whereby the bottom of an item is supported at each end by said base and intermediate said ends by a convolution portion, thereby extending substantially level across said base and above said depression; and

customer controlled drive means at said rear end connected to for rotating said helix a pre-determined incremental amount.

3,883,040

PNEUMATICALLY OPERABLE GATING MECHANISM

Peter Martin Bell, 83 Queens Rd., Cheadle Hulme, Stockport, Cheshire, England

Continuation of Ser. No. 198,694, Nov. 15, 1971, abandoned. This application Oct. 25, 1973, Ser. No. 409,765

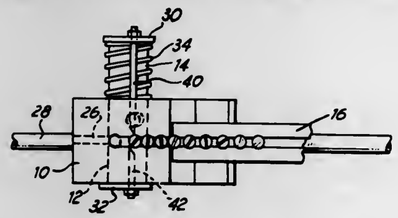
Claims priority, application United Kingdom, Nov. 14, 1970, 54298/70

Int. Cl. B65h *5/22*

U.S. Cl. 221—224 **2 Claims**

1. A pneumatically operable feed and gating mechanism for items having a head portion and a shank portion, comprising a spool valve movable between two positions in response to pneumatic pressure, a supply line for feeding said items to be gated to the mechanism, a delivery line spaced from said supply line along the axis of said spool valve through which said gated itmes are delivered from the mechanism, an air feed line, the spool valve being constructed with axially spaced

ports such that in one position one of said ports connects the air feed line to the delivery line and such that in the other position the other of said ports containing one of said items is connected to the delivery line and the air feed line is closed, and a gating mechanism movable with said spool valve and



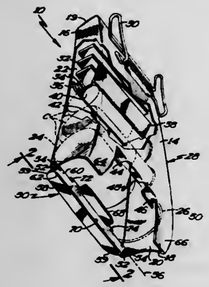
comprising coaxially aligned rods extending from each end of said spool and defining an inclined slot between the free ends of said rods to permit one of said items to be delivered from the supply line to the delivery line when the spool valve moves into said other position.

3,883,041

AMMUNITION CARTRIDGE DISPENSER

Gordon G. Olson, Willmar, Minn., assignor to Floyd B. Olson, Pennock and Les R. Karjala, Minneapolis, both of, Minn., part interest to each

Filed Jan. 17, 1974, Ser. No. 434,250
Int. Cl. B65h *1/08*
U.S. Cl. 221—227 6 Claims



1. An ammunition cartridge dispenser comprising:

a magazine including front and rear panels interconnected by upright end walls to define an interior chamber therebetween in which a plurality of cartridges is storable and further including a cartridge aperture at an open end of said chamber and communicating with said chamber, through which cartridges are loadable into and dispensable from said chamber;

a spring-loaded foot mounted within said chamber for movement toward and away from said cartridge aperture and biased to move toward said cartridge aperture to urge cartridges storable in said chamber toward said aperture; said magazine further including stationary cartridge retaining means on said rear panel and adjacent said cartridge aperture to contact a cartridge containable within said chamber to aid in retaining the cartridge within said chamber;

a movable dispensing lever adjacent said cartridge aperture, confronting said stationary cartridge retaining means and pivotally connected to said magazine to pivot about a longitudinal axis oriented generally parallel to said front panel, said lever including a handle extending out of said magazine so as to be accessible to an operator and further including a cartridge engaging arm;

said dispensing lever being swingable between retaining position wherein said cartridge engaging arm of said lever cooperates with said stationary cartridge retaining means to releasably retain a cartridge within said chamber and a releasing position wherein said cartridge engaging arm swings away from said stationary cartridge retaining means to increase the spacing therebetween to permit a cartridge to leavé said chamber and pass therebetween toward said cartridge aperture in response to force from said spring biased foot transmittable to the cartridge and directed toward said aperture; and

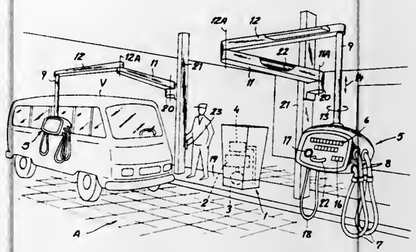
said cartridge engaging arm being bifurcated, a first bifurcation being defined by a hand positioned centrally on said arm between said end walls of said magazine and a second bifurcation being defined by a pair of fingers separated by the length of said hand, at least one of said bifurcations cooperating with the stationary cartridge retaining means to retain a cartridge within said chamber when said lever is in said retaining position.

3,883,042

INSTALLATION FOR DISPENSING GASOLINE

Heinrich Junker, Schwelm, Germany, assignor to Grundstück-verwaltungsgesellschaft Muller & Co. KG, Schwelm, Germany

Filed Aug. 22, 1973, Ser. No. 390,601
Claims priority, application Germany, Aug. 24, 1972, 2241556
Int. Cl. B67d *5/06*
U.S. Cl. 222—23 3 Claims



1. An installation for dispensing gasoline or the like to a motor vehicle at a filling area, said installation comprising:

an overhead support at said area;

a displaceable dispensing head provided with a price indicator, a filler hose, and value means for controlling gasoline flow through said hose;

support means suspending said head from said support for horizontal movement of said head jointly with said indicator, hose, and valve means in all horizontal directions throughout said area;

means for vertical movement of said head relative to said support;

means for rotation of said head about a vertical axis;

a stationary pump remote from said head for drawing gasoline out of a supply thereof;

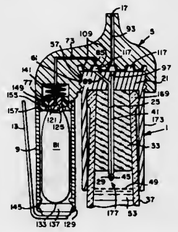
conduit means extending between said pump and said head for supplying said gasoline to said head, said support means including at least two arms, one of said arms being pivoted on said support and the other arm being pivoted on said one arm and carrying said head, and switch means on said head and connected to said pump for sensing the proximity of a motor vehicle to said head and allowing dispensing of gasoline only when a vehicle is adjacent said head.

3,883,043

DISPENSOR FOR VINTAGE WINES

Charles Robert Lane, Box 399, Los Altos, Calif. 94022

Filed Oct. 18, 1973, Ser. No. 407,552
Int. Cl. B67b *7/24*
U.S. Cl. 222—82 9 Claims



1. A device useful for dispensing a liquid from a sealed bottle without unduly agitating the liquid contained in the bottle while maintaining a desired gas in contact with the liquid to the exclusion of undesired vapors, the device being operable to dispense liquid, comprising:

A. A seal traversing body separately attachable over the neck of the sealed bottle, comprising:

a cap adapted to fit over and encompass the neck of the sealed bottle; means for piercing through the seal of the bottle, said piercing means including a tube and a pipe each extending through said cap, one end of said tube and one end of said pipe extending beyond the bottom of the cap, said one end of said tube and said one end of said pipe being insertable through the seal of the bottle, said one end being adapted to terminate within the bottle and each terminating above the normal liquid level therein, said tube being adapted to introduce a flow of gas into the bottle and said pipe adapted to conduct

a flow of liquid from within the sealed bottle through the seal of the bottle and through the cap to the outside of the bottle;

in combination with:

B. a liquid delivery member sealable in a readily attachable and detachable manner by a twisting motion in aligned and abutting relation to said cap after said seal traversing body is attached over the neck of said sealed bottle, said member comprising:

a second body having a cavity adapted to hold a gas filled pressurized vessel, said second body having a passage therethrough establishing a sealed gas flow connection at one end of said passage with said vessel and aligned at the other end of said passage through 360° of rotation of said member relative to said body with said other end of said tube, said second body also having an outlet tunnel therethrough aligned to establish liquid flow connection through 360° rotation of said member relative to said seal traversing body from the other end of said pipe to the exterior of said bottle; and

a flow control valve communicating the interior of said vessel with said passage.

3,883,044

MICROPIPETTER, ESPECIALLY FOR THE DISCHARGE OF A SAMPLE AND A DILUENT

Joseph Buchler, Fort Lee; Otto Gross, Bergenfield, both of N.J., and Bernard Parker, Westport, Conn., assignors to Buchler Instruments Division Nuclear-Chicago, N.J.

Filed Mar. 30, 1973, Ser. No. 346,637
Int. Cl. G01f *11/06*
U.S. Cl. 222—309 15 Claims

1. A pipetter comprising:

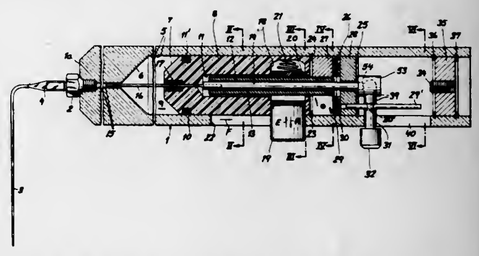
a housing having a port and defining a compartment communicating with said port;

a first piston shiftable in said housing for varying the volume of said compartment;

a second piston shiftable in said housing for varying the volume of said compartment independently of said first piston;

actuating means movable relatively to said housing and operatively connected to said second piston for displacing same relative to said housing; and

mechanism operatively connecting said first piston to said actuating means for incremental displacement of said first



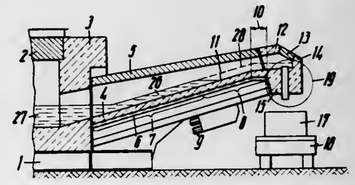
piston subsequent to displacement of said second piston whereby discharge of a sample by movement of said second piston is followed by incremental discharge of a quantity of liquid from said compartment by said first piston, said housing being a barrel forming a cylinder defining said compartment at one end, said first piston being axially shiftable in said cylinder and said second piston is axially shiftable in said first piston, said actuating means including an arm connected to said second piston and projecting laterally from said barrel for axially shifting said second piston relative to said first piston and said barrel.

3,883,045

ELECTRONIC CONVEYOR FOR MOLTEN METAL WITH ELEVATED POURING TUBE

Hans Erwin Gerbig, Deutscher Staatsangehoriger, Germany, assignor to AEG-Elotherm GmbH, Remscheid, Germany

Filed Sept. 14, 1973, Ser. No. 397,328
Claims priority, application Germany, Sept. 30, 1972, 2248052
Int. Cl. B22d *37/00*
U.S. Cl. 222—372 2 Claims



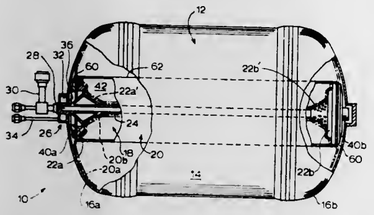
1. In casting equipment for pouring melts, of the type having a furnace associated with an electromagnetic conveying trough proceeding from said furnace vessel, said conveying trough having a refractory body upwardly sloping from said vessel, and an electromagnetic travelling field inductor extending along its length below said refractory body, the floor of the trough rising in the direction of a terminal wall from a point corresponding to the upper end of said conductor, the improvement comprising said terminal wall extending across the width of the trough and closing the effective open cross section of the trough, and a refractory pouring tube which passes through the trough bottom in proximity to said wall and

of which the upper end projects above the level of the adjacent floor of said trough.

3,883,046
ELASTOMERIC BLADDER FOR POSITIVE EXPULSION TANK

Leo M. Thompson, Niagara Falls; Robert K. Anderson, Lockport, and Lawrence H. Kocher, Tonawanda, all of N.Y., assignors to Textron Inc., Providence, R.I.

Filed Feb. 11, 1974, Ser. No. 440,956
Int. Cl. B65d *35/28*
U.S. Cl. 222—386.5 **8 Claims**

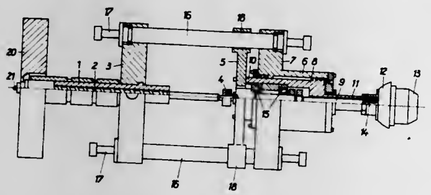


8. A bladder for use in a positive expulsion tank having a given shell configuration, characterized as having an as-fabricated cylindrical configuration with annular attachment areas at opposite ends of an intermediate area, said bladder being formed of a resiliently deformable material and incorporating a reinforcing matrix, said matrix being patterned to prevent stretch deformation of said attachment areas and to provide for nonuniform biaxial stretch characteristics within said intermediate area whereby to permit said bladder intermediate area to be resiliently deformed radially from said cylindrical configuration to assume a tank-full configuration corresponding to said shell configuration.

3,883,047
INJECTION UNIT FOR AN INJECTION MOLDING MACHINE

Heinz Hofer, Schoneberg, and Sushil Chaudhry, Heuchling near Lauf, both of Germany, assignors to DEMAG Kunststofftechnik Gesellschaft mit beschrankter Haftung, Nurnberg, Germany

Filed Mar. 15, 1973, Ser. No. 341,483
Claims priority, application Germany, Mar. 16, 1972, 2212752
Int. Cl. B29f *1/06*
U.S. Cl. 222—413 **3 Claims**

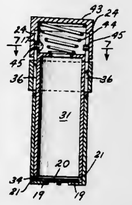


1. An injection unit for injection molding machines, which includes in combination: a plasticizing cylinder, a worm rotatably and axially displaceably arranged in said plasticizing cylinder, an injection cylinder arranged in substantially axial alignment with said plasticizing cylinder, fluid operable hollow piston means reciprocably arranged in said injection cylinder and having one side thereof facing said plasticizing cylinder and provided with a cylindrical extension extending through said injection cylinder in the direction toward said plasticizing cylinder, operatively connected to said worm for axially moving the same while permitting only rotation of said worm relative to said piston means, motor means comprising housing means connected to said piston means, said motor means being drivingly connected to said worm for rotating said worm, said injection cylinder being located coaxially between said motor means and said plasticizing cylinder, connecting spar means interconnecting said injection cylinder and said plasticizing cylinder so as to form a carriage therewith, guiding spar means axially displaceably supporting said carriage, and torque support means arranged on said extension outside said injection cylinder, said torque support means being axially displaceably supported by said connecting spar means, so as to prevent rotation of said hollow piston means and said motor housing means.

3,883,048
CONDIMENT DISPENSER

Morton Saipe, 6 Gault Park Dr., Westport, Conn. 06880, and George K. Maljanian, 67 Blue Ridge Rd., Wilton, Conn. 06897

Filed Nov. 29, 1973, Ser. No. 419,936
Int. Cl. B67d *3/00*
U.S. Cl. 222—518 **3 Claims**



1. A portable condiment dispenser comprising: a tubular main body element having a continuous side wall and an end wall at one end thereof defining at least one through opening, said side wall having at least one longitudinally arranged slot therein; a closure element slideably disposed within said body element, and cooperating therewith to form a condiment retaining chamber, and shiftable between first and second positions, in said first position, said closure element unobstructing said opening, and in said second position said closure element closing said opening; said closure element having manually engageable means thereon projecting through said longitudinally arranged slots; and a cap element selectively engaged upon a second end of said main body element to define therewith an enclosed cavity for the retention of a condiment.

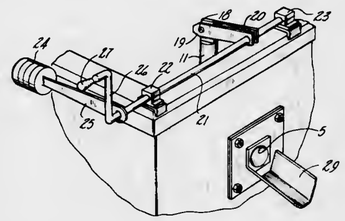
3,883,049
PISTON-TYPE VALVE FOR MELTING FURNACES

John McCarthy, 1522 Black Hawk Trl., Benton Harbor, Mich. 49022, and Keith Paul, 1328 S. Manor Dr., St. Joseph, Mich. 49085

Filed Sept. 14, 1973, Ser. No. 397,445
Int. Cl. B22d *37/00*
U.S. Cl. 222—559 **1 Claim**

1. An apparatus for selectively controlling the transfer and retention of flowable material, comprising, in combination:
first means for containing said flowable material;
second means connected to said first means for providing a flow path between the interior and the exterior of said first means for said flowable material;
third means, at least a portion of which is contiguous with said second means for selectively opening and blocking said flow path for said flowable material; and wherein:
said first means for containing said flowable material comprises a furnace;
said flowable material comprises molten metal;
said second means comprises a heat treated steel block having the general shape of a rectangular parallelepiped,

and being provided therein with first and second passages in communication with each other which form said flow path between the interior and the exterior of said furnace;
said second means being disposed within a wall of said furnace at a position which is normally below the uppermost level of the molten metal in said furnace so that when said third means have selectively opened said flow path, said molten metal may flow into said first passage and then pass into said second passage for transfer to the exterior of said furnace;

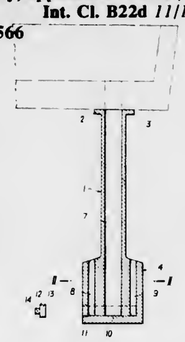


said first passage having a central longitudinal axis which is disposed substantially perpendicular to the central longitudinal axis of said second passage;
said third means includes a piston mechanism which moves in response to an operator's lever in conjunction with a counter-weight device;
said piston mechanism being disposed, dimensioned and arranged to move within said first passage, and being provided with at least two piston rings which are spaced apart by a distance which is greater than the largest diameter of the common line of intersection between said first and second passages.

3,883,050
REFRACTORY CASTING TUBE FOR CASTING HOT LIQUID METALS

Otto Hoyer, and Erwin Kuebel, both of Linz, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Austria

Filed Feb. 1, 1973, Ser. No. 328,504
Claims priority, application Austria, Feb. 3, 1972, 857/72
Int. Cl. B22d *11/10*
U.S. Cl. 222—566 **2 Claims**

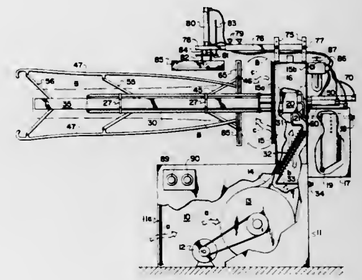


1. A refractory casting tube for the continuous casting of liquid steel in apparatus that includes a continuous casting mould and a tundish located above the mould, said casting tube comprising:
a tube made of refractory material and having an inner bore,
the tube being adapted to be secured at one end to the bottom of the tundish so that the inner bore of the tube communicates with the interior of the tundish,
the tube having at its other end a casting tube head that has a closed bottom and at least one canal extending vertically upwardly to define a vertically upwardly directed outlet for the casting tube head, the vertically extending canal being substantially parallel to the inner bore of the tube and having a length of at least four centimeters,
the casting tube head also having at least one laterally extending canal connecting the inner bore of the tube to the vertically extending canal, and
the casting tube being adapted for insertion into liquid steel in the mould during casting and being dimensioned so that the casting tube head and an adjacent lower portion of the tube can be disposed within the mould and spaced from all sides of the mould.

3,883,051
GARMENT FINISHING APPARATUS

Stanley M. Bailey, 242 Washington St., Hamburg, Pa. 19526

Continuation-in-part of Ser. No. 469,829, May 14, 1974. This application Sept. 24, 1974, Ser. No. 508,885
Int. Cl. A41h *43/00*
U.S. Cl. 223—51 **12 Claims**



1. In a garment finishing machine having a support base and a longitudinally extending supporting means carried on the support base, a steam supply header and a hot air supply duct, means for mounting a permeable garment bag along the supporting means for receiving hot air from said supply duct, a closed loop piping system extending along the supporting means and connected at an inlet end to said steam supply header for indirectly heating air within the bag, a heat exchanger within said hot air supply duct for heating air being supplied thereto, and said closed piping system having an opposite outlet end thereof connected to said heat exchanger for supplying residual heat from the steam thereto.

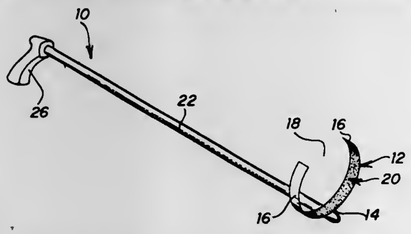
3,883,052
STOCKING PULLER

Julia P. Wilson, 7319 Inwood Rd., Apt. 4, Dallas, Tex. 75209

Filed Nov. 12, 1973, Ser. No. 414,641
Int. Cl. A47j *51/06*
U.S. Cl. 223—111 **4 Claims**

1. A stocking puller comprising:
a generally U-shaped resilient stocking support member adapted for the insertion of the foot of a user therethrough;
means forming an adhesive layer on the stocking support member for retaining an open stocking thereon;
an elongate rod having the stocking support member secured to one end thereof; and
handle means secured to the opposite end of the elongate rod from the stocking support member;

said means forming an adhesive layer comprising a length of tape of the type having adhesive layers formed on both



sides thereof with one of said layers being adhesively engaged with the stocking support member.

3,883,053

INFLATABLE PAD

Frank A. Pritchard, and Bill N. Lovelace, both of 2215 Bennett, Wichita, Kans. 67213

Continuation-in-part of Ser. No. 206,623, Dec. 10, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,990

Int. Cl. A45f *3/02*

U.S. Cl. 224—5 P **2 Claims**



1. An inflatable cushion pad for golf bag shoulder straps, or the like, comprising a flexible pocket portion, a flexible air chamber portion integrally attached along said pocket portion in juxtaposition, said air chamber portion having a plurality of end to end compartments in fluid communication with each other and bendable between said compartments, means mounted in the wall of said air chamber portion to inflate same, said pocket portion is an elongated hollow pocket open on the ends thereof, said air chamber portion extends along said pocket portion substantially covering a face of said inflatable pad, said air chamber portion is substantially the same length as said pocket portion, said means to inflate is a valve means through a wall of said air chamber portion, said valve means being openable for inflation or deflation of said air chamber portion, said air chamber portion being adapted to be positioned on one face of a strap when same is placed in said pocket portion, said pocket portion being adapted to fit around said strap in a close fitting relation when said air chamber portion is in an inflated condition, said plurality of compartments being separated by a plurality of seams transverse to said elongated pocket portion forming said compartments of substantially equal size, said inflatable pad being constructed and adapted to in use receive said strap in said pocket portion to have said plurality of compartments of said air chamber portion inflated and to be used having said air chamber portion positioned between said strap and a person and shaped to the contour of same to cushion the force of said strap when moved in contact with said person, said pad is inhibited from moving along the length of said strap by frictional engagement with said pocket and by inflation of said air chamber.

3,883,054

APPARATUS FOR INTERCEPTING AND ADVANCING THE LEADERS OF PHOTOGRAPHIC ROLL FILMS

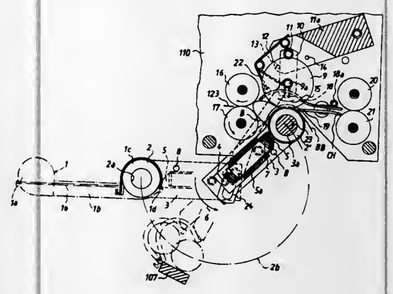
Hans Albert Butschek, Ottobrunn, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 8, 1974, Ser. No. 458,856

Claims priority, application Germany, Apr. 7, 1973, 2317590

Int. Cl. B26f *3/00;* **B65h** *75/00*

U.S. Cl. 225—93 **15 Claims**



1. Apparatus for intercepting the leader of photographic film which is convoluted on a reel within a convoluted backing strip having a front portion extending beyond the leader, comprising means for supporting a reel with convoluted film and backing strip thereon; drive means movable into engagement with the front portion of the backing strip on the reel in said supporting means to thereby loop the front portion of the backing strip; means for blocking rotation of the reel at least during engagement between the front portion of the backing strip and said drive means; means for advancing the looped front portion of the backing strip along a first path and for thereby rotating the reel in said supporting means in a direction to pay out the backing strip and the film whereby the leader of the film becomes exposed in response to rotation of the reel in said direction; and guide means for directing the leader of the film into a second path.

3,883,055

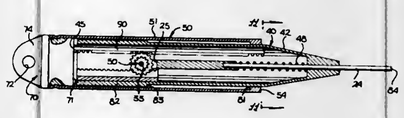
POWER STYLUS

Ralph L. Abos, Whittier, Calif., assignor to Dynapunch Systems, Inc., El Segundo, Calif.

Filed June 12, 1974, Ser. No. 478,466

Int. Cl. B26f *3/00*

U.S. Cl. 225—103 **10 Claims**



1. A stylus for punching scored areas from pre-scored sheet members comprising:

a. a housing having a first and second portion, said first postion insertable into said second portion, said first portion having a first gear rack and said second portion having a second gear rack;

b. a compound gear means disposed in said housing being engageable with said first and second gear racks for providing a mechanical advantage; and,

c. a perforating means coupled to said gear means, said perforating means capable of being forced through one end of said housing;

whereby, a driving force may be applied to said second portion of said housing, and transmitted to said perforating means, said perforating means capable of exerting a force greater than said driving force.

3,883,056

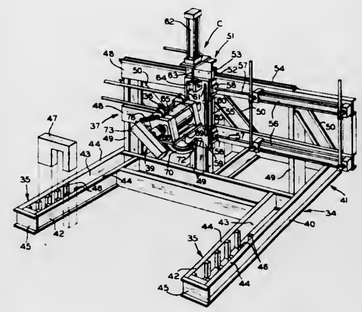
APPARATUS FOR SIMULTANEOUSLY BREAKING A PLURALITY OF FRANGIBLE SHEETS

Raymond L. Landes, Perrysburg, and Floyd F. Le Gros, Toledo, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Aug. 27, 1973, Ser. No. 391,887

Int. Cl. B26f *3/00*

U.S. Cl. 225—104 **6 Claims**



1. In an apparatus for breaking a plurality of individually scored frangible sheets stacked one against another with their score lines in superimposed relation into two units on a storage buck, the improvement comprising:

a. a base frame;

b. means affixed to said base frame for receiving and holding the buck, said means including a pair of spaced, parallel box members wherein each box member includes;

1. a plurality of spaced shoulder means, and

2. a selectively positionable plate engageable with said shoulder means so that said plate contacts and holds said storage buck in selected predetermined positions;

c. a ram device connected to said base frame and adapted to contact the outer face of the stack of frangible sheets on said storage buck and apply a force thereto; and

d. means for advancing said ram device into engagement with a stack of frangible sheets to deflect and simultaneously break the sheets of the stack along their score lines.

3,883,057

STOP-GO FILM ADVANCE MEANS

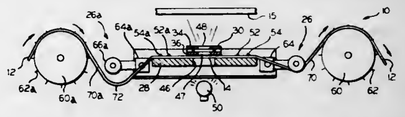
Jaroslav Kopernicky, Mississauga, Ontario, Canada, assignor to MRM Industries, Inc., Skokie, Ill.

Filed Oct. 30, 1972, Ser. No. 302,014

Int. Cl. G03b *1/28*

U.S. Cl. 226—36 **31 Claims**

1. In a film transport system for advancing picture film past a picture display area including power means for moving the film in a path between two points, and control means for advancing the film in a stop and go sequence, whereby during each sequence a different portion of film stops at the display area, said control means comprising:



means responsive to pressure of said film, for causing said different portion of film to advance after stopping at the display area.

3,883,058

DEVICE FOR THE INCREMENTAL ADVANCEMENT OF A LABEL TAPE

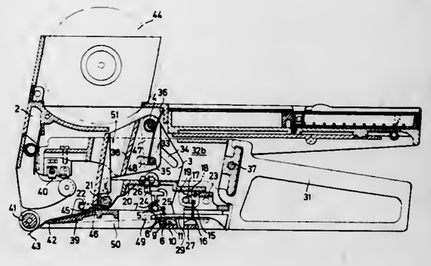
Kurt Schrotz, and Werner Becker, both of Hirschhorn, Germany, assignors to Dymo Industries, Inc., San Francisco, Calif.

Filed Apr. 17, 1974, Ser. No. 461,640

Claims priority, application Germany, Apr. 21, 1973, 2320333

Int. Cl. B65h *17/40*

U.S. Cl. 226—53 **9 Claims**



1. A device for the incremental advancement of a label carrier tape along a prescribed path of travel, the tape being provided with openings for gauging the advanced increments, said device comprising:

a frame;

a carrier rocker arm pivotally mounted on the frame for oscillatory movement in the general direction of travel of the tape between a retracted position and an advanced position;

a latch on the carrier rocker arm for engaging the tape and advancing increments thereof, the latch including latch teeth for biting into the label carrier tape in response to movement of the latch into a latching position and advancement of the latch in the direction of travel of the tape, a gauge feeler, and means resiliently biasing the gauge feeler such that the gauge feeler will intercept and enter an opening in the label carrier tape and, upon entering into the opening, will enable movement of the latch into the latching position;

a jaw member juxtaposed with the latch teeth, the jaw member having a guide surface for guiding the tape between the latch and the jaw member, the guide surface including grooves corresponding with the latch teeth and the feeler of the latch; and

a lock pawl located along the path of travel of the tape beyond the advanced position of the carrier rocker arm, the lock pawl being mounted on the frame for pivotal movement about an axis between a locking position and a released position, said lock pawl including teeth for engaging the tape in the locking position of the lock pawl and precluding retraction of the tape;

means resiliently biasing the lock pawl toward the locking position; and

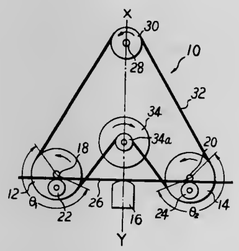
means enabling movement of the lock pawl toward the release position in response to advancement of the tape.

3,883,059

DUAL CAPSTAN TYPE TAPE DRIVING MECHANISM FOR A MAGNETIC TAPE MACHINE

Niro Nakamichi, Tokyo, Japan, assignor to Nakamichi Research, Inc., Tokyo, Japan

Filed July 11, 1974, Ser. No. 487,553
Claims priority, application Japan, July 12, 1973, 48-78711
Int. Cl. B65h *17/20*
U.S. Cl. 226—108 **6 Claims**



1. A dual capstan type tape driving mechanism for a magnetic tape machine comprising a first capstan wheel including a first capstan coaxially secured thereto, a second capstan wheel including a second capstan coaxially secured thereto, and a drivingly rotating member associated with both of said first and second capstan wheels so that they are driven in the same direction for movement of a tape engaging said first and second capstans, said tape driving mechanism further comprising an inertia applying member having an inertia energy of rotation equaling to the sum of those of said first and second capstan wheels and said drivingly rotating member; said first and second capstan wheels, said drivingly rotating member and said inertia applying member each being in the form of pulley with a single belt of less expansibility engaging them so that said inertia applying member rotates in the opposite direction to those of said first and second capstan wheels and said drivingly rotating member.

3,883,060

LOOP FORMING APPARATUS

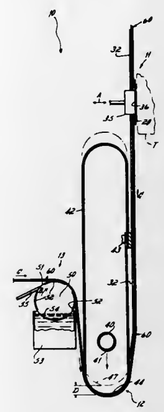
Eric W. Scarpa, Cincinnati, Ohio, assignor to R. A. Jones & Co. Inc., Covington, Ky.

Filed Jan. 4, 1973, Ser. No. 320,859
Int. Cl. B65h *17/42*
U.S. Cl. 226—113 **11 Claims**

1. Apparatus for forming a loop in a web within a web handling apparatus, said loop forming apparatus comprising: a flexible sheet having a curvilinear portion disposed adjacent a path of said web, said sheet forming a closed loop having a web engaging outer side,

means for fixing a portion of said flexible sheet to a stationary element of said web handling apparatus so that the closed loop formed by said sheet is movable about the fixed portion thereof, and

means for blowing air directly onto an internal side of said sheet within said closed loop and for thereby urging said



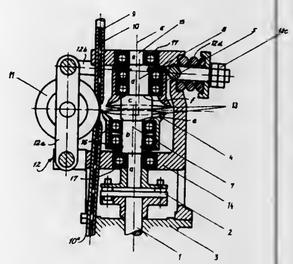
curvilinear portion of said sheet against said web to form a loop in said web.

3,883,061

WIRE-FEED APPARATUS

Kurt Thor, Bergheide, Germany, assignor to Veb Mansfled Kombinat Wilhelm Pieck, Eisleben, Germany

Filed July 11, 1973, Ser. No. 378,259
Int. Cl. B65h *17/22*
U.S. Cl. 226—154 **6 Claims**



1. An apparatus for longitudinally advancing an elongate workpiece, comprising:

supporting means for said workpiece;

a unitary shaft adjacent said supporting means;

drive means coupled with said shaft for rotating same; and

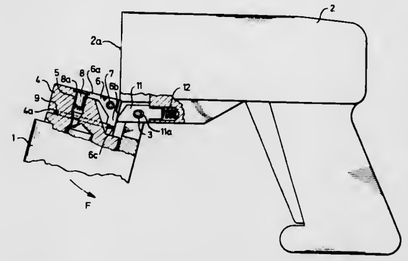
a pair of feed rollers mounted on said shaft with opposite angles of inclination relative to the axis of rotation thereof, said feed rollers being centered on roller axes skew to each other and to said axis of rotation on opposite sides of the latter, said feed rollers being provided with sharp peripheral edges executing wobbling motions 180° out of phase upon rotation of said shaft, said feed rollers being disposed close enough to said supporting means to come into intermittent contact with said workpiece for alternately entraining same in a predetermined direction.

3,883,062

CARTRIDGE EJECTION DEVICE FOR AN EXPLOSION DRIVEN SETTING GUN

Peter Jochum, Meiningen, Austria, assignor to Hilti Aktiengesellschaft

Filed May 30, 1973, Ser. No. 365,059
Claims priority, application Germany, June 7, 1972, 2227775
Int. Cl. B25c *1/08*
U.S. Cl. 227—9 **5 Claims**



1. Explosion driven setting gun for driving fastening elements into a hard target material, such as steel, concrete and the like, comprising a first gun part and a second gun part pivotally interconnected to one another so that the gun can be displaced between an open condition and a closed condition by pivotally displacing said gun parts relative to one another, a cartridge chamber formed in said first gun part, a two-arm ejection lever pivotally mounted on said first gun part for displacing a spent cartridge lodged in said cartridge chamber and having a first arm and a second arm extending angularly from said first arm, a spring biased stop assembly mounted on said second gun part, said first arm of said lever arranged to extend under the bottom edge of a cartridge within said cartridge chamber and said second arm arranged to cooperate with said stop assembly in the opened position of the gun so that said stop assembly pivots said lever so that said first arm dislodges a spent cartridge from the cartridge chamber, wherein the improvement comprises that said second arm has a detent formed therein, and an annular resilient locking member encircling and mounted on the outer surface of said first gun part and extending outwardly therefrom into the pivotal range of said detent and being displaceably lockably engageable within said detent for gripping said ejection lever against pivotable displacement so that said first arm is held in position ready to dislodge a spent cartridge as the gun is moved to the open condition, and said locking member being displaceable from said detent under the application of a predetermined load on said second arm from said stop assembly as said gun is displaced into the open condition.

3,883,063

PUNCHING AND STAPLING APPARATUS

Arnold Fassman, Westport, and Robert E. Mersereau, Stamford, both of Calif.

Filed Feb. 1, 1974, Ser. No. 438,689
Int. Cl. B27f *7/08*
U.S. Cl. 227—21 **19 Claims**

1. Apparatus for punching holes in stacks of paper and for stapling the stacks together in the region of the sheets where the holes are punched, comprising:

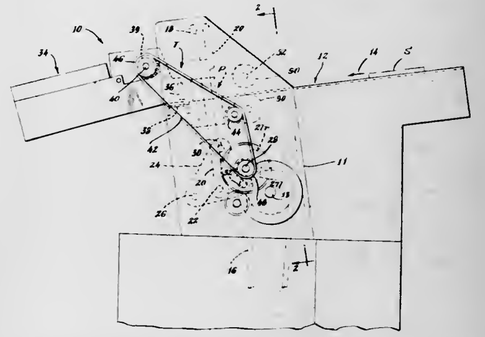
means providing for movement of the stacks of paper into operating position;

first and second operating stations located a preset distance apart along the line of movement of the stacks of paper; means for arresting the movement of each stack as it reaches said first operating station with the sheets thereof in assembled registry to accommodate a punching operation through all of the sheets of the stack;

means at said first operating station for punching holes through all of the sheets of the assembled stack, said punching means being operative to form said holes in said region of said paper a short distance from one edge of the sheets;

means to engage the sheets of said stack to hold said sheets in aligned registry after the punching means has been retracted from the stack of sheets;

means operative with said holding means for advancing said stack of paper forward a predetermined distance along said line of movement, said predetermined distance being at least substantially equal to said preset distance so that said region of said papers stops at said second operating



station, said holding means serving to maintain said sheets of said stack in registry during the advancing movement into said second operating station; and

means at said second operating station for stapling together all of said sheets in said region thereof and closely adjacent said holes previously formed by said punching means;

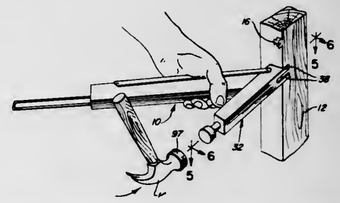
said holding and advancing means comprising drive roll means arranged to move into pressure-gripping engagement with the stacked sheets and to rotate through a predetermined angle to advance the stacked sheets so held said predetermined distance to position said sheet region where the holes are punched at the second operating station.

3,883,064

BRACKET SETTING TOOL

Thomas M. Hilgers, Rt. No. 83, Box 232A, Mundelein, Ill. 60060

Filed Mar. 29, 1974, Ser. No. 456,367
Int. Cl. B25c *1/02*
U.S. Cl. 227—120 **12 Claims**



1. A bracket setting tool having a drive tube for encasing a drive mechanism and a magazine for receiving a stack of brackets, said magazine intersecting said drive tube at an acute angle, said drive mechanism comprising a drive bolt having a contacting head exposed externally of said tubing, a drive slug slidably mounted in said tubing and being connected to said drive bolt, a guide tube plate mounted in said tubing and having a bolt guide tube telescopically receiving

said drive bolt, compression spring means encircling said drive

outer walls thereby mutually

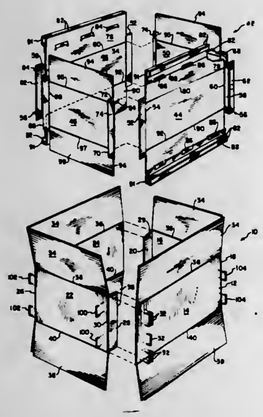
said drive bolt, compression spring means encircling said drive bolt and urging said drive slug and said guide tube plate apart, plural drive legs keyed to said drive slug for movement with said drive slug, one of said drive legs being a bottom leg positioned on the bottom of said drive tube and having a bifurcated pair of fingers extending forward in position to engage a bottom bracket in the stack of brackets in said magazine, the forward edge of said fingers being partially sloped in a plane common to the acute angle of the plane of the wall of the magazine so as to permit the stack of brackets to advance the bottom bracket into position for setting, two of said drive legs being side drive legs, each said side drive leg having an inwardly directed drive finger, a camming member in said drive tube in the path of movement of each side drive finger which member deflects said side finger inwardly to engage the opposite sides of the bottom bracket in said stack of brackets, resilient means between said drive slug and said drive tubing for absorbing rearward movement of said drive slug, a cover for said magazine pivoted at the junction between said magazine and the drive tube and adapted to be pivoted away from said magazine to permit a stack of brackets to be inserted in said magazine, a U-shaped retainer extending into said magazine from a remote end thereof, a spring on one leg of said retainer urging the end of said leg against the remote end of said stack of brackets to urge said brackets toward said drive tube, and being retractable against said spring urging to said retainer a disengaged position when a new stack of brackets is placed in said magazine.

3,883,065

COLLAPSIBLE SHIPPING CONTAINER

Michael C. Presnick, c/o Metatronics Manufacturing Corp., 111 Bloomingdale Rd., Hicksville, N.Y. 11801

Filed June 28, 1973, Ser. No. 374,368
Int. Cl. B65d *5/40, 5/62, 25/14*
U.S. Cl. 229—14 R **6 Claims**



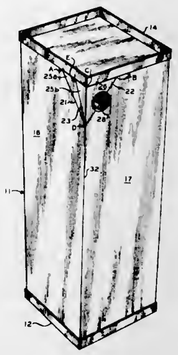
1. A collapsible corrugated shipping container with a self-contained corrugated liner comprising
   a. an outer container portion including four consecutively hinged outer side walls of predetermined height;
   b. top and bottom outer closing flaps hinged to said outer side walls;
   c. a liner portion including four separate inner side walls, each having a spacing extension means projecting laterally from one end thereof;
   d. L-shaped connecting means articulated at the other ends of said liner walls;
   e. fastening means joining inner legs of said connecting means to the extension means of adjacent liner walls and joining outer legs of said connecting means to each of said outer walls thereby mutually spacing said inner and outer walls; and
   f. top and bottom liner closing flaps articulated to said inner walls.

3,883,066

RECLOSABLE CONTAINER

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 30, 1973, Ser. No. 393,166
Int. Cl. B65d *5/72*
U.S. Cl. 229—17 **12 Claims**



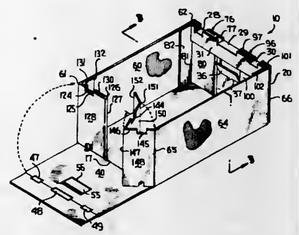
1. A container having a generally tubular body member; a bottom closure means affixed to one end of said body member; a top closure means affixed to the other end of said body member; pouring closure means hinged to said body member and closing said container in a stable closed first position, said pouring closure means being capable of being forced inwardly to arrive at a stable open second position; and reclosure means comprising a rigid structure firmly attached to said pouring closure means but unattached to any other part of said container, overlapping said body member across a line at which said pouring closure means and said body member are hinged, and contacting said hinge line between said closure means and said body member.

3,883,067

CARTON CORNER CONSTRUCTION

Thomas P. McGlynn, Short Hills, N.J., and Carl H. Yentsch, Philadelphia, Pa., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 15, 1972, Ser. No. 315,587
Int. Cl. B65d *5/24, 5/22*
U.S. Cl. 229—31 FS **4 Claims**



1. A carton blank comprising a bottom panel defined by spaced first and second parallel fold lines and spaced third and fourth parallel fold lines collectively defining a polygonal area, an end panel connected to said bottom panel at each of said

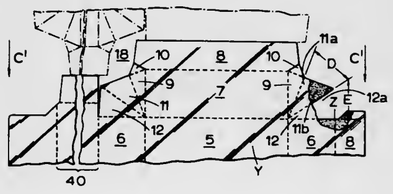
third and fourth fold lines, a side panel connected to said bottom panel at each of said first and second fold lines, a corner reinforcing panel between each adjacent side and end panel, each said corner reinforcing panel having fold line means for folding said corner reinforcing panel portions in parallel contiguous relationship and a third reinforcing panel portion transverse thereto, said fold line means are a pair of spaced parallel fold lines, said pair of panel portions are of substantially equal areas, a locking panel having openings therein joined by a fifth fold line to each end panel, means for directly interlockingly securing each locking panel through said openings to a pair of said reinforcing panel portions adjacent each end panel, said interlocking means including projecting edge portions of both reinforcing panel portions foldable upon each other into substantially co-extensive shape, size and area, and a sixth fold line generally linearly aligned with said fifth fold line at each end panel for securing each third reinforcing panel portion to the adjacent pair of reinforcing panel portions associated therewith.

3,883,068

MOISTURE BARRIER PACKAGE FORMED FROM LAMINATED BLANK

Stanley Milton Silver, London, England, assignor to Paxall, Inc., Chicago, Ill.

Filed Apr. 3, 1973, Ser. No. 347,464
Claims priority, application United Kingdom, Apr. 10, 1972, 16351/72; Aug. 1, 1972, 35779/72; Nov. 4, 1972, 50956/72
Int. Cl. B65d *5/56, 5/62*
U.S. Cl. 229—31 R **4 Claims**



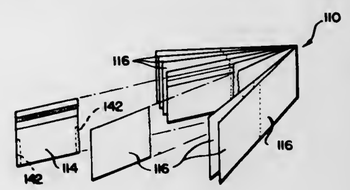
3. A top-loading package in the form of a tray and a hinged cover having a moisture-barrier interior lining, which package is formed from a single blank comprising a lamination of a unitary fibreboard substrate and a heat-sealable moisture-resistant sheeting laminated together by a heat-weakenable laminating material, the shape of said substrate being dissimilar to the shape of said sheeting so that selected peripheral web portions of said sheeting are unsupported by said substrate, said tray having four side walls connected to one another by generally triangular corner panels hinged respectively to the edge of one side wall, said blank being formed with a further triangular panel hinged to each said first-mentioned triangular panel and with an unsupported sheeting web portion of generally triangular shape joining each said further triangular panel to its adjacent sidewall, said blank being folded so that said unsupported web panel is disposed between said further triangular panel and the outer surface of the adjacent sidewall and being heat-sealed to both to provide a sealed corner, three of said sidewalls having sealing flaps hinged to the upper edges thereof and said cover including three cooperating sealing panels hinged thereto, said sealing flaps and panels being heat-sealed to one another to completely close said package interior lining, and the substrate of said cover and its hinged sealing panels being delaminated from the sheeting portion thereof.

3,883,069

BOOKLET WITH ATTACHED ENVELOPES

John K. Volkert, Northfield, Ill., assignor to Compak Systems, Inc., Northfield, Ill.

Division of Ser. No. 174,321, Aug. 24, 1971, Pat. No. 3,718,277. This application Nov. 16, 1972, Ser. No. 307,104
Int. Cl. B65d *27/06*
U.S. Cl. 229—73 **5 Claims**



1. A single, folded, printed blank for forming a booklet for distributing printed material and return envelopes to a recipient, said folded blank comprising a plurality of superimposed panels interconnected to one another along spaced parallel horizontal fold lines
   A. one of said panels being folded upon itself along an intermediate horizontal line and secured in such folded condition by adhesive to provide side-by-side envelope pockets and an envelope flap for each pocket,
      1. said one panel having a strip of envelope adhesive on each of said envelope flaps, and
      2. said one panel having a line of weakness intermediate of adjacent envelopes to facilitate separation thereof from each other,
   B. at least one other of said panels being provided with a line of weakness to facilitate the separation of a portion thereof which is insertable into one of said envelope pockets,
   C. said panels being arranged in superimposed relation to one another,
   D. said panels being interconnected to one another along a common vertical line perpendicular to said intermediate line and also being foldable about said common vertical line to create a booklet; and
   E. said horizontal intermediate line being located slightly vertically above the lowermost of said parallel fold lines, so that it is unaffected when the upper and lower edges of said folded printed blank are removed to cause said panels to become separate sheets.

3,883,070

METHOD AND APPARATUS FOR AIDING IN SOLUTION OF THREE-DIMENSIONAL FIRE CONTROL PROBLEMS

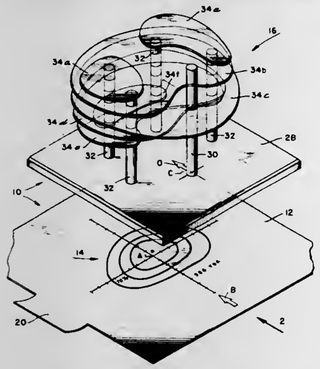
Lloyd Z. Maudlin, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 23, 1964, Ser. No. 363,676
Int. Cl. G06g *1/00*
U.S. Cl. 235—61.5 B **6 Claims**

1. Apparatus for aiding in the solution of a fire control problem for a weapon adapted to attack an underwater target, said weapon being of a type traveling along an air-trajectory to a point on the surface of the water in the vicinity of the target and thence along an underwater trajectory in response to a self contained control, said control causing the weapon to have predetermined characteristics affecting the likelihood of hitting a target under various spacial and relative motion situations, said apparatus comprising;
   a. an air-trajectory dispersion error curve representing probable area within which the weapon will enter the water for a given aimpoint,
   b. a rigid element including

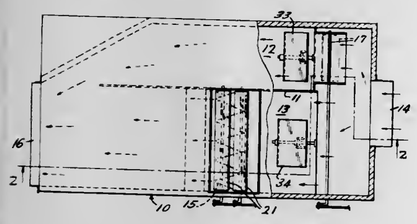
c. a reference marker representing a position datum of the target, said position datum consisting of the azimuthal coordinates only of the target position; and

d. a stack of parallel spaced transparent members, the individual members of said stack each representing the area on the surface of the water within which the weapon should enter the water in order to have a desired likelihood of hitting a target at said datum position for a different depth level of a predetermined series of separated depth levels, said individual members of the stack being stacked in order of the depth level they represent, and



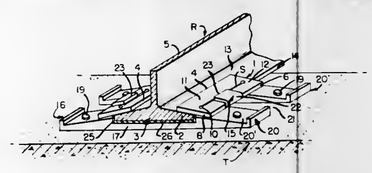
e. the construction and arrangement being such that said stacked members provide a three-dimensional image of desired water entry areas for different depths in superposed relationship to the air-trajectory dispersion error curve, said dispersion error curve and said rigid element being movable relatively whereby the effect of various adjustments of aim-point relative to the target position datum upon the fire control problem solution for various depth levels of the target may be readily envisioned.

3,883,071
MIXING BOX AND CONTROL THEREFOR
Gershon Meckler, 2750 Ridge Valley Rd., Atlanta, Ga. 30327
Filed Dec. 18, 1972, Ser. No. 316,379
Int. Cl. F24f *13/04*; G05d *23/13*
U.S. Cl. 236—49 **9 Claims**



1. A mixing box defining a substantially closed passage for the flow of air from an inlet end to an outlet end thereof, nozzle means intermediate the inlet and outlet ends of the mixing box, there being three openings through which air can flow from the exterior of the mixing box into the closed passage, the openings being so positioned that air flowing through said nozzle means induces a flow of air from the exterior of the mixing box through the openings and into the closed passage, a damper for each of the openings, each of said dampers being movable between an open position in which it is ineffective, and a closed position in which it is effective, to prevent flow of air through the openings, means defining a by-pass passage through which air can flow from the inlet end to the outlet end of the mixing box without passing through said nozzle means, a by-pass damper movable between an open position in which it is ineffective, and a closed position in which it is effective, to prevent flow of air through the by-pass passage, at least one actuator for said dampers and for said by-pass damper, said by-pass damper and the actuator therefor being effective, in response to a control signal indicating an air conditioning load between a minimum and an intermediate magnitude, to close said by-pass damper and, in response to a control signal indicating an air conditioning load between the intermediate and a maximum magnitude, to move said by-pass damper toward an open position, said dampers and the actuator for each being effective, in response to a control signal indicating an air conditioning load above the intermediate magnitude to open a first one and to close the others of said dampers, and, in response to a signal indicating an air conditioning load between the minimum and the intermediate magnitude to move the first two of said dampers toward an open position and the third of said dampers toward a closed position.

3,883,072
RAIL ANCHOR
John S. Newton, Glen Ellyn, Ill., assignor to Portec, Inc., Oak Brook, Ill.
Filed Apr. 5, 1974, Ser. No. 458,123
Int. Cl. E01b *9/00*
U.S. Cl. 238—338 **10 Claims**

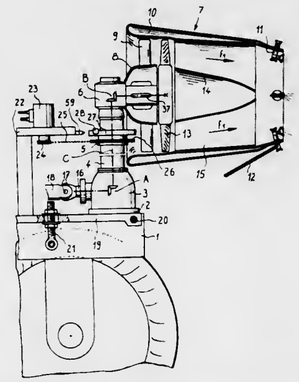


1. An anchor for a rail having a web and base flanges provided with outer edges, said anchor adapted to secure at least one said rail base flange to a crosstie and including, a substantially planar spring anchor plate having a medial slot defining a rail engaging section and tie retainer member engaging section on opposite sides thereof, said rail engaging section overlying said rail base flange and having an inside edge terminating short of said rail web, said tie member engaging section provided with an outside edge, retainer means fixedly attached to said crosstie and provided with a generally horizontal slot having its innermost edge terminating outside the vertical plane of said flange outer edge, and said spring anchor plate tie member engaging section engaged by said retainer means slot to bias the undersurface of said rail engaging section against the upper surface of said rail base flange to inhibit creeping of said rail over said crosstie.

3,883,073
OSCILLATING SPRAYING APPARATUS
Vincent Pierre Marie Ballu, Epernay, France, assignor to Tecnoma, Epernay, France
Filed July 5, 1973, Ser. No. 376,391
Claims priority, application France, July 7, 1972, 72.24659
Int. Cl. B05b *3/00*, *17/00*
U.S. Cl. 239—77 **23 Claims**

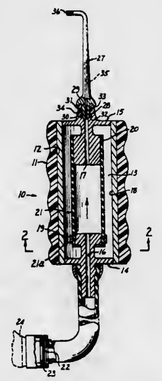
1. Oscillating spraying apparatus comprising a frame, a substantially L-shaped supporting casing having a substantially vertically extending portion rotatably mounted on said frame, a bevel gear member located within said supporting casing and having an input shaft concentrically located within said portion and an output shaft at right angles thereto, means for connecting said shaft to drive means for rotation thereof in a given direction, a spraying unit mounted on the supporting casing and including a fan element connected to said output shaft, an oscillating hydraulic motor carried by said

frame, means connecting said hydraulic motor to said rotatably mounted supporting casing for oscillation thereof in two directions of which one is the given rotating direction of said input shaft, means to detect the latter direction, and means for



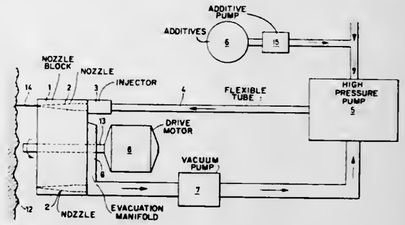
controlling said hydraulic motor, said control means including a braking member connected to said detecting means and operated thereby, whereby said spraying unit including said fan and said supporting casing are oscillated at the same speed in both directions.

3,883,074
HYDRAULIC OSCILLATOR AND SYSTEMS UTILIZING THE SAME
John W. Lambert, 18815 Milton, Glendora, Calif. 91740
Division of Ser. No. 227,379, Feb. 18, 1972, Pat. No. 3,810,465, which is a continuation-in-part of Ser. No. 110,094, Jan. 27, 1971, abandoned. This application Jan. 23, 1974, Ser. No. 435,635
Int. Cl. B05b *1/08*
U.S. Cl. 239—101 **11 Claims**



1. A hydraulic oscillator for providing a cyclically varying outlet flow from a steady inlet flow, comprising: a rigid pressure chamber; a charge of gas contained in said chamber; a conduit passing through and beyond said chamber, said conduit comprising an inlet passage, an outlet passage, said passages having the properties of impedance and resistance to liquid flow, and a flexible, collapsible-walled tubular portion extending between and interconnecting said passages, that part of the tubular portion which extends between the passages having an outside wall which is fully peripherally exposed to the gas in the chamber, the inlet passage being adapted for connection to a source of liquid under supply pressure, the impedance of the inlet passage being sufficiently large so as substantially to isolate the tubular portion dynamically from the pressure source, the pressure of the chamber being above that critical level at and above which oscillation will always occur, and less than the pressure of the source, and the resistance and dynamic impedance of the outlet passage being such as to secure a cyclical output of the desired frequency, phasing between pressure levels within a single cycle, and shape and volume of the drops in the output stream.

3,883,075
DEVICE FOR GENERATING HIGH-SPEED PULSED LIQUID JETS AT HIGH REPETITION RATES
Barry E. Edney, Canton of Vaud, Switzerland, assignor to Institut Cerac SA, Canton of Vaud, Switzerland
Filed June 6, 1974, Ser. No. 476,859
Claims priority, application Switzerland, June 12, 1973, 8462/73
Int. Cl. B05b *1/08*
U.S. Cl. 239—101 **18 Claims**



1. A device for generating high-speed pulsed liquid jets at a high repetition rates in cumulation jet nozzles to, for example, cut, break, deform, clean materials, comprising:

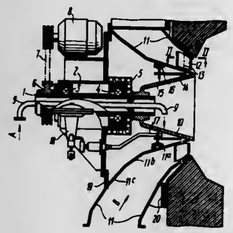
a high pressure liquid pump (5);

at least one injector means (3) coupled to and receiving pressurized liquid from said high pressure pump (5); and a rotatable nozzle block (1) in liquid connection with said high pressure pump (5) through said at least one injector means (3), said nozzle block (1) having a plurality of nozzles (2) situated generally at the periphery thereof and arranged about the axis of rotation thereof, said nozzles (2) passing through the whole width of said nozzle block (1), the axes of said nozzles (2) being inclined to the axis of rotation of said nozzle block (1) at an angle (α) which is a function of the speed of rotation of said nozzle block (1) and the injection speed of the liquid injected into the nozzles (2) by said at least one injector means (3).

3,883,076
ROTARY NOZZLE FOR SPRAYING LOW-CALORIC FLUID VISCOUS SUBSTANCES IN PROCESS OF BURNING
Georgy Alfonsovich Vorms, prospekt Oktyabrya 133, kv. 35.; Petr Ivanovich Kuznetsov, ulitsa Rossiiskaya 56"v", kv. 51., and Vladislav Borisovich Volkov, ulitsa Koltsevaya 169, kv. 6., all of Ufa, U.S.S.R.
Filed Oct. 31, 1973, Ser. No. 411,409
Int. Cl. B05b *3/02*
U.S. Cl. 239—214.23 **5 Claims**

1. A rotary nozzle for spraying fluid low-caloric viscous substances in the course of their burning, comprising: a housing; a hollow shaft rotatably installed in said housing; a rotary sprayer located on the end of the said hollow shaft; a pipe for supplying fluid substances to the internal surface of said rotary sprayer; a circular air duct narrowing in a taper and located around said rotary sprayer; rotatable blades located in the minimal outlet cross-section of said circular air duct and

providing the variation of the cross-section of said air duct for controlling the amount of air supplied to maintain burning and



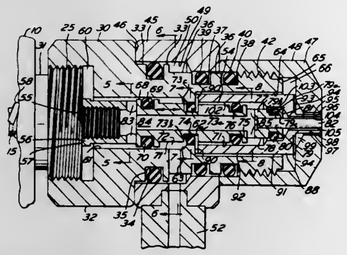
swirling of the air flow in the direction reverse to that of the rotation of said rotary sprayer.

3,883,077

SPRAYER

Omar V. Showalter, Pipersville, Pa., assignor to William L. Brehm, Atlanta, Ga.

Filed Feb. 13, 1974, Ser. No. 441,958
Int. Cl. B05b 7/12
U.S. Cl. 239—415 **11 Claims**



1. A sprayer for liquids comprising
a sprayer control body of generally tubular form and having an inlet end with a first interior bore terminating at an interior shoulder and a delivery end with a second interior bore extending from said shoulder,
a connection to a source of liquid under pressure to be dispensed and connected to the inlet end of said body,
a spool fixedly mounted in said body and extending from said shoulder toward said outlet,
a nozzle nut carried on said delivery end of said body,
a valve plunger movable in said body,
a spring urging said plunger in one direction,
a member for moving said plunger against the force of said spring,
said spool and said valve plunger having portions providing a restricted discharge passageway for atomization of liquid delivered therefrom,
said body and said plunger defining first liquid passageways, said plunger and said spool defining second liquid passageways communicating with said first passageways for delivery of liquid to and through said discharge passageway,
a first flow control member interposed between said spool and said plunger member and upstream of said discharge passageway cutting off liquid flow through said passageways in one position of said plunger,
an additional pressure fluid supply connection on said body for gas under pressure,
said body and said spool having portions defining fluid passageways for delivery of said gas from said additional supply connection,
said nozzle nut and said spool having portions providing a restricted discharge passageway to which said last mentioned fluid passageways are connected for discharge to gas contiguous to said liquid discharge passageway, and a second flow control member interposed between said body and said plunger for cutting off gas delivery in said one position of said plunger.

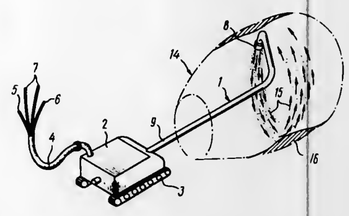
3,883,078

METHOD AND A DEVICE FOR GUNNITING CONVERTER LININGS

Oleg Nikolaevich Chemeris, bulvar mira 18, kv. 69; Evgeny Vasilievich Tretyakov, ulitsa Rozy ljuxemburg, 30, kv. 32; Viktor Kirillovich Didkovsky, ulitsa Rozy ljuxemburg 30a, kv. 42; Vilen Davidovich Kanfer, ulitsa Tsuslmskaua, 63, kv. 17, all of Donetsk; Nikolai Konstantinovich Paschenko, ulitsa Makara Mazaua, 74, kv. 1, Zhdanov, Donetskoi oblasti; Izmail Grigorievich Zeltser, prospekt Nakhimova, 154, kv. 29, Zhdanov, Donetskoi Oblasti; Grigory Mikhailovich Ljukimson, prospekt Lenina, 45, kv. 10, Zhdanov, Donetskoi Oblasti; Alexandr Nikolaevich Bashkatov, pereulok Sadkovy, 70, kv. 72, Zhdanov, Donetskoi Oblasti; Boris Nikolaevich Melnikov, ulitsa Sechenova, 68, kv. 27, Zhdanov, Donetskoi Oblasti; Miron Yakovlevich Medzhibozhsky, pereiok Nakhimova, 5, kv. 26, Zhdanov, Donetskoi Oblasti; Ilya Alexandrovich Goldberg, ulitsa Shaumiana, 47, kv. 35; Izrail Abramovich Juzefovsky, ulitsa Reshetova, 5, kv. 55, both of Leningrad; Rafail Davidovich Ratmansky, ulitsa Ilicha, 52, kv. 53; Viktor Nikolaevich Irkha, both of Zhdanov, Donetskoi Oblasti; Jury Nikolaevich Borisov, Hovokuznetsk Kemerovskoi Oblasti, and Fedor Filippovich Kurochkin, Zhdanov, Donetskoi Oblasti, all of U.S.S.R.

Continuation of Ser. No. 221,655, Jan. 28, 1972, abandoned.
This application Aug. 31, 1973, Ser. No. 393,406
Int. Cl. F23d 11/16
U.S. Cl. 239—422 **1 Claim**

1. A device for deposition of refractory material on linings of a symmetric converter by the cyclone method comprising a concentrically arranged ducting for conveying pulverized refractory material and fuel to a nozzle mounted at one end of said ducting, which ducting has a substantially straight main portion for extending along the longitudinal axix of the converter and a further portion extending from the main portion at an angle of substantially 15° to 90° to the main portion, the nozzle communicating with said further portion and being disposed with its axis substantially perpendicular to that of said further portion and to a plane common to said main portion and said further portion.



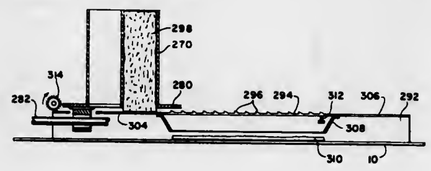
3,883,079

PASTRY SHELL FILLING APPARATUS

Imre F. Papai, 2818 E. 119 St., Cleveland, Ohio 44120

Division of Ser. No. 250,933, May 8, 1972, Pat. No. 3,780,643.
This application Oct. 1, 1973, Ser. No. 402,475
Int. Cl. A47j 44/00; B02c 18/02
U.S. Cl. 241—94 **4 Claims**

1. Grated foodstuff dispensing means comprising in combination:
a. means for holding a gratable foodstuff;
b. a grate having a leading edge and a trailing edge and relatively translatable with respect to said holding means;
c. means for relatively translating said grate and said holding means to and fro along a substantially horizontal interface; and



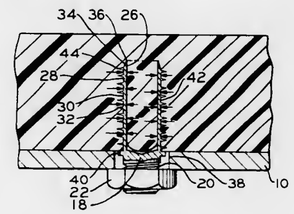
d. means for upwardly inclining the trailing edge of said grate.

3,883,080

RETAINING ARRANGEMENT FOR RUBBER LINER

Sven E. Andersson, Chagrin Falls, Ohio, assignor to Trelleborg Rubber Company, Inc., Solon, Ohio

Filed Feb. 11, 1974, Ser. No. 440,995
Int. Cl. B02c 17/22
U.S. Cl. 241—182 **11 Claims**



1. A lining and fastener arrangement for a device having a surface subject to wear comprising, lining means of wear resistant resilient material covering said surface, and self-tapping fastener means attaching said lining means to said device, said fastener means including hollow externally threaded shank means rotatably embedded in the material of said lining means, said shank means having an end in said lining means, said fastener means including means denoting the depth of embedment of said shank means in said lining means, said lining means having a thickness in the direction of the axis of said fastener means, and said denoting means being spaced from said end of said shank means a distance less than said thickness.

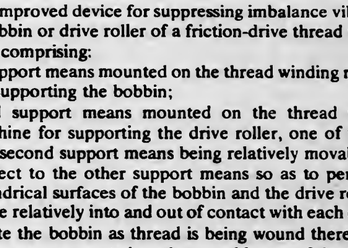
3,883,081

APPARATUS FOR SHREDDING BALEFORMED COMPRESSED FIBER MATERIAL

Birger Dahl, Sarpsborg, and Arne Ludvig Hannestad, Fredrikstad, both of Norway, assignors to Aktieselskapet Borregaard, 1700 Sarpsborg, Norway

Filed Feb. 12, 1974, Ser. No. 441,829
Claims priority, application Norway, Feb. 14, 1973, 599/73
Int. Cl. B02c 23/02
U.S. Cl. 241—281 **9 Claims**

1. An apparatus for shredding bales composed of a plurality of relatively loosely adhering slabs of compactly pressed fiber material, such as flash dried wood pulp, the fibers of said fiber material having a split direction substantially parallel to the interfaces between said slabs, said apparatus comprising:
a rotating cylinder having shredding teeth on the periphery thereof;
conveyor means for passing said bales along a bale path to a position adjacent said shredding teeth, said bales being located with said split direction transverse to the plane of said conveyor means;
guide means positioned on opposite lateral sides of said conveyor means for guiding said bales along a portion of said bale path adjacent said shredding teeth; and
clamping means mounted with respect to said conveyor means for clamping opposite lateral sides of a bale in a clamping direction transverse to said bale path and parallel to the longitudinal axis of said cylinder and for forcibly feeding said thus clamped bale along said bale path into contact with said shredding teeth, whereby said shredding teeth penetrate said bale in a direction parallel to said split direction and shred said bale.

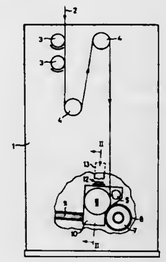


3,883,082

DEVICE FOR SUPPRESSING BOBBIN VIBRATIONS IN WINDING MACHINES

Martin Gritschke, Okarben, and Bernd Kretschmann, Offenbach, both of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Germany

Filed Nov. 15, 1973, Ser. No. 416,234
Claims priority, application Germany, Nov. 16, 1972, 2256270
Int. Cl. B65h 54/52
U.S. Cl. 242—18 B **4 Claims**



1. An improved device for suppressing imbalance vibrations in the bobbin or drive roller of a friction-drive thread winding machine comprising:
first support means mounted on the thread winding machine for supporting the bobbin;
second support means mounted on the thread winding machine for supporting the drive roller, one of the first and second support means being relatively movable with respect to the other support means so as to permit the cylindrical surfaces of the bobbin and the drive rollers to move relatively into and out of contact with each other to rotate the bobbin as thread is being wound thereon;
friction means mounted on the movable one of the first and second support means for movement therewith, along a predetermined path of movement, the friction means having a first flat surface lying in a plane substantially perpendicular to the axes of the bobbin and the drive roller; and
stationary plate means mounted rigidly on the thread winding machine adjacent to the path of movement of the

friction means and having a second flat surface substantially parallel and opposed to the first flat surface of the friction means so that the flat surfaces may slide over each other as the bobbin and drive roller move away from and toward each other, the first and second flat surfaces being in surface-to-surface contact when the bobbin is empty and having their contact surface decrease as the winding diameter of the bobbin increases; with one of the first and second flat surfaces being the pole faces of a permanent magnet and the other of the flat surfaces being made of magnetic material.

3,883,083
THREAD SUPPLY DEVICE FOR TEXTILE MACHINES

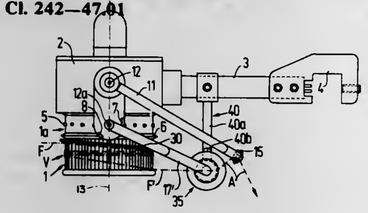
Karl Isac Joel Rosen, S-52 300-Ulricehamn, S-52300-Ulricehamn, Sweden

Continuation-in-part of Ser. No. 312,048, Dec. 4, 1972, Pat. No. 3,820,731. This application June 8, 1973, Ser. No. 368,172

Claims priority, application Germany, June 13, 1972, 2228754

Int. Cl. B65h *51/20*

U.S. Cl. 242—47.01 **10 Claims**



1. In a thread supply device for a textile machine having a drum which can be set in rotation and upon which a thread issuing from a storage coil can be tangentially wound up to form an intermediate thread storage, a thread guide element for engaging the thread as unwound from said drum, means supporting the thread guide element for movememt in a direction transversely to the thread unwinding from the drum, and a thread support element having a part which is in contact with the thread unwinding from the drum and is movable between first and second positions, said part being in radially spaced relation to the drum circumference in said first position for positive thread supply and in alignment with the drum axis in said second position for intermittent thread supply, comprising the improvement wherein the part of the thread support element which is in contact with the thread is designed as a thread brake.

3,883,084
FILM WRAPPING APPARATUS

Toshiaki Yamaguchi; Keizo Narita, and Kimihiro Wada, all of Kyoto, Japan, assignors to Nishimura Seisakusho Co., Ltd., Kyoto, Japan

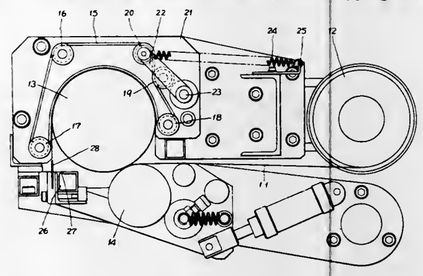
Filed Sept. 6, 1973, Ser. No. 394,842

Claims priority, application Japan, Dec. 12, 1972, 47-106,374

Int. Cl. B65h *19/20*

U.S. Cl. 242—56 R **1 Claim**

1. A film wrapping apparatus comprising a film winding core roller, means for driving said core roller for rotation, an endless belt stretched between a plurality of pulleys, said endless belt being pressed at a stretched portion thereof against said core roller along its peripheral direction so that said endless belt is moved along with said core roller, means for feeding a continuous film in a direction of its continuous length, cutting means for cutting said continuous film at a fixed position during its feeding to form a new leading end of said continuous film, air blowing means located immediately before said cutting means, said air blowing means facing the region where said endless belt contacts the surface of said core roller to introduce said leading end portion of said continuous film between said stretched portion of said endless belt and said core roller at said region, whereby the wrapping of said



film around the peripheral surface of said core roller is automatically initiated with said endless belt and said peripheral surface of said film winding core roller holding the leading end portion of said film therebetween.

3,883,085
ROLL SLITTING AND WINDING MACHINE

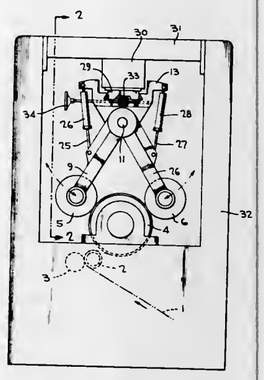
Franz Held, Gross Zimmern, Germany

Filed Oct. 4, 1971, Ser. No. 186,355

Claims priority, application Germany, Oct. 3, 1970, P 20 48 715.4

Int. Cl. B65h *17/00, 35/02*

U.S. Cl. 242—65 **2 Claims**



1. Roll cutter and winding machine having spaced side frame members; comprising, at least one winding roll each disposed on opposite sides of a supporting roll for alternately winding up a cut strip from a web passing over said supporting roll, said supporting roll extending between said side frame members, a pair of swivel arms for each of said winding rolls, one of said winding rolls being rotatably mounted between one pair of said arms at one end thereof, the other of said winding rolls being rotatably mounted between the other pair of said arms at one end thereof, at least three adjacent bearing bodies for said winding rolls, a single guide mounting said bearing bodies for adjustable movement in a direction parallel to the axis of said winding rolls, one arm of each said one pair and said other pair of said arms being pivotally mounted at the opposite ends thereof to the middle one of said bearing bodies, and the other arm of each said one pair and said other pair of said arms being pivotally mounted respectively to the outer ones of said bearing bodies.

3,883,086
APPARATUS FOR DETECTING AND GUIDING THE LEADERS OF PHOTOGRAPHIC ROLL FILMS

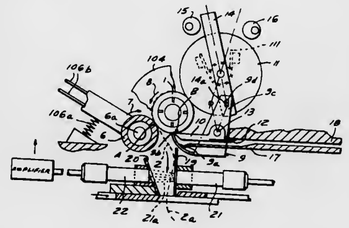
Helmut Zangenfeind, Puchheim, and Erich Nagel, Anzing, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 252,416, May 11, 1972, Pat. No. 3,642,221. This application Apr. 18, 1974, Ser. No. 462,186

Claims priority, application Germany, May 19, 1971, 2125084

Int. Cl. B65h *17/08, 17/02*

U.S. Cl. 242—65 **11 Claims**



1. Apparatus for intercepting the leader of photographic film which is convoluted on a spool within a convoluted backing strip having a front portion extending beyond the leader, comprising bearing means for rotatably supporting a spool with convoluted film and backing strip thereon; drive means for rotating the spool in said bearing means in a direction to pay out the film and the backing strip; deflector means mounted for engagement with the outermost convolution of said backing strip on the rotating spool and to thus deflect the front portion of said backing strip in a predetermined direction; first guide means defining a first path for the thus deflected front portion of the backing strip; second guide means defining a second path for the leader of the film; blocking means movable to and from and normally assuming an operative position in which the leader of the film is prevented from entering said second path; detector means mounted adjacent to said first path and including means for producing signals in response to detection of the front portion of the backing strip; displacing means operative to move said blocking means from said operative position in response to said signals; and means for orienting a spool in said bearing means in such angular position that the front portion of the backing strip on such spool is located intermediate the point of engagement between the spool and said drive means and the point of engagement between teh spool and said deflector means.

3,883,087
FILM TAKE-UP REEL

Clifford Van Praag, 264 Dennis St., Oceanside, N.Y. 11572

Filed Feb. 23, 1973, Ser. No. 335,107

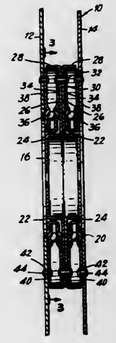
Int. Cl. B65h *75/18*

U.S. Cl. 242—71.8 **8 Claims**

1. A motion picture film take-up reel comprising:

a. a rotatably drivable hub member including a central hub portion formed of a pair of complementary halves and being adapted to receive a take-up reel drive spindle of a motion picture projector and form a driving connection therewith; radially extending peripheral flange means extending from said hub portion; cylindrical film-receiving surface means formed at the radially outer end of said flange means upon which said film is adapted to be wound; said pair of complementary halves centrally divided in a radially extending plane, each said half including a half-thickness portion of said peripheral flange means in contiguous surface-to-surface relationship, and fasstener means interconnecting said flange means for fastening together said complementary halves;

b. roller bearing means having first and second races, each including parallel radially extending side wall portions rotatable relative to each about a common axis, one each of said roller bearing means being positioned on each side of said flange means and with the central hub portion extending through a center aperture formed in each of said roller bearing means, further fastener means for fastening the side wall portions of each of said roller bearing means adjacent said flange means to said flange means; and



c. a pair of disc-shaped centrally-apertured planar flanges of light-weight material having the radially inner peripheral portion thereof positioned adjacent the axially outer side wall portions of each of said roller bearing means, said planar flanges being rigidly fastened to said side wall portions and being spaced apart a distance slightly greater than the width of the film to be wound on the cylindrical film-receiving surface means, said planar flanges being freely rotatable relative to said hub member and each other.

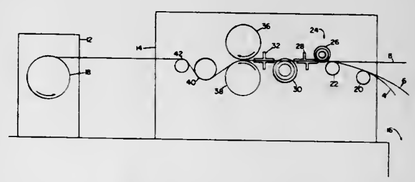
3,883,088
METHOD AND APPARATUS FOR PROVIDING AND MAINTAINING SEPARATION OF MULTIPLE STRANDS FROM A SLITTING OPERATION

Roger B. Cannon, Muncie, Ind., and Dwight B. Raddatz, Woodridge, Ill., assignors to Ball Corporation, Muncie, Ind.

Filed Nov. 14, 1973, Ser. No. 415,846

Int. Cl. B65h *23/10, 35/02*

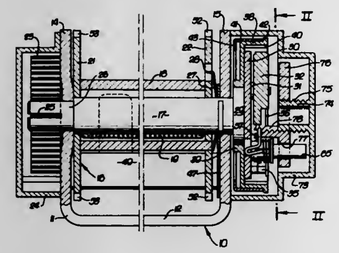
U.S. Cl. 242—75.2 **10 Claims**



3. A tension stand having a longitudinal axis and comprising: a first separator means; a second separator means; a first flattening means and a second flattening means, said first separator means being disposed above said longitudinal axis; said second separator means being disposed beneath said longitudinal axis; said first flattening means and said second flattening means being disposed along said longitudinal axis and on opposite sides of said second separator means, said first separator and said second separator being disposed on opposite sides of said first flattener.

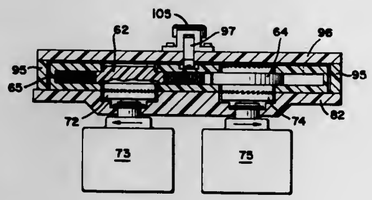
3,883,089

3,883,089
SAFETY BELT DEVICE
Albert R. Close, Sepulveda, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.
Filed Oct. 29, 1973, Ser. No. 410,498
Int. Cl. B65h 75/48
U.S. Cl. 242—107.4 12 Claims



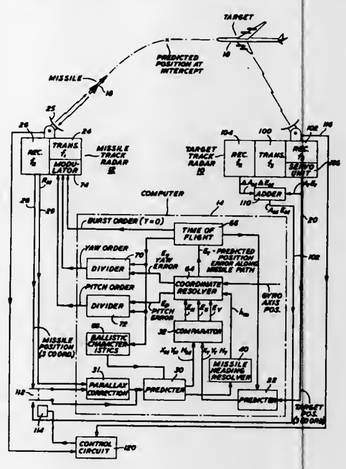
1. In a safety belt retractor having a strap receiving spool mounted for rotation in a frame with said spool being urged into a strap wound position and including a lockbar having at least one locking pawl thereon adapted to engage the teeth of a ratchet tooth gear on the spool, inertia responsive means adapted to engage said lockbar in response to sudden acceleration of said strap off said spool and move said lockbar to cause said pawl to engage with said teeth, the improvement comprising the provision of:
means operatively connected to said spool adapted to block said inertia responsive means thereby for selectively preventing said inertia responsive means for causing said pawl to engage with said teeth upon sudden acceleration of said strap off said spool until a retractive movement of said spool releases said inertia responsive means to thereby cause said pawl to engage with said teeth.

3,883,090
DRIVE FOR MAGNETIC RECORDING DISC OR TAPE CASSETTES
Robert P. Hall, Sr., Auburn, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed Apr. 24, 1972, Ser. No. 246,636
Int. Cl. G11b 23/10
U.S. Cl. 242—199 5 Claims



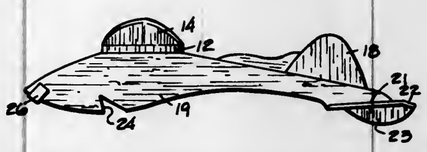
1. A magnetic cassette drive comprising,
a hollow cassette housing a movable magnetic recording media,
a driven hub rotatably supported in said cassette and connected to move the media,
a driven face on said driven hub including a plurality of circularly arranged radially extending and axially facing teeth, said teeth having undercut driving faces,
a drive hub separate from said cassette and having a drive face which is the complement of said driven hub, means connected to rotate said drive hub such that its undercut driving faces are foremost in the direction of rotation; and means supporting said cassette and said drive hub to bring said faces into contact to cause a locking engagement of the hubs during rotation thereof.

3,883,091
GUIDED MISSILE CONTROL SYSTEMS
Jacob W. Schaefer, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 30, 1956, Ser. No. 600,858
Int. Cl. F41g 9/00, 11/00, 7/14
U.S. Cl. 244—3.13 7 Claims



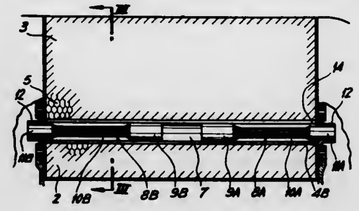
1. In an antiaircraft system, target tracking means for continuously establishing the position of a target aircraft in space, missile tracking means for similarly establishing the position of a missile, computing means responsive to position information from both said target and missile tracking means to produce control signals for said missile to insure interception of the target thereby and means for substituting the target tracking means for said missile tracking means as a source of missile position information for said computing means during the final phases of an engagement.

3,883,092
GLIDER
Ralph L. Ditto, 2205 Paul Minnie, Santa Cruz, Calif. 95062
Filed Nov. 14, 1973, Ser. No. 415,807
Int. Cl. B64c 31/02; A63h 27/00
U.S. Cl. 244—16 4 Claims



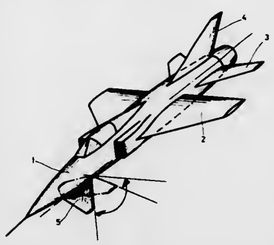
1. A glider having a fuselage connected below a wing assembly including a continuous surface wing construction comprising right and left centerwing portions and right and left wingtip portions, each of said centerwing portions having positive dihedral with respect to a horizontal plane and said wingtip portions having positive dihedral with respect to said horizontal plane that is twice that of said centerwing portions; and
a first vertical stabilizer extending above said fuselage and a second vertical stabilizer extending below the fuselage behind said first stabilizer, and a horizontal stabilizer disposed aft of said first stabilizer and intersecting the second vertical stabilizer and disposed in a plane below a line through the apex of said wing construction parallel to the longitudinal axis of said fuselage.

3,883,093
AIRCRAFT CONTROL ELEMENTS
André Violleau, Vitrolles-le-Roucas, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed Feb. 2, 1972, Ser. No. 222,837
Claims priority, application France, Feb. 11, 1971, 71.04579
Int. Cl. B64c 9/02
U.S. Cl. 244—42 D 14 Claims



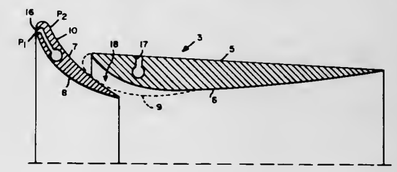
1. In an aircraft control element attached to an aircraft structure comprising at least one flap pivoting around an axis parallel to its span, the improvement that the flap is rigidly secured to a longitudinal portion of at least two symmetrically, axially disposed elongated torsion elements, another longitudinal portion of each such element being separate from the first portion and rigidly secured to the aircraft structure.

3,883,094
FOLDABLE CANARD ASSEMBLY
Andreas Mederer, Markt Schwaben, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed Nov. 1, 1973, Ser. No. 412,047
Claims priority, application Germany, Nov. 4, 1972, 2254136
Int. Cl. B64c 5/04
U.S. Cl. 244—45 A 6 Claims



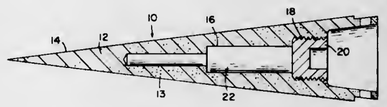
1. A foldable canard assembly for an aircraft having a fuselage, a main aerodynamic wing mounted on the mid section of said fuselage of said aircraft and a vertical tail assembly and a horizontal elevator assembly mounted on the aft section of said fuselage of said aircraft, comprising:
a pair of equally sized and separate canards mounted on the forward section and each having means defining an airfoil thereon; and
a pair of pivot means mounted on said aircraft fuselage forward of said main wing and defining a pair of pivot axes extending parallel to the longitudinal axis of said aircraft for pivotally securing said pair of separate canards to said aircraft, said pair of separate canards being pivotal between a first position wherein said canards both extend vertically downward from said aircraft fuselage and a second position wherein both of said canards extend horizontally and generally tangent to the lower surface of said forward section of said aircraft fuselage, said canards, when in said first position, extending in a parallel and contacting relation along their length so that said pair of vertically extending airfoils together define a single airfoil.

3,883,095
REVERSED COWL FLAP INLET THRUST AUGMENTOR
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Dah Yu Cheng, Palo Alto, Calif.
Filed Sept. 19, 1973, Ser. No. 398,886
Int. Cl. B64d 33/00
U.S. Cl. 244—53 B 9 Claims



1. In a jet engine assembly, an apparatus for providing thrust augmentation in a forward direction comprising:
a controlled movable airfoil having upstream and downstream surfaces relative to said forward direction for entraining external air into the interior of said jet engine assembly and developing a thrust component along said direction of motion; and
servo means for constantly moving said airfoil to a position that generates maximum thrust augmentation.

3,883,096
TRANSPIRATION COOLED NOSE CONE
Irving B. Osofsky, Rancho Plaos Verdes, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Mar. 12, 1974, Ser. No. 450,537
Int. Cl. B64c 1/38
U.S. Cl. 244—117 A 6 Claims



1. A missile nose cone comprising a cone shaped body member that has an outer surface that is tapered to a point, said cone shaped member being made of tungsten alloy impregnated with solid coolant is embedded and contained within pores of said tungsten alloy so that said solid coolant material of said boiling coolant material.

3,883,097
DEVICE FOR PICKING UP AND EJECTING LOADS UNDER AN AIRPLANE
Jean Billot, Levallois, France, assignor to Rafaut & Cie, Villeneuve La Garenne, France
Filed Dec. 10, 1973, Ser. No. 423,351
Claims priority, application France, Mar. 27, 1973, 73.10960
Int. Cl. B64c 1/22
U.S. Cl. 244—137 R 5 Claims

1. A device for carrying and ejecting a load under an airplane, the load being formed with recesses in its surface, said

device being housed within a girder of the airplane and comprising two carrying and ejecting assemblies and a single ejec-

stationary signal transmission line means extending coextensively with each of said paths prior to said confluence

bushing assemblies, disposed on either side of said fastening means, mounting said bracket on said frame, said bracket

3,883,102
TIE DOWN FOR TRAFFIC COUNTER HOSE

device being housed within a girder of the airplane and comprising two carrying and ejecting assemblies and a single ejection controlling means for operating both carrying and ejecting assemblies,

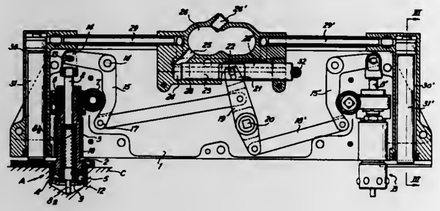
said unique ejection controlling means comprising:

a cylinder and a piston movable within said cylinder,

controllable means for introducing gas under pressure into said cylinder so as to move said piston,

a lever mechanically coupled to said piston and pivotally mounted on an axis fixed with respect to the airplane, said lever being pivoted around said axis upon movement of said piston in said cylinder, and

each carrying and ejecting assembly comprising:



supporting means, cooperable with an abutment surface of a recess in the load, for supporting the load, said supporting means comprising a sleeve insertable into the recess and actuatable locking and releasing means carried by said sleeve for locking the load to or releasing the load from the supporting means,

a mechanical linkage connecting said lever to said actuatable locking and releasing means, for actuating said locking-releasing means upon movement of said piston, and

lifting means for lifting both said supporting means and said load when said supporting means are engaged in said recess of the load, so as to fasten said load against the girder of the airplane and maintain it steady during flight of the air-plane.

3,883,098

ARRANGEMENT FOR GUIDING TOGETHER OF TWO TRAFFIC STREAMS

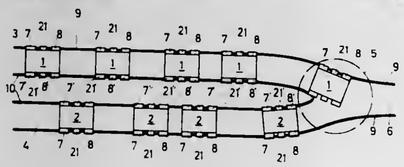
Walter Hermann, Weissenfeld; Peter Kraus, Munich, and Gunter Steinmetz, Grafing, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Sept. 5, 1973, Ser. No. 394,469

Claims priority, application Germany, Sept. 6, 1972, 2243679

Int. Cl. B61l *3/00*

U.S. Cl. 246—167 R **16 Claims**



1. In an arrangement for merging moving objects travelling in single file along respective ones of at least a pair of paths toward a confluence point at which the paths merge, said arrangement including control means mounted on each of said objects for controlling the speed of each object and spacing the objects, said control means comprising signal transmitting means and signal receiving means on each object, a signal transmitted by said signal transmitting means in one object on one path being received by said signal receiving means in the next object on said path, the improvement comprising:

stationary signal transmission line means extending coextensively with each of said paths prior to said confluence point, said signal transmission line means comprising electrical signal transmitting conductor means and first electrical connection means for effecting a higher than normal attenuation of said electrical signal in a longitudinal direction along said electrical signal transmitting conductor means so that the amplitude of said electrical signal transmitted over said electrical signal transmitting conductor means will be diminished in said longitudinal direction;

coupling means for coupling said signal transmitting means and said signal receiving means on each of said objects to said signal transmission line means so that signals can be transmitted from said signal transmitting means on one object to said signal receiving means on the next object; and

second electrical connection means for connecting said signal transmission line means adjacent one of said paths prior to said confluence point to said signal transmission line means adjacent the other of said paths also prior to said confluence point whereby a signal transmitted by said signal transmitting means on the forwardmost one of said objects on one of said paths will be transmitted through said second electrical connection means to said signal receiving means on the next following object on the other of said paths.

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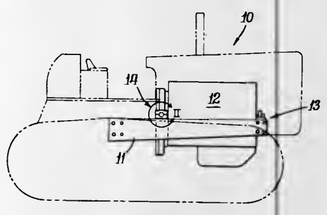
RESILIENT ENGINE MOUNT WITH SELF-LOCATING MEANS

Arthur D. Hermann, Chillicothe, and Edwin L. Riedesel, East Peoria, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Feb. 14, 1974, Ser. No. 442,465

Int. Cl. F16m *5/00*

U.S. Cl. 248—9 **9 Claims**



1. In an engine mount comprising a resilient bushing assembly, including a cup member, mounting an engine support trunnion on a structural member attached to a frame of a vehicle, the invention comprising stop-means secured on one of said cup and structural members to abut the other member for positioning such members axially relative to each other, said stop means comprising an annular flange formed integrally on said cup member and extending radially outwardly into abutting relationship with an outboard side of said structural member.

3,883,100

RESILIENT ENGINE MOUNT AND ALIGNMENT MEANS AND METHOD THEREFOR

Arthur D. Hermann, Chillicothe; William C. Hurt, II, Brimfield, and Bruce W. Miers, Peoria Heights, all of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

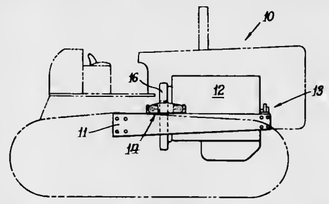
Filed Feb. 14, 1974, Ser. No. 442,466

Int. Cl. F16m *5/00*; **F16f** *15/00*

U.S. Cl. 248—9 **13 Claims**

1. A resilient engine mount releasably mounting an engine on a frame of a vehicle comprising a bracket, fastening means attaching said bracket to said engine and a pair of resilient

bushing assemblies, disposed on either side of said fastening means, mounting said bracket on said frame, said bracket comprising a vertically disposed plate and a mounting block



mounted on top of said frame and secured to a back side of said plate and disposed between said plate and said engine, said fastening means extending through said plate and mounting block and attached to a side of said engine.

3,883,101

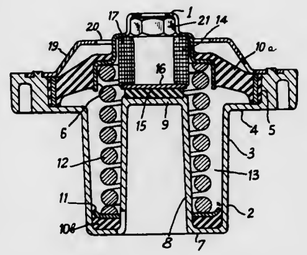
VIBRATION DAMPING MEANS

Pierre Vernier, Lausanne, Switzerland, assignor to ARFINA Anstalt Fuer Continentale und Uebersee Finanzinteressen, Vaduz, Liechtenstein

Filed July 15, 1974, Ser. No. 488,768

Int. Cl. E02d *27/44*; **F16m** *5/00*; **F16f** *15/00*

U.S. Cl. 248—9 **7 Claims**



1. Vibration damping means which comprises:

a first rigid member (**1**) adapted to be attached to one of two members to be damped;

a second rigid member (**2**) coaxial with the first rigid member and having the shape of a cylindrical cup, with a peripheral wall portion (**5**) at its open end which is radially spaced from a corresponding wall portion (**6**) of the rigid member (**1**);

said second rigid member having a projection (**8**) which extends upward from its bottom (**7**) in the form of an inner cup coaxial with the cylindrical wall (**3**) of the rigid member to define a substantially annular intermediate chamber (**13**) therebetween, said upward projection (**8**) having itself an inner bottom (**9**);

a pad of knitted metallic wire (**17**) between said first rigid member (**1**) and said inner bottom (**9**) which acts in the axial direction;

a first elastomeric pad (**10**) positioned between the radially spaced zones (**5**), (**6**) of the two rigid members (**1**), (**2**) to act in shear;

a helical spring (**12**) positioned in the annular space (**13**) and bearing on the first rigid member (**11**) and on the annular bottom (**9**) of the second rigid member (**2**);

a second annular elastomeric pad (**10**) positioned between the bottom (**7**) of the second rigid member (**2**) and the end of the spring (**12**);

and

a third elastomeric pad (**15**) between the inner bottom (**9**) of the projection (**8**) and the knitted metallic wire pad (**17**).

3,883,102

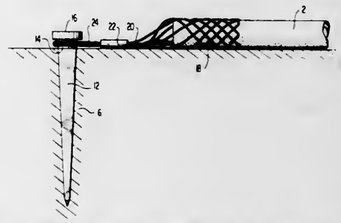
TIE-DOWN FOR TRAFFIC COUNTER HOSE

Harry E. Trigg, Hampton, Va., assignor to International Transportation Service Company, Hampton, Va.

Filed Aug. 13, 1973, Ser. No. 387,739

Int. Cl. F16g *11/00*; **G08g** *1/00*

U.S. Cl. 248—75 **1 Claim**



1. A tie down for the free end of a traffic counter hose comprising

a piton adapted to be driven into the pavement of a roadway and comprising

a body adapted to be driven into a roadway,

a cylindrical neck on the top of said body surmounted by a cylindrical head,

a Chinese finger trap engageable over a free end of said hose, said finger trap having

strands formed with a loop, said loop engaging around said neck and being normally barred from dislodgement from said neck by said head save by manipulative distortion of the loop,

said body being substantially flat and of generally triangular shape with a pointed lower end and a comparatively wide upper end from which said neck projects upwardly, the diameter of said neck being substantially equal to the thickness of the body and the diameter of the head being substantially greater than the diameter of the neck.

3,883,103

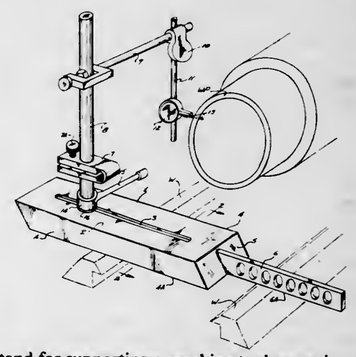
STAND FOR MACHINE TOOL GAUGE

Albert F. Bartolat, 61071 Hwy. 97, Bend, Oreg. 97701

Filed Jan. 2, 1974, Ser. No. 430,245

Int. Cl. A47g *19/00*

U.S. Cl. 248—124 **1 Claim**



1. In a stand for supporting a machine tool gauge in contact with a workpiece rotatably supported in a machine tool to determine the concentricity of the mounted workpiece, the stand including a mast, an arm extending outwardly from the mast, an indicator supported by said arm and having a feeler in contact with the workpiece, the improvement comprising, a base of elongate inverted channel formation of substantial

mass having downwardly extending sidewalls extending sub-

3,883,105

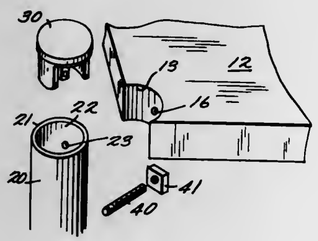
a lug rigidly attached to said first cast member

mass having downwardly extending sidewalls extending substantially the length of the base and constituting base leg members, said sidewalls tapered in a downward direction and terminating in a pair of parallel coplanar bottom edges each of reduced surface area of relatively heavy surface loading when in rested contact with the machine tool,

an arm projecting outwardly from one end of said base and having a flat bottom edge coplanar with the bottom edges of said sidewalls, said flat bottom edge of the arm constituting a third edge for support of the base on the machine tool in a tripodal manner, said arm additionally serving as a handle for the stand,

means mounting the lower end of the mast to said base within a lengthwise oriented opening formed in the latter enabling positioning the mast transversely relative to the axes of the rotatable workpiece, said mounting means including a hand grip in threaded attachment with said mast for advancement toward and away from said base to lock and unlock the mast in place along said opening, and said base and arm adapted to support the mast and indicator in an immobile manner regardless of minute particles intermediate said bottom edges and edge supporting machine tool surfaces.

3,883,104
TABLE LEG FASTENING MEANS
Fredrick B. Delafield, Altavista, Va., assignor to The Lane Company, Inc., Altavista, Va.
Filed Mar. 6, 1974, Ser. No. 448,714
Int. Cl. A47b *3/06*
U.S. Cl. 248—188 **8 Claims**



1. In furniture a combination for quickly, aesthetically, and securely attaching a supporting leg to a furniture body comprising

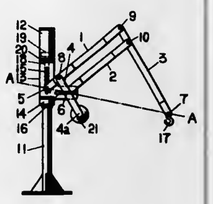
a. a tubular supporting leg having a circumference of a given shape with an opening in a portion thereof,

b. a furniture body having a cutout therein for receiving said leg portion, a body surface formed by said cutout being of substantially the same shape as said portion of said leg circumference and having an aperture therein for communication with said opening in said supporting leg portion,

c. means for effecting securement of said leg to said furniture body and for aesthetically capping said tubular leg, said means including (i) a cap portion for capping an open end of said tubular supporting leg and (ii) a flange portion depending from said cap portion for insertion into said tubular supporting leg, said flange portion having a rim for supporting said cap portion on said tubular leg, and

d. fastening means extending from said flange portion through said leg opening and said aperture in said body surface formed in said cutout for holding said securing and capping means, leg, and furniture body securely together in said surface to surface contact.

3,883,105
LOAD HANDLING EQUIPMENT
Reizou Matsumoto, 3-63, 4-chome, Imahuku-minami, Johtoh-ku, Osaka, Japan
Filed June 5, 1974, Ser. No. 476,415
Int. Cl. A47f *5/00*; **B66d** *1/00*
U.S. Cl. 248—281 **11 Claims**



1. A load handling equipment comprising a pantograph having two pairs of parallel members (1 – 2; 3 – 4, 4*a*, 4') facing each other and forming a parallelogram; pivotal connections (9; 6, 6'; 8, 8'; 10) between said members, including a first pivot (9) between first ends of a first (1) and a third (3) member, a second pivot (6, 6') at least axially aligned with a second member (2) and the first end of a fourth member (4, 4*a*, 4'), and third and fourth pivots (8, 8', 10) between respective second ends of said fourth and second members and intermediate points on said first and third members; an imaginary telescopic constant-ratio lever having three predetermined points (5, 6, 7) on the same imaginary line (A — A), of which a first point (5) constitutes a force point, a second point (6) constitutes a reaction point, and a third point (7) constitutes a gravity point where a load (W) is suspended, wherein said first and said second points are selectively a/ at the second end of said first member and *b*/ at least axially aligned with said second pivot, while *c*/ said third point is at the second end of said third member; a mechanism including a ram (18) of an actuator (12) connected to balance the load; and a second mechanism including means for limiting the movement of said force point to the vertical direction, means for horizontally moving said reaction point, and means for proportionately deriving a two-dimensional movement for said third point.

3,883,106
TELESCOPING POST
Ole Finn Simonsen, Baie D'Urfe, Quebec, Canada, assignor to Dominion Bridge Company Limited, Montreal, Quebec, Canada
Filed July 24, 1973, Ser. No. 382,209
Claims priority, application Canada, May 14, 1973, 171308
Int. Cl. E04g *25/08*
U.S. Cl. 248—354 R **1 Claim**

1. An infinitely adjustable telescoping post for extending between vertically spaced apart floors in a building under construction for use as a fence post in a temporary safety fence which also includes a plurality of panels having an upper rail and a middle rail, said telescoping post comprising

a first post member having an elongated, rigid hollow body defining an internal rectilinear passage of constant cross-section;

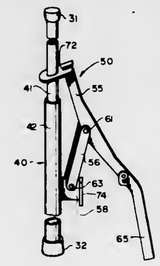
a section post member having an elongated rigid body, one end portion of which having a constant cross-section and outer dimensions adapted to fit relatively closely in slidable telescoping relationship within said passage of said first post member;

a lug rigidly attached to said first post member and extending outwardly therefrom;

a locking means for retaining said first and second post members into extended telescoping relationship when said telescoping post is subjected to longitudinal compression, said locking means comprising an aperture plate having an aperture therein through which said second post member extends, said aperture plate having a portion thereof extending outwardly from said second post member forming a boss;

a first toggle link having a generally compressed S-shape with inner and outer substantially straight end portions and an integral mid portion interconnecting each end protion at an angle, thereby forming a first boss at the interconnection between the inner end portion and the mid portion and a second boss at the interconnection between the outer end portion and the mid portion, said first toggle link being pivotably connected at the inner end portion thereof to said aperture plate boss at a first pivot point a transverse distance from said second post member;

a second toggle link pivotably connected at one end thereof to said first boss at a second pivot point and pivotably connected at the other end to said lug at a third pivot point a transverse distance from said first post member, said outer end portion of said first toggle link comprising

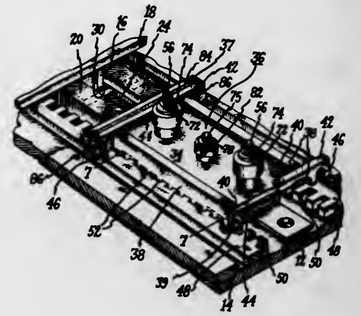


a handle extending along said second toggle link but slightly spaced therefrom so as to facilitate actuation of said locking means and for retaining the upper rail of the safety fence in position, the actuation of the locking means being effected by urging said handle toward said telescoping post for locking same and away from said telescoping post for releasing said second post member relative to said first post member whereby said toggle links are operable between a released position to a locking position, and when is said locking position said second pivot point is closer to said telescoping post than either said first or third pivot points thereby producing a toggle effect for holding the locking means in the locked position, and further when in said locking position, one side of said apertured plate is urged away from said lug along the axis of said telescoping post thereby to prevent sliding of said second post member within said passage when said telescoping post is subjected to longitudinal compression; a relatively thick boot mounted on each end of said telescoping post, said boots made of rubber-like resilient material for facilitating the positioning of said locking means in the locked position and for acting as friction elements;

hook means operable to interconnect said toogle links and said first post member when said locking means is in the locking position whereby to prevent accidental release; and

a bracket rigidly mounted on said first post member for supporting the middle rail of the safety fence.

3,883,107
LOAD CARRYING BED WITH ADJUSTABLE ANCHOR
Otis W. Ashworth, and Gordon C. Holden, both of Rome, Ga., assignors to General Electric Company
Filed Nov. 1, 1973, Ser. No. 411,695
Int. Cl. B60p *7/08*; **B65j** *1/22*
U.S. Cl. 105—367 **7 Claims**



1. Apparatus for anchoring a load to a loadbed comprising:

a. a rail member fixedly attached to a loadbed;

b. a T-shaped structure formed of first and second plate-like portions, an edge of said first plate-like portion being attached to a face of said second plate-like portion intermediate of the ends of said second plate-like portion such that said first and second plate-like portions are in a generally orthogonal relationship, an edge of said first plate-like portion opposite from the attached edge of said first plate-like portion being attached to the base of said load;

c. a hold down member slidably attached to said rail member having a T-shaped upper channel portion extending in the direction of the longitudinal axis of said rail member, engageable with said T-shaped load attached structure;

d. a shim member insertable between the surface of said second plate-like portion that is attached to an edge of said first plate-like portion and an adjacent surface of said upper channel portion of said hold down member, to urge said load attached T-shaped structure toward said rail member into an anchored position, and to urge said lip portion of the channeled bottom of said hold down member into non-sliding engagement with the undercut side portions of said rail member; and

e. means for preventing movement of said hold down member longitudinal of said rail member.

3,883,108
EASEL
Joseph Swartz, 2908 McDonald, Midland, Tex. 79701
Filed Mar. 29, 1973, Ser. No. 346,151
Int. Cl. A47b *97/04*
U.S. Cl. 248—460 **6 Claims**

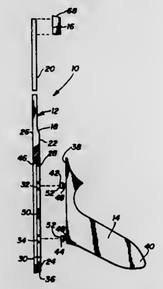
1. An easel for supporting an object in a frame comprising:

a. a standard having a first side carrying a vertical recess and adapted for abutting engagement with the rear of said frame, a second side opposite said first side, and a vertical slot communicating between said vertical recess and said second side;

b. prop means having a front edge adapted to engage said second side of the standard; and

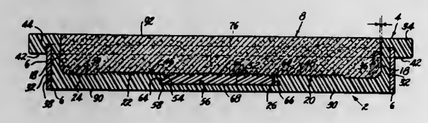
c. locking means fixedly mounted on said prop means and having a shank portion of a width less than the width of said slot and a length greater than the depth of said slot and an enlarged head fixedly secured to said shank with at least one dimension greater than the width of said slot

but less than the width of said recess such that said prop means can be slidably positioned relative to said standard



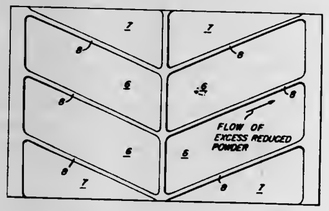
to adjust said easel and thereafter frictionally engage the standard to secure the easel in the adjusted position.

3,883,109
MOLD FOR MAKING METER BOX COVERS AND THE LIKE
Walter B. Hahne, Costa Mesa, Calif., assignor to Pre-Cast Concrete Products, Limited, Santa Ana, Calif.
Continuation of Ser. No. 673,444, Oct. 6, 1967, abandoned. This application June 23, 1970, Ser. No. 56,040
Int. Cl. B29c *5/00*
U.S. Cl. 249—91 **8 Claims**



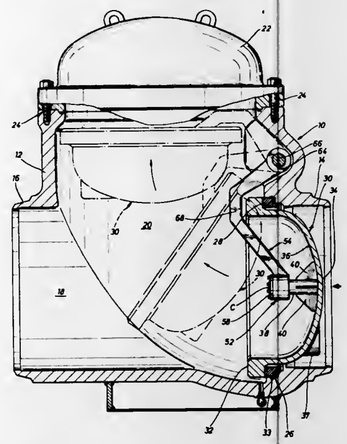
6. A mold for casting objects from a concrete mix or the like, comprising: a flexible plastic tray for receiving said mix, said tray having a bottom wall and side walls extending upwardly therefrom, the upper surface of said bottom wall containing a recess having an inwardly directed marginal flange extending throughout its periphery; and an insert disposed in said recess and having a peripheral flange engaged with said inwardly directed marginal flange to demountably retain said insert in said recess, said insert being readily removable upon flexing of the bottom wall of said tray.

3,883,110
BRIQUETTE MOLD POCKET CONFIGURATION
Luther G. Hendrickson, Churchill Borough, and Dino Ravasio, McKeesport, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.
Filed June 28, 1974, Ser. No. 483,997
Int. Cl. B29d *7/14;* **B30b** *3/00*
U.S. Cl. 249—187 **4 Claims**



1. A mold segment for use in a tandem roll briquette machine comprising a body portion adapted for inclusion on the periphery of a mold roll, and a plurality of mold pockets arranged in a V-formation extending from a central vertical land area.

3,883,111
CLAPPER-TYPE CHECK VALVE
Jerry W. Jourdan, Alvin, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Sept. 24, 1973, Ser. No. 400,454
Int. Cl. F16k *31/52*
U.S. Cl. 251—82 **7 Claims**

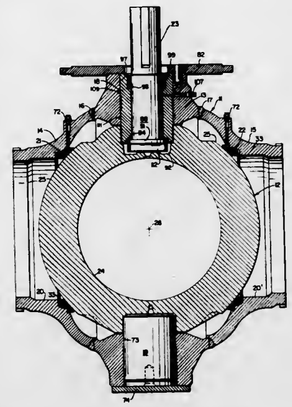


1. A check valve structure comprising, a valve body having a flow passage, a valve seat about the flow passage, a clapper type valve member, an arm connected to said valve member, a support shaft mounted on said body and fixed to said arm to support the arm for movement of the valve member between open and closed positions, drive means engaging said shaft for raising the valve member from the closed position to open position and maintaining said valve member in open position when rotated in one direction, said drive means permitting the valve member to move by gravity from an open position to a closed position when rotated in an opposite direction, said drive means permitting the valve member when in a closed position to swing freely in one direction to an open position relative to said drive means so that said valve member may open freely from a closed position without the actuation of said drive means.

3,883,112
PLUG VALVE HAVING COMPOSITE SEAT ELEMENT
Bertram J. Milleville, Pittsburgh, Pa.; Herman H. Fowler, Kearney, Nebr., and John H. Fowler, Pittsburgh, Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.
Filed Feb. 2, 1973, Ser. No. 328,915
Int. Cl. F16k *5/06*
U.S. Cl. 251—174 **11 Claims**

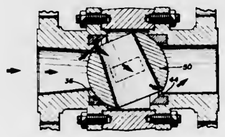
1. In a plug valve of the type wherein a ported plug is rotatably mounted in a valve body for movement between a valve closed position wherein it blocks a fluid passage through the valve and a valve open position wherein the plug port becomes a continuation of the body passage, seat rings mounted in said body surrounding passage openings at opposite sides of the plug and having spherical surface means adapted for engaging corresponding spherical surface means on said plug during rotation of the plug between said positions, at least one of said seat rings being a composite seat ring comprising a metal annulus having an axis parallel with the fluid passage and formed with said spherical surface means and an annular groove extending in a direction normal to the axis of said consisting essentially of a flat sided relatively narrow annulus

of synthetic plastic material, said annulus having a substantially greater width than thickness and laying in width in a plane normal to the axis of the annulus, said annulus having



its outer periphery fixed in said annular groove and its innere periphery projecting from said metal seat ring into deformable pressure engagement with said surface means of the plug.

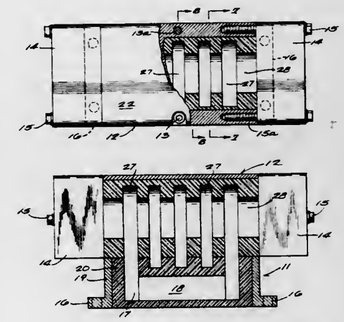
3,883,113
FLUID CONTROL BALL VALVE STRUCTURE FOR THROTTLING SERVICE
John P. Kolb, Stafford, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Mar. 29, 1974, Ser. No. 456,084
Int. Cl. F16k *5/06*
U.S. Cl. 251—209 **5 Claims**





1. A fluid control ball valve structure comprising a valve body having a valve chamber, upstream and downstream flow passages formed in said valve body and being in fluid communication with the valve chamber, a ball member disposed within the valve chamber and having a bore therethrough, means to rotate the ball member about a fixed axis of rotation between an open position in which the bore is in axial alignment with the flow passages and a closed position in which the bore is positioned generally at a right angle to the flow passages, an annular upstream seat member about the upstream flow passage and an annular downstream seat member about the downstream flow passage, the bore through said ball member having an entrance port adjacent the upstream seat member and an exit port adjacent the downstream seat member, and a circumferential upstream edge portion on said ball member defining the entrance port and having a generally arcuate indentation therein positioned on the circumferential segment of the edge portion initially clearing the upstream seat member upon rotation of the ball member from fully closed position toward open position, said arcuate indentation being struck from a generally constant radius which is positioned generally along a horizontal plane extending through the centerline of the flow passage with the surface formed by the indentation being beveled along its lateral edges, said indentation upon being exposed initially to fluid flow increasing substantially the flow area upon the initial opening of the valve member.

3,883,114
VALVE BODY
Bernard Harris, Bayside; Russell P. Johnson, and Gerald G. Lambert, both of Milwaukee, all of Wis., assignors to Rexnord, Inc., Milwaukee, Wis.
Filed Mar. 26, 1973, Ser. No. 345,019
Int. Cl.² F16K *11/07*
U.S. Cl. 251—366 **12 Claims**

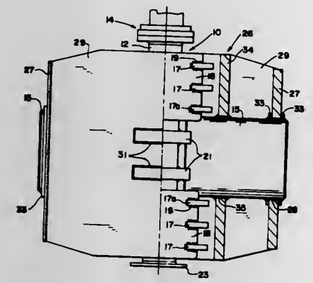


1. In an air valve comprising:
a. a cast valve body formed of resin mixed with metal powder;
b. a metal outer shell surrounding said cast valve body; and
c. a plurality of ports and internal passages communicating with said ports, said ports including inner portions formed in said cast valve body and outer portions formed in said metal outer shell.
the improvement comprising an elastomeric layer disposed between said cast valve body and said metal outer shell and bonding them together, said elastomeric layer being of sufficient thickness to accommodate the differences in thermal expansion and contraction between said cast valve body and said metal outer shell due to their different compositions and extending to the peripheries of said ports between said inner and outer portions thereof, thereby providing an air seal around said ports which prevents leakage of air from one of said ports, between said cast valve body and said metal outer shell, and into another of said ports.

7. In an air valve, a valve body comprising a cast inner member formed of resin mixed with metal powder and a metal outer shell, said valve body having a number of ports and internal passages communicating with said ports, said ports including inner portions formed in the cast inner member and outer portions formed in the shell, and an elastomeric layer disposed between said cast inner member and said metal outer shell and bonding them together, said elastomeric layer being of sufficient thickness to accommodate the differences in thermal expansion and contraction between the inner member and shell due to their different compositions and extending to the peripheries of the ports between said inner and outer

portions, thereby providing an air seal arouond the ports which prevents leakage of air from one port to between the inner member and the shell and into another port.

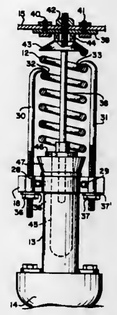
3,883,115
VALVE APPARATUS FOR PIPE LINES
Marvin H. Grove, Houston, Tex., assignor to M & J Valve Company, Houston, Tex.
Filed Sept. 14, 1973, Ser. No. 397,437
Int. Cl. F16k *27/10*
U.S. Cl. 251—366 **6 Claims**



1. In valve apparatus for pipe lines, a valve body having end walls provided with flow passages, a valve member within the body and movable between open and closed positions, pipe sections or transition pieces connected to the end walls of the body and communicating with the flow passages, bonnet means carried by one end of the body, an operating rod secured to the valve member and extending through the bonnet means and supplemental means for distributing stresses produced by bending moments applied between the valve body and the pipe sections, said means including rigid and substantially rectangular structural steel plates embracing the pipe sections at regions spaced outwardly from the end walls, and parallel structural side plates disposed along the sides of the valve body and rigidly secured to parallel side edges of the first named steel plates, said structural steel plates and said structural side plates forming a rectangular prism.

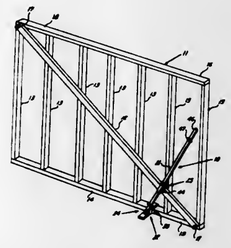
3,883,116
SPRING CLAMP TOOL FOR SERVICING SHOCK ABSORBERS
Jerry M. Buccino, 2034 Pelham Ave., Los Angeles, Calif. 90025
Filed Sept. 16, 1974, Ser. No. 506,529
Int. Cl. B60p *1/00*
U.S. Cl. 254—10.5 **1 Claim**

1. A spring clamp tool for servicing shock absorbers wherein the shock absorber is surrounded by a coiled spring extending between a lower casing and upper frame portion on a vehicle, said clamp tool including:
a. first and second clamp members each in the form of a bar shaped to define a central semi-circular portion and outer smaller semi-circular portions on either side of the central portion;
b. bolt and nut means for securing the bars together in opposed relationship with the central portions positioned about said casing so that said members are clamped to the casing, the outer smaller semi-circular portions defining openings on either side of the casing;
c. first and second elongated rods passing through said openings on either side of said casing to extend upwardly exterior of the coiled spring, the upper ends of the rods terminating in hooks for engaging the spring at diametrically opposite sides, the lower portions of the rods extending through the openings being threaded; and,
d. nuts threaded on the lower ends of the rods such that tightening of the nuts pulls the rods through the openings to retract the coiled spring whereby said shock absorber



may be uncoupled from said upper portion and from said casing for removal and replacements without having to disassemble said casing and spring from said vehicle.

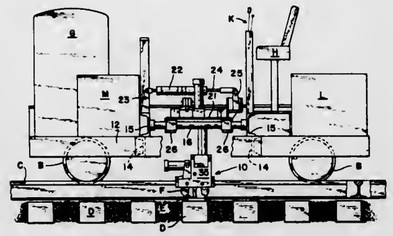
3,883,117
DEVICE FOR SQUARING THE STUDS AND PLATE MEMBERS OF A WALL SECTION
Earl A. Powell, 1030 Fifth St., West Des Moines, Iowa 50265
Filed Oct. 19, 1973, Ser. No. 407,805
Int. Cl. B66f *11/00, 15/00, 3/00*
U.S. Cl. 254—16 **7 Claims**



1. A jack device for squaring a wooden wall section having floor and ceiling plates interconnected by stud members and a brace member loosely attached to diagonally opposite end portions of said section, said device comprising:
a. an elongated lever member,
b. a pair of clamp assemblies of an inverted U-shape, with a first one of said assemblies corresponding to said floor plate, and the second one of said assemblies corresponding to said brace member, each of said clamp assemblies including a pair of oppositely arranged clamp arms,
c. means pivotally supporting a clamp arm of said first clamp assembly adjacent one end of said lever member for pivotal movement about an axis extended transversely of the lever member, and other means pivotally supporting the opposite arm of said first clamp assembly for pivotal movement about an axis parallel to the axis of said lever member, and
d. means mounting the second clamp assembly on one clamp arm thereof for longitudinal movement relative to the lever member and for rotational movement about the axis of the lever member,
e. said lever member, when the floor plate is received within the first clamp assembly and the brace member is received within the second clamp assembly, being manually pivoted relative to the first clamp assembly about said transverse axis to a position wherein the stud members

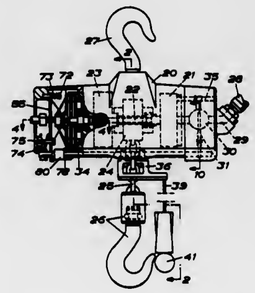
and plate members of the wooden wall section are extended in planes normal to each other.

3,883,118
SPIKE PULLING MECHANISM
J. R. Miller, Charlotte, N.C., assignor to Southern Railway Company, Washington, D.C.
Filed June 3, 1974, Ser. No. 475,923
Int. Cl. B25c *11/00*
U.S. Cl. 254—18 **12 Claims**



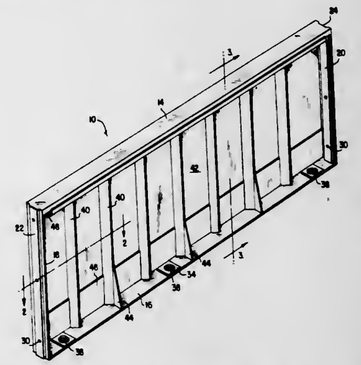
1. In a railroad spike pulling machine, a spike puller head comprising: a rigid frame; a pair of arms respectively pivoted to said frame for swinging movement in a common plane about parallel axes; said arms including relatively horizontally opposed spike gripping jaws at locations remote from their said axes; power means interconnecting said arms for selectively urging their said gripping jaws toward and away from each other;
and a central gripping element in the form of a pendant arm freely swingably suspended at its upper end from said frame, said pendant arm having gripping jaws at its lower end between and in horizontal alignment with said gripping jaws of said first mentioned arms for substantially horizontal free movement between said gripping jaws of said first mentioned arms.

3,883,119
HOIST
Gunnar Christer Hansson, Stockholm, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Sept. 8, 1972, Ser. No. 287,368
Int. Cl. B66d *1/58*
U.S. Cl. 254—168 **22 Claims**



1. A hoist comprising:
a housing with a reversible motor therein;
a drum in said housing and carrying a flexible line having a fastening means from which a load can be suspended;
a power transmission train in the housing and coupled to said motor to rotate said drum;
a friction brake means for selectively locking said drum;
a mechanism responsive to a tendency of load driven turning of said drum to force said brake means into a braking position when said motor is stopped so as to form an automatic one-way clutch together with said brake means;
an elastically yieldable means associated with at least one of said mechanism and said brake means for limiting the operating force applied to said brake means by said mechanism whereby to limit the braking force and permit a slipping in said one-way clutch when the tension in the flexible line exceeds a predetermined value; and
means separate from the power transmission train to selectively release said brake means so as to permit the drum to rotate in the load-lowering direction.

3,883,120
MONOLITHIC DASHER-BOARD FOR SKATING RINKS
Joseph R. Tippmann, 211 West St., New Haven, Ind. 46774
Continuation-in-part of Ser. No. 276,948, Aug. 1, 1972. This application June 18, 1973, Ser. No. 370,828
Int. Cl. E04h *17/16*
U.S. Cl. 256—24 **16 Claims**



1. In a dasher-board for skating rinks comprising:
a. a unitary panel member of polyester resinous material having fiberglass incorporated therein and forming a substantially flat front portion, said front portion having an upper and lower marginal edge portion extending outwardly therefrom and a first and second marginal edge portion extending outwardly from said front portion adjacent said upper and lower edge portions to form a continuous and homogeneous reinforcing flange around said front portion,
b. additional means adjacent said lower marginal edge portion to absorb the impact of hockey pucks and the like, said additional means being integrally formed with said front portion and made of said aforementioned material, and
c. channel means carried on said panel member for supporting a spectator shield.

3,883,121
PROCESS FOR MIXING TWO OR MORE LIQUID OR PASTRY PRODUCTS UNDER HIGH PRESSURE AND MIXING HEAD THEREFOR
Michel Pierre Guillaud, Grenoble, France, assignor to Societe Anonyme, Secmer la Tronche, Isere, France
Filed Sept. 4, 1973, Ser. No. 394,100
Claims priority, application France, Sept. 6, 1972, 72.32065
Int. Cl. B01f *5/10, 15/02*
U.S. Cl. 259—4 **6 Claims**

1. A head for mixing multiple liquid products introduced thereinto under pressure, comprising:

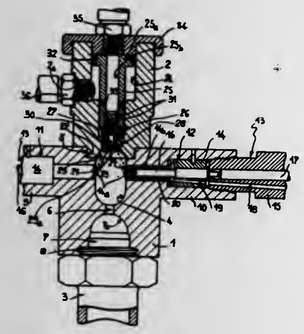
a body including therein a cavity having a central portion and having respective first and second concavely shaped

each inner bushing and the inner circumferential wall portion of each outer bushing being

h. a plurality of fixed upright bars forming part of said stand

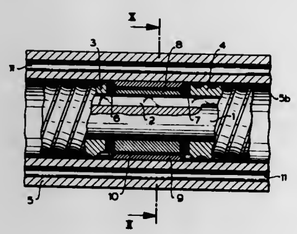
extended position to prevent substantial relative movement

a body including therein a cavity having a central portion and having respective first and second concavely shaped end portions separated from each other along the axis of the cavity by said central portion, and said body further having a chamber located adjacent to said first end portion and communicating with said first end portion by a channel located on said axis and said second end portion having an opening therethrough.



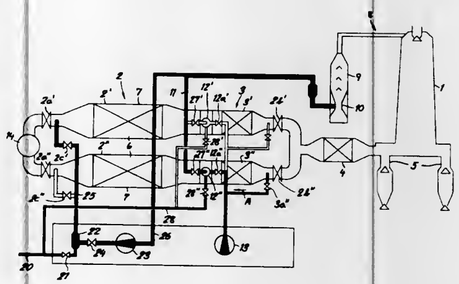
a cap removably closing said second end portion;
injector means extending from outside the head into the central portion of the cavity, the injector means being supplied with said liquid products under pressure and having jet openings extending into the cavity and directed to project said products onto the concavely shaped second end portion; and
a discharge tube extending from the chamber to discharge the mixed products.

3,883,122
SCREW EXTRUDER
Hans Werner, Stuttgart-Nord, Germany, assignor to Werner & Pfleiderer, Stuttgart, Germany
Filed Feb. 15, 1974, Ser. No. 442,753
Claims priority, application Germany, Apr. 27, 1973, 2321325; Feb. 27, 1973, 7307358
Int. Cl. B29b *1/10*; B01f *7/08*
U.S. Cl. 259—192 **8 Claims**



1. A screw extruder for processing materials of pliable consistency, said screw extruder comprising in combination:
an elongate casing including two parallel lengthwise bores of cylindrical configuration and intersecting each other;
a screw shaft mounting screw flights rotatably mounted in each bore, the screw flights on the shafts being in mesh and each shaft having intermediate its length a flight-free section, said sections being disposed in juxtaposition;
an inner bushing fitted upon each flight-free shaft section secured thereto against rotation and an outer bushing secured against rotation to the inside wall portion of the casing in radial registry with the respective inner bushing and coaxial therewith, the outer circumferential wall of each inner bushing and the inner circumferential wall portion of each outer bushing being correlated to define therebetween a shear gap of uniform radial width.

3,883,123
APPARATUS FOR THE REDUCTION OF IRON ORES BY DIRECT REDUCTION
Heinz-Dieter Pantke, Essen-Frintrop, and Ulrich Pohl, Mulheim (Ruhr), both of Germany, assignors to Thyssen Niederrhein AG Hutten- und Walzwerke, Oberhausen, Germany
Filed Sept. 24, 1973, Ser. No. 400,058
Claims priority, application Germany, Sept. 23, 1972, 2246885
Int. Cl. F27d *13/00*
U.S. Cl. 266—29 **9 Claims**

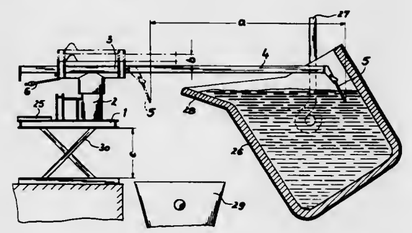


1. An apparatus for the reduction of iron ore, comprising a reducing furnace; a pair of regeneratively heatable gas reformers; a pair of regenerative air preheaters each respectively connected at a downstream end of a respective one of said reformers; a regeneratively heat storing buffer heat exchanger disposed in common between said air preheaters and said furnace for heating gas cooler than the buffer heat exchanger and cooling gas hotter than the latter; means for feeding combustion air to said heaters alternately and sustaining combustion to produce combustion gases traversing the respective reformer; means for passing a mixture of hydrocarbon and an oxidizing medium through said reformer alternately and the respective heaters and conversion to reducing gas; and means for functionally interchanging said reformer between a heating mode and a reducing gas producing mode.

3,883,124
APPARATUS FOR DE-SLAGGING CASTING LADLES
Abel Galer, Grivegnee, Belgium, assignor to SA Louise NV, Grivegnee, Belgium
Filed Oct. 16, 1973, Ser. No. 406,940
Claims priority, application Germany, Oct. 16, 1972, 2250695
Int. Cl. C21c *7/00*
U.S. Cl. 266—37 **12 Claims**

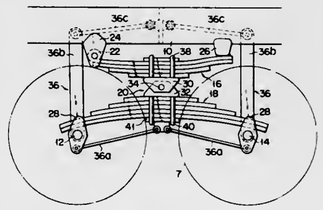
1. A de-slagging apparatus comprising in combination:
a. a stand;
b. a column vertically disposed in and supported by said stand, said column having a longitudinal axis;
c. means for raising and lowering said column to selected heights in the direction of its longitudinal axis;
d. a horizontally extending guide supported on said column;
e. an arm arranged coextensively with said guide and being supported thereby, said arm having a length dimension and two ends;
f. a slag skimmer secured to one end of said arm;
g. means for moving said arm along its length dimension in and with respect to said guide;

h. a plurality of fixed upright bars forming part of said stand and defining a space therebetween for accommodating said vertical column;



i. a plurality of rollers mounted on a lower terminus of said column and each rollingly engaging a separate one of said upright bars; and
j. a plurality of rollers, mounted on an upper terminus of said upright bars and rollingly engaging said column.

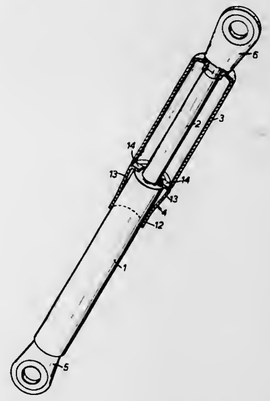
3,883,125
TANDEM SUSPENSION
Yukihiro Takatsu, Yokohama, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan
Filed Mar. 13, 1974, Ser. No. 450,610
Int. Cl. B60g *11/08*
U.S. Cl. 267—38 **5 Claims**



1. A tandem suspension comprising:
two parallel axle housings (12, 14),
upper leaf spring means (16) mounted at both ends thereof on the chassis of a vehicle,
lower leaf spring means (18) mounted at the respective ends thereof to said axle housing (12, 14), and
a coupling mechanism (20) pivotally coupling said upper (16) and lower (18) leaf spring means together substantially at the middle portions of said upper and lower leaf spring means for relative pivotal movement between said upper and lower leaf spring means about an axis extending substantially parallel to said axle housings.

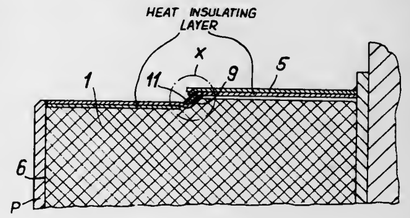
3,883,126
GAS SPRINGS
Lawrence George Nicholls, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed Jan. 17, 1974, Ser. No. 434,283
Claims priority, application United Kingdom, Jan. 19, 1973, 2982/73
Int. Cl. F16f *5/00*
U.S. Cl. 267—65 R **7 Claims**

1. A gas spring comprising a cylinder body having one end closed, a piston rod reciprocable into and out of the cylinder body through the other end thereof between a retracted and an extended position of said spring, gas under pressure in said cylinder body operating at all times against the cross sectional area of said rod to urge it towards the extended position of said spring, and mechanical latching means operative in said extended position to prevent substantial relative movement between said piston rod and said cylinder body, said latching



means being manually releasable to permit such relative movement.

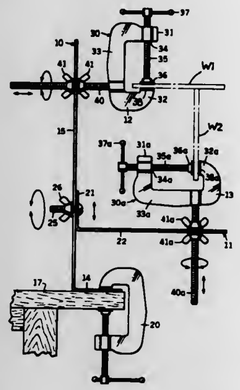
3,883,127
BUFFER HAVING A BUFFER BODY OF FOAMED SYNTHETIC MATERIAL
Wilhelm Schwarz, Wilhelmshaven, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Apr. 16, 1973, Ser. No. 351,504
Claims priority, application Germany, Apr. 22, 1972, 2219916
Int. Cl. F16f *1/37*
U.S. Cl. 267—140 **7 Claims**



1. A buffer which includes: a buffer body of foamed material having a first surface adapted to be acted upon by pressure, said buffer body being compressible in axial direction thereof by forces acting upon said first surface, mantle means of heat conductive material covering at least a portion of said buffer body and comprising a first section and a second section movable relative to each other in conformity with the compression and expansion of said buffer body which extends between both sections of the mantle means to substantially occupy space within one chamber, said first and second sections of said mantle means telescopically overlapping each other, end plate means respectively closing those ends of said telescopically interengaging mantle means which are remote from each other, said first and second sections overlapping each other with an anngular gap therebetween, ring means radially interposed between said first and second sections and bridging the angular gap, at least one of said sections being provided with bead-depression means having said ring means located and secured therein, one of said sections adjacent its pertaining bead-depression means being provided with deflecting surface means for deflecting the foamed material of the buffer body in a direction radially inwardly from the outer

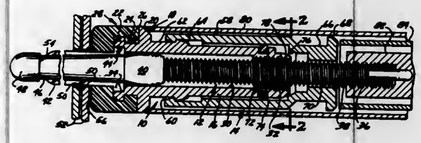
one of said sections when said sections are being telescoped into each other.

3,883,128
UNIVERSALLY ADJUSTABLE CLAMP
Ralph J. Breese, Box 217, Bourbon, Mo. 65441
Filed Feb. 25, 1974, Ser. No. 445,540
Int. Cl. B25b *1/22*
U.S. Cl. 269—45 **2 Claims**



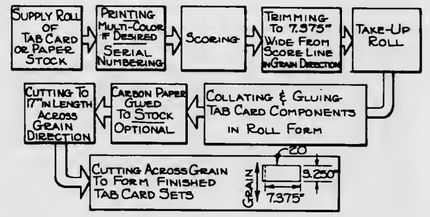
1. An adjustable clamping device for attachment to a base, the device comprising:
   a. a first angle bracket including an attachment leg for attachment to the base and a substantially perpendicular outstanding leg having an elongate slot therein,
   b. a second angle bracket including an attachment leg for attachment to the outstanding leg of the first angle bracket and a substantially perpendicular outstanding leg having an elongate slot therein,
   c. fastener means connecting the attachment leg of the second angle bracket to the outstanding leg of the first angle bracket,
   d. a first clamp including:
      1. a substantially U-shaped body having opposed arms,
      2. a threaded clamping member having a clamping axis extending between said arms,
      3. an elongate, threadedly adjustable member having a longitudinal axis and having one end secured to the body and the other end received by the slot in the outstanding leg of the first angle bracket for selective translational and rotational movement of said adjustable member in said slot to move the first clamp for a relative coarse sliding adjustment toward and away from the outstanding leg of the second angle bracket and to rotate the clamping axis in a plane substantially perpendicular to the longitudinal axis of said adjustable member, and
      4. means for selectively fixing the location of the adjustable member in said slot and for enabling movement of the adjustable member and first clamp for a relative fine threaded adjustment toward and away from the outstanding leg of the first bracket to which it is attached, and
   e. a second clamp including,
      1. a substantially U-shaped body having opposed arms,
      2. a threaded clamping member having a clamping axis extending between said arms,
      3. an elongate threadedly adjustable member having a longitudinal axis and having one end secured to the body and the other end received by the slot in the outstanding leg of the second angle bracket for selective translational and rotational movement of said adjustable member in said slot to move the second clamp for a relative coarse sliding adjustment toward and away from the outstanding leg of the first angle bracket and to rotate the clamping axis in a plane substantially perpendicular to the longitudinal axis of said adjustable member, and
      4. means for selectively fixing the location of the adjustable member in said slot and for enabling movement of the adjustable member and second clamp for a relative fine threaded adjustment toward and away from the outstanding leg of the second bracket to which it is attached.

3,883,129
CLAMPING DEVICE
Sterling B. Jones, 858 Duff Ave., West Covina, Calif. 91790
Filed Oct. 5, 1972, Ser. No. 295,281
Int. Cl. F16b *13/04*
U.S. Cl. 269—49 **11 Claims**



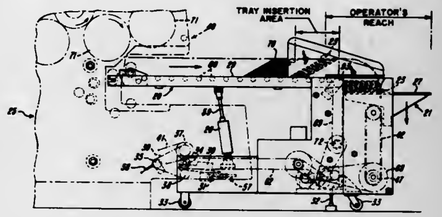
1. A clamping device for use in clamping work having an opening therethrough, comprising:
   an elongate main body having a head end and an aft end and formed with an axially extending passage therethrough;
   the head end having an end face adapted to engage the work to be clamped;
   an elongated tension member axially slidably mounted in the passage for free longitudinal extending and retracting movement therethrough and having a forward end projecting through the head end of the main body to pass through the work and an aft end projecting through the aft end of the main body;
   the tension member having a radially expansive gripper head spaced forward of the end face of the main body in extended position and adapted to enlarge radially from a contracted position, in which can pass through the work to an expanded size to engage the remote side of the work and clamp the work between the gripper head and the end face in response to retracting movement of the tension member;
   the head end of the main body having a formation for engagement by the pusher element of an applying tool and the aft end of the tension member having a formation for engagement by the puller element of the tool for producing the clamping action;
   an actuator carried by the main body and movable thereon to deflect at least a portion thereof transversely of the axis of the tension member into binding engagement with the tension member to lock it in clamping position, said actuator being in the form of a collar coaxially mounted on and axially slidable on the main body to a forward locking position and an aft releasing position;
   said collar being provided with an actuator portion arranged in camming relation with an aft portion of the main body to displace it laterally in response to forward movement of the collar and to release it for return to normal position in response to aft movement of the collar; and
   cooperating detent means formed on the collar and the main body to permit limited axial movement and prevent separation;
   the aft end of the collar extending beyond the aft end of the main body and being provided with a central axial guide aperture sized to freely slidably receive the aft portion of the tension member and normally maintain it on a coaxial path with the collar and out of binding engagement with the aft portion of the main body.

3,883,130
METHOD FOR FORMING TABULATING CARD SETS
Richard H. Hardesty, 138 Stratford Pl., Salisbury, N.C. 28144
Filed Oct. 12, 1972, Ser. No. 296,995
Int. Cl. B41f *13/64*
U.S. Cl. 270—18 **3 Claims**



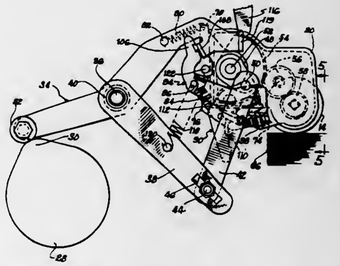
1. A method for producing tabulating card sets with each set comprising a bottom card of relatively inflexible paperboard and a plurality of alternately arranged carbon sheets and paper sheets overlying the paperboard card and interconnected thereto along a removable end portion, and with each tabulating card set having a dimensional tolerance within a few thousandths of an inch in both the longitudinal and transverse directions such that the paperboard card may be used as an information storage device such as a tabulating machine punch card or the like, and comprising the steps of
   advancing a continuous web of the paperboard and a plurality of continuous webs of paper from associated supply rolls and with the grain of each web extending in the longitudinal direction,
   printing each of the advancing webs with a desired card indicia to define a series of card outlines and with each card outline being oriented to lie transversely across the web,
   forming a score line by intermittently slitting each of the advancing webs, the score line extending along one side edge thereof to define a removable end portion along each card outline,
   continuously slitting each of the advancing webs at a predetermined location along the other side edge of the advancing web while maintaining such predetermined location within a tolerance of a few thousandths of an inch in relation to the score line,
   collating the continuous webs with intermediate continuous carbon sheets to form a continuous composite web and with the printed card outlines of each web being aligned with the card outlines of each adjacent web,
   interconnecting the composite web along the side edge thereof which comprises the removable end portions,
   transversely cutting the composite web at regular spaced locations along the length thereof such that each cut length includes a plurality of printed card outlines, and then
   transversely slitting the cut lengths of the composite web at a plurality of locations and along each transverse side edge of each card set to thereby form a plurality of individual card sets while maintaining a tolerance of a few thousandths of an inch between each transverse slitting line, whereby all four edges of the resulting card sets are formed by a slitting operation with the tolerance maintained within a few thousandths of an inch.

3,883,131
DELIVERY APPARATUS AND METHOD
Ohmer Anderson, Jr., and Robert Eugene Stephens, both of Dayton, Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed Nov. 2, 1973, Ser. No. 412,192
Int. Cl. B65h *45/00*
U.S. Cl. 270—61 F **20 Claims**



1. For stacking a continuous series of forms of predetermined length, improved delivery apparatus comprising:
   a conveyor for transporting said forms along a horizontal path in an upstanding loosely assembled lengthwise progression,
   a platform at the end of said conveyor,
   means for raising and lowering said platform,
   means for directing said forms from the horizontal path along said conveyor to a vertical path toward said platform, and
   means including a pair of retractable ledges mounted above said platform, for segregating a group of forms at the end of said series from the other forms in said series by catching an outwardly extending dividing tray inserted in said forms and moving together therewith and thereby restraining the advance of said other forms onto said platform.

3,883,132
PAPER FEED CONTROL MECHANISMS
John L. Swanson, Libertyville, Ill., assignor to A. B. Dick Company, Niles, Ill.
Filed July 16, 1973, Ser. No. 379,549
Int. Cl. B65h *3/06*
U.S. Cl. 271—110 **22 Claims**



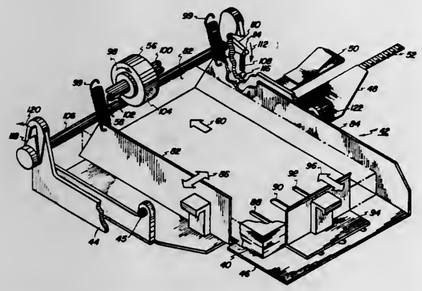
1. In a duplicating machine including a table for holding a stack of paper sheets, at least one feed member for engaging individual sheets to feed the sheets to the duplicating mechanisms, means for driving the feed member for achieving the feeding operation, and primary means for controlling the operation of the means for driving the feed member, the improvement comprising secondary control means for automatically controlling the feeding operation of the feed member depending upon the location of the top of said stack, said control means including a latch lever, means operatively con-

necting said latch lever to said feed member, said latch lever

a first microswitch and a second microswitch, said micro-

necting said latch lever to said feed member, said latch lever moving with said feed member as the feed member changes position in response to a change in the height of said stack, the movement of the latch lever resulting in engagement of the latch lever with the means for driving said feed member when the top of the stack reaches a predetermined position, the engagement of the latch lever with the means for driving the feed member stopping the driving of the feed member.

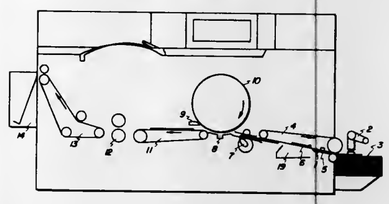
3,883,133
MOVABLE PACK ADVANCER
Robert P. Rebres, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Sept. 17, 1973, Ser. No. 398,024
Int. Cl. B65h 3/52, 1/12
U.S. Cl. 271—122 **20 Claims**



1. A sheet feeding apparatus including:
means for separating and advancing successive sheets from a stack of sheets disposed in the sheet feeding apparatus; a supporting member laterally movable from an operating position to loading position remotely spaced from the operating position;
a base plate mounted pivotably on said supporting member, said base plate being adapted to support the stack of sheets;
biasing means for resiliently urging said base plate to pivot so as to move the stack of sheets disposed thereon into communication with said separating and advancing means;
a cam follower secured to said base plate; and
a cam member secured to the sheet feeding apparatus, said supporting member being laterally movable across said cam member with a portion of said cam follower in engagement therewith, said cam member having a profile such that as said cam follower moves therealong said biasing means pivots said base plate from a position wherein the uppermost sheet of the stack of sheets of support material is spaced from said separating and advancing means to a position in communication therewith; means for automatically locking said supporting member in the operating position; and
means for automatically actuating the sheet feeding apparatus in response to said supporting member being located in the operating position.

3,883,134
DETECTING AND REMOVING APPARATUS FOR SKEW FED SHEETS
Michio Shinaki, Atsugi, Japan, assignor to Rank Xerox, Ltd., London, England
Filed Jan. 18, 1974, Ser. No. 435,137
Int. Cl. B65h 29/58
U.S. Cl. 271—261 **1 Claim**

1. In an automatic sheet handling system including a moving belt for conveying sheets, apparatus for removing skew fed sheets from said belt comprising
a first microswitch and a second microswitch, said microswitches being positioned along a line perpendicular to the direction of movement of said belt such that the leading edge of a sheet traveling along said belt passing each of said microswitches causes the operation of said each of said microswitches, the contacts of said microswitches being connected to pass a signal during the time that only one, but not both, of said microswitches is operated,
first timing means connected to said microswitches and responsive to the time duration of said signal for providing an enabling signal when said time duration is greater than a predetermined amount,



second timing means,
a rotary solenoid,
relay means enabled responsive to said enabling signal for energizing said solenoid, said second timing means, and providing a self locking path for said relay means, and
a plurality of fingers operatively coupled to said solenoid and initially positioned adjacent said belt, said plurality of fingers responsive to the energization of said solenoid for pivoting and separating a passing sheet from said belt,
said second timing means including disabling means opening said self locking path of said relay means after a predetermined interval to disable said relay means, whereby said solenoid is de-energized and said plurality of fingers are returned to their intitial position.

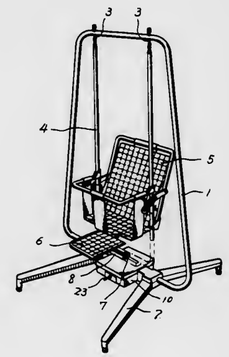
3,883,135
SIMULATED KARATE DEVICE
Paul E. Milliken, 9061 Wall St., N.W., Massillon, Ohio 44646
Continuation-in-part of Ser. No. 359,099, May 10, 1973, abandoned. This application Aug. 23, 1973, Ser. No. 390,866
Int. Cl. A63j 5/00
U.S. Cl. 272—8 N **9 Claims**



1. A simulated karate device comprising:
A. a separable element to be struck with a human hand;
B. said element comprising a pair of mating pieces, each piece having an irregular edge which interfits with a similar irregular edge on the opposite piece, each of the irregular edges comprising a series of outwardly extending projections alternately defining therebetween a series of inwardly extending depressions, the projections of one piece extending into the depressions in the opposite piece when the pieces are assembled together, in such manner that the projections of one piece overlap the projections of the other piece in the longitudinal direction;

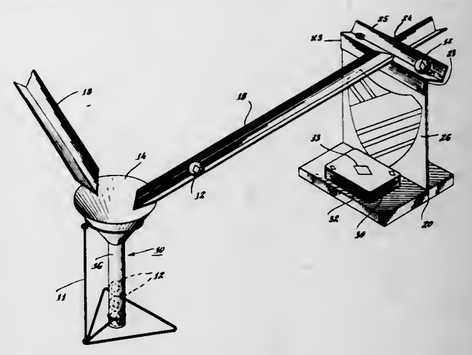
C. each piece having a transverse recess in its respective irregular edge passing through the outwardly extending projections;
D. the recess in each edge being in alignment with the recess in the opposed edge of the mating piece when the two mating pieces are assembled together in edge to edge relationship; and
E. yieldable retaining means simultaneously extending through the transverse recesses in the outwardly extending projections on both pieces to key the two pieces together;
F. said retaining means having sufficient strength to releasably join together the mating pieces but being sufficiently yieldable to permit separation of the pieces when the separable element is struck with the hand to create the illusion of breaking a single continuous element.

3,883,136
AUTOMATIC SWING OPERATED BY ELECTRICITY
Young Ho Kim, 1164-2, Choryang-dong, Dong-ku, Busan, South Korea
Filed May 18, 1973, Ser. No. 361,541
Claims priority, application South Korea, July 10, 1972, 4381/72
Int. Cl. A63g 9/16
U.S. Cl. 272—86 **1 Claim**



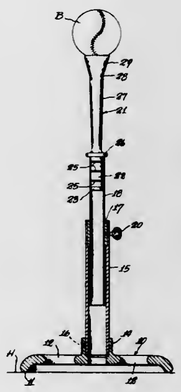
1. An automatic swing comprising:
a main frame;
a swing arm pivotally connected at its upper end to said main frame;
a first permanent magnet affixed to the bottom end of said swing arm;
an electro-magnet affixed to the bottom of said main frame immediately below the path of the permanent magnet; and
electrical circuit means isolated from said main frame and said swing arm for selectively energizing said electro-magnet and effecting an automatic oscillatory movement of aid swing arm by coaction between the magnetic field of said permanent magnet afffixed to said swing arm and the magnetic field of said electro-magnet, wherein said electrical circuit means includes:
a normally open switch;
a second permanent magnet affixed to said normally open switch and coacting with said first permanent magnet to close said switch only while said first permanent magnet is positioned proximate said electro-magnet,
electrical resistance means; and
switch means for selectively coupling said resistance means into and out of said circuit for varying the amplitude of oscillation of said swing arm.

3,883,137
GAME APPARATUS
Paul J. Bengtson, 384 Main St., Danbury, Conn. 06810
Filed May 20, 1974, Ser. No. 471,800
Int. Cl. A63f 9/00
U.S. Cl. 273—1 R **7 Claims**



7. A game apparatus comprising
a funnel-shaped receptacle made from transparent material adapted to support one end of each of a multiplicity of ramps with one end of each of said ramps positioned above the ingress means to said receptacle,
a multiplicity of stands having planar vertical members adapted for supporting the other ends of each of said ramps at levels higher than the level of said one end of each, with the plane of said each of said members normal to the long axes of the ramps with which it is associated, a multiplicity of ramps each of which is supportably positioned with one end on said receptacle and the other end on one of said members, and signalling means positioned on each of said stands on the side thereof which normally may face toward said receptacle.

3,883,138
BATTING TEE APPARATUS
Andro J. Chorey, 8316 Gibson Rd., Canfield, Ohio 44406
Filed Aug. 6, 1973, Ser. No. 385,842
Int. Cl. A63b 69/40
U.S. Cl. 273—26 R **2 Claims**



1. An improved batting tee comprising:
a base member adapted to rest upon a surface and free of attachment thereto, said base member having gently

rounded edges about its periphery to minimize injury to a person in the event of upset thereof, and having an upstanding tubular socket thereon,

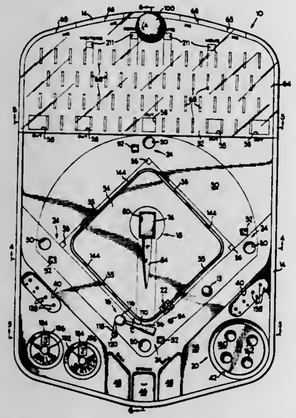
a first upstanding tube having its lower end received in said socket and detachably secured therein,

a tubular bushing affixed within said tube adjacent the upper end thereof, said bushing providing an aperture of lesser internal diameter than said tube,

a second upstanding tube telescopingly received within said first tube and slidably engaged with said bushing, said second tube having enlarged means at the lower end thereof to prevent upward movement of said second tube past said bushing,

thumbscrew means releasably locking said tubes in adjusted telescoped position, and, an upright ball support comprising a solid rod of resilient material having a ball-receiving pocket at its upper end, a tapered lower end for frictional insertion into said second tube, said ball support adjacent said tapered lower end thereof being provided with a plurality of peripheral grooves therein to enhance frictional engagement of the ball support with said second tube when inserted therein, an outwardly extending flange thereon adjacent said lower end and having a diameter greater than that of said second tube for limiting the insertion of said ball support into said second tube.

3,883,139
BASEBALL TYPE GAME APPARATUS
Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Nov. 28, 1973, Ser. No. 419,805
Int. Cl. A63f 7/06
U.S. Cl. 273—89 **15 Claims**



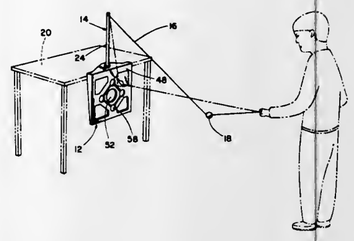
1. In a baseball game including a simulated baseball, a playing surface on which the ball is rollingly supported having a simulated baseball diamond thereon, batting means mounted near home plate to hit the ball, pitching means to launch the ball toward the batting means, figures simulating baseball players which are mountable on the diamond, means to propel the figures around the diamond and safe/out means for determining whether a hit ball resulted in a hit or an out, the improvement in said safe/out means comprising:

indicating means associated with at least one of said bases including a ball engaging portion, a figure engaging portion which is adapted to engage said figure only when a ball engages said ball engaging portion, and a sign having indicia thereon indicating when a player is out, said sign being movable in response to said figure engaging said figure engaging portion between a normal safe position and an out position wherein said out indicia is displayed.

12. In a baseball game including a simulated baseball, a playing surface on which the ball is rollingly supported having a simulated baseball diamond thereon, batting means mounted near home plate to hit the ball, pitching means to launch the ball toward the batting means, figures simulating baseball players which are mountable on the diamond, means to propel the figures around the diamond and safe/out means for determining whether a hit ball resulted in a hit or an out, the improvement comprising:

means dividing said playing surface into an accessible infield portion wherein a ball may be retrieved by a player and an inaccessible outfield portion wherein a ball cannot be retrieved by a player, and means associated with said inaccessible outfield portion for moving said ball onto said accessible infield portion after it has been in the inaccessible outfield portion, whereby said ball, after being hit, moves from said accessible infield portion to said inaccessible outfield portion and back to said accessible infield portion.

3,883,140
TARGET AND SLIDING PROJECTILE
Joseph T. Becker, 2 S. 214 Sheffield Dr., Glen Ellyn, Ill. 60137
Filed Feb. 1, 1974, Ser. No. 438,855
Int. Cl. A63b 71/00
U.S. Cl. 273—101 **11 Claims**



11. A game as set forth in claim 8 wherein said target area comprises a frame forming member having a generally vertical face with an opening therein defining a mouth formation and said support means comprises a vertically disposed post to the upper end of which said flexible line is connected.

3,883,141
SIMULATED BOWLING GAME
Kenneth C. Sherwood, New York, N.Y., assignor to Kae-Tee Development Corporation, New York, N.Y.
Filed Dec. 23, 1971, Ser. No. 211,321
Int. Cl. A63d 3/00, 13/00
U.S. Cl. 273—121 A **9 Claims**

1. In a pin ball game apparatus simulating a bowling establishment for a ten pin game with the pins set in triangular array comprising:

a first panel surface having a forward end and a rear end having pictured thereon a set of pins in reverse position to that in which they are set up at one end of a bowling lane with the head pin in proximity to the forward end of the game apparatus and the 7 and 10 pins in proximity to the rear end of the game apparatus;

an indicating panel set up at an appropriate angle relative to the first panel to image the pin conditions of the first panel;

ball movement arresting means located in positions on the first panel corresponding to each pin position on the outside of the triangle;

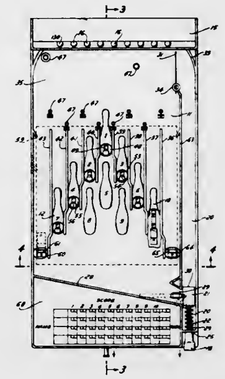
channel means located on said first panel for directing a ball to one of said ball movement arresting means;

means for projecting a ball and for causing the ball to move into one of said channels to the locus of the pin positions on the first panel;

a subpanel position beneath the first panel;

switch means below each ball movement arresting means;

means for interconnecting the switch so that when a switch is contacted by a projected ball a switch connection is changed, and depending upon the position of the connected switch, the closure of selected ones of the several switches which correspond to the pins, which could fall if a ball in a bowling lane under similar contact so that the interconnected switches represent, together with pin



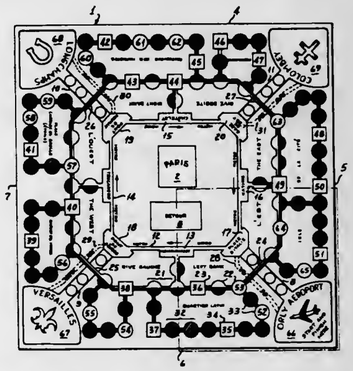
positions directly behind switches, those pins which would have fallen with ball contact;

means for connecting the switch means associated with the ball arresting means for the head pin of the group in a circuit for activating substantially simultaneously all indicating means thereby to simulate a strike hit when the first delivered ball is that reaching the said contacting means; and

means for activating any previously inactive switch means in said ball arresting means for conditions when the second delivered ball is arrested at the location of the head pin thereby to indicate a spare.

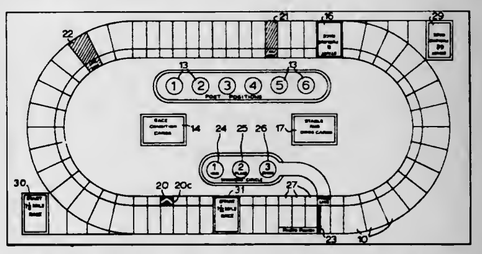
3,883,142
BOARD GAME APPARATUS
Robert H. Spohn, 7 Brookside Pl., Livingston, N.J. 07039
Filed July 9, 1973, Ser. No. 377,815
Int. Cl. A63f 3/04
U.S. Cl. 273—134 AC **12 Claims**

1. In a board game apparatus, a board having a playing surface having on it marked spaces representing places and clusters of places which are to be visited by players during the playing of the game and bear titles and constitute stopping points, said playing surface also having lines that connect said spaces, said lines representing avenues of travel for connecting said spaces, certain lines representing avenues restricted to pedestrian travel, other lines encompassing both pedestrian travel and local transportation and still other lines representing avenues of rapid transit systems, a set of game pieces diversified in color or design representing players for registering movement along said lines, said lines constituting optional but continuous routes of play along which the speed of movement of said game pieces is governed by the density of stopping points marked in said lines, said avenues being differently colored or shaded and keyed to dice which are unlike in color corresponding to the colors or shading of said avenues for determining the permissible avenues along which a game piece may move and which also have indicia indicating the extent of movement of the game pieces, said lines connecting said clusters of spaces in such a manner as to permit travel between them to be interrupted by any player at points along



the second-mentioned avenue designated on the playing surface according to randomly indicated directions, there being a plurality of cards bearing indicia indicating such directions and said dice having indicia to direct the drawing of said cards.

3,883,143
RACING BOARD GAME APPARATUS
Patricia Alexandra Kelley, 44 Stubbs Dr, Apt. 514, Willowdale, Ontario, and Alan Brian Kelley, 296 The Kingsway, Apt. 2, Islington, Ontario, both of Canada
Filed Feb. 13, 1974, Ser. No. 442,058
Int. Cl. A63f 3/00
U.S. Cl. 273—134 CH **15 Claims**

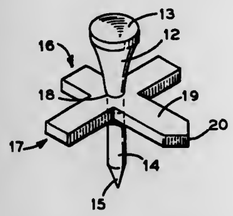


1. A racing board game comprising a board having a series of spaces, a plurality of cards, a smaller plurality of holders movable over said spaces and each adapted to carry any one of said cards to move therewith, an insignium on each card, an insignium on at least one space matching the insignium on each card to indicate an advantage or disadvantage if the card is carried onto the space, and differing indicia on the movable holders indicative of different starting biases of the holders.

3,883,144
GOLF TEE
Malcolm Lazow, 333 Seventh Ave., Valley Stream, N.Y. 10001
Filed Jan. 11, 1974, Ser. No. 432,644
Int. Cl. A63b 69/36, 57/00
U.S. Cl. 273—183 A **1 Claim**

1. A golf tee comprising a shank portion, a cupped portion extending from one end of said shank portion for supporting a golf ball thereon, and an insertion portion extending from the other end of said shank portion and having a point on the end thereof for insertion into the ground; and means for limiting the extent of the insertion of said insertion portion into the ground to thereby locate said cupped portion at a determined level above the ground level and for insuring true vertical

placement of said shank portion, said limiting means comprising a pair of intersecting flat elongated members being coplanar and disposed at right angles to each other and the longitudinal axis of said shank portion, said elongated members being fixedly secured to and extending outwardly of said shank portion at the juncture thereof with said shank portion so that if the shank portion is inserted at an angle, the underside of



one or more of said elongated members may make contact with the ground and provide a lever to cause the shank portion to become vertically oriented to insure vertical placement of said shank portion and to maintain said tee in a true vertical position; said elongated members further providing visual means for (1) properly positioning the golf club head; and (2) properly locating the feet of the player with respect to optimizing his driving position.

3,883,145
GOLF BALL AND COMPOSITION FOR FORMING THE SAME

Alvon R. Cox, and William W. Latou, both of Ashland, Ohio, assignors to The Faultless Rubber Company, Ashland, Ohio

Continuation-in-part of Ser. No. 565,416, July 15, 1966, abandoned. This application Oct. 9, 1967, Ser. No. 673,931
Int. Cl. A63b *37/00;* **C08d** *3/08, 9/10*
U.S. Cl. 273—218 **22 Claims**

1. A golf ball comprising a unitary, solid, cured elastomer made by vulcanization of the composition consisting essentially of the following ingredients in the ratios stated:

highly resilient polybutadiene elastomer materials having at least 30 percent cis configuration about 80 to 100 parts.

about 25 to 50 parts of a material from the class consisting of 1,3 butylene glycol dimethacrylate, ethylene glycol dimethacrylate, polyethylene glycol dimethacrylate, and trimethylol propane trimethacrylate,

high density and molecular weight linear polyethylene having a molecular weight of between 1.5 and 2 million and a melt index of 0 in small particle size from about 2 to about 40 parts,

a peroxide curing agent about 0.5 to 10 parts, and

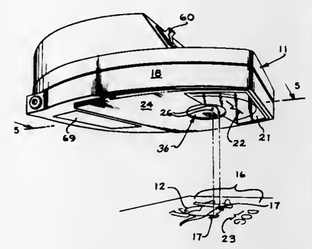
finely divided reenforcing and filler materials about 30 to 60 parts.

3,883,146
HAND-HELD PLAYBACK DEVICE, SYSTEM AND METHOD

Reynold B. Johnson, Palo Alto, and Ronald D. Irvin, Los Gatos, both of Calif., assignors to Education Engineering Associates, Palo Alto, Calif.

Filed Apr. 4, 1973, Ser. No. 347,841
Int. Cl. G11b *25/04*
U.S. Cl. 274—9 C **9 Claims**

1. In a hand-held audio transducing device for transducing signals relative to a stationary record carried on a sheet of material, which sheet has observable information adjacent said record related to information playback in said record, a housing small enough to be held in one hand, a playback assembly within said housing including a rotatable body, means for rotating said body, a transducer carried by said body during rotation of said body for following a path of said record, means forming a substantially unobstructed observation portion through said housing allowing observation of said information contained in and to be reproduced from said record, means carried by said rotatable body, registration means and movable into and out of engagement with new sheet for registering said transducer to permit the transducer



to follow the record path, and means serving to retract said registration means clear of said sheet and to commence rotation of said body and transducer so as to transduce said information of said record for reproduction to the operator while indicating said information in said observation portion to be observed by the operator during reproduction of said information.

3,883,147
DRY LUBRICATED MATERIALS

Amedee Roy Troy, and James M. Geyman, both of Harper Woods, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 27, 1971, Ser. No. 212,413
Int. Cl. F16j *15/34;* **C10m** *7/06, 7/04*
U.S. Cl. 277—96 R **10 Claims**

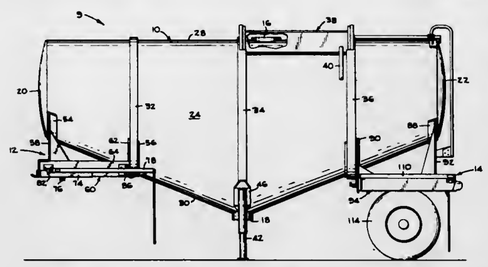
1. A member for use under dry lubricated conditions comprising: a substrate having a working surface thereon comprised initially of an iron oxide matrix containing an interspersed mixture of a trapping material means for embedding abraded particles and debris particularly iron oxide particles in the work surface during use selected from the group consisting of barium sulfate, cadmium sulfate, calcium oxide, calcium phosphate, calcium sulfate, manganese sulfate, sodium phosphate, sodium sulfate, sodium sulfide, sodium biphosphate, zinc sulfide, zinc oxide, titanium oxide, calcium fluoride, sodium borate, and mixtures thereof and a component selected from the group consisting of nickel coated graphite, graphite and mixtures thereof.

7. A regenerator section for a gas turbine engine comprising at least two members arranged for rubbing contact during operation of the engine, one of the members having an initial working surface comprised of an iron oxide matrix containing an interspersed mixture of nickel coated graphite or graphite and a particle-debris trapping material selected from the group consisting of barium sulphate, cadmium sulphate, calcium oxide, calcium phosphate, calcium sulphate, manganese sulphate, sodium phosphate, sodium sulfate, sodium sulfide, sodium biphosphate, zinc sulfide, zinc oxide, titanium oxide, calcium fluoride, sodium borate, and mixtures thereof, and wherein a transformation occurs in the work surface during a break-in period, forming as a result, a substantially continuous highly oriented film of Fe_2O_3 on the work surface of the one member and a film of Fe_2O_3 is also formed on the mating second member by transfer from the one member to the second member.

3,883,148
TRAILER TANK

Norman T. Miller, Modesto, Calif., assignor to Certified Stainless Services, Ceres, Calif.

Filed Feb. 11, 1974, Ser. No. 441,269
Int. Cl. B60p *3/22*
U.S. Cl. 280—5 C **7 Claims**



1. A trailer tank for transporting materials having fluid characteristics comprising:

a. an outer shell forming an enclosure for receiving such materials and being formed of side, bottom, top and end walls, said side walls having a radius of curvature in a transverse plane which is greater than the radius of curvature in a transverse plane of said bottom wall and wherein said bottom wall is approximately V-shaped in a longitudinal plane; and

b. means forming a discharge opening at the lowermost point of said bottom wall,

the transverse cross-sectional-shape of said shell at approximately midpoint along the longitudinal axis thereof being approximately elliptical with the major axis thereof lying in a vertical plane and the eccentricity being such as to provide relatively steep sides for fast drainage.

3,883,149
BABY CARRIAGE FRAME

Gianluca Perego, Arcore, Italy, assignor to Perego-Pines S.p.A., Italy

Filed July 22, 1974, Ser. No. 490,259
Claims priority, application Italy, Mar. 7, 1974, 35639/74
Int. Cl. B62b *3/02*
U.S. Cl. 280—36 B **6 Claims**

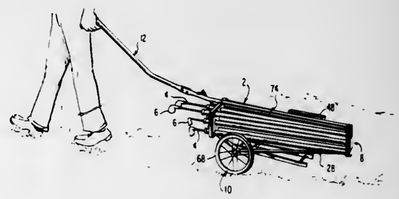


1. A collapsible baby carriage frame assembly, comprising an upper frame and including a crossbar structure comprising two spaced apart front crossbars extending obliquely upwardly of the longitudinal direction of the carriage and two spread apart rear crossbars extending adjacent said front crossbars and crossing the same at an angle symmetrical of said longitudinal direction, said front and rear crossbars extending to common upper and lower levels and being pivoted to each other at their cross-points and thereby adapted to be folded and to be unfolded and locked to serve as a support for a baby cabin and each crossbar having obliquely extending upper end portions and lower end portions extending in said longitudinal direction of the carriage; a handle bar having a handle portion and two spaced apart legs adapted to form extensions of said rear crossbars and having each a free end portion pivotally connected to the respective one of said upper end portions of said rear crossbars, the pivots defining an axis transverse to said longitudinal direction about which said handle bar is foldable toward said front crossbars; a spring element structure supporting said crossbar structure and comprising two spaced apart spring tube members of upwardly open bracket-like configuration and extending, in assembled state, in vertical alignment with the respective crossbars, each of said spring tube members having two free end portions projecting inwardly in said longitudinal direction and axially aligned with the respective lower end portions of said crossbars and a lower middle portion extending in the same direction; and means for yieldably connecting said lower end portions of said crossbars to said upper end portions of said spring tube members in a definite spaced relationship while permitting their mutual rotation about their longitudinal axes to enable said spring tube members to be folded toward said crossbar structure; a lower frame including two spaced apart connection members extending in said longitudinal direction and, in assembled state, adjacent said lower middle portions of said spring tube members; two spaced apart wheel axles extending between and secured to said connection members; and means for locking said lower frame in position on a supporting surface, each of said connection members comprising a front connection bar having an outer and an inner end and being secured to one of said wheel axles, and a rear connection bar having an outer and an inner end and being secured to the other wheel axle, said inner ends of said front and rear connection bars of each connection member being pivoted to each other in the space between said axles and said pivots defining an axis which is parallel to said axles and about which said rear connection bars along with the respective axle are pivotable relative to said front connection bars to fold said lower frame; wheel means mounted by twos on each of said lower middle portion of said spring tube members in spaced relationship corresponding to the spacement of said wheel axles; and means for mutually engaging and locking said wheel means to said lower frame in assembled state and unlocking and disengaging the same while collapsing said frame assembly.

3,883,150
GOLF CLUB CARRIER

Arthur A. Varela, 2207 Belle Haven Rd., Alexandria, Va. 22307

Filed Dec. 5, 1972, Ser. No. 312,280
Int. Cl. B62b *1/12*
U.S. Cl. 280—47.19 **15 Claims**



1. A carrier in which a set of golf clubs can be stored compactly when not in use and transported when in use with the heads of the clubs protruding from the carrier to permit selection and withdrawal of individual clubs for use, said carrier comprising body means for supporting the shafts of said golf clubs, said body means being elongated in the direction of the lengths of the golf club shafts and having longitudinal ends and longitudinal sides, a base on one longitudinal end of said body means upon which said carrier may be rested during storage to dispose said body means in a generally vertical orientation, a pair of wheels on said body means rotatable about a generally transverse axis remote from said base and close to the

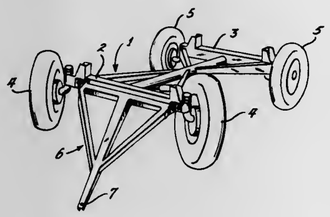
center of gravity of the loaded carrier, the wheels of said pair extending beyond the longitudinal side of said body means which faces downwardly when said carrier is shifted to a generally horizontal orientation with said wheels being spaced laterally in opposite directions from the said center of gravity to stabilize the carrier against sidewise tipping when said body means is supported in a generally horizontal orientation by said wheels, and elongated handle means on the longitudinal side of said body means opposite said wheels, said handle means having along its length portions extending at angles with respect to each other so that said handle means protrudes longitudinally and upwardly from the end of said body means opposite said base when said body means is supported in a generally horizontal orientation by said wheels to dispose a free end portion of said handle means at a level for convenient manipulation by a person pulling the carrier along on said wheels with the said body means extending longitudinally close to the ground in a generally horizontal direction, the longitudinal protrusion of said handle from the last-mentioned end of said body means being sufficient to permit the person pulling the carrier to walk in front of the horizontally disposed carrier without contact with or interference from the carrier or the golf clubs therein.

3,883,151

MEANS FOR GUIDING THE MOVEMENT OF A VEHICLE

Oscar W. Barchus, 1247 Mehlview Ct., St. Louis, Mo. 63125

Filed Sept. 13, 1972, Ser. No. 288,751
Int. Cl. B62d 7/00, 17/00
U.S. Cl. 280—80 R **6 Claims**



1. In facilitating the directional movement of a vehicle through the arrangement of its front wheel assemblies to follow a guided course of travel comprising, a vehicle including a supporting frame for mounting of its wheel assemblies, each wheel assembly including a first axle pivotally mounting to said frame and maintaining an angular relationship with the frame to which it mounts to thereby achieve wheel camber, a second axle rotatably supporting a wheel and being mounted for limited forward and reverse pivotal movement to said first axle to thereby achieve wheel toe-in in the direction of vehicle movement.

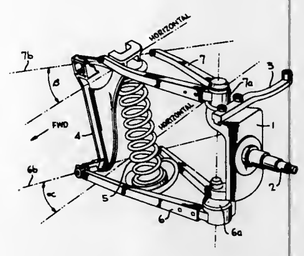
3,883,152

WHEEL SUSPENSIONS

Christian Bourcier de Carbon, 64, Boulevard Maurice-Barres, 92-Neuilly-sur-Seine, France

Filed Feb. 12, 1971, Ser. No. 115,032
Int. Cl. B62d 7/06
U.S. Cl. 280—96.2 R **11 Claims**

1. A suspension device for automotive vehicle wheels, comprising a wheel mounting, including the wheel spindle, having upper and lower supporting connections with the chassis of the vehicle, said lower connection comprising a member extending transversely outwardly with respect to the chassis, means connecting an inward portion of said connection with said chassis for approximately up and down movement flexing, with relation to the chassis, the axis of said flexing movement inclined downwardly and rearwardly with respect to the direction of movement of the vehicle; said upper connection comprising means for hingedly connecting the upper portion of the wheel mounting to the chassis sufficiently rearwardly of the wheel spindle and of the lower connection that, together with



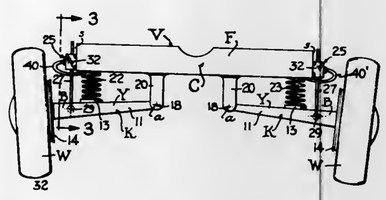
the inclination of the lower connection, the path of oscillatory movement of the spindle is inclined rearwardly with regard to the direction of movement of the vehicle, the angle of inclination being a minimum of from about 10° to about 30°; said device including spring means for resilient suspension of the vehicle from the wheels.

3,883,153

APPARATUS FOR SUPPRESSING SPRING ACTION BETWEEN THE WHEEL MOUNTS AND FRAME OF A VEHICLE

Bhupindar Singh, 18678 Cumnoch Pl., Northridge, Calif. 91324, and Donald A. Swauger, 20616 Blackhawk St., Chatsworth, Calif. 91311

Filed June 25, 1973, Ser. No. 372,962
Int. Cl. B60g 13/02
U.S. Cl. 280—124 R **10 Claims**



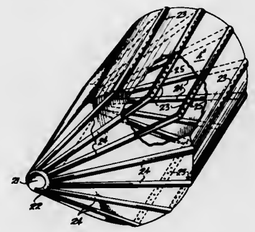
1. In combination with a spring mount for a wheel which is normally articulatable relative to the frame of a vehicle and an hydraulic braking system of such vehicle, a spring suppressor comprising:
   1. a housing secured to the frame of such vehicle and having a passage formed therethrough;
   2. a strut member having one end pivotally connected to such spring mount and its opposite end arranged for free sliding movement through the passage through said housing during normal articulation of the spring mount;
   3. an hydraulically operated caliper type brake in said housing including a pair of brake shoes embracing said strut therein; and
   4. an hydraulic brake operating system in said vehicle communicating with said hydraulically operated caliper type brake for urging the brake shoes thereof into gripping engagement with said strut to thereby render the spring mounts of the vehicle in fixed relation relative to the frame of the vehicle.

3,883,154

CRASH PROTECTION EQUIPMENT

Foy McCullough, Jr., Bellevue; Duane A. Williams, Mercer Island; Lincoln B. Katter, Lynnwood, and Donald R. Poole, Woodinville, all of Wash., assignors to Rocket Research Corporation, Redmond, Wash.

Division of Ser. No. 23,735, March 30, 1970. This application June 16, 1971, Ser. No. 153,744
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB **3 Claims**



1. Safety apparatus for a vehicle having a passenger compartment comprising an inflatable cushion located within the vehicle movable between a collapsed, inoperative position and an inflated, operative position for restraining an occupant of the vehicle during a collision; a flexible, inflatable, tubular framework operatively associated with said cushion and operable upon inflation to move said cushion to said operative position and causing inflation of said cushion by aspiration of air into said cushion during such movement, said framework including at least one opening into the interior of said cushion to provide inflating fluid supplemental to the air pumped into said cushion by aspiration during movement of said cushion to said operative position; a source of inflating fluid operatively associated with said framework for inflating said framework; and a collision sensor mounted on said vehicle for initiating fluid flow from said source to said framework upon the sensing of a vehicle collision.

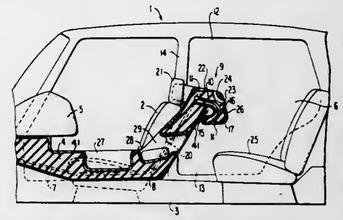
3,883,155

PROTECTIVE PADDING ESPECIALLY FOR THE BACKREST AND HEADREST IN A MOTOR VEHICLE

Hermann Renner, Magstadt, and Gerhard Busch, Gechingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed June 26, 1972, Ser. No. 265,988
Claims priority, application Germany, June 26, 1971, 02131970
Int. Cl. B60r 21/10
U.S. Cl. 280—150 B **35 Claims**

1. A protective padding arrangement for vehicles having an interior space with an instrument panel and adjustable seats disposed in a front portion thereof and rear seat means disposed in a rear portion thereof, the arrangement comprising: padding means disposed in the interior space rearwardly of the adjustable seats and extending substantially over the entire width of the interior space, said padding means being mounted independently of the adjustable seats in the interior space to maintain the distance between the padding means and the rear seat means constant regardless of the adjustment of the adjustable seats, said padding means including a substantially U-shaped means extending between the adjustable seats toward the front of the interior space for connection with the instrument panel substantially in the central area thereof, an outer



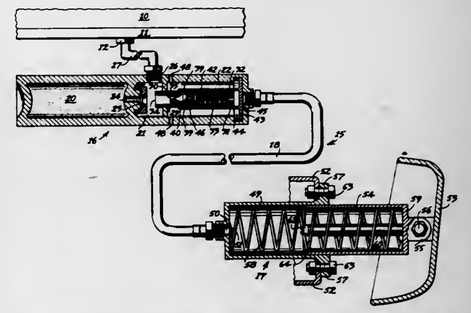
zone of elastic material having high damping properties, a closed outer covering, and an inner zone which plastically deforms with energy absorption upon exceeding a predetermined load.

3,883,156

BUMPER-ACTUATED TRIGGER MECHANISM FOR VEHICLE SAFETY CRASH BAG

Wallace N. Frazier, 111 Richland Ave., Smyrna, Tenn. 37167

Filed Feb. 1, 1974, Ser. No. 438,940
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB **2 Claims**



1. A device for inflating a vehicle safety crash bag comprising:
   a. a vehicle frame,
   b. a container on said frame containing compressed gas and having an outlet closed by a rupturable diaphragm,
   c. conduit means connecting said container outlet in fluid communication with a vehicle safety crash bag for inflation of said bag when said diaphragm is ruptured,
   d. a firing pin,
   e. latch means releasably holding said firing pin in an inoperative position spaced from and in alignment with said rupturable diaphragm,
   f. means biasing said firing pin toward its operative position piercing said diaphragm,
   g. a liquid chamber,
   h. a piston member reciprocable within said liquid chamber between an inoperative position and an operative position,
   i. operative means connecting said piston member and said latch means for releasing said firing pin to its operative position when said piston member is in its operative position,
   j. a gas cylinder fixed upon said vehicle frame,
   k. a contractible wall member reciprocably movable axially within said gas cylinder for compressing gas within said cylinder,
   l. a vehicle bumper connected to said contractible wall member for movement therewith,

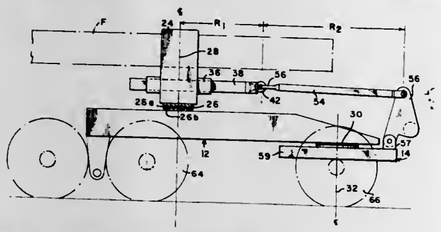
m. spring means in said gas cylinder normally biasing said wall member to an expanded inoperative position,
n. a liquid conduit, filled with liquid, in open fluid communication with said liquid chamber and connected to said gas cylinder,
o. an outlet port in said gas cylinder in fluid communication with said liquid conduit,
p. a second pressure-rupturable diaphragm closing said outlet port, and
q. means associated with said contractible wall means for rupturing said second diaphragm when said wall member is moved axially toward said cylinder a predetermined distance.

3,883,157
BICYCLE CONVERSION DEVICE
Kenneth Wayne Simpkins, 3024 N. 24th St., Phoenix, Ariz. 85016
Filed Sept. 24, 1973, Ser. No. 400,392
Int. Cl. B62k *15/00*
U.S. Cl. 280—287 **3 Claims**



3. The bicycle conversion device as set forth in claim 2 wherein the members of the blade guiding device are detachably secured together by a plurality of bolts extending freely through one of the members and threadedly received in aligned openings provided in the opposite member whereby after the members are placed about a tubing the bolt serves to clamp the device firmly to the tubing.

3,883,158
VEHICLE WITH STEERABLE REAR WHEELS
Tyman H. Fikse, Enumclaw, Wash., assignor to Pointer-Willamette Trailer Co., Inc., Renton, Wash.
Filed July 29, 1974, Ser. No. 492,484
Int. Cl. B62d *53/00*
U.S. Cl. 280—404 **4 Claims**



1. An elongated vehicle comprising:
A tractor having a main frame, at least two forward steerable wheels on said main frame, rearward carriage means having forward and rearward ends and wheels supporting the carriage on the ground, first bearing means for supporting said main frame on said carriage means for movement about a first vertical axis, a trailing frame rearward of said first bearing means, second bearing means for supporting said carriage means rearward end on said trailing frame for movement about a second vertical axis, at least two steerable wheels on said trailing frame, lengthwise adjustable actuating means coupled between said main frame and said trailing frame steerable wheels for steering said trailing frame wheels in response to horizontal rotational movement of said main frame relative to said carriage means about said first vertical axis whereby the trailing frame steerable wheels will steer said trailing frame to allow turning of the vehicle about smaller radii.

3,883,159
AUXILIARY ROLLER WHEEL DEVICE FOR IMMERSIBLE BOAT TRAILERS
William P. Whitley, Jr., 4525 E. 10th Ln., Hialeah, Fla. 33013
Filed Feb. 16, 1973, Ser. No. 333,208
Int. Cl. B60p *3/10*
U.S. Cl. 280—414 R **2 Claims**

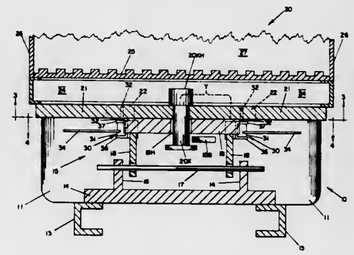


1. An auxiliary roller wheel device for boat trailers and the like comprising, in combination, a body member, said body member comprising a substantially rectangular base plate, a pair of spaced, parallel trunnion members extending outwardly of one side of said base plate, a wheel, means journalling said wheel between said trunnion members, the other side of said base plate comprising means for removably securing said base plate against the underside of a trailer framework I-beam member, said base plate securing means comprising an upstanding wall portion extending outwardly of the other side of said base plate and along one edge thereof, said upstanding wall portion merging, at its outer end, with a top plate portion in spaced, parallel relation with respect to said base plate and defining therewith an open-ended slot, means for clamping said body member to a trailer framework I-beam member web portion received in said slot, said top plate portion being in the form of an equilateral triangle the apex of which extends outwardly of said short, upstanding wall portion for a distance of somewhat less than one-half the transverse width of said base plate, said clamping means comprising a screw member threadingly received in a threaded opening through said apex portion of said top plate portion, said body member being integrally formed with said base plate, said trunnion members, said upstaning wall portion and said top plate portion, said trunnion members each being integrally formed along their outsides with central, vertically-extending reinforcing rib portions merging at their upper ends into opposed portions of said one side of said base plate.

3,883,160
TRAILER ANTI-JACKKNIFING DEVICE
William G. Meyers, R.R. 1, Gretna, Nebr. 68028, and Arthur A. Dirks, 5357 N. 47th St., Omaha, Nebr. 68104
Filed Mar. 21, 1974, Ser. No. 453,364
Int. Cl. B62d *53/08*
U.S. Cl. 280—432 **6 Claims**

1. Trailer anti-jackknifing device in combination with a conventional tractor-drawn trailer wherein the tractor includes a forwardly disposed operator's cab and rearwardly disposed fifth wheel assembly unit having a skid-plate that includes a generally circular forward major portion and a bifurcate rearward minor portion and including therewithin a kingpin extending along the tractor-trailer vertical pivot-axis, the trailer underside including a frontal base-plate having a depending kingpin overlying the fifth wheel unit skid-plate bifurcate portion, and the trailer extending longitudinally rearwardly from and in pivotably associated relationship with the tractor through said kingpin vertical pivot-axis, said anti-jackknifing device comprising:

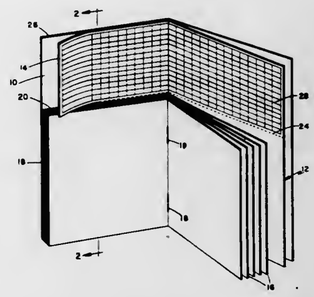
A. At least one vertically reciprocatable upright locking-pin as the reciprocatably movable plunger of a fluid-actuatable piston of the casing-plunger type, the stationary casing portion of the piston nestably supported within the recess lower horizontal shelf of a generally C-shaped support member and the plunger locking-pin portion of the piston being surrounded by the upper horizontal shelf of said C-shaped support member, the locking-pin being ultimately attached to the fifth wheel skid-plate by removably abuttably attaching the C-shaped support upright intermediate concave portion to the skid-plate generally circular forward peripheral portion, said plunger locking-pin having a lower normal-station located wholly downwardly below the trailer base-plate and an upward extended-station;
B. Actuation means for causing the plunger locking-pin to vertically reciprocate between said lower normal-station and said upward extended-station, said locking-pin actuation means including a control means located within the



operator's cab and hence remote from the tractor fifth wheel unit skid-plate; and
C. Sectorially extending confinement means for the locking-pin and effective at extended-station only thereby preventing trailer jackknifing about the tractor-trailer vertical-axis during panic situations but not interfering with sharp tractor turns during normal driving, said horizontal sectorial confinement means having a continuous sectorial extent within the range of 15°–25° and being attached to the trailer frontal base-plate and located radially outwardly from the tractor-trailer vertical pivot-axis and in common elevation with the locking-pin upward extended-station, the confinement means central portion being in registry with the locking-pin when the pivotal trailer is in rearwardly longitudinally extending relationship with the tractor fifth wheel unit and the kingpin pivot-axis thereat and wherein the trailer base-plate in addition to the sectorial confinement means and spaced from the respective terminii thereof includes at least two safety-holes spaced a constant-radius from the kingpin pivot-axis.

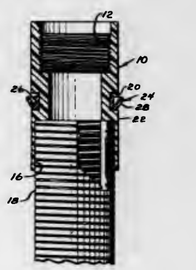
3,883,161
COMBINED BOOKLET AND SCORE CARD WITH TEAR-OUT SCORE GRID
William M. McGee, 8030 El Paso St., La Mesa, Calif. 92041, and Jesse H. Melder, 8638 Hebrides Dr., San Diego, Calif. 92126
Filed May 29, 1973, Ser. No. 364,929
Int. Cl. G09b *19/22*
U.S. Cl. 283—50 **3 Claims**

1. A combined booklet and scorecard comprising:
a single sheet score card having a score grid portion:
a book attached to said score card so that the score card is in flyleaf position, said book having printed pages selectively and concomitantly visible with the whole of said score grid portion;
said pages having aligned edges mutually reinforcing each other and in use defining a firm tearing edge against which said score grid portion is pressed while being torn from the remaining portion of said card;
said card being weakened along a line positionally coinciding closely with said tearing edge; and



said book having a cover disposed exteriorly of said book and card and being a supportive backing for said score grid to facilitate a user's writing thereon.

3,883,162
WELL SCREEN FITTING AND METHOD OF SEALING SAME TO A CASING
Edward N. Colburn, Minneapolis, Minn., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Mar. 18, 1974, Ser. No. 452,483
Int. Cl. F16l *17/00*
U.S. Cl. 285—111 **1 Claim**



1. In combination, a well casing and a well screen fitting for sealing a well screen to the interior surface of said well casing through which it is moved to its final position, said well screen fitting comprising an elongated cylindrical body member having a recess in one end for receiving a well screen, a circumferential groove in the wall of the body at a position spaced axially from said recess, a generally V-shaped flexible sealing ring having a base portion and inner and outer wall portions extending upwardly from said base portion, said sealing ring being positioned along its entire axial extent in said groove with said base portion located at the end of the groove closest to the recess, the inner wall portion of the ring having its inner surface in tight engagement with the inner wall of the groove throughout the length thereof and the outer wall portion of the ring being formed so as to extend outwardly in a skirt-like fashion relative to the outer surface of the fitting, the combined wall thickness of said inner and outer wall portions being between 70-80% of the radial distance between the inner wall of the circumferential groove and the inner wall of the well casing, the outer wall portion of the ring being of sufficient resiliency and axial extent that it will fold over on itself and be compressed when the fitting and sealing ring are moved a short distance in said well casing in the direction opposite to that used for installing the fitting into the casing.

3,883,163
SAFETY DEVICE FOR PREVENTING ACCIDENTAL DISCHARGE OF FIREARMS
Ronald Lee Hall, 1000 Lakeside Dr., Apt. 1, Mesquite, Tex. 75149
Filed Dec. 26, 1973, Ser. No. 428,222
Int. Cl. F41a 17/00
U.S. Cl. 42—70 **4 Claims**

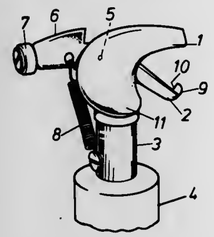
1. A safety device for preventing accidental discharge of firearms comprising:
a. a housing having a bore therethrough;
b. a trigger pivotally mounted in said housing;
c. a sear pivotally mounted in said housing and having a first end engaging said trigger and a second end engaging a hammer of a firearm;
d. a safety member slidably mounted in said bore and having a first position wherein said safety member engages said trigger to prevent movement thereof and a second position wherein said safety member is disengaged from said trigger;
e. a first spring means for biasing said safety member to said first position;
f. a second spring means for biasing said sear to a position wherein said sear engages said hammer;
g. a first pin slidably mounted in said housing and having a first end engaging said safety member and a second end;
h. a second pin slidably mounted in said housing and having a first end engaging said sear and a second end;
i. a third pin slidably mounted in said housing and having a first end engaging said second end of said first pin and a second end engaging said second end of said second pin;
j. a fourth pin slidably mounted in said housing and having a first end engaging said second end of said second pin and a second end;
k. a fifth pin slidably mounted in said housing and having a first end engaging said second end of said fourth pin and a second end;
l. a sixth pin slidably mounted in said housing and having a first end engaging said second end of said fifth pin and a second end;
m. spring means in said gas cylinder normally biasing said wall member to an expanded inoperative position,
n. a liquid conduit, filled with liquid, in open fluid communication with said liquid chamber and connected to said gas cylinder,
o. an outlet port in said gas cylinder in fluid communication with said liquid conduit,
p. a second pressure-rupturable diaphragm closing said outlet port, and
q. means associated with said contractible wall means for rupturing said second diaphragm when said wall member is moved axially toward said cylinder a predetermined distance.

3,883,164
SAFETY DEVICE FOR PREVENTING ACCIDENTAL DISCHARGE OF FIREARMS
Ronald Lee Hall, 1000 Lakeside Dr., Apt. 1, Mesquite, Tex. 75149
Filed Dec. 26, 1973, Ser. No. 428,223
Int. Cl. F41a 17/00
U.S. Cl. 42—70 **4 Claims**

1. A safety device for preventing accidental discharge of firearms comprising:
a. a housing having a bore therethrough;
b. a trigger pivotally mounted in said housing;
c. a sear pivotally mounted in said housing and having a first end engaging said trigger and a second end engaging a hammer of a firearm;
d. a safety member slidably mounted in said bore and having a first position wherein said safety member engages said trigger to prevent movement thereof and a second position wherein said safety member is disengaged from said trigger;
e. a first spring means for biasing said safety member to said first position;
f. a second spring means for biasing said sear to a position wherein said sear engages said hammer;
g. a first pin slidably mounted in said housing and having a first end engaging said safety member and a second end;
h. a second pin slidably mounted in said housing and having a first end engaging said sear and a second end;
i. a third pin slidably mounted in said housing and having a first end engaging said second end of said first pin and a second end engaging said second end of said second pin;
j. a fourth pin slidably mounted in said housing and having a first end engaging said second end of said second pin and a second end;
k. a fifth pin slidably mounted in said housing and having a first end engaging said second end of said fourth pin and a second end;
l. a sixth pin slidably mounted in said housing and having a first end engaging said second end of said fifth pin and a second end;

m. a seventh pin slidably mounted in said housing and having a first end engaging said second end of said sixth pin and a second end;
n. a first lever pivotally mounted in said housing and having a first end engaging said second end of said seventh pin and a second end;
o. a second lever pivotally mounted in said housing and having a first end engaging said second end of said first lever and a second end;
p. a third lever pivotally mounted in said housing and having a first end engaging said second end of said second lever and a second end;
q. a fourth lever pivotally mounted in said housing and having a first end engaging said second end of said third lever and a second end;
r. a fifth lever pivotally mounted in said housing and having a first end engaging said second end of said fourth lever and a second end;
s. a sixth lever pivotally mounted in said housing and having a first end engaging said second end of said fifth lever and a second end;
t. a seventh lever pivotally mounted in said housing and having a first end engaging said second end of said sixth lever and a second end;
u. a first cam pivotally mounted in said housing and having a first end engaging said second end of said seventh lever and a second end;
v. a second cam pivotally mounted in said housing and having a first end engaging said second end of said first cam and a second end;
w. a third cam pivotally mounted in said housing and having a first end engaging said second end of said second cam and a second end;
x. a fourth cam pivotally mounted in said housing and having a first end engaging said second end of said third cam and a second end;
y. a fifth cam pivotally mounted in said housing and having a first end engaging said second end of said fourth cam and a second end;
z. a sixth cam pivotally mounted in said housing and having a first end engaging said second end of said fifth cam and a second end;
aa. a seventh cam pivotally mounted in said housing and having a first end engaging said second end of said sixth cam and a second end;
bb. a first rod slidably mounted in said housing and having a first end engaging said second end of said seventh cam and a second end;
cc. a second rod slidably mounted in said housing and having a first end engaging said second end of said first rod and a second end;
dd. a third rod slidably mounted in said housing and having a first end engaging said second end of said second rod and a second end;
ee. a fourth rod slidably mounted in said housing and having a first end engaging said second end of said third rod and a second end;
ff. a fifth rod slidably mounted in said housing and having a first end engaging said second end of said fourth rod and a second end;
gg. a sixth rod slidably mounted in said housing and having a first end engaging said second end of said fifth rod and a second end;
hh. a seventh rod slidably mounted in said housing and having a first end engaging said second end of said sixth rod and a second end;
ii. a first wedge pivotally mounted in said housing and having a first end engaging said second end of said seventh rod and a second end;
jj. a second wedge pivotally mounted in said housing and having a first end engaging said second end of said first wedge and a second end;
kk. a third wedge pivotally mounted in said housing and having a first end engaging said second end of said second wedge and a second end;
ll. a fourth wedge pivotally mounted in said housing and having a first end engaging said second end of said third wedge and a second end;
mm. a fifth wedge pivotally mounted in said housing and having a first end engaging said second end of said fourth wedge and a second end;
nn. a sixth wedge pivotally mounted in said housing and having a first end engaging said second end of said fifth wedge and a second end;
oo. a seventh wedge pivotally mounted in said housing and having a first end engaging said second end of said sixth wedge and a second end;
pp. a first block slidably mounted in said housing and having a first end engaging said second end of said seventh wedge and a second end;
qq. a second block slidably mounted in said housing and having a first end engaging said second end of said first block and a second end;
rr. a third block slidably mounted in said housing and having a first end engaging said second end of said second block and a second end;
ss. a fourth block slidably mounted in said housing and having a first end engaging said second end of said third block and a second end;
tt. a fifth block slidably mounted in said housing and having a first end engaging said second end of said fourth block and a second end;
uu. a sixth block slidably mounted in said housing and having a first end engaging said second end of said fifth block and a second end;
vv. a seventh block slidably mounted in said housing and having a first end engaging said second end of said sixth block and a second end;
ww. a first ball slidably mounted in said housing and having a first end engaging said second end of said seventh block and a second end;
xx. a second ball slidably mounted in said housing and having a first end engaging said second end of said first ball and a second end;
yy. a third ball slidably mounted in said housing and having a first end engaging said second end of said second ball and a second end;
zz. a fourth ball slidably mounted in said housing and having a first end engaging said second end of said third ball and a second end;
aaa. a fifth ball slidably mounted in said housing and having a first end engaging said second end of said fourth ball and a second end;
bbb. a sixth ball slidably mounted in said housing and having a first end engaging said second end of said fifth ball and a second end;
ccc. a seventh ball slidably mounted in said housing and having a first end engaging said second end of said sixth ball and a second end;
ddd. a first roller pivotally mounted in said housing and having a first end engaging said second end of said seventh ball and a second end;
eee. a second roller pivotally mounted in said housing and having a first end engaging said second end of said first roller and a second end;
fff. a third roller pivotally mounted in said housing and having a first end engaging said second end of said second roller and a second end;
ggg. a fourth roller pivotally mounted in said housing and having a first end engaging said second end of said third roller and a second end;
hhh. a fifth roller pivotally mounted in said housing and having a first end engaging said second end of said fourth roller and a second end;
iii. a sixth roller pivotally mounted in said housing and having a first end engaging said second end of said fifth roller and a second end;
jjj. a seventh roller pivotally mounted in said housing and having a first end engaging said second end of said sixth roller and a second end;
kkk. a first gear pivotally mounted in said housing and having a first end engaging said second end of said seventh roller and a second end;
lll. a second gear pivotally mounted in said housing and having a first end engaging said second end of said first gear and a second end;
mmm. a third gear pivotally mounted in said housing and having a first end engaging said second end of said second gear and a second end;
nnn. a fourth gear pivotally mounted in said housing and having a first end engaging said second end of said third gear and a second end;
ooo. a fifth gear pivotally mounted in said housing and having a first end engaging said second end of said fourth gear and a second end;
ppp. a sixth gear pivotally mounted in said housing and having a first end engaging said second end of said fifth gear and a second end;
qqq. a seventh gear pivotally mounted in said housing and having a first end engaging said second end of said sixth gear and a second end;
rrr. a first spring pivotally mounted in said housing and having a first end engaging said second end of said seventh gear and a second end;
sss. a second spring pivotally mounted in said housing and having a first end engaging said second end of said first spring and a second end;
ttt. a third spring pivotally mounted in said housing and having a first end engaging said second end of said second spring and a second end;
uuu. a fourth spring pivotally mounted in said housing and having a first end engaging said second end of said third spring and a second end;
vvv. a fifth spring pivotally mounted in said housing and having a first end engaging said second end of said fourth spring and a second end;
www. a sixth spring pivotally mounted in said housing and having a first end engaging said second end of said fifth spring and a second end;
xxx. a seventh spring pivotally mounted in said housing and having a first end engaging said second end of said sixth spring and a second end;
yyy. a first screw pivotally mounted in said housing and having a first end engaging said second end of said seventh spring and a second end;
zzz. a second screw pivotally mounted in said housing and having a first end engaging said second end of said first screw and a second end;
aaaa. a third screw pivotally mounted in said housing and having a first end engaging said second end of said second screw and a second end;
bbbb. a fourth screw pivotally mounted in said housing and having a first end engaging said second end of said third screw and a second end;
cccc. a fifth screw pivotally mounted in said housing and having a first end engaging said second end of said fourth screw and a second end;
dddd. a sixth screw pivotally mounted in said housing and having a first end engaging said second end of said fifth screw and a second end;
eeee. a seventh screw pivotally mounted in said housing and having a first end engaging said second end of said sixth screw and a second end;
ffff. a first nut pivotally mounted in said housing and having a first end engaging said second end of said seventh screw and a second end;
gggg. a second nut pivotally mounted in said housing and having a first end engaging said second end of said first nut and a second end;
hhhh. a third nut pivotally mounted in said housing and having a first end engaging said second end of said second nut and a second end;
iiii. a fourth nut pivotally mounted in said housing and having a first end engaging said second end of said third nut and a second end;
jjjj. a fifth nut pivotally mounted in said housing and having a first end engaging said second end of said fourth nut and a second end;
kkkk. a sixth nut pivotally mounted in said housing and having a first end engaging said second end of said fifth nut and a second end;
llll. a seventh nut pivotally mounted in said housing and having a first end engaging said second end of said sixth nut and a second end;
mmmm. a first bolt pivotally mounted in said housing and having a first end engaging said second end of said seventh nut and a second end;
nnnn. a second bolt pivotally mounted in said housing and having a first end engaging said second end of said first bolt and a second end;
oooo. a third bolt pivotally mounted in said housing and having a first end engaging said second end of said second bolt and a second end;
pppp. a fourth bolt pivotally mounted in said housing and having a first end engaging said second end of said third bolt and a second end;
qqqq. a fifth bolt pivotally mounted in said housing and having a first end engaging said second end of said fourth bolt and a second end;
rrrr. a sixth bolt pivotally mounted in said housing and having a first end engaging said second end of said fifth bolt and a second end;
ssss. a seventh bolt pivotally mounted in said housing and having a first end engaging said second end of said sixth bolt and a second end;
tttt. a first washer pivotally mounted in said housing and having a first end engaging said second end of said seventh bolt and a second end;
uuuu. a second washer pivotally mounted in said housing and having a first end engaging said second end of said first washer and a second end;
vvvv. a third washer pivotally mounted in said housing and having a first end engaging said second end of said second washer and a second end;
wwww. a fourth washer pivotally mounted in said housing and having a first end engaging said second end of said third washer and a second end;
xxxx. a fifth washer pivotally mounted in said housing and having a first end engaging said second end of said fourth washer and a second end;
yyyy. a sixth washer pivotally mounted in said housing and having a first end engaging said second end of said fifth washer and a second end;
zzzz. a seventh washer pivotally mounted in said housing and having a first end engaging said second end of said sixth washer and a second end;
aaaaa. a first nut pivotally mounted in said housing and having a first end engaging said second end of said seventh washer and a second end;
bbbbb. a second nut pivotally mounted in said housing and having a first end engaging said second end of said first nut and a second end;
ccccc. a third nut pivotally mounted in said housing and having a first end engaging said second end of said second nut and a second end;
ddddd. a fourth nut pivotally mounted in said housing and having a first end engaging said second end of said third nut and a second end;
eeeee. a fifth nut pivotally mounted in said housing and having a first end engaging said second end of said fourth nut and a second end;
fffff. a sixth nut pivotally mounted in said housing and having a first end engaging said second end of said fifth nut and a second end;
ggggg. a seventh nut pivotally mounted in said housing and having a first end engaging said second end of said sixth nut and a second end;
hhhhh. a first bolt pivotally mounted in said housing and having a first end engaging said second end of said seventh nut and a second end;
iiiii. a second bolt pivotally mounted in said housing and having a first end engaging said second end of said first bolt and a second end;
jjjjj. a third bolt pivotally mounted in said housing and having a first end engaging said second end of said second bolt and a second end;
kkkkk. a fourth bolt pivotally mounted in said housing and having a first end engaging said second end of said third bolt and a second end;
lllll. a fifth bolt pivotally mounted in said housing and having a first end engaging said second end of said fourth bolt and a second end;
mmmmm. a sixth bolt pivotally mounted in said housing and having a first end engaging said second end of said fifth bolt and a second end;
nnnnn. a seventh bolt pivotally mounted in said housing and having a first end engaging said second end of said sixth bolt and a second end;
ooooo. a first washer pivotally mounted in said housing and having a first end engaging said second end of said seventh bolt and a second end;
ppppp. a second washer pivotally mounted in said housing and having a first end engaging said second end of said first washer and a second end;
qqqqq. a third washer pivotally mounted in said housing and having a first end engaging said second end of said second washer and a second end;
rrrrr. a fourth washer pivotally mounted in said housing and having a first end engaging said second end of said third washer and a second end;
sssss. a fifth washer pivotally mounted in said housing and having a first end engaging said second end of said fourth washer and a second end;
ttttt. a sixth washer pivotally mounted in said housing and having a first end engaging said second end of said fifth washer and a second end;
uuuuu. a seventh washer pivotally mounted in said housing and having a first end engaging said second end of said sixth washer and a second end;
vvvvv. a first nut pivotally mounted in said housing and having a first end engaging said second end of said seventh washer and a second end;
wwwww. a second nut pivotally mounted in said housing and having a first end engaging said second end of said first nut and a second end;
xxxxx. a third nut pivotally mounted in said housing and having a first end engaging said second end of said second nut and a second end;
yyyyy. a fourth nut pivotally mounted in said housing and having a first end engaging said second end of said third nut and a second end;
zzzzz. a fifth nut pivotally mounted in said housing and having a first end engaging said second end of said fourth nut and a second end;
aaaaaa. a sixth nut pivotally mounted in said housing and having a first end engaging said second end of said fifth nut and a second end;
bbbbbb. a seventh nut pivotally mounted in said housing and having a first end engaging said second end of said sixth nut and a second end;
cccccc. a first bolt pivotally mounted in said housing and having a first end engaging said second end of said seventh nut and a second end;
dddddd. a second bolt pivotally mounted in said housing and having a first end engaging said second end of said first bolt and a second end;
eeeeee. a third bolt pivotally mounted in said housing and having a first end engaging said second end of said second bolt and a second end;
ffffff. a fourth bolt pivotally mounted in said housing and having a first end engaging said second end of said third bolt and a second end;
gggggg. a fifth bolt pivotally mounted in said housing and having a first end engaging said second end of said fourth bolt and a second end;
hhhhhh. a sixth bolt pivotally mounted in said housing and having a first end engaging said second end of said fifth bolt and a second end;
iiiiii. a seventh bolt pivotally mounted in said housing and having a first end engaging said second end of said sixth bolt and a second end;
jjjjjj. a first washer pivotally mounted in said housing and having a first end engaging said second end of said seventh bolt and a second end;
kkkkkk. a second washer pivotally mounted in said housing and having a first end engaging said second end of said first washer and a second end;
llllll. a third washer pivotally mounted in said housing and having a first end engaging said second end of said second washer and a second end;
mmmmmm. a fourth washer pivotally mounted in said housing and having a first end engaging said second end of said third washer and a second end;
nnnnnn. a fifth washer pivotally mounted in said housing and having a first end engaging said second end of said fourth washer and a second end;
oooooo. a sixth washer pivotally mounted in said housing and having a first end engaging said second end of said fifth washer and a second end;
pppppp. a seventh washer pivotally mounted in said housing and having a first end engaging said second end of said sixth washer and a second end;
qqqqqq. a first nut pivotally mounted in said housing and having a first end engaging said second end of said seventh washer and a second end;
rrrrrr. a second nut pivotally mounted in said housing and having a first end engaging said second end of said first nut and a second end;
ssssss. a third nut pivotally mounted in said housing and having a first end engaging said second end of said second nut and a second end;
tttttt. a fourth nut pivotally mounted in said housing and having a first end engaging said second end of said third nut and a second end;
uuuuuu. a fifth nut pivotally mounted in said housing and having a first end engaging said second end of said fourth nut and a second end;
vvvvvv. a sixth nut pivotally mounted in said housing and having a first end engaging said second end of said fifth nut and a second end;
wwwwww. a seventh nut pivotally mounted in said housing and having a first end engaging said second end of said sixth nut and a second end;
xxxxxx. a first bolt pivotally mounted in said housing and having a first end engaging said second end of said seventh nut and a second end;
yyyyyy. a second bolt pivotally mounted in said housing and having a first end engaging said second end of said first bolt and a second end;
zzzzzz. a third bolt pivotally mounted in said housing and having a first end engaging said second end of said second bolt and a second end;
aaaaaaa. a fourth bolt pivotally mounted in said housing and having a first end engaging said second end of said third bolt and a second end;
bbbbbbb. a fifth bolt pivotally mounted in said housing and having a first end engaging said second end of said fourth bolt and a second end;
ccccccc. a sixth bolt pivotally mounted in said housing and having a first end engaging said second end of said fifth bolt and a second end;
ddddddd. a seventh bolt pivotally mounted in said housing and having a first end engaging said second end of said sixth bolt and a second end;
eeeeeee. a first washer pivotally mounted in said housing and having a first end engaging said second end of said seventh bolt and a second end;
fffffff. a second washer pivotally mounted in said housing and having a first end engaging said second end of said first washer and a second end;
ggggggg. a third washer pivotally mounted in said housing and having a first end engaging said second end of said second washer and a second end;
hhhhhhh. a fourth washer pivotally mounted in said housing and having a first end engaging said second end of said third washer and a second end;
iiiiiii. a fifth washer pivotally mounted in said housing and having a first end engaging said second end of said fourth washer and a second end;
jjjjjjj. a sixth washer pivotally mounted in said housing and having a first end engaging said second end of said fifth washer and a second end;
kkkkkkk. a seventh washer pivotally mounted in said housing and having a first end engaging said second end of said sixth washer and a second end;
lllllll. a first nut pivotally mounted in said housing and having a first end engaging said second end of said seventh washer and a second end;
mmmmmmm. a second nut pivotally mounted in said housing and having a first end engaging said second end of said first nut and a second end;
nnnnnnn. a third nut pivotally mounted in said housing and having a first end engaging said second end of said second nut and a second end;
ooooooo. a fourth nut pivotally mounted in said housing and having a first end engaging said second end of said third nut and a second end;
ppppppp. a fifth nut pivotally mounted in said housing and having a first end engaging said second end of said fourth nut and a second end;
qqqqqqq. a sixth nut pivotally mounted in said housing and having a first end engaging said second end of said fifth nut and a second end;
rrrrrrr. a seventh nut pivotally mounted in said housing and having a first end engaging said second end of said sixth nut and a second end;
sssssss. a first bolt pivotally mounted in said housing and having a first end engaging said second end of said seventh nut and a second end;
ttttttt. a second bolt pivotally mounted in said housing and having a first end engaging said second end of said first bolt and a second end;
uuuuuuu. a third bolt pivotally mounted in said housing and having a first end engaging said second end of said second bolt and a second end;
vvvvvvv. a fourth bolt pivotally mounted in said housing and having a first end engaging said second end of said third bolt and a second end;
wwwwwww. a fifth bolt pivotally mounted in said housing and having a first end engaging said second end of said fourth bolt and a second end;
xxxxxxx. a sixth bolt pivotally mounted in said housing and having a first end engaging said second end of said fifth bolt and a second end;
yyyyyyy. a seventh bolt pivotally mounted in said housing and having a first end engaging said second end of said sixth bolt and a second end;
zzzzzzz. a first washer pivotally mounted in said housing and having a first end engaging said second end of said seventh bolt and a second end;
aaaaaaaa. a second washer pivotally mounted in said housing and having a first end engaging said second end of said first washer and a second end;
bbbbbbbb. a third washer pivotally mounted in said housing and having a first end engaging said second end of said second washer and a second end;
cccccccc. a fourth washer pivotally mounted in said housing and having a first end engaging said second end of said third washer and a second end;
dddddddd. a fifth washer pivotally mounted in said housing and having a first end engaging said second end of said fourth washer and a second end;
eeeeeeee. a sixth washer pivotally mounted in said housing and having a first end engaging said second end of said fifth washer and a second end;
ffffffff. a seventh washer pivotally mounted in said housing and having a first end engaging said second end of said sixth washer and a second end;
gggggggg. a first nut pivotally mounted in said housing and having a first end engaging said second end of said seventh washer and a second end;
hhhhhhhh. a second nut pivotally mounted in said housing and having a first end engaging said second end of said first nut and a second end;
iiiiiiii. a third nut pivotally mounted in said housing and having a first end engaging said second end of said second nut and a second end;
jjjjjjjj. a fourth nut pivotally mounted in said housing and having a first end engaging said second end of said third nut and a second end;
kkkkkkkk. a fifth nut pivotally mounted in said housing and having a first end engaging said second end of said fourth nut and a second end;
llllllll. a sixth nut pivotally mounted in said housing and having a first end engaging said second end of said fifth nut and a second end;
mmmmmmmm. a seventh nut pivotally mounted in said housing and having a first end engaging said second end of said sixth nut and a second end;
nnnnnnnn. a first bolt pivotally mounted in said housing and having a first end engaging said second end of said seventh nut and a second end;
oooooooo. a second bolt pivotally mounted in said housing and having a first end engaging said second end of said first bolt and a second end;
pppppppp. a third bolt pivotally mounted in said housing and having a first end engaging said second end of said second bolt and a second end;
qqqqqqqq. a fourth bolt pivotally mounted in said housing and having a first end engaging said second end of said third bolt and a second end;
rrrrrrrr. a fifth bolt pivotally mounted in said housing and having a first end engaging said second end of said fourth bolt and a second end;
ssssssss. a sixth bolt pivotally mounted in said housing and having a first end engaging said second end of said fifth bolt and a second end;
tttttttt. a seventh bolt pivotally mounted in said housing and having a first end engaging said second end of said sixth bolt and a second end;
uuuuuuuu. a first washer pivotally mounted in said housing and having a first end engaging said second end of said seventh bolt and a second end;
vvvvvvvv. a second washer pivotally mounted in said housing and having a first end engaging said second end of said first washer and a second end;
wwwwwwww. a third washer pivotally mounted in said housing and having a first end engaging said second end of said second washer and a second end;
xxxxxxxx. a fourth washer pivotally mounted in said housing and having a first end engaging said second end of said third washer and a second end;
yyyyyyyy. a fifth washer pivotally mounted in said housing and having a first end engaging said second end of said fourth washer and a second end;
zzzzzzzz. a sixth washer pivotally mounted in said housing and having a first end engaging said second end of said fifth washer and a second end;
aaaaaaaaa. a seventh washer pivotally mounted in said housing and having a first end engaging said second end of said sixth washer and a second end;
bbbbbbbbb. a first nut pivotally mounted in said housing and having a first end engaging said second end of said seventh washer and a second end;
ccccccccc. a second nut pivotally mounted in said housing and having a first end engaging said second end of said first nut and a second end;
ddddddddd. a third nut pivotally mounted in said housing and having a first end engaging said second end of said second nut and a second end;
eeeeeeeee. a fourth nut pivotally mounted in said housing and having a first end engaging said second end of said third nut and a second end;
fffffffff. a fifth nut pivotally mounted in said housing and having a first end engaging said second end of said fourth nut and a second end;
ggggggggg. a sixth nut pivotally mounted in said housing and having a first end engaging said second end of said fifth nut and a second end;
hhhhhhhhh. a seventh nut pivotally mounted in said housing and having a first end engaging said second end of said sixth nut and a second end;
iiiiiiiii. a first bolt pivotally mounted in said housing and having a first end engaging said second end of said seventh nut and a second end;
jjjjjjjjj. a second bolt pivotally mounted in said housing and having a first end engaging said second end of said first bolt and a second end;
kkkkkkkkk. a third bolt pivotally mounted in said housing and having a first end engaging said second end of said second bolt and a second end;
lllllllll. a fourth bolt pivotally mounted in said housing and having a first end engaging said second end of said third bolt and a second end;
mmmmmmmmm. a fifth bolt pivotally mounted in said housing and having a first end engaging said second end of said fourth bolt and a second end;
nnnnnnnnn. a sixth bolt pivotally mounted in said housing and having a first end engaging said second end of said fifth bolt and a second end;
ooooooooo. a seventh bolt pivotally mounted in said housing and having a first end engaging said second end of said sixth bolt and a second end;
ppppppppp. a first washer pivotally mounted in said housing and having a first end engaging said second end of said seventh bolt and a second end;
qqqqqqqqq. a second washer pivotally mounted in said housing and having a first end engaging said second end of said first washer and a second end;
rrrrrrrrr. a third washer pivotally mounted in said housing and having a first end engaging said second end of said second washer and a second end;
sssssssss. a fourth washer pivotally mounted in said housing and having a first end engaging said second end of said third washer and a second end;
ttttttttt. a fifth washer pivotally mounted in said housing and having a first end engaging said second end of said fourth washer and a second end;
uuuuuuuuu. a sixth washer pivotally mounted in said housing and having a first end engaging said second end of said fifth washer and a second end;
vvvvvvvvv. a seventh washer pivotally mounted in said housing and having a first end engaging said second end of said sixth washer and a second end;
wwwwwwwww. a first nut pivotally mounted in said housing and having a first end engaging said second end of said seventh washer and a second end;
xxxxxxxxx. a second nut pivotally mounted in said housing and having a first end engaging said second end of said first nut and a second end;
yyyyyyyyy. a third nut pivotally mounted in said housing and having a first end engaging said second end of said second nut and a second end;
zzzzzzzzz. a fourth nut pivotally mounted in said housing and having a first end engaging said second end of said third nut and a second end;
aaaaaaaaaa. a fifth nut pivotally mounted in said housing and having a first end engaging said second end of said fourth nut and a second end;
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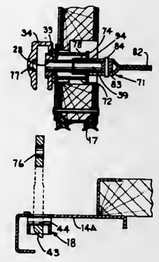
3,883,163
MACHINES FOR STITCHING CUSHIONS, MATTRESSES AND THE LIKE
Nils Olof Nesteaius, Muskotgan 21, 252 55 Helsingborg, Sweden
Filed Sept. 14, 1973, Ser. No. 397,594
Claims priority, application United Kingdom, Sept. 25, 1972, 44233/72
Int. Cl. B65h 69/04
U.S. Cl. 289—18 3 Claims



1. A machine for stitching padded articles, comprising a presser foot for compressing a padded article in the region of where it is to be stitched, needle means for passing a length of tying material through the padded article at spaced points to form a loop of tying material extending through the padded article, means for holding the ends of the loop of tying material, and means for tying a knot in the ends of the loop of tying material, the knot tying means comprising a pair of co-operating jaw members, means for advancing and retracting the jaw members whereby the jaw members can be advanced into engagement with the ends of the loop of tying material, means for rotating the jaw members whereby a closed loop of the ends of the tying material can be formed about the jaw members, and means for actuating the jaw members whereby the jaw members can be caused to grip the ends of the tying material adjacent said closed loop, the jaw members being retractable by said advancing and retracting means to withdraw the jaw members from the closed loop and to pull the ends of the tying material whereby they are gripped by the jaw members through the closed loop to form and tighten a knot, said jaw members comprising a cutting edge formed thereon for cutting the ends of the tying material where these are gripped in the jaw members when a knot has been formed and tightened.

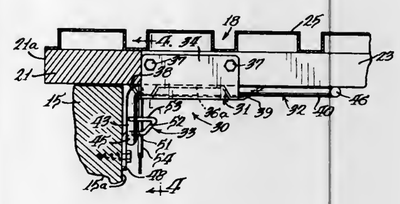
3,883,164
DOOR LOCK WITH SAFETY RELEASE
Gerald W. Galbreath; Alfred T. Dietrich, and George E. Mosbarger, all of Marion, Ohio, assignors to Overhead Door Corporation, Dallas, Tex.
Filed Apr. 2, 1974, Ser. No. 457,167
Int. Cl. E05c 15/02
U.S. Cl. 292—92 10 Claims

1. A door lock structure for an upwardly acting door of a truck van, comprising:
latch means mounted on said door adjacent one side thereof, said latch means including mounting plate means disposed adjacent said one side of said door and fixedly mounted relative to said door, and an actuating member pivotally mounted on said mounting plate means;
said latch means further including a latch bolt pivotally supported on said mounting plate means;
catch means adapted to be mounted on the bed of a truck and positioned for engagement with said latch bolt when the lower edge of said door is adjacent with said bed and said catch means;
releasable coupling means movably carried by said door for normally connecting said latch bolt to said mounting plate means while permitting pivotal movement of said latch bolt relative to said mounting plate means, said coupling means when disengaged causing said latch bolt to be totally disconnected from the remainder of said latch means, the remainder of said latch means remaining connected to said door; and



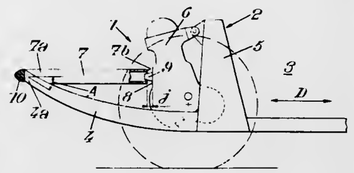
release means accessible only from the other side of said door and connectible to said coupling means for selectively disengaging said coupling means to disconnect said latch bolt from said mounting plate means, whereby said latch bolt is totally disconnected from said door so that said door may be moved toward an open position without prior disconnection of said latch means from said catch means.

3,883,165
DOOR STOP FOR A LATERALLY MOVABLE DOOR
Ludwig Wenzlow, Deerfield, Ill., assignor to Chromalloy American Corporation, Harvard, Ill.
Filed Mar. 29, 1974, Ser. No. 455,999
Int. Cl. E05c 1/04
U.S. Cl. 292—302 12 Claims



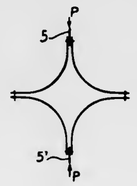
1. A door stop for a laterally movable door which has a forward edge and a rearward edge and which is hung on a building wall to selectively cover a door opening that has a first jamb and a second jamb, said door stop comprising, in combination:
a bracket providing a horizontal slideway mounted adjacent the forwward edge of the door on the door surface which is toward the wall;
a slide member in said slideway and projecting from both ends of the bracket, said slide member having a front end and a rear end;
an integral offset stop bar at the front end of the slide member which engages the first jamb as the door nears fully closed position, and which is thereafter abutted by the bracket to stop forward movement of the door, said stop bar engaging the second jamb when the door is in fully open position;
and ears at the rear end of the slide member which are abutted by the bracket when the door is fully open.

3,883,166
END STRUCTURES FOR VEHICLES
Jean Cadiou, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Nov. 20, 1973, Ser. No. 417,575
Claims priority, application France, Nov. 28, 1972, 42251
Int. Cl. B60r 19/02
U.S. Cl. 293—63 10 Claims



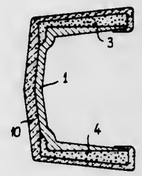
1. A longitudinal end structure for a vehicle, comprising:
a transverse unit forming a wall of the body of said vehicle;
a first longitudinal member fixed at one end to said transverse wall unit, the other end of said first longitudinal member extending from said transverse wall unit to an end of said vehicle;
a second longitudinal member extending from said transverse wall unit to said other end of said first member, said first and second members forming an angle with each other;
wherein one of said first and second members is inclined with respect to the longitudinal axis of said vehicle; and wherein one end portion of said second member is fixed to said other end portion of said first member and the other end portion of said second member is free and spaced from said transverse wall unit; and
means for guiding said free end portion of said second member into engagement with a stop zone of said transverse wall unit only upon application of a force sufficient to deform at least one of said first and second members.

3,883,167
DEVICES FOR ABSORBING ENERGY BY PLASTIC DEFORMATION
Bernard Tanet, and Bernard Elias, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt (Hautes de Seine) and Automobiles Peugeot, Paris, both of, France
Filed Apr. 5, 1973, Ser. No. 348,094
Claims priority, application France, Apr. 13, 1972, 72.13022
Int. Cl. B60r 19/02; G01p 15/06
U.S. Cl. 293—70 6 Claims



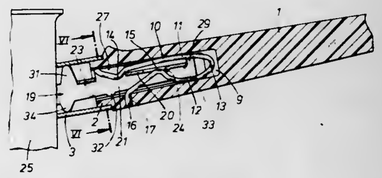
1. An energy-absorbing device comprising two sets of plastically-deformable tongues, each tongue of a set diverging from each other tongue thereof, said sets being rigidly fixed to each other and two anchorages at the ends of the tongues adapted to be brought closer together under the action of a load, the interior surface of each tongue of each set adjacent its respective anchorage facing the interior surfaces of the other tongues of its respective set, in which the deformable tongues of said device are incurved and are coupled to each other, at least in pairs, and in which said anchorages are separated by said two sets of tongues, and are located at the junction of at least two tongues of the same set.

3,883,168
COMPOSITE VEHICLE BUMPER
Marcel Goupy, and Pierre Roubinet, both of Billancourt (Hauts de Seine), France, assignors to Regie Nationale des Usines Renault, Billancourt (Hauts de Seine) and Automobiles Peugeot, Paris, both of, France
Filed Mar. 7, 1974, Ser. No. 449,103
Claims priority, application France, Mar. 13, 1973, 73.08881
Int. Cl. B60r 19/04
U.S. Cl. 293—98 5 Claims



1. Composite bumper for motor vehicles, which comprises a shaped element having a plurality of apertures formed therein, this element consisting of a multidirectional stratified structure of fibers and resin, and at least one reinforcing element consisting of a unidirectional stratified structure of resin-impregnated fibers extending outside said apertures.

3,883,169
HANDLE FOR POTS, PANS, AND THE LIKE
Wolfgang Fischbach, Daaden, Germany, assignor to Heinrich Baumgarten, Eisen- und Blechwarenfabrik, Siegen, Germany
Filed Dec. 26, 1973, Ser. No. 428,234
Claims priority, application Germany, Dec. 30, 1972, 2264244
Int. Cl. A47j 45/10
U.S. Cl. 294—31 R 6 Claims



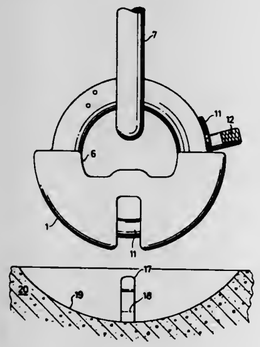
1. A handle for an object, comprising:
a supporting arm secured to said object and extending outwardly therefrom, said supporting arm having abutment means and projection means thereon;
a handle body having a cavity thereon adapted to receive said supporting arm therein;
a generally U-shaped spring located in said cavity and being adapted to clip and fasten said handle body without play to said supporting arm, said spring consisting of a pair of flexible limbs which normally engage the interior surface of said cavity, said limbs having spring humps offset in relation to one another along the longitudinal length of said spring; and
stop means on said handle body for engaging a free end of one of said limbs to prevent said spring from a longitudi-

nal displacement relative to said handle body, said supporting arm being received in said cavity and between said limbs to effect a flexing of said limbs outwardly away from each other by engagement of said spring humps with said abutment means, said projection means engaging said interior surface of said cavity for supporting said handle and limiting the relative turning movement between said handle body and said supporting arm, the portion of said spring humps engaging said abutment means of said supporting arm effecting the application of an axial force to said handle body to urge said handle body toward said object.

3,883,170
HOISTING SHACKLE WITH QUICK RELEASE ATTACHMENT MEANS

Siegfried Fricker, Wiernsheim, and Horst Reinkensmeier, Neifern-Oschelbronn, both of Germany, assignors to Siegfried Fricker, Wiernsheim, Germany

Filed July 10, 1973, Ser. No. 378,029
Claims priority, application Germany, Aug. 16, 1972, 22401714
Int. Cl. B66c *1/36*
U.S. Cl. 294—83 R **15 Claims**



1. A hoisting shackle system with a quick release attachment device for attaching a hoisting harness to a load at one or more attachment points, comprising in combination:

a ring-shaped closed shackle body having an annular cavity giving it a shape similar to that of an upright hollow torus and being thus adapted to form an articulated, chain-link-type end member of a hoisting harness or the like of which a hook or end loop can reach through the central aperture of the torus, the shackle body having an upper arcuate portion in which the outer peripheral wall of the hollow torus structure is removed so as to leave a radially open, U-shaped cross-sectional wall profile around its annular cavity;

an arcuate locking bolt received in the annular cavity of the shackle body so as to be guided therein for movement along the curvature of said annular cavity;

a transverse radial slot in the lowermost portion of the shackle body which reaches upwardly a distance beyond the cross-sectional space occupied by the locking bolt inside the annular cavity;

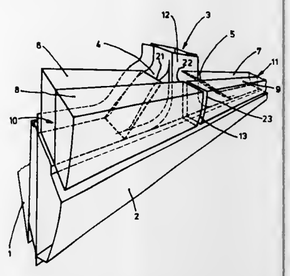
an anchoring element capable of being fixedly attached to a load and having an upstanding eye portion with a transverse opening, the eye portion fitting into the radial slot of the shackle body in such a way that the locking bolt can be inserted through its opening, thereby attaching the anchoring element to the shackle body; and

means for releasing the anchoring element from the shackle body, by retracting the locking bolt from its locked position in which it traverses said radial slot to a position outside the slot region.

3,883,171
CRUSH RESISTANT COMPARTMENT FOR VEHICLES

Andreas Bauer, Fallersleben, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed July 20, 1973, Ser. No. 381,082
Claims priority, application Germany, July 31, 1972, 2237532
Int. Cl. B62d *25/00*
U.S. Cl. 296—28 R **10 Claims**



1. A crush resistant compartment for a vehicle having an access opening flanked by a pair of fixed support columns extending between upper and lower walls of the compartment, and a movable closure member for opening and closing the opening, said compartment comprising:

a reinforcing impact resistant beam forming part of the closure member and extending transversely across the opening substantially between and adjacent each of the fixed columns when the opening is closed, said beam having a projecting outer portion adjacent its outer surface, said projecting outer portion defining an inwardly facing bearing surface overlapping one of said columns for abutting the column upon lateral impacting of the beam inwardly,

said beam having a second bearing surface located between said projecting outer portion and an inner surface thereof and facing said one column within said opening when the opening is closed by said closure,

the first bearing surface and the second bearing surface defining therebetween a recess receiving said one column.

3,883,172
VEHICULAR SEAT MOUNTING LINKAGE

James C. Barton, Peoria; James P. Mueller, East Peoria, both of Ill., and John W. Carter, Davenport, Iowa, assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed July 2, 1973, Ser. No. 375,483
Int. Cl. A47c *3/22*
U.S. Cl. 296—65 **13 Claims**

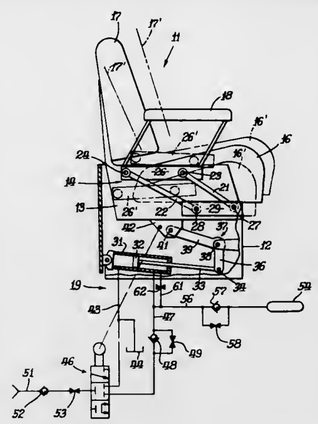
1. An operator seat assembly in a vehicle having a longitudinal axis and an operator station, the seat assembly being disposed in the operator station and comprising

a base structure secured to the vehicle,

a seat frame for supporting an operator,

forward and rearward link means respectively pivoted between said base structure and said seat frame, said rearward link means being effectively longer than said forward link means, said forward and rearward links forming in combination with said seat frame and said base structure to which they are pivotably affixed an unsymmetric quadrilateral having sides of fixed length, said forward and rearward link means being disposed with their respective linear axes tending to remain in substantial convergence adjacent a relatively remote point located below and in longitudinally spaced apart relation forward of the seat assembly, said point of convergence being preselected with reference to the vehicle, and

a resilient means effectively interconnected between said seat frame and said base structure for yieldingly resisting

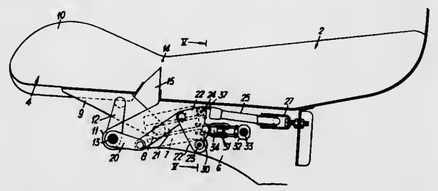


movement of said seat frame relative to said base structure.

3,883,173
SEAT WITH THIGH SUPPORT

Bernard William Shephard, Basildon, and Kenneth George Draper, Burnham-on-Crouch, both of England, assignors to Ipeco Europe Limited, Essex, England

Filed Jan. 26, 1973, Ser. No. 327,144
Claims priority, application United Kingdom, Feb. 2, 1972, 4819/72
Int. Cl. B60n *1/02*; A47c *1/034*
U.S. Cl. 297—312 **9 Claims**

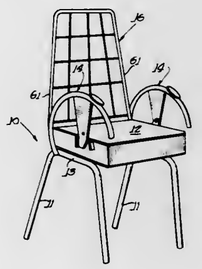


1. An upholstered seat comprising: a main seat portion having upper and lower surfaces, a forward end and individual thigh support portions each of which includes an upper and lower surface, biasing means individually and resiliently urging each of said thigh support portions upwardly into an upper support position, each of said thigh support portions being independently movable with respect to the other, said individual thigh support portions being located in juxtaposition with the forward end of said main seat portion at opposite sides thereof, individual strut means in fixed relation with each of said thigh support portions and extending downwardly therefrom and including guide pins, a frame member in fixed relation with said main seat portion, said frame member including a pair of elongate slots in which said guide pins are slidably received, a linkage assembly operatively connecting said biasing means to the thigh support portion associated therewith, said linkage assembly including a pivotally mounted lever means having one end mounted to one of said strut means and another end to a connecting link which is in turn operatively connected to said biasing means, said linkage assembly being disposed below the lower surface of said thigh and main seat portions, said guide pins, elongate slots and linkage assembly cooperating to direct the movement of said thigh support portions along an arcuate path about a pivot axis located adjacent the upper surface thereof at said upper surface of said main seat portion, each of said thigh support portions being movable downwardly along said arcuate path upon the application of a load to it from above, whereby said individual thigh support portions are individually resiliently loaded upwardly and individually movable with respect to each other about said pivot axis adjacent the upper surfaces thereof without the presence of a pivotal hinge at said pivot axis.

3,883,174
ADJUSTABLE CHAIR

Joan C. Roscoe, 27 Merryfield Ave., Waterville, Maine 04901

Filed Aug. 5, 1974, Ser. No. 495,035
Int. Cl. A47c *1/02*
U.S. Cl. 297—355 **4 Claims**



1. A chair comprising:

a pair of spaced apart inverted generally U-shaped leg members each having a top bight portion;

a horizontal seat resting on the bight portions and secured thereto;

a pair of arm rests, one arm rest associated with each leg member and having one end fixedly attached to a back end of the associated leg member bight portion with the arm rest projecting upwardly and forwardly therefrom in an arcuate semi-circular manner;

a passageway defined interiorly of each arm rest member and extending axially therethrough;

a tubular member telescopically received in each of the arm rest passageways and movable axially therealong;

control means associated with each arm rest member and engagable with each tube member telescopically received therein to selectively lock the tube member in any selected telescopic position therein;

a pair of bracket members, each bracket member associated with one of the tubular members at a central portion thereof and extending outwardly therefrom through appropriate slots in the arm rest members to a position adjacent opposite sides of the seat;

pivot means pivotally connecting the projecting free end portion of each bracket to the seat for guided pivotal movement of the bracket thereabout;

a pair of stop members associated with the terminal end of each bracket on each side of the seat, the stop members being disposed in front and in back of the leading and trailing edges respectively of the terminal edge to limit the maximum rearward and forward angular pivotal movement of the bracket relative to the seat; and

a generally flat back rest member including side supports interconnected by a top edge and a bottom edge and extending intermediate the arm rest members adjacent the back end portions thereof, each side edge being fixedly attached to an adjacentmost end of the telescopic tubular member within the associated arm rest member for simultaneous movement therewith as permitted by an arcuate slot extending through a side wall portion of the arm rest member at the back portion thereof;

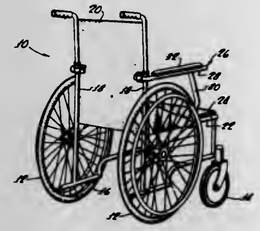
whereby telescopic movement of the tubular member forwardly of the arm rest members effects the movement of the back rest member to a maximum upright position as determined by the stop member engaging the trailing edge of the bracket, and sliding telescopic movement of the tubular member rearwardly of the arm rest members places the back rest member at any selected reclined position up to a maximum reclined position determined by the stop member engaging the leading edge of the support brackets.

3,883,175

SWING-BACK DETACHABLE WHEELCHAIR ARMREST

Keith S. Rodaway, Culver City, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.

Filed Aug. 23, 1973, Ser. No. 390,754
Int. Cl. A47c *7/54*
U.S. Cl. 297—416 **5 Claims**



1. A removable rotatable wheelchair armrest assembly comprising:
a wheelchair frame;
an arm support member having one end connected to said wheelchair frame;
a stabilizer leg having one end connected to said arm support member;
means on said one end of said arm support member for releasably locking said arm support member to said wheelchair frame to allow removal of said arm support member and stabilizer leg from said wheelchair frame; and
a holding bracket attached to said wheelchair frame and having an opening for receipt of said one end of said arm support member, said bracket has a tubular sleeve into which said one of said arm support member having a tubular shape is placed, resulting in a rotatable connection between said arm support member and said bracket, said arm support member being retained in said bracket by a spring-biased button connected to said one end of said arm support member.

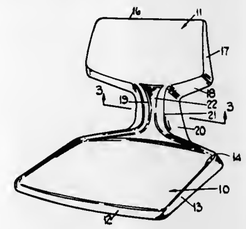
3,883,176

CHAIR SHELL

Philip Hugh Morton, Kidderminster, England, assignor to Pel Limited, Worcestershire, England

Filed Jan. 14, 1974, Ser. No. 433,103
Claims priority, application United Kingdom, Jan. 23, 1973, 3389/73
Int. Cl. A47c *3/00, 7/02*
U.S. Cl. 297—457 **4 Claims**

1. A one piece chair shell comprising a seat portion connected to a backrest portion by at least one connecting section which is vertically corrugated and which is substantially narrower than the seat portion and the backrest portion with the vertical corrugations facilitating support of the substantially



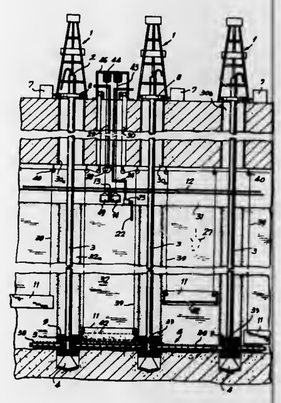
narrower connecting section and the remainder of the chair shell.

3,883,177

DIAMOND DRILL AND ROCK FRAGMENT EXCAVATION DEVICE

Petru C. Baciu, 48-20 48th St., Woodside, Queens, N.Y. 11377

Filed Jan. 23, 1974, Ser. No. 435,697
Int. Cl. E21b *3/02, 9/36*
U.S. Cl. 299—19 **4 Claims**



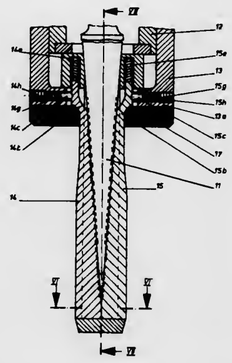
1. A rock drilling device comprising in combination: a tubular element having inner and outer tubular surfaces and defining a plurality of coolant-flow apertures through the tubular walls of the tubular element with the apertures defining a coolant flow path from within the tubular element to laterally exterior thereof, the apertures extending substantially radially outwardly from the longitudinally axially extending tubular coolant flow path within the tubular element, there being diamond cutting bits arranged along the outer tubular surfaces with the apertures substantially adjacent the diamond cutting bits, and bevel gear means and drive shaft means with the drive shaft means extending along its longitudinal axial axis at an angle laterally relative to the tubular element's longitudinally axially extending axis and the shaft means being operatively connected through the intermediate bevel gear means for driving rotatably the tubular element around the tubular element's longitudinally axially extending axis as a result of force transmitted by the drive shaft means to and through the bevel gear means, and the tubular element being supportable by the bevel gear means and the bevel gear means being supportable by the drive shaft means.

3,883,178

HYDRAULICALLY ACTUATED APPARATUS FOR THE MECHANICAL SPLITTING OF STONES

Helmut Darda, Im Tal/Brd, 7712 Blumberg, Germany

Filed June 15, 1973, Ser. No. 370,470
Claims priority, application Germany, June 20, 1972, 2229940
Int. Cl. E21c *37/04*
U.S. Cl. 299—22 **26 Claims**



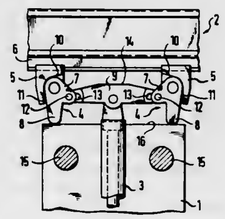
1. In an apparatus for the mechanical splitting and fracturing of stone, comprising a cylinder block; a hydraulically actuatable piston longitudinally movable in said cylinder block; a piston rod connected to said piston; a slide wedge fastened to said piston rod; an intermediate member on said cylinder block; and pressure wedges adapted to be set into bore holes in said stone, said intermediate member forming a mechanical connection between said apparatus and said pressure wedges, said pressure wedges being sideways movable at a deflection conforming to the slope of said slide wedge, the improvement comprising; prestressed return spring means; said pressure wedges being connected to said intermediate member so as to be axially displaceable relative thereto in opposition to the force of said return spring means.

3,883,179

ROOF SUPPORTS FOR LONG WALL MINING INSTALLATIONS

Manfred Flöter, deceased, late of Altlunen, Germany (by Hannelore Emmi Floter, administratrix); Franz Beulker, Werne; Lubomir Plevak, Lunen, and Kunibert Becker, Werl, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed July 25, 1973, Ser. No. 382,600
Claims priority, application Germany, Aug. 1, 1972, 2237798
Int. Cl. E21c *29/02*
U.S. Cl. 299—321 **11 Claims**



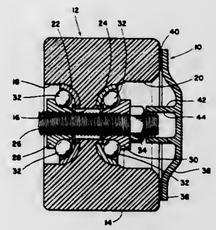
1. In a winning installation comprising a conveyor and a mineral winning machine guided for movement thereon, a long wall support system including at least one support unit comprising a frame, an advancing ram mounted to said frame, and means connecting said ram and said conveyor, said means comprising a cross head on said ram, a pair of bell-crank levers, support means carried by said conveyor and pivotally mounting said bell-crank levers one on each side of said ram, each of said bell-crank levers having a first arm anticulated to said cross head and a second arm forming an adjustable stop for said support unit extending between said unit and conveyor and being pivotable between a position extending obliquely of the length of the conveyor and a position extending normally of the length of the conveyor.

3,883,180

WHEEL HUB CAP FOR SKATE WHEELS

Calvin L. Kain, 1325 Rockdale Rd., Bartlesville, Okla. 74003

Filed Oct. 1, 1973, Ser. No. 402,045
Int. Cl. B60b *7/06*
U.S. Cl. 301—5.3 **4 Claims**



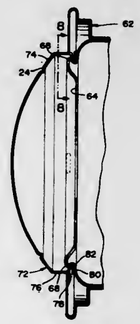
1. In combination with a skate wheel rotatably secured to an exposed wheel axle and axle nut threadedly disposed thereon, a wheel hub cap comprising a substantially dish shaped body having an annular surface provided around the outer periphery of the concave face thereof, means provided on said annular surface for removably securing the hub cap body to the exposed face of the skate wheel, said means for removably securing the hub cap body to the exposed face of the skate wheel comprising a pressure sensitive adhesive.

3,883,181

DECORATIVE WHEEL COVER AND RETAINING ASSEMBLY THEREFOR

William K. Dissinger, Muncy, Pa., assignor to Plastaspec, Inc., Harrisburg, Pa.

Filed Apr. 5, 1972, Ser. No. 241,303
Int. Cl. B60b *7/00*
U.S. Cl. 301—37 P **13 Claims**



1. A decorative wheel cover for mounting on a wheel assembly of a vehicle comprising a display portion; decorative means displayed by said display portion; a skirt portion de-

pending from said display portion; and a lip portion extending from the bottom peripheral edge of said skirt portion and including an annular bead extending radially inwardly toward the center of said wheel cover; said display portion, said skirt portion and said lip portion being integrally formed of a resilient thermoplastic material whereby the wheel cover may be flexed to facilitate mounting, said material permitting passage of light rays therethrough, and said lip portion including a radially inwardly directed wall folded upon itself to form said bead, said bead having a curved surface configuration in cross section.

3,883,182

SIDEWALL TRIM MEMBERS

J. Haywood Barnes, 283 Tolbert St., Wadsworth, Ohio 44281

Filed Mar. 21, 1973, Ser. No. 343,434
Int. Cl. B60b *7/00*
U.S. Cl. 301—37 TC **8 Claims**



1. An annular sidewall trim member for a pneumatic tire comprising a resilient outer section for engaging part of a tire sidewall, and a radially inner annular anchor section, both of said sections being formed from elastomer but with said anchor section having reenforcing means therein to prevent radial expansion thereof, said trim member being adapted to engage a tire and wheel combination to be secured thereto by said anchor section and by a wheel covering engaging the wheel, said anchor section being thinner than said outer section and having a portion of smaller diameter than the tire bead engaging portion of a rim with which the trim member is to be used, said anchor section extending radially beyond the wheel cover when the member and cover are operatively positioned on a wheel.

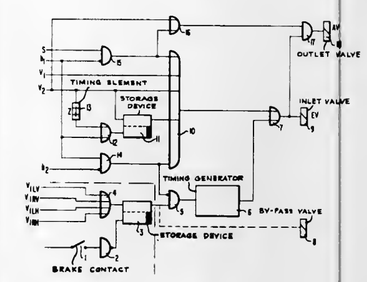
3,883,183

INSTALLATION FOR THE CONTROL OF THE BRAKE SLIPPAGE AND FOR THE PREVENTION OF THE LOCKING OF WHEELS OF VEHICLES, ESPECIALLY MOTOR VEHICLES

Manfred H. Burckhardt, Waiblingen; Hellmut Krohn, Esslingen; Horst Grossner, Geradstetten, and Hans-Jorg Florus, Goppingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Apr. 21, 1972, Ser. No. 246,276
Claims priority, application Germany, Apr. 21, 1971, 2119293
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 P **10 Claims**

1. An installation for the control of the brake slippage of vehicle wheels, especially motor vehicle wheels, in which pulse transmitter means are coordinated to the wheels whose pulses are processed into signals in a circuit system connected to the output of the pulse transmitter means and in which the thus obtained signals act on control means in pressure medium circuit means of the wheel brakes in such a manner that the pressure at the wheel brakes is being built up, held or decreased, and which includes means for controlling the recommencement of the pressure build-up and means for influencing the pressure build up, characterized in that the means for controlling the recommencement of the pressure build-up includes time-limit means responsive to the attainment of a deceleration threshold value for enabling the recommencement of the pressure build-up within a predetermined period



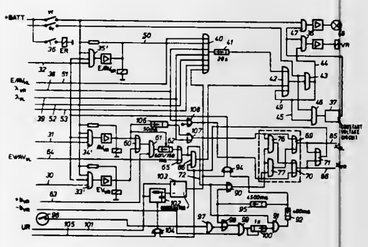
after the attainment of said deceleration threshold value unless an acceleration threshold value is attained within the predetermined period and in that the means for influencing the pressure build-up includes a timing generator means.

3,883,184

MONITORING DEVICE FOR ANTI-LOCK CONTROL SYSTEM

Wolf-Dieter Jonner, Heidelberg; Heinz Leiber, Leimen, and Wolfgang Koraslak, Ketsch, all of Germany, assignors to Teldix GmbH, Heidelberg, Germany

Filed June 26, 1973, Ser. No. 373,778
Claims priority, application Germany, June 30, 1972, 2232034
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 AF **17 Claims**



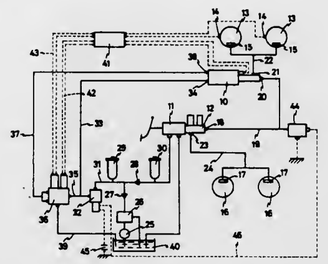
2. A monitoring device for an anti-lock control system for vehicles comprising: first means for monitoring the duration of the response of the brake pressure controlling element of said anti-lock control system; second means for generating a signal if said first means indicates that said response duration is in excess of a predetermined time limit; and third means, which receives said signal, for causing the anti-lock control system to become ineffective after a given further period of response of said brake pressure controlling element and for causing alternate reduction and build up of the brake pressure during said further period.

3,883,185

ANTI-SKID CONTROL APPARATUS

Masami Inada, Aichigun, and Toshiyuki Kondo, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed June 28, 1973, Ser. No. 374,524
Claims priority, application Japan, July 25, 1972, 47-74281
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F **6 Claims**



1. An apparatus for anti-skid brake pressure control in a hydraulic wheel brake system of an automotive vehicle with wheels comprising in combination:
- a master cylinder,
- a plurality of wheel brake cylinders,
- a fluid pressure circuit between said master cylinder and said wheel brake cylinders,
- a plurality of sensors for providing signals according to the number of rotations of said wheels,
- an anti-skid fluid pressure control means disposed within said fluid pressure circuit,
- a power fluid pressure source for actuating said anti-skid fluid pressure control means,
- a control valve means disposed between said anti-skid fluid pressure control means and said power fluid pressure source operable by the signals from said sensors for controlling said anti-skid fluid pressure control means, and
- a cut valve means disposed between said power fluid pressure source and said control valve means for interrupting fluid communication therebetween when no brake pressure is applied and for establishing fluid communication therebetween when the brake pressure exceeds a predetermined value.

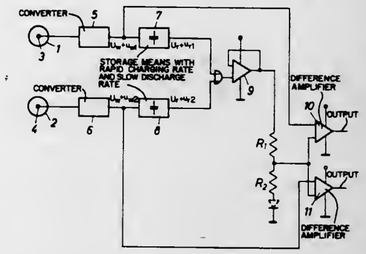
3,883,186

ANTI-LOCK CONTROL SYSTEM

Anton Rodi, St. Ilgen, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Filed Dec. 14, 1973, Ser. No. 424,804
Claims priority, application Germany, Dec. 23, 1972, 2263284
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 BE **3 Claims**

1. An anti-lock control system for the wheel brakes of vehicles over a desired speed range, comprising:
- a. first means for generating vehicle speed-dependent reference values each composed of a constant value portion and a vehicle speed-dependent value portion and forming, when plotted against vehicle speed, a reference value curve having a slope of a particular sign;
- b. second means for generating wheel speed-dependent values as a function of the speed of a given wheel of the vehicle, each wheel speed-dependent value being composed of a constant value portion larger than said constant value portion of the vehicle speed-dependent reference values and a value portion dependent upon the speed of said given wheel, said wheel speed-dependent values forming, when plotted against vehicle speed, a wheel speed-dependent value curve having the same sign as said reference value curve and not intersecting said reference value curve in said desired speed range in the absence of slip of said given wheel;
- c. comparison means for comparing said reference values with said wheel speed-dependent values; and



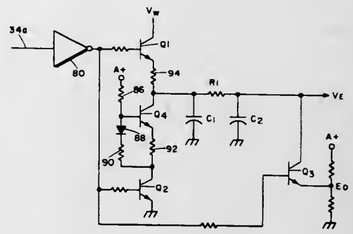
- d. control means responsive to said comparison means for varying the brake pressure at the wheel brake of said given wheel when the wheel speed-dependent value falls below the reference value.

3,883,187

EXPONENTIAL GENERATION IN AN ADAPTIVE BRAKING SYSTEM BY CHARGE TRANSFER

Ralph W. Carp; Robert E. Weber, and Bertice E. Walker, all of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 29, 1974, Ser. No. 464,867
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 P **7 Claims**



1. In an adaptive braking system for wheeled vehicles using speed logic wherein a first speed signal correlated to the speed of some structure of said vehicle is generated and a reference speed signal related to said first speed signal is generated and wherein a braking force modulator responds at least in part to a predetermined relationship of at least one of said first speed and said reference speed signals with another signal, means for generating said another signal comprising:
- a first charge storage means;
- a second charge storage means, said another signal being generated across said second charge storage means;
- means for conveying charges from said first charge storage means to said second charge storage means, said first charge storage means, said second charge storage means and said means for conveying charges comprising a time constant circuit;
- a source of relatively constant potential;
- switching means for normally impressing said relatively constant potential on said second charge storage means and for simultaneously impressing a signal related to said first speed signal on said first charge storage means; and, means for generating an initiate signal at a predetermined point in the brake control cycle of said adaptive braking system, said switching means being responsive to said

intiate signal for interrupting communication of the signal related to said first speed signal from said first charge storage means and for interrupting the application of said relatively constant potential to said second charge storage means, whereby the charges stored on said first and second charge storage means will equalize through said means for conveying to thereby generate said another signal.

3,883,188

EMPTY/LOAD CONTROL VALVE APPARATUS

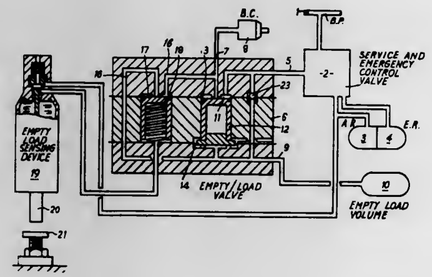
David John Wickham, London, England, assignor to Westinghouse Brake & Signal Co. Ltd., Chippenham, Wiltshire, England

Filed Jan. 24, 1974, Ser. No. 436,393

Claims priority, application United Kingdom, Feb. 16, 1973, 7635/73

Int. Cl. B60t *8/20*

U.S. Cl. 303—23 R **7 Claims**



1. An empty-load fluid pressure control valve apparatus including a brake pressure input port, a brake cylinder pressure output port and a port for connection to an extra volume, cut-off valve means connected between the brake pressure input port and the brake cylinder output port and operable by a differential pressure responsive means responsive in operation to the pressure of the extra volume port predominating over the brake pressure at the input port to close the cut off valve, a further valve controlled by fluid pressure applied from an empty-load sensing device to hold closed a communication which otherwise is provided between the brake cylinder output port and the extra volume port for a loaded condition.

3,883,189

SAFETY INSTALLATION FOR TWO CIRCUIT BRAKE SYSTEMS OF MOTOR VEHICLES

Erich Braun, Rielinghausen, Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Germany

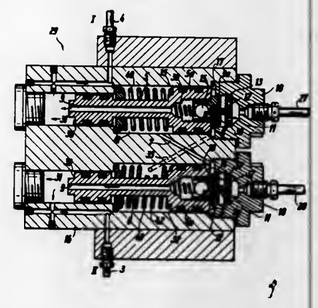
Filed Aug. 16, 1973, Ser. No. 389,030

Claims priority, application Germany, Aug. 16, 1972, 2240095

Int. Cl. B63t *11/20*

U.S. Cl. 303—84 R **12 Claims**

1. A safety installation for two-circuit brake systems of motor vehicles with master cylinder brake means and two brake circuit means, each brake circuit means including and independent line system with a main line and independent wheel brake cylinder means, the installation comprising: housing means, pressure space means provided in said housing means for each brake circuit means, line means for communicating each of said pressure space means with the master cylinder brake means, differential piston means constructed as a pressure amplifier disposed in each of said pressure space means and coordinated to each brake circuit means, a throughflow bore extending through a respective differential piston means substantially coaxially with its longitudinal axis, a valve means disposed at one end of the throughflow bore of each differential piston means, the valve means being operable to automatically close or open the respective throughflow bores in dependence on a pressure drop in one of the brake circuit means, and line means for communicating the upstream side of each of the valve means in a pressure space means with the other pressure space means on the downstream side of the valve means disposed in the other pressure space means.



3,883,190

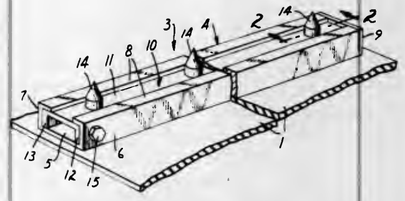
SNOWMOBILE TRACTION CLEAT AND DRIVE BELT

James Anthony Kilbane, Jr., Rt. 1, Smithtown, Bay Rd., Excelsior, Minn. 55331

Filed Oct. 3, 1973, Ser. No. 403,014

Int. Cl. B62d *55/28*

U.S. Cl. 305—35 EB **17 Claims**



1. A traction cleat for a snowmobile comprising:
   a. a first channel-shaped structure comprising a base, a pair of legs attached to and extending outwardly from said base on oppositely disposed longitudinal margins of said base and a top means attached to said legs at the ends of said legs opposite to those attached to said base for holding a second member in said first channel-shaped structure and for allowing projections of the second member to project beyond said first channel-shaped structure,
   b. a second member comprising a base having at least one projection extending from the upper surface of said base, said second member being held within said first channel-shaped structure, and slidably removable therefrom with said projection of said second member extending through said top means of said first channel-shaped structure and the upper surface of said base of said second member contacting said top means of said first channel-shaped structure, and
   c. securing means for holding said second member from any substantial movement in the longitudinal direction of said first channel-shaped structure.

3,883,191

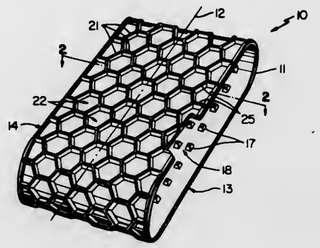
ENDLESS TRACK

Guy Noel Chaumont, Tring-Jonction, Quebec, Canada, assignor to Dayco Corporation, Dayton, Ohio

Filed Apr. 8, 1974, Ser. No. 458,958

Int. Cl. B62d *55/25*

U.S. Cl. 305—35 EB **9 Claims**



1. An endless track having a main body made of an elastomeric material and being adapted to be moved in an endless path having a longitudinal axis, said main body comprising an inner surface and a ground engaging outer surface; said outer surface including a central portion comprising a plurality of ribs defining regular hexagonal cells, each of said cells having ribs arranged at an acute angle with said axis to provide continuous support for said track; said outer surface further comprising side ribs defining the outermost edges of said track, said side ribs and the adjacent angled ribs forming nonsymmetrical cells outward of said central portion.

3,883,192

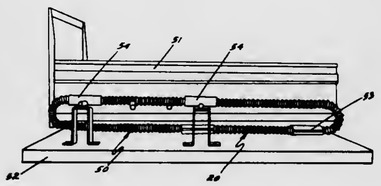
MOVEMENT DEVICE

Frederick S. Faiks, Comstock Park, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Nov. 29, 1972, Ser. No. 310,411

Int. Cl. F16c *17/00*

U.S. Cl. 308—3.6 **36 Claims**



1. A movement device for facilitating the movement of one object with respect to another, said device comprising: a rigid, rod-like support including at least one change of direction in its configuration; a flexible sleeve slidably carried on said support; first and second mounting means for mounting first and second objects respectively to said flexible sleeve; said first and second mounting means being connected to said flexible sleeve at points on opposite sides of a point at which said rigid support changes direction whereby when said sleeve is slid on said support, said first and second mounting means travel in different directions, thereby causing said first and second objects to move relative to one another.

3,883,193

PEDESTAL BEARING WITH SPIRAL GROOVES IN THE BEARING GLIDING PLANE

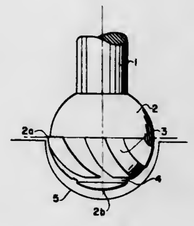
Wolfgang Hepp, Immenstaad; Klaus Pimiskern, Friedrichshafen, and Werner Herbert, Markdorf, all of Germany, assignors to Dornier System GmbH, Friedrichshafen, Germany

Filed June 25, 1973, Ser. No. 373,137

Claims priority, application Germany, Aug. 11, 1972, 2239624

Int. Cl. F16c *35/00*

U.S. Cl. 308—9 **2 Claims**



1. In an axial friction bearing comprising a stationary ball socket and a spherical bearing part provided on the surface thereof with spiral grooves, said spiral grooves terminating in the feed direction in a recess concentric to the pole of the sphere,
   the improvement comprising that said recess is a continuous annular groove in proximity to said pole, and that a smooth sphere portion is between said groove and said pole.

3,883,194

DEVICE FOR MOUNTING A RADIAL ROLLING BEARING

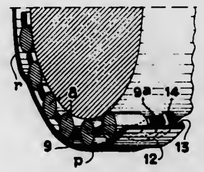
Alfred Pitner, Paris, France, assignor to Nadella, France, a part interest

Filed July 23, 1973, Ser. No. 381,395

Claims priority, application France, July 24, 1972, 72.26534

Int. Cl. F16c *43/00*

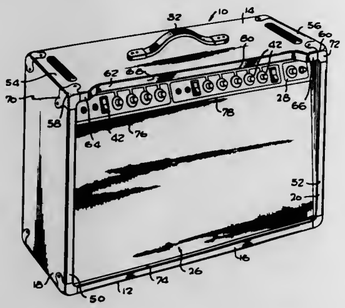
U.S. Cl. 308—184 **23 Claims**



1. A device for mounting a radial rolling bearing having rolling elements, comprising an elastically yieldable elastomeric collar, a thin sleeve engaged in the collar and having an inner surface which acts as a raceway for the rolling elements and defines in a plurality of angularly spaced regions a reduced clearance for the rolling elements, the collar defining an inner surface and the sleeve defining an outer surface which is coextensive with and in intimate contact with the inner surface of the collar throughout the periphery of the sleeve, the sleeve having such thinness that the sleeve has an elasticity allowing said regions to deform radially under the action of forces transmitted by the rolling elements, the sleeve being preformed in accordance with an irregular profile which defines circumferentially alternate cylindrical segments having a diameter providing a conventional radial clearance for

the rolling elements and cylindrical segments which are inwardly offset and constitute regions defining a reduced radial clearance for the circulation of the rolling elements.

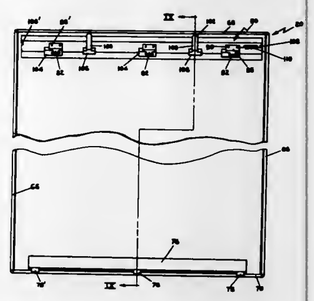
3,883,195
SPEAKER UNIT HAVING RECESSED CONTROL PANEL
Thomas A. Walker, Tustin, Calif., assignor to Music Man, Inc., Anaheim, Calif.
Filed Oct. 5, 1973, Ser. No. 404,094
Int. Cl.² A47B *81/06*
U.S. Cl. 312—7 R **8 Claims**



1. A portable cabinet for housing a loudspeaker and electrical controls therefor, said cabinet having opposite sides of like size and shape with each of the sides having front and top edges intersecting at a top-front corner thereof, the front edges of said sides lying within and defining a front plane for the cabinet and the top edges of said sides lying within and defining a top plane for the cabinet with the front and top planes intersecting along a line extending between the top-front corners of the sides, a control panel having a plurality of manually manipulated elements extending therefrom, the control panel extending through substantially the entire distance between the opposite sides of the cabinet and being mounted adjacent and generally parallel to the line of intersection between the front and top planes so as to be manually accessible through the front and the top planes, said panel being disposed so that all parts thereof including the manually manipulated elements are inside both the front plane and the top plane.

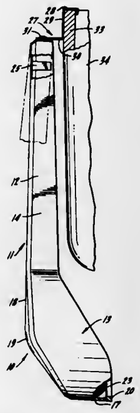
3,883,196
END PANEL SUPPORT SYSTEM
Robert G. Mohr, Grand Rapids; Ronald R. Hodges, Granville; Jack Hockenberry; Douglas Scheerhorn, both of Grand Rapids, and Gale F. Wilcox, Wayland, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Division of Ser. No. 366,218, June 1, 1973. This application Oct. 11, 1974, Ser. No. 514,062
Int. Cl. A47b *17/00, 19/00, 43/00*
U.S. Cl. 312—194 **3 Claims**

1. A system for supporting one or a number of standardized furniture components as desks, tops, cabinets or the like comprising: a supported member; end panel members adapted to support said supported member; first securing means in said end panels and said supported member for releasably securing same together; cover members for said end panels; and second securing means in said cover members and said end panels for releasably securing said cover to said panel whereby said cover members can be readily removed for access to said securing means; said second securing means includes tabs on said cover members and first slots on said end panel for receiving said tabs, said tabs including engaging means for holding said tabs in place in said first slots, a second slot adjacent and below each said first slot thereby defining a bridge between each of said first and second slots, said bridge being of a bendable material whereby it can be bent in or out, up or down by inserting a tool into an appropriate one of said first



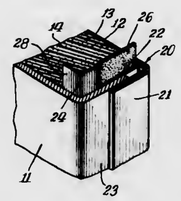
and second slots and operating said tool against said bridge, said bridge thereby forming a means for adjusting said cover member in or out, up or down with respect to said end panel.

3,883,197
BOWL BRUSH ASSEMBLY
Joyce Pruitt Reid, 1316 W. 115th St., Chicago, Ill. 60643
Filed May 31, 1973, Ser. No. 365,492
Int. Cl. A47g *29/08*; A46b *17/00*
U.S. Cl. 312—206 **4 Claims**



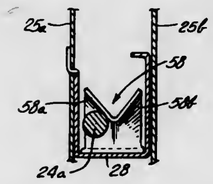
1. A brush and holder assembly, said assembly including, in combination,
a brush having an elongated handle and a bristle portion at one end thereof,
a holder for said brush,
said holder being formed generally in the shape of said brush and having an open, unobstructed entry side,
means for suspending the brush in the holder from a support location integral with the holder which maintains the bristle portion out of contact with the holder, and
means for connecting said brush and holder assembly from an anchor location which enables said assembly, when not in use, to be disposed with the open, unobstructed entry side of the holder facing an adjacent vertical surface, such as the vertical wall of a water closet tank to which the assembly is anchored,
said connecting means further enabling the brush and holder assembly to be unrestrainedly rotated and tilted with respect to the adjacent vertical surface whereby the brush may be freely inserted into, and removed from, the holder, and the holder disposed in a position in which the open entry side faces the adjacent vertical surface.

3,883,198
CABINET CONSTRUCTION
Harry L. Tillman, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Sept. 7, 1973, Ser. No. 395,634
Int. Cl. A47b *96/04*; F25d *23/06*
U.S. Cl. 312—214 **9 Claims**



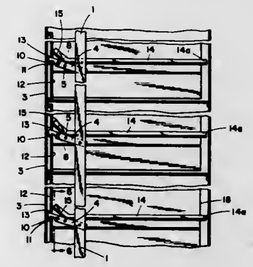
1. A cabinet construction comprising: a first wall; a second wall spaced from said first wall to define an expansion space therebetween provided with foamed-in-place insulation; a U-shaped flange on one of said walls extending and opening toward the other wall at an end of said space, said U-shaped flange having an inner leg defining an inner surface adjacent said expansion space and having a distal edge spaced from said other wall; a turned end portion on the other of said walls slip fitted between the legs of said flange; and a flexible tape in said expansion space having a first portion facially engaging said inner surface of said inner leg and a second portion facially engaging said turned end portion of the other of said walls and sealing said end of said expansion space against expansion of the insulation between said slip fitted turned end portion and flange legs during foaming-in-place thereof, one of said tape portions being adhesively secured to its engaged wall and the other of said tape portions being freely facially slidable relative to its engaged wall.

3,883,199
FILE DRAWER INTERLOCKING AND LOCKING MECHANISM
Charles R. Cawley, Jr., Barto; Gerald M. Wiseman, Hatfield, and John T. Gabel, East Greenville, all of Pa., assignors to Knoll International, Inc., New York, N.Y.
Filed July 25, 1972, Ser. No. 274,969
Int. Cl. E05b *65/46*; E05c *15/04, 13/04*
U.S. Cl. 312—216 **10 Claims**



1. A file drawer interlocking mechanism comprising an elongated rod pivotal about a longitudinal axis between drawer closed and drawer opened positions and extending parallel to one of the sides of each of a plurality of drawers of a multi drawer file and carrying a plurality of projections thereon spaced from and parallel to the rod and each positioned closely adjacent to a corresponding one of said drawer sides, channel means on each of said drawer sides and positioned closely adjacent to and operatively associated with a corresponding one of said projections in the closed position of the drawer, each channel means having opposed sides defining a channel through which the corresponding projection passes as the drawer is moved between closed and opened positions, one of the sides of each channel engaging the corresponding projection to pivot said elongated rod about said axis from said drawer closed position to said drawer opened position as the projection moves through the corresponding channel during the opening of the corresponding drawer when all other drawers are in closed positions, the opposite side of each channel engaging the corresponding projection to pivot said elongated rod from said drawer opened position to said drawer closed position as the projection moves through the corresponding channel during the closing of the corresponding drawer when all other drawers are in closed positions, and each channel means having a striking surface which strikes the corresponding projection when the corresponding drawer is in the closed position but said elongated rod is in the drawer opened position to prevent the opening of any closed drawer when another drawer is in an opened position.

3,883,200
FILE DRAWER LOCK
Ernest W. Latham, North Aurora, Ill., assignor to Bentson Industries Inc., Aurora, Ill.
Filed Dec. 12, 1973, Ser. No. 424,003
Int. Cl. E05b *65/46*
U.S. Cl. 312—216 **5 Claims**

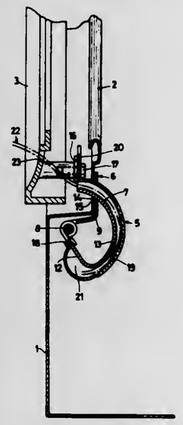


2. A lock mechanism for a plurality of associated drawers, including a latch lever having a latch end and a lift end associated with each drawer, a latch catch mounted for latching cooperation with each of said latch levers, a projecting cam and a projecting rib mounted to form a continuous guide along each drawer, a following roller element rotatably mounted near the latch end of each of said latch levers for guidable engagement with a corresponding said projecting cam and projecting rib, and a gravity biased locking bar interconnecting the lift ends of said latch levers associated with each drawer, said locking bar being mounted for reciprocal movement between a locking position and an unlocking position, said locking bar being raised to locking position upon movement of a drawer out of said pre-selected alignment whereby said projecting cam and rib engage said corresponding following roller element and depress the latch end of said latch levers, said locking bar being lowered to unlocking position by virute of its gravitational bias upon disengagement of said following roller element from said projecting rib and cam when said drawer is moved back into said preselected alignment.

3,883,201
WASHING MACHINE ON THE LOADING DOOR OF WHICH IS MOUNTED AN ELECTRICALLY OPERATED COMPONENT
Luciano Busoni, La Spezia, Italy, assignor to San Giorgio Elettrodomestici S.p.A., La Spezia, Italy
Filed June 7, 1973, Ser. No. 367,948
Claims priority, application Italy, Oct. 20, 1972, 30747/72
Int. Cl. A47b *81/00*; H05k *5/03*; D06f *39/14*
U.S. Cl. 312—223 **8 Claims**

1. A machine comprising a housing, an opening in said housing, a door, a hinge mounting said door for movement between a position closing said opening and an open position,

said hinge including a hinge pin fixedly carried by said housing and a hinge flange pivotally carried by said hinge pin and fixedly secured to said door, at least one electric cable extend-



ing from said door and along said hinge flange to a point adjacent said hinge pin, and retaining means carried by said hinge flange for retaining said electric cable adjacent said hinge flange.

3,883,202
DESK HAVING ELECTRICAL SUPPLY LINES WHICH ARE LAID IN THE TABLE
Karl-Heinz Konig, Giessen, Germany, assignor to Voko-Franz & Co., Pohlheim near Giessen, Germany
Filed Nov. 1, 1973, Ser. No. 411,693
Int. Cl. A47b *51/00*
U.S. Cl. 312—223 **11 Claims**

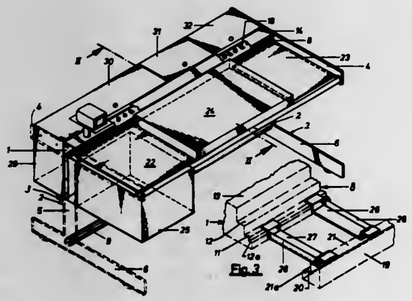
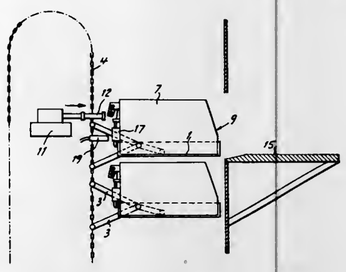


Fig. 3

1. A desk having a front and a back and two sides, comprising:
frame means comprising a pair of horizontally spaced side members and first and second horizontally spaced wall means secured to and extending between said side members;
first stepped surface means on said first wall means facing said front of said desk and second stepped surface means on said second wall means facing said back of said desk and opposing said first stepped surface means, said first and second stepped surface means each comprising a plurality of horizontally offset, vertically spaced and upwardly facing surfaces, the lowermost surface of each of said stepped surface means being spaced closer to each other than any of the remaining surfaces, each of said upwardly facing surfaces on one of said stepped surface means being coplanar with the corresponding upwardly facing surface on the other of said stepped surface means; and
a plurality of laterally spaced support surface means each including guide means slidingly mounted on a pair of said coplanar upwardly facing surfaces and adapted to slide along the length of said upwardly facing surfaces between said side members, the width of each of said support surface means being sufficient to occupy the space between said pairs of coplanar upwardly facing surfaces but no wider or narrower than the width of the spacing between a pair of coplanar upwardly facing surfaces on which said support surface means is supported, one of said support surface means being vertically spaced from the other of said support surface means to facilitate a lateral sliding movement of said support surface means to a position vertically aligned with at least one of the other of said support surface means.

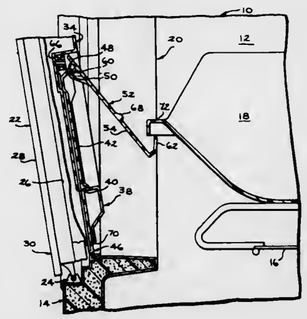
3,883,203
SAFETY DEVICE FOR ARTICLE STORAGE AND RETRIEVAL APPARATUS
Werner Franz Lexe, Worth, Germany, assignor to Sperry Rand Corporation, New York, N.Y.
Filed Mar. 21, 1973, Ser. No. 343,293
Claims priority, application Switzerland, Apr. 19, 1972, 5766/72
Int. Cl. A47b *49/00*
U.S. Cl. 312—268 **7 Claims**



1. A power operated article storage system comprising:
Endless carrier means carrying a plurality of carriers along an orbital path for selectively positioning the carriers at an access station;
A plurality of containers slideably supported on the carriers so that each container is slideable between a fully retracted position on the carrier and a laterally extended position from the carrier;
A plurality of locking assemblies each mounted on a respective container, said locking assemblies each including a movable locking member actuable for movement between a locking positin in which the movable locking member engages the container's carrier and thereby secures the container in the retracted position to prevent relative sliding between the container and the carrier and an unlocked position in which the movable locking member is disengaged from the container's carrier and thereby permits relative sliding between the container and carrier, and further including a lock-actuating member operatively associated with said movable locking member for moving said movable locking member between said locking position and said unlocked position in response to activation of said lock-actuating member;
Container-sliding means positioned at the access station and operatively associated with a container positioned at the access station for sliding the container between the retracted and extended positions, said container-sliding means being aligned with the lock-actuating member of the container positioned at the access station so as to

activate the lock-actutating member and thereby move its associated locking member from said locking position to said unlocked position prior to sliding the container from the retracted position to the extended position; and
Stationary sensing means positioned at the access station and aligned with the movable locking member of the container positioned at the access station for sensing the locking position of the movable locking member.

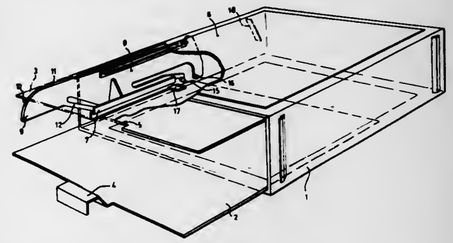
3,883,204
ICE BUCKET RETRIEVING APPARATUS OF A REFRIGERATOR
Luis E. Prada, and Jack M. Bryant, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Apr. 3, 1974, Ser. No. 457,481
Int. Cl. A47b *97/00*
U.S. Cl. 312—273 **6 Claims**



1. An ice bucket retrieving apparatus associated with an ice-access door of an ice-access opening of a main freezer door of a refrigerator, comprising:
a housing having a slot and being pivotally connected to the main freezer door;
an ice bucket retrieving element having an actuating arm and means for engagement with an ice bucket and being pivotally connected to the housing;
an actuating element having a trigger arm and being slidably positioned within the housing slot and movable between a first position at which the trigger arm is at a first elevation and a second position at which the trigger arm is at a second lower elevation in contact with the actuating element and the ice bucket retrieving element is pivoted outwardly therefrom; and
means for biasing the actuating element toward the second elevation of the trigger arm.

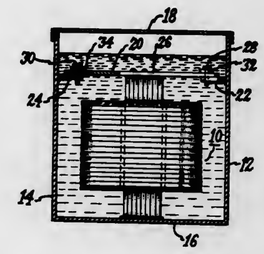
3,883,205
CONTAINER COMPRISING A BOX, A DRAWER AND A FLAP HINGED TO THE BOX
Peter Antonius Marie Ambaum, and Willem Johannes Catharina Ambaum, both of Reuver, Netherlands, assignors to B.V. Briefhouder- En Papierwarenfabriek "PAS", Reuver, Netherlands
Filed Aug. 30, 1973, Ser. No. 392,909
Claims priority, application Netherlands, Sept. 4, 1972, 7212020
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 **6 Claims**

1. A container comprising:
a box having a vertical side wall and defining an opening;
a pull-out drawer mounted to be inserted into and withdrawn from the box by way of said opening; a closing flap connected to the box to hinge about a horizontal axis above the pull-out drawer;
a guide means connected to said side wall;
a vertical plate arranged in the box adjacent to said side wall so as to be slidable in said guide means; and
a coupling member disposed on the drawer,



said vertical plate having an elongated resilient part which extends rearwardly and downwardly so that when the drawer is in an inserted position in the box the free end of the elongated part is below the guide means and when the drawer is moved towards a withdrawn position said elongated part cooperates with the guide means and said coupling member to displace the plate forwardly and upwardly.

3,883,206
CENTERING AND ANCHORING DEVICE
Kenneth H. Baughman, Rome, Ga., assignor to General Electric Company
Filed May 7, 1973, Ser. No. 357,684
Int. Cl. H01f *15/02*
U.S. Cl. 312—351 **4 Claims**

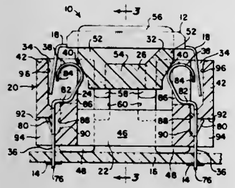


1. A centering and anchoring device for holding an apparatus in an enclosure during use comprising an enclosure having opposed side walls, at least two brackets secured to said side walls, threaded openings in said brackets, an apparatus within said enclosure, a bar fixed to said apparatus, said bar dimensioned to overlie said brackets, said bar having enlarged openings, one said enlarged opening overlying each said threaded opening in said brackets, a bolt extending through each said enlarged opening and threaded into each said threaded opening and a conical washer mounted on each said bolt and in secure engagement with each said enlarged opening.

3,883,207
LOW INSERTION FORCE CONNECTOR FOR MODULAR CIRCUIT PACKAGES
Thaddeus K. Tomklewicz, Bolingbrook, Ill., assignor to Molex Incorporated, Lisle, Ill.
Filed Sept. 13, 1973, Ser. No. 396,822
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 M **13 Claims**

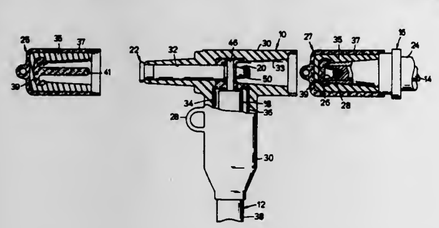
1. A connector for a modular circuit package including plural male leads, said connector comprising:
a housing including a base and having base wall means defining a cavity therein and a carriage mounted in said

cavity for movement between outer and inner positions;
retaining means on said base and carriage for preventing movement of said carriage from said cavity beyond said outer position;
an externally directed support surface on said carriage adapted to receive the circuit package;
recess means in said base wall means housing defining a plurality of lead receiving paths for receiving the leads of a circuit package disposed on said support surface;



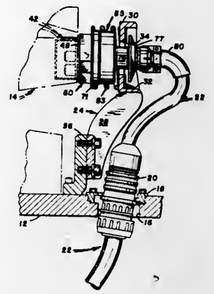
a plurality of terminals mounted in said housing, each including a spring contact normally positioned partly within said cavity adjacent one said lead receiving path and permitting unobstructed entry of a lead into said path; and
means on said carriage slidably engaging said terminals upon movement of the carriage from the outer position to the inner position and camming said spring contacts transversely into said lead receiving paths and against the inserted leads.

3,883,208
VISIBLE BREAK TEE-CONNECTOR
Edward L. Sankey, New Berlin, and Quinton H. Sutton, Waukesha, both of Wis., assignors to RTE Corporation, Waukesha, Wis.
Filed Oct. 25, 1973, Ser. No. 409,764
Int. Cl. H01r *13/54*
U.S. Cl. 339—92 R **16 Claims**



1. A visible break tee-connector for electrically connecting a high voltage cable to a bushing for an electrical device, said connector comprising:
a housing formed from a resilient insulating material,
an electrically conductive primary cable connecting element positioned in said housing, said element being electrically connected to said primary cable, and
a bushing connecting member positioned in said housing and including a body portion electrically engaging said element,
means at one end for electrically connecting said member to said bushing,
means at the other end for electrically connecting said element to ground,
and mechanical means for holding said bushing connecting member onto said element on disconnection from said bushing whereby said bushing connecting member can be grounded prior to disconnection from said bushing without disconnecting said member from said cable connecting element.

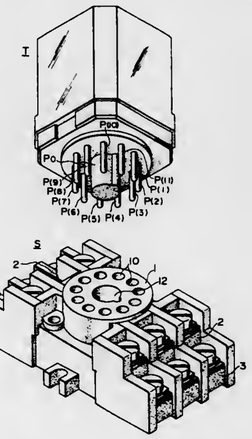
3,883,209
MISSILE CONNECTOR
Sverre Kongelbeck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 29, 1973, Ser. No. 374,823
Int. Cl. H01r *13/60*
U.S. Cl. 339—125 R **8 Claims**



1. In combination with a missile launcher and a missile positioned in the launcher for launching therefrom, said missile having a receptacle in its aft end and an adapter secured to the receptacle and having electrical contacts,
a missile connector for establishing electrical connections with the missile, said connector including a bracket secured to the launcher,
a plug mounted for limited movement in the outer end portion of the bracket and having contact prongs displaceably engageable with the adapter contacts,
means on the plug and bracket and urging the plug toward the adapter,
and a cable system connecting the plug to a source of electric power,
said means maintaining a positive connection between the plug and the adapter when the missile is in the launcher and in the event of relative movement of the missile and launcher prior to launching, said plug separating from the adapter upon movement of the missile from the launcher.

3,883,210
SOCKET ASSEMBLY
Teizo Fujita, Osaka, and Masao Kikuchi, Nabari, both of Japan, assignors to Izumi Denki Company Limited, Osaka, Japan
Filed Aug. 17, 1973, Ser. No. 389,405
Claims priority, application Japan, Aug. 18, 1972, 47-83201
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 S **6 Claims**

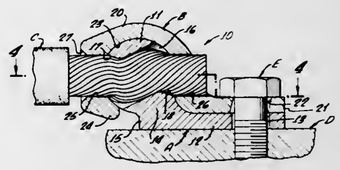
1. A socket assembly having external lead wire connection terminals arranged in tiers at opposite ends thereof for electrically connecting terminals of an electronic component such as a relay or timer to external lead wires, comprising:
a plurality of electrically conductive connector fittings each having at one end thereof essentially upwardly extending portions and each having at the other end thereof external lead wire connection terminals for attachment to said lead wires, said upwardly extending portions each including means for attachment to said terminals of the electronic component, said plurality of connector fittings being divided into at least first and second portions;
a lower base member of electrically insulating material including first means on an upper surface of said base member removably supporting the first portion of said plurality of connector fittings each in electrically separated positions on said lower base member, said lower base member including at each of opposite end portions thereof a row of spaced seat portions individually supporting the external lead wire connection terminals of the first portion of said connector fittings, whereby the first portion of said connector fittings supported on said first means may be spaced each from the other;
at least one intermediate base member of electrically insulating material mounted on said lower base member, said intermediate base member including spaced apertures aligned with each of said upwardly extending portions of the first portion of said connector fittings so that said upwardly extending portions of the first portion of said connector fittings pass through said apertures and extend upwardly from an upper surface of said upper base member, said intermediate base member including second means on the upper surface thereof removably supporting the second portion of said plurality of connector fittings each in electrically separated portions on said intermediate base member, said intermediate base member further including at each of opposite end portions thereof a row



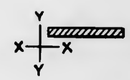
of spaced seat portions for individually supporting the external lead wire connection terminals of the second portion of said connector fittings;
an electrical component support member of electrically insulating material mounted on said at least one intermediate base member and including spaced apertures a portion of which are aligned with each of said apertures in said at least one intermediate base member and a further portion of which are aligned with each of said upwardly extending portions of said second portion of said plurality of connector fittings; and
means for joining the intermediate and lower base members and component support member,
whereby in use said terminals of said electronic component may be inserted into said apertures in said component support member to make contact with said connector fittings and said lead wires may be attached to said external lead wire connection terminals of the first and second portions of said connector fittings.

3,883,211
NON-SHEARING SOLDERLESS ELECTRICAL CONNECTOR
Alvin E. Shugarman, and Lowell E. Linder, both of Santa Ana, Calif., assignors to Electro-Clamp Corporation, Beverly Hills, Calif.
Filed Apr. 26, 1973, Ser. No. 354,645
Int. Cl. H01r *9/10*
U.S. Cl. 339—266 R **19 Claims**

1. In a solderless electrical connector of the rotatable jaw, clamping type comprising male and female jaws having respective mounting tails adapted to be secured against a support, said male jaw including a transverse cylindrical head joined to one end of said male jaw tail and having a bore which extends diametrically through the center of said head for receipt of a conductor, said female jaw including a C-shaped yoke joined to one end of said female jaw tail and defining a transverse cylindrical socket which receives said head of said male jaw for relative angular movement of said jaws between an open, conductor-receiving position and a closed, conductor-clamping position, said yoke having opposed cylindrical bores on a common diameter of said yoke which are alignable with said bore in said male jaw in said open position of said jaws, the improvement wherein the diameter of said bore in said male jaw is throughout its length slightly larger than the diameter of said bore in said female jaw to permit said conductor to expand when said jaws are rotated to said closed position.



3,883,212
CONTACT FOR MULTIPLE CONDUCTOR CONNECTOR
Josef Keglewitsch, Addison, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Continuation of Ser. No. 64,313, Aug. 17, 1970, abandoned.
This application Oct. 6, 1972, Ser. No. 295,759
Int. Cl. H01r *9/14*
U.S. Cl. 339—276 A **4 Claims**



1. A contact element for electrical connectors, formed of a single, integral piece of sheet metal, having
an active portion at one end including a flexible contact blade,
a terminal portion at the other end, and
a mounting shank between said active portion and said terminal portion, said shank being of channel shaped cross-section, with an intermediate web between two flanges,
wherein said terminal portion is characterized by a cross-section including a channel with a back web coplanar with the intermediate web of said shank, and two side flanges, one at each side of said back web and extending at right angles thereto to a width at least as great as the width of said back web, said side flanges being reentrant back upon themselves by 180° bends whereby they extend inwardly to the full depth of the channel and into close contact with said back web and with each other.

3,883,213
CONNECTORS
Frank J. Glaister, Ipswich, Mass., assignor to Chomerics, Inc., Woburn, Mass.
Filed Jan. 7, 1974, Ser. No. 431,389
Int. Cl. H01r *13/24*
U.S. Cl. 339—61 M **9 Claims**

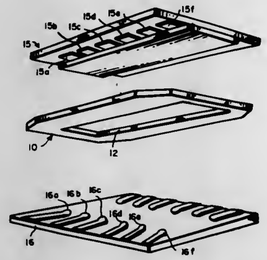
1. In an electrical system comrising first and second electrical devices, each of said first and second electrical devices

having a plurality of spaced apart contacts, at least one of said

3,883,215

signal to the transmission lines associated with all of the

having a plurality of spaced apart contacts, at least one of said plurality of contacts comprising raised land portions, a one piece sheet connector having elastomeric-like properties positioned between the devices and overlapping superimposed contacts of said first and second devices, means to compress the sheet connector between superimposed contacts of said first and second devices on opposite surfaces of said sheet connector, said sheet connector having a low resistance through the volume between superimposed contacts where compressed and a high resistance where not directly compressed between said superimposed contacts so that each pair



of superimposed contacts are electrically isolated from every other pair of superimposed contacts, said sheet connector of a thickness X and has the property that when adjacent contacts on opposite sides of said sheet are positioned as close as the distance X apart and compression is applied by pressing superimposed contacts on opposite sides of the sheet together, the resistance through the sheet between superimposed contacts is low relative to the resistance between adjacent contacts, where X is 5 to 100 mils and said sheet connector comprises a homogeneous mixture of electrically conductive particles and a non-conductive binder material having elastomeric properties.

3,883,214

PROTECTIVE ANTI-REFLECTIVE COATINGS FOR ALKALI-METAL HALIDE OPTICAL COMPONENTS

Richard A. Hoffman, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 14, 1972, Ser. No. 262,869
Int. Cl. B32b 9/04; G02b 1/10, 13/14
U.S. Cl. 350—1 **13 Claims**



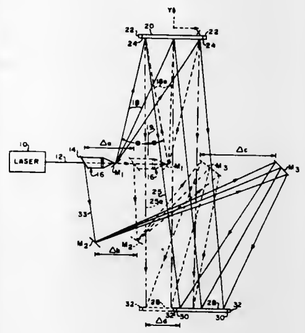
1. An optical component having two faces and a circumferential edge for use at a particular wavelength comprising:
A. a substrate of a single-crystal alkalimetal halide; and
B. a first continuous coating on one of said faces and on said edge, and a second continuous coating on said other face and overlapping said first continuous coating on said edge, said coatings being selected from the group consisting of CaF_2 and MgF_2 coatings about an odd multiple of a quarter of said wavelength in optical thickness and As_2S_3 and Sb_2S_3 coatings about a multiple of a half of said wavelength in optical thickness.

3,883,215

HOLOGRAPHIC SYSTEM FOR NON-DESTRUCTIVE TESTING

Robert L. Kurz, Huntsville, Ala., assignor to The United States of America as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Aug. 8, 1973, Ser. No. 386,793
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 **4 Claims**



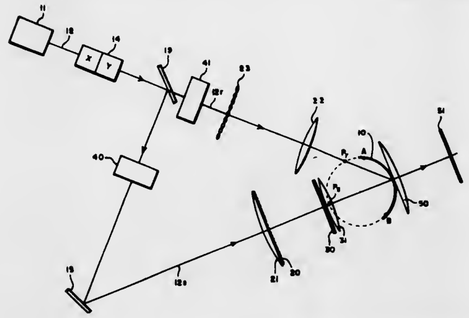
1. A holographic system comprising:
a source of monochromatic light;
beam splitting means for dividing this light into an object beam and a reference beam;
first illuminating means, comprising a first mirror, for directing said object beam onto an object;
holding means for holding and positioning photosensitive material to receive light which has impinged on said object;
second illuminating means for directing said reference beam onto said photosensitive material, and comprising second and third spaced mirrors providing an optical path between said means for dividing said light and said photosensitive material;
first positioning means for adjustably positioning said first illuminating means for selectively varying the angle of illumination of said object, and comprising means for moving said first mirror along a line parallel to a reference plane corresponding to the plane of said holder and photosensitive material held therein and for selectively rotating said first mirror about an axis perpendicular to said line; and
second positioning means for positioning said second illuminating means for selectively varying the angle of said reference beam on said photosensitive material, and comprising means for selectively moving said second mirror along a line parallel with said reference plane, means for selectively rotating said second mirror about an axis perpendicular to said reference plane, and means for moving said third mirror along a line parallel with said reference plane and for selectively rotating said third mirror about an axis perpendicular to said reference plane;
whereby the angles at which said beams reach said object and said photosensitive material may be selectively varied and thus the sensitivity of said system to deformation of a test object be varied and said angles may be made identical and thereby obtain interference fringes with a selected degree of detail on said photosensitive material.

3,883,216

HOLOGRAPHIC MEMORY HAVING SPHERICAL RECORDING MEDIUM

Tzuo-Chang Lee, Bloomington, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 11, 1974, Ser. No. 459,996
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 **17 Claims**



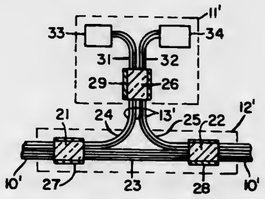
1. In a holographic memory having a memory medium with a plurality of locations at which holograms may be stored and having an object and a reference beam for forming holograms at each of the plurality of locations on the memory medium, and wherein the object and reference beams are directed along object and reference beam channels, respectively, the improvement comprising:
a memory medium having a curved surface proximate a portion of a sphere, the sphere having a diameter along the optical axis of the object beam channel; and
reference beam pivoting means for pivoting the reference beam about a reference beam pivot point proximate the sphere.

3,883,217

OPTICAL COMMUNICATION SYSTEM

Roy E. Love, Corning, and Frank L. Thiel, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed July 5, 1973, Ser. No. 376,575
Int. Cl. G02b 5/14
U.S. Cl. 350—96 C **3 Claims**



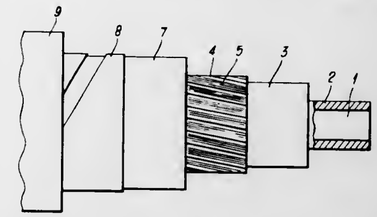
1. An optical communication system comprising
at least three stations, each of which has means for generating optical signals and means for receiving optical signals, a plurality of optical signal transmission lines having first and second ends, the number of said transmission lines being equal to the number of stations, each of said transmission lines comprising at least one optical waveguide, means for coupling the first end of each of said transmission lines to the generating means and receiving means of a corresponding one of said plurality of stations, and
passive optical coupler means connected to the second ends of each of said transmission lines for receiving optical signals from a transmission line connected to any one of said plurality of stations and coupling a portion of that signal to the transmission lines associated with all of the remaining stations.

3,883,218

OPTICAL GUIDES

Raymond Jeffrey Slaughter, Chislehurst, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed Nov. 8, 1973, Ser. No. 413,823
Claims priority, application United Kingdom, Nov. 10, 1972, 52099/72
Int. Cl. G02b 5/16
U.S. Cl. 350—96 B **22 Claims**



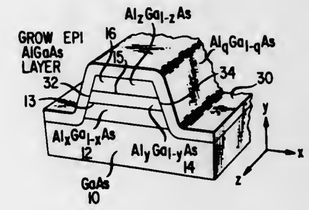
1. An optical cable comprising a central elongate non-optical reinforcing member; a plurality of elongate optical elements, each element consisting of at least one optical fibre which elongate optical elements are embedded side by side in a substantially flat tape of plastics material which is lapped helically about the reinforcing member in at least one layer; and an outer protective sheath; the position of each elongate optical element with respect to the other elongate optical elements of the or each layer being constant throughout the length of the cable, and the reinforcing member being of such a material and of such a cross-sectional area having regard to the material or materials and cross-sectional area of each optical fibre that the reinforcing member at least substantially reduces the strain that would otherwise be imparted to the optical fibres when the cable is stressed in such a way as to tend to subject any optical fibre to a tensile force.

3,883,219

DIELECTRIC OPTICAL WAVEGUIDE

Ralph Andre Logan, Morristown; Bertram Schwartz, Westfield; Joseph Charles Tracy, Jr., Bernardsville, and William Wiegmann, Middlesex, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 291,937, Sept. 25, 1972, Pat. No. 3,833,435. This application Dec. 26, 1973, Ser. No. 427,914
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG **9 Claims**



1. A dielectric optical waveguide comprising:
a GaAs substrate having first and second major surfaces,
a multilayered structure comprising the following layers epitaxially grown on said first major surface in the order recited: a $Al_xGa_{1-x}As$ first layer at least one $Al_yGa_{1-y}As$ middle layer, and a $Al_zGa_{1-z}AS$ third layer, $y < x$ and z;

the width of said middle layer measured parallel to said first major surface being less than the corresponding width of said first and third layers so that said latter layers have portions which overhang the edges of the said middle layer.

3,883,220

OPTICAL SWITCH

Henry F. Taylor, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 10, 1973, Ser. No. 423,624
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG **5 Claims**



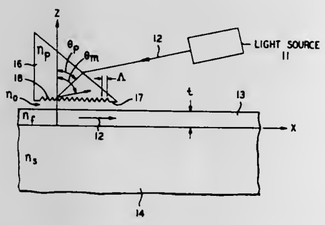
1. An optical switch comprising:
a substrate having a first refractive index;
broadband optical waveguides defined by an electrooptic material supported on predetermined portions of said substrate,
said material having a second higher refractive index and diverging from a single path into at least two spatially separated paths;
a source of electrical energy;
a pair of electrodes positioned proximate to and operatively associated with each said spatially separated path; and
means for controllably connecting said electrical energy to a selected pair of said electrodes to apply an electric field of determinable polarity across an associated spatially separated path and substantially parallel to the plane of the interface between said electrooptic material and said substrate for lowering the refractive index of said path, whereby to divert optical energy from said associated spatially separated path.

3,883,221

PORTABLE PRISM-GRATING COUPLER

William Walter Rigrod, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 1, 1974, Ser. No. 438,843
Int. Cl. G02b 5/14, 27/38
U.S. Cl. 350—96 C **10 Claims**



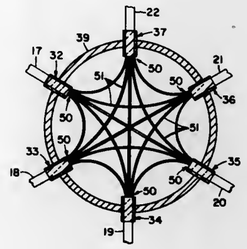
1. An optical coupling arrangement of the type comprising a body of optically transparent material having an index of refraction n_f and two opposing major surfaces separated by a distance proportioned for guiding a beam of optical electromagnetic radiation, and
a prism of optically transparent material having an index of refraction n_p, said prism having a surface disposed essentially parallel to and separated by a gap of index of refraction n_e from one of the major surfaces of said body, n_e being smaller in value than n_f and n_p, respectively, said arrangement being characterized in that
said surface of said prism includes a fixed optical grating having a grating periodicity selected for diffracting at least a portion of the beam of optical radiation incident thereon inside said prism, said surface of said prism being oriented to receive said beam at an angle providing coupling through said gap between the evanescent field of a diffracted portion of said beam and a propagating waveguide mode in said body.

3,883,222

COUPLER FOR OPTICAL COMMUNICATION SYSTEM

Leslie C. Gunderson, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 7, 1973, Ser. No. 395,165
Int. Cl. G02b 5/16
U.S. Cl. 350—96 C **11 Claims**



1. An optical coupler comprising at least four elongated transparent mixer rods, each rod having first and second planar endfaces that are substantially perpendicular to the axis thereof,
means for connecting an optical signal transmission line to the first endface of each of said mixer rods,
a plurality of bundles of optical waveguide fibers, one of said bundles being coupled to the second endface of each of said mixer rods, each of said bundles being divided into groups of fibers, one of which extends to the second endface of each of the remaining mixer rods, and
a housing for supporting said mixer rods, said plurality of bundles of optical waveguide fibers being disposed within said housing.

3,883,223

COUPLER FOR OPTICAL COMMUNICATION SYSTEM

Marshall C. Hudson, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 8, 1974, Ser. No. 458,786
Int. Cl. G02b 5/16
U.S. Cl. 350—96 C **6 Claims**

1. In an optical communication system having a plurality of optical signal transmission lines each comprising at least one optical waveguide having an acceptance angle θ, a coupler for coupling a portion of the optical signal propagating in any one of said transmission lines to each of the remaining transmission lines, said coupler comprising
support means for disposing the end portions of said optical signal transmission lines in a parallel bundled array having a maximum cross-sectional dimension D, the optical waveguides of which said transmission lines are comprised terminating in faces that are disposed in a substantially planar array, thereby constituting a transmission line bundle endface, and
concave light reflecting means spaced from said endface and being so disposed with respect to said endface that a portion of the optical signal radiating from any one of said optical signal transmission lines reflects from said reflecting means back into each of the remaining optical signal transmission lines, said reflecting means being symmetrical about an axis that passes through the center of said array, said reflecting means including a light reflecting surface, the cross-sectional shape of which is given by the equation

$$y = (4px)^{1/2}(1 - kx)^{1/2}$$

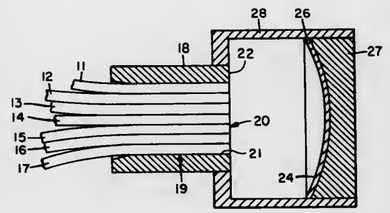
where k is given by

$$-1/(2p) \leq k \leq 1/(2p)$$

and p is determined by the equation

$$p = D/2 \tan \theta$$

said acceptance angle θ being an angle up to 12°.



3,883,225

METHODS AND APPARATUS FOR TREATING ACQUIRED MYOPIA AND SIMILAR OR RELATED EYE CONDITIONS

Donald S. Rehm, R.D. 3, Box 317, Ligonier, Pa. 15658

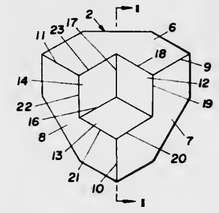
Continuation-in-part of Ser. No. 303,464, Nov. 6, 1972, abandoned. This application Oct. 18, 1973, Ser. No. 407,460
Int. Cl. G02b 25/00; A61b 3/00
U.S. Cl. 350—146 **25 Claims**

3,883,224

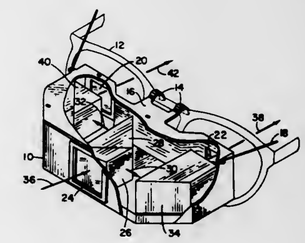
LIGHT REFLECTOR AND MOLD THEREFOR

Morimasa Tanaka, Kanagawa, Japan, assignor to Ichiko Industries Limited, Tokyo, Japan

Filed Oct. 9, 1973, Ser. No. 404,756
Int. Cl. G02b 5/12
U.S. Cl. 350—103 **5 Claims**



1. A light reflector comprising:
an external side facing in the direction from which external light rays strike the reflector, and an internal side on the opposite side of the reflector from said external side and having thereon a plurality of light reflecting units each of which is nonagonal in plan view and which are joined to each other, and said internal side further having a plurality of light-transmitting planes each having a regular triangular shape in plan view and being surrounded by three of said light reflecting units,
each light reflecting unit being comprised of an inner triple reflecting plane structure having three flat planes joined together at right angles relative to each other and an outer triple reflecting plane structure having three flat planes joined together at right angles relative to each other, said inner triple reflecting plane structure being positioned inside said outer triple reflecting plane structure with the planes thereof joined to the planes of said outer triple reflecting plane structure along edges, each of said light reflecting units having three light reflecting elements each of which is a triple reflecting plane structure formed by one of the flat planes of said inner triple reflecting plane strucutre and the two of the flat planes of said outer triple reflecting plane structure which are joined to said one of the flat planes at right angles relative to each other,
the apexes of the triangular light-transmitting plane having apexes lying on the junction lines of the three light reflecting units surrounding said light-transmitting plane, respectively.



1. Therapeutic optical apparatus comprising a housing, an objective aperture on one side of the housing, a pair of viewing apertures on the other side of said housing, means for securing said housing to the head of the user with said viewing apertures substantially in alignment with the user's eyes, lighth beam-splitting and deflecting means mounted in said housing in juxtaposition to said objective aperture, a pair of light reflectors mounted in said housing in juxtaposition to said splitting and deflecting means, said reflectors being disposed to receive respective split portions of light passing through said objective aperture and to reflect said respective split portions through said viewing apertures respectively into the

user's eyes, the reflected split portions being essentially parallel to the path of light entering said objective aperture in order to eliminate the effects of convergence and stereopsis, and lens means mounted on said housing and covering said viewing apertures for imparting an essentially zero accommodation to the eyes when viewing close work.

3,883,226

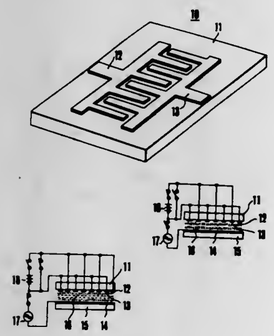
Patent Not Issued For This Number

3,883,227

LIQUID CRYSTAL DISPLAY DEVICES

Shunsuke Kobayashi, Wako; Tokuhide Shimojo, and Kazuhiko Kasano, both of Ise, all of Japan, assignors to Ise Electronics Corporation, Ise City, Japan

Filed June 4, 1973, Ser. No. 366,969
Claims priority, application Japan, June 5, 1972, 47-55749
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 LC **1 Claim**



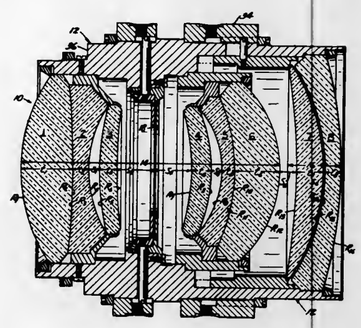
1. An electroresponsive element for a liquid crystal display device comprising a first substrate, first and second comb shaped electrodes disposed on a common surface of said first substrate to correspond to a desired pattern with the teeth of said first and second comb shaped electrodes interleaved with each other, a second substrate spaced apart a predetermined distance from said first and second electrodes, a counter electrode supported by said second substrate to confront said first and second electrodes, a field effect type liquid crystal interposed between said first and second substrates, the electrode surfaces of said substrates being neutral respecting orientation of the molecules of said liquid crystal, and means for impressing a direct voltage across said first and second electrodes to provide initial orientation of the axes of the molecules of said liquid crystal, a source of high frequency alternating current, means operable for connecting said source of alternating current across said counter electrode and said first and second electrodes joined as a common electrode, said means for impressing and said means operable being adapted for mutually exclusive application of said direct voltage and said alternating current.

3,883,228

VARIABLE MAGNIFICATION ZOOM LENS

Ellis I. Betensky, Stamford, Conn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed July 9, 1973, Ser. No. 377,533
Int. Cl. G02b *15/00*
U.S. Cl. 350—184 **8 Claims**



1. An asymmetrical zoom lens providing variable magnification in a short, fixed object plane to image plane distance, comprising:

a lens barrel,

a prime lens within said lens barrel, and

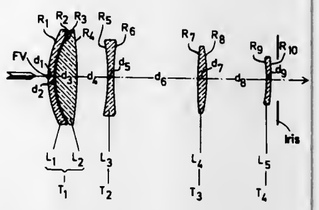
a lower power, air spaced doublet within said lens barrel coaxial with and at one end of said prime lens, one of the elements of said doublet being supported for axial movement with respect to said lens barrel and the other elements, said doublet combining with said prime lens to provide a plurality of magnifications at the image plane of objects at the object plane upon synchronized movement of said lens barrel and said movable element of said doublet to a plurality of predetermined correlated positions.

3,883,229

TELEPHOTO LENS OBJECTIVE

Fritz Determann, Oberkochen, and Heinz Zajadatz, Aalen, both of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Germany

Filed Feb. 14, 1973, Ser. No. 332,416
Claims priority, application Germany, Feb. 22, 1972, 2208163
Int. Cl. G02b *9/00*
U.S. Cl. 350—214 **11 Claims**



1. A photographic telephoto lens objective, comprising a converging first part facing the side of the longer light distance, a following diverging second part, a converging third part following at a greater distance away, and a final diverging fourth part, characterized by the fact that the optical materials for all lenses with the exception of associated lenses which are almost free of refractive power are selected from five ranges of the P** – P* presentation, in accordance with which:

$$P^{**} = \frac{N_F - N}{N_F - N_C}$$

$$P^{*} = \frac{N_F - N_t}{N_F - N_C}$$

where N is the index of refraction and the subscripts F, C, *i* and *t* represent the wavelengths of light for the blue and red hydrogen lines and for the ultraviolet and infrared mercury lines, respectively, and that for Ranges 1 to 5 the following limits apply:

Range 1:	P** = −1.933 ± 0.021	P* = 1.749 ± 0.010
Range 2:	P** = −1.724 ± 0.021	P* = 1.787 ± 0.010
Range 3:	P** = −1.863 ± 0.021	P* = 1.765 ± 0.010
Range 4:	P** = 2.091 ± 0.021	P* = 1.727 ± 0.010
Range 5:	P** = −1.925 ± 0.021	P* = 1.751 ± 0.010,

that from the optical materials so selected, lenses or lens groups are formed whose refractive powers, multiplied by the structural length assume refractive power characteristics which, for a refractive power 1.0 for the entire system, are:

A = −0.74 ± 0.18
B = +3.08 ± 0.57
C = −2.35 ± 0.59
D = +2.63 ± 0.56
E = −2.90 ± 0.69,

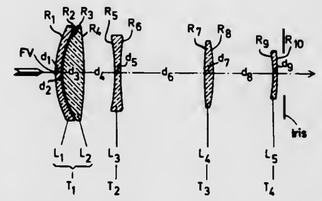
structural length being taken as the distance from the first vertex of the first lens to the image plane of the objective; the first part comprising a first member primarily of material of glass Range 1 and having a refractive power proportional to the value A, and a second member of material primarily from glass Range 2 and having a refractive power proportional to the value B; the second part comprising a member primarily of material of glass Range 3 and having a refractive power proportional to the value C; the third part comprising a member primarily of material of glass Range 4 and having a refractive power proportional to the value D; the fourth part comprising a member primarily of material of glass Range 5 and having a refractive power proportional to the value E; the proportionality factor being the reciprocal of the structural length of the objective.

3,883,230

TELEPHOTO LENS OBJECTIVE

Fritz Determann, Oberkochen, and Heinz Zajadatz, Aalen, both of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Germany

Continuation-in-part of Ser. No. 332,416, Feb. 14, 1973. This application May 3, 1974, Ser. No. 466,915
Claims priority, application Germany, May 5, 1973, 2322813
Int. Cl. G02b *9/00*
U.S. Cl. 350—214 **12 Claims**



1. A photographic telephoto lens objective, comprising a converging first part facing the side of the longer light distance, a following diverging second part, a converging third part following at a greater distance away, and a final diverging fourth part, characterized by the fact that the optical materials for all lenses with the exception of associated lenses which are almost free of refractive power are selected from five ranges of the P** – P* presentation, in accordance with which:

$$P^{**} = \frac{N_F - N_i}{N_F - N_C}$$

$$P^{*} = \frac{N_F - N_t}{N_F - N_C}$$

where N is the index of refraction and the subscripts F, C, *i* and *t* represent the wavelengths of light for the blue and red hydrogen lines and for the ultraviolet and infrared mercury lines, respectively, and that for ranges 1 to 5 the following limits apply:

Range 1: P** = −1.933±0.021 P* = 1.749±0.010
Range 2: P** = −1.724±0.021 P* = 1.787±0.010
Range 3: P** = −1.863±0.021 P* = 1.765±0.010
Range 4: P** = −2.091±0.021 P* = 1.727±0.010
Range 5: P** = −1.925±0.021 P* = 1.751±0.010,

that from the optical materials so selected, lens parts comprising lens members or groups of lens members are formed whose refractive powers, multiplied by the structural length assume successive refractive power characteristics A, B, C, D, E, which, for a refractive power 1.0 for the entire system are:

A = −0.74±0.26
B = +3.08±0.57
C = −1.80±1.14
D = +2.63±0.76
E = −3.40±1.20,

structural length being taken as the distance from the first vertex of the first lens to the image plane of the objective; the first part comprising a first member primarily of material of glass range 1 and having a refractive power proportional to the value A, followed by a second member of material primarily from glass range 2 and having a refractive power proportional to the value B; the second part comprising a member primarily of material of glass range 3 and having a refractive power proportional to the value C; the third part comprising a member primarily of material of glass range 4 and having a refractive power proportional to the value D; the fourth part comprising a member primarily of material of glass range 5 and having a refractive power proportional to the value E; the proportionality factor being the reciprocal of the structural length of the objective; said objective being further characterized by relationships between said refractive power characteristics such that:

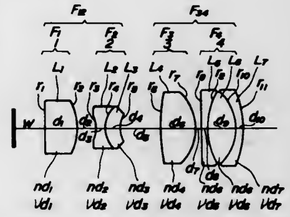
B+C = 1.34±1.0, and
D+E = −0.80±0.87.

3,883,231

OBJECTIVE LENS SYSTEMS FOR USE IN MICROSCOPES

Tsohimichi Koizumi, Tsukui-machi, Kanagawa Pref., Japan, assignor to Olympus Optical Company Limited

Continuation-in-part of Ser. No. 277,821, Aug. 3, 1972, abandoned. This application Nov. 5, 1973, Ser. No. 412,725
Claims priority, application Japan, Aug. 4, 1971, 46-58354
Int. Cl. G02b *9/34*
U.S. Cl. 350—220 **5 Claims**



1. An objective lens system for use in microscopes, which is constructed as four lens components and seven lenses, comprising: a first component consisting of a first lens having

a positive refractive power and being made of general optical glass having a high refractive index and a low Abbe's number; a second component having a negative refractive power and being made of general optical glass, consisting of a biconcave second lens cemented to a positive meniscus third lens; said first and said second components constituting a front lens component system having a negative refractive power; a third component consisting of a biconvex fourth lens having a positive refractive power and being made of optical crystal or general optical glass having a high Abbe's number; and a fourth component having a positive refractive power, including a sixth lens having a positive refractive power and being made of optical crystal or general optical glass having a high Abbe's number, held between a fifth and seventh lens, the latter two having a negative refractive power and being made of general optical glass, said fifth lens being a negative lens cemented to said sixth and said seventh lenses, being respectively a biconvex and a negative meniscus lens; said third and said fourth components constituting a rear lens component system having a positive refractive power; and all lenses being arranged in succession from the side of an object, and which is defined by the following conditions:

(1) $nd_1 \geqq 1.73, \nu d_1 \leqq 4.0, 0.8 > \frac{F_1}{F'} > 0.37, \frac{r_1}{F'} \geqq 1;$

(2) $15 \geqq |\nu d_2 - \nu d_3|, \nu d_2 \geqq 50, nd_2 \geqq 1.55,$
$0.25 \geqq \frac{r_4}{F'} \geqq 0.1, 0.25 > \frac{|F_2|}{F'} > 0.14;$

(3) $\nu d_4 \geqq 70, 0.7 > \frac{F_3}{F'} > 0.4;$

(4) $3 \geqq \frac{F_4}{F'} \geqq 1.5, \frac{|r_8|}{F'} \geqq 10, \nu d_6 \geqq 70;$

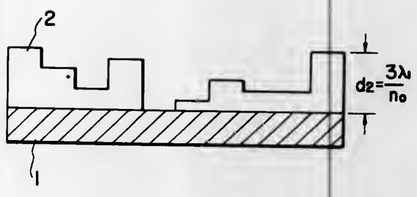
(5) $0.3 > \frac{d_5}{F'} > 0.12;$ and

(6) $1.5 > \frac{|F_{12}|}{F'} > 0.4, 0.8 > \frac{F_{34}}{F'} > 0.3$

where F' is a focal length of the total lens system, F_1, F_2, F_3 and F_4 are respective focal lengths of said first, said second, said third and said fourth components, F_{12} and F_{34} are respective composite focal lengths of said front and said rear lens component systems, $r_1, r_2, \ldots r_{11}$ are radii of curvatures of the successive lenses counted from the first component, $d_1, d_2, \ldots d_{10}$ are axial thicknesses of or air spaces between the successive lenses, $nd_1, nd_2, \ldots nd_7$ are refractive indexes, and $\nu d_1, \nu d_2, \ldots \nu d_7$ are respective Abbe's numbers of said lenses.

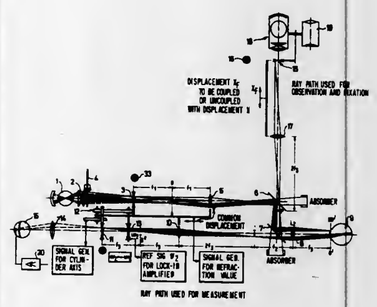
3,883,232
RANDOM PHASE PLATE AND OPTICAL SYSTEM INCORPORATING SAID PLATE
Yoshito Tsunoda, Hachioji, Japan, assignor to Hitachi, Ltd.
Filed Dec. 3, 1973, Ser. No. 421,350
Int. Cl. G02b *5/18, 5/22*
U.S. Cl. 350—314 **4 Claims**

1. A random phase plate comprising:
a plurality of phase shifting elements disposed adjacent one another in a random arrangement, and having a plurality of different effective optical thicknesses, so as to provide random phase shifts to the respective spectral components of a multi-chromatic light beam incident thereon, and wherein the optical thickness of those elements which have the maximum optical thickness among said



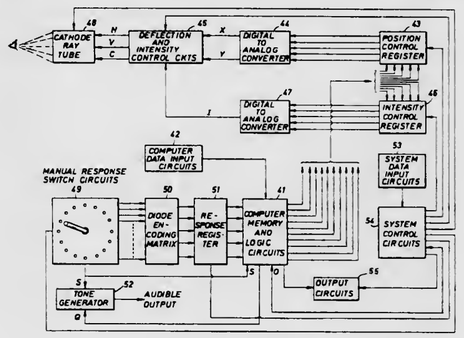
plurality of elements is an integral multiple of each of the spectral components of said multi-chromatic light beam.

3,883,233
AUTOMATIC, RECORDING REFRACTOMETER
Gunther Guilino, Munich, Germany, assignor to Optische Werke G. Rodenstock
Filed Dec. 21, 1973, Ser. No. 427,114
Claims priority, application Germany, Dec. 22, 1972, 2262886
Int. Cl. A61b *3/10;* **G01b** *9/00*
U.S. Cl. 351—6 **11 Claims**



1. An automatic, recording refractometer for determining visual defects comprising:
first means for directing the image of a first rotatable test figure along a first prescribed optical path into the eye;
second means for directing the image from the retina of the eye along a second optical path through a second rotatable test figure;
third means for projecting the image of a fixation marker into said second optical path;
fourth means, responsive to light passing through said second rotatable test figure from the eye, for providing a measurement of visual anomalies of the eye;
fifth means, coupled to said test figures, for effecting a relative displacement of said test figures in such a way that the image of the first rotatable test figure reflected from the retina of the eye under examination is focused on the second rotatable test figure; and
sixth means for coupling the displacement of said fixation marker in an optional manner with said fifth means.

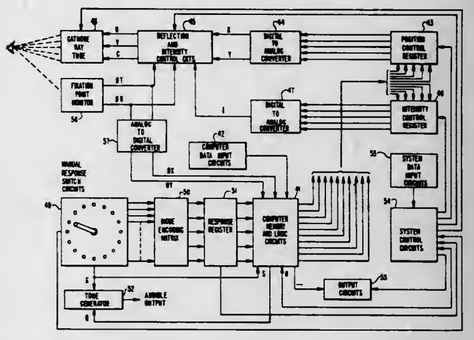
3,883,234
COMPUTER CONTROLLED APPARATUS FOR AUTOMATIC VISUAL FIELD EXAMINATION
John R. Lynn, 10001 Preston Rd., Dallas, Tex. 75230, and George W. Tate, Jr., 121 C Artillery Post Dr., Houston, Tex. 78234
Division of Ser. No. 54,289, July 13, 1970, Pat. No. 3,705,003. This application Dec. 4, 1972, Ser. No. 311,533
Int. Cl. A61b *3/02*
U.S. Cl. 351—23 **13 Claims**



1. Apparatus for testing the visual field of a subject comprising:
means for presenting under machine control at selected locations on a test field at test point locations selected from a test array momentary, stationary spots of light, each having a stimulus value selected from a group of discrete stimulus values;
subject response means manually operable by the subject for providing an output indicating the sector relative to a fixation point on the test field in which the subject indicates a spot was perceived; and
means, responsive to the output of said subject response device for automatically determining whether the subject correctly perceived a given spot presented on the test field by determining if said given spot was presented within n sectors of the sector indicated by the output of the subject response device, where n is an integer;
said means for presenting further including means for presenting at said selected locations additional momentary, stationary spots of light of selected stimulus values until, for each location, a threshold value is detected at each location at which any spot presented correctly perceived or a spot of maximum stimulus value selected from said group is presented at locations at which no spot was correctly perceived.

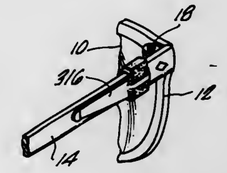
3,883,235
AUTOMATIC VISUAL FIELD EXAMINATION INCLUDING FIXATION MONITORING COMPENSATION
John R. Lynn, 10001 Preston Rd., Dallas, Tex. 75230, and George W. Tate, Jr., 4323 Brown Apt. 243, Dallas, Tex. 75219
Continuation-in-part of Ser. No. 181,538, Sept. 17, 1971, Pat. No. 3,718,386. This application Feb. 26, 1973, Ser. No. 335,572. The portion of the term of this patent subsequent to Feb. 27, 1990 has been disclaimed.
Int. Cl. A61b *3/02*
U.S. Cl. 351—39 **39 Claims**

1. An automatic machine implemented process for testing the visual field of a subject comprising the steps of:
establishing a test field positioned relative to a predetermined point on a test screen;
determining, under machine control, the instantaneous location of the direction of gaze of the subject relative to the predetermined point;
translating the test field relative to the predetermined point on the test screen when the direction of gaze is not at said predetermined point to reposition the test field relative to the direction of gaze the same as the position of the test field relative to said predetermined point when the test field was initially established;



presenting, on the test screen, under machine control, test stimuli of selected stimulus value at preselected locations in the test field; and
determining whether the subject percieved the test stimuli.

3,883,236
CLIP FOR SPECTACLES
Walter J. Zipper, 463 Mesa Rd., Santa Monica, Calif. 90402
Filed Oct. 19, 1973, Ser. No. 408,579
Int. Cl. G02c *5/16*
U.S. Cl. 351—112 **4 Claims**

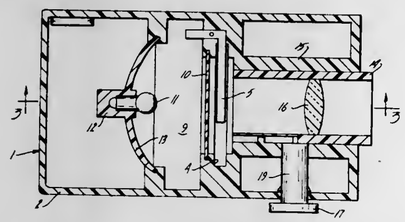


1. In an arrangement wherein a clip is used for releasably securing conventional spectacles having a temple hinged to a lens frame to a person's clothing such as, for example, his shirt or coat pocket wherein the improvement comprises, a clip of cantilever structure, said clip being an elongated strip member with an elastic element encircling one end portion of said strip, and means on said strip retaining said elastic element on said one end portion, said elastic element being stretchable such that said temple may be inserted between said element and said strip with said elastic element then engaging said temple with sufficient frictional contact to prevent slippage of said clip on said temple and with said elastic element then serving as a hinge element for hinging said strip member on said temple.

3,883,237
PANORAMIC IMAGE REPRODUCING APPARATUS
Tristan D. Juergens, Milwaukee, Wis., assignor to The Gates Rubber Company, Denver, Colo.
Filed Aug. 3, 1972, Ser. No. 277,623
Int. Cl. G03b *21/00*
U.S. Cl. 353—10 **6 Claims**

1. An apparatus for viewing a three-dimensional effect image of a single-dimensional substantially planar object, comprising an object carrier means, a lens means constructed for creating a pin cushion distorted image, the lens means mounted and spaced relative to said object carrier and having

the axis of the lens means generally perpendicular to the plane of the planar object, and means for illuminating the object to



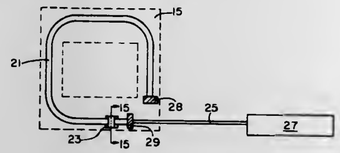
establish corresponding presentation of the planar object through said lens as an image with appreciable pin cushion distortion.

3,883,238

AUDIOVISUAL SLIDES AND APPARATUS

Panayotis C. Dimitracopoulos, P.O. Box N-7776, Nassau, Bahamas

Filed Dec. 26, 1973, Ser. No. 427,590
Int. Cl. G03b *31/06*
U.S. Cl. 353—19 **9 Claims**



1. Means to reproduce and project audiovisual information comprising:

a. support means for fixedly holding an audiovisual record having a projectable image and an information track,

b. optical projection means directed onto said image,

c. rail guiding means facing said track and enantiomorphically following the geometric configuration of said track,

d. a transducer slidably supported by said rail means and cooperable with said track,

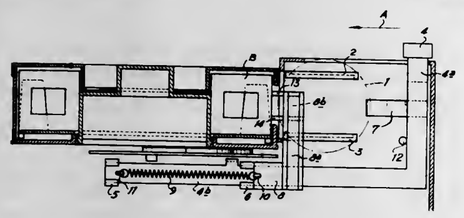
e. moving means for moving said transducer along said rail means and thus carrying said transducer progressively along and in an information-scanning relation to said track.

3,883,239

PHOTOGRAPHIC SLIDE-PROJECTORS

Serge Besancenot, Post of Sevran, Sevran, France

Filed May 11, 1973, Ser. No. 360,379
Claims priority, application France, May 29, 1972, 72.19093
Int. Cl. G03b *23/02*
U.S. Cl. 353—118 **6 Claims**



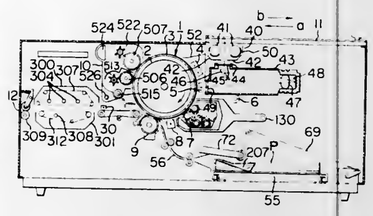
1. A photographic slide-projector of the type incorporating an optical projection system to which the slides are to be fed by forward travel one by one from a magazine and from which they are to be returned one by one to the magazine comprising a movable pusher, a resilient clip carried by said pusher and including flexible limbs able to grip a slide to be projected when the latter is in the magazine so as to extract the slide therefrom and to feed it in front of the optical projection system, first means on said pusher having an aperture in which said limbs are insertable for closing the resilient clip to grip a slide in the clip in this state during forward travel of the pusher, and removable from said aperture for opening the clip upon arrival of the slide in front of the optical system and subsequent forward travel of the pusher beyond said slide being positioned in front of the optical system, and second means for returning the slide, after projection, to the magazine.

3,883,240

ELECTROPHOTOGRAPHIC COPYING MACHINE

Yoshio Ito; Hamime Katayama; Hiroshi Nitanda, all of Tokyo, and Masaru Yamaguchi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 120,132, March 2, 1971, Pat. No. 3,784,297. This application Apr. 5, 1973, Ser. No. 348,093
Claims priority, application Japan, Mar. 11, 1970, 45-20075; Apr. 15, 1970, 45-32112
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 DD **5 Claims**



1. An electrophotographic copying machine comprising a housing,

an original holder reciprocable upon the upper surface of an electrophotographic photosensitive member unit comprising an electrophotographic photosensitive member disposed substantially at the center of said housing and supporting means for rotatably fixing said member,

charging means disposed on one side of said electrophotographic photosensitive member,

an optical exposure system located to one side of said electrophotographic photosensitive member for effecting an image exposure through a slit,

developing means,

fixing means,

cleaning means,

said fixing and cleaning means being disposed on the other side of said electrophotographic photosensitive member,

copy medium feeding means, and

image transfer means, both of which are disposed below said electrophotographic photosensitive member,

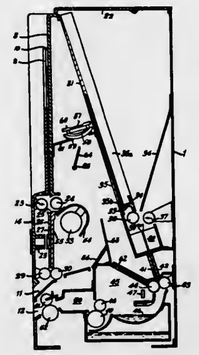
said electrophotographic photosensitive member unit being mounted in said housing so as to be removed upwardly therefrom.

3,883,241

ELECTROPHOTOGRAPHIC COPYING MACHINE AND A BOX-SHAPED MAGAZINE FOR USE IN SUCH A MACHINE

Karl Gustav Zeuthen, Gentofte, Denmark, assignor to Rexomi A/S, Copenhagen, Denmark

Filed May 8, 1973, Ser. No. 358,325
Claims priority, application Denmark, Feb. 10, 1970, 632
Int. Cl. G03g *15/22*
U.S. Cl. 355—3 R **2 Claims**



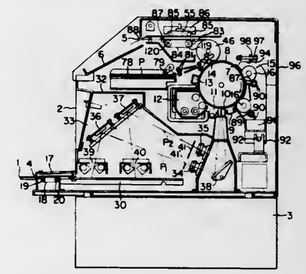
1. A vertical electrophotographic copying machine comprising a vertically extending casing, means in the upper portion of the casing for receiving a stack of copy sheets, means for electrostatically charging a copy sheet having a photosensitive surface, means for feeding said copy sheet and said original from the upper portion of the casing in initially spaced positions in synchronism through the machine to respective ejection openings in the lower portion of said casing, a first substantially vertical transparent member for receiving said original as it passes between the upper portion of said casing and its respective ejection opening, a second transparent member positioned at an acute angle to said first transparent member for receiving said copy sheet as it passes between the upper portion of said casing and its respective ejection opening, an optical system for scanning said original during the movement thereof as it passes said first transparent member and subjecting said copy sheet to exposure as it passes said second transparent member, means to developing the latent electrostatic image on said copy sheet subsequent to exposure, guide means for said original forming a substantially vertical, downwardly directed original travelling path to its ejection opening in the lower portion of said casing, said charging means and said exposing means being likewise arranged along a mainly vertical, downwardly directed copy sheet travelling path, at least one stop member in the path of said original determining the intial position of said original, at least one stop member in the path of said copy sheet, said original and copy sheet being positioned in said original positions by gravity, and means for retracting said stop members from said paths, when the original and the copy sheet, respectively, have been positioned in said initial positions.

3,883,242

ELECTRONIC PHOTOGRAPHIC COPYING MACHINE

Isao Takahashi, Yokohama; Motoharu Fujii, Tokyo; Kazuo Kawakubo, Tokyo; Masao Ariga, Tokyo, and Susumu Sugiura, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 211,276, Dec. 23, 1971. This application July 23, 1973, Ser. No. 381,399
Claims priority, application Japan, Dec. 29, 1970, 45-12721
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 R **1 Claim**



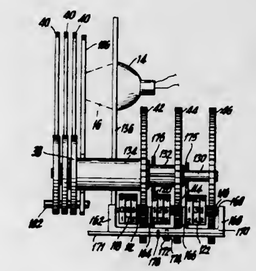
1. An electrophotographic copying machine comprising a repetitively usable electrophotographic photosensitive member; a group of elements including an electrostatic latent image forming means, developing means, transferring means and cleaning means, said elements being disposed sequentially around said photosensitive member, and said developing means and cleaning means being contactable with said photosensitive member; transfer material feeding means; fixing means; a lower main body portion for supporting said photosensitive member, electrostatic latent image forming means, developing means and cleaning means; and an upper main body portion for supporting said transferring means and said fixing means wherein, upon separation of said lower and upper main body portions, said photosensitive member and a path for the transfer material are accessible.

3,883,243

LIGHT COLOR REGULATING APPARATUS

Louis L. Weisglass, New York, N.Y., and Robert A. Flieder, Englewood Cliffs, N.J., assignors to Berkey Photo, Inc., New York, N.Y.

Filed Sept. 25, 1973, Ser. No. 400,646
Int. Cl. G03b *27/76*
U.S. Cl. 355—35 **29 Claims**



1. A color control apparatus, comprising

a housing;

light source means replaceably mounted in said housing for forming a light beam;

color filter means movable at least partially into the path of the beam for coloring at least a portion of the beam and

leaving the remainder of the beam uncolored when only a portion of the beam is colored;

chamber means in the path of the beam beyond the filter means for mixing the colored portion of the beam with the remainder of the beam so as to produce a light whose color and density vary in response to the color of the filter means and the extent to which the filter means intercepts the beam;

control means coupled to the filter means for moving the filter means into and out of the beam along a continuous path between limits which define the maximum and minimum color densities of the colored light produced by the chamber means so as to control the color density of the color produced by the chamber means;

readout means coupled to said control means for displaying a reading indicating the extent to which filter means has been moved between the limits and hence the color density of the light which the chamber means produces;

said source means being replaceable so as to result in change in the character of the beam relative to said filter means;

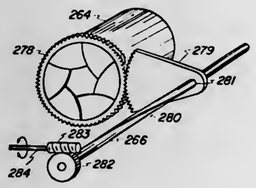
said control means being settable to a first position for one source means creating one beam and to a second position for another source means changing the character of the beam;

decoupling means engaging said readout means for decoupling the readout means from said control means to permit matching of a given reading for a predetermined color and density set by the control means and for recoupling said control means and said readout means thereafter.

3,883,244
APERTURE ADJUSTMENT IN OPTICAL ASSEMBLY

Raymond Whitaker, Leeds, and Bryan S. Haslam, Harrogate, both of England, assignors to Xerox Corporation, Stamford, Conn.

Filed June 19, 1973, Ser. No. 371,457
Claims priority, application United Kingdom, June 23, 1972, 29652/72
Int. Cl. C03b *27/72*
U.S. Cl. 355—71 **2 Claims**



1. Optical apparatus for projecting an image of an object and including:

a lens assembly disposed along an optical axis and movable therealong relative to said object to vary the magnification of said image relative to said object,

a variable aperture iris diaphragm disposed on said lens assembly to control the rate of light exposure therethrough and an external gear operatively connected to said iris diaphragm and rotatable relative to said lens assembly,

a stationary bearing shaft extending parallel to said optical axis, said lens assembly being operatively connected to said stationary shaft for sliding movement therealong,

a biasing shaft extending parallel to said optical axis,

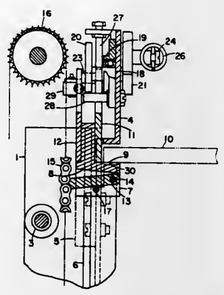
a drive pinion keyed to said biasing shaft for combined rotation and axial movement in a helical locus relative to said biasing shaft, said drive pinion being in operative engagement with said external gear and effective to rotate said external gear when said lens assembly, said gear and said pinion move along said optical axis,

whereby said variable aperture iris diaphragm is adjusted in response to movement of said lens assembly along said optical axis.

3,883,245
MECHANISM FOR STOPPING A CONTACT SCREEN AT A PREDETERMINED POSITION IN A PROCESS CAMERA

Eiji Miyasaka, 489-1, Takamiya-cho; Kenichi Yonemaru, 480-1, Takamiya-cho, and Kojiro Henmi, 148-2, Hirata-cho, all of Hikone, Japan

Filed Oct. 1, 1973, Ser. No. 402,209
Claims priority, application Japan, Oct. 6, 1972, 47-99793
Int. Cl. G03b *27/66*
U.S. Cl. 355—71 **5 Claims**

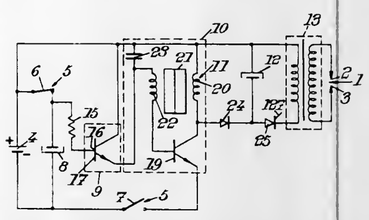


1. A mechanismm for stopping a contact screen in a process camera correctly at a predetermined position, comprising sliders arranged movable up and down while carrying a contact screen retainer bar thereon, driving means with play for driving said sliders, a switch to deactuate said driving means and a rocker member and further characterized in that when said sliders are raised up and said rocker member is accordingly pushed up by a part thereof to a point beyond the dead center, said rocker member is turned additionally by a spring, and during this additional turn said rocker member engages a part of said sliders with parts of said sliders to move the latter to their stoppage position.

3,883,246
ELECTRONIC DEVICE ADAPTED TO PRODUCE HIGH VOLTAGE-PULSES, ESPECIALLY FOR IGNITING A GAS LIGHTER

Henri Edouard Francois Marie Courier de Mere, Paris, France, assignor to Bicosa-Societe de Recherches, Clichy (Haut-de-Seine), France

Filed Jan. 22, 1973, Ser. No. 325,891
Claims priority, application France, Jan. 25, 1972, 72.002407; Apr. 12, 1972, 72.012833; July 7, 1972, 72.024714; Dec. 11, 1972, 72.043967
Int. Cl. F23q *2/28*
U.S. Cl. 431—264 **31 Claims**



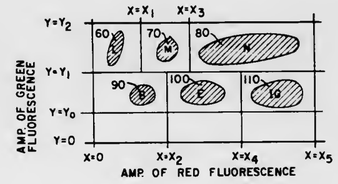
1. An electronic ignition device for igniting fuel in cigarette lighters, gas burners and other fuel-consuming apparatus of the type provided with a burner unit and a spark gap arranged

in proximity to the burner unit, comprising, in combination, a D.C. voltage source; voltage raising means connected to said source and to said spark gap and operative for generating a spark voltage across said spark gap, said voltage raising means including oscillator means connected to said source and operative for converting the D.C. voltage of said source into an oscillating voltage having a maximum voltage value higher than the voltage value of said D.C. voltage; switch means having an activated condition and an unactivated condition, and being operative when activated for initiating operation of said oscillator means to cause said voltage raising means to generate a spark voltage across said spark gap; and terminating means operative when said switch means remains in activated condition for automatically terminating operation of said oscillator means upon elapse of a predetermined time interval following the initiation of operation of said oscillator means.

3,883,247
METHOD FOR FLUORESCENCE ANALYSIS OF WHITE BLOOD CELLS

Lawrence R. Adams, Mahopac, N.Y., assignor to Bio/Physics Systems, Inc., Mahopac, N.Y.

Filed Oct. 30, 1973, Ser. No. 410,994
Int. Cl. G01n *1/30*
U.S. Cl. 356—39 **23 Claims**



22. A method for classifying vital white blood cells amoung the groups of lymphocytes, monocytes, neutrophils, basophils, eosinophils and immature forms of granulocytes, said method comprising the steps of:

a. combining a fresh blood sample with a hypotonic colloidal solution of a metachromatic fluorochrome dye at a physiologically normal pH; and

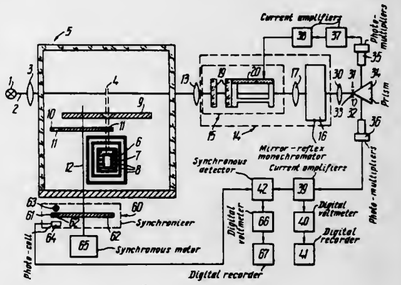
b. distinguishing the groups of white blood cells by measuring the magnitudes of metachromatic fluorescences from the individual cells in response to optical radiation.

3,883,248
METHOD AND APPARATUS FOR MEASURING CONCENTRATION OF SUBSTANCE IN ITS GASEOUS PHASE

Vadim Izrailovich Rakhovsky, ulitsa Mashinostroenia, 2/7, korpus 1, kv. 68; Gennady Izrailovich Stotsky, bulvar generala Karbysheva, 22, kv. 50; Maria Andreevna Mazing, ulitsa Kerchinskaya, 32, kv. 37, all of Moscow, and Valery Mikhailovich Shustryakov, MFTI, korpus 7, kv. 413, Dolgoprudny Moskovskoi Oblasti, all of U.S.S.R.

Filed Aug. 31, 1972, Ser. No. 285,194
Claims priority, application U.S.S.R., June 13, 1972, 1797587; June 13, 1972, 1797588
Int. Cl. G01j *3/42*
U.S. Cl. 356—85 **10 Claims**

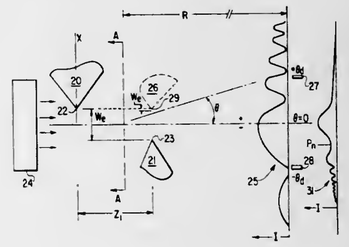
1. A method of measuring the concentration of a substance in its gaseous phase, said method comprising the steps of: continuously passing a luminous flux emitted by a source of light through a target containing the substance being measured in its gaseous phase, the substance being disposed in said target as a periodically interrupted atomic beam; absorbing by said atomic beam a portion of radiation emitted by said luminous flux each time said atomic beam interferes with said flux, thereby generating an alternating component of said luminous flux; passing said luminous flux without absorption; isolating a radiation spectrum section of said source of light including the whole absorption line of the substance involved; converting the luminous flux corresponding to said isolated spectrum section into an electric signal; repeatedly storing the alternating component of the electric signal in synchronism with the interruption of said atomic beam, thereby increasing the portion of useful signal in noise; and determining the ratio of said electric signal to a signal corresponding to the luminous flux passed through said target without being absorbed, proportional to the concentration of the substance being measured in its gaseous phase.



3,883,249
Z-FACTOR AND OTHER DIFFRACTOGRAPHIC DISPLACEMENT AND PROFILE SENSORS

Timothy R. Pryor, P.O. Box 2093, Windsor, Ontario, Canada (N8Y 4R5)

Continuation-in-part of Ser. Nos. 253,421, May 15, 1972, and Ser. No. 256,099, May 23, 1972, Pat. No. 3,797,939, and Ser. No. 329,121, Feb. 2, 1973. This application May 9, 1973, Ser. No. 358,547
Int. Cl. G02b *9/02*
U.S. Cl. 356—109 **39 Claims**



1. A method of determining the relative position of at least two boundaries comprising the steps of:

directing electromagnetic waves onto at least one first boundary to produce a first diffraction wave;

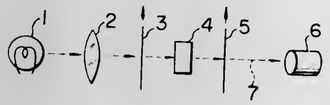
directing electromagnetic waves onto at least one second boundary to produce a second diffraction wave, said second boundary being spaced from said first boundary in the direction of propagation of said electromagnetic waves, said first and second diffraction waves interacting to produce an interference pattern; and

determining from said interference pattern the relative position of said first and second boundaries, in a direction transverse to said direction of propagation, or in said direction of propagation, or in both of said directions.

3,883,250
METHOD OF OPTICALLY MEASURING THE ABSORPTION OF LIGHT HAVING A SPECIFIC WAVELENGTH BY A SAMPLE, BY ADJUSTING THE OUTPUT OF A DETECTOR RESPONSIVE TO LIGHT HAVING WAVELENGTHS LONGER THAN THE SPECIFIC WAVELENGTH TO A ZERO LEVEL

Nobumitsu Unuma, Tokyo, and Yasushi Nomura, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed July 5, 1973, Ser. No. 376,274
Claims priority, application Japan, July 7, 1972, 47-67507
Int. Cl. G01j 3/48
U.S. Cl. 356—184 **7 Claims**



1. A method of optically measuring the absorption of light having a specific wavelength by a sample comprising the steps of:

a. directing a beam of light along a prescribed path to light detecting means;

b. inserting into said beam of light a substantially monochromatic filter, said filter effectively transmitting light at substantially said specific wavelength;

c. inserting into said beam of light, optically in series with said monochromatic filter, a selective filter which effectively passes light at wavelengths other than at said specific wavelength, and which effectively blocks light at said specific wavelength;

d. adjusting the output of said light detecting means to a zero level in response to the light passing through both said substantially monochromatic filter and said selective filter;

e. removing said selective filter from said beam of light;

f. inserting into said beam of light, optically in series with said monochromatic filter, a sample which effectively absorbs light having said specific wavelength but effectively transmits light containing wavelengths other than said specific wavelength; and

g. measuring the absorption of light of said specific wavelength by said sample by measuring the output of said detecting means, in response to the light passing through both said substantially monochromatic filter and said sample.

3,883,251
SINGLE PHOTO EPIPOLAR SCAN INSTRUMENT

Unno V. Helava, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 12, 1974, Ser. No. 460,637
Int. Cl. G01n 21/22
U.S. Cl. 356—203 **16 Claims**

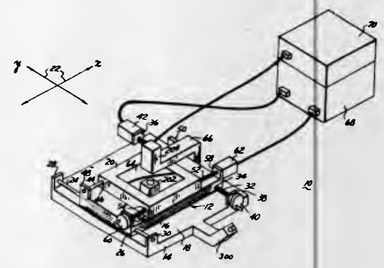
1. A scan instrument for generating image data from a single photographic image along epipolar lines and storing the image data for subsequent data processing and map making comprising:

a rigid base;

stage means attached to said base for providing translatory motion along at least two mutually perpendicular axes relative to said base, said stage means adapted to receive said photographic image and translate said image along said mutually perpendicular axes;

microdensitometer means fixedly attached to said base for detecting the image details within a predetermined area on the photographic image and generating electrical signals indicative of the detected image details;

control means for actuating said stage means to translate said photographic image relative to said densitometer causing said microdensitometer means to generate electrical signals indicative of the image details along a predetermined set of epipolar lines on the photographic image; and

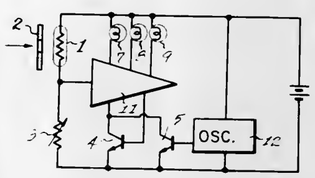


means for storing the electrical signals generated by said microdensitometer means.

3,883,252
EXPOSURE METER DEVICE

Hirokazu Ando, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1973, Ser. No. 392,231
Claims priority, application Japan, Aug. 29, 1972, 47-100836
Int. Cl. G01j 1/42
U.S. Cl. 356—227 **4 Claims**



1. An exposure meter device for indicating which one of a plurality of exposure ranges has been selected as the one into which an exposure amount has been regulated, which comprises:

a plurality of electrically energizable illuminative elements for displaying a visual indication of the selected exposure range, at least a first one of the elements being exclusively pre-assigned to indicate a pair of exposure ranges that differ slightly and grossly respectively from a normally optimum exposure range, one of the pair being indicated by flickering of the first element, the other of the pair being indicated by continuous illumination of the first element;

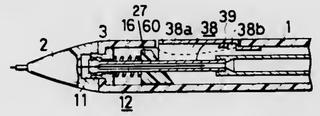
photosensitive transducing means for providing an electrical signal indicative of the regulated exposure amount, electrical signal varying relative to a plurality of threshold values that define a plurality of electrical signal ranges each of which corresponds to a different one of the exposure ranges; and

circuit means coupled to receive the electrical signal and responsive to the electrical signal's value relative to the threshold values for selectively energizing the illuminative elements so that they display the visual indication, the circuit means including a first circuit having a plurality of output terminals, each of a first plurality of the output terminals being connected to a different one of the elements, the first circuit operating to connect on a one-at-a-time basis any one of the elements into a current flow path, and the circuit means further including switching means in the current flow path and controllable by the first circuit either to maintain a steady current flow or to cause pulsating current flow and thereby cause either continuous or flickering illumination of the selected element.

3,883,253
MECHANICAL PENCIL

Takeo Naruse, Saitama; Junichi Hashimoto, and Hideaki Oikawa, both of Tokyo, all of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1973, Ser. No. 334,731
Claims priority, application Japan, Mar. 3, 1972, 47-26301; July 10, 1972, 47-81359; July 10, 1972, 47-81360; Nov. 10, 1972, 47-129536
Int. Cl. B43k 2/16
U.S. Cl. 401—65 **3 Claims**



1. In a push type mechanical pencil comprising an outer casing; an inner casing having at its fore end a lead gripping chuck means and also formed with a lead passage communicated with said chuck means and a spare leads housing tube communicated with said lead passage; and a spring means adapted to press said inner casing rearwardly along its axis, wherein said push type mechanical pencil further comprises a fore larger hole and a rear smaller hole both formed in alignment through said outer casing and defined by a bridge formed integral with said outer casing, said fore larger hole being formed at a place where a user's fingertip is positioned when the user grasps said outer casing, an elastic push plate adapted to normally lie covering said holes along the external surface of said outer casing, said push plate being bent in L-shape at its rear end portion and tailed in said rear smaller hole such that said push plate is bendable about said bridge, said push plate having side walls suspending from both sides of its fore end portion and extending into the inside of said outer casing, and an engaging member secured to said inner casing at the rear part of said spring and having a tapered surface formed at the rear portion thereof on which the fore edges of said side walls of said push member acts, whereby when the user pushes said push plate downwardly toward the inner casing, the fore edges of said push plate push said engaging member to move forwardly against the resisting force of said spring, thereby pushing out the lead into a writing position.

3,883,254
PORTAL BUSHING FOR PRODUCT CONTAINER

Martin M. Vasas, Fairfield, Conn., assignor to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn.

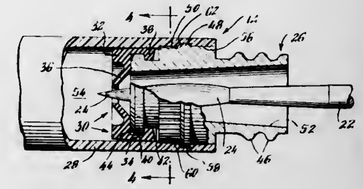
Filed Apr. 5, 1973, Ser. No. 348,104
Int. Cl. A46b 11/00
U.S. Cl. 401—122 **10 Claims**

1. A portal bushing for use with a reservoir body in a reservoir assembly to provide access thereinto for an applicator, said bushing comprising:

a generally cylindrical body with a passage therethrough between a first axial end and a second axial end;

means for affixing a seal around the external periphery of said cylindrical body, said affixing means being disposed on said first axial end; and

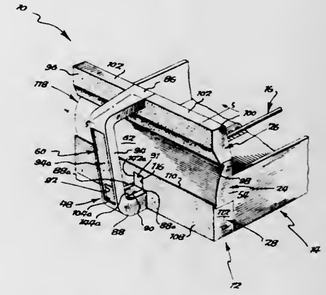
a lip for interlocking with the reservoir body and means for penetrating into the reservoir body, said lip and said penetrating means being disposed on the external periphery of said cylindrical body between said first axial end and said second axial end, said lip being engageable with a groove in the reservoir body to translate thrust forces therebetween and said penetrating means being engageable into a penetrable portion on the reservoir body to translate torsional forces therebetween, said lip and said penetrating means being effective to retain said cylindrical body in the reservoir body with no continual stress being exerted therebetween.



3,883,255
MOLDED PLASTIC FRONT SECTION FOR CARD TRAY AND ASSOCIATED FOLLOWER ROD FRONT END PORTION

Carl H. Little, Jamestown, N.Y., assignor to Weber Knapp Company, Jamestown, N.Y.

Filed Aug. 8, 1973, Ser. No. 386,540
Int. Cl. B42f 13/14
U.S. Cl. 402—61 **6 Claims**



1. In a card tray construction having separately formed front and tray sections, means for connecting a front of said tray section to a rear of said front section to form a completed card tray, and a follower rod rearwardly insertable through said front and tray sections for the purpose of removably supporting cards within said tray section, the improvement wherein said front section comprises in combination:

a generally rectangular rear panel and a generally rectangular composite front panel assembly joined to said rear panel to form said front section, said panel assembly including a central panel element, an upper panel element and a lower panel element, said central panel element having a horizontally extending central band portion, upper and lower connecting portions arranged to upstand and depend from adjacent a mid point of said band portion and an essentially U-shaped drawer pull end connected to upper and lower extremities of said connecting portions so as to forwardly bridge said band portion, said upper and lower panel elements forwardly overlying said upper and lower connecting portions and cooperating with said band portion to form a forwardly facing surface of said front section and to define an open ended recess extending transversely of said forwardly

facing surface for receiving a tray contents identifying card, and said drawer pull and said lower panel element and said lower connecting portion and said rear panel are formed with substantially aligned openings for permitting passage of said follower rod rearwardly through said front section into an inserted position within said tray section.

3,883,256

BALL AND SOCKET JOINTS WHICH DO NOT REQUIRE SERVICING AND HAVE AN OUTER JACKET OF A THERMOPLASTIC, AND PROCESS FOR THEIR MANUFACTURE

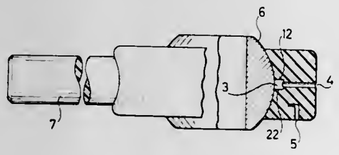
Horst Schmidt, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 27, 1973, Ser. No. 419,190

Claims priority, application Germany, Nov. 29, 1972, 2258355

Int. Cl. F16c *11/06*

U.S. Cl. 403—141 **7 Claims**



7. A ball and socket joint comprising an inner ring and an outer jacket formed of a thermoplastic material, said inner ring being generally spherical in shape and being movably received and mounted in said outer jacket; said outer jacket comprising cooperating male and female parts, said female part having an internal bore formed therein having first and second coaxially aligned sections for respectively receiving a portion of said ring and said male part; said first section of said bore being defined by an annular inner curved surface defining a portion of a sphere having a radius of curvature substantially equal to the radius of curvature of said ring and having its maximum diameter located within said female part; said male part having two opposite sides and an internal bore formed therein for receiving a portion of said ring and an external peripheral surface which is generally complementary to the second section of the bore in said female part; said internal bore of the male part being defined by an inner annular curve defining a portion of a sphere having minimum and maximum diameter portions located respectively on opposite sides of the male part and having a radius of curvature substantially equal to the radius of curvature of said ring whereby said male part may be inserted, in substantially mating engagement, in the second section of the bore of said female part with the side thereof adjacent the maximum diameter of its inner annular curved surface located adjacent the maximum diameter of the inner annular curved surface of the female part to retain said ring therebetween; said male and female parts being secured together by welding in the region of the second bore section of the female part said male and female parts defining an annular groove therebetween adjacent the maximum diameters of their respective inner annular curved surfaces and said female part has a radially extending bore formed therein providing communication between said annular groove and the exterior of the outer jacket through which lubricant may be injected to the ring.

3,883,257

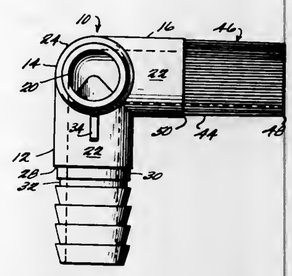
MOLDED JOINT COMPONENT FOR TUBULAR FRAME FURNITURE

Fredrick B. Delafield, Altavista, Va., assignor to The Lane Company, Inc., Altavista, Va.

Filed Nov. 5, 1973, Ser. No. 413,161

Int. Cl. F16b *7/00*

U.S. Cl. 403—172 **1 Claim**



1. A molded joint component for tubular frame furniture such as for joining two tubular metal stretchers which approach one another at an angle in a horizontal plane with a tubular metal leg, said joint component comprising:

an integral tubular molding of acrylonitrile-butadiene-styrene plastic material bearing an exterior bright metallic plating throughout and having the shape of a folded tee wherein two arms of the tee join one another in a horizontal plane and a leg depends from their juncture, the bores of the arms and leg intersecting and intercommunicating at said juncture;

each arm and said leg having a smooth portion at said juncture and leading toward the three respective free ends;

each arm and said leg having a serrated portion axially outwardly of the smooth portion thereof, near the three respective free ends;

means defining an axially outwardly facing, circumferentially extending radial shoulder on each arm and said leg bordering the axially outer extent of the three respective smooth portions;

the serrations and shoulders being disposed to permit the respective arms and leg to be forced into the bores of tubular frame elements to be joined to the extent where the elements abut the respective sholders and are interiorly gripped by the respective serrations;

the serrations on said leg being constituted by a plurality of angularly spaced, longitudinally extending flutes which collectively extend from the free end of the leg to the shoulder and gradually increase in outer diameter from the free end to the shoulder;

the collective outer diameter of the flutes at the shoulder on said leg being smaller than the outer diameter of said shoulder and the arms meeting one another at a right angle and the integral tubular molding further including a horizontal flange extending between the arms at their juncture, whereby a shelf may be supported upon incorporation of the joint component with like others and tubular metal stretchers and legs to constitute tubular frame furniture.

3,883,258

PLASTIC DOWEL PIN AND WOOD JOINT ASSEMBLY

Kenneth E. Hewson, 626 Colony Dr., Troy, Mich. 48084

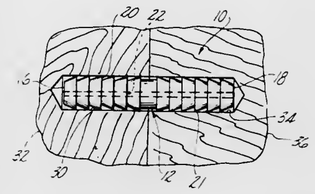
Filed May 24, 1973, Ser. No. 363,349

Int. Cl. F16b *13/00*

U.S. Cl. 403—298 **2 Claims**

1. A dowel pin for connecting two members, each having aligned dowel holes, said dowel pin comprising an elongated body fabricated from a resilient material, the opposite ends of said dowel body being insertable into said dowel holes to join

said members together, said body having a plurality of end-to-end longitudinally aligned truncated cone sections extending from the mid-section of said body to the opposite ends of said body, the larger circular bases of each truncated cone section at the opposite ends of said body having outer diameters that are substantially equal to the dowel holes within which said dowel pin ends are insertable, each larger circular base of each successively inwardly spaced truncated cone section from said end circular bases having outer diameters that are each successively greater than the diameters of said first mentioned larger circular bases by predetermined amounts; the conical surface of each of said truncated cone sections being inclined toward the ends of said body; said mid-section of said



dowel body being of a uniform cylindrical shape, the opposite flat ends of which carry the largest diametered circular bases of the inwardly most aligned truncated cone sections, said mid-section having an outer diameter which is less than the diameter of either of said last mentioned truncated cone section circular bases; a longitudinal slot extending the full longitudinal length of said dowel pin thru the opposite ends of said dowel pin, said body being fabricated from a resilient material, such that said dowel pin peripheral surface adjacent said slot is inwardly compressed as said dowel pin is inserted within said dowel holes, said dowel body exerting an outward force on the larger circular bases of each of said truncated cone sections to lockingly engage said cone sections with the walls of said dowel holes.

3,883,259

SCREEDING BEAM FOR CONCRETE

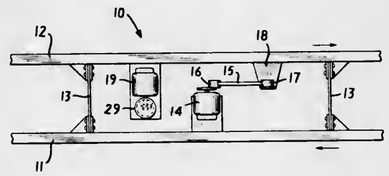
Sture Berg, Solna, and Torsten Fors, Spanga, both of Sweden, assignors to Dynapac Maskin AB

Filed Dec. 6, 1973, Ser. No. 422,307

Claims priority, application Sweden, Dec. 13, 1972, 16244/72

Int. Cl. E04g *21/10*

U.S. Cl. 404—120 **5 Claims**



1. A screeding beam for compacting concrete or similar plastic masses which comprises:

a. two parallel, coplanar beams connected by a flexible assembly comprising leaf springs; and

b. a motor mounted on one of said beams, the shaft of said motor having an eccentrically mounted connecting rod attached to the other of said beams adapted to cause said beams to describe an oscillatory motion relative to one another.

3,883,260

VIBRATION PLATE SYSTEM

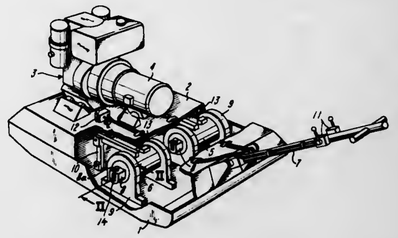
Helmut Heckner, Munich, Germany, assignor to Wacker Werke KG, Munich, Germany

Filed Apr. 29, 1974, Ser. No. 465,256

Claims priority, application Germany, Apr. 30, 1973, 2321761

Int. Cl. E01c *19/30*

U.S. Cl. 404—133 **6 Claims**



1. A vibration plate system which includes: a vibration plate, a surload, cushioning means interposed between said vibration plate and said surload and resting the latter on said vibration plate, said surload comprising an internal combustion engine and an electric generator means drivingly connected to said engine to be driven thereby, electric motor means adapted to be supplied with electric energy from said generator means and including rotor means with rotor shaft means, and means eccentrically supporting said rotor shaft means and together said electric motor means forming unbalance generator means operatively connected to said vibration plate for imparting an unbalance thereon.

3,883,261

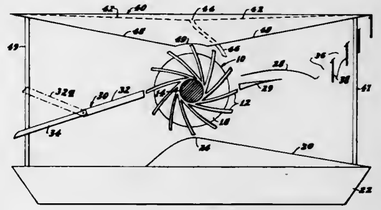
POWER MEANS

Paul E. Saxmann, 6120 E. 21st St., Indianapolis, Ind. 46218

Filed Aug. 13, 1973, Ser. No. 387,686

Int. Cl. F03d *11/04*

U.S. Cl. 415—7 **4 Claims**



1. Power means for obtaining useful power from moving fluid such as water waves or air motion, comprising:

an impeller body member;

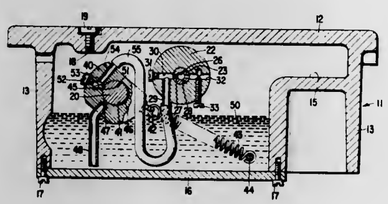
means supporting said impeller body member for rotational motion about a horizontal axis; and

baffle means for guiding the moving fluid to operatively impinge against the impeller body member to impart torque thereto in a certain rotational direction;

in a combination with two vertically-spaced baffles on the side of the impeller body member from which the moving water comes, the upper one having means serving to confine the water so as to operatively impinge against the impeller body member only along the lower portion thereof which produces rotational torque in the said certain rotational direction, and the lower one having means serving to confine the water thus deflected by the upper one to cause it to continue to move to operatively impinge against the impeller body member in a torque-

producing manner in contrast to merely dropping vertically and in effect losing some of its kinetic energy.

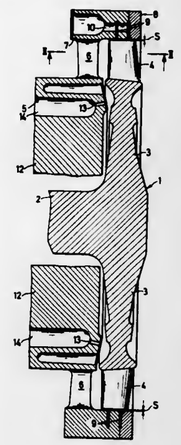
3,883,262
LUBRICANT PUMP FOR SEWING MACHINES
Ulrich Schmedtkord; Roland Franz Saile, both of Karlsruhe, and Reinhold Papajewski, Buchig, all of Germany, assignors to The Singer Company, New York, N.Y.
Filed Oct. 1, 1973, Ser. No. 402,515
Int. Cl. F03b 5/00; D05b 71/00
U.S. Cl. 415—90 1 Claim



1. A lubricant pump for a sewing machine including a rotary actuating shaft with a smooth cylindrical exterior portion, said pump comprising a shaft collar formed with a plain cylindrical bore accommodated with clearance on said smooth cylindrical exterior portion of said rotary actuating shaft, spring means biasing said collar in one direction transversely of said actuating shaft to define a line of closest convergence of said collar bore with said rotating shaft exterior, a lubricant outlet port formed in said collar leading from said line of closest convergence of said collar bore with said smooth cylindrical exterior portion of said rotating shaft exterior, and a lubricant inlet port formed on said collar and leading to said collar bore in angularly spaced relation from said outlet port.

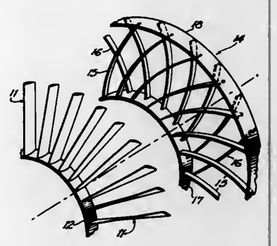
3,883,263
DEVICE FOR COOLING ROTOR BLADES WITH SOLID PROFILE OF MOTOR VEHICLE GAS TURBINES
Horst Mai, Nuremberg, Germany, assignor to Maschinenfabrik Ausburg-Nuremberg Aktiengesellschaft Werk Nuremberg, Nuremberg, Germany
Filed Dec. 20, 1973, Ser. No. 426,911
Claims priority, application Germany, Dec. 21, 1972, 2262597
Int. Cl. F01d 25/08
U.S. Cl. 415—116 2 Claims

1. In combination with a gas turbine rotor of a motor vehicle having a hub and twisted peripheral rotor blades with solid profile, a guide wheel coaxially arranged with said rotor and including: a central section extending around said hub, a peripheral section extending around said rotor blades, and guide blades interconnecting said central section and said peripheral section, annular chamber means radially inwardly of said guide wheel blades and provided with first nozzle means directed and open toward that portion of said turbine rotor which is near to and radially inwardly of said peripheral rotor blades, said annular chamber means being adapted to be connected to a source of cooling air, and second nozzle means provided in said peripheral section and directed at least approximately radially toward the peripheral portion of said peripheral rotor blades, said second nozzle means being



adapted to be connected to a source of compressed cooling air.

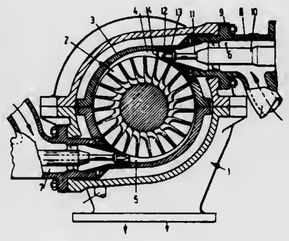
3,883,264
QUIET FAN WITH NON-RADIAL ELEMENTS
Gadicherla V. R. Rao, 450 San Antonio Rd., Woodland Hills, Calif. 94306
Filed Apr. 8, 1971, Ser. No. 132,336
Int. Cl. F01d 5/16, 9/02
U.S. Cl. 415—119 3 Claims



1. In an axial flow apparatus of the type described, in combination:
a rotor unit and a stator unit each comprising a circumferential array of vanes;
said rotor unit being rotatable in axial adjacency to said stator unit for imparting energy to an axial flow through the apparatus;
one of said units having a frame comprising inner and outer supports;
said vanes of one unit including a plurality of non-radial vanes of airfoil cross-section which are similarly oriented in non-radial positions leaning circumferentially away from the radial in a common direction throughout their radial extent; said vanes being secured between said supports;
the vanes of the other unit being oriented in positions angularly related to the positions of said non-radial vanes;
said non-radial vanes comprising a first circumferential array of vanes all similarly oriented in positions leaning circumferentially away from the radial in one direction and a second circumferential array of vanes leaning away from the radial in an opposite direction;

whereby the pulsations created by the vanes of said rotor unit passing the vanes of said stator unit will be attenuated by the radial progressions of the crossings of the relatively moving vanes, thereby reducing noise.

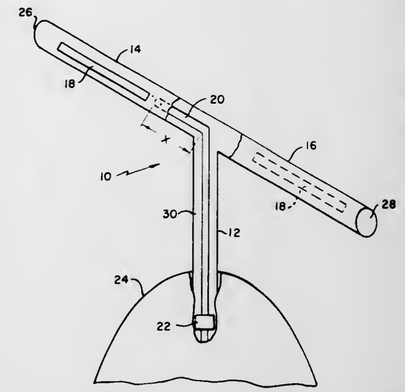
3,883,265
TURBINE
Jan Schrieken, Delden, Netherlands, assignor to Koninklijke Machinefabriek Stork B.V., Hengelo, Netherlands
Filed Sept. 12, 1973, Ser. No. 396,998
Int. Cl. F01b 25/02
U.S. Cl. 415—147 9 Claims



1. A turbine for a compressible medium having at least a first stage wheel which is traversed in the centripetal direction by the driving medium and operates in accordance with the equal pressure principle, said stage being at least partially surrounded by a distribution duct of decreasing cross section, a regulating valve controlling flow into said distribution duct and at which an enthalpy difference of the medium is converted into velocity, said valve comprising a housing provided with a valve body and having a passage which first converges and then diverges and characterised in that in the direction of flow the passage of the valve housing first converges abruptly and then gradually diverges and in that the valve body leaves free, in the closed state, a narrow gap at the area of the smallest section of the housing and extends into the diverging part of the housing by a portion whose sectional area gradually decreases in accordance with a linear function of the place of said section on the longitudinal axis of the valve body and in that in the closed state the valve body is in contact on the upstream side of the converging part with the housing along a common tangential plane which is at an angle to the direction of movement of the valve body, which angle exceeds the friction angle between the valve body and the housing.

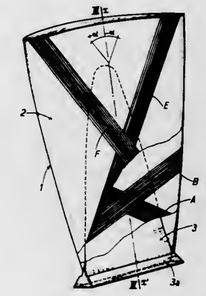
3,883,266
DIFFERENTIAL LIFT CONTROL BY SYNCHRONOUS RESONANT EXCITATION OF AIR COLUMN IN HELICOPTER ROTOR
Herman A. Soulant, Jr., 501 Gilscot Pl., Rockville, Md. 20851
Filed Sept. 24, 1973, Ser. No. 400,107
Int. Cl. B64c 27/72
U.S. Cl. 416—1 1 Claim

1. In a circulation control rotor having hollow blades attached to a hub rotated by some external means, the method of producing cyclic lift which comprises:
matching the rotational speed of the rotor with the natural frequency of vibration of the fluid column in the blades; and



injecting pulses of fluid into the blades at a constant azimuthal position of the rotor.

3,883,267
BLADES MADE OF COMPOSITE FIBROUS MATERIAL, FOR FLUID DYNAMIC MACHINES
Claude Paul Baudier, Antony; Jean Georges Bouiller, Brunoy; Pierre Michel Teysseyre, Paris, and Claude Zabukovec, Brunoy, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France
Filed Aug. 6, 1973, Ser. No. 385,712
Claims priority, application France, Aug. 4, 1972, 72.28342
Int. Cl. F01d 5/14
U.S. Cl. 416—230 5 Claims

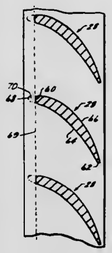


1. In a blade for a fluid dynamic machine, said blade comprising an airfoil section having a root-to-tip centroidal axis and constituted by the superimposition, upon a metal core, of a plurality of superimposed layers of composite fibrous material, and a root section constituted by a metal portion integral with and projecting from said metal core beyond said airfoil section, the improvement wherein said layers of composite fibrous material are arranged each with an orientation such that the angle α made between the general direction of the fibers in a layer and said axis of the blade, diminishes, in absolute value, from a maximum value for the innermost layer or layers which are next to the core, to a minimum value for the outermost layer or layers which are next to the surface of the airfoil section.

3,883,268
BLUNTED LEADING EDGE FAN BLADE FOR NOISE REDUCTION

Robert C. Evans, and Donald K. Dunbar, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 194,285, Nov. 1, 1971, abandoned. This application Aug. 29, 1973, Ser. No. 392,508
Int. Cl. F01d *5/14*
U.S. Cl. 416—223 **5 Claims**

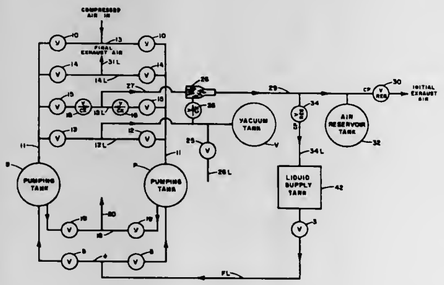


1. In a gas turbine engine of the type which includes rotating turbomachinery, a combustion section, and an exhaust nozzle adapted to provide a propulsive force, the improvement comprising:
a rotatable disc; and
a plurality of turbomachinery rotor blades carried by said disc and having leading edges at least a portion of which include blunting means for reducing the noise generated by the rotation of said blade, and wherein said leading edges of said blades are generally coplanar.

3,883,269
LIQUID TRANSFER SYSTEM

Robert C. Wolff, 955 Crystal St., New Orleans, La. 70124

Filed Nov. 1, 1973, Ser. No. 411,848
Int. Cl. F04f *1/06;* **B63b** *27/00;* **F16k** *15/00*
U.S. Cl. 417—122 **15 Claims**

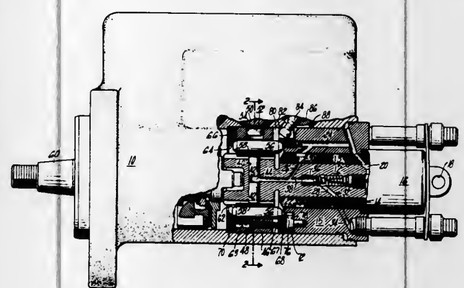


1. A transfer system for pumping material in the form of a liquid, slurry or the like comprising:
at least two pumping chambers;
a material supply tank containing the material to be transferred;
a common discharge line for said pumping chambers;
material inlet means connected between said supply tank and said pumping chambers for alternately filling said pumping chambers with the material to be transferred;
material outlet means connected between said pumping chambers and said common discharge line for alternately transferring the material from said pumping chambers to said common discharge line;
fluid pressure head means connected to said pumping chambers for supplying a pumping fluid pressure head to said pumping chambers for forcing the material out of said pumping chambers;
fluid exhaust line means connected to said pumping chambers for exhausting the pumping fluid pressure head from the pumping chambers after the material has been forced out of them;
control means connected to said pumping chambers for controlling said inlet means, said outlet means, said fluid pressure head means and said fluid exhaust line means in proper sequence; and
supply tank fluid line means connected between said exhaust line means and the material supply tank for increasing the static pressure head in said material supply tank; whereby the rate of flow of the material to said pumping chambers is increased and complete emptying of the material supply tank is enhanced.

3,883,270
FUEL PUMP

Leonard N. Baxter, Windsor, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Mar. 22, 1974, Ser. No. 453,572
Int. Cl. F04b *49/00, 17/02*
U.S. Cl. 417—214 **11 Claims**



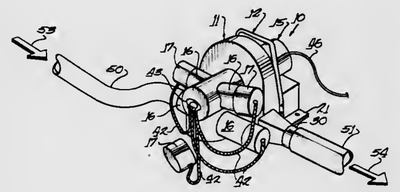
1. In a fuel pump for an internal combustion engine with a housing having inlet and outlet passages, a fuel distributing rotor journaled in a bore in the housing and having an inlet port and an outlet port which communicate alternately with said inlet and outlet passages during the rotation of said rotor to permit alternate admission and discharge of fuel, plungers slidably mounted in radial passages of said rotor to sequentially pressurize charges of fuel for delivery through said outlet passages, a cam ring surrounding said rotor in the plane of revolution of said plungers and having an inwardly directed contour formed by cam lobes, roller shoes engagable with the ends of said plungers mounting rollers which act as cam followers for translating the cam contour into reciprocable movement of the plungers, and positive mechanical means for regulating the quantity of fuel to be injected per pumping stroke, the improvement wherein said regulating means comprises a pair of cone rings having generally conical inner surfaces engagable with each end of the rollers and means for moving said cone rings axially relatively to each other for adjusting the outward movement of the rollers.

3,883,271
PORTABLE EXHAUST FUMES EXPELLER DEVICE

Kenneth J. Mertes, 1831 4th St. South, Wisconsin Rapids, Wis. 54494

Filed Jan. 21, 1974, Ser. No. 434,969
Int. Cl. F04b *21/00*
U.S. Cl. 417—234 **3 Claims**

1. A portable exhaust fumes expeller device adapted for use with one or more vehicles having their engines running in an enclosed shop and the like for discharging the exhaust gases from such vehicles to a desired location exteriorly of the shop, the device comprising:
a housing having an air tight chamber defined therein and including an intake aperture and an outlet aperture associated with said chamber;
a centrifugal squirrel cage blower fan disposed in said chamber and operable in a manner to draw air into the chamber through said inlet aperture and discharge said air from said chamber out of said outlet aperture;
an electric motor mounted on said housing and having a shaft extending outwardly therefrom through a suitable opening in said housing to be connected axially of said blower fan to effect the rotation of said fan about its axis in said chamber;
means adapted to provide electrical energy to said electric motor for effecting the energization thereof;
an elongated hollow cylindrical tubing having one end affixed in an air tight manner to said housing inlet aperture with said tubing extending outwardly therefrom said terminating in a closed end spaced therefrom;
a plurality of longitudinally extending open ended hollow pipes spaced angularly about the circumference of said cylindrical tubing and projecting outwardly therefrom, each pipe having one end affixed in an air tight manner to said tubing with the opposite end defining an intake port opening;
a plurality of elongated cylindrical hollow cap members having a closed end and an open end and adapted to be

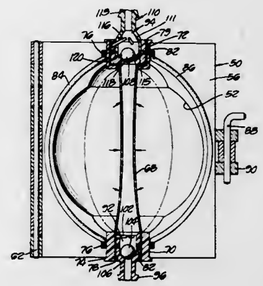


axially aligned with an associated one of said pipes and inserted snugly thereover in a telescopic manner to seal the intake port end of said pipe, a cap being provided for each of said pipes;
a plurality of flexible means each having one end affixed to a hook member on said housing with the opposite end of each flexible member affixed to the closed end of an associated cap;
a longitudinally extending open ended hollow discharge tubing having one end affixed to said housing outlet aperture with the opposite end extending outwardly therefrom;
a handle member affixed to said housing and adapted for use in the transporting of the device between locations; and
a plurality of longitudinally elongated flexible tubings each adapted to have one end affixed to a tail pipe of a vehicle with the opposite end affixed to one of said intake ports of said pipes with at least one flexible tubing having one end affixed to said discharge end of said discharge tube with the opposite end extending outwardly of the shop to a location exteriorly of the shop whereby operation of the fan creates a partial vacuum in the chamber which is transmitted through the interconnected cylindrical members and pipe members and flexible tubings to the vehicle tail pipe for the drawing of exhaust fumes from a running engine of the vehicle through the device to discharge the same through the discharge tubing and discharge hosing to a safe location exteriorly of the shop.

3,883,272
HYDRAULIC PUMP WITH REPLACEABLE PUMPING MEMBER

Benjamin V. Puckett, 13529 Charlwood Cir., Cerritos, Calif. 90701

Filed Apr. 16, 1973, Ser. No. 351,461
Int. Cl. F04b *9/08, 35/02, 43/08*
U.S. Cl. 417—383 **5 Claims**



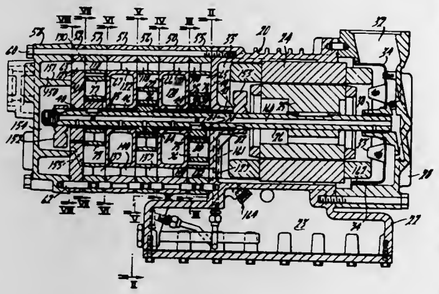
1. A pumping device comprising:
a fluid casing having opposite end walls, each of said end walls having means defining openings extending therethrough;
said fluid casing comprising a pair of casing members detachably connected to one another;
each of said casing members having an inner wall, and means defining a cavity in said inner wall of each of said casing members;
said cavities in said inner walls of said casing members cooperating with one another, when said casing members are connected to one another with their inner walls facing one another, to define a fluid chamber in said casing;
a fitting disposed in each of said openings in each of said end walls of said casing;
a generally tubular, impervious elastic member disposed between said fittings and extending through said fluid chamber in said casing;
said generally tubular, impervious elastic member having end portions connected to said fittings and being in sealing engagement therewith, thereby the interior of said generally tubular, impervious elastic member is fluid-isolated from the fluid chamber surrounding the elastic member;
said generally tubular, impervious elastic member and said fittings to which the ends of said elastic member are sealingly connected defining a disposable unit which may be selectively inserted in place in said casing or removed from said casing when said casing members are disconnected from one another;
means connecting the interior of said fluid chamber to means creating alternately positive and negative pressure in said fluid chamber to intermittently expand said generally tubular, impevious elastic member in said fluid chamber; and
valve means disposed in each of said fittings to permit a fluid-to-be-pumped to enter one end wall of said casing and into said generally tubular, impervious elastic member when said elastic member is expanded and to permit such fluid-to-be pumped to be discharged through the other end wall of said casing when said elastic member returns to its original, non-expanded condition.

3,883,273

ROTARY CHAMBER-TYPE COMPRESSOR

Robert W. King, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Continuation-in-part of Ser. No. 193,651, Oct. 29, 1971, abandoned. This application Oct. 18, 1972, Ser. No. 298,196
Int. Cl. F04b 17/00; F04c 23/00
U.S. Cl. 417—410 29 Claims



1. In a rotating chamber-type pumping device including a body structure having a cavity therein and having an end wall, a rotor in the cavity having a compound movement which is the resultant of two circular components of rotation about parallel axes at different angular velocities whereby rotating chambers of changing volume are created in areas of the cavity lying radially outside the peripheral wall of the rotor, a fluid inlet orifice in the end wall communicating with a suction chamber-defining area of the cavity outside the peripheral wall of the rotor, an outlet port in the body structure communicating with the exterior and with a compression chamber-defining area of the cavity, a check-type outlet valve controlling flow through said outlet port, a shaft for driving said rotor, said end wall extending radially outwardly a substantial distance beyond said orifice, a second pumping device located on the opposite side of the body from said end wall and also drivable by said shaft; the improvement comprising the rotor being hollow and said inlet orifice extending through said end wall within the peripheral path of and discharging into the interior of the rotor of the first-mentioned pumping device, an additional inlet orifice extending through said body structure radially outwardly of said cavity, a chambered divider member between the first and second pumping devices having passage portions therein communicating with said additional inlet orifice and with said second pumping device to supply fluid to the latter, and a transfer port in said divider member segregated from said passage portions and openings into the cavity of said first mentioned pumping device at positions both inwardly and outwardly of the peripheral wall of the rotor, on the side of the rotor opposite said end wall, to transfer fluid from the hollow interior of the rotor to a suction area of the cavity outside the periphery of the rotor.

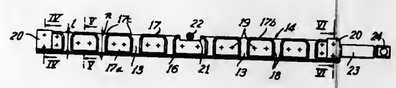
3,883,274

CONTROL RODS FOR THE FLOW PER STROKE OF PISTON MACHINES, ESPECIALLY INJECTION PUMPS, AND IN THESE MACHINES THEMSELVES

André Vuaille, 5, rue Cyrano, 69-Lyon (3eme), France

Continuation of Ser. No. 197,688, Nov. 11, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 429,821
Int. Cl. F04b 7/04; F04s 39/10
U.S. Cl. 417—494 7 Claims

1. A control rod for a fuel injection pump adapted to control the quantity of fuel delivered per stroke of the pump, said pump having at least one coaxial piston and cylinder, fuel delivery control means associated with said piston regulated by the angular positioning of the piston relative to said cylinder with respect to their common axis, two slides arranged at each end of the rod, said rod being an elongate member adapted to longitudinally slide in said slides, at least one finger fixed to said piston so as to be rotatable therewith and having a free end controlling said relative angular position, said rod member including a profiled element of L-shaped cross-section having a wide wing and a narrow wing, said wide wing being parallel to the axis of the cylinder and said narrow wing extending towards said cylinder, a plurality of separating members which are approximately U-shaped fixed on said profiled element in the hollow of said L-shaped element the separating members being spaced from one another in the



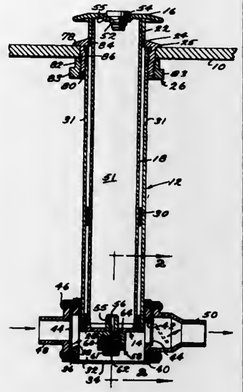
direction of the length of said element said separating members defining as many recesses therebetween as there are fingers, each recess receiving the free end of one finger, the free end of each said finger having a width substantially equal to the width of the recess in which it is positioned, said separating members being formed by walls at right angles to the longitudinal direction of said rod, each U-shaped member having its open end facing the narrow wing of the L-shaped element, the dimension of each U-shaped member perpendicular to the wide wing being substantially equal to the dimension of the narrow wing perpendicular to the wide wing.

3,883,275

MODULAR PUMP ASSEMBLY

Ronald O. Browne, Staunton, Va., assignor to Browne Engineering Corporation, Staunton, Va.

Filed June 5, 1972, Ser. No. 259,602
Int. Cl. F04b 23/02, 41/02
U.S. Cl. 417—503 9 Claims



1. A pump device assembled from modular components which can be fitted together in various ways to form a preferred configuration and capacity for a pump, comprising:
- a first tubular component for receving and carrying a reciprocating piston member therein;
- a second tubular component, secured to said first tubular component wherein a terminal end of said first tubular component is inserted into an opening formed through a wall of said second tubular component so as to secure the first tubular component in a position which extends into one-half of the diameter of the second tubular component, and at a right angle thereto, to provide a secure and strong assembly of the components;
- a pumping chamber disposed between said inserted first and second tubular components, said pumping chamber being defined by the intersecting relationship of said first and second tubular components;
- an inlet opening communicating with said pumping chamber for being connected to a source of supply of liquid to be pumped;
- an outlet opening communicating with said pumping chamber for being connected to a conduit or other discharge area for the liquid being pumped;
- a first one-way valve means positioned across said inlet opening to prevent a back flow of liquid from said pumping chamber through said inlet opening;
- a second one-way valve means positioned across said outlet opening to prevent a back flow of liquid from said conduit or other discharge area into said pumping chamber, said second one-way valve means being identical to said first one-way valve means so that the two one-way valve means can be used interchangeably;
- a piston member fitted within a bore of said first tubular component for being manually reciprocated in said bore to thereby (a) draw a volume of liquid through said first one-way valve means into said pumping chamber and into a portion of the bore of said first tubular component when the piston member is drawn in a direction away from said pumping chamber and (b) push said volume of liquid through said second one-way valve means when the piston member is pushed in a direction towards said pumping chamber; and
- a mounting ring assembly carried by said first tubular component to secure the pump device to a deck or bulkhead structure, said mounting ring assembly including:
  - a first annular ring having a larger diameter flange portion for fixing the axial position of the pump device against one surface of a deck or bulkhead and a smaller diameter sleeve portion connected to the flange portion for being inserted through an opening formed in said deck or bulkhead, said smaller diameter sleeve portion having a threaded external surface at its end which is remote from the flange portion and said smaller diameter sleeve portion being secured by threaded engagement to the threaded surface of the upper end of said first tubular component; and
  - a second annular ring having an internally threaded surface of a diameter which will allow a threaded engagement of the second annular ring with said first annular ring, said annular ring being of a sufficient size to function as a locking ring which bears against a surface which is opposed to the said one surface of said deck or bulkhead to thereby permit a securement of the pump device through the deck or bulkhead.

2. A manually operated pump device which can be used for pumping a first liquid from a source to a point of use and which further functions to meter a second liquid into the first liquid as it is being pumped, comprising:
- a first tubular component for receiving and carrying a reciprocating piston member therein;
- a second tubular component secured to said first tubular component wherein a terminal end of said first tubular component is inserted into an opening formed through a wall of said second tubular component so as to secure the first tubular component in a position which extends into one-half of the diameter of the second tubular component, and at a right angle thereto, to provide a secure and strong assembly of the components;
- a pumping chamber disposed between said inserted first and second tubular components said pumping chamber being defined by the intersecting relationship of said first and second tubular components;
- an inlet opening communicating with said pumping chamber for being connected to a source of supply of a first liquid to be pumped;
- an outlet opening communicating with said pumping chamber for being connected to a conduit or other discharge area for the liquid being pumped;
- a first one-way valve means positioned across said inlet opening to prevent a back flow of liquid from said pumping chamber through said inlet opening;
- a second one-way valve means positioned across said outlet opening to prevent a back flow of liquid from said conduit or other discharge area into said pumping chamber;
- a piston member fitted within a bore of said first tubular component for being manually reciprocated in said bore to thereby (a) draw a volume of said first liquid through said first one-way valve means into said pumping chamber and into a portion of the bore of said first tubular component when the piston member is drawn in a direction away from said pumping chamber and (b) push said volume of liquid through said second one-way valve means when the piston member is pushed in a direction towards said pumping chamber;
- a separate reservoir means for carrying a supply of a second liquid to be dispensed into said first liquid which is being pumped, said reservoir means having an outlet aperture communicating with said pumping chamber for dispensing said second liquid from the reservoir means into the first liquid being pumped through said pumping chamber;
- a metering valve means for opening and closing said outlet aperture in response to a change in pressure differential which develops between said reservoir means and said pumping chamber as a result of the pumping of said first liquid into and out of said pumping chamber; and
- a mounting ring assembly carried by said first tubular component to secure the pump device to a deck or bulkhead structure, said mounting ring assembly including:
  - a first annular ring having a larger diameter flange portion for fixing the axial position of the pump device against one surface of a deck or bulkhead and a smaller diameter sleeve portion connected to the flange portion for being inserted through an opening formed in said deck or bulkhead, said smaller diameter sleeve portion having a threaded external surface at its end which is remote from the flange portion, said smaller diameter sleeve portion being secured by threaded engagement to the theaded surface of the upper end of said first tubular component; and
  - a second annular ring having an internally threaded surface of a diameter which will allow a threaded engagement of the second annular ring with said first annular ring, said second annular ring being of a sufficient size to function as a locking ring which bears against a surface which is opposed to the said one surface of said deck or bulkhead to thereby permit a securement of the pump device through the deck or bulkhead.

3,883,276

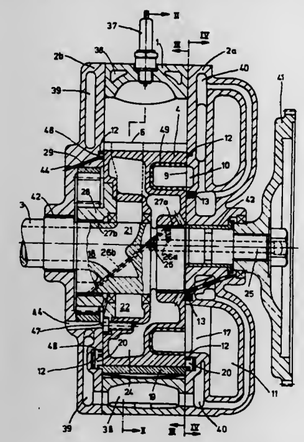
DISCHARGE ARRANGEMENT FOR THE EXHAUST GAS FROM THE WORK AREAS OF A ROTARY PISTON COMBUSTION ENGINE

Peter Hofbauer, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Continuation of Ser. No. 299,594, Oct. 20, 1972, abandoned. This application May 9, 1974, Ser. No. 468,234
Int. Cl. F01c 1/02, 21/04; F02b 55/16
U.S. Cl. 418—61 B 6 Claims

1. A combustion engine of the circularly rotating piston type having an internally placed axle comprising a housing having at least a pair of side members and a central member placed between said side members, an eccentric shaft means, a piston means mounted for rotation on said eccentric shaft means with bearing points therebetween, said piston means having a front surface including exhaust gas openings that are in opposition to one of said side members and outlet channels that have a substantially uniform cross-section and are in fluid communication with said exhaust gas openings, said piston

means being further defined by a profile including 2 N lobes defined by an epitrochoid curve, said central member comprising an inner profile having 2 N + 1 counter lobes forming an outer envelope curve for said piston means, gas outlet control opening means provided in the circumferential surface of N lobes of said piston means and in fluid communication with said outlet channels in said piston means, an annular exhaust gas guide means provided in one of said side members and cooperating with said outlet channels, said gas outlet control opening means and said exhaust gas openings in said piston means for leading away said exhaust gas from said operating spaces and said piston means, sealing means in said side members comprising a first outer sealing means for sealing the operating spaces between the piston means and the



contour of said central member of said housing and, second radial inner sealing means for sealing the bearing points of said piston means on said eccentric shaft means, means for lubricating said bearing points, said exhaust openings formed on one said side portions of the piston means lying in a region defined by an envelope curve generated during rotation of said piston means by the inner contour of said first radial outer sealing strip means as projected on said piston means and by the outer contour of said second radial inner sealing strip means, said exhaust openings having a triangular shape, said exhaust gas guide means provided in said one side member of said housing running substantially circumferentially and permanently communicating with said exhaust openings to prevent the formation of stagnant exhaust gas pockets in said exhaust gas openings.

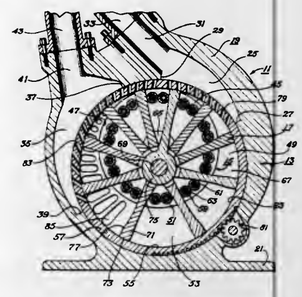
3,883,277

ROTARY VANE DEVICE WITH IMPROVED SEALS

Leonard J. Keller, Sarasota, Fla., assignor to The Keller Corporation, Dallas, Tex.

Filed Oct. 11, 1973, Ser. No. 405,271
Int. Cl. F01c *1/00, 19/00*; F04c *1/00*
U.S. Cl. 418—137 **6 Claims**

1. In an eccentric rotor vane device having:
a. a main chamber having a substantially cylindrical interior surface;
b. first and second ports spaced around and communicating with said main chamber;
c. a plurality of annularly related radial vanes, independently pivotal and rotatable within said main chamber about a vane axis therewithin; said vanes occupying substantially the total radial distance from said axis to said interior surface of said main chamber;
d. a rotor that is eccentrically mounted with respect to said main chamber and rotatable about a rotor axis spaced from said vane axis; said rotor having follower means for interdigitating said vanes and effecting a change in volume of a subchamber intermediate respective said vanes as said rotor and said vanes are rotated within said main chamber; each subchamber being delineated by a pair of confronting vane faces and a corresponding follower means between said vane faces and said main chamber interior surface and varying from a minimum volume at a radially outermost position of said follower means with respect to said vane axis, said minimum volume position being referred to as the 0° position, to a maximum volume at the radially innermost position of said follower means, referred to as the 180° position; and
e. power delivery shaft connected with said rotor for delivering power in association therewith; the improvement comprising an improved seal means intermediate said vanes and said follower means in which:



f. each follower means is disposed intermediate adjacent said respective vanes and comprises a plurality of rotatably-mounted cylindrical rollers extending longitudinally of said rotor; each said roller having respective vane engaging surface; said plurality of said rollers intermediate adjacent vanes being contiguous each other; and
g. said vanes have lateral faces that are concaved inwardly toward the central plane of the vane such that said follower means is maintained in substantially uniform sealing engagement with said vane lateral faces as said follower means traverse inwardly and outwardly therealong during rotation of said rotor such that a satisfactory seal is maintained intermediate said follower means and said vanes so that said follower means can serve as a piston as well as an interdigitating means; and each said roller contiguous a lateral face of a vane engages said vane face with rolling friction for reduced friction and long life.

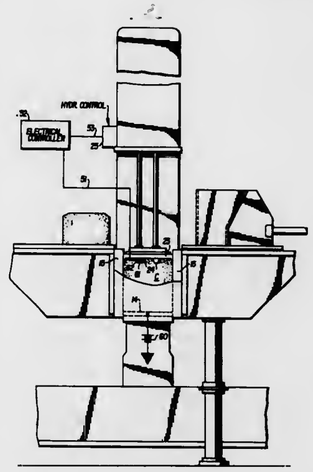
3,883,278

ANODE PRESS WITH VIBRATION AND COMPACTION RATE SENSING MEANS

Wynn M. Hass, Owensboro, Ky., assignor to Southwire Company, Carrollton, Ga. and National Steel Corp., Pittsburg, Pa.

Continuation-in-part of Ser. No. 163,766, July 19, 1971, abandoned. This application Nov. 28, 1973, Ser. No. 419,862
Int. Cl. B30b *11/02*
U.S. Cl. 425—135 **13 Claims**

10. Apparatus for forming a compacted block from particulate material comprising a mold, a press ram disposed above said mold and mounted for vertical movement therein, means for vibrating particulate material contained within said mold to expel air therefrom thereby compacting the material and causing the surface thereof to descend at a given rate, means in operative communication with the particulate material for continuously sensing the rate at which the surface of the material descends, and means responsive to said sensing means for continuously controlling the movement of said press ram at a rate corresponding substantially to the rate at which the surface of the material descends whereby said press



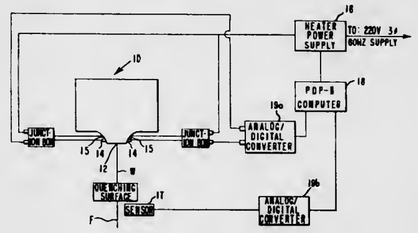
ram will apply substantially no pressure against the material during compaction thereof.

3,883,279

APPARATUS FOR MAKING POLYMERIC FILM

David Edward Heyer, Circleville, Ohio, assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 280,888, Aug. 15, 1972, abandoned. This application Aug. 2, 1973, Ser. No. 385,149
Int. Cl. B29f *3/08*
U.S. Cl. 425—141 **5 Claims**



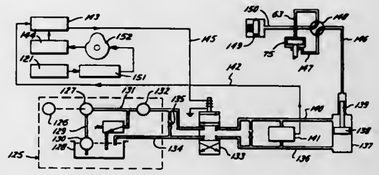
1. An apparatus for improving the gauge profile of a web of polymeric film including:
an extrusion die for extruding a web of material onto a moving quenching surface;
means for selectively heating thermally isolated parts of die lips of the extrusion die;
means for pinning the web of material fully across its width to the quenching surface;
means for removing the web of material from the quenching surface in the form of a web of film;
means for measuring the thickness of the web of film across the width thereof and transmitting a signal based thereon; and
means for actuating the means for selectively heating the thermally isolated die lip parts of the extrusion die; based on such signal in a manner to improve the gauge profile of the web of film.

3,883,280

APPARATUS FOR CONTROLLING THE EXTRUSION OF PARISONS

Robert E. Waltman; John B. Coast, and Gary A. Hinz, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 129,142, March 29, 1971, which is a division of Ser. No. 887,939, Dec. 24, 1969, Pat. No. 3,649,148, which is a continuation-in-part of Ser. No. 695,636, Jan. 4, 1968, abandoned. This application June 7, 1973, Ser. No. 367,701
Int. Cl. B29d *23/04*
U.S. Cl. 425—162 **3 Claims**



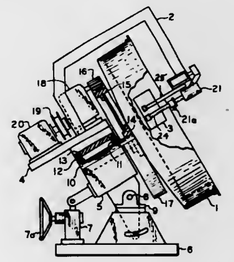
1. In an apparatus for controlling the extrusion of plastic parisons, the combination comprising:
a. a cam having a peripheral surface conforming to the desired wall thicknesses of the extruded parison;
b. cam drive means;
c. means coupled to said cam to generate an electrical signal proportional to the shape of said cam;
d. means for controlling fluid pressure actuated by the means of subparagraph (c);
e. means for supplying fluid pressure to the means of subparagraph (d);
f. means coupled to the means of subparagraph (d) for boosting the pressure of the fluid from the means of subparagraph (e); and
g. means coupled to the means of subparagraph (f) for varying the wall thickness of said extruded plastic parisons.

3,883,281

PELLETIZING DISC ASSEMBLY AND CONTROL SYSTEM

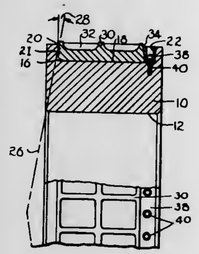
Carl A. Holley, Pittsburgh, Pa., assignor to Ferro-Tech, Inc., Pittsburgh, Pa.

Filed June 21, 1974, Ser. No. 481,820
Int. Cl. B29b *1/03*
U.S. Cl. 425—222 **3 Claims**



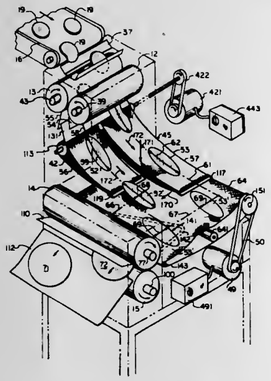
1. In apparatus for spraying water on granular material and for compressing the mixture into shapes, means for automatically controlling the amount of water sprayed onto the mixture controlled by a Wheatstone bridge in which the variable resistance leg comprises a pair of probes of substantially cylindrical shape extending in spaced parallel relationship into said mixture, and means for driving said probes about their axes to enable cleaning of the probes without excessive wear.

3,883,282
BRIQUETTING ROLL AND POCKETED SEGMENTS THEREFOR
William D. Armbrust, Greensburg; Dennis J. Shallenberger, Latrobe, and Charles E. Hill, Whitney, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.
Filed Mar. 28, 1974, Ser. No. 455,518
Int. Cl. B29c 3/02
U.S. Cl. 425—237 12 Claims



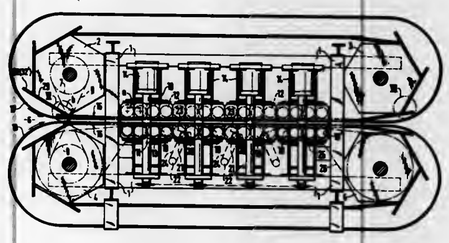
1. In a briquetting device; a roll having an outwardly opening annular groove formed in the periphery thereof, the bottom wall of said groove being in the form of planar chordal sections in end to end relation and each perpendicular to a respective radius of the roll, said groove when viewed in cross section having one side wall which forms an acute first included angle with the bottom wall of said groove while the other side wall forms a second included angle with said bottom wall which is larger than said first included angle, said side walls converging in the radially outward direction, said one side wall of said groove is in the form of an annular segment of a cone.

3,883,283
FLOUR DOUGH SHEET FORMING AND CONVEYING SYSTEMS
Frank J. Herrera, Downey, Calif., assignor to Casa Herrara, Inc., Los Angeles, Calif.
Filed May 29, 1973, Ser. No. 364,998
Int. Cl. A21c 3/02
U.S. Cl. 425—337 18 Claims



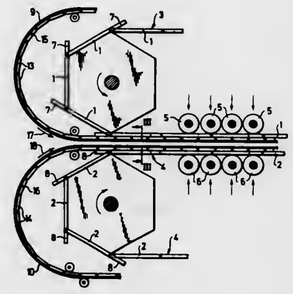
1. In apparatus for forming rounded flour dough sheets from flour dough patties, the improvement comprising in combination:
first means for working flour dough patties into oval sheets of flour dough;
second means for working said oval sheets of flour dough into rounded flour dough sheets;
third means for conveying said oval sheets away from said first means, said third means including first endless conveying means having an endless conveyor web, means for mounting said first endless conveying means for conveyance of said oval sheets essentially in a first direction of advance, said mounting means including an essentially sheet-like support located at least partially inside said endless conveyor web for supporting said endless conveyor web, and means for driving said first endless conveying means, said third conveying means further including a blade connected to said sheet-like support so as to form an aperture therebetween through which said endless conveyor passes said oval sheets from said third means to said second means, said fourth means including second endless conveying means, means for mounting said second endless conveying means for conveyance of said oval sheets essentially in a second direction of advance extending at an angle to said first direction of advance as seen in the direction of gravitational force acting on said oval sheets during conveyance, and means for driving said second endless conveying means.

3,883,284
CONTINUOUSLY OPERATING ROUGH OR FINAL PRESS
Albert De Mets, Kachtem, Izegem, Belgium, assignor to Kronstrukiewerkhuizen de Mets N.V.
Filed Apr. 19, 1974, Ser. No. 462,543
Claims priority, application Germany, Apr. 19, 1973, 2320178
Int. Cl. B29c 15/00
U.S. Cl. 425—371 17 Claims



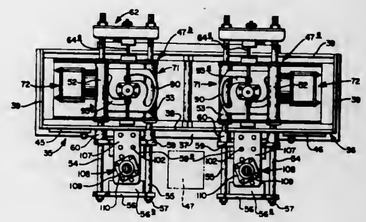
1. A continuously operable press for producing panels, such as chipboards, fiberboards, and the like; said press comprising:
a first movable belt,
a second movable belt,
and guiding and moving means for guiding and moving said first and second belts with respective outer surfaces of said belts in facing relationship and moving in the same direction over a material pressing portion of the respective travel paths of said belts such that material forming said panels can be conveyed by and compressed between said belts along said material pressing portion of said respective travel paths,
wherein at least one of said first and second belts includes a plurality of belt plates articulatedly joined to one another by guide element means, the edges of said belt plates which extend at right angles to the travel direction of said belt plates including recess means and projection means, said recess means and projection means including interengageable flange portion means such that during operation of the press the flange portion means of one of the recess means and projection means of one plate engage and suport the flange portion means at the other of the recess means and projection means of the next adjacent plate over at least a portion of the respective travel path of said belts.

3,883,285
CONTINUOUSLY OPERATING PRESS FOR CHIPBOARDS, FIBERBOARDS, OR THE LIKE
Albert DeMets, Kachtem, Izegem, Belgium, assignor to Konstruktiewerkhuizen DeMets N.V., Belgium
Filed Apr. 19, 1974, Ser. No. 462,545
Claims priority, application Germany, Apr. 19, 1973, 2320179
Int. Cl. B29c 15/00
U.S. Cl. 425—371 33 Claims



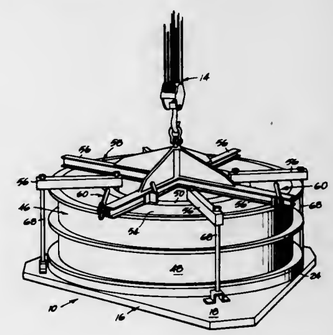
1. A press for processing panels, such as chipboard, fiberboard, and the like; said press comprising:
a first plate belt including a plurality of belt plates articulated to one another,
a second plate belt including a plurality of belt plates articulated to one another,
guiding and moving means for guiding and moving said first and second plate belts with respective outer surfaces of said plate belts in facing relationship and moving in the same direction over a material pressing portion of the respective travel paths of said plate belts such that material forming said panels can be conveyed by and compressed between said plate belts along said material pressing portion of said respective travel paths,
a first movable continuous flexible band surrounding a portion of said first plate belt,
a second movable continuous flexible band surrounding a portion of said second plate band,
said first and second bands being interposed between said belts over said material pressing portion of the respective travel paths thereof for transferring pressing forces from said plate belts to the material forming said panels which is disposed between said first and second bands,
and a plurality of strips mounted to said first band at the side thereof facing away from the second band when said bands are in facing relationship along said material pressing portion of their travel paths for avoiding production of markings and panels being processed along the junction areas of the belt plates of said first plate belt, said strips extending transverse to the travel direction of the respective band and being mounted to permit relative movement of said strip and said first band in the plane of the junction of said strips and said first band.

3,883,286
BLOW MOLDING METHOD AND APPARATUS
William G. Kinslow, Jr.; Paul A. Marchant, both of Kansas City, Mo.; Robert D. Bessler, Prairie Village, and Robert X. Hafele, Overland Park, both of Kans., assignors to Ethyl Development Corporation, Kansas City, Mo.
Division of Ser. No. 232,666, March 8, 1972. This application Dec. 17, 1973, Ser. No. 425,496
Int. Cl. B29c 1/16, 3/02
U.S. Cl. 425—387 B 11 Claims



1. In a blow molding apparatus an assembly for transporting a tubular parison between a parison supply station and a blow station the combination comprising:
a. a support frame including a base plate, a pair of side plates attached to opposite edges of said base plate;
b. wheel means attached to said support frame;
c. a pneumatic power means attached to said base plate;
d. a cam rotatively coupled to said power means;
e. a pair of cam followers coupled to said cam;
f. a pair of sleeves mounted between said side plates;
g. a pair of shafts slidably received in said sleeves;
h. a first platen attached to one end of said pair of shafts;
i. a second platen slidably mounted on said pair of shafts between said first platen and one of said side plates;
j. means coupling one of said cam followers to the other end of said pair of shafts; and
k. means coupling the other of said cam followers to said second platen.

3,883,287
PNEUMATIC CORE PRESS
Charles E. Grawey; Glenn A. Ball, both of Peoria, and Donald G. Zook, Metamora, all of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.
Filed June 15, 1973, Ser. No. 370,204
Int. Cl. B29c 3/00
U.S. Cl. 425—405 R 12 Claims



1. Apparatus for pressing and forming granular material comprising:

a mold body defining an inwardly recessed portion; and a bladder associated with a mold body and inflatable to expand generally inwardly of the recessed portion thereof, to press and form granular material disposed in the recessed portion between the mold body and bladder, wherein the mold body comprises an annular mold body defining an annular recessed portion of generally U-shaped cross section said mold body further comprising inner and outer rings and a connecting ring removebly fixed relative to the inner and outer rings and the bladder comprises an annular bladder of generally U-shaped cross section and positioned inwardly of the annular recessed portion.

3,883,288

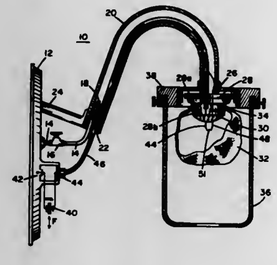
GAS LANTERN AND IGNITION SYSTEM THEREFOR

Don A. Berlincourt, Chagrin Falls, and Earl O. Schweitzer, Wickliffe, both of Ohio, assignors to Vernitron Corporation, Great Neck, N.Y.

Continuation of Ser. No. 96,324, Dec. 9, 1970, abandoned. This application Sept. 10, 1973, Ser. No. 395,904

Int. Cl. F21h *1/00*

U.S. Cl. 431—109 **10 Claims**



1. A gaseous or vaporized fuel lantern and ignition system therefor, comprising:

a substantially bag-like mantle of a fabric which is effective to provide light when in close proximity to a flame, and structural means supporting said mantle;

conduit means for supplying a stream of combustible fuel to said mantle, said conduit means including at the terminal end thereof a burner nose having a flame screen provided with a plurality of apertures for letting the fuel pass therethrough exclusively and in direct contact to establish a flame within said mantle,

said conduit means having an opening to receive air therethrough to cause mixing of the fuel and the air prior to discharge of the fuel through the flame screen;

piezoelectric ignition means effective to generate a voltage upon manual actuation thereof;

and electrode means electrically associated with said ignition means and positioned to establish a fixed and stationary spark gap substantially within or proximate to the stream of said fuel and in internal juxtaposition to said bag-like mantle with at least one electrode protruding through said flame screen with its end terminating in close proximity to said screen.

3,883,289

PIEZO-ELECTRIC TYPE GAS LIGHTER

Masayuki Fujioka, Tokyo, Japan, assignor to Leo Mfg. Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1973, Ser. No. 421,733

Int. Cl. F23q *2/08*

U.S. Cl. 431—131 **6 Claims**

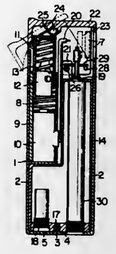
1. A piezo-electric gas lighter comprising:

a housing having four side walls, a bottom wall with a hole therein, and an open top;

an L-shaped fuel tank, the lower, wider, transverse portion of which fits within the bottom inside of said housing, said fuel tank having projections extending from the top thereof and a screw hole in the bottom in alignment with said hole in said bottom wall of said housing;

a combustion valve having a tubular body mounted within the elongated portion of said fuel tank and having a valve body extending through the top of said fuel tank adjacent said projections;

operating means having an L-shaped configuration and being pivotally mounted to said projections, said operating means also serving as the cover of said lighter housing when in its normal position with respect to said housing; means coupled between said operating means and said combustion valve to permit fuel to flow out of said valve when said operating means is pivoted away from its normal position;



a piezo-electric element positioned on the stepped portion of said fuel tank and extending upward therefrom adjacent and parallel to said elongated portion of said fuel tank, said piezo-electric element having a top plate, said operating means, when in its normal position, having its elongated portion extending across the top of said piezo-electric element and its short transverse portion extending down the side of said piezo-electric element past the top thereof, thereby coupling said piezo-electric element, said fuel tank and said operating means together as a unit; said operating means having means for engaging said top plate of said piezo-electric element for actuation of said piezo-electric element by depression of said top plate to produce an electrical discharge simultaneously with the flow of fuel from said combustion valve to ignite said lighter when said operating means is pivoted away from its normal position; and

a screw for removably securing together said housing with the unit comprising said piezo-electric element, said operating means and said fuel tank by passing through said hole in said bottom wall of said housing and engaging said screw hole in the bottom of said fuel tank.

3,883,290

APPARATUS FOR THE PRODUCTION OF HOT GASES

Herbert Windelbandt, Schlottfelderstr. 2, D 5105 Aachen, Germany

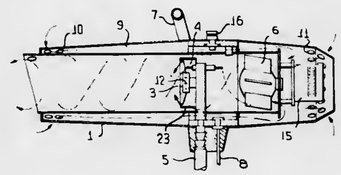
Filed Nov. 3, 1972, Ser. No. 303,601

Claims priority, application Germany, Nov. 11, 1971, 2155055; June 27, 1972, 2231345

Int. Cl. F23d *11/04*

U.S. Cl. 431—168 **12 Claims**

1. Apparatus for the production of hot gases comprising an elongated guide pipe having a longitudinal axis and a discharge opening, a burner disposed concentrically within and relative to said guide pipe, said burner including nozzle means for directing fuel generally radially outwardly of the longitudinal axis, conduit means for connecting said burner nozzle means to a source of combustible fuel, ignition means adjacent said burner for igniting the combustible fuel being discharged from said burner nozzle means, an axial blower disposed concentrically within and relative to said guide pipe for creating a swirling air stream through said guide pipe toward said discharge opening, said swirling air stream including low volume air flow along said longitudinal axis and higher volume air flow radially outwardly therefrom, said burner and ignition



means being disposed between said blower and said discharge opening, and said ignition means being disposed within said area of low volume flow whereby fuel directed radially outwardly of said nozzle means toward said guide pipe when ignited creates flames directed radially outwardly from said burner into the swirling air stream created by said blower for discharge through said discharge opening.

3,883,291

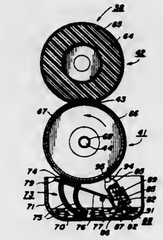
OIL APPLICATOR FOR REPRODUCTION MACHINE FUSER

Eugene F. Cloutier, Brighton, and Douglas P. Connolly, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 19, 1973, Ser. No. 417,462

Int. Cl. B05c *8/00*

U.S. Cl. 432—60 **6 Claims**



4. In a reproduction machine adapted to produce copies of documents, said machine having cooperating pressure and heated rolls for fusing images developed on the copy material, the combination of:

applicator means to apply a liquid release material to the fuser heated roll to prevent copies from adhering thereto, wiper means engageable with the periphery of said fuser heated roll to remove excess release material therefrom before contact with the copy material being fused; and

bias means to bias both said applicator means and said wiper means into contact with said fuser heated roller.

3,883,292

SLEEVELESS PRESSURE ROLL CLEANER

Ralph A. Hamaker, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 29, 1973, Ser. No. 364,574

Int. Cl. F03g *13/20*

U.S. Cl. 432—60 **10 Claims**

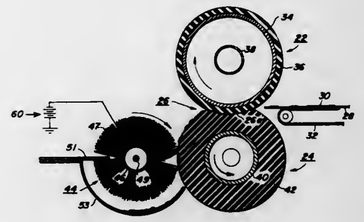
1. Apparatus for fusing electroscopic toner particles to a substrate, said apparatus comprising:

a first roll member;

a second roll member mounted for simultaneous rotation with said first roll member and in contact therewith;

means for heating one of said roll members; and

means for cleaning toner particles from the other of said members, said toner cleaning means comprising a brush rotatable in contact with the surface of said other member and including a plurality of metallic bristles.



7. The method of fusing electroscopic marking particles to the substrate in image configuration comprising the steps of: contacting said marking particles with a heated roll member and simultaneously contacting the back side of said substrate with a pressure roll member; and

rotating a metallic brush in contact with the surface of said pressure roll member to remove marking particles therefrom.

3,883,293

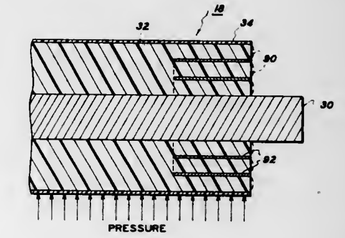
PRESSURE ROLL CONSTRUCTION

Alan F. McCarroll, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 5, 1974, Ser. No. 458,159

Int. Cl. B60b *7/02*; **F27b** *9/28*

U.S. Cl. 432—60 **3 Claims**



1. In a heated pressure roll fusing system for fusing toner images of electrostatic copying machines in which a heated fuser roll is urged into pressure contact with a relatively soft pressure backing roll, an improved pressure roll device comprising,

a core member,

a cylindrical member made of rubber positioned around said core member, said rubber being relatively thick and soft and having a tendency to bulge at the ends thereof under fusing conditions,

said cylindrical member being formed with at least one thin stiffening member inserted at each of the ends thereof said stiffening members being circular in shape and having a thickness ranging from about .001 inches to about .010 inches to minimize end bulge to improve fusing and reduce wear.

3,883,294

HEAT TREATING APPARATUS

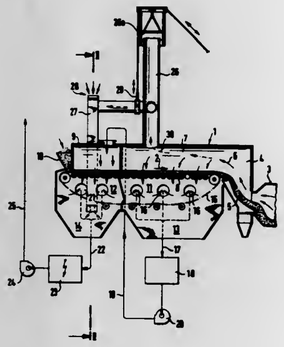
Horst Ritzmann; Hans Mollenkopf, both of Neubeckum; Wolf Goldmann; Jurgen Wurr, both of Eanigerloh, and Reinhard Körting, Neubeckum, all of Germany, assignors to Polysius AG, Neubeckum, Germany

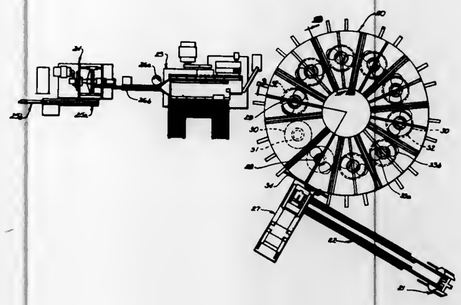
Filed Nov. 5, 1973, Ser. No. 412,632

Claims priority, application Germany, Nov. 15, 1972, 2256034

Int. Cl. F27b *7/02, 7/36*

U.S. Cl. 432—107 **9 Claims**





1. A device for the heat treatment of material with hot gas comprising: a traveling grate including a section for supporting material to be treated and conveying it in a forward path of travel; means including at least one heat treatment chamber above said grate section for directing hot gases from one side of said grate and the material supported thereby to an intermediate grate space below and at the other side of said grate and said material supported thereby; dust removal means for purifying the gases after they have passed through the material; and means connecting the heat treatment chamber to said dust removal means while by-passing said traveling grate section, said connecting means including a tubular by-pass tube conduit connected to the dust removal means via a portion of said intermediate grate space.

3,883,295

ROTARY HEARTH FURNACE

Ernest W. Lowderman, Independence; Leland L. Barrington, Overland Park, and Ferdinand Young, Jr., Independence, all of Mo., assignors to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 297,886, Oct. 16, 1972, Pat. No. 3,827,267. This application Feb. 4, 1974, Ser. No. 439,411

Int. Cl. F27b *9/16*

U.S. Cl. 432—138 **16 Claims**

1. A furnace for heating a plurality of coils of rod; said furnace having a single, unitary gas fired heating chamber; a rotary hearth for said chamber, said hearth having a plurality of openings therein; a spindle-turntable within each said opening and clear of said hearth, each said spindle-turntable being adapted to receive at least one coil of rod to be heated within said chamber; frame work located beneath said hearth so as to support same, each said spindle-turntable also resting on said frame work; bearing means on which said frame work is engaged for purposes of rotation; a charging station for said chamber; an unreeling station for said chamber; and indexing means for moving said frame work, hearth and spindle-turntables so as to move a coil through substantially all of said chamber from said charging station to said unreeling station.

3,883,296

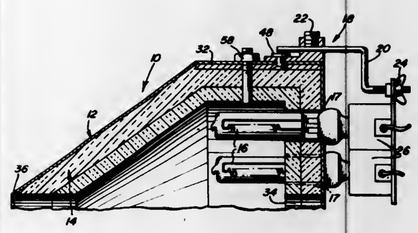
PORTABLE METAL HEAT TREATING FURNACE

Betty J. Salvage, and Donald R. Salvage, both of 465 Solano Ave., Hayward, Calif. 94541

Filed Jan. 16, 1973, Ser. No. 324,071

Int. Cl. F27d *1/00*

U.S. Cl. 432—247 **6 Claims**



1. A heat treating furnace comprising, in combination:
a. an encasement forming a housing;
b. an insulating liner arranged within the encasement and housed thereby, the liner having a pair of layers; one layer being constructed from a rigid insulation material, and the other layer being constructed from a blanket insulation material, the layer of rigid insulation material being arranged adjacent to and between the layer of blanket insulation material and the encasement, each layer capable of withstanding temperatures of at least 2,000°F; and
c. means for removably and replaceably attaching the layers of insulation material to the encasement.

3,883,297

FRAMEWORKS FOR SHIELDING DEVICES

Gustav Nobelius, Hagersten, Sweden, assignor to Bruun & Sorensen AB, Farsta, Sweden

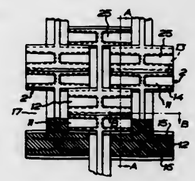
Filed Apr. 3, 1974, Ser. No. 457,463

Claims priority, application Sweden, Apr. 9, 1973, 7349629

Int. Cl. F23m *5/00, 5/02*

U.S. Cl. 432—249 **8 Claims**

1. In a framework for supporting a refractory lining, the improvement which comprises a plurality of detachably interconnected elements disposed to receive and support a refractory lining, said elements being generally H-shaped and oriented with the legs of adjacent elements in lengthwise contact, the legs of said elements having curved surfaces accommodating said lengthwise contact, and the curved surfaces on the legs of adjacent elements being generally complementary to allow pivotal movement of individual elements for replacement in the framework.



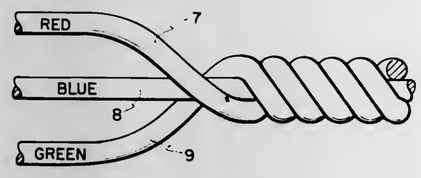
3,883,298
ENERGY RESPONSIVE THREAD

Gerald Platt, 727 South 1100 East, Salt Lake City, Utah 84102

Continuation of Ser. No. 865,917, Oct. 13, 1969, abandoned. This application Nov. 10, 1972, Ser. No. 305,368

Int. Cl. D06p *5/00*

U.S. Cl. 8—2 **7 Claims**



1. A method of sewing a colored fabric comprising
a. stitching said fabric with a thread having three light sensitive dyes which develop a specific, permanent color upon exposure to light, and
b. exposing said thread to light to develop a color matching that of the fabric in the immediate vicinity of said thread.

3,883,299
DYEING AND PRINTING TEXTILES WITH VAT DYES USING REDUCTONES AND/OR REDUCTONATES

Ulrich Baumgarte; Siegfried Weigold, both of Limburgerhof, and Werner Scheuermann, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 20, 1972, Ser. No. 316,865

Claims priority, application Germany, Dec. 24, 1971, 2164463

Int. Cl. D06p *1/24*

U.S. Cl. 8—34 **12 Claims**

1. A process of dyeing or printing cellulose textiles with vat dyes in a pH range from about 12 upward wherein hydroxyacetone, dihydroxyacetone, glycol aldehyde, dihydroxybutanone, 2,3-dihydroxyacrylaldehyde (triosereductone), ascorbic acid, cyclopentenediolone (reductic acid), ethyl α-amino-β-ketobutyrate or a mixture of two or more of these is used as reducing agent in the presence of a quinoid compound which is soluble in water within the said pH range.

3,883,300
PROCESS FOR REDUCING SHRINKAGE AND IMPROVING CREASE RETENTION OF WOOL-SYNTHETIC FIBER BLENDS

Clyde T. Moore, Bennettsville, and Harry L. Mercer, Cheraw, both of S.C., assignors to J. P. Stevens & Co. Inc., New York, N.Y.

Filed June 28, 1972, Ser. No. 266,850

Int. Cl. D06m *9/00*

U.S. Cl. 8—115.7 **6 Claims**

1. A process of treating yarns and fabrics produced therefrom, the yarns being composed of blends of proteinaceous fibers having overlapping scales and synthetic thermoplastic fibers having heat settable memory at conventional garment pressing temperatures, in order to reduce shrinkage and improve crease retention on washing, which consists essentially in shrink-proofing said proteinaceous fibers by oxidizing them with an acidic aqueous solution of a chlorinating agent for said proteinaceous fibers, removing the acidic aqueous solution, subjecting a fabric composed of said yarns to creasing by pressing in creases in a conventional garment press under conventional garment pressing conditions, whereby said fabrics exhibit increased crease retention on washing and drying.

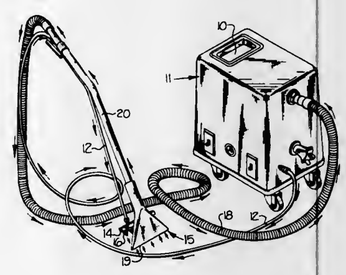
3,883,301
METHOD OF CLEANING TEXTILE FABRICS

Donald G. Emrick, Fort Lauderdale; Joseph H. Christian, and Robert M. Hines, both of Raleigh, all of N.C., assignors to U.S. Floor Systems, Inc., Raleigh, N.C.

Filed June 21, 1973, Ser. No. 372,201

Int. Cl. A47l *7/00*

U.S. Cl. 8—158 **3 Claims**



1. A method of cleaning textile fabric such as carpet, upholstery and the like wherein cleaning of the fabric is maximized while adverse effects on the fabric are minimized due to operation within optimal parameters, the method comprising the steps of:

spraying a solution of hot water and detergent in a predetermined zone and against fabric to be cleaned from a distance of about 2 inches and at a pressure of about 26 pounds per square inch and at a flow rate of about one gallon per minute, while

drawing air through the fabric in a predetermined zone spaced from the spraying zone at a distance of about 2 inches and withdrawing the solution and soil from the fabric into a vacuum conduit having a sealed orifice lift of about 115 inches of water.

3,883,302
HIGH-BULK POLYACRYLONITRILE YARN

Werner Amend, Wuppertal-Barmen, Germany, assignor to Hacoba-Textilmaschinen GmbH & Co. KG, Wuppertal-Barmen, Germany

Continuation of Ser. No. 90,034, Nov. 16, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,560

Int. Cl. D06p *5/06*

U.S. Cl. 8—172 **1 Claim**

1. A method of making high-bulk polyacrylonitrile yarn covered with cationic dyes, which comprises the steps of treating unbulked polyacrylonitrile yarn in a bath at a temperature beneath 70°C and its glass transition temperature with an aqueous acid liquor containing a cationic dye and benzyloxypropionitrile as a polar organic compound which swells or solubilizes the fibers of said yarn, and thereafter subjecting the yarn to damp heat treatment at a temperature of substantially 98°C to 100°C, the yarn being subjected to the treatment with the aqueous acid liquor while coiled on spools, is then rinsed, finished and centrifuged and is finally rewound from the spools on to user spools while being maintained free from tension during the rewinding process during the damp heat treatment for a period of 5 seconds to 15 minutes.

3,883,303
METHOD FOR CONTROLLING ODORS IN RECIRCULATING TOILETS

George C. Roberts, Venice, Calif., assignor to Inca-One Corporation, Culver City, Calif.

Filed June 15, 1972, Ser. No. 263,190

Int. Cl. A61l *11/00, 13/02*

U.S. Cl. 21—55 **2 Claims**

1. A method for controlling odors and inhibiting growth of microorganisms in recirculating toilets containing water, organic waste material and microorganisms which consists essentially in: mixing paraformaldehyde with the water contained in said toilet, said water having a temperature of between 0°C and 40°C and containing borax to adjust the pH of the water and paraformaldehyde to between 5 and 8, the amount of paraformaldehyde being from 100 part per million to 5,000 parts per million, by weight, based upon the contents of the toilet so that sufficient paraformaldehyde dissolves in said water and slowly releases formaldehyde to form a solution and to react with any mercaptans, bioorganics and other components of human waste contained in the toilet and to inhibit the growth of microorganisms without killing said microorganisms and thus not interfering with subsequent biological decomposition on later dumping of the contents of the recirculating toilet, said components of human waste tending to lower the pH of the solution to the acidic side thus increasing the solubility of the paraformaldehyde and thereby providing more formaldehyde in solution for reaction with additional components of human waste while said borax, without reacting with said formaldehyde in solution is tending to raise said pH above about 5 to control and maintain the desired concentration of formaldehyde in solution.

3,883,304
METHOD FOR TESTING PREGNANCY

Clayton H. Hamilton, Cross Lake, Minn., assignor to Conifer Laboratories, Inc., Cross Lake, Minn.

Continuation-in-part of Ser. No. 257,016, May 25, 1972, abandoned. This application June 6, 1974, Ser. No. 476,882

Int. Cl. G01n *31/20, 33/16*

U.S. Cl. 23—230 B **12 Claims**

1. A method of testing female blood to determine pregnancy comprising the steps of placing a small amount of said blood and a small amount of a test reagent on a testing surface, said test reagent comprising dissolved sodium chloride in the approximate ratio of between 0.63 and 1.08 grams per 100 cc of said test reagent and an acid selected from the group consisting of nitric acid, surfuric acid, hydrochloric acid, and acetic acid each in the approximate percentage of between 0.15 and 0.35%, thoroughly mixing said blood and said test reagent, and detecting the extent of agglutination of the blood.

3,883,305
AUTOMATIC CHEMICAL ANALYSIS APPARATUS

Douglas Haig Hoskins, St. Albans; Thomas Horne, Woburn Bletchley; Graham Roger Jarman, and Arthur William Dunsmore, both of Dunstable, all of England, assignors to Coulter Electronics, Inc., Hialeah, Fla.

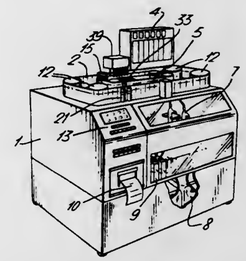
Filed Mar. 14, 1973, Ser. No. 341,069

Claims priority, application United Kingdom, Mar. 21, 1972, 13241/72

Int. Cl. G01n *33/16, 1/18*

U.S. Cl. 23—253 R **27 Claims**

1. An apparatus for automatic chemical analysis comprising: a first sequentially advanceable conveyor for carrying containers holding samples to be tested; a second sequentially advanceable conveyor for carrying reaction tubes in which chemical reactions can be caused to occur; said conveyors defining paths which lie one within the other; first and second transfer stations fixedly positioned along the path of said first and second conveyors, respectively; transfer structure positioned adjacent said first and second stations for sequentially transferring sample portions from each container, when it is at said first station, to a predetermined plurality of the reaction tubes as they are moved past said second station; apparatus capable of adding different reagents to each of said plurality of reaction tubes; a programmed drive arrangement for advancing said first conveyor to present a next sample container



to said first station in conjunction with advancing said second conveyor to present a next plurality of reaction tubes sequentially to said second station for sample transferring; and testing equipment for testing the reaction products of each of said plurality of reaction tubes.

3,883,306
AUTOMATIC ANALYZING ARRANGEMENT

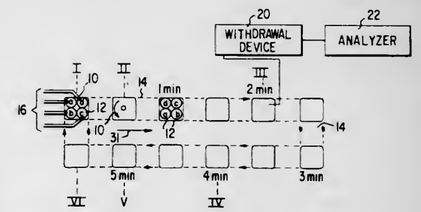
John Ake Widen, Taby, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Nov. 23, 1973, Ser. No. 418,175

Claims priority, application Sweden, Nov. 23, 1972, 15259/72

Int. Cl. G01n *1/10, 1/14*

U.S. Cl. 23—253 R **9 Claims**



1. An arrangement for conveying receptacle holders along a predetermined path to different treatment stations in an automatic analyzing apparatus, said arrangement comprising means for conveying at least one holder along the path, means located at at least one location along the path for selectively rotating the holder relative to the path, the angle of rotation being equal to the angle formed between a radial line between the center of rotation of the holder and one receptacle of the holder and a radial line between said center of rotation of the holder and another receptacle of the holder, means for supplying a fluid to at least one receptacle, means for recovering the contents of the receptacle to which the fluid is added and means for analyzing the recovered contents.

3,883,307
GAS ANALYZER RESISTANCE ELEMENT

Young Ho Kim, Palo Alto, Calif., assignor to Ambac Industries Inc., Garden City, N.Y.

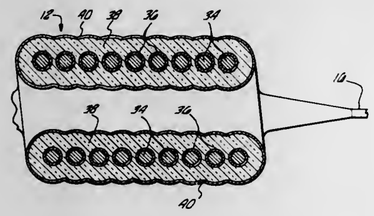
Continuation-in-part of Ser. No. 191,170, Oct. 21, 1971, abandoned. This application Dec. 19, 1973, Ser. No. 426,035

Int. Cl. B01j *11/08;* **G01n** *31/12*

U.S. Cl. 23—254 E **16 Claims**

1. A catalytic combustion resistance element comprising a ceramic coated wire over which a catalytic layer is formed, in

which the catalytic layer comprises individual particles of a powdered oxide selected from the class of oxides consisting of alumina and beryllia, each of said particles being individually coated with a metallic catalyst, said powdered particles being



of an average size of about one micron, and binder agent means attaching the individual catalyst coated oxide particles to one another so as to form a porous outer layer of the catalyst coated particles.

3,883,308

APPARATUS FOR ANALYSING LIQUID SUBSTANCES LIKELY TO FORM AGGLUTINATES

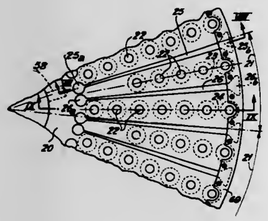
Claude Matte, Paris, France, assignor to Centre National de la Recherche Scientifique and Centre National de Transfusion Sanquine, Paris, France, a part interest to each

Continuation of Ser. No. 163,936, July 19, 1971, abandoned, which is a continuation of Ser. No. 728,189, May 9, 1968, Pat. No. 3,617,222. This application Sept. 4, 1973, Ser. No. 393,996

Claims priority, application France, May 12, 1967, 67.106180; Mar. 22, 1968, 68.145043

Int. Cl. G01n *33/16, 1/14*

U.S. Cl. 23—259 **2 Claims**



1. As a mechanical subassembly of a liquid chemical or biochemical analyzing machine, a support for a multiplicity of vessels adapted to contain liquid samples comprising:

an annular substantially planar shaped member having a central opening therein, said member defining a multiplicity of apertures each adapted to receive and positively to maintain a vessel, said apertures being disposed angularly and radially on said member throughout substantially the entire area thereof, said multiplicity of apertures being formed in groups of apertures, the apertures of each group being spaced along a respective line of a plurality of lines extending radially from the center of said member to the periphery thereof,

vessels in said apertures, each vessel having an axis of symmetry of revolution and a transparent concave bottom, each vessels' shape being substantially that of a cupola connected to opaque side walls inclined relative to the axis of symmetry of said vessel with each vessel having a bulbous portion adjacent the bottom thereof, and

means on said member for angularly positioning said member with respect to a shaft of said machine adapted to pass through said central opening.

3,883,309

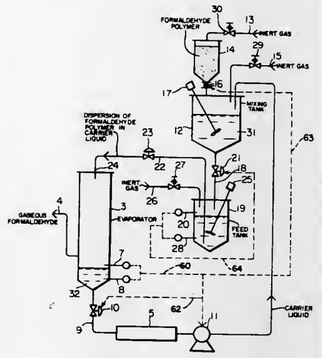
APPARATUS FOR THE GENERATION OF GASEOUS FORMALDEHYDE FROM FORMALDEHYDE POLYMER

Kazutomo Ishizawa; Yasunori Nagata, and Hisakazu Ikui, all of Osaka, Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed Aug. 8, 1972, Ser. No. 278,874

Int. Cl. B01d *1/00*; **B01j** *7/00*; **C07c** *47/04*

U.S. Cl. 23—260 **11 Claims**



1. In an apparatus for generating gaseous formaldehyde from a formaldehyde polymer comprising

a. one or more mixing tanks for preparing a dispersion of the formaldehyde polymer in a liquid carrier,

b. a feed tank for receiving the dispersion from the mixing tank and feeding the dispersion to the evaporator set forth below,

c. an evaporator for heating the dispersion at the temperature of formaldehyde gas generation, and

d. a cooler for cooling the liquid carrier discharged from the evaporator, the improvement which comprises:

said four members (a), (b), (c) and (d) are connected in series in that order, said mixing tank (a) being connected to a means for feeding the formaldehyde polymer as finely divided particles to said mixing tank (a), and said evaporator (b) being provided at the upper part thereof with an inlet feed means comprising an overflow means for making the dispersion flow into the evaporator in the state of overflow, said evaporator further having a formaldehyde gas discharge conduit, liquid level control means having upper and lower liquid level detecting probes, both probes being disposed below said formaldehyde gas discharge conduit and a liquid carrier discharge means disposed below said lower probe, said liquid level control means maintaining the free surface of the liquid carrier collected at the bottom of the evaporator at a height between the detecting probes by discharging the liquid carrier from the bottom of the evaporator in response to a signal from the liquid level control means.

3,883,310

TAPERED ORE LEACHING VESSEL

Clearl Don Killgore, Redondo Beach, Calif., assignor to Clearl D. Killgore and Harold Von Killgore, both of Redondo Beach, Calif., part interest to each

Filed June 5, 1972, Ser. No. 259,436

Int. Cl. B01d *11/02*

U.S. Cl. 23—267 R **4 Claims**

1. In apparatus for leaching ore,

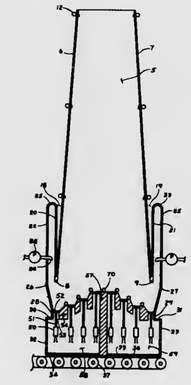
an upright elongate walled vessel of tapered form having a minimum cross-sectional area at the uppermost end thereof enlarging to a maximum cross-sectional area proximate the lower end thereof for containing said ore,

a plurality of manifolds connected to said vessel at a plurality of vertically spaced-apart locations along the length of said vessel between said uppermost end and said lower end thereof, each of said manifolds having a plurality of individual passages communicating said manifolds to said vessel for injecting leaching solution into said vessel at each said vertically spaced-apart location,

a plurality of individual vertically and laterally spaced-apart passages proximate and within the lower end of said vessel for injecting fluid upward into said vessel,

a plurality of channels in spaced-apart relationship and varying heights, each of said channels having a trapdoor mounted at the upper end thereof adapted to be selectively opened to receive the spent ore, said trapdoors being at different vertical heights relative to said lower end of said vessel for regulating the flow of spent ore down through the vessel and avoiding congestion of said spent ore,

a center wall proximate the lower end of said vessel and perpendicular to the bottom wall of said vessel to serve as a divider between two common areas into which said



spent ore will flow when said trapdoors are selectively opened,

a plurality of pistons having at least two forked arms in a juxtaposed relationship to said trapdoors,

a plurality of hydraulic cylinders proximate and within said lower end of said vessel, each said cylinder adapted to contain each said piston, each said cylinder supported by forked pillars which provide an arch under which the spent ore can be allowed to fall to the bottom of said vessel,

a plurality of conventional hinges, each said hinge secured to the center of each said trapdoor so that when each said piston is raised by each said hydraulic cylinder, said forked arms of each said piston will cause each said trapdoor to move upward taking the shape of an inverted V when it is fully opened, thus permitting a passage for the movement of spent ore around each said trapdoor as the opposite ends of each said trapdoor draw closer together, and

a plurality of regulated doors in spaced-apart relationship at the bottom of said vessel, beneath said hydraulic cylinders, for maintaining an even flow of spent ore through said vessel, each said regulated door adapted to be selectively opened for removal of said spent ore after said spent ore has passed into said common areas.

3,883,311

REACTION CRYSTALLIZER

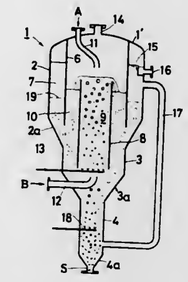
Toshio Kanai, Yokohama; Masaaki Noguchi; Hiroshi Yanagioka, both of Tokyo; Yosio Kogawa, Yokohama, and Susumu Kondo, Kawasaki, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Filed Sept. 22, 1972, Ser. No. 291,292

Claims priority, application Japan, Sept. 23, 1971, 46-74425

Int. Cl. B01d *9/00*; **B01j** *1/00*

U.S. Cl. 23—273 R **4 Claims**



1. A reaction crystallizer which comprises in combination a closed vertical reaction tank having a cylindrical cross section and an upper barrel having the largest diameter, a middle barrel having a smaller diameter than said upper barrel and a lower barrel defining a classification zone having a smaller diameter than said middle barrel, a first inner cylinder suspended from the top of the reaction tank and having a diameter smaller than that of the upper barrel, said first inner cylinder defining an annular mother liquid chamber with the upper barrel, a second cylinder defining a reaction chamber having a diameter smaller than that of the middle barrel and the first inner cylinder, said second cylinder being disposed from within the first inner cylinder and to the middle barrel, said second cylinder defining an annular circulation chamber with the inner surface of the said first inner cylinder, means for introducing a first reactant to the second cylinder, means for introducing air to an open bottom portion of the second cylinder, and means for introducing a second reactant to the second cylinder, means for introducing air to the lower barrel, a crystal discharge passage disposed at the lower portion of the lower barrel, recycle pipe disposed for passing mother liquor from the mother liquor chamber to the lower barrel defining the classification zone, a discharge passage for overflow of mother liquor disposed near the upper portion of the upper barrel, and a gas discharge disposed on top of the reaction tank, whereby fine crystals produced in the reaction tank remain suspended, with coarse crystals passing to the classification zone.

3,883,312

MOVING-BED REACTOR WITH WITHDRAWAL OF CATALYST AND EFFLUENT THROUGH THE SAME CONDUIT

Gary A. Youngman, Buffalo Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 8, 1973, Ser. No. 414,036

Int. Cl. B01j *9/12*

U.S. Cl. 23—288 G **3 Claims**

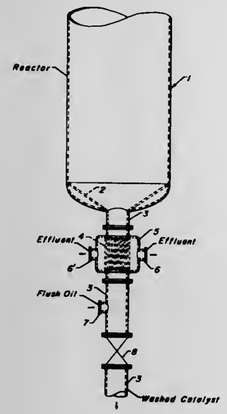
1. A moving-bed reactor apparatus through which solid catalyst particles forming a catalyst bed descend by the action of gravity, which apparatus comprises:

a. a vertically disposed cylindrical vessel;

b. a reactant inlet conduit interconnected with an upper portion of said vessel;

c. a catalyst inlet conduit interconnected with an upper portion of said vessel;

d. a combined catalyst and reactor effluent outlet conduit located on a bottom portion of said vessel, said combined catalyst and reactor effluent outlet conduit extending downward and containing a vertically disposed perforated section having openings no larger in size than said catalyst particles, an annular casing surrounding said perforated section forming an annular chamber therebetween, an effluent discharge port disposed in said annular casing and laterally opposite said perforated section, whereby the reactor effluent will pass from the catalyst withdrawal conduit through said perforated section and said discharge port and the catalyst will be separated from the reactor effluent;



e. a wash oil inlet conduit communicating with said combined catalyst and reactor effluent outlet conduit at a point below said perforated section, whereby catalyst and reactor effluent may be withdrawn from the moving-bed reactor through said combined catalyst and reactor effluent outlet conduit, the catalyst being withdrawn downward past the perforated section and washed by said wash oil entering through said wash oil inlet conduit and passing upward, said wash oil being exited through said perforated section and said effluent discharge port with said reactor effluent; and,

f. a plurality of inert ceramic balls of a diameter larger than that of said catalyst particles filling said annular chamber to thereby reduce pressure drop due to reactant flow and promote a more uniform drainage pattern in said catalyst bed.

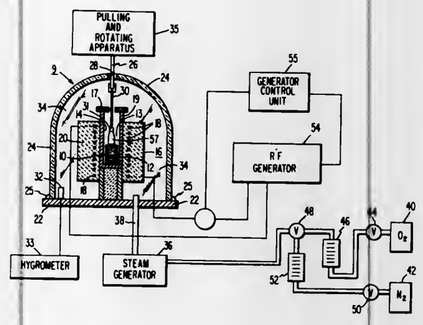
3,883,313
MODIFIED CZOCHRALSKI-GROWN MAGNESIUM ALUMINATE SPINEL AND METHOD OF MAKING SAME

Glenn Wherry Cullen, Princeton, N.J.; Stephen Ray Bolin, Reading, Mass.; John Francis Corboy, Ringoes, N.J.; John Elvin Creamer, San Juan Capistrano, Calif., and Alan John Wasilewski, Beachwood, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1972, Ser. No. 314,974
Int. Cl. B01j *17/24*; **C01f** *7/02*; **H01h** *3/10*
U.S. Cl. 23—301 SP **7 Claims**

1. In a Czochralski method for growing a single-crystal of spinel material comprising the steps of melting a source of spinel material to form a melt, contacting a seed crystal of the spinel material to a portion of said melt, and relatively moving said seed crystal with respect to said melt, whereby successive portions of said melt are frozen out on said seed crystal, the improvement comprising:

providing an ambient comprising an inert gas and oxygen, saturated with water vapor and contacting said melt, and



thus growing said single crystal of spinel material containing OH ions in its lattice.

3,883,314
SELF-LUBRICATION BEARING MEMBER

Edouard Schnyder, Bienne, and Marcel Liengme, Cormoret, both of Switzerland, assignors to Omega, Louis Brandt & Frere S.A., Bienne, Switzerland

Continuation-in-part of Ser. No. 149,395, June 2, 1971, abandoned. This application Apr. 12, 1973, Ser. No. 350,500
Claims priority, application Switzerland, June 29, 1970, 9775/70
Int. Cl. C22c *29/00*; **B22f** *3/16*; **C22c** *1/04*
U.S. Cl. 29—182.5 **13 Claims**

1. A self-lubricating bearing member comprising a porous metallic base material selected from the group consisting of a metal, a metal alloy, a metal carbide, a metal nitride, a metal boride, a metal silicide, a metal oxide, and mixtures thereof having a porosity of between about 1 and about 40 percent by volume and a hardness of between about 200° and about 2,400° Vickers, the pores of which are filled with a lubricant having a coefficient of friction of between about 0.002 and about 0.300 and viscosity of at least 1.5° Engler at the temperature of use.

6. Method for the manufacture of a self-lubricating bearing member comprising the steps of:

a. forming a homogeneous mixture of a metallic base material selected from the group consisting of a metal, a metal alloy, a metal carbide, a metal nitride, a metal boride, a metal silicide, a metal oxide, and mixtures thereof, and a metal soap, these components being in a pulverulent state;

b. compressing the mixture of metallic base material and metal soap at a pressure between about 2 and about 15 metric tons per square centimeter;

c. subjecting the compressed mixture to a thermal treatment in an inert atmosphere at a temperature between about 1,200° and about 1,800°C for a sufficient period of time to impart thereto a porosity of between about 1 and about 40 percent by volume;

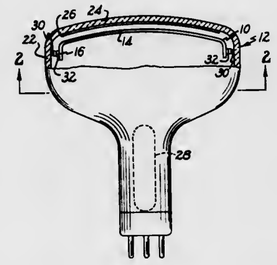
d. introducing a lubricant into the pores of the product of step (c); and

e. shaping the product into a bearing member.

3,883,315
SHADOW MASK FOR A COLOR TELEVISION IMAGE TUBE

Unto U. Savolainen, and Henry Ty, both of Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 13, 1972, Ser. No. 314,872
Int. Cl. B23p *15/16*
U.S. Cl. 29—183.5 **17 Claims**

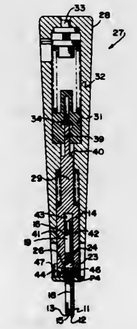


1. An improved shadow mask for a color television image tube comprising a thin metal sheet having a translucent area defined by a multiplicity of dot-like apertures extending through said sheet, said thin metal sheet being of a composite metal laminate material embodying at least one layer of mild steel material and embodying at least one layer of metal of relatively greater thermal conductivity than said mild steel material for reducing the occurrence of local temperature differentials across said translucent mask area to prevent local thermal distortion of said translucent mask area.

3,883,316
TERMINATION TOOL BLADE

John R. Mason, Los Angeles, Calif., assignor to Dracon Industries, Chatsworth, Calif.

Filed May 3, 1974, Ser. No. 466,733
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 HT **8 Claims**

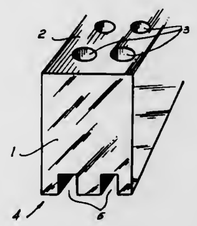


1. A reversible blade for use in a tool for terminating electrical conductors at a termination clip and having a retaining screw for retaining the blade therein, comprising an elongate blade body, a first end on said elongate body having a cutting edge and a seating edge formed thereon, a second end on said elongate body having seating edges formed thereon, said first and second ends each having longitudinal recesses therein for receiving the termination clip, first and second opposing surfaces on said elongate body for contacting the retaining screw, and serrations on said first and second surfaces, whereby when said blade is retained in the tool and one of said first and second ends extends therefrom, said serrations on said first and second opposing surfaces respectively engage the retaining screw, thereby preventing loosening of the retaining screw and rotation of the blade with respect to the tool.

3,883,317
SELF-SUPPORTING, TOTALLY COMBUSTIBLE UNIT

Fuhad Abdala Neme, Avelino Maure 732, Mendoza, Argentina

Filed Jan. 4, 1972, Ser. No. 215,386
Claims priority, application Argentina, Jan. 5, 1971, 233326
Int. Cl. C10l *5/36*, *5/40*
U.S. Cl. 44—14 **4 Claims**



1. A self-supporting, totally combustible unit, for use in counteracting the effects of frost, which comprises a solid combustible body with at least one open-ended passage passing therethrough longitudinally, said passage being communicated with one or more lower air inlet and circulating channels, said unit being characterized by the fact that said combustible body consists integrally of 132 percent of a combustible mixture which includes 100 percent of petroleum residual coal, 15 percent of a filler material chosen from the group consisting of vegetable cellulosic materials, sawdust, pulverized rubber and bakelite, an asphalt agglomerate, and a material selected from the group consisting of vinyl polychloride and polyethylene, the lower base of said combustible body being provided with the channels which, communicating with longitudinal vertical passage, extend towards and to the side of said combustable body to provide inlet openings.

3,883,318
HYDROGENATED ALKYL AROMATICS AS PETROLEUM DISTILLATE FUEL COLD FLOW IMPROVERS

Nicholas Feldman, Woodbridge, and Stephan Ilnyckyj, Maplewood, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 24, 1972, Ser. No. 283,388
Int. Cl. C10l *1/20*
U.S. Cl. 44—62 **10 Claims**

1. A distillate petroleum fuel oil having at least a major proportion boiling in the range of about 250° to 700°F., improved in its flow properties by 0.01 to 3 wt. % of a flow improving hydrogenated alkyl aromatic fraction of an amorphous normally solid wax having a melting point in the range of about 80° to 200°F. and a molecular weight in the range of about 600 to about 3,000 obtained from a residual petroleum oil.

3,883,319
FIRE RESISTANT JET FUEL COMPOSITIONS

Richard L. Green, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 23, 1973, Ser. No. 418,532
Int. Cl. C10l *1/28*, *1/24*, *1/22*
U.S. Cl. 44—62 **3 Claims**

1. A jet fuel having improved fire resistance comprising a distilled liquid hydrocarbon fuel having an endpoint of at least 224°C. containing from about 0.001 to 10 percent of an elastomer, selected from the group consisting of fluorocarbon

rubber, chlorosulfonated polyethylene rubber, polysulfide rubber, silicon rubber, urethane rubber, nitrile rubber and acrylic rubber.

3,883,320
REDUCING DEPOSITS AND SMOKE FROM JET FUELS WITH ADDITIVES INCORPORATING AN AMMONIUM SALT

Joseph Stephan Strukl, Hickory Hills, Ill., assignor to Standard Oil Company, Chicago, Ill.

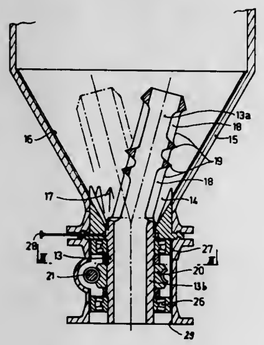
Filed Dec. 7, 1972, Ser. No. 312,960
Int. Cl. C10l *1/14*
U.S. Cl. 44—68 **12 Claims**

1. An additive composition, suitable for inclusion in jet fuel to inhibit smoke formation and ash deposition, comprising:
   a. from 67 to 95 parts by weight of manganese or iron, provided as an oil-soluble metal coordination compound selected from the group consisting of methyl cyclopentadienyl manganese tricarbonyl and tertiary amyl ferrocene;
   b. from 5 to 33 parts by weight of an alkaline earth metal, provided as an oil-soluble compound, said metal being selected from the group consisting of magnesium, calcium and barium, and said compound being selected from the group consisting of carboxylates, petroleum sulfonates, alkyl aryl sulfonates, alkyl phenates and alkylphenol sulfides; and
   c. from 2 to 20 parts by weight of ammonium ion per 100 parts by weight of total metals from (a) and (b), said ammonium ion being provided as an oil-soluble ammonium salt selected from the group consisting of carboxylates, petroleum sulfonates, alkyl benzene sulfonates and alkenyl succinates.

3,883,321
DEVICE FOR GASIFICATION OF SOLID FUELS

Wilhelm Haverkamp, Essen, Germany, assignor to Heinrich Koppers GmbH, Essen, Germany

Filed Oct. 17, 1973, Ser. No. 407,255
Claims priority, application Germany, Nov. 14, 1972, 2255694
Int. Cl. C10j *3/20*
U.S. Cl. 48—73 **9 Claims**

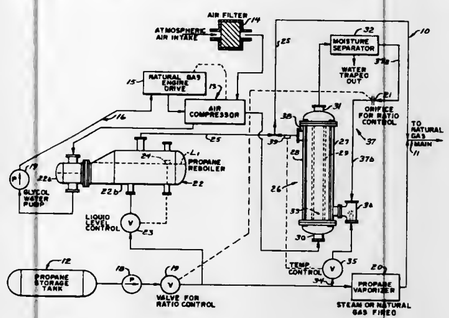


1. In a device for gasifying solid fuels, a combination comprising an upright vessel including an upper portion having an inlet for admission of solid fuel to be gasified and of an oxidant, a burner in said inlet, an outlet for discharging gasified fuel, and a bottom portion below said upper portion and having an interior surface circumferentially forming a downwardly conically converging bottom chamber having an axis and containing a liquid medium for entrapping slag formed in said upper portion during the gasification of the solid fuel; a tubular port downwardly of and coaxially merging with said bottom chamber and communicating therewith; comminuting means including a tubular member having a first portion accommodated in and coaxial with said tubular port, and a second portion inclined with respect to said first portion and situated in said bottom chamber proximate to said interior surface thereof and defining therewith a comminuting gap, said second portion being provided with at least one aperture connecting the interior of said tubular member with said bottom chamber for discharging slag particles below a predetermined size from said bottom chamber; and drive means for rotating said tubular member about the axis of said first portion thereof so that said second portion conically orbits about said axis with attendant orbiting of said comminuting gap, and cooperates with said interior surface to comminute the slag in said bottom chamber to said predetermined size.

3,883,322
BLENDING APPARATUS FOR VAPORIZING PROPANE

Henry W. Bivins, Jr., 5030 Brummel, Skokie, Ill. 60076

Filed Aug. 23, 1973, Ser. No. 390,885
Int. Cl. B01f *3/02*
U.S. Cl. 48—180 A **17 Claims**



1. Apparatus for providing from a supply of liquefied fuel fluid a gaseous fuel fluid, comprising: delivery means; powered means for compressing ambient air; means providing a heat transfer coolant in heat exchange relationship with said powered means for cooling said powered means; means for providing heat exchange between the liquid fuel fluid and said coolant for cooling said coolant and vaporizing said liquid fuel fluid; and means for delivering to said delivery means a mixture of fuel fluid vaporized by said heat exchange means and air compressed by said powered means.

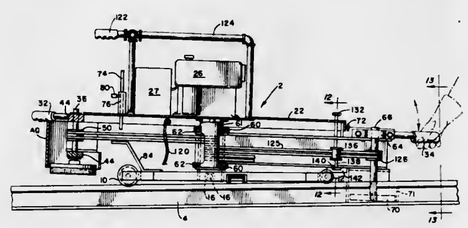
9. Apparatus for providing from a supply of liquefied fuel fluid an aerated gaseous fuel fluid, comprising: delivery means; means for providing compressed air; means for flashing the liquefied fuel fluid; means responsive to the flashing of the liquefied fuel fluid for dehumidifying the compressed air; and means for delivering a mixture of the dehumidified compressed air and the flashed fuel fluid to said delivery means.

3,883,323
WELDED RAILROAD RAIL GRINDING APPARATUS

Lush E. Cooley, 1835 Wilson Ave., Cleveland, Tenn. 37311

Filed Sept. 6, 1974, Ser. No. 503,852
Int. Cl. B23p *23/04*
U.S. Cl. 51—178 **12 Claims**

1. Apparatus for grinding welded joints between the rails of a railroad track comprising a chassis including a base assembly carrying a pair of longitudinally spaced rollers adapted to rest on one of the rails of the track and a laterally extending stabilizer arm carrying another roller adapted to rest on the opposite rail of the track, a platform mounted on said base assembly, a source of power mounted on said platform, at one end of said chassis a grinding element carried by said platform and rotatable by said power source about a normally vertical axis, means for tilting the axis of said grinding element from side to side and also moving said grinding element vertically with respect to said base assembly so as to grind the top and side surfaces of the ball portion of a welded joint in the first mentioned rail, at the other end of said chassis two additional grinding elements carried by said platform rotatable by said power source about normally vertical axes and disposed on

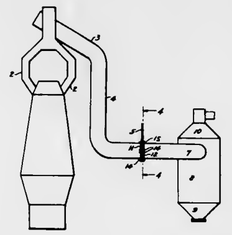


opposite sides of the said first mentioned rail, and means for moving said additional grinding elements horizontally towards and away from one another and vertically with respect to said base assembly so as to grind the side surface of the web portion and the top surfaces and side edges of the base flange portion of said welded joint.

3,883,324
METHOD AND APPARATUS FOR AGGLOMERATING DRY DUST PARTICLES IN A GAS STREAM AND SEPARATION

Paul A. Balla, Bethlehem, and Charles C. Oshinski, Johnstown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 72,931, Sept. 8, 1970, abandoned. This application May 2, 1973, Ser. No. 356,536
Int. Cl. B01d *45/12*
U.S. Cl. 55—1 **8 Claims**

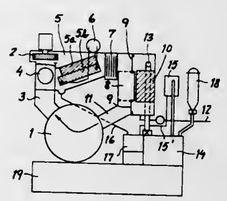


1. A method for removing dry particulate material from a gas stream containing both fine and coarser particulates comprising:
   a. passing the gas stream in a substantially dry state through a gas conduit and through a constriction in said conduit having a cross sectional area not greater than about one quarter of the cross sectional area of the conduit and located within the duct at least five duct diameters upstream from a dry dust collector and having a cross sectional area of the duct and the initial velocity through the duct of the gas stream such as to cause an abrupt increase in velocity of said gas stream at least 10,000 fpm as it passes through the constriction, and
   b. passing the dry gas stream to said dry dust catcher where particles in the gas stream are removed in a dry state.

3,883,325
METHOD OF AND APPARATUS FOR THE RECOVERY OF SOLVENT GASES FROM AN AIR STREAM

Heinrich Fuhring, Augsburg, and Johannes Helmut Sieber, Aystetten, both of Germany, assignors to Böwe Böhler & Weber Maschinenfabrik, Augsburg, Germany

Filed Mar. 21, 1973, Ser. No. 343,535
Claims priority, application Germany, Mar. 23, 1972, 2214153
Int. Cl. B01d *53/04*
U.S. Cl. 55—20 **10 Claims**

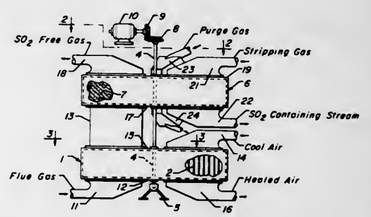


1. A method of recovering solvent from an air stream in a dry-cleaning machine containing vapors of the solvent in the presence of air moisture, comprising the steps of circulating said air stream along a path through said machine and into contact with goods to be dried therein; cooling said air stream at a first location along said path to condense condensible components therefrom; reheating said air stream at a second location along said path downstream of said first location to decrease the relative humidity of the air stream; and treating said air stream after the reheating thereof with a solvent adsorber at a third location along said path downstream of said second location.

3,883,326
SULFUR OXIDES REMOVAL SYSTEM

John G. Wenner, Lincolnshire, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 239,893, March 31, 1972, Pat. No. 3,780,498. This application Dec. 17, 1973, Ser. No. 425,471
Int. Cl. B01d *53/06*
U.S. Cl. 55—34 **2 Claims**



1. A continuous method for simultaneously effecting the adsorption of sulfur oxides from a waste gas stream and the removal of such oxides which comprises maintaining the continuous rotation of a gas permeable cylinder-form bed of a SO_2 adsorbent material that has been divided into segmental zones by gas barrier means, a gas permeable rotating bed of heat exchange material being spaced from and utilized in a series flow combination with said rotating bed of SO_2 adsorbent material and providing a segmentally divided zone of heat exchange material in continuous rotation and in the flow path of said waste gas stream whereby such stream is first passed through said heat exchange material to effect a heating thereof prior to being passed into said bed of SO_2 adsorbent material, passing the waste gas stream from said heat exchange material continuously into contact with at least one

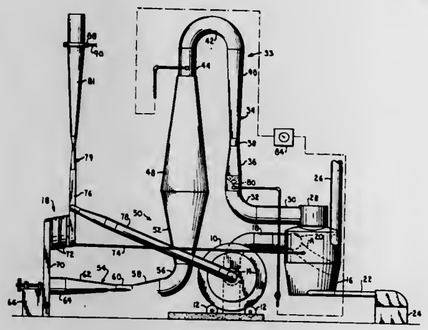
segmental zone of said bed and recovering from an opposing side of such zone a gas stream with reduced content of sulfur oxides, at the same time passing a regenerating gas stream through at least one segmental zone which has adsorbed sulfur oxides on said material to effect the substantial removal thereof, passing a high temperature gaseous stream into contact with said gas permeable rotating bed of heat exchange material through a portion of said rotating bed that is spaced from the pathway of the waste gas stream whereby the latter is heated and said high temperature gaseous stream is cooled down from contact with said heat exchange material, and continuing the rotation of said bed through said waste gas and regenerating streams to effect a continuing desulfurization operation.

3,883,327

METHOD AND APPARATUS FOR SEPARATING PARTICULATE MATTER FROM A GAS STREAM

Stanley P. Thompson; Walter T. Thompson; David L. Boyert, all of Topeka, and Thomas B. Swearingen, Manhattan, all of Kans., assignors to Thompson Dehydrating Company, Topeka, Kans.

Filed May 21, 1973, Ser. No. 362,440
Int. Cl. B01d *47/06*
U.S. Cl. 55—94 **17 Claims**



1. A method of combining a particulate substance with a substance which is initially present in a liquid state, said method comprising the steps of:

moving the particulate substance in a fluid stream; providing a quantity of said liquid substance in the fluid stream; progressively decreasing the internal fluid stream pressure to thereby increase the velocity of the particles of said substance to effect agglomeration of the particles;

maintaining the temperature and pressure of the fluid stream during said progressively decreasing step, above the saturation point so as to preclude condensation of liquid during agglomeration of the particles;

progressively increasing the internal fluid stream pressure to effect vaporization of said liquid substance; and

progressively reducing the internal pressure of said fluid stream to effect condensation of the vapor on the agglomerated particles.

3,883,328

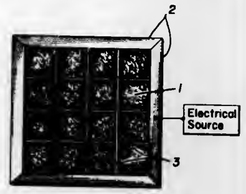
CARBON FIBER ELECTRODES FOR ELECTRICAL PRECIPITATORS

Raymond G. Spain, 4805 Metcalf Dr., Raleigh, N.C. 27612

Filed Nov. 29, 1973, Ser. No. 420,275
Int. Cl. B03c *3/40*
U.S. Cl. 55—154 **3 Claims**

1. A collecting electrode to remove particulate materials from gases by electrical precipitation comprising:

a mass of carbon fibers with an apparent density of 0.02 to 0.10 grams per cubic centimeter, with average individual fibers having an electrical resistivity of 2 to 13 × 10^{-4} ohm-centimeters, an axial fiber moduli greater than 10 × 10^6 psi, a density greater than 1.7 grams per cubic centimeter, and an equivalent diameter of 6 to 12 microns; and



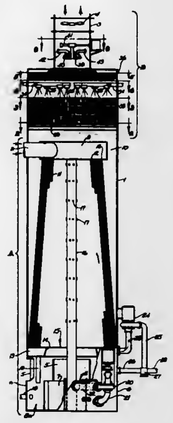
a corrosion resistant frame surrounding the mass and a means of applying a positive or negative direct current charge of at least 5000 volts to the carbon fiber mass and to provide mechanical support to the carbon fiber mass.

3,883,329

HIGH EFFICIENCY VAPOR CONTROL SYSTEM

John A. Dupps, Sr., Germantown, Ohio, assignor to The Dupps Company, Germantown, Ohio

Filed Jan. 23, 1974, Ser. No. 435,705
Int. Cl. B01d *47/06*
U.S. Cl. 55—222 **7 Claims**



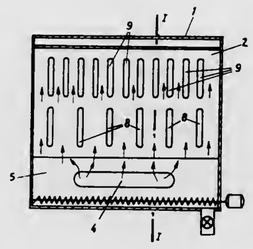
1. A vapor control system comprising an elongated, vertically disposed tubular housing having air inlet means at its bottom and air discharge means at its top, including blower means connected to said housing for creating an air stream flowing upwardly through said housing; a lower treatment zone comprising upper and lower spaced apart annular chambers mounted in said housing, an annular passage between said housing and said upper chamber, said lower chamber terminating inwardly in an annular wall defining a centrally disposed air flow passage, the said air stream flowing upwardly through the said passages, an annular array of condensing tubes interconnecting said upper and lower chambers and surrounding the air flow passage in the lower chamber, means for introducing odor containing vapors into said upper chamber, means for withdrawing condensate from said lower chamber, means for withdrawing non-condensables from said lower chamber, conduit means connected to the means for withdrawing noncondensables from said lower chamber and to the housing for introducing the non-condensables into the air stream beneath said lower chamber, and first spray means in said housing positioned to spray liquid onto said annular array of condensing tubes through the air stream; an upper treatment zone in said housing overlying said upper chamber comprising means for subjecting the air stream to a liquid chemical treatment, and means overlying the said liquid chemical treatment means for thereafter removing moisture from the air stream prior to its discharge from the system through said air discharge means; a reservoir underlying said lower annular chamber for collecting both residual liquid chemicals from the chemical treatment means and liquid discharged by said first spray means for recirculation, and conduit means, including pump means, connected to said reservoir and to said first spray means for pumping admixed liquid and chemicals from said reservoir to said first spray means; and a separate scrubber adjacent said housing, spray means in said scrubber, conduit means operatively connecting the spray means in said scrubber to the reservoir in said housing, metering means for introducing additional chemicals into the conduit supplying the spray means in said scrubber, said metering means being connected to said last named conduit and to a separate source of liquid chemicals, means connected to the means for withdrawing non-condensables from the lower chamber for diverting the non-condensables to said scrubber for passage therethrough, and means for withdrawing the non-condensables for said scrubber for delivery to an incinerating means.

3,883,330

POCKET FILTER APPARATUS

Adolf Margraf, Im Haberkamp 196, D 4961 Wendthagen, Germany

Filed Jan. 10, 1974, Ser. No. 432,165
Int. Cl. B01d *46/02*
U.S. Cl. 55—341 **6 Claims**



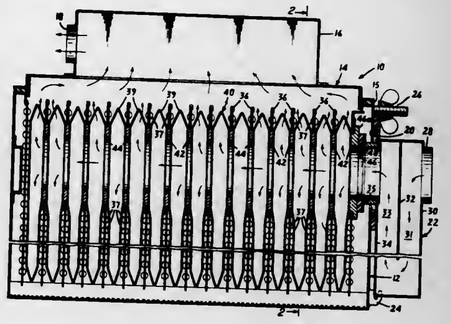
1. In a pocket filter apparatus including a housing structure defining an enclosure therein and having an apertured wall mounted within the housing dividing the enclosure into a first chamber for a dust-laden gas and a second chamber for a clean gas, and the housing structure defining an inlet port into the first chamber, an outlet port out of the second chamber, with the apertured wall defining through-apertures of communication between the first chamber and the second chamber, and having a plurality of separate filter pockets separately mounted extending into the first chamber from and at least one open-end of each filter pocket mounted in at least one of the through-apertures for all through-apertures thereby sealing the first chamber from the second chamber, the improvement being: said through-apertures and respective ones of said filter pockets mounted therein being spaced-apart from one another at predetermined greater distances from one another at locations in juxtaposition to said inlet port than remaining other ones of said filter pockets spaced-apart from one another.

3,883,331

FILTER, PARTICULARLY FOR SMOKE SOLIDS FILTRATION

Richard A. Bernard, Flossmoor, and Arthur A. Bernard, Beecher, both of Ill., assignors to Dover Corporation, Memphis, Tenn.

Filed Jan. 8, 1973, Ser. No. 321,939
Int. Cl. B01d *46/02*
U.S. Cl. 55—381 **12 Claims**



1. A filter for filtration of a gas to remove particulate material therefrom comprising a housing; a filter element supported in the housing, the filter element including a multiplicity of generally flat, closed envelopes of a material that is permeable to gas but capable of capturing particles entrained in the gas, an inlet opening in at least one of the envelopes of the filter element for admission of the gas to be filtered into the interior thereof, means communicating the interiors of the envelopes with each other for distribution of the gas to be filtered among the interiors of the several envelopes, and means joining the envelopes together with the faces thereof at least partly in generally adjacent relation; means for maintaining the major portions of the external surfaces of the walls of the envelopes in spaced relation to provide flow passages between adjacent envelopes of the filter element for the flow of filtered gas through and away from the spaces between the envelopes, said means for maintaining the adjacent envelopes in spaced relation including separator plates mounted in spaced relation in the housing, at least one separator plate being disposed between each adjacant pair of envelopes and having spaced-apart protuberances engageable by the respective walls of adjacent envelopes; and means for conducting gas to be filtered into the filter element through the inlet opening thereof.

3,883,332

PARTICLE SEPARATOR

Richard Penderell Llewelyn, Cheltenham, Victoria, and John Austin Hart, Burwood, Victoria, both of Australia, assignors to State Electricity Commission of Victoria, Melbourne, Victoria, Australia

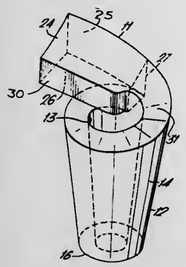
Filed Dec. 11, 1972, Ser. No. 314,165
Claims priority, application Australia, Dec. 9, 1971, 7328/71
Int. Cl. B01d *45/12*
U.S. Cl. 55—459 **3 Claims**

3. Apparatus for separating particles from a stream of gas and entrained particles, comprising:

an elongated annular duct having an outer tubular wall and an inner tubular wall both extending from an inlet end of the duct through to an outlet end of the duct; and

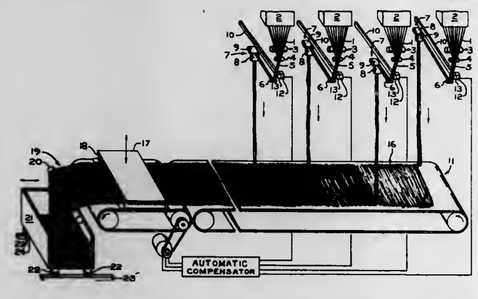
the inner and outer walls of the duct both converge conically toward a common convergence apex beyond the outlet end of the duct so that the duct is of contracting annular cross-section toward its outlet end;

an annular duct roof on the inlet end of the duct;
an inlet to the duct to direct the stream into the inlet end of the duct so that it flows with swirling motion through to an outlet end of the duct; and
outlet means to divide an inner part of the flow at the outlet end of the duct from particles in the outer region of the flow; wherein
said inlet has a roof, a floor, and inner and outer walls connecting the roof and floor so as to define a single inlet



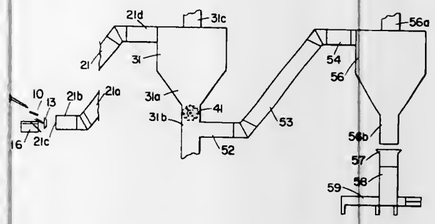
passage separate from the annular duct, the roof and floor of the inlet are non-parallel, and the roof of the inlet joins smoothly onto the roof of the duct which latter roof, after one revolution around the duct joins smoothly with the floor of the inlet at the entrance to the annular duct; and the inner and outer walls of the inlet converge in the direction of flow and smoothly join the inner and outer walls of the duct respectively, whereby at the entrance of the annular duct the flow in the inlet enters the duct smoothly.

3,883,333
METHOD AND APPARATUS FOR FORMING A UNIFORM GLASS FIBER CONTINUOUS MAT
Richard H. Ackley, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Oct. 25, 1973, Ser. No. 410,007
Int. Cl. C03b *37/00*
U.S. Cl. 65—2 **14 Claims**



4. A method of forming a continuous uniform density glass fiber mat comprising:
forming glass fibers from a plurality of fiber forming bushings;
depositing said glass fibers from said bushings onto a first continuous conveyor;
conveying said glass fibers from said first continuous conveyor to a second continuous conveyor;
adjusting the speed of said second conveyor, when at least one of said bushings is not operating and a strand deficient glass fiber mat is formed, to slow the speed of said second conveyor to allow for a uniform bulk density of said glass fibers to be conveyed onto said second conveyor, said bulk density being the same as when all of said bushings are operating; and
collecting the mat so formed.

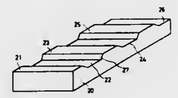
3,883,334
MINERAL FIBER PRODUCTION METHOD AND APPARATUS
Don Cassidy, Martinsville, and Ray W. Barkhau, Indianapolis, both of Ind., assignors to L. C. Cassidy & Son, Inc., Indianapolis, Ind.
Filed May 23, 1974, Ser. No. 472,817
Int. Cl. C03b *37/06*
U.S. Cl. 65—2 **7 Claims**



1. A method of producing a homogeneous mineral fiber product from a stream of molten slag comprising: rectilinearly projecting and fiberizing the slag by entraining it in an annularly arranged array of steam jets; providing a collecting tube concentric with the annular array of steam jets for receiving the fiberized material with the open receiving end of the tube spaced from the point of entry of the slag into the steam flow and having a diameter somewhat less than the of the remainder of the tube to provide a conical entry section; connecting the end of said collecting tube remote from the entry section to an initial cyclone-type centrifugal separator; dropping the discharge from the lower end of the cyclone separator through an unloading valve; drawing off the fiberized material of lesser mass through a horizontal tube communicating with the discharge from the unloading valve; providing a conveying tube communicating with the horizontal tube and with the intake of a second cyclone-type centrifugal separator; providing air moving fans for establishing suction in said collecting tube, horizontal tube, conveying tube and said centrifugal separators; and providing a means for accumulating the homogeneous product issuing from the lower end of the second centrifugal separator.

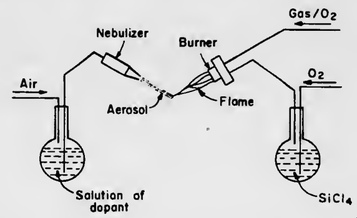
3,883,335
METHOD OF FORMING MICROCHANNEL PLATES HAVING CURVED MICROCHANNELS
Remy Henri Francois Polaert, Villecresnes, France, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 17, 1973, Ser. No. 361,287
Claims priority, application France, May 19, 1972, 72.18043
Int. Cl. C03c *23/20*
U.S. Cl. 65—4 **9 Claims**

1. A method of forming microchannel plates having curved microchannels extending between major faces thereof, for use in making secondary emissive electrodes, comprising the steps of:
forming a layer of substantially straight adjacent and parallel microchannels of the same cross-section, said layer being one microchannel thick;
positioning said layer between a first jig having parallel ribs and a second jig having ribs parallel to but positioned for interdigitation with said ribs of said first jig, with said microchannels crossing said ribs;
at a temperature where said microchannels are between their plastic phase and their elastic phase, pressing said jigs toward each other to shape said microchannel layer to the contour of said jigs;
bonding said microchannels of said layer together;
stacking a multiplicity of similar so shaped and bonded microchannel layers;



bonding said stacked microchannel layers together; and
cutting said bonded stack of microchannel layers into plates along planes which intercept said microchannels of said bonded stack of microchannel layers.

3,883,336
METHOD OF PRODUCING GLASS IN A FLAME
Eric N. Randall, Bath, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Jan. 11, 1974, Ser. No. 432,573
Int. Cl. C03b *23/20;* **C03c** *7/00;* **C03b** *25/00*
U.S. Cl. 65—18 **10 Claims**



1. A method for making a transparent, homogeneous glass body consisting of at least two constituent oxides comprising the steps:
a. entraining within a gas stream vapors of a compound of SiO_2, GeO_2, B_2O_3, P_2O_5, and SeO_2 that will hydrolyze in a flame to produce the corresponding glass forming oxide in particulate form;
b. nebulizing a solution containing a metal oxide or a metal compound thermally convertible by heat treatment in a flame to a stable metal oxide into an aerosol consisting of substantially uniformly-sized droplets that do not exceed about 10 microns in diameter; and
c. simultaneously passing said vapors and said aerosol into the flame of a combustion burner to form and codeposit a homogeneous oxide mixture as a glass body free from inclusions.

3,883,337
METHOD OF MANUFACTURING A GLASS OBJECT BY MOLDING AND SINTERING GLASS POWDER
Claes Ivar Helgesson, Akersberga; Sven Borje Stellan Persson, Taby, and Hans-Olof Ingvar Nilsson, Goteborg, all of Sweden, assignors to Stig Arbman AB, Stockholm, Sweden
Filed Apr. 18, 1973, Ser. No. 352,333
Claims priority, application Sweden, Feb. 6, 1973, 73016214
Int. Cl. C03c *15/00*
U.S. Cl. 65—31 **25 Claims**

1. In a method of manufacturing a glass object, wherein glass powder is molded and sintered, the improvement which comprises that, prior to the molding and sintering, the glass powder particles are coated with colloidal silica, said coating being effected by placing the glass powder in an alkaline silicate solution, thereupon acidifying the solution to a pH value at which colloidal silica precipitates, whereby said colloidal silica deposits on the surfaces of the glass particles, to coat the latter, and finally drying the coated glass powder.

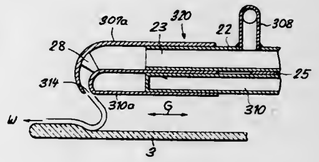
9. In a method of manufacturing a glass object, wherein glass powder is molded and sintered, the improvement which comprises that, prior to the molding and sintering, the surfaces



of the powder particles are etched, whereupon the glass powder particles are coated with colloidal silica.

20. In a method of manufacturing a glass object, wherein glass powder is molded and sintered, the improvement which comprises that, prior to the molding and sintering, the surfaces of the glass powder particles are etched by treating the glass powder with an aqueous alkaline solution, whereby a quantity of glass is dissolved by the solution in the form of silicate, and acidifying the solution, whereupon said silicate deposits on the surfaces of the glass particles in the form of a colloidal silica coating.

3,883,338
PROCESS AND APPARATUS FOR THE PRODUCTION OF SHEET GLASS
Valentin Stingelin, Aire/Geneve, Switzerland, assignor to Battelle Memorial Institute, Geneve, Switzerland
Continuation-in-part of Ser. No. 276,588, July 31, 1972, abandoned. This application June 5, 1974, Ser. No. 476,403
Claims priority, application Switzerland, Aug. 11, 1971, 11787/71
Int. Cl. C03b *18/02*
U.S. Cl. 65—91 **14 Claims**



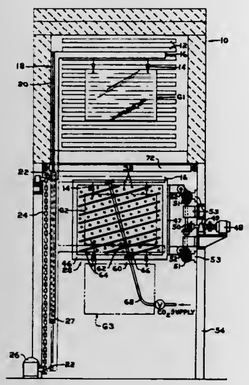
1. A method of producing sheet glass of a thickness less than normal equilibrium thickness, comprising the steps of:
depositing a layer of molten glass on a predetermined surface area of a fluidic support;
subjecting an intermediate portion of said layer to above-ambient gas pressure within boundaries defined by a descending gas curtain, thereby reducing the thickness of said intermediate portion with resulting broadening of said layer beyond its original width; and
expanding said gas curtain to widen said intermediate portion in step with the broadening of said layer while maintaining a surrounding marginal zone of equilibrium thickness.

3,883,339

METHOD OF TWO STAGE TEMPERING OF GLASS

Edmund R. Michalik, West Mifflin, and James E. Neely, Jr., Butler, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 7, 1974, Ser. No. 467,767
Int. Cl. C03b 27/00
U.S. Cl. 65—114 7 Claims



1. In the method of tempering a glass sheet comprising heating said sheet to an elevated temperature range sufficiently high to impart a temper thereto on sudden chilling and applying cooling means sufficiently rapidly toward the surface of said glass sheet while at said elevated temperature range to produce at least a partial temper in said glass sheet, the improvement comprising

applying toward said glass sheet a cooling medium containing soft particles of a sublimable solid material having a sublimation temperature below the strain point of the glass and capable of sublimation on contact with a hot surface while said glass sheet is within said elevated temperature range and said soft particles are at a temperature not exceeding the temperature of sublimation of said material at a rate sufficient to develop a heat transfer coefficient of at least 100 British thermal units per hour per square foot per degree Fahrenheit at said heated surface to develop a compressive stress in the surface portion of the glass, and

continuing to cool the glass by applying another cooling medium free of soft, sublimable particles.

3,883,340

GLASS MELTING METHOD

William George French, Plainfield; Arthur David Pearson, Bernardsville, and Arthur Richard Tynes, Red Bank, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 29, 1973, Ser. No. 345,979
Int. Cl. C03b 5/00, 5/18
U.S. Cl. 65—134 3 Claims

1. A method for the production of glass comprising;

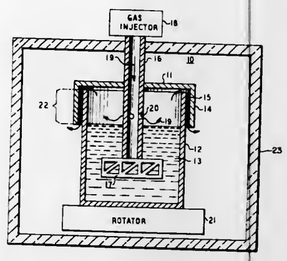
a. melting the constituents in a crucible to form a melt,

b. maintaining the melt at an elevated temperature with a controlled atmosphere above the melt, the crucible being situated in a furnace,

c. stirring the melt and

d. cooling the melt

characterized in that the controlled atmosphere is isolated from the furnace by the continual introduction of filtered gas of controlled composition into a partially enclosed chamber above the melt so that an outwardly flowing gas stream of linear velocity at least 10 feet per minute is maintained through a corridor at least one quarter of an inch long between the enclosed chamber and the furnace whereby the flow of contaminants from the furnace into the enclosed chamber is inhibited wherein



the partially enclosed chamber and corridor are formed by suspending a skirted lid above the crucible, which skirted lid has an inner diameter more than one percent larger than the outer diameter of the crucible and which skirted lid is suspended by means of a hollow tube extending through the lid, which hollow tube additionally serves to introduce the filtered gas into the partially enclosed chamber.

3,883,341

BIS-ALKYLENE PYROPHOSPHATE-UREA REACTION PRODUCTS AS SLOW-RELEASE FERTILIZERS

Cleve A. I. Goring, and Henry H. Scott, both of Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 133,375, April 12, 1971, abandoned. This application Jan. 2, 1973, Ser. No. 320,676
Int. Cl. C05b 15/00
U.S. Cl. 71—29 1 Claim

1. A method of fertilizing the soil which comprises applying to the soil a bis-ethylene pyrophosphate-urea condensation product prepared by the condensation of about 3 molecular equivalents of urea with about 1 molecular equivalent of bis-ethylene pyrophosphate.

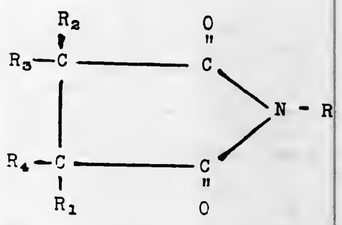
3,883,342

PLANT GROWTH REGULATORS

Walter William Abramitis, Downers Grove, and John J. Callahan, Park Ridge, both of Ill., assignors to Akzona Incorporated, Asheville, N.C.

Filed Apr. 13, 1973, Ser. No. 350,854
Int. Cl. A01n 9/22
U.S. Cl. 71—76 6 Claims

1. A method for increasing or decreasing plant growth comprising applying to the locus of a plant an effective amount of a regulant of the formula:



in which

R is alkyl having 8 to 22 carbon atoms;

R_1 is selected from the group consisting of hydrogen and alkenyl having 8 to 22 carbon atoms;

R_2, R_3 and R_4 are selected from the group consisting of hydrogen, methyl, and alkenyl having 8 to 22 carbon atoms:

and when R_1 is alkenyl, R_2, R_3 and R_4 are hydrogen.

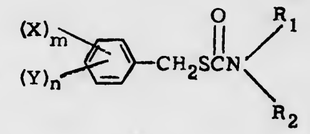
3,883,343

METHOD OF TOBACCO SUCKER INHIBITION

Kanichi Fujikawa; Ryohei Takahashi; Isao Yokomichi; Fumio Kimura; Takeo Kaji, and Nobuyuki Sakashita, all of Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Japan

Filed Mar. 12, 1973, Ser. No. 340,534
Claims priority, application Japan, Mar. 13, 1972, 47-26016
Int. Cl. A01n 9/20
U.S. Cl. 71—78 5 Claims

1. A method of inhibiting the growth of suckers of tobacco plants which comprises applying to tobacco plant, an effective amount benzylthiolcarbamate having the formula,



wherein

R_1 and R_2 are selected from the group consisting of acetyl, cyclohexyl, and C_{1-6} alkyl groups;

X and Y are selected from the group consisting of nitro, acetyl, amino, C_{1-3} alkyl, C_{1-3} alkoxyl, and halogen; and

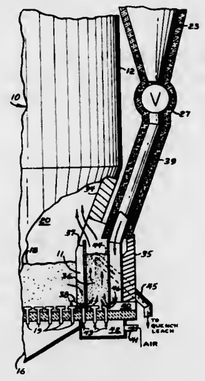
m and *n* are 0 or 1.

3,883,344

METHOD FOR TREATING COPPER ORE CONCENTRATES

William A. Griffith, Osburn, Idaho; Nicholas Tschischow, and Theodore S. Jordan, both of Casa Grande, Ariz., assignors to Hecla Mining Company, Wallace, Idaho

Filed Nov. 7, 1973, Ser. No. 413,652
Int. Cl. C22b 1/10, 15/00
U.S. Cl. 75—1 8 Claims



1. The method of oxidizing metal solids containing copper compounds and other metal sulfides to product a calcine having the copper compounds in a readily leachable form and said other metal sulfides in a difficulty leachable form, comprising: maintaining said solids in a finely divided form in a loose, flowable main bed while contacting the solids with a supply of free oxygen and maintaining said bed at an elevated temperature of about 550°–750°C. to produce an oxidized bed comprising copper sulfate and gaseous reaction product mixed with entrapped fine solids; isolating said gaseous reaction products mixed with said fine solids from said main bed; separating said entrapped fine solids from said gaseous reaction products exteriorly of said main bed while maintaining an elevated temperature in said fine solids and then mixing said heated fine solids after said separating with a portion of the 550°–750°C. solids from said main bed to form a mixture of finely divided solids; maintaining said mixture of finely divided solids in a loose, flowable secondary bed while contacting the solids in said secondary bed with a separate supply of free oxygen substantially at the location where said mixing of said separated fine solids and said main bed portion occurs and maintaining said secondary bed at a roasting temperature of about 450°–750°C., said secondary bed temperature being not more than about 100°C. below that of said main bed to product a calcine rich in copper sulfate; and discharging said secondary bed calcine preparatory to recovering the copper content.

3,883,345

PROCESS FOR THE RECOVERY OF ANTIMONY

Frank R. Caldon; Joseph E. Pimentel, both of Arvada, and Clifford J. Lewis, Lakewood, all of Colo., assignors to National Lead Company, New York, N.Y.

Filed Aug. 10, 1971, Ser. No. 170,434
Int. Cl. C22b 31/00; C01g 57/00
U.S. Cl. 75—1 40 Claims

36. A process for the production of an alakli carbonate solution containing dissolved antimony therein, which comprises the steps of:

heat treating a mixture of an antimony-containing material and a carbon-containing material, said heat treatment being in the range of 800° to 1,000°C;

agitating said heat treated mixture in an aqueous solution of an alkali carbonate to result in an antimony-pregnant alkali carbonate solution and an insoluble residue;

separating said residue from said solution; and

further processing said solution for its antimony values.

3,883,346

NICKEL-LANTHANUM ALLOY PRODUCED BY A REDUCTION-DIFFUSION PROCESS

Donald L. Martin, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

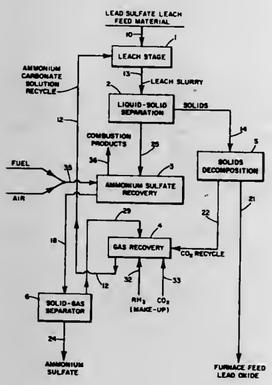
Division of Ser. No. 345,559, March 28, 1973, abandoned. This application Apr. 25, 1974, Ser. No. 463,872
Int. Cl. B22f 9/00; C22c 19/00
U.S. Cl. 75—.5 BA 1 Claim

1. A hydrogen storage medium consisting essentially of particles substantially free of strain ranging in size from about 10 microns to 50 microns consisting essentially of nickel-lanthanum alloy having a composition within 15% by weight of the stoichiometric composition of the Ni_5La intermetallic compound and containing entrapped calcium in an amount ranging from a detectable amount up to about 0.4% by weight of said alloy, said calcium being unremovable without melting said particles.

3,883,347
SLAG-FORMING AGENT FOR STEELMAKING
Masaru Takashima, Tokyo, Japan, assignor to Aikoh Co. Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 225,286, Feb. 10, 1972, abandoned. This application Sept. 27, 1973, Ser. No. 401,269
Claims priority, application Japan, Feb. 16, 1971, 46-6491
Int. Cl. C21c *5/54*
U.S. Cl. 75—30 **7 Claims**

1. A method for making steel comprising adding to molten steel a slag-forming agent comprising 2 to 20% by weight of metallic titanium particles, 30 to 94% by weight of aluminum oxide, and 4 to 20% by weight of a binder.

3,883,348
PROCESS FOR THE REMOVAL OF SULFUR FROM BATTERY WRECKER MATERIAL USING AMMONIUM CARBONATE SOLUTION
Floyd A. Acoveno, and Thomas W. Freudiger, both of Dallas, Tex., assignors to R.S.R. Corporation, Dallas, Tex.
Filed Sept. 6, 1973, Ser. No. 394,837
Int. Cl. C22b *13/04*; **C01g** *21/02, 21/14*
U.S. Cl. 75—103 **10 Claims**



1. A process for the recovery of more valuable products from lead sulfate bearing material, which comprises leaching said material with ammonium carbonate solution to form lead carbonate and ammonium sulfate, separating the effluent of the leaching step into a solid lead carbonate product and a liquid product comprising a solution of ammonium sulfate and carbon dioxide, recovering carbon dioxide from at least one of said products and reacting the same with ammonia to form ammonium carbonate, and supplying the latter in aqueous solution to the aforesaid leaching step.

3,883,349
ELECTROPHOTOGRAPHIC CHARGING METHOD
Masamichi Sato, Tucson, Ariz., assignor to Rank Xerox, Ltd., London, England
Filed Feb. 22, 1973, Ser. No. 334,830
Int. Cl. G03g
U.S. Cl. 96—1 R **7 Claims**

1. In an electrophotographic method of forming an image substantially free of background and highlight fog, wherein an electrostatic charge is applied to a photoreceptor surface, an image area of said charged surface is exposed to a light image to form a latent electrostatic image, and said exposed surface is then developed, the improvement which comprises charging a portion of said surface outside of said image area with an electrostatic charge greater than the first-mentioned charge,



and retaining the second-mentioned charge on said surface through at least a portion of the development.

3,883,350
PHOTOGRAPHIC PRODUCTS AND PROCESSES WITH SILVER COMPLEXES AS ANTIFOGGANTS
John C. Charkoudian, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 15, 1973, Ser. No. 370,220
Int. Cl. G03c *7/00, 5/54, 1/76, 3/00, 1/48, 1/40, 1/10, 1/28, 1/30, 1/02, 1/08*
U.S. Cl. 96—3 **28 Claims**

1. A photosensitive silver halide emulsion having associated therewith a stable, water-soluble compound of the formula:

$$AgL^{+2}\,2X^{-}$$

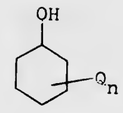
wherein L is a non-aromatic macrocyclic ligand having four electron donor atoms and is represented by the formula:



wherein each Y is a carbon chain of at least 2 carbon atoms and X is an anion.

3,883,351
METHOD OF MAKING A PHOTORESIST
James M. Lewis, Aurora, Ohio, assignor to Horizons Incorporated, Cleveland, Ohio
Division of Ser. No. 224,939, Feb. 9, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,540
Int. Cl. G03c *1/70*
U.S. Cl. 96—35.1 **3 Claims**

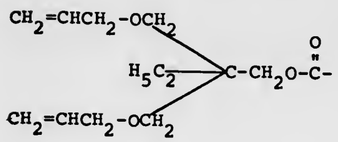
1. The process which comprises:
preparing a solution of a photosensitive material in a solvent, said photosensitive material consisting essentially of the following materials;
1. at least one polymerizable N-vinyl monomer;
2. at least one activator for enhancing the effect of exposing said monomer to a suitable dose of electromagnetic radiation at least sufficient to initiate polymerization of said monomer, said activator being selected from the group consisting of: organic halogen compounds in which at least three halogen atoms from the groups consisting of Cl, Br and I are attached to a single carbon atom; sulfonyl chlorides, sulfonyl bromides, sulfenyl chlorides, sulfenyl bromides and mercapto compounds wherein the mercapto group is attached to a carbon atom in a heterocyclic nucleus; and
3. at least one substituted phenol represented by the general formula

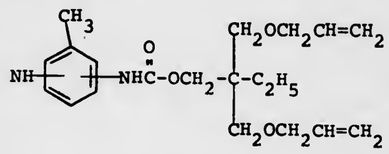


in which Q represents one or more hydroxyl groups, amino groups, alkyl or allyl groups and not all of the Q's need be the same, and *n* is an integer from 1 to 5; and
4. a resin which exhibits a good degree of solubility in an alkanol selected from the group consisting of methanol, ethanol and propanols and at least some solubility in the azeotrope of said alcohols and water;
coating the solution onto a solid substrate;
drying the coating;
photographically exposing the coating to suitable radiation;
heating to complete polymerization of the exposed portions of the coating; and
developing the resulting resist with an alcohol or alcohol-water azeotrope.

3,883,352
PROCESS FOR FORMING A PHOTOCURED SOLDER RESIST
Harold A. Kloczewski, Pasadena, and William R. Schaeffer, Baltimore, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of Ser. No. 348,378, April 5, 1973, abandoned, Division of Ser. No. 363,453, May 24, 1973, Pat. No. 3,824,109. This application May 3, 1974, Ser. No. 466,588
Int. Cl. G03c *5/00*
U.S. Cl. 96—35.1 **3 Claims**

1. A process for forming a photocured solder resist on at least one surface of a substrate which comprises:
A. applying to said surface, a layer of a solid photocurable solder resist composition consisting essentially of:
1. 5 to 40 parts by weight of a polythiol containing at least two thiol groups per molecule;
2. 60 to 95 parts by weight of poly-(diallyl orthophthalate), the sum of (1) and (2) being 100 parts by weight;
3. 1 to 20 parts by weight based on the weight of (1) and (2) of a liquid polyene of the formula:





and

4. 0.05 to 10 parts by weight based on the weight of (1) and (2) of a photocuring rate accelerator,
B. exposing said composition imagewise to actinic radiation for a time sufficient to insolubilize the exposed portion of said composition and
C. removing the unexposed photocurable composition from the surface of said substrate.

3,883,353
SPLICING OPTICAL FIBERS
Leonard George Cohen, Matawan; John Stone Cook, Summit, and Martin Victor Schneider, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 29, 1973, Ser. No. 364,500
Int. Cl. G03c *5/00, 11/00*
U.S. Cl. 96—38.3 **6 Claims**

1. A method for shaping the ends of first and second optical fibers that are to be spliced together, each of said fibers comprising a relatively high index-of-refraction cylindrical core having a relatively low index-of-refraction cladding disposed thereabout, said method comprising the steps of:
coating the entire end surfaces of said first and second fibers with negative and positive radiation-sensitive material, respectively,
exposing to radiation only a selected portion of the material coated on each of said end surfaces by directing at said material a radiant beam whose cross-sectional area approximates that of said core and is much less than the cross-sectional area of said core and cladding, said selected portion including the material covering the entire core area of each fiber end and excluding the major portion of the material that covers the cladding area of each fiber end,
removing the unexposed portion of said material from said first fiber end and the exposed portion of said material from said second fiber end,
and removing a longitudinal portion of each fiber end that is not protected by remaining material.

3,883,354
COLOR REVERSAL PROCESS AND DEVELOPER
Robert P. Molenda, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 188,616, Oct. 12, 1971. This application Aug. 14, 1972, Ser. No. 280,263
Int. Cl. G03c *5/50, 5/30*
U.S. Cl. 96—59 **32 Claims**

1. A bath for photographic positive color development of silver halide photographic elements, said bath comprising, in aqueous solution at a pH of from 8.5 to 14:
A. at least 0.02 moles/liter of photographic color developing agent capable, upon oxidation thereof, of reacting with a photographic coupler to form a dye; said color developing agent having a polarographic half-wave potential at pH 11.0 from about −159 to about −305 millivolts;
B. at least one black and white developing agent having a polarographic half-wave potential at pH 10.0 of from about −10 millivolts to about −187 millivolts; and
C. water-soluble, dye-formation inhibitor in a concentration of at least about 0.10 moles/liter which is present in sufficient quantity so that substantially all dye formation of a silver halide photographic element is restrained in said bath after said element has been exposed to light, the mole ratio of inhibitor to color developer being at least about 0.97.

15. A photographic color reversal development process which comprises
A. treating a color photographic element having a hydrophilic colloid silver halide layer bearing a latent image with an aqueous bath solution which includes at least 0.02 moles/liter of photographic color developing agent capable, upon oxidation, of reacting with a photographic color coupler to form a dye, black and white photographic developer including at least one black and white developing agent having a polarographic half-wave potential at pH 10.0 of from about −10 millivolts to about −187 millivolts, and water-soluble dye-formation inhibitor in a concentration of at least 0.10 moles/liter, said concentration being sufficient so that substantially all dye formation

of a silver halide photographic element is restrained in said bath after said element has been exposed to the light, the mole ratio of inhibitor to color developer being at least about 0.97, thereby to imbibe said silver halide layer with said bath solution and to develop solely a negative black and white image therein;

B. thereafter fogging said silver halide layer so as to render said layer developable in non-imaged areas;

C. without intermediate removal of said imbibed bath solution, treating said layer to reduce the inhibiting effect of said dye formation inhibitor; and

D. allowing development therein of a positive color image in the presence of a color coupler.

3,883,355
CRYSTALLIZATION OF SILVER HALIDE WITHIN AN AQUEOUS MIXTURE OF A WATER SOLUBLE SILVER COMPLEX AND A POLYMERIC COLLOID BINDER

Vivian K. Walworth, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 27, 1973, Ser. No. 383,106
Int. Cl. G03c 1/02; C03c 1/08; G03c 1/18
U.S. Cl. 96—114 **18 Claims**

1. A method for forming a photographic silver halide emulsion layer which comprises mixing an aqueous solution of a water-soluble complex of silver halide complexed by excess halide and a polymeric binder material, forming a layer of said mixture and crystallizing photosensitive silver halide grains in said layer by decomplexation.

3,883,356
RINSE-WAX FORMULATION

Rudolf Syrovatka, and Kurt Hofer, both of Vienna, Austria, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 9, 1973, Ser. No. 349,165
Claims priority, application United Kingdom, Apr. 11, 1972, 16591/72
Int. Cl. C08h 9/00; C09d 1/14
U.S. Cl. 106—8 **5 Claims**

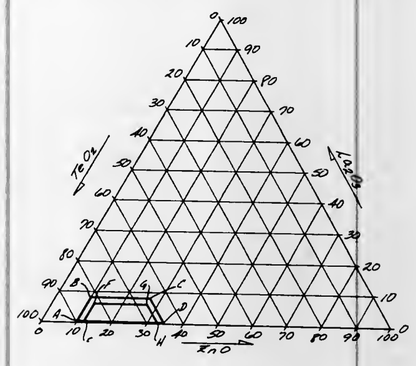
1. A rinse-wax formulation suitable for incorporation into rinse waters during the laundering of cars or automobiles, comprising an aqueous medium having therein solubilized a cationic surfactant selected from the group consisting of reaction products of long-chain fatty acids containing from 8–22 carbon atoms with alkylene polyamines, alkylolamines or ammonia, the condensation products of primary fatty amines containing from 8–22 carbon atoms with an alkylene oxide, the quaternary ammonium salts of fatty amines having at least one alkyl substituent containing from 8–22 carbon atoms; and mixtures thereof; a mineral oil having an aromatic material content of from about 15–70% by weight; and a non-alkalimetal salt of long chain fatty acids having from about 12–22 carbon atoms in the chain, selected from the group consisting of magnesium, calcium, strontium, barium, zinc, cadmium, aluminum salts and mixtures thereof; said formulation comprising essentially about 1–20% by weight of said cationic surfactant, about 10–30% by weight of said mineral oil, about 0.01–2.0% by weight of said non-alkalimetal soap, and the balance water.

3,883,357
LASER GLASS HOST COMPOSITIONS COMPRISING TeO_2, La_2O_3 AND ZnO

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 27, 1973, Ser. No. 374,229
Int. Cl. C03c 3/28
U.S. Cl. 106—47 R **14 Claims**

1. A laser glass composition comprising TeO_2, La_2O_3 and ZnO, the proportions of TeO_2, La_2O_3 and ZnO in molar amounts being defined by the area within the heavy lines, connecting the points ABCD of the ternary diagram of the Figure, the laser glass composition including an effective



lasing amount of Nd_2O_3 for stimulated emission at a wavelength of about 1.06 microns.

3,883,358
COPPER ALUMINOBORATE GLASSES

Joseph W. Malmendier, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed July 22, 1974, Ser. No. 490,500
Int. Cl. C03c 3/14
U.S. Cl. 106—47 R **3 Claims**

1. A copper-containing glass consisting essentially, by weight on the oxide basis wherein the copper content is expressed as CuO, of about 25–55% CuO, 0–25% Al_2O_3, and 40–70% B_2O_3.

3,883,359
REFRACTORY INSULATING COMPOSITIONS

Barry J. Harvey, Tydesley, England, assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Feb. 15, 1974, Ser. No. 442,964
Int. Cl. C04b 35/02
U.S. Cl. 106—64 **8 Claims**

1. A pumpable refractory insulating composition comprising from about 20 to about 50 percent of hydraulic setting cement, from about 10 to about 25 percent of finely divided refractory material, from about 1 to about 5 percent of a particulate synthetic organic polymer, from about 0.15 to about 0.3 percent of a surface active agent, and from about 20 to about 70 percent water.

3,883,360
GROUTING COMPOSITION AND METHOD

Alvaro L. Ruiz, Madrid, Spain, assignor to Hayward Baker Company, Northbrook, Ill.

Continuation of Ser. No. 102,265, Dec. 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 694,807, Jan. 2, 1968, abandoned. This application Oct. 25, 1972, Ser. No. 300,783
Int. Cl. C04b 35/16; E02d 3/00
U.S. Cl. 106—74 **5 Claims**

1. A grouting composition consisting, per liter of solution, of from 350 to 675 cc alkali metal silicate having an alkali metal oxide:silicon dioxide ratio of about 1:3 to 1:5 and having an alkali metal silicate solids content between 30 and 45 percent; from about 25 to 60 cc formamide; from 5 to 50 cc of ethyl acetate, and the balance water, said ethyl acetate being dissolved in said formamide and the combination of the formamide and ethyl acetate being present as a solute in said composition.

3,883,361
PORTLAND CEMENTS

Harry Wilfred Wallace Pollitt, Sevenoaks, and Arthur William Brown, London, both of England, assignors to The Associated Portland Cement Manufacturers Limited, London, England

Filed Oct. 4, 1973, Ser. No. 403,427
Claims priority, application United Kingdom, Oct. 11, 1972, 46875/72
Int. Cl. C04b 7/02
U.S. Cl. 106—89 **10 Claims**

1. An expansive cement of the Portland type comprising a clinker ground to a specific surface of 250 – 550m^2/kg and composed predominantly of alite with at least 2 percent by weight based on the clinker of free lime the major proportion of which is in the form of globular inclusions encapsulated within individual alite crystals.

3,883,362
FRIABLE COMPOSITIONS AND PROCESS FOR PRODUCING SAME

James E. Yates, and Paul H. Washecheck, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 425,378, Dec. 17, 1973, abandoned. This application May 1, 1974, Ser. No. 465,950
Int. Cl. C08h 9/06, 17/36
U.S. Cl. 106—268 **14 Claims**

1. A process which comprises mixing a paraffinic hydrocarbon wax, calcium hydroxide and a fatty acid while heating to a temperature of at least 150°C and thereafter cooling to recover a solid, glass-like, friable composition, said paraffinic hydrocarbon wax having a drop melting point of at least 110°F, an oil content of not greater than 50 percent by weight and a needle penetration value (77°F) in the range of 1 mm to 20 mm, and said fatty acid being a C_{16}–C_{24} aliphatic hydrocarbon monocarboxylic acid or mixtures thereof.

3,883,363
FRIABLE COMPOSITION AND PROCESS

James E. Yates, Ponca City, Okla., and Wilfred M. Pinto, Mahtomedi, Minn., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 425,379, Dec. 17, 1973, abandoned. This application May 1, 1974, Ser. No. 465,789
Int. Cl. C08h 9/06, 17/36
U.S. Cl. 106—268 **10 Claims**

1. A process which comprises mixing a paraffinic hydrocarbon wax and calcium salt of a fatty acid while heating to a temperature of at least 150°C and thereafter cooling to recover a solid, glass-like, friable composition, said paraffinic hydrocarbon wax having a drop melting point of at least 110°F, an oil content of not greater than 50 percent by weight and a needle penetration value at 77°F in the range of 1 mm to 20 mm, and said fatty acid being a C_{16}—C_{24} aliphatic hydrocarbon monocarboxylic acid or mixtures thereof.

3,883,364
ALKALINE EARTH CARBONATES

James A. Robertson, Levittown, Pa.; David W. Tunison, and Andrew O. C. Fong, both of Modesto, Calif., assignors to FMC Corporation, New York, N.Y.

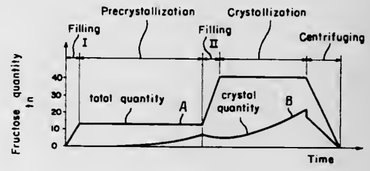
Division of Ser. No. 286,478, Sept. 5, 1972, Pat. No. 3,802,901. This application Jan. 4, 1974, Ser. No. 430,766
Int. Cl. C09c 1/02
U.S. Cl. 106—306 **5 Claims**

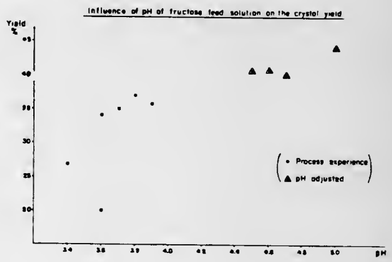
1. A dust free granular alkaline earth metal carbonate selected from the group consisting of barium and strontium carbonates, in physical form, suitable for feed stock in glass furnaces, the product being characterized by its graininess and particle hardness and capacity to be handled mechanically without generating fine dust, said product including as an intercrystalline sintering agent, dispersed through it an alkali metal silicate in an amount providing from 0.05 to 0.50 percent by weight of silicate (expressed as silicon dioxide) which is sintered into the total final composition.

3,883,365
PH ADJUSTMENT IN FRUCTOSE CRYSTALLIZATION FOR INCREASED YIELD

K. Holger Forsberg, Kotka; Lauri Hamalainen, Kantvik; Asko J. Melaja, Kantvik, and Jouko Johannes Virtanen, Kantvik, all of Finland, assignors to Suomen Sokeri Osakeyhtio, Helsinki, Finland

Continuation-in-part of Ser. No. 215,391, Jan. 4, 1972, abandoned. This application Jan. 28, 1974, Ser. No. 437,224
Int. Cl. C13f 1/02; C13k 9/00
U.S. Cl. 127—60 **13 Claims**





1. A method for crystallizing fructose from a water solution thereof containing glucose as an impurity which comprises the steps of

a. providing an aqueous fructose solution containing glucose as an impurity and at least about 90 percent dry substance, the fructose content of the dry substance being at least about 90 percent by weight,

b. adjusting the pH of the solution to within the range of 4.5 to 5.5,

c. bringing the aqueous fructose solution to a temperature at which it is saturated with respect to fructose,

d. adding fructose seed crystals to the solution,

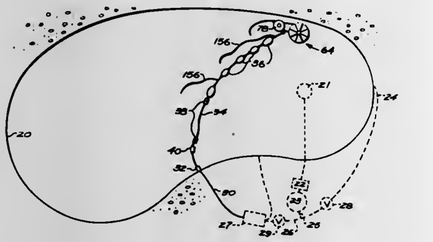
e. lowering the temperature of the resulting mass at a controlled rate to cause the mass to be supersaturated with respect to fructose and to bring about an increase in crystal size of the seed crystals without substantial formation of new fructose crystals, and

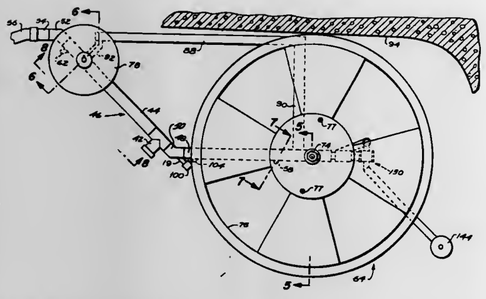
f. separating the fructose crystals from the mass when the crystal size is in the range of about 200 to 500 μm.

3,883,366
POOL CLEANER

Charles M. Blumenfeld, 4700 Parkridge Rd., Sacramento, Calif. 95822

Continuation-in-part of Ser. No. 221,942, Jan. 31, 1972, abandoned. This application July 27, 1973, Ser. No. 383,256
Int. Cl. B08b *3/02, 9/08*
U.S. Cl. 134—52 **25 Claims**





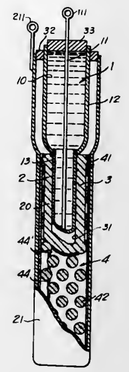
1. Apparatus for cleaning sediment from a pool of liquid, the apparatus comprising:
an elongated conduit;
a front wheel secured to the conduit;
a rear wheel spaced from the front wheel and secured to the conduit;
buoyant means supporting the wheels in the vicinity of the surface of the liquid;
means for supplying liquid to the conduit;
lateral jet means associated with the conduit and arranged to move the conduit laterally and carry the wheels into contact with a wall of the pool;
intermittent jet means associated with the conduit and arranged to move it longitudinally along the side of the pool;
means for opening and closing the intermittent jet means to cause the conduit to move along the wall in a stop-and-go pattern;
a downwardly extending flexible hose secured to the conduit for stirring up sediment in the pool; and
means for removing liquid from stirred-up sediment from the pool.

3,883,367
SODIUM-SULFUR STORAGE BATTERY

Takewo Chiku, Toyota; Takeshi Kogiso, Nagoya; Kimie Kojima, Toyota, and Takashi Yoshida, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, Japan

Filed Oct. 17, 1973, Ser. No. 407,197
Claims priority, application Japan, Oct. 19, 1972, 104797
Int. Cl. H01m *35/02*
U.S. Cl. 136—6 F **14 Claims**

1. A sodium-sulfur storage battery comprising in combination a battery container,
at least one negative half-cell unit within said battery container defining a sodium chamber,
molten sodium within said sodium chamber,
a negative conductor extending from within said sodium chamber,
at least one positive half-cell unit within said battery container defining a sulfur chamber,
molten sulfur within said sulfur chamber,
a positive conductor,

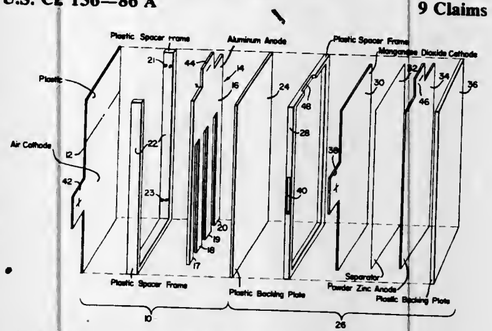


a solid electrolyte between said negative and positive half-cell units for separating said sodium chamber from said sulfur chamber and passing only sodium ions therethrough, and
a porous current collector mesh within said positive half-cell unit in electrical contact with said positive conductor and a surface of said solid electrolyte,
said porous current collector mesh being formed by interlacing carbon yarn composed of carbon monofilaments having an elastic modulus not less than 15 tons/mm² and a tensile strength not less than 100 kg/mm².

3,883,368
ALKALINE ALUMINUM-AIR/ZINC-MANGANESE DIOXIDE HYBRID BATTERY

Karl V. Kordesch, Lakewood, and Akiya Kozawa, Middleburg Heights, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 26, 1972, Ser. No. 301,108
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 A **9 Claims**

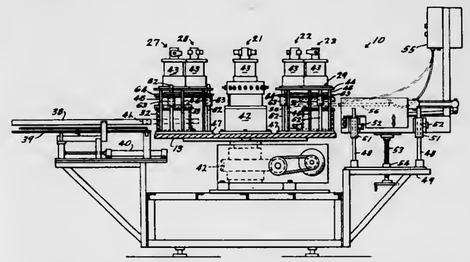


1. A hybrid battery capable of discharging at two or more current rates, one rate being high and the other being low relative to each other, said battery comprising a first and a second cell electrically connected in parallel, the open circuit voltage of said first cell being substantially equal to the trickle charge voltage requirement of said second cell, said first cell having an aluminum electrode, an oxygen depolarized electrode, and an aqueous alkaline electrolyte, said aluminum electrode having a surface area such that the current density at said aluminum electrode at a current rate equal to the average current rate of said relatively high rate and said relatively low rate is sufficient to enable said first cell to be discharged without excessive wasteful corrosion of said aluminum electrode normally occurring at low current densities and without an excessive voltage drop in said first cell normally occuring at high current densities and said second cell having a zinc electrode, a manganese dioxide electrode, and an aqueous alkaline electrolyte, wherein said battery is so constructed and arranged that said first cell delivers most of the electrochemical output of the battery when the external discharge current rate on the battery is said relatively low rate, said second cell delivers most of the electrochemical output of the battery when the external discharge current rate on the battery is said relatively high rate, and said first cell charges said second cell when there is no external discharge current on said battery.

3,883,369
BATTERY ASSEMBLY MACHINE

John P. Badger, Genoa, and William H. Strater, Toledo, both of Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed Dec. 26, 1973, Ser. No. 427,737
Int. Cl. H01m *35/18;* **B29c** *19/02*
U.S. Cl. 136—176 **12 Claims**



1. An apparatus for heat sealing together a battery case and cover of a thermoplastic material, comprising, in combination, means for positioning a cover a predetermined distance above the upper surfaces of a battery case and for holding it in such position in alignment with and parallel to the opposed upper surfaces of said case, means for applying radiant heat to the spaced apart opposed surfaces of said cover and case until said surfaces become tacky, including means for adjusting the relative distances of the heat applying means from the cover and case, and means for joining and clamping together said case and cover for a predetermined period until said tacky surfaces become welded together.

3,883,370
ELECTRICAL BARRIER LAYER COATING AND METHOD FOR MAKING SAME

Jerome J. Kanter, 12300 Hobart Ave., Palos Park, Ill. 60464

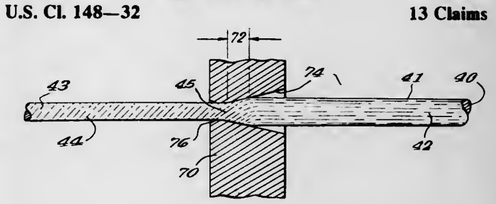
Continuation-in-part of Ser. No. 105,650, Jan. 11, 1971, Pat. No. 3,700,505, which is a continuation-in-part of Ser. No. 828,707, May 28, 1969, abandoned. This application Aug. 11, 1972, Ser. No. 279,940The portion of the term of this patent subsequent to Oct. 24, 1989, has been disclaimed.
Int. Cl. B44d *1/18*
U.S. Cl. 148—6.35 **18 Claims**

1. In a process for providing an electrical barrier layer on magnetic inductors having an adherent oxide layer formed on a surface thereof, the steps comprising:
complexing said oxide layer of the magnetic inductor with at least one metal in solid phase from Group III of the Periodic Table by mechanical frictional contact therebetween in order to complex said Group III metal with said oxide layer;
said Group III metal selected from the group consisting of aluminum, scandium, yttrium, and the rare earth metals; said oxide layer formed by oxidation of said magnetic inductor metal;
said magnetic inductor comprising at least one metal from the spinel mineral group selected from the class consisting of iron, chromium, manganese, and the alloys thereof; and
oxidizing at least a portion of said Group III metal contained in said layer.

3,883,371
TWIST DRAWN WIRE

Arthur L. Geary, Barrington, Ill., assignor to Brunswick Corporation, Skokie, Ill.

Filed Feb. 21, 1973, Ser. No. 334,223
Int. Cl. C22c *41/00*
U.S. Cl. 148—32 **13 Claims**



1. An anisotropic-wrought two-phase metal material comprising:
a. a cold deformed uniformly fiberized metallographic microstructure being in a helical angled configuration with respect to the longitudinal axis of the material;
b. at least 15 percent of one of the two phases being present in the material;
c. at least one of the phases present appearing as elongated fibers within the material;
and further characterized for a given reduction in cross-sectional area wherein:
1. the torsional yield strength of the material subjected to constriction and torsion is greater than the torsional yield strength of the material subjected solely to constriction, and
2. the tensile yield strength of the material subjected solely to constriction is equal to or greater than the tensile yield strength of the material subjected to constriction and torsion.

3,883,372
METHOD OF MAKING A PLANAR GRADED CHANNEL MOS TRANSISTOR

Hung Chang Lin, Silver Spring, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 11, 1973, Ser. No. 378,291
Int. Cl. H01l *7/44*
U.S. Cl. 148—187 **3 Claims**

1. A method of making a planar metal oxide semiconductor field effect device having a relatively narrow channel region and a silicon gate, wherein the improvement comprises:
forming a relatively thin insulating layer of oxide approximately 1×10^3A thick over a semiconductor substrate of selected conductivity type;
forming a layer approximately 5×10^3A thick of polycrystalline silicon over said insulating layer;
forming a first layer of glass over said polycrystalline silicon layer to a thickness approximately 10×10^3A thereby

being substantially greater than the thickness of the insulating layer;

masking and etching through said glass and polysilicon layers to the surface of said silicon layer to form at least two spaced apart windows of predetermined area for source and drain regions, respectively;

masking an area greater than said predetermined area over said first glass layer at the location of and substantially aligned with at least one window of said at least two windows corresponding to said source region for insuring proper alignment of a subsequent double diffusion thereat and then etching the glass at said larger area and the insulating layer to the surface of said substrate at the location of said at least one window, said thickness of said first glass layer thereby preventing any etching of the polysilicon layer thereat;

diffusing a first conductivity type impurity dopant selected from the group consisting of boron, aluminum, gallium and indium through said at least one window into the surface of said substrate;

removing the remainder of said first glass layer and any remaining insulating layer at the location of the other window;

simultaneously diffusing a second conductivity type impurity dopant selected from the group consisting of phosphorous, arsenic, antimony and bismuth through said at least two windows into the surface of said substrate to produce a double diffused source region and a single diffused drain region;

the intermediate portion of said insulating layer and said polycrystalline layer thereby producing a silicon gate while the polycrystalline layer extending beyond said at least two windows serves as an electrostatic shield;

forming a second layer of glass over the surface of the polycrystalline silicon and the surface of said substrate exposed by said at least two windows;

etching contact windows through said second layer of glass to the surface of said substrate at the source and drain regions and the surface of the silicon gate; and

forming a layer of metallization therethrough and etching a selected pattern for forming discrete metal electrodes.

3,883,373
GAS GENERATING COMPOSITIONS

Eric William Sidebottom, Otterburn Heights, Quebec, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada

Filed July 2, 1973, Ser. No. 375,654
Claims priority, application United Kingdom, July 24, 1972, 34481/72
Int. Cl. C06b *19/02*
U.S. Cl. 149—6 **8 Claims**

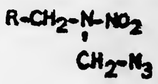
1. A gas generating composition comprising a mixture of particles of the following ingredients
   1. an alkali metal azide or an alkaline earth metal azide,
   2. an oxidizing compound in proportion sufficient to react completely with said azide with the liberation of nitrogen therefrom, and
   3. an oxide selected from the group consisting of silicon dioxide, aluminum oxide, titanium dioxide, tin oxide and zinc oxide, with or without admixture with a metal selected from the group consisting of silicon, aluminum, tin and zinc, said oxide and metal being in proportion sufficient to react with all the metallic residue of the reaction between (1) and (2).

3,883,374
DOUBLE-BASE PROPELLANT CONTAINING ORGANIC AZIDE

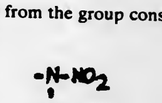
Ronald Rosher, Cumberland, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 851,765, Aug. 20, 1969. This application Apr. 26, 1972, Ser. No. 249,444
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.8 **11 Claims**

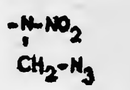
1. A propellant composition comprising nitrocellulose and an organic azide represented by the formula



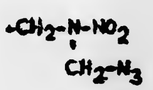
wherein R is selected from the group consisting of H, alkyl of 1 to 6 carbon atoms,



and alkyl of 1 to 6 carbon atoms wherein at least one hydrogen atom has been replaced by the



radical to form the radical



3,883,375
SOLID PROPELLANT COMPOSITIONS CONTAINING POLYMERIC BINDERS WITH AZIRIDINYL CURING AGENTS

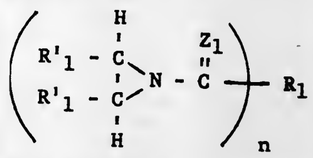
Edmund J. Mastrolia, Sacramento; Charles B. Frost, Fair Oaks, and Gerald A. Wessler, Rancho Cordova, all of Calif., assignors to Aerojet - General Corporation, Azusa, Calif.

Filed Feb. 3, 1964, Ser. No. 343,446
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.9 **13 Claims**

1. A high energy propellant composition comprising an oxidizer and the reaction product of a terminally reactive polymer having the formula:

$$A_3(Y_3)_p$$

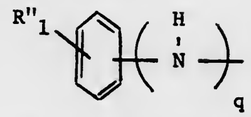
wherein A_3 comprises a polymer of a polymerizable vinylidene compound; Y_3 is selected from the group consisting of carboxy, hydroxy, amine and mercapto, and p is an integer of at least 2; with a curing agent selected from the group consisting of those having the formula:



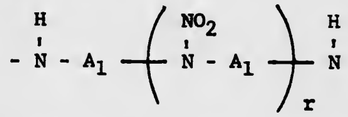
wherein R_1 is selected from the group consisting of alkylene, arylene, trivalent organic radicals of the formula:



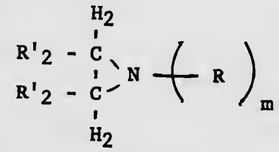
organic radicals of the formula:



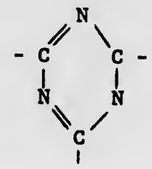
wherein q is an integer of from 2 to 3 and R''_1 is selected from the group consisting of hydrogen and lower alkyl; and divalent radicals of the formula:



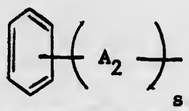
wherein A_1 is alkylene, and r is selected from the group consisting of 0 and 1; n is an integer of from 2 to about 4 and corresponds numerically to the valence of R_1; R'_1 is selected from the group consisting of hydrogen and lower alkyl and Z_1 is selected from the group consisting of oxygen and sulfur; and those having the formula:



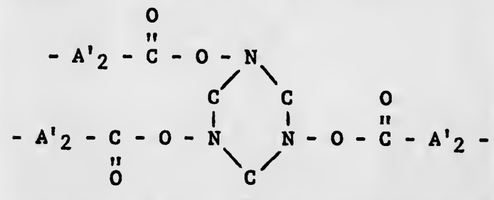
wherein R_2 is selected from the group consisting of alkylene, arylene, a trivalent radical of the formula:



a radical of the formula:



wherein A_2 is lower alkylene and s is an integer of from 2 to 3; and a trivalent organic radical of the formula:



wherein A'_2 is lower alkylene; m is an integer of from 2 to about 4, and corresponds numerically to the valence of R_2, and R'_2 is selected from the group consisting of hydrogen and lower alkyl.

3,883,376
HIGH REACTIVITY FUELS FOR SUPERSONIC COMBUSTION RAMJETS

Frederick S. Billig, Rockville; James C. Pirkle, Jr., Wheaton, and Stephen E. Grenleski, Jr., Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 87,344, Nov. 5, 1970, abandoned. This application May 7, 1973, Ser. No. 357,748
Int. Cl. C10l *1/30*
U.S. Cl. 149—22 **2 Claims**

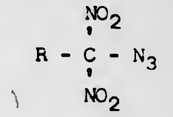
1. A fuel composition capable of ignition within the low residence times occurring in a supersonic ramjet combustion engine comprising:
   a hydrocarbon selected from the group consisting of n-dodecane, methylcyclopentadiene dimer, and tetra-hydro methylcyclopentadiene dimer, the hydrocarbon being present in the fuel composition in a proportion equal to at least 50 percent and not more than 87.5 percent by weight thereof; and, a pyrophoric additive component selected from the group consisting of respective mixtures of trimethylaluminum and ethyldecaborane; trimethylaluminum and pentaborane; triethylaluminum, ethyldecaborane, and diethyldecaborane; and, trimethylaluminum, ethyldecaborane, and diethyldecaborane; the additive component being present in the fuel composition in a proportion equal to not more than 50 percent by weight thereof and wherein the first-named constituent of each mixed additive component constitutes at least 20 percent of the additive component by weight.

3,883,377
1-AZIDO-1,1-DINITROALKANES, USEFUL AS PROPELLANTS

Charles M. Wright, Wilmington, Del., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 27, 1968, Ser. No. 780,614
Int. Cl. C06b *15/02*; **C07c** *117/00*
U.S. Cl. 149—88 **8 Claims**

1. A compound of the structure



wherein R is alkyl and contains up to eight carbons.

8. The method of plasticizing polynitropropene by adding to said polymer the compound of claim 1.

3,883,378
THERMALLY STABLE NITROSTARCH

Joseph S. Stack, Riverdale, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 23, 1966, Ser. No. 596,737
Int. Cl. C06b *9/04*
U.S. Cl. 149—108 **12 Claims**

1. A urethane complex consisting of the reaction product of nitrostarch and an isocyanate selected from the group consisting of
   2,4-tolylene diisocyanate,
   4,4′-diphenylmethane diisocyanate,
   1,5-napthalene diisocyanate,
   p-tolylene isocyanate,
   3,3′-dimethoxy - 4,4′-biphenyl diisocyanate,
   3,3′-dimethyl - 4,4′-biphenyl diisocyanate,

phenylene diisocyanate
hexamethylene diisocyanate, and
heptamethylene diisocyanate,
said complex having thermal stability above 65°C for use in munitions.

3,883,379
METHOD OF IMPROVING THE CORROSION RESISTANCE OF NICKEL-COPPER ALLOYS

Richard D. Tokarz, Ruhland, Wash., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

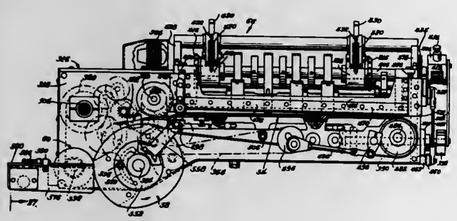
Filed Dec. 21, 1972, Ser. No. 317,456
Int. Cl. C23f *1/00, 15/00*
U.S. Cl. 156—18 **2 Claims**

1. A method of improving the corrosion resistance to hot water of a resistance temperature detector including a body formed of a nickel-copper alloy containing 63–70 wt. percent nickel and minor amounts of sulfur, said alloy further containing magnesium residual from the forming process wherein it had been used as a deoxidizer, comprising etching the detector body in concentrated hydrochloric acid prior to exposure of the detector to hot water.

3,883,380
METHOD OF LABELING

Harry V. Kirk, Libertyville, and Manfred Rudy, Norridge, both of Ill., assignors to Kirk-Rudy, Inc., Kennesaw, Ga.

Division of Ser. No. 108,334, Jan. 21, 1970, abandoned, and a continuation of Ser. No. 234,980, March 15, 1972, abandoned. This application June 18, 1973, Ser. No. 370,824
Int. Cl. B32b *31/12*; **G05g** *15/00*
U.S. Cl. 156—60 **5 Claims**

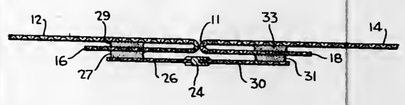


1. A method for applying indicia to each of a series of continuously moving articles at a preselected indicia receiving position thereon, said preselected position being at substantially the same relative position for each of said articles, said method comprising the steps of continuously moving each of said articles along a path of travel past an indicia applying station, moving a plurality of aligned labels in a row of labels along a second path of travel to said indicia applying station, engaging the leading edge of each of said moving articles during movement in said first path of travel for locating said preselected indicia receiving position at said indicia applying station, continuously rotating a label applying member in one direction while defining a label receiving position thereon, defining a nip in said second path of travel upstream of said label applying member, passing each label to said nip, temporarily stopping the movement of only the leading edge of said labels at said nip while remaining portions of each label continue movement thereby forming a kink in each of said labels, opening said nip to permit said label, including the temporarily stopped leading edge thereof, to continue movement in said second path of travel, positively feeding each of said labels thereafter to said label receiving position on said label applying member with the leading edge of each of said labels being positioned at the same relative position on said label receiving position on said label applying member, said positive feeding step also acting to remove said kink in said label and simultaneously causing said label to snap to a flattened position for substantially assuring complete separation of a leading label from an adjacent label, coinciding the timing of the rotation of said label applying member with the timing of the movement of each of said movably engaged articles for coinciding said label with said preselected indicia receiving position as said label receiving position on said label applying member rotates to said indicia applying station, and applying indicia on said labels to each of said articles at said preselected indicia receiving position and at said indicia applying station.

3,883,381
SLIDE FASTENER INSTALLATION AND METHOD AND SLIDE FASTENER PACKAGE FOR FORMING THE SAME

Bruce K. Thaeler, Meadville, Pa., assignor to Textron Inc., Providence, R.I.

Filed June 26, 1973, Ser. No. 373,705
Int. Cl. A44b *19/34*
U.S. Cl. 156—66 **5 Claims**



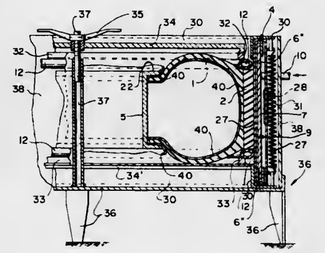
1. A method of installing a slide fastener having a pair of carrier tapes on an article, the article having a pair of main fabric sections folded upon themselves to form folded edges and a pair of flaps with each flap extending from a folded edge and the folded edges defining an elongate opening to be closed by the slide fastener comprising the steps of
providing a slide fastener carrying at least four strips of heat-bondable adhesive on the carrier tapes,
peeling at least two of the strips of adhesive from the carrier tapes,
disposing at least one of the peeled strips of adhesive between respective flaps and main sections for adhesively bonding the flaps and main sections and spacing the disposed strip of heat-bondable adhesive from the folded edges,
compressing the flaps against the main sections while applying heat to adhesively bond the flaps to the main sections, disposing a strip of heat-bondable adhesive between respective carrier tapes and flaps, and
compressing the carrier tapes against the flaps while applying heat to adhesively bond the carrier tapes to the flaps.

3,883,382
METHOD AND APPARATUSES FOR RETREADING WORN TIRES

Guy Pelletier, Melbourne, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed Oct. 27, 1972, Ser. No. 301,272
Claims priority, application Canada, Nov. 3, 1971, 126801
Int. Cl. B29h *5/04, 5/16*
U.S. Cl. 156—96 **11 Claims**

1. A cold cure retreading apparatus for retreading a worn pneumatic tire whose periphery has been buffed, by means of a fully prevulcanized replacement tread band disposed around the buffed surface of said tire with a thin layer of uncured bonding material between said buffed surface and the inner surface of said tread band; said apparatus comprising a rim mounted centrally of said tire for preventing lateral outward displacement of the beads of the tire, a steam impervious lining for covering the inside surface of said tire and for defining in conjunction with said rim an inner steam chamber, an inner chamber steam supply means in communication with said inner steam chamber for feeding steam to said inner chamber, a peripheral belt for closely encircling the periphery of said tire with said tread band in place thereon, said belt presenting a smooth bearing surface for contacting the outward surface of said tread band, a resilient ring disposed on each lateral edge of said tread band for inwardly pressing over the junctions between said tread band and the sides of said tire, means for retaining said resilient rings in place during



curing of said adhesive material, an outer rigid band circumscribing said peripheral belt and defining therewith an outer steam chamber for applying heat to the outward surface of said tread band during said curing, and outer chamber steam supply means in communication with said outer steam chamber for feeding steam to said outer steam chamber.

3,883,383
METHOD OF FABRICATING EMBOSSED MEMBRANES

Frank B. Leitz, Jr., Weston, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Filed Sept. 21, 1966, Ser. No. 580,914
Int. Cl. B29c *19/00*
U.S. Cl. 156—242 **12 Claims**

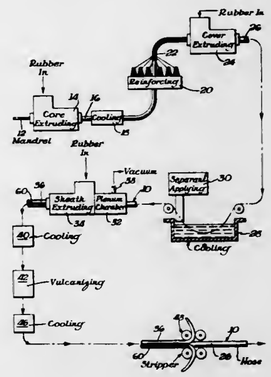
1. The method of making an embossed ion-exchange membrane comprising:
a. inserting a sheet of glass in a tray;
b. inserting polymerizable ion-exchange resin monomers in said tray to a predetermined height;
c. inserting a porous sheet of membrane-supporting backing material into said tray;
d. inserting a patterned sheet or plate of soft flexible metal into said tray, said sheet being provided with a flat marginal area;
e. inserting masking material on said flat marginal area;
f. inserting another glass sheet to rest on the surface of the masking material;
g. heating the tray and its contents for polymerization of the monomers therein;
h. and thereafter removing and separating the contents of the tray and peeling or stripping the said patterned sheet or plate from the resulting polymerized ion-exchange resin to obtain an embossed ion-exchange membrane.

3,883,384
HOSE MANUFACTURE

Paul Hopkins, Hockessin, Del., assignor to Electric Hose & Rubber Company, Wilmington, Del.

Continuation-in-part of Ser. No. 83,096, Oct. 22, 1970, abandoned. This application Feb. 8, 1973, Ser. No. 330,703
Int. Cl. B29d *23/00*
U.S. Cl. 156—244 **1 Claim**

1. In a method of protecting a flexible hose during its manufacture wherein the hose includes an outer layer of readily deformable vulcanizable material, the improvement comprising passing the hose through an extruding machine, extruding around the hose a relatively thick soft flexible sheath made from a rubber material which lacks the necessary vulcanizing agents to render the sheath non-vulcanizable and reuseable, the sheath being extruded directly on the hose without any structural element therebetween, placing the hose carrying sheath in a steam autoclave by coiling a plurality of layers of the sheath carrying hose atop each other without any temporary wrapping as a means of protection, vulcanizing the hose with the use of heat and external pressure applied against both the sheath and the hose by utilizing the pressure developed in the steam autoclave to act against the external hose surface by being transmitted through the sheath, maintaining the sheath

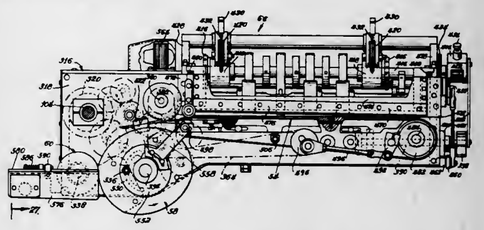


unvulcanized on the hose during vulcanization of the hose with the sheath remaining distinct and readily removable from the hose after vulcanization thereof, and removing the sheath from the hose after the hose has been vulcanized by the utilization of stripping elements which strip the sheath from the hose.

3,883,385
LABELING MACHINE

Harry V. Kirk, Libertyville, and Manfred Rudy, Norridge, both of Ill., assignors to Kirk-Rudy, Inc., Kennesaw, Ga.

Continuation of Ser. No. 108,334, Jan. 21, 1970, abandoned. This application June 19, 1973, Ser. No. 371,368
Int. Cl. B32b *31/12*; **G05g** *15/00*
U.S. Cl. 156—352 **8 Claims**



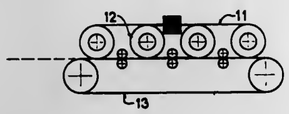
1. Apparatus for applying indicia to each of a plurality of continuously moving articles at a preselected indicia receiving position thereon, said preselected position being at substantially the same relative position for each of said articles, said apparatus comprising, in combination, an indicia applying station, means for continuously and successively moving each of said articles in a row along a first path of travel to and past said indicia applying station, means for continuously engaging the leading edge of each of said moving articles during movement thereof in said first path of travel for locating said preselected indicia receiving position at said indicia applying station, means for continuously and successively moving a plurality of labels in a row along a second path of travel to said indicia applying station, a label applying member at said indicia applying station and having a label receiving position thereon, means for continuously rotating said label applying

member, means for defining a nip in said second path of travel upstream of said label applying member, means for normally opening and temporarily closing said nip, each leading edge of each of said labels being temporarily stopped when said nip is closed and continuing movement in said second path of travel when said nip is open, each of said labels continuing movement in said second path to travel to said label applying member only after being temporarily stopped at said nip, said opening and closing means for said nip stops movement of said leading edge only and trailing portions of said label continue movement by said label moving means thereby forming a temporary kink in eack of said labels, means for delivering each of said labels to said label receiving position on said label applying member and acting to remove said kink in said label and simultaneously causing said label to snap to a flattened position for substantially assuring complete separation of a leading label from an adjacent following label, and means for coinciding said label receiving position, with said label thereon, with said indicia receiving position of each of said articles as said label applying member applies indicia on said labels to each of said articles at each of said indicia receiving positions.

3,883,386
APPARATUS FOR CONTINUOUSLY JOINING OR PAPER PRINTING FLAT MATERIALS

Eraldo Garbini, Corbetta; Umberto Lissoni, and Bruno Cislaghi, both of Magenta (Milan), all of Italy, assignors to Saer di Trezzi Edvige, Corbetta (Milan), Italy

Filed Mar. 20, 1972, Ser. No. 236,395
Claims priority, application Italy, May 25, 1971, 22240/71
Int. Cl. B29c *19/02*; **H05b** *5/00, 9/02*
U.S. Cl. 156—380 **9 Claims**



1. An apparatus for continuously joining layers of fabric with interposed thermo-adhesive, comprising two continuous belts between which the parts to be joined are seized and compressed, at least one of said belts being a metal belt entirely heated by means of induced electric current, wherein the lower one of said two continuous belts is a conveyor belt, and the upper one of said two continuous belts is a fixed belt of metal having a low electrical resistance, said upper belt being disposed in such a manner as to constitute the secondary winding of a transformer fed with low frequency current.

3,883,387
BUILDING DRUM SHAPING SEGMENT ASSEMBLY

Geza M. Csatlos, P.O. Box 1411, Wadsworth, Ohio 44309

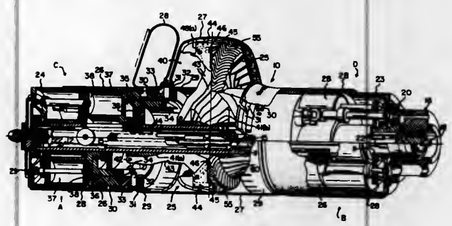
Filed Aug. 28, 1973, Ser. No. 392,334
Int. Cl. B29h *17/12, 17/16, 17/26*
U.S. Cl. 156—415 **10 Claims**

1. A shaping segment assembly carried by a shaping mechanism used to radially expand the medial portion of a building drum having building surfaces provided by said medial portion said contractible end portions, said medial portion being overlaid by a cylindrical sleeve, said medial and end portions being mounted around a drum shaft,

said shaping mechanism including opposed axially movable actuator sleeves mounted around said drum shaft, each said actuator sleeve carrying the axially outer end of one of a pair of a series of control links positioned radially around said drum shaft, the axially inner end of each pair of control links being pivotally connected to a shaping segment carrier,

characterized in that,

said assembly has an alternating series of fixed and floating segments underlying and supporting said cylindrical sleeve as a building surface,



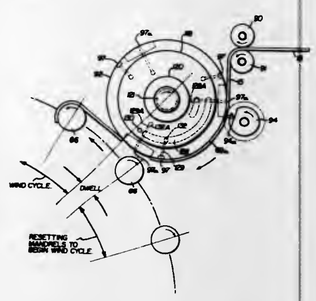
each said fixed segment being carried by one of the series of said carriers pivotally connected to a pair of said control links,

each said floating segment being connected adjacent the ends thereof to a fixed segment by a pair of continuous chains with pantographic links.

3,883,388
MACHINE FOR PRODUCING A PLASTIC-COVERED GLASS CONTAINER

Stephen W. Amberg, St. James; Thomas E. Doherty, Setauket, both of N.Y., and Clarence A. Heyne, Sun City, Ariz., assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 209,751, Dec. 20, 1971, Pat. No. 3,802,942. This application July 11, 1973, Ser. No. 378,384
Int. Cl. B22b *1/00*
U.S. Cl. 156—446 **2 Claims**



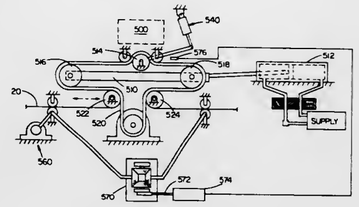
1. A sleeve making machine comprising supply means for a web of material of predetermined width, a web feed device comprising counter rotating nip rolls rotated on parallel vertical shafts and through which the web is advanced, means connected to the vertical shafts for driving said nip rolls, a feed drum rotated on a vertical shaft, vacuum means on said feed drum for holding the advancing web thereon, means connected to the feed drum shaft for driving the drum at a surface velocity greater than the web velocity, the vacuum means providing a slip clutch effect for maintaining the web length between said nip rolls and feed roll in tension, a rotary knife mounted on a vertical shaft, means connected to said shaft for rotating it, said knife being engageable with the web on said drum for cutting sleeve lengths from said web, the cut length of web being spaced from the parent web on said drum, a mandrel turret machine having a circular array of rotatable mandrels thereon, the mandrels each being mounted on a rotatable vertical shaft, said turret being rotatable about a vertical axis and moving the surface of the mandrels successively in tangential proximity to the surface of the feed drum to a transfer station advanced beyond said rotary knife, drive means engageable with the vertical shafts of said mandrels at

the proximity of the transfer station and operable responsive to turret rotation for rotating the mandrels through a winding cycle in excess of one revolution, vacuum means on each mandrel for engaging the leading end of a sleeve length on the feed drum and transferring it to the mandrel, said sleeve length being wrapped around the mandrel in said winding cycle and overlapping the trailing end on said leading end, heat sealing devices on said turret individual to each mandrel, said devices each being operable in relation to the overlapped ends of a sleeve length wrapped around said mandrel for heat sealing them together, means on the turret connected to said devices for operating them in succession for heat sealing the overlapping ends of said wrapped length thereby forming it into a seamed sleeve, stripping means individual to each of said mandrels and supported by the turret for reciprocating stripping movement, said means at least partly encircling the mandrel adjacent an edge surface of a sleeve thereon, and means connected to the stripping means and operated responsive to rotary movement of the turret for axially shifting the sleeve on the mandrel.

3,883,389
CONTINUOUS RECIPROCATING WEB DRIVE MEANS WORKING WITH INTERMITTENT HEAT SEAL FORMING MEANS

Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co. Inc., Gloucester, Mass.

Division of Ser. No. 159,993, July 6, 1971, Pat. No. 3,775,225. This application Nov. 15, 1973, Ser. No. 415,956
Int. Cl. B30b *15/34*
U.S. Cl. 156—583 **1 Claim**

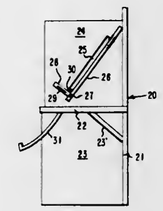


1. In a heat sealing machine operable on continuous plastic web, the machine including a pair of spaced shuttle rolls reciprocally movable in unison adjacent to a pair of more closely spaced idler rolls, said pairs of rolls adapted to have plastic web threaded thereabout, a drive means arranged to drive said shuttle rolls reciprocally to temporarily stop the plastic film, and a heat die for forming a heat seal in the stopped web located downstream, relative to the direction of normal web movement, of one of said shuttle rolls and wherein an endless timing belt is threaded about said pairs of rolls, and a single direction clutch is engaged with said belt, adapted to prevent said belt between said shuttle rolls and the portion of said film at said heat seal die from moving during the forming of the heat seal as said shuttle is driven in the take-up direction, the improvement wherein said single direction clutch is combined with a drive means for selectively rotating the normally stationary part of the clutch, said drive means energizable after a heat seal formation is made to cause movement of said endless belt and simultaneous movement of said film at said heat seal die away from said heat seal die despite continued normal web stopping movement of the shuttle and endless belt threaded thereabout against the single direction clutch.

3,883,390
PROCESS AND APPARATUS FOR DELAMINATING AN ADHERENT RECEPTOR SHEET ON A SENSITIZED ELEMENT

Abraham B. Cohen, Springfield, and Herbert A. Tobias, East Brunswick, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 201,414, Nov. 23, 1971, Pat. No. 3,794,546. This application Aug. 30, 1973, Ser. No. 393,053
Int. Cl. B32b *31/08*
U.S. Cl. 156—584 **6 Claims**



1. An apparatus for delaminating a receptor sheet from a discrete sheet structure comprising in combination:

a. a supply roll for a continuous web, said continuous web having an adhesive surface;

b. an element for feeding the sheet structure to said continuous web, said element including a track to move the sheet structure into position where it can be fed to said continuous web;

c. an element for adhering the adhesive surface of said continuous web to at least the leading edge of the receptor sheet by pressing the continuous web against the receptor sheet;

d. a heating element comprising at least one heating platen for heating said sheet structure before it is contacted by said continuous web; and

e. a take-up roll for said continuous web and the receptor sheet, said take-up roll being disposed relative to said element for adhering said continuous web to the receptor sheet so that upon take-up of said continuous web, the receptor sheet is delaminated from the sheet structure.

3,883,391
TREATMENT OF LIGNOCELLULOSIC MATERIAL WITH AN AQUEOUS CONTAINING CYANIDE IONS AND AN ALKALINE EARTH METAL SALT

Richard B. Phillips, Sloatsburg, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Jan. 16, 1974, Ser. No. 433,868
Int. Cl. D21c *3/02*
U.S. Cl. 162—70 **16 Claims**

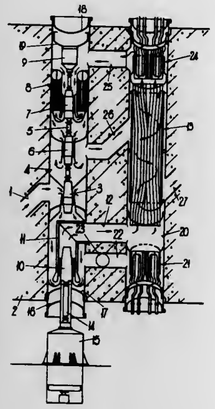
1. A process for increasing the yields of alkaline pulping of lignocellulosic material comprising treatment of the lignocellulosic material with an aqueous solution containing cyanide ions and a water-soluble, alkaline-earth metal salt.

9. A process for increasing the yields of alkaline pulping of lignocellulosic material comprising treatment of said lignocellulosic material with an aqueous solution containing cyanide ions and a water-soluble, alkaline-earth metal salt, removing the lignocellulosic material from said aqueous solution, and digesting the thus treated lignocellulosic material with an alkali-metal pulping solution having a pH above about 7 and up to about 12.

3,883,392
NUCLEAR REACTORS AND TO CLOSURE ARRANGEMENTS FOR USE THEREIN

Piotr Stanislaw Burylo, Leicester, and Dennis John Hughes, Nuneaton, both of England, assignors to The English Electric Company Limited, London, England

Filed Dec. 6, 1972, Ser. No. 312,669
Int. Cl. G21c *15/26*
U.S. Cl. 176—60 **4 Claims**



1. A nuclear reactor comprising:

A. a pressure vessel having a wall which defines a chamber accommodating a reactor core and arranged to contain gas under pressure,

B. means providing bores penetrating the wall of the pressure vessel from outside the vessel,

C. closure means for the bores,

D. means providing passages interconnecting the bores and the core chamber, and

E. turbomachinery housed within the bores and incorporating at least one heat exchanger and an associated water-box,

F. the closure means for the bore which houses a said heat exchanger of the turbomachinery comprising

i. a primary closure device which provides a gastight seal across the bore, and

ii. a secondary closure device extending across but not sealing the bore inwardly of the primary closure device to limit the escape of gas from the bore in the event of rupture of the primary closure device,

iii. the secondary closure device being provided by the said water-box, and

iv. the water-box comprising a pair of plates sealed together at their edges and shaped to provide a space between them, and

v. a partition separating the space into at least two chambers.

3,883,393
CELL CULTURE ON SEMI-PERMEABLE TUBULAR MEMBRANES

Richard A. Knazek; Pietro M. Gullino, both of Bethesda, Md.; Robert L. Dedrick, McLean, Va., and William R. Kidwell, Bethesda, Md., assignors to The United States of America as represented by the Secretary of Health, Education and Welfare, Washington, D.C.

Division of Ser. No. 254,678, May 18, 1972, Pat. No. 3,821,087. This application Feb. 11, 1974, Ser. No. 441,445
Int. Cl. C12k *9/00*
U.S. Cl. 195—1.8 **5 Claims**

1. A method for the formation and maintanence of solid tissues in vitro comprising:

a. arranging a multiplicity of capillaries within a chamber simulating a vascular network, the capillaries having walls which are permeable to nutrients required for cell growth and/or cell products and being arranged with individual capillaries extending in substantially parallel relationship to each other within the chamber, dividing the chamber by the walls of the capillaries into an intracapillary space within the capillaries and an extracapillary spaced outside the capillaries, the intracapillary space and the extracapillary space communicating with each other only through the walls of the capillaries, the capillaries being spaced from each other so as to provide sufficient extracapillary space for three-dimensional growth of a large number of cells, with the capillaries being in sufficient proximity that when the depth of cell growth on one capillary is such that the cells growing on that capillary farthest from that capillary can no longer obtain nourishment from perfusate passing through that capillary and/or removal of waste products by perfusate passing through that capillary, such cells will be influenced by perfusate passing through at least one other capillary;

b. introducing living cells into the extracapillary space so that the cells will settle onto the capillaries; and

c. passing perfusate through the intracapillary space.

3,883,394
WATER-INSOLUBLE PENICILLIN ACYLASE

Thomas A. Savidge, Steyning; Lawson William Powell, and Kenneth Brian Warren, both of Worthing, all of England, assignors to Beecham Group Limited, England

Filed July 12, 1973, Ser. No. 378,697
Claims priority, application United Kingdom, July 22, 1972, 34411/72
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 **13 Claims**

1. A process for the preparation of a water-insoluble enzyme preparation which comprises contacting in aqueous solution a water-insoluble absorbent material with a penicillin acylase enzyme, 0.1 to 10.0 millimoles of a water-soluble dialdehyde per gram of absorbent material and 0.1 to 5.0 millimoles of an aliphatic diamine per gram of absorbent material, the molar ratio of diamine to dialdehyde being from 1:1 to 1:10.

3,883,395
MEDIUM FOR THE CULTIVATION OF MYCOPLASMS

Rudolf Mauler, Cappel near Marburg Lahn, and Edgar Reichert, Marbach near Marburg Lahn, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg-/Lahn, Germany

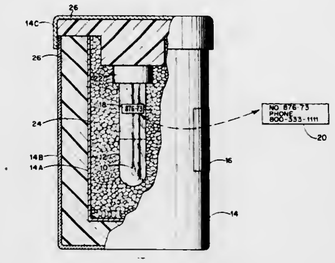
Filed Mar. 13, 1973, Ser. No. 340,699
Claims priority, application Germany, Mar. 18, 1972, 2213240
Int. Cl. C12k *1/10*
U.S. Cl. 195—100 **9 Claims**

1. A medium for the cultivation of mycoplasms consisting essentially of an aqueous dispersion of glutamine or glutamic acid, valine, carbohydrate, yeast extract, an inorganic salt, and lecithin.

3,883,396
GONORRHEA DETECTING

Charles A. Thomas, Jr., Newton; James E. Zuckerman, Jr., Acton, and Stephen A. Morse, Brockton, all of Mass., assignors to Charles A. Thomas, Jr., Newton, Mass.

Filed Mar. 30, 1973, Ser. No. 346,415
Int. Cl. C12k *1/10*
U.S. Cl. 195—100 **8 Claims**



1. A holding medium for *Neisseria gonorrhoeae*-suspect specimens comprising

a buffered saline solution, and

a non-nutritive concentration of secondary protein therein, ethanol, dissolved in the solution, and

progesterone, dissolved in the solution,

whereby gonococci if present in the medium, display an essentially flattened and extended colony-forming-unit versus time-curve.

3,883,397
MATERIAL FOR BIOLOGICAL DEGRADATION OF PETROLEUM

Philip McNair Townsley, Vancouver, British Columbia, Canada, assignor to John Dunn Agencies Ltd., Vancouver, British Columbia, Canada

Filed July 12, 1973, Ser. No. 378,647
Int. Cl. C12k *1/10*
U.S. Cl. 195—100 **6 Claims**

1. A particulate material for promoting growth of petroleum degrading bacteria in oil slicks floating on water, each particle having:

a. a core of solid water soluable microbial available nutrient selected from the group consisting of nitrogen in the form of an ammonium compound, phosphorous in the form of a microbial available phosphate compound, and iron in a form of microbial available iron compound,

b. a coating encapsulating the core composed of a metalic salt of a fatty acid which is lipophylic, patially hydrophobic and biodegradable, the metal in the salt being selected from the group consisting of magnesium, aluminum and calcium.

3,883,398
MICROCULTURE SLIDE CHAMBER

Kazuyuki Ray Ono, Bridgeton, N.J., assignor to Bellco Glass, Inc., Vineland, N.J.

Filed May 7, 1973, Ser. No. 357,991
Int. Cl. C12b *1/00*
U.S. Cl. 195—127 **10 Claims**

1. A microculture slide chamber for growing cultures comprising:

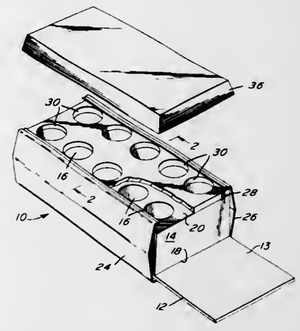
a slide on which said cultures are to be grown;

a matrix having a plurality of generally parallel matrix holes extending therethrough, said matrix being made of a resilient material;

said matrix holes when positioned over said slide defining a plurality of wells for containing a culture bearing fluid;

a gasket surrounding the end of each matrix hole adjacent said slide, each said gasket being integral with said matrix, and each said gasket providing a fluid-tight seal between said slide and said matrix for retaining fluid in said wells;

a plate having openings therethrough aligned to permit access to said matrix holes when said plate is in overlying relation to said matrix;



resilient clip means for retaining said microculture slide chamber in assembled relation for growing cultures therein, said assembled relation comprising said slide in abutting relation with the gasket side of said matrix and said plate in abutting and aligned relation with the opposite side of said matrix, and

a cover for said microculture slide chamber.

3,883,399
CHARGING COKE OVEN BLENDED COAL AND AN OVERLAY OF BRIQUETTES

Naomichi Nire, Takatsuki, Japan, assignor to Sumitomo Metal Industries Limited, Osaka City, Japan

Filed June 14, 1972, Ser. No. 262,672
Claims priority, application Japan, June 17, 1971, 46-43510
Int. Cl. C01b *47/10*; C10b *57/04*
U.S. Cl. 201—6 **1 Claim**

1. A method for carbonizing coal briquettes utilizing a conventional coking oven comprising:

charging said oven with a sufficient amount of a blended coal to fill the oven to a level within the range of between 70 and 94 percent of the effective height of the oven, said blended coal being capable of conversion into blast furnace coke upon carbonization thereof;

thereafter placing, on top of said blended coal, a sufficient amount of coal briquettes to fill the remainder of the effective height of the oven, said briquettes comprising an admixture of a soft coking coal and a non-coking carbonaceous substance; and

subjecting the contents of the oven to carbonization to thereby simultaneously produce blast furnace coke and coke briquettes.

3,883,400
SYSTEM FOR THERMAL DESALTING OF WATER

Ismail Zelfugarovich Makinsky, ulitsa E. Saratovtsa, 3/5, kv. 8; Enver Akhmedogly Kasimzade, ulitsa E. Saratovtsa, 5, kv. 21, and Samuil Petrovich Baksht, ulitsa Nizami 129 kv. 13, all of Baku, U.S.S.R.

Continuation of Ser. No. 311,643, Dec. 4, 1972, abandoned, which is a continuation of Ser. No. 117,982, Feb. 23, 1971, abandoned. This application Jan. 10, 1974, Ser. No. 432,156
Int. Cl. B01d *3/06, 3/10*
U.S. Cl. 202—180 **2 Claims**

1. A system for thermal desalting of water comprising in combination:

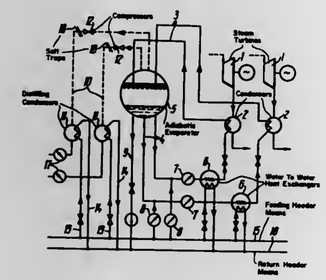
feeding and return header means for distributing cooling water in pipelines of the system;

at least one steam turbine having an exhaust for exhausting steam therefrom;

condenser means connected to the exhaust of said steam turbine through a pipeline;

an adiabatic evaporator having an inlet side and a first and second outlet side, said adiabatic evaporator having its inlet side connected to said condenser means through a pipeline;

water-to-water heat exchanger means having a first, second and separate third side, the first side being connected to the first outlet side of said adiabatic evaporator through a pipeline, said second side being connected to said condenser means, the third side being connected to said



feeding and return header means for distributing cooling water so that fluid flowing through said heat exchanger means from said first side to said second side is brought to the temperature of the cooling water in said distributing means;

said water-to-water heat exchanger means, said condenser means and said adiabatic evaporator forming a circulation water cooling system;

distilling condenser means connected through a pipeline to the second outlet side of said adiabatic evaporator for receiving steam therefrom, said distilling condenser means being connected to said feeding and return header means for distributing cooling water so that said condenser means is indirectly cooled thereby said distilling condenser means is cooled thereby.

3,883,401

PROCESS FOR THE SEPARATION OF KETAZINES FROM THEIR CRUDE SYNTHESIS MIXTURES

Jean-Pierre Schirmann, Brignais, and Marcel Thevenon, Pierre Benite, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

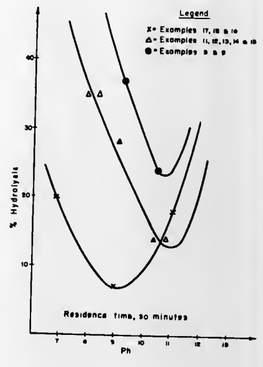
Filed Dec. 18, 1973, Ser. No. 425,865

Claims priority, application France, Dec. 21, 1972, 72.45576

Int. Cl. B01d *3/10*

U.S. Cl. 203—91 **3 Claims**

1. A method for the separation of ketazines from a crude synthesis mixture containing them which comprises adjusting the pH of the mixture to between about 8.5 and 12 by the addition of a base or an acid and distilling the crude reaction mixture during a period of 30 minutes or less at a reduced



pressure to maintain a distillation column base temperature not exceeding about 85°C.

3,883,402

PROCESS FOR ELECTROFORMING NICKEL CONTAINING DISPERSED THORIUM OXIDE PARTICLES THEREIN

Glenn A. Malone, Williamsville, N.Y., assignor to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 177,501, Sept. 2, 1971, abandoned. This application May 10, 1974, Ser. No. 468,877

Int. Cl. C23b *7/08, 7/00, 5/08*

U.S. Cl. 204—3 **19 Claims**

1. A method of electroforming dispersion strengthened nickel containing dispersed ultrafine thorium oxide particles, which electroformed nickel is of improved high temperature properties, which comprises passing a direct current between an anode and a cathode in an electroforming bath containing a dissolved nickel salt and 0.1 to 10%, on the basis of the dissolved nickel present, of thorium oxide particles of diameters in the range of 75 to 300 Angstroms, and at a pH in the range of 0.4 to 1.9, which electroforming bath contains ultrafine thorium oxide particles obtained by admixing a thorium oxide sol or a hydrated thorium oxide gel with an aqueous medium to produce a sol, so as to form on the cathode a deposit of nickel containing the dispersed ultrafine thorium oxide particles therein, which nickel deposit is mechanically deformable at room temperature and of improved high temperature strength compared to ordinary electroformed nickel.

3,883,403

APPARATUS AND METHOD FOR CATHODE STRIPPING

Victor Alexander Ettel, Mississauga, Ontario; Christopher Charles Dunkley, Sudbury, Ontario; Jose Antonio Blanco, Welland, Ontario, and Robert Ray Matthews, Lively, Ontario, all of Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

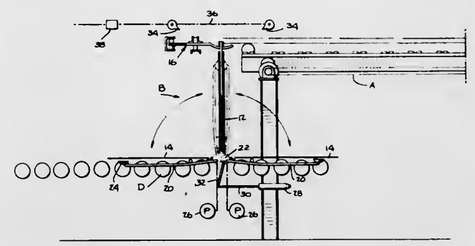
Filed Oct. 4, 1973, Ser. No. 403,466

Claims priority, application Canada, Oct. 10, 1972, 153595

Int. Cl. C23b *7/02;* **B01k** *1/00*

U.S. Cl. 204—12 **14 Claims**

4. A process for electrodepositing a non-ferrous metal on a cathode blank and subsequently stripping the electrodeposit from the cathode blank which comprises electrodepositing a non-ferrous metal on a cathode blank in an electrolytic cell, said cathode blank and electrodeposit having different coefficients of thermal expansion, and said electrolytic cell containing an electrolyte that is maintained at a predetermined temperature, to form a cathode comprising the cathode blank and an electrodeposit of a preselected thickness thereon of at least about one-sixteenth inch thickness, removing the cathode from the electrolytic cell, conveying the cathode to a stripping station while maintaining the temperature of the cathode at



substantially the predetermined temperature to minimize premature parting, engaging the electrodeposit in the stripping station with gripping means affixed to mechanical stripping means, rapidly altering the temperature of the engaged electrodeposit to part at least partially the electrodeposit from the cathode blank at an edge and then actuating the stripping means to strip the parted electrodeposit from the cathode blank.

3,883,404

METHOD FOR MAKING SULFUR DIOXIDE-TREATED ASPHALT BINDERS

Pier Luigi Bocca, and Pierpaolo Pacor, both of Rome, Italy, assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Oct. 23, 1973, Ser. No. 408,833

Claims priority, application Italy, Oct. 23, 1972, 53550/72

Int. Cl. C10c *3/02*

U.S. Cl. 208—44 **8 Claims**

1. A process for the production of a binding and coating agent which comprises contacting, in the liquid phase, an aromatic extract of a lubricating oil distillate fraction with a gas containing from 5 to 100 wt. % of sulphur dioxide, said contacting being conducted at approximately atmospheric pressure, and a temperature within the range of 180° to 650°C., at a ratio of feed of SO_2 per hour of from 0.5 to 10 liters (at S.T.P.) per kilogram of said aromatic extract, said contacting being sufficient to increase the sulphur content of the aromatic extract by from 0.75 to 12 percent by weight.

3,883,405

ZINC PLATING BATHS

Gerald H. Grossblatt, 3041 Hudson Ct., Chamblee, Ga. 30033

Filed July 10, 1972, Ser. No. 270,185

Int. Cl. C23b *5/10, 5/46*

U.S. Cl. 204—55 Y **12 Claims**

1. An aqueous, alkaline zinc cyanide electroplating bath containing as brightening agents, the polyamine-dialdehyde condensation products prepared by reacting at least one aliphatic dialdehyde with at least one polyamine salt of a water-soluble acid at temperatures and for a time sufficient to form said reaction products, said polyamine of said polyamine salt being a water soluble aliphatic compound having at least two terminal amine groups, said aliphatic dialdehyde being water soluble and having two terminal aldehyde groups, and said polyamine-dialdehyde condensation products present in sufficient amounts to improve the brightening of the plated products and characterized by solubility in said alkaline zinc cyanide bath.

3,883,406

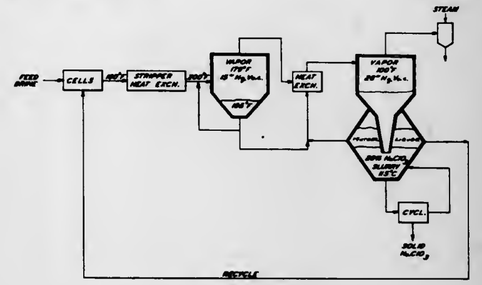
PROCESS FOR RECOVERING ELECTROLYTICALLY PRODUCED ALKALI METAL CHLORATES

Thomas Francis O'Brien, Swarthmore, Pa., and Jimmie Ray Hodges, Benton, Ky., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed July 6, 1973, Ser. No. 376,978

Int. Cl. C01b *11/26*

U.S. Cl. 204—95 **5 Claims**



1. A method for electrolytically producing alkali metal chlorate from an alkali metal chloride comprising the steps of:

a. electrolyzing an aqueous sodium chloride solution at a temperature above about 50° C until an unsaturated cell liquor is produced having a sodium chlorate to sodium chloride ratio of between 5:1 and 27:1, the concentration of the sodium chloride component being maintained in the range between a lower level above about 30 grams per liter and an upper level below which sodium chloride cannot crystallize,

b. withdrawing the electrolyzed liquor from the cell as effluent and while above 50° C subjecting the effluent to evaporative concentration under reduced pressure and at constant temperature to effect crystallization of pure sodium chlorate crystals from the liquor, and

c. separating the pure sodium chlorate crystals from the liquor.

3,883,407

PRODUCTION OF 2,2,2-TRIFLUOROACETYL CHLORIDE

Albert L. Dittman, Allendale, N.J., assignor to Halocarbon Products Corporation, Hackensack, N.J.

Filed Apr. 20, 1973, Ser. No. 353,025

Int. Cl. B01j *1/10*

U.S. Cl. 204—158 R **5 Claims**

1. The process for the production of trifluoroacetylchloride which comprises reacting gaseous 1,1-dichloro-2,2,2-trifluoroethane containing less than about 0.1% of water by weight with a gas consisting essentially of oxygen at a temperature up to about 250°C in the presence of ultraviolet radiation thereby to produce trifluoroacetyl chloride containing less than about 5% of trifluoroacetic acid.

3,883,408

FURNACE ATMOSPHERE OXYGEN ANALYSIS APPARATUS

Yong-Wu Kim, Munster, and John P. Douglas, Schereville, both of Ind., assignors to Inland Steel Company, Chicago, Ill.

Division of Ser. No. 249,876, May 3, 1972, abandoned. This application Jan. 28, 1974, Ser. No. 437,214

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 S **5 Claims**

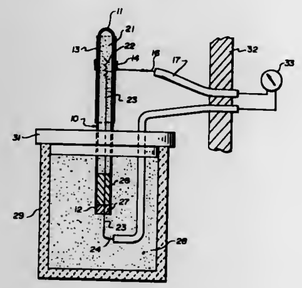
1. An oxygen-ion conducting galvanic cell comprising:

an elongated, hollow probe having one open end and having an exterior surface and an interior surface, said probe being made of an oxygen-ion conducting solid electrolyte; a mixture of finely divided iron and a finely divided oxide thereof, said mixture being compacted in said hollow probe;

a hermetic seal associated with said open end comprising a finely divided, electrically nonconducting inert refractory solid material contained within said probe adjacent said mixture;

mechanical seal means for holding said hermetic seal in position adjacent said mixture;

a first electrical conductor making electrical contact with the exterior surface of said probe;



a second electrical conductor passing through said hermetic seal and making electrical contact with said mixture, said second conductor being electrically insulated from the exterior surface of said probe; and

insulating means including a bed of finely divided, electrically non-conductive refractory sand for insulating the point of entry of said second conductor into its associated hermetic seal from the exterior surface of said probe, said point of entry being embedded in said bed of refractory sand.

3,883,409
GOLD ALLOY ELECTROPLATING BATH

Andre Olivier, Rue Dufour, Switzerland, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed July 9, 1973, Ser. No. 377,471

Claims priority, application Switzerland, July 10, 1972, 10332/72

Int. Cl. C23b *5/42, 5/46*

U.S. Cl. 204—44 **28 Claims**

1. In an improved aqueous bath for the electrolytic deposition of gold or gold alloys on electrically conductive objects, said bath containing at least one chelating agent, an alkali metal gold sulfite, at least one gold alloying metal, and about 0.5–100 g/l of at least one electrically conductive salt other than said alkali metal gold sulfite, said gold alloying metal and said chelating agent, the improvement wherein white gold is deposited on said object and wherein said at least one gold alloying metal is at least one water soluble salt of cadmium, at least one water soluble salt of copper, at least water soluble salt of nickel, and additionally there is incorporated in said bath an organic phosphorus compound of either

a. a compound of the formula

$$R^1_{(3-n)} - N\left[-R - \overset{O}{\overset{\|}{P}} - (OH)_2 \right]_n$$

in which R^1 is a hydrogen atom or about a $C_1 - C_8$ lower alkyl radical, R is about a $C_1 - C_8$ alkylene radical, and n is a whole number of about 1 – 3; or

b. an alkylene diamino tetra-(methylphosphonic acid) or a 1-hydroxyalkylidene-1,1-diphosphonic acid, the alkylene and alkylidene groups of which contain about 1–12 carbon atoms, or

c. a water soluble salt of compounds of a or b;

said bath having a pH of about 8.5 – 11, and further wherein said bath contains gold in an amount of about 1 – 8 g/l, cadmium in an amount of about 0.1 – 30 g/l, copper in an amount of about 0.001 – 0.5 g/l, nickel in an amount of about 0.001 – 10 g/l and the organic phosphorous compounds in an amount of about 0.01 – 10 g/l; wherein said at least one chelating agent is other than a, b and c and is present in an amount sufficient to substantially completely complex all of the metals present in the plating bath.

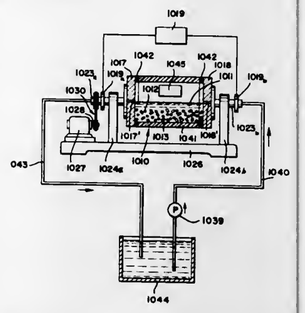
3,883,410
METHOD OF AND APPARATUS FOR THE DEBURRING WORKPIECES

Kiyoshi Inoue, 3 Chome, Kamiyoga, Tokyo, Japan

Continuation-in-part of Ser. No. 714,252, March 19, 1968, Pat. No. 3,620,953, and a Continuation-in-part of Ser. No. 859,532, April 21, 1969, Pat. No. 3,533,928, which is a continuation of Ser. No. 598,391, Dec. 1, 1966, abandoned. This application Aug. 2, 1971, Ser. No. 168,173. The portion of the term of this patent subsequent to Oct. 13, 1988 has been disclaimed.

Int. Cl. B23p *1/04*

U.S. Cl. 204—129.46 **1 Claim**



1. The method of removing burrs from a workpiece, comprising the steps of:

supporting said workpiece in conducting relationship with a source of electric current, said workpiece being the anode in a direct current circuit;

submerging said workpiece in a tank containing conductive abrasive media immersed in a conductive solution, said solution being an electrolyte solution; and simultaneously passing a direct electric current through said workpiece and said conductive abrasive media and conductive solution, to release atomic oxygen on the burr surface and to form an oxide coating on the surface of the burrs, and

vibrating said workpiece relative to said solution and said abrasive conductive media for providing random contact between said burrs and said conductive abrasive media to wipe off said burrs.

3,883,411
ELECTRODEPOSITION OF THICK NICKEL DEPOSITS ON PERMANENT CATHODE BLANKS

Aubrey Stewart Gendron, and Victor Alexander Ettel, both of Mississauga, Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Apr. 11, 1974, Ser. No. 459,883

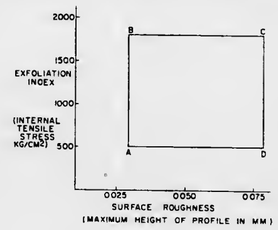
Claims priority, application Canada, Feb. 8, 1974, 192114

Int. Cl. C23b *7/02;* **B01k** *1/00;* **C22d** *1/14*

U.S. Cl. 204—12 **8 Claims**

1. A process for electro-deposition of nickel comprising electrodepositing substantially sulfur-free nickel continuous over an area of at least about 1 square decimeter to a thickness of at least about 1 millimeter on an abrasively roughened, permanent mandrel made of titanium, aluminum or stainless steel from an aqueous sulfate bath substantially devoid of

chloride and having a pH in the range of about 1.5 to about 5.5 under conditions whereby the Exfoliation Index of the deposit is correlated to the surface roughness of the mandrel



so as to provide adhesion during electrodeposition and ready removal of the deposit from the mandrel upon completion of the electrodeposition.

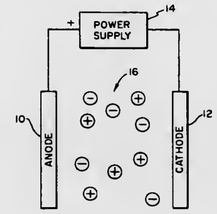
3,883,412
DESALINATION PROCESS

Richard E. Jensen, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 30, 1974, Ser. No. 438,089

Int. Cl. C02c *5/12;* **C02b** *1/82;* **B01k** *3/08*

U.S. Cl. 204—149 **2 Claims**



1. A method of removing ions from water comprising the steps of:

applying a low level positive voltage to a porous anode submerged in said water to form a space charge layer of negative ions in and around said porous anode;

applying a low level negative voltage to a porous cathode submerged in said water to form a space charge layer of positive ions in and around said porous cathode.

separating said anode and said cathode from said water so as to remove said positive and negative ions from said water;

combining ionized water with said porous anode and said porous cathode

removing said low level positive and negative voltages from said porous anode and cathode respectively

using low level voltages generated by said anode and said cathode to further deionize water.

3,883,413
OZONE GENERATOR USING PULSED ELECTRON BEAM AND DECAYING ELECTRIC FIELD

Diarmaid H. Douglas-Hamilton, Boston, Mass., assignor to Avco Corporation, Everett, Mass.

Continuation-in-part of Ser. No. 291,823, Sept. 25, 1972, abandoned. This application May 20, 1974, Ser. No. 471,725

Int. Cl. C01b *13/00, 13/12*

U.S. Cl. 204—176 **3 Claims**

1. A method of generating ozone comprising the steps of:

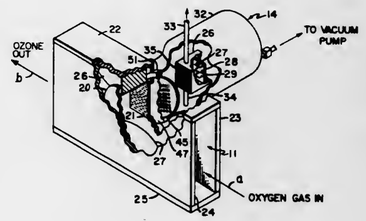
providing a supply of pressurized oxygen gas;

generating a controllable beam of high energy electrons;

producing a controllable electric field;

passing said gas through said field;

irradiating said gas in said field with short bursts of said high energy electrons; and



thereafter reducing said electric field after each electron burst by conduction through ionized gas produced by said electron burst until the next irradiation of said gas with said high energy electrons.

3,883,414
DETECTOR OF TRACE SUBSTANCE IN WATER

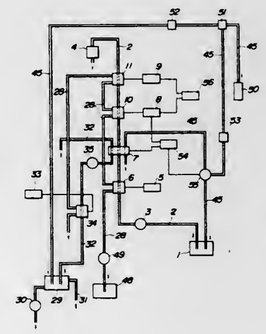
Taitiro Fujinaga, Kyoto, and Katuo Miura, Matsudo, both of Japan, assignors to Shibata Kagaku Kikai Kogyo Kabushiki, Tokyo, Japan

Filed Mar. 27, 1974, Ser. No. 455,326

Claims priority, application Japan, Mar. 28, 1973, 48-34679

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 R **13 Claims**



1. A detector system for detecting impurities in water, said system comprising:

a supply means for supplying supporting electrolyte;

b. first flow electrolyte cell means coupled to said supply means for purifying said supporting electrolyte, said first cell means including a casing and a potentiostat means;

c sample injector means including a sample reservoir coupled to said first cell means for injecting a sample containing said impurities into said system;

d at least two additional flow electrolyte cell means, including a second cell means coupled to said sample injector means and a third cell means coupled to said second cell means, said second and third cell means each including a casing and potentiostat means;

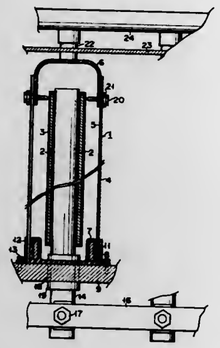
e depolarizer electrolyte supply means coupled to said casing of each of said cell means, wherein each said casing includes an auxiliary electrode and the depolarizer electrolyte flows through said casing to contact said auxiliary electrode; and,

f recorder means coupled to the potentiostats of said at least two additonal cell means for recording the output thereof, the output of said potentiostats being indicative of the amount of said impurities in said sample.

3,883,415
MULTIPLE VERTICAL DIAPHRAGM TYPE ELECTROLYTIC CELL FOR PRODUCING CAUSTIC SODA

Hiroshi Shibata; Yasuo Yamazaki; Yoshikazu Kokubu, and Isao Okazaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1973, Ser. No. 419,864
Claims priority, application Japan, Dec. 4, 1972, 47-120718
Int. Cl. B01k *3/10*
U.S. Cl. 204—258 **7 Claims**



1. A multiple vertical diaphragm type electrolytic cell for producing caustic soda comprising:
   a plurality of unit cells installed compactly in a cathode tank in electrically parallel connection, each of said unit cells including two anode plates interfixed by welding with at least two electroconductive supporting rods which in turn are connected to outer bus bars respectively,
   an iron mesh cathode frame lined with an asbestos diaphragm surrounding the interfixed anode plates at a prescribed distance,
   a cap made of corrosion-resistant material mounted on the iron mesh cathode frame,
   a bottom dish inserted thereinto, and
   means for supporting the outer upper side walls of said anode plates, said supporting means including a plurality of setscrews electrically insulated and held gas tight by a packing so as to prevent the rocking of the upper part of said anode plates.

3,883,416
STABILIZATION OF LUBE OIL

Tsoung Y. Yan, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,466
Int. Cl. C07c *27/10*
U.S. Cl. 208—3 **10 Claims**

1. A method for improving the oxidative stability of a hydrocarbon lubricating oil which comprises contacting said oil with a gas containing free oxygen and a solid basic refractory oxide catalyst characterized by an alkali metal content of between about 2 and about 30 percent by weight at a temperature in the range of about 150° to about 550°F., at a pressure between atmospheric and 500 psig and at a liquid hourly space velocity of between about 0.1 and about 10 volumes/volume of catalyst/hour.

3,883,417
TWO-STAGE SYNTHESIS OF LUBRICATING OIL

Charles Woo, Sarnia, Ontario, Canada; John A. Bichard, Baton Rouge, La., and Exxon Research and Engineering Company, Linden, N.J.

Filed Dec. 5, 1973, Ser. No. 422,096
Int. Cl. C10g *37/08*
U.S. Cl. 208—49 **6 Claims**

1. A process for preparing a synthetic lubricating oil of high viscosity index which includes the following steps:
   a. subjecting a hydrocarbon mixture comprising alpha olefins within the range of 5-carbon-atom to 20-carbon-atom olefins to a thermal polymerization at a temperature within the range of about 300° to 650°F. for from 0.1 to 10 hours in a first zone;
   b. separating from the product of the thermal polymerization a fraction comprising unreacted olefins having from 5 to 20 carbon atoms;
   c. subjecting the last named olefin fraction to further thermal polymerization in a second zone at a temperature within the range of about 600° to 800°F. for from 0.1 to 20 hours; and
   d. recovering a synthetic lubricating oil product from said second zone.

3,883,418
LEAD FREE MOTOR FUEL PRODUCTION

Lewis E. Drehman, and Floyd E. Farha, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 2, 1973, Ser. No. 320,501
Int. Cl. C10g *39/00*
U.S. Cl. 208—66 **6 Claims**

1. A method for upgrading a naphtha feedstock comprising: contacting said naphtha in a first reforming zone with a reforming catalyst under reforming conditions conducive to naphthene dehydrogenation with a minimum of paraffin conversion and separating from said first reforming zone a first liquid reformate stream comprising aromatics, unreacted paraffins and unreacted naphthenes;
   separating said liquid reformate stream from said first reforming zone into a first fraction boiling below about 110°F, a second fraction boiling in the range of about 120° to about 260°F, and a third fraction boiling above about 260°F;
   separating said second fraction boiling in the range of about 120° to about 260°F into a paraffin-rich raffinate and an aromatics-rich extract;
   contacting said paraffin-rich raffinate in a second reforming zone in the presence of steam under reforming conditions with a catalyst consisting essentially of at least one Group VIII metal or metal compound capable of reduction, at least one tin group metal or metal compound, and at least one Group II metal aluminate or aluminate spinel support material; and separating from said second reforming zone a second liquid reformate stream; and
   blending said first fraction having a boiling point below about 110°F, said third fraction boiling above about 260°F, said aromatics-rich extract and said second liquid reformate stream to form a gasoline fraction having an unleaded ASTM research octane number of at least about 95.

3,883,419
PROCESS FOR PREPARING PLATINUM-TIN REFORMING CATALYSTS AND USE THEREOF

Takuji Itoh, and Ikuo Akitsuki, both of Ohi-machi, Japan, assignors to Exxon Research and Engineering Company, Linden, N.J.

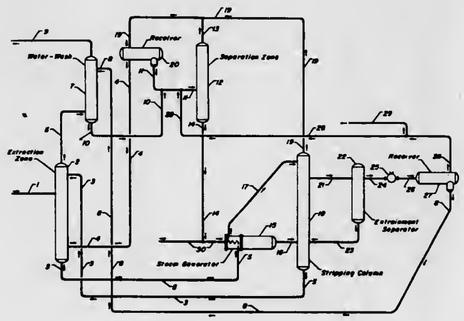
Filed Oct. 17, 1973, Ser. No. 407,176
Int. Cl. C10g *35/08*; **B01j** *11/78, 11/08*
U.S. Cl. 208—138 **9 Claims**

1. A process for preparing a hydrocarbon conversion catalyst comprising a complex compound of a platinum group metal component and a tin component contained on a refractory inorganic oxide carrier which comprises:
   a. impregnating said refractory inorganic oxide carrier with an aqueous solution of a halogen acid containing a platinum group metal component;
   b. drying the platinum group metal componentimpregnated carrier;
   c. impregnating the dried platinum group metal componentimpregnated carrier with a solution of a divalent tin compound, said impregnation conducted in a non-oxidizing and non-reducing atmosphere;
   d. drying the carrier impregnated with said platinum group component and tin component; and
   e. calcining the dried impregnate of step (d) at elevated temperatures.

3,883,420
EDIBLE OIL SOLVENT PRODUCTION

Richard D. Stone, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 30, 1974, Ser. No. 438,073
Int. Cl. C10g *21/28*
U.S. Cl. 208—321 **8 Claims**

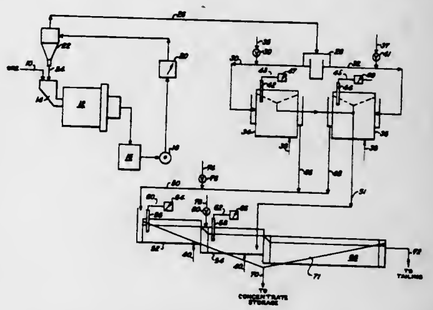


1. A process for removing aromatic hydrocarbons having more than eight carbon atoms per molecule from the extract phase from a solvent extraction zone, which process comprises countercurrently contacting said extract phase, containing (i) solvent, characteristically selective for dissolving aromatic hydrocarbons, (ii) aromatics containing less than nine carbon atoms per molecule and, (iii) aromatic hydrocarbons containing more than eight carbon atoms per molecule, with a mixture of steam and a lower molecular weight paraffinic hydrocarbon, containing from about three to about seven carbon atoms per molecule, the mole ratio of paraffin to steam in said mixture being in the range of about 0.1:1.0 to about 10.0:1.0, and recovering said solvent reduced in the concentration of aromatic hydrocarbons having more than eight carbon atoms per molecule.

3,883,421
MEASUREMENT OF OXIDATION REDUCTION POTENTIAL IN ORE BENEFICIATION

Dale Emerson Cutting, P.O. Box 717; Richard Arthur Womack, P.O. Box 265, and Joseph Vernon MacGuffie, P.O. Box 362, all of Cuba, N. Mex. 87013

Filed Sept. 12, 1972, Ser. No. 288,306
Int. Cl. B03d *1/02*
U.S. Cl. 209—1 **20 Claims**

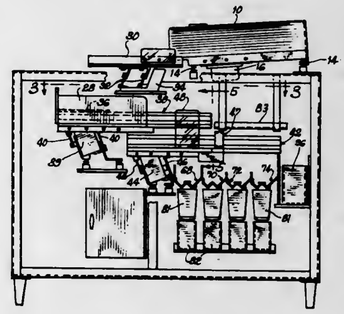


1. In a system for the beneficiation of an ore slurry over a range of compositions of the ore body from which said slurry was derived by addition to said slurry of a chemical substance of an oxidizing or reducing character including froth flotation agent and a flotation collector to improve the continuous separation of mineral values from said slurry by treatment including the step of froth flotation, the improvement comprising measuring the range of oxidation-reduction potentials of the said chemically treated slurry developed in efficient operation of said system as it is varied with variations of said ore body to define a preselected range of optimum potentials, and supplying said chemical substance to the slurry in quantity controlled to maintain the oxidation-reduction potential of said slurry in said preselected range during the flotation step of said treatment.

3,883,422
SILVERWARE FEEDER CONSTRUCTION

Ralph Ettlinger, Jr., Highland Park; Robert B. Dietsche, Deerfield, and John W. MacAllister, Prospect Heights, all of Ill., assignors to Avant Industries, Inc., Wheeling, Ill.

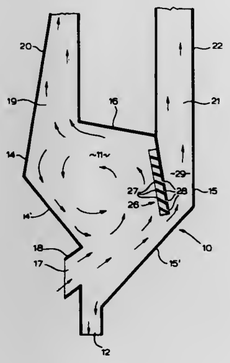
Filed June 20, 1973, Ser. No. 371,703
Int. Cl. B07c *1/10*
U.S. Cl. 209—75 **13 Claims**



1. In a construction for sorting spoons wherein the bowls of the spoons are of different sizes, the improvement comprising a sorter bed, said sorter bed defining a plurality of spaced parallel grooves, loading means for depositing spoons on said bed, means associated with the bed for moving spoons along the bed and including at least one opening defined at the bottom of one of said grooves whereby said spoons can pass

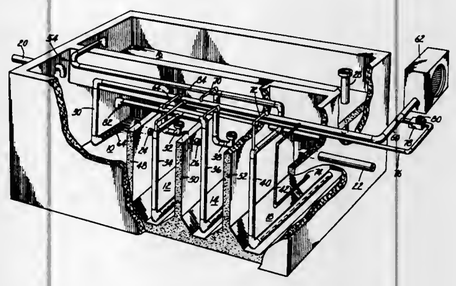
through said sorter bed, said opening being dimensioned so that the handles of the spoons will pass through the sorter bed with the spoon bowls suspending the spoons on the bed, a first portion of said opening dimensioned to permit the passage of smaller bowl spoons through the opening, and including a second portion of said opening, said second portion defining wing sections adapted to receive bowl edges of larger bowl spoons whereby the larger bowl spoons drop through said sorter bed at said second portion.

3,883,423
VERTICAL CLASSIFIER
Robert R. Turner, Oakville, Ontario, and Ralph H. Hart, Mississauga, Ontario, both of Canada, assignors to Aerofall Mills Limited, Mississauga, Ontario, Canada
Filed Aug. 1, 1973, Ser. No. 384,456
Int. Cl. B07b *7/04*
U.S. Cl. 209—143 **6 Claims**



1. A vertical classifier for particulate solid material entrained in a fluid carrier, comprising a vessel defining a horizontally oriented separating chamber having a bottom discharge opening for the discharge of separated solid material, said vessel having a pair of side walls, a front wall providing an inlet opening communicating with a lower portion of the chamber, a rear wall, and a top wall providing an outlet opening communicating with an upper portion of the chamber and positioned adjacent to the front wall, inlet passage means communicating with said inlet opening, outlet passage means communicating with said outlet opening, said inlet passage means providing an upwardly inclined duct for directing inflowing fluid in an upwardly inclined direction towards the rear wall, and said rear wall having a rearwardly inclined portion extending from the discharge opening approximately in said upwardly inclined direction, said inlet and outlet passage means defining an upwardly curved flow path for effecting centrigual separation of solid material from the fluid stream within the chamber, baffle means located in the chamber at a position to intercept the flow of inflowing fluid and deflect a portion of the entrained material inwardly of said curved flow path, and means defining a deflector surface ppsitioned to induce a downward flow of a portion of said fluid stream thereby to create a horizontal vortex within the chamber, said means defining a deflector surface being constituted by a downwardly and rearwardly inclined portion of said front wall terminating adjacent to said inlet opening.

3,883,424
METHOD AND APPARATUS FOR TREATMENT OF DOMESTIC WASTE WATER
Raymond P. Stamblesky, Mentor, and William R. Jones, Eastlake, both of Ohio, assignors to John Kruger, Willoughby; Lee Friedabaugh, Concord Township and William N. Hogg, Gates Mills, all of Ohio, part interest to each
Filed June 6, 1973, Ser. No. 367,647
Int. Cl. C02c *1/08*
U.S. Cl. 210—5 **10 Claims**

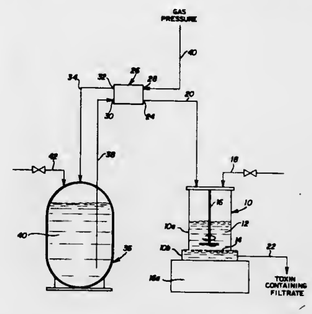


1. A device for treating residential waste water comprising, tank means having a plurality of separate tank sections including an influent receiving section, an effluent discharge section, and at least one intermediate section,
means to deliver influent to said influent receiving section, means to provide air agitation to the waste water in said influent receiving section, means to discharge water above a given level responsive and proportional to water received in said discharge section from said effluent discharge section,
means interconnecting said influent receiving section each of said intermediate sections and said discharge section to provide fluid flow from said influent receiving section to said intermediate sections and to said effluent discharge section, return means to at least periodically return a portion of the waste water in at least one intermediate section to the influent receiving section, further characterized by the means interconnecting two successive sections including air lift means to positively deliver waste water above a given level from one section and responsive and proportional to water delivered to the unit to the next succeeding section as the only interconnection therebetween and operative by the means to provide air agitation whereby flow through and out of the unit is porportional to the intake, but flow through is halted when the means to provide air ceases to function.

3,883,425
DETOXIFICATION OF SAPONINS
Gordon L. Dorn, Dallas, Tex., assignor to J. K. & Susie L. Wadley Research Institute and Blood Bank, Dallas, Tex.
Filed Dec. 10, 1973, Ser. No. 423,447
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **14 Claims**

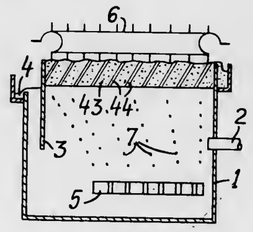
1. In a method of obtaining purified saponin from a plant source wherein a component rich in saponin and which will hemolyze red blood cells is extracted from said plant source,

the improvement comprising:
removing antimicrobial toxic constituents from said saponin



extract which when in aqueous solution have an apparent molecular weight of less than about 600.

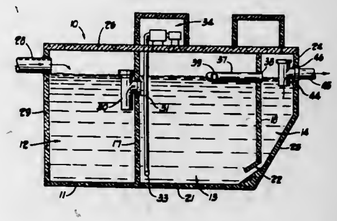
3,883,426
PROCESS FOR TREATING WASTE WATER
Sylvette Odette Rosalie Laurent Lewandowski, and Raymond Lewandowski, both of Rennes, France, assignors to Etudes et Procedes d'Assainissement Purator, France
Filed July 16, 1973, Ser. No. 379,907
Int. Cl. B03d *1/00*; **C02b** *1/20*
U.S. Cl. 201—44 **7 Claims**



1. A process for treating waste water to remove impurities therefrom, which comprises contacting in a flotation zone said waste water and aluminum having on at least one surface an amalgam of aluminum and mercury, allowing said waste water to react with said amalgam to form hydrogen gas and alumina in situ, removing from said zone impurities that have been carried to the surface of the waste water by the evolved hydrogen gas and alumina, and recovering purified waste water.

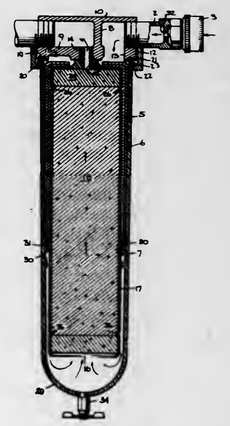
3,883,427
FLOATING SOLIDS RETURN DEVICE
Robert R. Oldham, and John H. Wooddell, both of Sidney, Ohio, assignors to Robert R. Oldham, Inc., Sidney, Ohio
Continuation-in-part of Ser. No. 351,274, April 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 239,887, March 31, 1972, Pat. No. 3,805,957. This application Mar. 28, 1974, Ser. No. 455,642
Int. Cl. C02c *1/12*
U.S. Cl. 210—73 **1 Claim**

1. A process for returning floating solids from a first portion of a tank, having fluid therein and divided into two portions by partition means, to the second portion wherein a current, the major portion of which is in a determinable direction, is induced, said process comprising the steps of providing conduit means at the surface of the fluid, said conduit means being substantially "J-shaped" with a longitudinal axis and having a first opening at one end extending transversely of said axis and communicating with the surface of said fluid in said first portion of said tank, a curved or reentrant portion, and a second opening extending transversely of said axis, nearer said curved or reentrant portion than said first opening, and opening into said second portion of said tank and being in communication with the surface of the fluid therein, determining the direction of flow of the major portion of the current in



said second portion of said tank at the surface of fluid therein adjacent said second opening, and cutting or severing said conduit means transversely of said axis along said curved or reentrant portion thereof to face said opening in the direction in which said major portion of said current is determined to be flowing.

3,883,428
FILTER
Robert W. Waring, 197 Old Post Rd., Fairfield, Conn. 06430
Filed Sept. 14, 1973, Ser. No. 397,388
Int. Cl. B01d *27/00*
U.S. Cl. 210—94 **7 Claims**



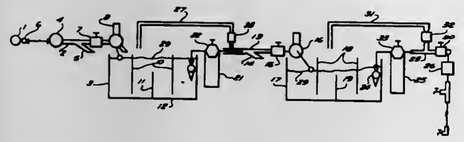
1. A liquid filter comprising the combination of an elongated hollow casing having a liquid inlet and a liquid outlet at one end thereof, an elongated inner chemical filter element comprising an imperforate sheath with its opposite ends open and filled with chemical filter material, said inner filter element being positioned within said casing with one open end of the sheath adjacent to said inlet and outlet and communicating only with the filter outlet and having the sheath's opposite open end in communication with the interior of the hollow casing, a space between the inner filter sheath and the inner surface of the casing in communication with said filter inlet, a second filter element comprising an elongated fibrous boot positioned in said space engaging the inner surface of the casing and the sheath of said inner filter and fixed at said one open end of said sheath whereby the liquid flows from said filter inlet through the boot in said space and thereafter through the said opposite open end of said inner filter element sheath and through said chemical filter material to said outlet.

through said piping arrangement for movement between posi- sheet bottom said basin being

3,883,429
PORTABLE WATER SUPPLY SYSTEM

William E. Hanford, North Tarrytown, N.Y., assignor to World Water Resources, Inc., New York, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,174
Int. Cl. B01d 21/24, 29/36
U.S. Cl. 210—104 15 Claims



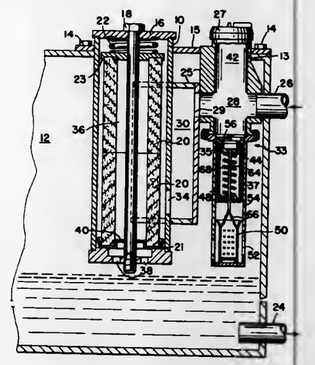
1. An apparatus for rendering contaminated water potable which comprises
a water source;
a first purification tank communicating with the water source by way of a first conduit provided with at least one flexible baffle;
a second purification tank communicating with the first tank by way of a second conduit the second tank being provided with at least one flexible baffle;
a prefiltering means for removing particulate matter from water flowing through the first conduit;
a first recycle means communicating between the second conduit and the first tank the first recycle means having a first normally closed, pressure-relief valve, the valve being open only when a pressure greater than about 8 psi exists in the second conduit;
a first pressure filter, positioned in the second conduit upstream of the first recycle means;
a chemical addition means being positioned in the second conduit between the first recycle means and the second tank, the means being capable of terminating the flow of water into the second tank when the level of water in the second tank reaches a pre-determined height;
an outlet means communicating between the second tank and a purified water distribution means;
a second recycle means communicating between the outlet means and the second tank, the second recycle means having a second normally closed pressure relief valve, the second valve being open only when the pressure in the outlet means exceeds about 8 psi; and
a second pressure filter positioned in the outlet means upstream of the second recycle means.

3,883,430
FILTER AND BYPASS VALVE ARRANGEMENT

Edward A. Codo, Joliet, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Feb. 20, 1973, Ser. No. 334,090
Int. Cl. B01d 27/10
U.S. Cl. 210—132 9 Claims

1. In a fluid supply system having fluid reservoir means for containing fluid utilized in said supply system, a combined filter and by-pass apparatus comprising; filling spout means for supplying fluid to said reservoir means, said spout means having inlet and outlet means, first chamber means in communication with said spout means outlet means, normally closed valve means having inlet means in communication with said first chamber means and outlet means in communication with said reservoir means, said valve means including housing means removably secured to said spout means, primary fluid filtering means having inlet means in communication with said first chamber means and having outlet means in communication with said reservoir means, said combined filter and by-pass apparatus being disposed at least partially within said reservoir means and positioned such that all fluid entering said supply system must pass through said first chamber means before entering said reservoir means, said normally closed valve means including a valve member secured within said valve housing means by retainer means, said valve member

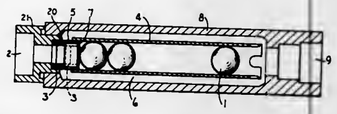


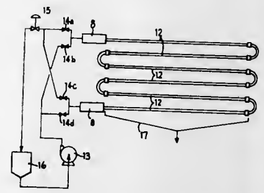
being manually removable from said valve housing means through said spout inlet means, said retainer means including bail means for coacting with lug means and recess means to retain said valve member within said housing means.

3,883,431
CLEANING APPARATUS

Kiyoshi Ishii; Shobu Konomi, both of Ohimachi, and Yoshio Ishiguro, Tokyo, all of Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Apr. 22, 1974, Ser. No. 462,629
Claims priority, application Japan, Apr. 25, 1973, 48-49389
Int. Cl. B08b 9/04
U.S. Cl. 210—134 7 Claims



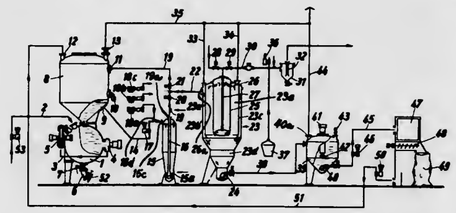


1. In a fluid-flow system comprising a tubular piping arrangement having reversing valve means for reversing the direction of flow of fluid through the piping arrangement, one or more resiliently compressible objects movable back and forth through said piping arrangement to clean same, and retaining means adapted to retain said object or objects at the ends of the travel thereof through said piping arrangement, the improvement in which said retaining means comprises a container which is open at one end for receiving said objects from or directing said objects into said tubular piping arrangement and which is blocked at its opposite end by a porous barrier; by-pass conduit means connected in parallel with said container for by-passing liquid around said container; and check valve means coupled to the blocked end of the container and which is responsive to the direction of flow of liquid through said piping arrangement for movement between positions in which (1) the liquid entering said tubular piping arrangement flows substantially entirely through said porous barrier and said container to force said object or objects through said piping arrangement, and (2) the liquid leaving said tubular piping arrangement flows into said container and then through said by-pass conduit means and said check valve means.

3,883,432
SYSTEM FOR PURIFYING AND DISINFECTING WASTE WATER

Karl-Heinz Hildebrand, Fachbachtal 40, 5421 Fachbach Bad-Ems, Germany

Continuation of Ser. No. 172,351, Aug. 12, 1971, abandoned.
This application Sept. 13, 1973, Ser. No. 396,741
Claims priority, application Germany, Aug. 12, 1970, 2040061
Int. Cl. B01d 21/16
U.S. Cl. 210—152 8 Claims



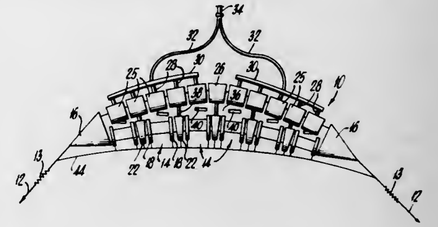
1. A system for the continuous purification and disinfection of sewage comprising:
a first mixing tank for homogenizing the sewage, said first mixing tank having a sewage inlet, a drain for solid substances which collect on the bottom of said first mixing tank and a sewage discharge leading to a feed back line returning to said first mixing tank and wherein a pump and a disintegrating means are arranged in said line, said first mixing tank including a reservoir positioned thereabove and wherein a sewage outlet is located;
a second mixing tank arranged downstream from said reservoir having a sewage inlet connected with the sewage outlet of said reservoir, a sewage outlet and at least one inlet for chemicals;
a closed vessel having an upper tangential inlet which is connected with the sewage outlet of said second mixing tank and which opens into an outer annular chamber, said outer chamber being open at the bottom and in communication with an inner annular chamber which is in communication with an outlet of said closed vessel, each of said outer and inner annular chambers being in communication with a third chamber positioned below said first and second annular chambers and provided with a sludge drain;
a filter associated with said closed vessel and arranged downstream from said upper tangential inlet of said closed vessel; and
a disinfecting means positioned downstream from said filter.

3,883,433
COLLECTION AND RECOVERY SYSTEM FOR OIL SPILLS

Frank Adams March, and Louis Stanislaus Brown, both of Reston, Va., assignors to Ocean Systems, Inc., Reston, Va.

Continuation-in-part of Ser. No. 269,725, July 7, 1972, abandoned. This application Sept. 20, 1973, Ser. No. 399,339
Claims priority, application Netherlands, July 4, 1973, 7309366
Int. Cl. E02b 15/04
U.S. Cl. 210—242 11 Claims

10. Apparatus for collecting an immiscible liquid, such as oil, spread on a body of water, including a basin with a flexible sheet bottom said basin being supported by floatation to maintain its rearward edge above the water line, a primary weir attached to the forward edge of said basin and supported by floatation, and oil withdrawal means for drawing oil from said basin, said primary weir having weir openings therein for passage of liquid from the upper layer of said body of water into said basin, said primary weir having a plurality of rigid modules disposed therealong in spaced relationship with one another, said flexible sheet connecting adjacent modules and

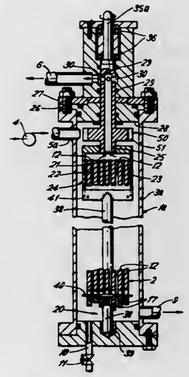


providing a barrier to flow between modules, each module comprising two spaced, weir floats elongated in the fore-aft direction with a weir plate affixed therebetween with the weir lip extending generally across the space between the weir floats, and with the plane of the weir plate at an acute angle to the long dimension of the weir floats, the module floating stably with the weir plate inclined into the water, its lip being forward and higher, thereby causing as the apparatus moves over the body of water a thickening of the oil ahead of the weir plate and a reduced pressure beneath said basin.

3,883,434
REVERSE OSMOSIS APPARATUS

Ronald Gayler, Wantage, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 5, 1973, Ser. No. 403,835
Claims priority, application United Kingdom, Oct. 25, 1972, 49220/72; May 4, 1973, 21409/73
Int. Cl. B01d 31/00
U.S. Cl. 210—330 7 Claims



1. Reverse osmosis apparatus comprising a stationary pressure shell, at least one bundle of rods disposed lengthwise within the shell so as to be rotatable within the shell about an axis, each rod having at least one longitudinally extending groove therein, a permeable substrate in the form of a sleeve covering the rod and a reverse osmosis membrane deposited on the substrate, manifold means mounted on one common end of a plurality of said rods, a hollow shaft attached to the

manifold means, and extending along said axis, turbine means arranged to be energised by the pressure head of the feed solution for rotating the shaft and hence the bundle of rods within the said shell, means comprising a conduit for supplying a feed solution to the pressure shell so as to obtain a product liquid within said groove and said manifold by reverse osmosis, and means for collecting said product liquid by way of said shaft.

3,883,435

CHROMATOGRAPHIC SHEETS AND FILMS AND ADSORBENT THEREFOR

Bruno Englebrecht, Langemarckstr. 31; Hans Walker, Lindenweg 10, both of Eschwege; Johannes Blome, Rohgraben 11, Grebendorf, and Friedemann Jordan, Johannuplatz 4a, Buhl, Baden, all of Germany

Division of Ser. No. 130,822, April 2, 1971, Pat. No. 3,726,405. This application Jan. 23, 1973, Ser. No. 326,127
Claims priority, application Germany, Apr. 2, 2015672
Int. Cl. B01d *15/08*
U.S. Cl. 210—502 **3 Claims**

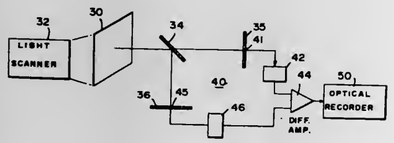
1. An adsorbent for a chromatographic sheet or film, said adsorbent comprising a mixture of adsorption active silica gel powder and from 1 to 50 percent by weight of silicic acid in the form of a silica sol having a content of from 1 to 15 percent of colloidal silicic acid, based on the weight of said adsorption active powder.

3,883,436

PHYSICAL CORRECTION FILTER FOR IMPROVING THE OPTICAL QUALITY OF AN IMAGE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an Invention of Shui Yee Lee, Washington, D.C.

Filed July 16, 1971, Ser. No. 163,151
Int. Cl. G01n *21/30*
U.S. Cl. 250—566 **8 Claims**



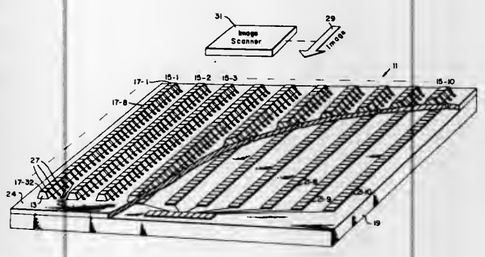
1. An optical system comprising:
a photographic record of a scene;
light source means for scanning said record;
filter means for receiving light from said scanned record, said filter means defining a pinhole aperture characterized by a substantially constant Fourier transform in response to a unit impulse of light and at least one other aperture whose configuration is a function of the characteristics of said scene record with light from said scanned record passing through said pinhole aperture and said other aperture; and
means for providing an output which is a function of the difference of the light passing through said pinhole aperture and said other aperture, said record being of low resolution due to scene double exposure and said at least one other aperture comprising a pair of pinholes spaced a distance related to said double exposure.

3,883,437

MONOLITHIC IR DETECTOR ARRAYS WITH DIRECT INJECTION CHARGE COUPLED DEVICE READOUT

Kjell Nummedal, Los Angeles; Donald J. Holscher, Playa del Rey; John M. Hartman, Costa Mesa, and Darrell M. Erb, Newport Beach, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 25, 1974, Ser. No. 436,586
Int. Cl. G01t *1/24*
U.S. Cl. 250—332 **9 Claims**



1. In an imager the combination comprising:
A. An array of infrared detectors, each operable to generate an electrical signal in response to infrared radiation; and
B. means for processing said signals, said means including:
1. A charge-coupled signal collecting device comprised of:
a. a storage medium,
b. a dielectric layer disposed over a major surface of said medium,
c. a plurality of electrodes disposed over said dielectric layer for creating in response to voltages applied thereto a succession of potential wells in said storage medium and for passing an electric charge from given ones of said wells to succeeding ones of them,
d. means d.c. coupled to said detectors for injecting directly into said storage medium next to successive ones of said potential wells, a charge in response to the output of respective ones of said detectors,
2. means for applying voltages to said electrodes so as to step said injected charges through the potential wells of said charge-coupled device, and
3. means coupled to said signal collecting device for reading out said stepped charges.

3,883,438

ABSORBENT COMPOSITION

Robert K. Remer, Evanston, Ill., assignor to Hull-Smith Chemicals, Inc., Des Plaines, Ill.

Continuation of Ser. No. 129,602, March 30, 1971, abandoned. This application June 29, 1973, Ser. No. 374,929
Int. Cl. C09k *3/00*
U.S. Cl. 252—1 **12 Claims**

1. An absorbent composition comprisng an effective amount of the reaction product formed in an alkaline aqueous medium of polyvalent metal ions, amine or amide compound, carbon disulfide, and a major amount of water-dispersible or ammoniacal-dispersible reactive high molecular weight compound or polymer material, wherein the amount of carbon disulfide is sufficient to react with substantially all of the amine or amide.

3,883,439

GREASE COMPOSITION

Josef F. Bergeron, Los Angeles, Calif., assignor to Jet Lube, Inc., Glendale, Calif.

Filed Apr. 17, 1974, Ser. No. 461,658
Int. Cl. C10m *5/22, 5/14, 7/36*
U.S. Cl. 252—37.2 **26 Claims**

1. A thixotropic lubricating compound having a reversible gel structure comprising the reaction product of significant amounts of a crude fish oil, a sulfurmodified sperm oil, a microcrystalline wax and an oxide of lead.

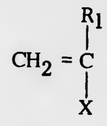
3,883,440

LIQUID DEVELOPER FOR ELECTROPHOTOGRAPH

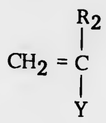
Yasuo Tamai, Odawara; Sadao Osawa, Asaka; Satoru Honjo, Asaka; Akira Umehara, Asaka; Masaya Yamamoto, Tokyo; Nobuo Tsuji, Ashigara; Naomitsu Takashina, Fujisawa, and Wakio Nagashima, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara and Mitsubishi Gas Chemical Company, Incorporated, Tokyo, both of, Japan

Filed June 15, 1973, Ser. No. 370,212
Claims priority, application Japan, June 16, 1972, 47-60110
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **11 Claims**

1. A liquid developer for electrophotography comprising a carrier liquid having an electric resistance higher than about 10^{10} Ω.cm. and a dielectric constant less than about 3, said carrier liquid having dispersed therein a toner prepared by graft polymerizing the addition polymerizable compound represented by formula (I) and the addition polymerizable compound represented by formula (II) onto pigment particles;

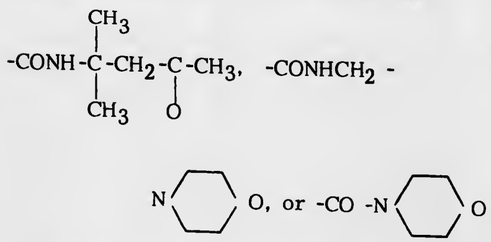


(I)



(II)

wherein R_1 represents —H or —CH_3, X represents —$COOC_nH_{2n+1}$ ($6 \leq n \leq 20$), R_2 represents —H, and Y represents —$CONHCH_2OH$, —$CONHCH_2OCH_3$, —$CONHC_2H_2OC_2H_5$, —$CONHCH_2OC_3H_7$, —$CONHCH_2OC_4H_9$,



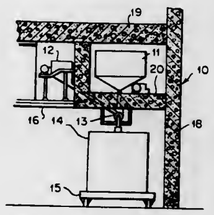
the ratio of the addition polymerizable compound of formula (I) to the addition polymerizable compound of formula (II) being 5 – 45 parts by weight to 1 part by weight of the compound of the formula (II); the size of the pigment particles being less than about 1 micron; and from about 0.1 to about 20 parts by weight of the toner being present per 1000 parts by weight of the carrier liquid.

3,883,441

APPARATUS FOR FIXING RADIOACTIVE WASTE

John D. Murphy, Bedford Hills; John Pirro, Jr., Rutland; Monsey Lawrence, and Stanley F. Wisla, both of Yorktown Heights, all of N.Y., assignors to Atcor Inc., Park Mall, Peekskill, N.Y.

Filed July 20, 1970, Ser. No. 56,625
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 W **3 Claims**



1. A waste processing facility for preparing radioactive wastes for disposal which includes means defining a shielded enclosure, a metering tank positioned in said enclosure, said metering tank including metering means for removing liquid contents therefrom at a metered rate and measuring means for measuring the radioactivity of liquid contents thereof, mixing means for continuously receiving, mixing and discharging fixing materials and liquids said mixing means being connected to said metering means to receive the contents of said tank through said metering means, fixing materials feed means connected to said mixing means to deliver fixing materials thereto at a regulated rate, means defining a space in which to position a container relative to said mixing means to receive the discharged contents therefrom.

3,883,442

NON-SHRINKING ALUMINA-BASED CATALYST COMPOSITIONS

Dennis P. McArthur, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 255,180, May 19, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,139
Int. Cl. B01j *11/82*
U.S. Cl. 252—432 **11 Claims**

1. A method for the manufacture of a supported active metal catalyst which resists shrinkage at high temperatures, which comprises:
1. impregnating preformed, cohesive aggregates of an alumina hydrate or transition alumina support with a solution of a B_2O_3 precursor to incorporate therein between about 0.2 and 25 weight-percent of B_2O_3 equivalent;
2. calcining the impregnated support at a temperature between about 675° and 1500°C. for a time sufficient to decompose said B_2O_3 precursor and to substantially reduce thermal shrinkage of said support, but insufficient to reduce the surface area thereof to below about 5 m^2/g, said calcination being carried out prior to the addition of any catalytic metal component capable of combining with B_2O_3 at said calcination temperature;
3. impregnating the calcined support with a solution of a salt of at least one catalytic metal selected from Groups IB, IIB, VB, VIB, VIIB and VIII of the Periodic Table; and
4. calcining the salt-impregnated support to convert the impregnated salt or salts to an active catalytic form.

3,883,443
CATALYST ASSEMBLY FOR REMOVING NOXIOUS GASES FROM AUTOMOBILE EXHAUST
Teruyuki Nakamoto; Yoshioki Shingo, both of Tokyo; Tetsuo Yamaguchi, Yokohama, and Yukio Endo, Tokyo, all of Japan, assignors to Fujikura Densen Kabushiki Kaisha, Japan
Filed Apr. 16, 1973, Ser. No. 351,761
Claims priority, application Japan, Apr. 21, 1972, 47-40176
Int. Cl. B01j 11/22
U.S. Cl. 252—447 12 Claims

1. A catalyst assembly for removing noxious gases from the automobile exhaust comprising a plurality of highly gas permeable catalyst layers each thereof composed of a copper-nickel catalyst, and a plurality of highly gas permeable separating layers each thereof composed of a ferrous material, said plurality of catalyst layers being supported and isolated from each other by said plurality of separating layers.

3,883,444
AUTO EXHAUST CATALYST
James M. Maselli, and Gwan Kim, both of Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of Ser. No. 164,466, July 20, 1971, abandoned. This application Apr. 11, 1973, Ser. No. 350,212
Claims priority, application United Kingdom, June 20, 1972, 28868/72
Int. Cl. B01j 11/08
U.S. Cl. 252—455 R 7 Claims

1. A composition useful as an internal combustion engine exhaust catalyst which comprises 4–20 weight percent cobalt oxide, 0.1–15 weight percent nickel oxide, 0.005–0.1 weight percent palladium and the remainder being support material such that the total weight percent equal 100.

3,883,445
SHRINKAGE RESISTANT AUTO EXHAUST CATALYSTS
James F. Roth, St. Louis; James W. Gambell, Creve Coeur, and Charles R. Penquite, Ballwin, all of Mo., assignors to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 160,549, July 7, 1971, Pat. No. 3,781,406. This application Aug. 23, 1973, Ser. No. 391,167
Int. Cl. B01j 11/06, 11/32
U.S. Cl. 252—462 22 Claims

1. A catalytic oxidation composite effective at elevated temperature and particularly resistant to volume shrinkage and other thermal degradation consisting essentially of an alumina which is a transition alumina and other than alpha alumina and having dispersed therein loadings of copper, chromium and rare earth components, with the loadings of the said components being intermixed and well dispersed throughout the alumina rather than limited to separate regions of the alumina, and with the loadings being present, on a metal basis per 100 parts Al_2O_3 basis, in amounts of 2 to 15 weight parts copper, 0.1 to 10 wt. parts chromium, and 1 to 15 weight parts total rare earths, with at least 1 weight part of the rare earth being selected from the group consisting of lanthanum, neodymium, praseodymium, and mixtures thereof, and with the copper being predominantly well dispersed copper aluminate as determined by ESCA and with the alumina used to prepare the composite having surface area of at least 50 m^2/gram so as to provide sufficient surface for the copper to be well dispersed.

3,883,446
PHOSPHORUS-FREE DETERGENT FORMULATION
Stephen E. McGuire, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Feb. 9, 1973, Ser. No. 330,932
Int. Cl. C11d 1/02, 3/34
U.S. Cl. 252—545 4 Claims

1. A nonphosphorus-containing detergent formulation consisting essentially of a surfactant and an alkali metal, ammonium, or alkylolammonium salt of a water-soluble terpolymer of about 10 to 40 percent by weight allyl alcohol, about 1 to 43 percent by weight sulfur dioxide and about 20 to 83 percent by weight acrylic or methacrylic acid, provided that the particular proportions fall within the shaded area of the diagram on the annexed drawing; said surfactant being
a. an alkali metal, ammonium, or alkylolammonium alkylbenzene sulfonate;
b. an alkali metal, ammonium, or alkylolammonium olefin sulfonate;
c. an alkali metal, ammonium, or alkylolammonium alkylsulfonate;
d. an alkali metal, ammonium, or alkylolammonium alkanol sulfate;
e. an alkali metal, ammonium, or alkylolammonium alkoxylated alkanol sulfate;
f. alkoxylated alcohols;
g. or mixtures thereof;
said terpolymer salt being present in amounts ranging from about 0.1 to about 25 parts by weight per part by weight of the surfactant.

3,883,447
TRANSPARENT LIQUID DETERGENT COMPOSITION
Fumikatsu Tokiwa, Wakayama; Kyozaburo Tachibana, Sakura; Yutaka Minegishi, Funabashi, and Tetsuya Imamura, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
Filed Dec. 20, 1972, Ser. No. 316,828
Claims priority, application Japan, Dec. 29, 1971, 46-2977
Int. Cl. C11d 1/18
U.S. Cl. 252—546 6 Claims

1. A transparent, stable, liquid detergent composition comprising an aqueous solution of
A. as essentially the only organic surfactant components in the detergent composition, a three component surfactant consisting essentially of
1. from about 30 to about 55 percent by weight of straight chain alkylbenzene sulfonate
2. from about 30 to about 60 percent by weight of α-olefin sulfonate, and
3. from about 5 to about 20 percent by weight of polyoxyethylene alkyl- or alkylphenyl ether;
B. from about 0.1 to 3.0 parts by weight, per one part of constituent A, or water-soluble salt of nitrilotri-acetic acid;
the composition containing at least 25 percent by weight of the sum of constituents A and B.

3,883,448
RECOVERY AND PURIFICATION OF PROTEIN
Moshe Sternberg, South Bend, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Apr. 23, 1973, Ser. No. 353,895
Int. Cl. A23j 1/20
U.S. Cl. 260—8 2 Claims

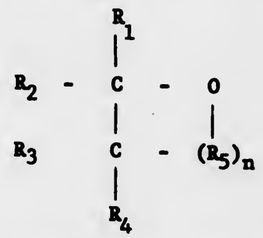
1. A process for isolating and purifying protein from aqueous cheese whey solutions which consists essentially of mixing the cheese whey solution with about 0.1 to about 1.0 percent, (weight/volume basis) based on the total volume of the mixture, of a polycarboxylic acid selected from the class consisting of polyacrylic acid, hydrolyzed ethylene-maleic anhydride copolymers and hydrolyzed methyl vinyl ether-maleic anhydride copolymers at a pH from about 3 to about 4.5 and at a temperature below about 30° C. and for a time from about 30 minutes to about 90 minutes to form a precipitate between the protein in the cheese whey solution and the polycarboxylic acid, and then separating the resulting precipitate from the remaining cheese whey solution.

3,883,449
POLYMERIZATION OF 1,4-HALOSUBSTITUTED-2,3-EPOXYBUTANES
Edwin James Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Continuation-in-part of Ser. No. 322,585, Jan. 10, 1973. This application Apr. 30, 1973, Ser. No. 355,395The portion of the term of this patent subsequent to Nov. 19, 1991, has been disclaimed.
Int. Cl. C08g 23/14
U.S. Cl. 260—2 A 10 Claims

1. A process for producing polymers of 1,4-halosubstituted-2,3-epoxybutanes comprising contacting at least one 1,4-halosubstituted-2,3-epoxybutane under polymerization conditions at a temperature below 0°C. with at least a catalytic amount of a catalyst combination consisting essentially of
a. an aluminum trialkyl or an aluminum trialkyl which has been reacted with up to about 1.5 mole of water per mole of aluminum, and
b. boron trifluoride, phosphorus pentafluoride, phosphorus oxyfluoride or antimony pentafluoride, components (a) and (b) being present in said combination in a molar ratio of from about 0.02:1 to about 5:1.

3,883,450
PROCESS FOR PRODUCING HOMO- AND COPOLYMERS OF CYCLIC ACETALS
Karlheinz Burg, Langenhain/Taunus, and Helmut Schlaf, Kelkheim/Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Division of Ser. No. 281,559, Aug. 17, 1972, Pat. No. 3,848,020. This application May 9, 1974, Ser. No. 468,563
Claims priority, application Germany, Aug. 19, 1971, 2141600
Int. Cl. C08g 11/00
U.S. Cl. 260—2 R 3 Claims

1. In a process for producing a moldable homopolymer of a cyclic acetal of the formula



wherein R_1, R_2, R_3 and R_4 may be the same or different and represent hydrogen or an alkyl group which can be halogen-substituted, R_5 represents an oxymethylene radical which can be substituted by an alkyl or halogen-substituted alkyl group, and n is 1 to 3, or when n is 1, R_5 can be the radical $-(O-CH_2CH_2)_m-OCH_2-$ wherein m is 1 to 3, at a temperature between the melting point and boiling point of the monomer or monomer mixture in the presence of a protonic acid, the improvement which consists in using an anhydrous perfluoroalkyl sulfonic acid with one to 18 carbon atoms as the protonic acid.

3,883,451
FLAME-RETARDANT POLY (ARYLOXYPHOSPHAZENE) COPOLYMERS
Kennard A. Reynard, Mentor, and Selwyn H. Rose, Beachwood, both of Ohio, assignors to Horizons Incorporated, Cleveland, Ohio
Filed June 11, 1973, Ser. No. 368,848
Int. Cl. C08g 33/16, 33/02
U.S. Cl. 260—2 P 10 Claims

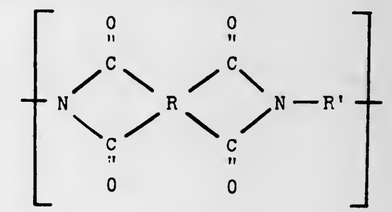
1. Poly(aryloxyphosphazene) copolymers consisting of 20 to 50,000 randomly repeating units represented by the following general formulas:



wherein R_1 and R_2 are different monovalent aryl radicals, and R_1 is an aryl radical selected from the group consisting of phenyl, 3-substituted phenyl, 4-substituted phenyl, 3,4-disubstituted phenyl, 3,5-disubstituted phenyl and 3,4,5-trisubstituted phenyl, wherein the substituents are selected from the group consisting of lower alkyl, lower alkoxy, and halogen, but not more than one substituent may be halogen, and R_2 is XC_6H_4-, $X_2C_6H_3-$, 2,4,5—$Cl_3C_6H_2-$, 2,4,6—$Cl_3C_6H_2-$, 2,3,4,6—Cl_4C_6H-, and C_6Cl_5- where X is Cl or Br, but Br can only occupy the 3,4 or 5 position; wherein the ratio of R_1/R_2 groups for 3- or 4- monosubstituted phenyl can vary from 95/5 to 5/95, and the R_2 group will decrease approximately 15 mole percent for each additional halogen in R_2 plus an additional an additional 15 mole percent for each ortho position that is occupied by halogen.

3,883,452
COMPOSITION OF POLYIMIDE POWDER AND POLYFORMALDEHYDE
Edwin Louis Scheuerlein, and Frank Clyde Starr, Jr., both of Wilmington, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.
Filed May 15, 1973, Ser. No. 360,582
Int. Cl. C08g 53/08; C08j 1/14
U.S. Cl. 260—2.5 M 15 Claims

1. A composition comprising a coalescible polyimide powder and 5 to 50% by weight, based upon the total weight of said composition, of a solid, particulate homopolymer of formaldehyde, wherein said polyimide is characterized by the following recurring structural unit:



wherein R is a tetravalent radical containing at least one six-carbon atom ring characterized by benzenoid unsaturation and wherein the four carbonyl groups of said recurring structural unit are attached to separate carbon atoms in pairs with the carbonyl groups of each pair being attached to adjacent carbon atoms in said R radical; and wherein R' is a divalent aromatic radical.

3,883,453

COATING COMPOSITIONS CONTAINING ACRYLIC POLYMERS POLYMERIZED IN THE PRESENCE OF CELLULOSE ACETATE BUTYRATE

Masao Takahashi; Tadanori Fukuda, and Tosirou Kataoka, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 10, 1973, Ser. No. 358,855
Int. Cl. C08b *21/08*
U.S. Cl. 260—15 **6 Claims**

1. A coating composition comprising an intimate mixture of the following components A and B:

A. about 60 – 90% by weight of a dispersion of copolymer obtained by copolymerizing a mixture of acrylic monomers which consist of

a. about 30–96% by weight of at least one monomer selected from the group consisting of alkyl acrylate monomers and alkyl methacrylate monomers, wherein the alkyl groups have 1 – 20 carbon atoms, and

b. about 70–4% by weight of at least one monomer selected from the group consisting of hydroxyalkyl acrylate monomers and hydroxyalkyl methacrylate monomers wherein the alkyl groups have 2–20 carbon atoms, an α,β-ethylenically unsaturated carboxylic acid, acrylamide, methacrylamide, methylol acrylamide, methylol methacrylamide, butoxymethyl acrylamide, butoxymethyl methacrylamide, butoxymethyl acrylamide, and butoxyethyl methacrylamide in the presence of a solution of cellulose acetate butyrate with a peroxide catalyst, the proportion of component (a) to cellulose acetate butyrate being between about 50 and 2, and

B. about 10 – 40% by weight of amino resin, wherein the cellulose acetate butyrate has about 53–37% by weight of butyryl content, about 2–14% by weight of acetyl content and about 0.5–3% by weight of hydroxyl content, and in which the content of cellulose acetate butyrate in the cellulose acetate butyrate solution is about 2–30% by weight.

3,883,455

NON-BLEEDING VINYLIDENE CHLORIDE COPOLYMER COATINGS

Charles E. Peos, East Orange, N.J., assignor to A. E. Staley Manufacturing Co., Decatur, Ill.

Filed Nov. 7, 1972, Ser. No. 304,427
Int. Cl. C08f *19/14, 21/04*
U.S. Cl. 260—23 XA **32 Claims**

1. A vinylidene chloride copolymer emulsion composition suitable for use as an aqueous based coating vehicle for inhibiting bleeding when woods of a high phenolic wood content are coated therewith, said emulsion composition comprising:

A. a vinylidene chloride copolymer containing:

a. about 40% to about 80% by weight vinylidene chloride,

b. about 20% to 60% by weight of an alkyl ester of an alpha, beta-ethylenically unsaturated acid wherein the alkyl ester group containing from 1 to 8 carbon atoms, and

c. about 0.5 to about 3% by weight of at least one alpha, beta-ethylenically unsaturated monomer selected from the group consisting of an ethylenically unsaturated monocarboxylic acid, an ethylenically unsaturated dicarboxylic acid, an ethylenically unsaturated dicarboxylic acid anhydride, acrylamide, methacrylamide and N-substituted acrylamides,

B. an organic monocarboxylic acid in an amount ranging from at least 3 parts by weight to about 10 parts for each 100 parts by weight vinylidene chloride copolymer dry solids, and

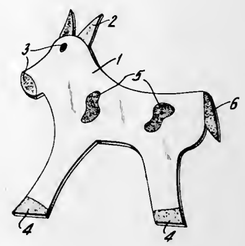
C. an organic acid salt buffering agent in an amount sufficient to buffer the vinylidene chloride copolymer emulsion composition to a pH of about 3.0 to about 6.0.

3,883,456

PLASTIC MASS FOR MODELLING PURPOSES AND A METHOD FOR FORMING IMPRINTS FROM THE MASS

Ludwig C. Finck, Neumarkt, Oberpfalz, Germany, assignor to Firma Eberhard Faber GmbH, Germany

Filed Dec. 29, 1972, Ser. No. 319,681
Int. Cl. C08f *19/14, 21/04*
U.S. Cl. 260—23 XA **17 Claims**



1. A kneadable coherent mass suitable for modelling purposes, said mass having the following characteristics:

a. it comprises a hydrophobic or hydrophilic filler, a hydrophilic plasticizer, and a coloring agent which is capable of dilution with water;

b. it can be diluted with water;

c. in moist condition it releases and transfers color upon contact;

d. it releasably adheres to substrates.

3,883,454

BINDERS FOR ENVIRONMENTALLY HARMLESS LAQUER SYSTEMS

Rolf Dhein; Bernd-Ulrich Kaiser, both of Krefeld; Hans Rudolph, Krefeld-Bockum; Rolf Küchenmeister, and Clemens Niehaus, both of Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Oct. 29, 1973, Ser. No. 410,771
Claims priority, application Germany, Oct. 31, 1972, 2253325; June 19, 1973, 2304550; Aug. 31, 1973, 2343976
Int. Cl. C08g *37/34;* **C09d** *11/10, 11/12*
U.S. Cl. 260—22 R **8 Claims**

1. A binder for a low solvent lacquer system containing a melamine resin, said binder consisting essentially of an oligomeric alkyd resin obtained by condensing a polyalcohol, an aromatic dicarboxylic acid and a monocarboxylic acid in molar ratios of between 1:0.5:0.5 and 1:0.8:1.5 and by additionally partially condensing 0.05 to 0.65 equivalents of aromatic dicarboxylic acid as a semiester with each 1,000 parts by weight of alkyd resin, said monocarboxylic acid being selected from the group consisting of unsaturated natural fatty acids, benzoic acid, hexahydrobenzoic acid, butyl benzoic acid, tolyl acid, α-ethylhexanoic acid, saturated, branched and linear fatty acids having eight to 18 carbon atoms per molecule and mixtures thereof.

3,883,457

STABILIZED POLYBUTADIENE RESIN

Delmar F. Lohr, Jr., and Edward Leo Kay, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 16, 1973, Ser. No. 351,688
Int. Cl. C08d *11/04*
U.S. Cl. 260—23.7 R **8 Claims**

1. A composition curable to a hard resin having enhanced resistance to thermo-oxidative deterioration of its mechanical properties, which composition comprises

	Parts by Weight
A butadiene polymer or copolymer resin	100
Vinyltriacetoxysilane	0.05–5.0
Silica	100–500
A substituted ammonium dihydrocarbylphosphorodithioate	0.5–5.0
Calcium stearate	0.5–5.0
Dicumyl peroxide	0.5–6.0

the resin being a homopolymer of butadiene or a copolymer of butadiene and styrene and containing at least 40 percent by weight of butadiene, and at least 80 percent of butadiene repeating units in the 1,2-configuration, and having a molecular weight of 12,500 to 55,000.

3,883,458

FLATTING AGENTS FOR COATINGS

Dietrich-Wolfgang Mueller, Dossenheim; Hans Klug, Frankenthal; Klaus Bronstert, Carlsberg, and Lieselore Grah, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Feb. 1, 1974, Ser. No. 438,796
Claims priority, application Germany, Feb. 2, 1973, 2305023
Int. Cl. C08c *11/70*
U.S. Cl. 260—28.5 R **10 Claims**

1. A surface coating containing as a flatting agent the product obtained by reacting

A. a polyolefin wax having a molecular weight of 800 to 25,000 which is a polyethylene wax, a polypropylene wax or an ethylene/propylene copolymer wax, with

B. a vinyl aromatic compound which is styrene or vinyl toluene and

C. a copolymerizable α,β-olefinically unsaturated dicarboxylic anhydride of from 4 to 5 carbon atoms, at a molar ratio of (B):(C) of from 0.7:1 to 1:0.7 and a weight total of (B) plus (C) of from 2 to 50 percent by weight with reference to the weight of the polyolefin was (A) and at a temperature of from 100°C. to 200°C. in the presence or absence of a free-radical polymerization initiator.

3,883,459

THERMOELASTIC ARTICLES AND PROCESS OF MANUFACTURE THEREOF

Eric George Kent, Sarnia, Ontario, Canada, assignor to Polysar Limited, Sarnia, Ontario, Canada

Filed Mar. 7, 1974, Ser. No. 449,036
Claims priority, application Canada, Apr. 18, 1973, 169107
Int. Cl. C08c *11/70*
U.S. Cl. 260—28.5 B **9 Claims**

1. A process of producing a vulcanized thermoelastic composition capable of storing elastic stress which process is preparing a mixture comprising

a. 100 parts by weight of a vulcanizable crystalline elastomer which is selected from a trans-1,4 polymer of a conjugated diolefin compound selected from butadiene-1,3, isoprene and chloroprene and from crystalline copolymers of ethylene with vinyl acetate, said crystalline elastomer having a crystalline melting point of from about 50°C to about 150°C and on X-ray crystallinity of from 5 percent to about 40 percent,

b. from 5 to 100 parts by weight of a crystalline wax having a melting point of from about 40°C to about 100°C and,

c. vulcanizing agent, and vulcanizing the mixture to produce said thermoelastic composition.

3,883,460

STABILIZATION OF POLYBUTADIENE RESIN

Delmar F. Lohr, Jr., and Edward Leo Kay, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 16, 1973, Ser. No. 351,693
Int. Cl. C08d *11/04*
U.S. Cl. 260—23.7 R **4 Claims**

1. A composition curable to a hard resin having enhanced resistance to thermo-oxidative deterioration of its mechanical properties, said composition containing

	Parts by Weight
A butadiene polymer or copolymer resin	100
Zinc diarylphosphinodithioate	0.5–5.0
Calcium stearate	0.5–5.0
A peroxide curing agent	0.5–6.0
Silica	100–500
Vinyl triacetoxysilane	0.05–5.0

the resin being a homopolymer of butadiene or a compolymer of butadiene and styrene and containing at least 40% by weight of butadiene, and at least 80% of butadiene repeating units in the homopolymer or copolymer being in the 1,2-configuration, and having a molecular weight of 12,500 to 55,000; and the curing agent being a peroxide which gives radicals of the structure $R_2(CH_3)CO\cdot$ in which each R represents a hydrocarbon radical containing 1 to 20 carbon atoms.

3,883,461

ETHYLENE/VINYL CHLORIDE COMPOSITIONS

William G. Wagner, Imperial, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 5, 1973, Ser. No. 412,950
Int. Cl. C09j *3/26*
U.S. Cl. 260—27 R **9 Claims**

1. An aqueous dispersion containing a dispersed phase which comprises (1) about 5 to about 65 parts by weight of an ethylene/vinyl chloride interpolymer, and (2) for every part of said interpolymer, 0.05 to 4 parts of rosin material.

3,883,462

NOVEL RESINOUS COMPOSITIONS COMPRISING SEQUENTIAL REACTION PRODUCT OF FORMALDEHYDE, INORGANIC ACID, TRIETHANOLAMINE AND UREA

Glenn A. Pearson, 1311 Delaware Ave. S.W., Washington, D.C. 20024

Filed Jan. 16, 1973, Ser. No. 324,156
Int. Cl. C08g *9/10*
U.S. Cl. 260—29.4 R **5 Claims**

1. A process of producing an aqueous resinous system comprising (1) admixing aqueous formaldehyde and an inorganic catalyzing acid to obtain an exothermic and substantially immediate reaction; (2) adding triethanolamine to said reaction mixture of (1) to obtain an exothermic and substantially immediate reaction; and (3) adding urea to the reaction mixture of (2) to obtain a viscous aqueous resinous solution, said formaldehyde being present in an amount of 30 moles, said catalyzing acid being present in an amount of 2 moles, said triethanolamine being present in an amount of 2 moles, and said urea being present in an amount of 12 moles, it being

permissible to have a variation of no greater than 15 percent in said molar amounts.

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permissible to have a variation of no greater than 15 percent in said molar amounts.

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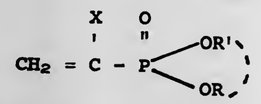
FLAME RETARDANT BINDER FOR FLAMMABLE MATERIALS

Jung Il Jin, Irvington, and Paul Kraft, Spring Valley, both of N.Y., assignors to Stauffer Chemical Corporation, Westport, Conn.

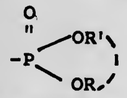
Filed Sept. 27, 1973, Ser. No. 401,533
Int. Cl. C08g 51/24
U.S. Cl. 260—29.4 UA 11 Claims

1. A flame retardant polymeric latex binder composition comprising (a) from about 20 to about 70 weight percent of a polymer latex containing:

1. from about 10 to about 75 weight percent of a bis(hydrocarbyl)vinyl phosphonate of the formula:



wherein X is selected from the group consisting of hydrogen, halogen, cyano, phenyl, C_1—C_{18} alkyl and



and each of R and R′ are hydrocarbyl or substituted hydrocarbyl having substituents selected from the group consisting of chloro, bromo, fluoro, nitro, hydroxy, sulfone, ethoxy, methoxy, nitrile, ether, ester and keto groups, said hydrocarbyl or substituted hydrocarbyl having from 1 to 18 carbon atoms,

2. from about 20 to about 85 weight percent of a vinyl halide or vinylidene halide,

3. from about 5 to about 35 weight percent of a C_1–C_{20} alkyl ester of acrylic acid, and optionally,

4. from 0 to about 10 weight percent of a comonomer selected from the group consisting of acrylic acid, methacrylic acid, amides of acrylic acid and methacrylic acid, the N-methylol derivatives of the amides of acrylic acid and methacrylic acid, and diacetone derivatives of the amides of acrylic acid and methacrylic acid, (b) from about 3 to about 50 weight percent of a phosphorus containing compound selected from the group consisting of, a co-condensate of bis(β-chloroethyl)vinyl phosphonate and dimethyl methyl phosphonate, a condensate of bis(β-chloroethyl) vinyl phosphonate, tetrakis(hydroxymethyl)phosphonium chloride or hydroxide, N-hydroxymethyl-3-(dimethylphosphoro)propionamide, tris(2,3-dibromopropylphosphate), and water-insoluble ammonium polyphosphate, water-insoluble ammonium salt of metaphosphoramidic acid and mixtures thereof, said water-insoluble phosphorus compounds being characterized by a water solubility of less than 25 g/100 cc at 10°C., (c) from 0 to about 50 weight percent of urea, (d) from about 10 to about 50 weight percent of an aminoplast selected from the group consisting of a melamine formaldehyde or a urea formaldehyde, and (e) from 0 to about 20 weight percent of a phosphate plasticizer.

3,883,464

STYRENE RESIN COMPOSITION CONTAINING EPOXY LUBRICANTS

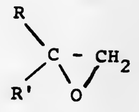
Masaru Higuchi; Hajime Ohnishi, and Hiroshi Yagihara, all of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 212,787, Dec. 27, 1971, Pat. No. 3,817,900. This application July 5, 1973, Ser. No. 376,318
Claims priority, application Japan, Dec. 30, 1970, 45-122245; Nov. 17, 1971, 46-92284
Int. Cl. C08f 45/34
U.S. Cl. 260—30.4 R 5 Claims

1. A thermoplastic synthetic resin moldable composition, consisting essentially of

A. a copolymer consisting of (1) at least one first monomer component selected from the group consisting of styrene, α-methyl styrene and nucleus substituted styrenes, and (2) at least one second monomer component selected from the group consisting of acrylonitrile and the methyl, ethyl and butyl esters of acrylic acid and methacrylic acid, said copolymer having blended therein,

B. from 0.01 to 3.0 percent by weight, based on the weight of said copolymer, of one or a mixture of lubricants of the formula



wherein R and R′ each represent hydrogen or straight chain alkyl and the sum of the carbon atoms in R and R′ is 14 to 42.

3,883,465

RAPID SETTING POLYURETHANES FROM DIOLS AND POLYFUNCTIONAL POLYISOCYANATES PREPARED IN THE PRESENCE OF CARBOXYLIC ACID ESTERS

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 358,245, May 7, 1973, Pat. No. 3,801,532, which is a continuation-in-part of Ser. No. 205,647, Dec. 7, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 422,826
Int. Cl. C08g 22/16
U.S. Cl. 260—31.2 12 Claims

1. A rigid, non-cellular composition having a density of at least about 1 gram/cc which is demoldable, without the application of an external source of heat, within about 5 minutes after admixture of the components of the composition which is the reaction product of a polyurethane-forming composition comprising

A. a dihydroxyl-containing compound having a hydroxyl equivalent weight of less than about 250;

B. an organic polyisocyanate having an NCO functionality of at least about 2.5;

C. a liquid modifier compound having a boiling point of at least about 150°C or mixture of such compounds and which moderates the reaction exotherm between components (A), (B) and (D) without substantial reaction therewith selected from esters of carboxylic acids or mixtures thereof; and

D. an organometallic catalyst;

wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1, component (C) is present in quantities of from about 10 to about 50 percent by weight of the combined weights of components (A), (B) and (C); and component (D) is present in quantities of from about 0.1 to about 10.0 percent by weight of the combined weight of components (A), (B) and (C).

3,883,466

RAPID SETTING POLYURETHANES FROM DIOLS AND POLYISOCYANATES PREPARED IN THE PRESENCE OF AN ORGANIC CARBONATE

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 358,245, May 7, 1973, Pat. No. 3,801,532, which is a continuation-in-part of Ser. No. 205,697, Dec. 7, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 422,830
Int. Cl. C08g 22/16
U.S. Cl. 260—32.2 18 Claims

1. A rigid, non-cellular composition having a density of at least about 1 gram/cc and an elongation value of less than about 100 percent which is demoldable, without the application of an external source of heat, within about 5 minutes after admixture of the components of the composition which is the reaction product of a polyurethane-forming composition comprising

A. a dihydroxyl-containing compound having a hydroxyl equivalent weight of less than about 250;

B. an organic polyisocyanate having an NCO functionality of at least about 2.5;

C. a liquid modifier compound having a boiling point of at least about 150°C or mixture of such compounds and which moderates the reaction exotherm between components (A), (B) and (D) without substantial reaction therewith selected from the group consisting of organic carbonates and mixtures thereof; and

D. an organometallic catalyst;

wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1, component (C) is present in quantities of from about 10 to about 50 percent by weight of the combined weights of components (A), (B) and (C); and component (D) is present in quantities of from about 0.02 to about 5.0 percent by weight of the combined weight of components (A), (B) and (C).

3,883,467

SOLUTIONS OF TETRACHLORINATED AROMATIC POLYESTERS IN METHYLENE CHLORIDE

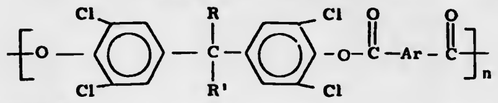
Robert W. Stackman, Morris Twp., and Clifford M. Vogt, Madison, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 281,585, Aug. 17, 1972. This application July 1, 1974, Ser. No. 485,011
Int. Cl. C08g 51/30; D01f 7/00
U.S. Cl. 260—33.8 R 9 Claims

1. A stable solution adapted to form fibers by dry-spinning which solution comprises:

from about 70 to about 82 percent by weight of the solution of methylene chloride; and

from about 30 to about 18 percent by weight of the solution of a polymer having a recurring structural formula:



wherein

n is so chosen that the molecular weight of the polymer is from about 10,000 up to about 200,000 and R and R′ may be the same or different and represent lower alkyl groups or hydrogen or may, together, constitute a cyclic hydrocarbon; and Ar is a mixture of from about 20 to about 40 percent paraphenylene and from about 80 to about 60 percent metaphenylene; the stable solution having a viscosity of from about 100 to about 3,000 poises.

3,883,468

THERMOPLASTIC MOLDING COMPOSITIONS

Franz Schmidt, Mannheim; Wolfgang Scheak, Schwetzingen; Rolf Wurmb, Heidelberg; Eugen Meyer-Simon, Frankfurt; Friedrich M. Thurn, Bruchl, and Werner Will, Wolfgang, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 19, 1973, Ser. No. 426,029
Claims priority, application Germany, Dec. 22, 1972, 2262859
Int. Cl. C08g 51/10
U.S. Cl. 260—37 AL 7 Claims

1. A thermoplastic molding composition comprising:

a. a polyoxymethylene;

b. from about 15–50 percent by weight of glass fibers; and,

c. from 0.2 to 2.0 percent by weight of a polymeric organosilane adhesion promoter of the formula I

$$X_3Si—R—(OCH_2)_n—O—R^1{}_m—O—R—SiX_3 \quad (I)$$

in which

X denotes halogen, C_{1-7} hydrocarbon-oxy, C_{1-7} acyl-oxy or hydroxyl, the groups X being identical or different,

R denotes straight-chain or branched-chain divalent C_{2-10} hydrocarbon radicals attached to the silicon atom by a silicon-carbon bond which may be interrupted at one or more points by an oxygen atom, the groups R being identical or different,

R^1 denotes C_{2-6} alkylene which may exhibit one or two oxygen bridges,

n is a number between 1 and 5, and

m is a number between approx. 10 and 200.

3,883,469

PROCESS FOR THE PRODUCTION OF POLYAMIDE MOULDINGS

Bert Brassat, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 317,770, Dec. 22, 1972, abandoned. This application Apr. 10, 1974, Ser. No. 459,804
Claims priority, application Germany, Dec. 24, 1971, 2164483
Int. Cl. C08g 51/04
U.S. Cl. 260—37 N 3 Claims

1. In the process for the production of polyamides with reduced residual monomer content by activated anionic polymerization of lactams having at least 5 ring members, the improvement which comprises polymerizing said lactam in the presence of 0.5 to 25% by weight based on the lactam of at least one silicate selected from the group of silicates having sheet structure.

3,883,470

TiO_2 PIGMENTED COATINGS, CREDIT CARD AND PROCESSES RELATING THERETO

John J. Bishop, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

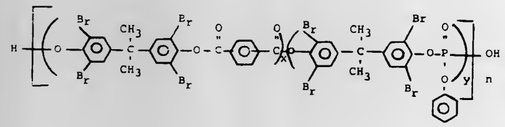
Division of Ser. No. 176,737, Aug. 31, 1971, Pat. No. 3,770,478. This application July 12, 1973, Ser. No. 378,484
Int. Cl. C08g 51/04
U.S. Cl. 260—39 P 5 Claims

1. A pigmented coating consisting essentially of a dry mixture of TiO_2 pigment in a binder of thermoplastic aminotriazine-sulfonamide-aldehyde resin and ethylene vinyl acetate copolymer or vinyl chloride-maleate copolymer or polyester selected from the group consisting of poly(ethylene succinate), poly(ethylene sebacate), and poly(ethylene terephthalate) wherein the mixture comprises 5 to 45 weight percent of the polyester or the copolymer, 10 to 45 weight percent of the aminotriazine resin and 10 to 85 weight percent of the pigment.

3,883,471
COMPOSITION FOR USE IN THE FORMATION OF THREE-DIMENSIONAL FLAME RETARDANT ARTICLES

Robin Nikolas Greene, New Albany, Ind., and Kathrine Johnson Lewis, West Los Angeles, Calif., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 387,050, Aug. 9, 1973, abandoned. This application May 22, 1974, Ser. No. 472,422
Int. Cl. C08f *15/40, 15/16, 45/08*
U.S. Cl. 260—42.52 **10 Claims**



1. An elastomeric composition having good scorch resistance, said composition consisting essentially of

1. a polymeric component which is an acrylic ester/-butenedioic acid monester dipolymer or ethylene/acrylic ester/butenedioic acid monoester terpolymer,

2. a vulcanizing agent selected from polyfunctional, organic, primary amines and their salts, the amount of the polyamine being about 0.06 – 0.30 mole of amino function per kilogram of polymer, and

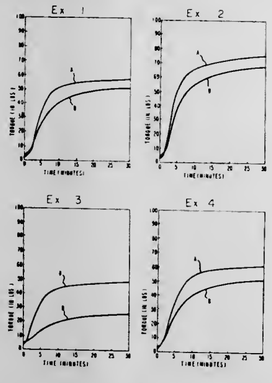
3. at least one vulcanization accelerator selected from bases and conjugate bases whose K_b at 25°C in water is comprised within the range of 10^{-12} to 10^{6} and which do not cause crosslinking by reaction with ester groups; with the provisos that the acrylic ester is a C_1–C_4 alkyl acrylate or methacrylate; the butenedioic acid monester is a C_{1-C12} alkyl or C_6–C_{12} aryl monoester; the dipolymer contains about 1–10 weight percent of the butenedioic acid monoester; and the terpolymer contains about 2 to 10 weight percent of the butenedioic acid monoester, and the proportion of all the ester groups in the terpolymer is equivalent to about 2.5 – 8.0 moles of ester groups per kilogram of polymer.

where x = about 1 to 3, y = about 1 to 3, and n = about 2 to 30, with said polymeric brominated aromatic phosphate exhibiting no propensity to exude from said intimate blend during utilization of a three-dimensional article molded therefrom at an elevated temperature of 175°C. for 66 hours.

3,883,472
FAST CURING HEAT STABLE ELASTOMERIC COMPOSITIONS

Robin Nikolas Greene, New Albany, Ind., and Kathrine Johnson Lewis, West Los Angeles, Calif., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 387,050, Aug. 9, 1973, abandoned. This application May 22, 1974, Ser. No. 472,422
Int. Cl. C08f *15/40, 15/16, 45/08*
U.S. Cl. 260—42.52 **10 Claims**



1. An elastomeric composition having good scorch resistance, said composition consisting essentially of

1. a polymeric component which is an acrylic ester/-butenedioic acid monester dipolymer or ethylene/acrylic ester/butenedioic acid monoester terpolymer,

2. a vulcanizing agent selected from polyfunctional, organic, primary amines and their salts, the amount of the polyamine being about 0.06 – 0.30 mole of amino function per kilogram of polymer, and

3. at least one vulcanization accelerator selected from bases and conjugate bases whose K_b at 25°C in water is comprised within the range of 10^{-12} to 10^{6} and which do not cause crosslinking by reaction with ester groups; with the provisos that the acrylic ester is a C_1–C_4 alkyl acrylate or methacrylate; the butenedioic acid monester is a C_{1-C12} alkyl or C_6–C_{12} aryl monoester; the dipolymer contains about 1–10 weight percent of the butenedioic acid monoester; and the terpolymer contains about 2 to 10 weight percent of the butenedioic acid monoester, and the proportion of all the ester groups in the terpolymer is equivalent to about 2.5 – 8.0 moles of ester groups per kilogram of polymer.

3,883,473
GLASS FIBER REINFORCED POLYVINYL CHLORIDE

Michael E. Kucsma, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 181,625, Sept. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 828,720, May 28, 1969, abandoned. This application Aug. 3, 1973, Ser. No. 385,412
Int. Cl.² C08F *45/10*
U.S. Cl. 260—42.18 **10 Claims**

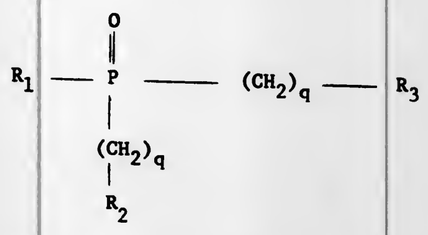
1. A rigid thermoplastic composition consisting essentially of a resin composition comprising about 100 parts by weight of a rigid vinyl chloride homopolymer, about 8 to about 15 parts by weight of a coumarone-indene resin having a ring and ball softening point above about 100°C, and about 5 percent to about 55 percent glass fibers by weight of resin composition.

3,883,474
FLAME RESISTANT THERMOPLASTIC POLYESTERS

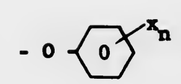
Werner Racky, Wiesbaden, and Hans-Jerg Kleiner, Bad Soden, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 28, 1973, Ser. No. 419,528
Int. Cl. C08g *51/58*
U.S. Cl. 260—45.75 B **10 Claims**

1. A flame-resistant thermoplastic polyester molding composition comprising a linear saturated polyester and a flame-resisting amount of a flame-retarding compound of the general formula:

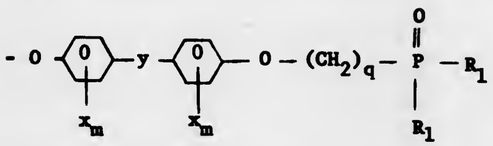


wherein R_1 represents an alkyl radical having from 1 to 6 carbon atoms, R_2 is hydrogen or an aryloxy radical of the formula:

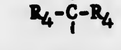


I

R_3 is aryloxy of formula I, or if R_2 is hydrogen, R_3 may have the general structure:



wherein x is Cl or Br, y is -, O, S, SO_2, or



wherein R_4 is hydrogen or alkyl having from 1 to 6 carbon atoms, n is 0 to 5, m is 0 to 4 and q is 1 to 4.

3,883,475
MOULDING COMPOSITION OF THERMOPLASTIC MATERIALS

Werner Racky, Wiesbaden, and Harald Cherdron, Naurod, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 15, 1974, Ser. No. 442,829
Claims priority, application Germany, Feb. 19, 1973, 2308104
Int. Cl. C08f *45/56;* **C08g** *51/56*
U.S. Cl. 260—45.7 P **4 Claims**

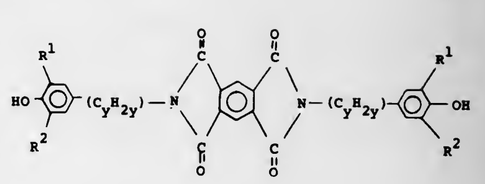
1. A moulding composition of thermoplastic material containing from 1 to 20 percent by weight, based on the total weight of moulding composition, of red phosphorus and from 0.2 to 15 percent by weight, based on the weight of red phosphorus, of a substance binding hydrogen phosphide selected from the group consisting of MoS_2, HgO, PbO_2, $AgNO_3$, $HgCl_2$, $FeCl_3 \cdot 6\ H_2O$, CuO, and active carbon.

3,883,476
PYROMELLITIC DIIMIDES OF 3,5-DIALKYL-4-HYDROXYPHENYLSUBSTITUTED AMINES

Martin Dexter, Briarcliff Manor; Martin Knell, Ossining; Peter Klemchuk, Yorktown Heights, and John F. Stephen, New City, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 186,499, Oct. 4, 1971, abandoned. This application Nov. 13, 1973, Ser. No. 415,867
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.8 N **9 Claims**

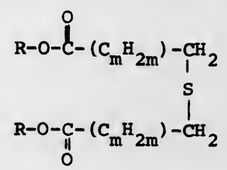
1. A composition of matter stabilized against thermal and oxidative deterioration which comprises an organic polymeric material normally subject to oxidative deterioration containing from 0.005 to 5 percent by weight of a stabilizing compound of the formula



wherein

each of R^1 and R^2 is the same or different lower alkyl group of from 1 to 4 carbon atoms; and

y has a value of from 0 to 3; and from 0 to 2 percent by weight of a co-stabilizer having the formula



wherein

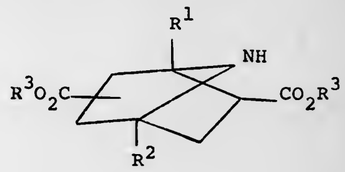
R is a alkyl group having from 6 to 24 carbon atoms; and m is an integer from 1 to 6.

3,883,477
COMPOSITIONS STABILIZED WITH 1,4-DISUBSTITUTED-7-AZABICYCLO (2.2.1) HEPTANE-2,5 OR 2, 6-DICARBOXYLIC ACID ESTERS

John F. Stephen, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,230
Int. Cl. C08f *45/60;* **C08g** *51/60*
U.S. Cl. 260—45.8 N **13 Claims**

1. A composition of matter comprising an organic material normally subject to deterioration stabilized with (a) 0.01 to 5 percent of a stabilizer having the formula



wherein

R^1 is phenyl,

R^2 is phenyl, benzyl or lower alkyl, and

R^3 is alkyl from 1 to 24 carbons,

(b) 0 to 5 percent of a phenolic antioxidant and (c) 0 to 5 percent of a thio co-stabilizer.

3,883,478
FLAME-RETARDANT POLYESTER FIBER COMPOSITIONS

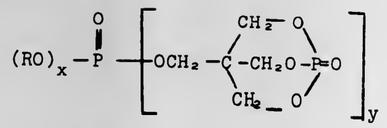
John T. Gresham, Somerset, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Dec. 7, 1973, Ser. No. 422,841
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.8 R **14 Claims**

1. A flame-retardant polyester fiber composition comprising from about 95 to 80 parts by weight of a fiber-forming linear polyester and, as the flame-retardant additive, from

about 5 to 20 parts by weight of a phosphate triester having

about 5 to 20 parts by weight of a phosphate triester having the formula



where R is an aryl radical selected from the group consisting of phenyl and naphthyl radicals and phenyl and naphthyl radicals containing 1 to 3 chlorine or bromine atoms and substituted derivatives of said radicals, the substituents being selected from the group consisting of methyl, methoxy, phenyl, phenoxy and phenyl and phenoxy containing 1 to 5 chlorine or bromine atoms and y is an integer from 1 to 3 and x is $3-y$.

3,883,479

ABS PLASTIC COMPOSITIONS CONTAINING BIO-PHENOXY FLAME RETARDANTS

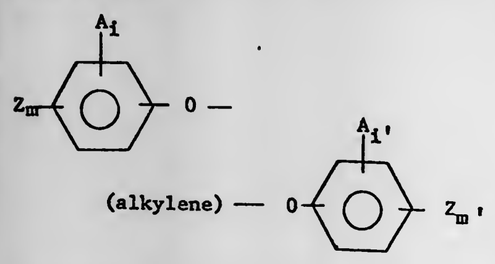
Arnold L. Anderson, and Robert J. Nulph, both of Alma, Mich., assignors to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,820

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **17 Claims**

1. A plastic composition containing acrylonitrile-butadiene styrene polymer having incorporated therein an effective amount of a flame retardant which is a bis-phenoxy compound having the formula:



wherein Z is bromine; m and m' are integers having a value of 1–4; i and i' are integers having a value of 1 or 2; alkylene is a straight or branched chain alkylene group having from 1 to 6 carbon atoms; and A is selected from the group consisting of cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl, or halo- benzyl, with the proviso that when m or m' is 4, i or i' respectively is 1.

3,883,480

FLAME AND SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 438,724, Feb. 1, 1974. This application Sept. 3, 1974, Ser. No. 502,294

Int. Cl. C08f *45/56*

U.S. Cl. 260—45.75 C **5 Claims**

1. A flame and smoke retardant composition comprising (1) a vinyl chloride or vinylidene chloride polymer and (2) Cu_3N, said Cu_3N being present in an amount of from about 0.25 to about 10 weight parts per 100 weight parts of polymer and having an average particle size of from about 100 microns to about 0.5 micron.

3,883,481

FIRE-RETARDANT POLYOLEFIN COMPOSITIONS

Kurt Kopetz; Willi Ziegenbein, and Anton Schick, all of Marl, Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

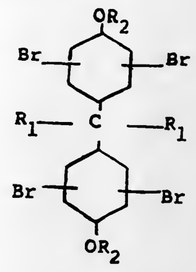
Continuation of Ser. No. 92,943, Nov. 25, 1970, abandoned, and a continuation-in-part of Ser. No. 677,062, Oct. 23, 1967, abandoned. This application July 27, 1973, Ser. No. 383,272

Claims priority, application Germany, Oct. 28, 1966, 40545

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.75 B **6 Claims**

1. A flame-resistant polyolefin composition comprising on a weight basis 100 parts of a polyolefin, 2–9 parts antimony oxide, and 2–20 parts of



wherein R_1 is H or CH_3 and R_2 is dibromoethyl, dibromopropyl or dibromobutyl.

6. A flame-resistant polyolefin composition comprising on a weight basis 100 parts of a polyolefin, 2–9 parts antimony oxide, and 2–20 parts of a compound selected from the group consisting of:

2,2′-bis-[4-(β,γ-dibromobutyric acid ester)-3,5-dibromophenyl]-propane; and

2,2′-bis[4-(α,β-dibromopropionic acid ester)-3,5-dibromophenyl]-ethane.

3,883,482

FLAME AND SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 1, 1974, Ser. No. 438,724

Int. Cl. C08f *45/56*

U.S. Cl. 260—45.75 F **8 Claims**

1. A flame and smoke retardant composition comprising (1) a vinyl chloride or vinylidene chloride polymer and (2) a compound selected from the group consisting of AlB_{12}, MoB_2, TiB_2 and mixtures thereof, said compound being present in an amount of from about 0.25 to about 10 weight parts per 100 weight parts of polymer and having an average particle size of from about 100 microns to about 0.5 micron.

3,883,483

ELECTRODEPOSITABLE CATIONIC THERMOSETTING COATING COMPOSITIONS

Carl C. Anderson, Gibsonia, and Joseph R. Marchetti, Greensburg, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 168,433, Aug. 2, 1971. This application Sept. 24, 1973, Ser. No. 400,493

Int. Cl. C08g *22/32*

U.S. Cl. 260—77.5 TB **5 Claims**

1. A cationic electrodepositable, thermosetting composition comprising:

a. from about 5 to about 50 percent by weight of a secondary or tertiary nitrogen-containing aminoalkyl monomer;

b. from about 5 to about 80 percent by weight of the reaction product of a half-blocked diisocyanate and an ethylenically unsaturated hydroxyl-containing monomer; and

c. from about 0 to about 90 percent by weight of at least one other ethylenically unsaturated monomer.

3,883,484

RAPID SETTING POLYURETHANES FROM DIOLS AND POLYISOCYANATES IN THE PRESENCE OF A HYDROXYL-CONTAINING HALOGENATED ALIPHATIC COMPOUND

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 358,245, May 7, 1973, Pat. No. 3,801,532, which is a continuation-in-part of Ser. No. 205,697, Dec. 7, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 422,829

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 MA **16 Claims**

1. A rigid, non-cellular composition having a density of at least about 1 gram/cc which is demoldable, without the application of an external source of heat, within about 5 minutes after admixture of the components of the composition which is the reaction product of a polyurethane-forming composition comprising

A. a dihydroxyl-containing compound having a hydroxyl equivalent weight of less than about 250;

B. an organic polyisocyanate having an NCO functionality of at least about 2.5;

C. a liquid modifier compound or mixture of such compounds and which moderates the reaction exotherm selected from the group consisting of monohydroxyl-containing halogenated aliphatic compounds having an atmospheric boiling point below about 150°C and an OH equivalent weight of less than about 500; **and**

D. an organometallic catalyst;

wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1, component (C) is present in quantities of from about 0.1 to about 10 percent by weight of the combined weights of components (A), (B) and (C); and component (D) is present in quantities of from about 0.02 to about 5.0 percent by weight of the combined weight of components (A), (B) and (C).

3,883,485

COPOLYAMIDES CONTAINING CAPROLACTAM, LAURICLACTAM AND HEXAMETHYLENE DIAMINE ADIPATE

Fritz Raabe, Bonn, and Eduard de Jong, Bonn-Beuel, both of Germany, assignors to Plate Bonn Gesellschaft mit beschrankter Haftung, Bonn, Germany

Filed July 31, 1973, Ser. No. 384,370

Claims priority, application Germany, May 12, 1973, 2324159

Int. Cl. C08g *20/10*

U.S. Cl. 260—78 L **12 Claims**

1. A solid copolyamide consisting essentially of recurring units of caprolactam, lauriclactam, hexamethylene diamine adipate and a hexamethylene diamine salt of an aliphatic dicarboxylic acid of the formula

$$HOOC-(CH_2)_n-COOH \quad (I)$$

in which n is the number 7, 8, 10 or 11, said units being incorporated in the copolyamide by polymerisation in the following proportions:

caprolactam	25–35% by weight
lauriclactam	20–40% by weight
hexamethylene diamine adipate	8–25% by weight
hexamethylene diamine salt of the acid of formula (I)	10–40% by weight.

3,883,486

HEAT-RESISTANT POLYMERS BASED ON POLYAMINES AND OLIGOMERS POSSESSING IMIDE GROUPS

Michael Bargain, Lyon, France, assignor to Rhone-Poulenc, S.A., Paris, France

Filed June 21, 1972, Ser. No. 264,723

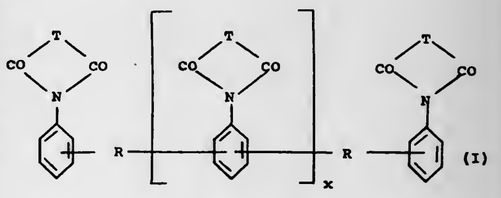
Claims priority, application France, June 24, 1971, 71.23065

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 UA **13 Claims**

1. A heat resistant is heatcurable polymer consisting essentially of a polymeric composition obtained by reacting, between 50° and 350°C.,

a. an oligomer having the average general formula:

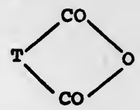


(I)

in which x represents a number from 0.1 to about 2, R represents a divalent hydrocarbon radical with 1 to 8 carbon atoms, which is derived from an aldehyde or a ketone of the general formula:

$$O=R \quad (II)$$

in which the oxygen atom is bonded to a carbon atom of the radical R, and T represents a divalent organic radical possessing 2 to 24 carbon atoms, the free valencies of which are on adjacent carbon atoms and which is derived from an internal anhydride of the general formula:



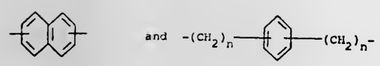
(III)

at least 60 percent of the T radicals in the oligomer containing a polymerisable carbon-carbon double bond optionally substituted by chlorine atoms or methyl groups, the remaining T radicals, if any, being alkylene, cycloalkylene, phenylene or naphthylene radicals, with (b) a polyamine of the general formula:

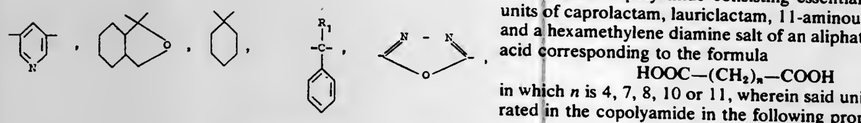
$$Q(NH_2)_y$$

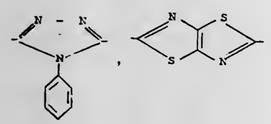
in which y represents an integer at least equal to 2 and Q represents

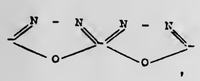
a divalent organic radical E selected from a linear or branched alkylene radical with less than 13 carbon atoms, a phenylene radical, a cyclohexylene radical, radicals of the formulae:

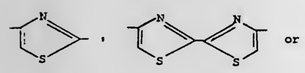


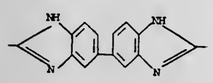
wherein *n* represents an integer from 1 to 3, a radical consisting of a plurality of phenylene or cyclohexylene radicals connected to one another by a simple valency bond or by —O— or —S—, an alkylene group with 1 to 3 carbon atoms, —CO—, —SO_2—, —CONH—, —COO—, —$P(O)R_1$—, —CONH—X—NHCO—,



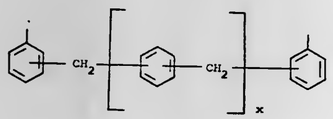








wherein R_1 represents a hydrogen atom, an alkyl radical with 1 to 4 carbon atoms, a phenyl radical or a cyclohexyl radical, and X represents an alkylene radical with less than 13 carbon atoms, said phenylene and cyclohexylene radicals optionally being substituted by methyl groups, and a 2- to 4-valent radical of the formula:



in which *x* represents a number from 0.1 to 2, the relative amounts being such that the oligomer supplies 1.1 to 50 T radicals containing a polymerisable carbon-carbon double bond per $—NH_2$ group supplied by the polyamine.

3,883,487

COPOLYAMIDES CONTAINING CAPROLACTAM, LAURICLACTAM AND 11-AMINOUNDECANOIC ACID

Fritz Raabe, Bonn, and Eduard de Jong, Bonn-Beuel, both of Germany, assignors to Plate Bonn Gesellschaft mit beschrankter Haftung, Bonn, Germany

Filed July 31, 1973, Ser. No. 384,371

Claims priority, application Germany, May 12, 1973, 2324160

Int. Cl. C08g *20/10*

U.S. Cl. 260—78 L **12 Claims**

1. A solid copolyamide consisting essentially of recurring units of caprolactam, lauriclactam, 11-aminoundecanoic acid and a hexamethylene diamine salt of an aliphatic dicarboxylic acid corresponding to the formula

$$HOOC—(CH_2)_n—COOH \quad (I)$$

in which *n* is 4, 7, 8, 10 or 11, wherein said units are incorporated in the copolyamide in the following proportions:

caprolactam	20–40% by weight
lauriclactam	20–35% by weight
11-aminoundecanoic acid	15–35% by weight
hexamethylene diamine salt of the acid formula (I)	15–40% by weight.

3,883,488

2-VINYL-(9-DICYANOMETHYLENE) FLUORENE AND DERIVATIVES THEREOF

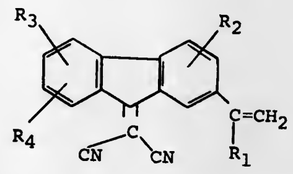
James M. Pearson, Webster, and John F. Yanus, Fairport, both of N.Y., assignors to Xerox Corporation

Filed Oct. 31, 1973, Ser. No. 411,578

Int. Cl. C08f *7/02*

U.S. Cl. 260—78.4 N **13 Claims**

1. A composition of matter characterized by the structural formula:



wherein R_1 is H or methyl and R_2, R_3 and R_4 are H, halogen or aliphatic groups having from 1 to 4 carbon atoms.

3,883,489

PROCESS FOR THE PREPARATION OF A DISPERSIBLE VINYL ACETATE/ETHYLENE POLYMER POWDER

Klaus Matschke, Hausen; Karl Josef Rauterkus; Detlev Seip, both of Kelkheim, Taunus, and Wolfgang Zimmermann, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 19, 1973, Ser. No. 342,492

Claims priority, application Germany, Mar. 24, 1972, 2214410

Int. Cl. C08f *1/11, 1/88, 15/02*

U.S. Cl. 260—78.5 R **3 Claims**

1. A process for the preparation of a free-flowing and easily dispersible polymer powder comprising a copolymer of vinyl acetate and ethylene and optionally at least one further olefinically unsaturated monomer, wherein said copolymer is dried in a tower as an aqueous dispersion prepared by copolymerization of the monomers in an aqueous system at an ethylene pressure of up to 100 atmospheres and in the presence of from 0 to 1 % by weight, calculated on the polymer, of an ionic

emulsifier, the improvement comprising adding to said aqueous system from 5 to 20 % by weight, calculated on the polymer, of at least one polyvinyl alcohol with a degree of saponification of from 80 to 92 mol % and a viscosity of a 4 % aqueous solution of said polyvinyl alcohol at 20°C from 3 to 35 cP, said copolymerization being in the presence of a free radical initiator in said aqueous system, and spray drying said aqueous dispersion by simultaneously introducing into a spray-drying tower at least one dry anticaking agent selected from the group consisting of aluminium silicate, silica and calcium carbonate in an amount of from 3 to 30 % by weight, calculated on the solids content of the aqueous dispersion, said anticaking agent having an average particle size of from 0.01 to 0.5 μ.

3,883,490

RESINS CONTAINING DITHIOIC ACID GROUPS

Yasuo Fujimoto, Yokohama; Isao Masumura, and Yukio Hashimoto, both of Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Japan

Filed May 15, 1973, Ser. No. 360,419

Claims priority, application Japan, May 22, 1972, 47-49859

Int. Cl. C08f *27/06*

U.S. Cl. 260—79.5 NV **5 Claims**

1. A resin comprising a cross-linked copolymer of aromatic vinyl compounds having at least one sulfur-containing group selected from the group consisting of a dithioic acid group and an alkyl group having a dithioic acid group bonded to at least some aromatic nucleui of said copolymer.

3,883,491

NOVEL N-3-AMINOALKYL AMIDES, POLYMERS THEREOF, AND METHOD FOR THEIR PREPARATION

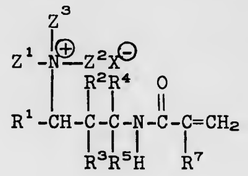
Donald I. Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Division of Ser. No. 832,412, June 11, 1969, Pat. No. 3,666,810. This application Dec. 1, 1971, Ser. No. 203,853

Int. Cl. C08f *3/90, 15/02*

U.S. Cl. 260—85.5 R **8 Claims**

1. A polymer of a compound of the formula



wherein each of R^1, R^2 and R^3 is hydrogen or a hydrocarbon radical; each of R^4 and R^5 is a hydrocarbon radical; R^7 is hydrogen or a lower alkyl radical; X is a salt-forming anion; each of Z^1 and Z^2 is a lower alkyl or C_{3-8} cycloalkyl radical, or



is a heterocyclic radical; and Z^3 is hydrogen or a lower alkyl radical.

3,883,492

PROCESS FOR THE POLYMERIZATION AND COPOLYMERIZATION OF OLEFINS

Andre Delbouille, and Jean-Louis Derroitte, both of Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Jan. 13, 1969, Ser. No. 790,832

Claims priority, application France, Jan. 17, 1968, 68.136374

Int. Cl. C08f *1/56*; B01j *11/84*

U.S. Cl. 260—88.2 R **19 Claims**

1. Process for the polymerization and copolymerization of α -olefins which comprises carrying out said polymerization and copolymerization in the presence of a catalyst comprising an organometallic compound of a metal of Groups I, II, III and IV of the Periodic Table and the product obtained by reacting in the liquid phase a transition metal derivative selected from the group consisting of the halides, oxyhalides, alkoxyhalides, oxyalkoxides and alkoxides of the metals of Groups IVb, Vb, and VIb of the Periodic Table and an anhydrous solid support consisting of a hydroxide of the formula $M(OH)_z$ in which M is selected from the group consisting of magnesium, chromium, manganese, iron, nickel, cobalt, copper, zinc and cadmium, said transition metal derivative and said hydroxide being initially mixed under conditions which prevent overheating leading to solidification of the reaction mixture.

3,883,493

METHOD FOR PRODUCING COPOLYMERS OF 1-OLEFINS WITH CONJUGATED DIENES

Takashi Yamao, and Shujiro Shiga, both of Chiba, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka-Shi, Japan

Filed May 10, 1973, Ser. No. 359,069

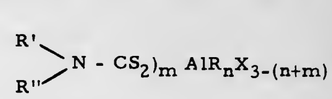
Claims priority, application Japan, May 10, 1972, 44-46676

Int. Cl. C08f *1/42, 15/04*; C08d *3/04*

U.S. Cl. 260—85.3 R **20 Claims**

1. A method for preparing copolymers of 1-olefins with conjugated dienes, which comprises copolymerizing at least one 1-olefin with at least one conjugated diene using a catalyst composition comprising:

A. at least one dithiocarbamate-containing organoaluminum compound represented by the following formula



wherein

each of R′, R″ and R is an organic group containing 1 to 20 carbon atoms, X is a halogen atom, m is not less than 0.05, *n* is not less than 0.5, and $n + m$ is not more than 3, or a mixture thereof with at least one organoaluminum compound represented by the following formula

$$AlR_3 \text{ or } AlR_yX_{3-y}$$

wherein R is an organic group containing 1 to 20 carbon atoms, X is a halogen atom, and *y* is more than 0 but less than 3, and

B. at least one transition metal compound selected from the group consisting of vanadium or titanium halides, alcoholates, acetyl acetonates, salicylates and cyclopentadienyl compounds.

3,883,494
PROCESS FOR THE PREPARATION OF EMULSIFIER-CONTAINING POLYVINYL CHLORIDE OR VINYL CHLORIDE COPOLYMER POWDERS

Hermann Winter, Marl; Manfred Smolinski, Rhade; Hans-Georg Wolf, Marl; Harry Roll, Marl; Kurt Hoffmann, Recklinghausen, and Helmut Jacob, Marl, all of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Sept. 14, 1972, Ser. No. 288,972

Claims priority, application Germany, Sept. 18, 1971, 2146753

Int. Cl. C08f *1/88*

U.S. Cl. 260—92.8 A **11 Claims**

1. In a process for preparing powdery, emulsifier-containing vinyl chloride polymer particles suitable for use in the manufacture of plastisols by spray drying an aqueous dispersion of said polymer with a carrier gas through a two-fluid atomizer into a water-evaporating atmosphere, the improvement which comprises spraying with 1.6–5.0 kg of carrier gas per kg of said dispersion to form dry powdery polymer particles containing less than 2 wt.% particles having a diameter greater than 40 μ.

3,883,495
PROCESS AND CATALYST FOR RING OPENING POLYMERISATION

Dieter Maertens; Gunther Lehnert, both of Leverkusen, and Manfred Zimmermann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Apr. 4, 1973, Ser. No. 347,775

Claims priority, application Germany, Apr. 8, 1972, 2217048

Int. Cl. C08f *1/56*

U.S. Cl. 260—93.1 **3 Claims**

1. A process for polymerizing a cyclic olefin having 4, 5, 7, 8 or more ring carbon atoms and 1 carbon-to-carbon double bond or a plurality of non-conjugated carbon-to-carbon double bonds in the ring, said process comprising contacting said cyclic olefin with a catalyst of

a. a molybdenum halide or oxyhalide,

b. an ester of the formula

$$R_1—O—R_2$$

wherein

R_1 and R_2 are alkyl having 1 to 12 carbon atoms, cycloalkyl having 5 to 10 carbon atoms, aryl having 6 to 20 carbon atoms or aralkyl having 1 to 6 carbon atoms in the alkyl moiety and 6 to 10 carbon atoms in the aryl moiety or R_1 and R_2 together with the oxygen to which they are attached form a 5- to 7-membered ring,

c. an organo aluminum compound of the formula

$$AlX_nR_{3-n}$$

wherein

R is alkyl having 1 to 12 carbon atoms, cycloalkyl having 5 to 10 carbon atoms, aryl having 6 to 20 carbon atoms or alkaryl having 7 to 20 carbon atoms, X is hydrogen, halogen or alkoxy having 1 to 10 carbon atoms and n is 0, 1, 1.5 or 2,

d. a Lewis acid and

e. elementary iodine

at a temperature of −50° to 50°C. and recovering resulting polymer, the molar ratio of a):b) being 1:0.1 to 1:10, the molar ratio of (a):(c) being 1:0.1 to 1:10, the molar ratio of (a):(d) being 1:0.1 to 1:10, said elementary iodine being present in an amount of 0.25 to 4 mmols per mol of molybdenum and said catalyst being present in an amount of from 0.01 to 10 mmol per 100 g. of cyclic olefin.

3,883,496
PROCESS FOR THE MANUFACTURE OF INSULIN, ANALOGS AND DERIVATIVES THEREOF

Rolf Geiger, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt (Main), Germany

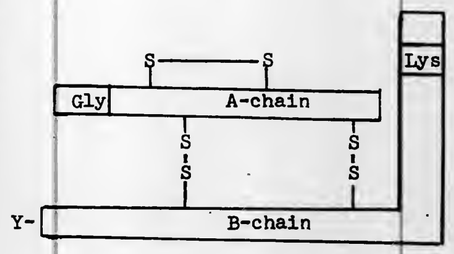
Filed Oct. 23, 1973, Ser. No. 408,913

Claims priority, application Germany, Oct. 25, 1972, 2252157

Int. Cl. A61k *17/04*; C07c *103/52*

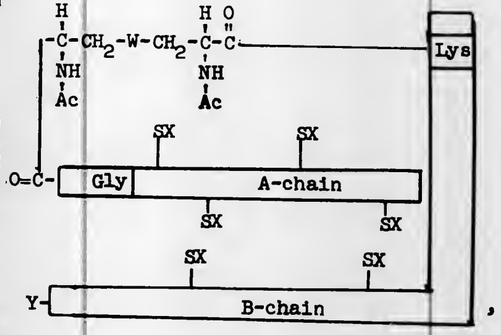
U.S. Cl. 260—112.7 **2 Claims**

1. A method for making an insulin compound of the formula



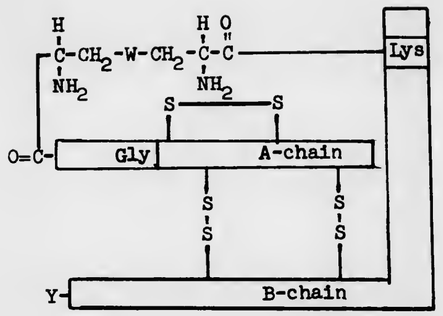
,

wherein Y is hydrogen, alkanoyl having 1 to 4 carbon atoms, phenyl-alkanoyl having 1 to 3 carbon atoms in the alkanoyl portion, benzoyl, alkyloxy-carbonyl or aralkyloxy-carbonyl having 1 to 4 carbon atoms in the alkyl portion, or aminoacyl derived from a naturally-occurring α- or β-amino acid or from the D-enantiomer thereof, and biologically-active analogs thereof in which one or more amino acids have been exchanged for other, preferably simpler, amino acids or in which the chains are modified, preferably shortened, in length, which process comprises cleaving N-protective and S-protective groups from a compound of the formula



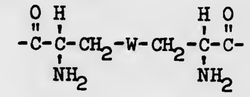
,

or analogs thereof in which one or more amino acids have been exchanged for other, preferably simpler, amino acids or in which the chains are modified, preferably shortened, in length wherein Ac is an N-protective group cleaved by proton solvolysis, X is hydrogen or an S-protective group, and W is $(CH_2)_n$—, where n is an integer from zero to four, or is —S—, —S—CH_2—, —CH_2—S—CH_2—, —SO_2—, —SO_2—CH_2—, or —CH_2—SO_2—CH_2—, dehydrogenating —SH groups in the resultant product to form S—S bonds, whereby a compound of the formula



,

or an aforementioned analog therof, is obtained, and then subjecting the last-mentioned compound or analog to Edman degradation to remove the



bridge therefrom.

3,883,497
POLYPEPTIDES FROM UROGASTRONE

Harold Gregory, and Ian Robert Willshire, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 29, 1973, Ser. No. 410,557

Claims priority, application United Kingdom, Nov. 29, 1972, 55089/72

Int. Cl. C07g *7/00*; C08h *1/00*; C07g *15/00*

U.S. Cl. 260—112 R **3 Claims**

1. A process for the fractionation of crude urogastrone into three components which comprises the steps of:

a. applying a sample of a urogastrone preparation having a specific activity as defined above of 5–10 μg./kg. to a column of carboxymethyl cellulose equilibrated with an 0.01 molar aqueous buffer of pH 4.5, eluting the column with a buffer of pH 5.0 with a concentration gradient of 0.01 molar to 0.5 molar, and collecting the eluted material showing the biological activity,

b. applying the biologically active material from step (a) to a column of a porous polyacrylamide gel excluding molecules of molecular weight greater than 5,000 in an 0.05 molar aqueous buffer solution of pH 7.2 and composed of volatile components, eluting the column with the same solution, and collecting the eluted material showing the biological activity,

c. applying the biologically active material from step (b) to a column of aminoethyl cellulose equilibrated with an 0.01 molar aqueous buffer of pH 5.5 composed of volatile components, eluting the column with a buffer of the same molarity and then with a buffer having a concentration gradient of from 0.01 molar to 0.3 molar, detecting the presence of three peaks of eluted material each showing the biological activity and collecting, from the first eluted peak material which contains α-urogastrone, from the second eluted peak material which contains β-urogastrone, and from the third eluted peak material which contains γ-urogastrone, followed by, in the case of material from the peak from step (c) containing β-urogastrone, applying the material to a column of carboxymethyl cellulose equilibrated with an 0.01 molar aqueous buffer of pH 5.0, eluting the column with a buffer of pH 5.0 with a concentration gradient of from 0.01 molar to 0.5 molar, collecting the eluted material showing the biological activity, applying this material to a column of a porous polyacrylamide gel excluding molecules of molecular weight greater than 5,000 in an 0.05 molar aqueous buffer of pH 7.2 and composed of volatile components, eluting the column with the same solution and collecting the eluted material showing the biological activity: or followed by in the case of material from the peak from step (c) containing γ-urogastrone, applying the material to a column of carboxymethyl cellulose equilibrated with an 0.01 molar aqueous buffer of pH 4.8, eluting the column with a buffer of pH 4.8 with a concentration gradient of from 0.01 molar to 0.5 molar, collecting the eluted material showing the biological activity, applying this material to a column of a porous polyacrylamide gel excluding molecules of molecular weight greater than 5,000 in an 0.05 molar aqueous buffer of pH 7.2 and composed of volatile components, eluting the column with the same solution and collecting the eluted material showing the biological activity.

3,883,498
[ILE^3, LEU^4]-VASOPRESSIN ANALOGS

Dieter Gillessen, Birsfelden; Josef Rudinger, Zurich, and Rolf Studer, Bottmingen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

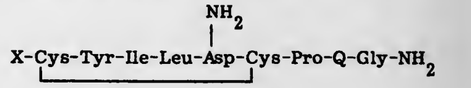
Filed Sept. 7, 1973, Ser. No. 395,105

Claims priority, application Switzerland, Sept. 21, 1972, 13083/72

Int. Cl. C07c *103/52*; C07g *7/00*; A61k *27/00*

U.S. Cl. 260—112.5 **13 Claims**

1. A compound of the general formula



wherein X is the residue of a naturally occurring amino acid or of a linear peptide of 2–6 amino acids selected from leucine and glycine and Q is the residue of arginine or lysine and wherein all amino acids with an asymmetric center have the L-configuration

and pharmaceutically acceptable non-toxic acid addition salts thereof.

3,883,499
PEPTIDE AND PROCESS FOR PREPARING SAME FROM FROG SKIN

Shinro Tachibana, Narashino, and Kengo Araki, Niiza, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1973, Ser. No. 386,538

Claims priority, application Japan, Aug. 18, 1972, 47-82103

Int. Cl. C07c *103/52*; C07g *7/00*; A61k *27/00*

U.S. Cl. 260—112.5 **1 Claim**

1. An octapeptide compound consisting of the following amino acids arranged in the following order and wherein the configurations of all the amino acids are L:

pyroglutamic acid.glycine.lysine.arginine.proline.
tryptophan.isoleucine.leucine.

3,883,500
PROCESS FOR THE MANUFACTURE OF INSULIN, ANALOGS AND DERIVATIVES THEREOF

Rolf Geiger, Frankfurt am Main, and Georg Jager, Neuenhain, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

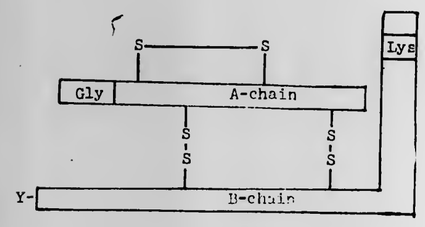
Filed Oct. 29, 1973, Ser. No. 410,310

Claims priority, application Germany, Oct. 31, 1972, 2253327

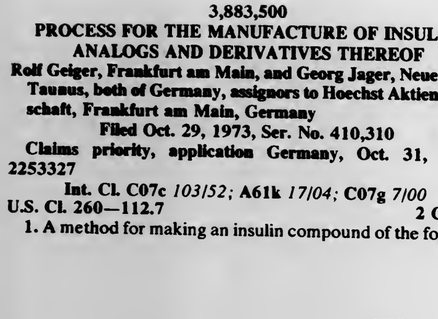
Int. Cl. C07c *103/52*; **A61k** *17/04*; **C07g** *7/00*

U.S. Cl. 260—112.7 **2 Claims**

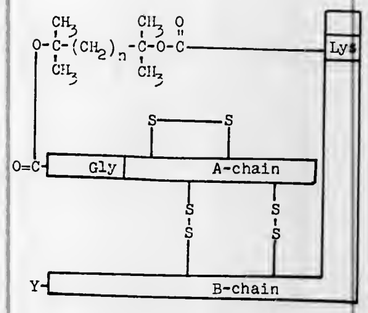
1. A method for making an insulin compound of the formula



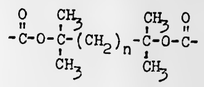
wherein Y is hydrogen, alkanoyl having 1 to 4 carbon atoms, phenyl-alkanoyl having 1 to 3 carbon atoms in the alkanoyl portion, benzoyl, alkyloxy-carbonyl or aralkyloxy-carbonyl having 1 to 4 carbon atoms in the alkyl portion, or aminoacyl derived from a naturally-occurring α- or β-amino acid or from the D-enantiomer thereof, and biologically-active analogs thereof in which one or more amino acids have been exchanged for other, preferably simpler, amino acids or in which the chains are modified, preferably shortened, in length, which process comprises cleaving S-protective groups from a compound of the formula



or analogs thereof in which one or more amino acids have been exchanged for other, preferably simpler, amino acids or in which the chains are modified, preferably shortened, in length, wherein X is hydrogen or an S-protective group and n is an integer from two to four, dehydrogenating -SH groups in the resultant product to form S-S bonds, whereby a compound of the formula



or an aforementioned analog thereof, is obtained, and then treating this compound with an acid to remove the



bridge therefrom.

3,883,501
SULFURIZED PHENOLIC MATERIALS

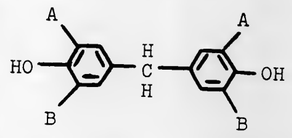
Robert E. Malec, Birmingham, and Larry Plonsker, Bloomfield Hills, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Sept. 19, 1973, Ser. No. 398,644

Int. Cl. C07g *17/00*

U.S. Cl. 260—137 **10 Claims**

1. A sulfurized product made by the process comprising heating to a temperature of about 50°–200°C a mixture of (a) about 0.5–10 parts by weight of sulfur, and (b) about 100 parts by weight of a reaction product, said reaction product comprising a major amount of a mixture of methylenebis phenols, said mixture comprising (1) a substantial amount of at least one symmetrical methylenebis phenol having identically substituted phenol radicals and having the formula:



wherein A is a tert-alkyl group having from 4 to about 12 carbon atoms and B is selected from the group consisting of hydrogen and alkyl groups having 1–12 carbon atoms, and (2) a substantial amount of at least one asymmetrical methylenebis phenol having different phenol radicals and having at least one ortho-tert-alkyl group containing from 4–12 carbon atoms, said reaction product being made by reacting in the presence of an alkali metal hydroxide catalyst (i) one mole part of a mixture of alkyl phenols, said mixture containing at least two different alkyl phenols, each of said different alkyl phenols having a hydrogen atom available in an ortho or para position, said different alkyl phenols being selected from the group consisting of 2-alkyl phenols, 2,6-dialkyl phenols and 2,4-dialkyl phenols wherein said alkyl groups contain 1–12 carbon atoms, the remaining components of said mixture consisting mainly of 2,4,6-tri-alkyl phenol wherein said alkyl groups contain 1–12 carbon atoms, at least one of said different alkyl phenols having a tert-alkyl group containing 4–12 carbon atoms in an ortho position, and (ii) from about 0.3 to about 10 mole parts of formaldehyde per equivalent of said alkyl phenols.

3,883,502
DISAZO DYESTUFFS COMPRISING PHENYL METHANE SULFONIC ACID DIAZO COMPONENT COUPLED TO PHENYL OR NAPHTHYL ANINE WHICH IS DIAZOTIZED AND COUPLES TO AN INDOLE COUPLER

Richard Sommer, Leverkusen-Schlebusch, and Edgar Siegel, Leverkusen-Steinbuchel, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

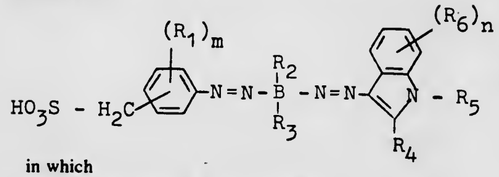
Filed Apr. 10, 1972, Ser. No. 242,787

Claims priority, application Germany, Apr. 10, 1971, 2117462

Int. Cl. C09b *31/14*; **D06p** *3/24*

U.S. Cl. 260—165 **7 Claims**

1. Disazo dyestuff, which in the form of the free acid, has the formula



in which

B is 1,4-phenylene or 1,4-naphthylene;

R_1 is hydrogen, chlorine, bromine, C_1-C_4-alkyl, cyanoethyl, C_1-C_6-alkoxy, hydroxyethoxy, benzyloxy or nitro;

R_2 and R_3 are hydrogen, chlorine, bromine, C_1-C_6-alkoxy, β-hydroxyethoxy, benzyloxy, C-C_4-alkyl, or cyanoethyl;

R_4 is C_1-C_4-alkyl; phenyl; naphthyl; biphenylyl; or phenyl, naphthyl or biphenylyl substituted by C_1-C_4-alkyl, C_1-C_4-alkoxy, chlorine or bromine;

R_5 is hydrogen; C_1-C_4-alkyl; or C_1-C_4-alkyl substituted by cyano, carbonamido or carboxyl; R_6 is C_1-C_4-alkyl, cyanoethyl, C_1-C_6-alkoxy, hydroxyethoxy, benzyloxy, halogen, nitro, sulfo or cyano;

m is 1 or 2; and

n is 0, 1 or 2.

3,883,503
4-(2-NITRO-4-SULFO- OR OPTIONALLY SUBSTITUTED SULFAMOYLANILINO)PHENYL-AZO-PHENYL DYES

Daniel Van Assche, Binningen, Basel-Land, and Hanspeter Uehlinger, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

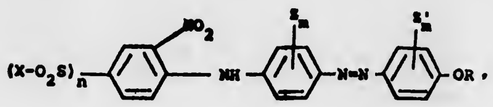
Filed Oct. 10, 1972, Ser. No. 296,441

Claims priority, application Switzerland, Oct. 13, 1971, 14978/71

Int. Cl. C09b *29/34*

U.S. Cl. 260—206 **24 Claims**

1. A compound of the formula



or a salt thereof,

wherein

R is alkyl of 1 to 6 carbon atoms or sulfoalkyl of 1 to 6 carbon atoms,

X is —OH or —NHR_1,

wherein

R_1 is hydrogen, alkyl of 1 to 6 carbon atoms, alkoxyalkyl wherein the alkoxy and alkyl radicals independently have 1 to 6 carbon atoms each, phenyl or substituted phenyl having 1 or 2 substituents wherein each substituent is independently halo, alkyl of 1 to 6 carbon atoms or alkoxy of 1 to 6 carbon atoms,

each Z and each Z′ is independently halo, alkyl of 1 to 6 carbon atoms or alkoxy of 1 to 6 carbon atoms,

each *m* is independently 0, 1 or 2,

n is 0 or 1, and

each halo is independently chloro or bromo, with the proviso that when R is alkyl, X must be -OH and n must be 1.

3,883,504
WATER-INSOLUBLE CARBONYLALKYLENE SULFONAMIDO CONTAINING AZO DYESTUFFS

Rodolf Schickfluss, Frankfurt am Main, and Willi Steckelberg, Hofheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

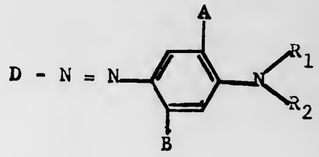
Filed Jan. 30, 1973, Ser. No. 328,064

Claims priority, application Germany, Feb. 3, 1972, 2205062

Int. Cl. C09c *29/06, 29/34*

U.S. Cl. 260—207.1 **9 Claims**

1. A compound of the formula

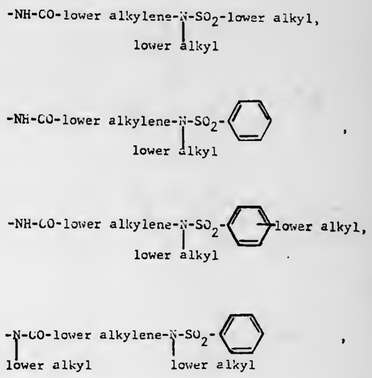


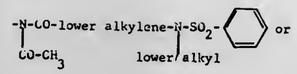
in which

D represents nitro-phenylene, dinitro-phenylene, carbo-lower alkoxy-phenylene, chloro-nitro-phenylene, cyano-nitrophenylene, dichloro-nitro-phenylene, chloro-bromo-nitro-phenylene, chloro-dinitro-phenylene, bromo-dinitro-phenylene, chloro-lower alkyl sulfonyl-phenylene, nitro-lower alkylsulfonyl-phenylene, bromo-cyano-nitro-phenylene, chloro-trifluoromethyl-phenylene, phenylazo-phenylene,

A represents hydrogen, chlorine, lower alkyl, lower alkoxy or —O—lower alkylene-lower alkoxy,

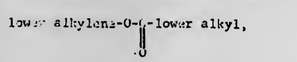
B represents hydrogen, chlorine, lower alkyl, lower alkoxy, lower alkloylamino, benzoylamino,

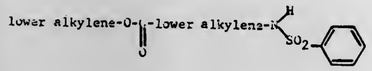


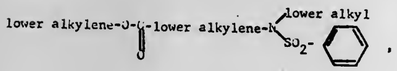


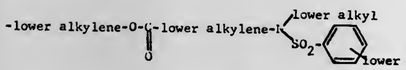


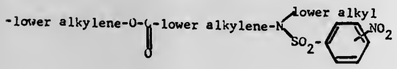
R_1 represents lower alkyl, lower alkylene-OH,

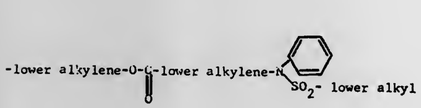


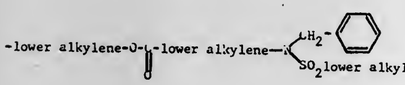


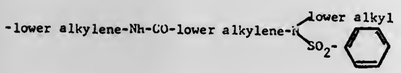






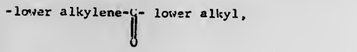


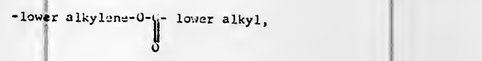


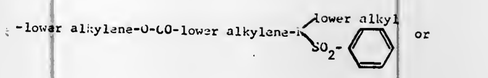


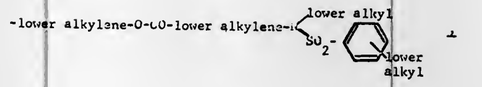
and R_2 represents hydrogen, lower alkyl, -lower alkylene-OH, lower alkylene-CN,











providing that at least one of B, R_1, and R_2 contain the group of the formula $-CO-(CH_2)_n-N-SO_2-$, wherein n is an integer from 1 to 6.

3,883,505

METHOD OF SOLUBILIZING POLYSACCHARIDES

Junji Hamuro, Tokyo, Japan, assignor to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 378,705, July 12, 1973, abandoned. This application May 20, 1974, Ser. No. 471,189

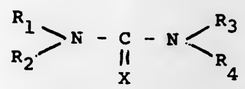
Claims priority, application Japan, July 17, 1972, 47-71454

Int. Cl. C07c *3/00*

U.S. Cl. 260—209 R **8 Claims**

1. A method of improving the solubility of a polysaccharide poorly soluble in water which comprises:

a. contacting said polysaccharide with an aqueous solution of at least two moles per liter of a compound of the formula



wherein R_1, R_2, R_3, and R_4 are selected from the group consisting of hydrogen and alkyl having up to four carbon atoms, and X is oxygen, sulfur, or NH until said polysaccharide is dissolved in said solution; and

b. recovering said polysaccharide in water-soluble form from said solution.

3,883,506

CHROMOMYCINONE GLYCOSIDE

Jury Vasilievich Zhdanovich, Khoroshevskoe shosse, 5, korpus 8, kv. 21; Galina Borisovna Lokshin, Balaklavsky prospekt, 20, korpus 3, kv. 206; Alexandr Dmitrievich Kuzovkov, ulitsa Vinokurova, 5/6 korpus 2, kv. 33; Sarra Markovna Rudaya, ulitsa Nagornaya, 17, kv. 57, and Nadezhda Konstantinovna Solovieva, ulitsa, 18, korpus 2, kv. 151, all of Moscow, U.S.S.R.

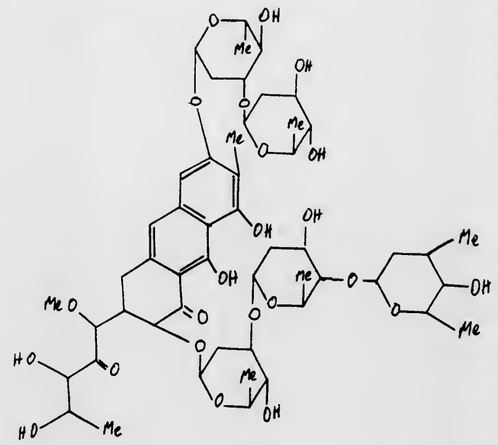
Continuation of Ser. No. 60,917, Aug. 4, 1970, abandoned. This application Jan. 24, 1974, Ser. No. 436,360

Claims priority, application U.S.S.R., Aug. 4, 1969, 1355862

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 AB **1 Claim**

1. A glycoside represented by the formula:



3,883,507

NOVEL ESTERS OF MEGALOMICIN A AND PROCESSES FOR THEIR PREPARATION

Hans Reimann, Wayne, and Robert S. Jaret, Livingston, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

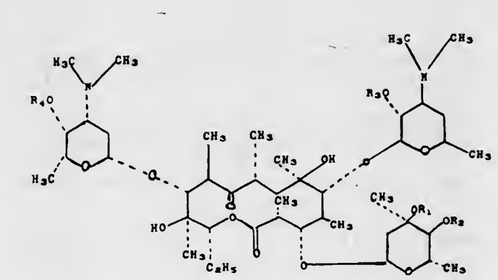
Continuation-in-part of Ser. No. 109,632, Jan. 25, 1971, abandoned. This application Mar. 28, 1974, Ser. No. 455,751

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB **15 Claims**

1. A process which comprises treating a 3'-hydroxymegalomicin A starting compound selected from the group consisting of megalomicin A, 4'-monoacylmegalomicin A, 2'',4'''-diacylmegalomicin A and 4',2'',4'''-triacylmegalomicin A, each of said acyl radicals being derived from a hydrocarbon carboxylic acid having from 2 to 18 carbon atoms, with an excess of an acid anhydride of a hydrocarbon carboxylic acid having from 2 to 18 carbon atoms in a basic medium at a temperature in the range of from about 60° to about 120°C,

whereby is formed a 3',4',2'',4'''-tetraacyl ester derivative of megalomicin A having the following structural formula:



wherein R_1, R_2, R_3 and R_4 are each an acyl radical of a hydrocarbon carboxylic acid having from 2 to 18 carbon atoms and wherein, when said 3'-hydroxymegalomicin A starting compound also has a 4'-acyl derivative, R_2 is the acyl radical of said acid anhydride reagent and R_1 is the acyl radical originally in the 4'-position of the 3'-hydroxy-4'-acylmegalomicin A starting compound.

3,883,508

PROCESS FOR THE PREPARATION OF GUANOSINE TETRA- AND PENTA-PHOSPHATES AND PRODUCTS

Alan Frederick Cook, Cedar Grove, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed June 13, 1973, Ser. No. 369,657

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R **11 Claims**

6. Guanosine 5'—S—C_1–C_7 alkyl phosphorothioate-2',3'-cyclic phosphate and its base addition salts.

3,883,509

SUBSTITUTED O-[AMINOSULFONYL]-GLYCOLIC AMIDES

Adolf Fischer, Mutterstadt, and Wolfgang Rohr, Mannheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

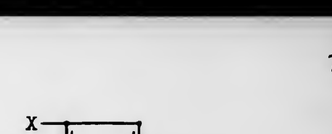
Filed Apr. 16, 1973, Ser. No. 351,240

Claims priority, application Germany, Apr. 22, 1972, P2219923.1

Int. Cl. C07d *41/04, 27/04, 29/34*

U.S. Cl. 260—239 B **9 Claims**

1. A substituted O-[aminosulfonyl]-glycolic amide of the formula



where R denotes hydrogen, alkyl of one to six carbon atoms, cyclopentyl, cyclohexyl or haloalkyl of one to six carbon atoms and the carbonamide nitrogen is a member of an unsubstituted or lower-alkyl-substituted tetramethylenimine, pentamethylenimine, hexamethylenimine, heptamethylenimine, octamethylenimine, or 3-azabicyclo-[3,2,2]-**nonane ring.**

3,883,510

CARBAMATE ESTERS OF 2-OXYIMINO-3-KETO-1,4-DIHETEROCYCLICS

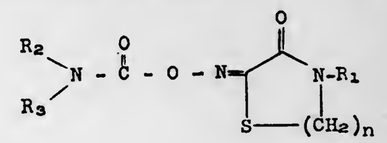
Russell F. Bellina, Claymont, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 171,388, Aug. 12, 1971, Pat. No. 3,790,566. This application Oct. 25, 1973, Ser. No. 409,667

Int. Cl. C07d *93/38, 93/44*

U.S. Cl. 260—239.3 R **2 Claims**

1. A compound of the formula:



where

R_1 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 3–4 carbon atoms, or alkynyl of 3–4 carbon atoms;

R_2 is hydrogen, alkyl of 1–3 carbon atoms, or allyl;

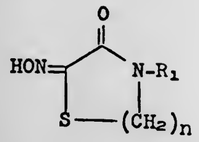
R_3 is hydrogen or methyl; and

n is 3–4.

2. A compound of the formula:

R_3 is hydrogen or methyl; and
n is 3–4.

2. A compound of the formula:



where
R_1 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 3–4 carbon atoms, or alkynyl of 3–4 carbon atoms; and
n is 3–4.

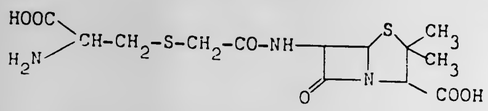
3,883,511

NEW 6-AMINOPENICILLANIC ACID DERIVATIVE

Hugo Troonen, Hoeilaart; Piet Roelants, Watermaal-Bosvoorde, and Bernard Boon, Ohain, all of Belgium, assignors to Recherche et Industrie Therapeutiques (R.I.T.), Genual, Belgium

Filed Mar. 7, 1974, Ser. No. 449,180
Int. Cl. C07d *27/52*
U.S. Cl. 260—239.1 **3 Claims**

1. 6-(D)- [2-amino-2-carboxy)-ethylthio]-acetamido penicillanic acid of the formula:



or a salt thereof with a pharmaceutically acceptable cation.

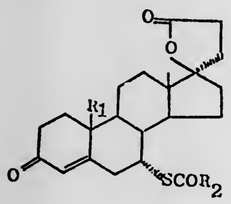
3,883,512

PROCESS FOR THE MANAUFACTURE OF β-(3-OXO-7α-HIOACYL-17β-HYDROXY-4-ANDROSTEN-17α-YL)-PROPIONIC ACID α-LACTONES

Ulrich Stache, Hofheim, Taunus, and Kurt Radscheit, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

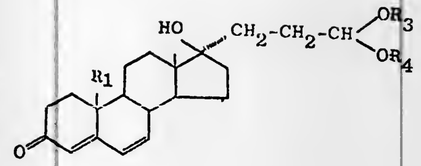
Filed Oct. 18, 1973, Ser. No. 407,479
Claims priority, application Germany, Oct. 20, 1972, 2251476
Int. Cl.² C07C *173/00*
U.S. Cl. 260—239.57 **8 Claims**

1. A process for the manufacture of a β-(3-oxo-7α-thioacyl-17β-hydroxy-4-androsten-17α-yl)-propionic acid γ-lactone of the general formula I



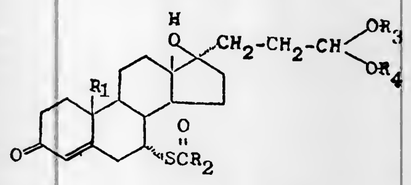
(I)

in which R_1 stands for a methyl group or a hydrogen atom and R_2 for an alkyl group having one to five carbon atoms, which comprises reacting a β-(3-oxo-17β-hydroxy-4,6-androstadien-17α-yl)-propionaldehyde dialkyl or alkylene acetal of the general formula II



(II)

in which R_1 is defined as above and R_3 and R_4 each stands for an alkyl group having one to five carbon atomes, or R_3 and R_4 together stand for an alkylene group having two to five carbon atoms, with a thiocarboxylic acid of from two to six carbon atoms, in a mixture of water and an organic solvent miscible with water, to yield a β-(3′-oxo-7′α-thioacyl-17β′-hydroxy-4′-androsten-17α′-yl)-propionaldehyde dialkyl or alkylene acetal of the general formula III



(III)

in which R_1, R_2, R_3 and R_4 are defined as above, and oxidizing this compound in an acid solution to yield the corresponding γ-lactone of the formula I.

3,883,513

TETRAZOYL DERIVATIVES OF NATURALLY OCCURRING PROSTAGLANDINS

Hans-Jurgen E. Hess, Old Lyme; Leonard J. Czuba, New London, and Thomas K. Schaaf, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 177,102, Sept. 1, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,586
Int. Cl. C07d *55/00*
U.S. Cl. 260—240 R **29 Claims**

1. 2-descarboxy-2-[tetrazol-5-yl]-ω-pentanorprostaglandins, and their C_{15} epimers, and the corresponding 1- and 3-lower alkyltetrazolyl-ω-pentanorprostaglandins, and their C_{15} epimers, having at the 15-position one hydrogen or alkyl substituent having from 1 to 3 carbon atoms and one alkyl substituent having from 5 to 11 carbon atoms, and the C_9, C_{11}, and C_{15} esters thereof wherein said esterifying group is formyl, alkanoyl having from 2 to 5 carbon atoms, or benzoyl.

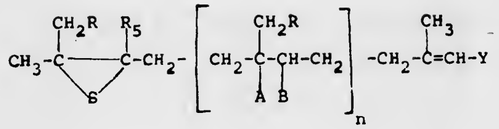
3,883,514

EPITHIO COMPOUNDS

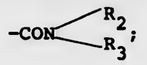
Albert Peiffner, Pfaffhausen, and Ulrich Schwieter, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 858,534, Sept. 16, 1969, Pat. No. 3,697,543. This application Aug. 31, 1970, Ser. No. 68,504
Claims priority, application Switzerland, Sept. 27, 1968, 14,522
Int. Cl. C07d *59/00*
U.S. Cl. 260—240 H **12 Claims**

1. A compound of the formula:



wherein A and B are hydrogen or taken together form a carbon to carbon double bond or a sulfur bridge; R is hydrogen or lower alkyl; R_5 is methyl or hydrogen; Y is a member selected from the group consisting of —C ≡ N;



and
—CH_2OR_4; R_2 and R_3 are hydrogen or lower alkyl, or taken together with their attached nitrogen atoms form a heterocyclic ring selected from the group consisting of pyrrolidino, piperidino and morpholino; R_4 is hydrogen, lower alkyl, lower alkanoyl, benzoyl, lower alkyl substituted benzoyl, amino lower alkyl, lower alkyl substituted amino-lower alkyl, benzyl, phenyl, substituted benzyl, substituted phenyl; and n is an integer from 0 to 1.

3,883,515

ADIABATIC PROCESS FOR THE PRODUCTION OF 2,4-ICHLORO-6-AMINO-S-TRIAZINES

Jai Prakash Tandon, Cranston, and William Sandford Durrell, East Greenwich, both of R.I., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 888,845, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 787,418, Dec. 27, 1968, abandoned. This application Mar. 14, 1973, Ser. No. 341,019
Int. Cl. C07d *55/18*
U.S. Cl. 260—240 B **19 Claims**

1. A process for the preparation of a 2,4-dichloro-6-mono-substituted amino-s-triazine which comprises reacting, under adiabatic conditions and in a two-phase organic aqueous solvent medium, cyanuric chloride with

a. a primary or secondary amine of the formula R_1R_2NH wherein R_1 is a lower alkyl, alkenyl or cycloalkyl radical containing up to 6 carbon atoms, R_2 is hydrogen, a lower alkylene radical the chain of which can be substituted by the hydroxyl group or by halogen or which can be interrupted by oxygen or sulphur, R_1 and R_2 together with the adjacent nitrogen atom also represent the pyrrolidino, morpholino, pyridazino, or piperidino radical; or

b. an amino compound containing at least one water-solubilizing group selected from among carboxylic and sulfonic acid groups, said amino compound being selected from among amino-substituted stilbene-2,2′-disulfonic acids, benzene sulfonic acids, naphthalenesulfonic acids and anthraquinone sulfonic acids.

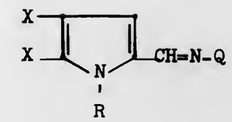
3,883,516

PYRROLE-2-CARBOXALDEHYDE DERIVATIVES

Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug, Inc., New York, N.Y.

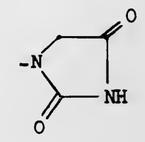
Filed Apr. 11, 1973, Ser. No. 349,972
Int. Cl. C07d *27/22*
U.S. Cl. 260—240 G **12 Claims**

1. A compound having the formula:



I

wherein X is chlorine, bromine or iodine, both values of X being identical; R is hydrogen or lower-alkyl; and Q is hydroxy, ureido, thioureido or 1-hydantoinyl, having the structure:



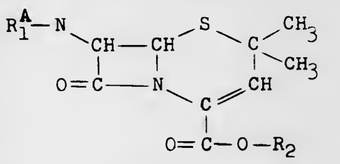
3,883,517

8-OXO-5-THIA-1-AZABICYCLO(4,2,0)OCT-2-ENE COMPOUNDS

Karl Heusler, Basel; Hans Bickel, Binningen; Bruno Fechtig, Reinach, Basel-Land; Heinrich Peter, Riehen, and Riccardo Scartazzini, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

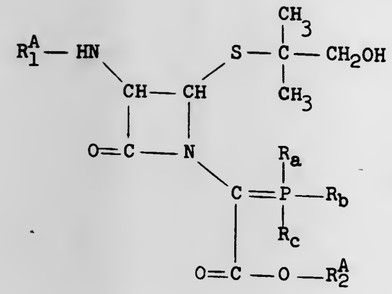
Filed June 2, 1971, Ser. No. 149,341
Claims priority, application Switzerland, June 5, 1970, 8470/70
Int. Cl. C07d *99/24, 99/16*
U.S. Cl. 260—243 C **9 Claims**

1. In a process for the manufacture of 7-amino-ceph-3-em-4-carboxylic acid compounds of the formula



(I)

in which R_1^A is a member selected from the group consisting of phenylacetyl in which phenyl is unsubstituted or substituted by hydroxy, phenylglycyl, in which phenyl is unsubstituted or substituted by a member selected from the group consisting of hydroxy and hologen in which glycyl portion the amino group is unsubstituted or substituted by sulfo, carbamoyl, guanidinocarbonyl, 2,2,2-trichloroethoxycarbonyl, 2-chloroethoxycarbonyl, 2-bromoethoxy-carbonyl, 2-iodoethoxycarbonyl, tert.-butyloxycarbonyl or phenacyloxycarbonyl; α-carboxyphenylacetyl and α-carboxy-2-thienylacetyl, in which carboxy is a member selected from the group consisting of carboxy and carboxy esterified by lower alkyl; α-sulfo-phenylacetyl, in which sulfo is a member selected from the group consisting of sulfo and sulfo esterified by lower alkyl; and tert.-butyloxycarbonyl, 2,2,2-trichloroethylcarbonyl, 2-iodoethoxycarbonyl and 2-bromoethoxycarbonyl, and R_2 is hydrogen or a group R_2^A, which is a member selected from the group consisting of tert.-butyl, diphenylmethyl, 2,2,2-trichloroethyl, 2-iodoethyl, 2-chloroethyl, 2-bromoethyl, 4-methoxy-benzyl and 4-nitrobenzyl, the step which comprises reacting a compound of the formula



(II)

in which each of R_a, R_b and R_c is a member selected from the group consisting of lower alkyl and phenyl, R_1^A has the meaning given above, whereby functional groups present in R_1^A are in the free or protected form, and R_2^A has the meaning given above, is reacted with dimethylsulfoxide in the presence of an acid anhydride as a reagent with dehydrating or water-absorbing properties.

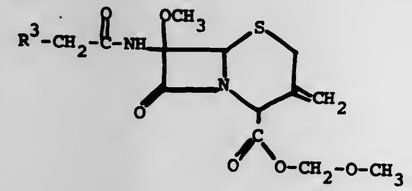
3,883,518

3-METHYLENE CEPHALOSPORINS

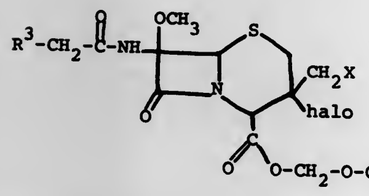
Gerald S. Ponticello, Bridgewater Township, Somerville County; F. Edward Roberts, Princeton, and Leonard M. Weinstock, Belle Mead, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 15, 1972, Ser. No. 253,221
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **3 Claims**

1. A compound of the formula:



or



wherein R^3 is furyl or thienyl; and X is halo or azido.

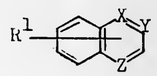
3,883,519

METHOD FOR PURIFICATION OF CEPHALEXIN

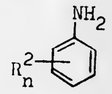
Shoichiro Fujii, Kyoto, and Kunio Takanohashi, Toyonaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 1, 1972, Ser. No. 311,430
Claims priority, application Japan, Dec. 4, 1971, 46-97979; Apr. 21, 1972, 47-40676
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **21 Claims**

1. A process for producing a sparingly soluble salt of cephalexin, wherein cephalexin is reacted with a base selected from the group consisting of a compound of the formula

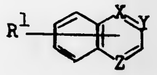


wherein R^1 represents hydrogen, hydroxyl, methyl or ethyl, each of X, Y and Z represents nitrogen or carbon and at least one of X, Y and Z is nigtrogen, with the proviso that all of X, y and Z do not represent nitrogen at the same time, and a compound of the formula

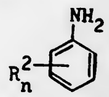


wherein R^2 represents chlorine or alkyl of 1 to 3 carbon atoms and n is an integer of 1 or 2, or R_n^2 represents the group —CH=CH—CH=CH—.

19. A sparingly soluble salt of cephalexin with a base selected from the group consisting of a compound of the formula



wherein R^1 represents hydrogen, hydroxyl, methyl or ethyl, each of X, Y and Z represents nitrogen or carbon and at least one of X, y and Z is nitrogen, with the proviso that all of X, Y and Z do not represent nitrogen at the same time, and a compound of the formula



wherein R^2 represents chlorine or alkyl of 1 to 3 carbon atoms and n is an integer or 1 or 2, or R_n^2 represents the group —CH=CH—CH=CH—.

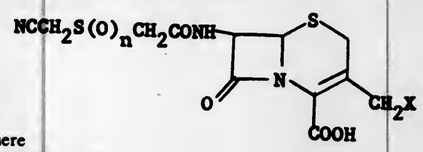
3,883,520

SUBSTITUTED MERCAPTOACETAMIDOCEPHALOSPORINS

Robert M. DeMarinis, King of Prussia, Pa., assignor to Smith-Kline Corporation, Philadelphia, Pa.

Filed Aug. 17, 1973, Ser. No. 389,407
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **12 Claims**

1. A compound of the formula



where
n is 0, 1, or 2;
X is SHet; and
Het is a 5 or 6-membered heterocylic ring containing carbon and 1–4 atoms selected from the group consisting of N, O, and S, unsubstituted or substituted with one or two substituents selected from the group consisting of alkyl of C_1–C_6, alkoxy of C_1–C_6, allyloxy, oxide, halogen, carboxamido, carboxyl, carbalkoxy of C_1–C_6, mercapto, methylthio, trifluoromethyl, hydroxy, amino, alkylamino and dialkylamino, each undefined alkyl having 1–6 carbon atoms
or a non-toxic pharmaceutically acceptable salt thereof.

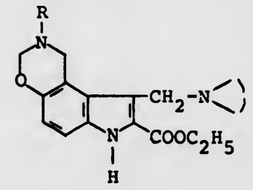
3,883,521

3-SUBSTITUTED-5-AMINOMETHYL-6-CARBETHOXY(OXAZINO [5',6' E INDOLES).

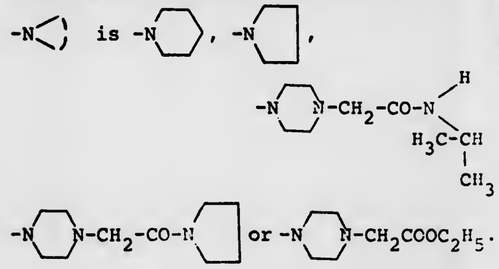
Claude Fauran; Michel J. Turin; Gerard J. Huguet; Guy M. Raynaud, all of Paris, and Bernard M. Pourrias, Meudon La Foret, all of France, assignors to Delalande S.A., Courbevoie, France

Filed May 24, 1973, Ser. No. 363,535
Claims priority, application France, June 8, 1972, 72.20644
Int. Cl. C07d *87/06*
U.S. Cl. 260—244 R **14 Claims**

1. A compound having the formula



wherein R is alkyl having 1 to 6 carbon atoms, allyl, cyclohexyl, diethylamino ethyl or β-hydroxyethyl, and



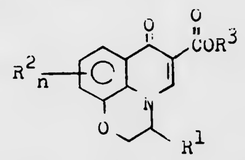
3,883,522

SUBSTITUTED PYRIDO(1,2,3-DE)-1,4-BENZOXAZINES

John F. Gerster, Woodbury, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Feb. 11, 1974, Ser. No. 440,951
Int. Cl. C07d *87/00*
U.S. Cl. 260—244 **26 Claims**

1. A compound of the formula



wherein R^3 is hydrogen or lower alkyl, R^1 is hydrogen or lower alkyl, R^2 is lower alkyl, lower alkoxy, halogen or nitro and *n* is zero to three; when R^2 is nitro, R^1 is methyl or ethyl, or pharmaceutically acceptable salts of such compounds when R^3 is hydrogen.

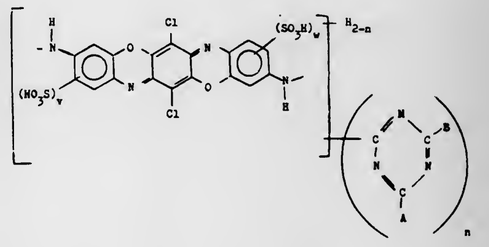
3,883,523

TRIAZINE DERIVATIVES OF TRIPHENODIOXAZINES

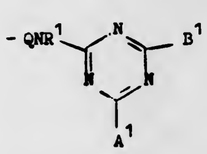
Brian Parton, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 137,706, April 26, 1971, abandoned. This application Feb. 21, 1973, Ser. No. 334,287
Claims priority, application United Kingdom, May 15, 1970, 23695/70
Int. Cl. C09b *19/02*
U.S. Cl. 260—246 R **2 Claims**

1. A dyestuff of the formula:



wherein $v + w$ has a value 2.0 to 2.5, $n = 1$ to 2, A is Cl or Br, B is lower alkoxy, sulphophenoxy or NR^1R^2 wherein R^1 is H, CH_3 or CH_2SO_3H and R^2 is H, phenyl, sulphophenyl, disulphophenyl, sulphotolyl, carboxyphenyl, sulphocarboxyphenyl, sulphonaphthyl, disulphonaphthyl, trisulphonaphthyl or



wherein R^1 has the meaning given above, Q is sulphophenylene, disulphophenylene, ethylene, disulphodiphenylene or sulphotolylene, A^1 is Cl, SO_3H, or sulphoanilino or disulphoanilino and B^1 is Cl, lower alkoxy, sulphophenoxy or NR^1R^3 wherein R^1 has the meaning given above and R^3 is H, phenyl, sulphophenyl, disulphophenyl, sulphotolyl, carboxyphenyl, sulphocarboxyphenyl, sulphonaphthyl, disulphonaphthyl or trisulphonaphthyl.

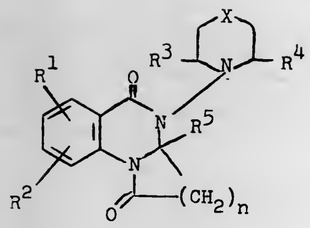
3,883,524

QUINAZOLINE DERIVATIVES

Erhard H. Wolf, Hofheim, Taunus, Germany, and Brian J. Duffy, Flanders, N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed June 8, 1972, Ser. No. 260,799
Int. Cl. C07d *87/42*
U.S. Cl. 260—247.2 A **11 Claims**

1. A compound of the formula



in which R^1 and R^2 are hydrogen, halogen, nitro or amino, R^3 and R^4 are hydrogen or lower alkyl, R^5 is lower alkyl, X is oxygen or $(CH_2)_m$, *m* being zero, 1 or 2 and *n* is 2, 3 or 4, and the pharmaceutically acceptable salts thereof.

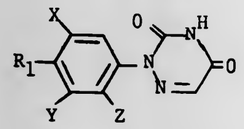
3,883,525

THERMAL REARRANGEMENT OF 3-ARYLOXYTRIAZINE-5(4H)-ONES

Banavara L. Mylari, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed June 13, 1973, Ser. No. 369,587
Int. Cl. C07d *55/10*
U.S. Cl. 260—248 AS **5 Claims**

1. A process for the preparation of a compound of the formula



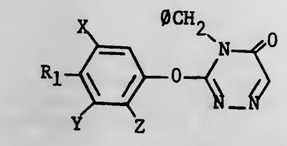
wherein

R_1 is selected from the group consisting of hydrogen, 2-chlorophenoxy and 2-chloro-4-(N-methyl-N-ethylsulfamonyl) phenoxy;

X is selected from the group consisting of hydrogen and methyl;

Y is selected from the group consisting of hydrogen, methyl and chloro; and

Z is selected from the group consisting of hydrogen and chloro, which comprises heating from 200°–350°C. in a reaction-inert solvent a compound of the formula



and thereafter removing the protecting group by catalytic hydrogenolysis at a pressure of from atmospheric to 45 psi at ambient temperature wherein said catalyst is palladium or palladium-on-charcoal.

3,883,526

3-BENZYLPYRIDO [3,4-E]-AS-TRIAZINE AND 1,2-DIHYDRO-3-BENZYLPYRIDO[3,4-E]-AS-TRIAZINE HYDROCHLORIDE

George C. Wright; Allan V. Bayless, and Joseph E. Gray, all of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed June 6, 1973, Ser. No. 367,500
Int. Cl. C07d *57/34*
U.S. Cl. 260—248 AS **3 Claims**

1. The compound 1,2-dihydro-3-benzylpyrido-[3,4-e]-as-triazine hydrochloride.

3,883,527

PROCESS FOR PREPARATION OF 2-ARYL-1,3,4-TRIAZINE-3,5(2H,4H)-DIONES

Thomas M. Brennan, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

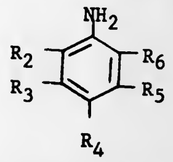
Filed Oct. 19, 1973, Ser. No. 407,872
Int. Cl. C07d *55/10*
U.S. Cl. 260—248 AS **23 Claims**

1. A process for preparing 2-aryl-1,2,4-triazine-3,5(2H,4H)-diones which comprises:

a. coupling a diazotized arylamine with a lower alkyl cyanoacetate to produce a lower alkyl cyanoglyoxalate arylhydrazone;

b. hydrolyzing and decarboxylating the lower alkyl cyanoglyoxalate arylhydrazone thus produced under alkaline conditions to produce a glyoxamide arylhydrazone and

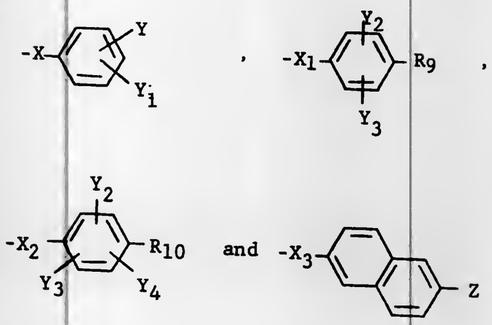
c. reacting the thus produced glyoxamide arylhydrazone with a di(lower alkyl) carbonate in the presence of a basic condensing agent to product a 2-aryl-1,2,4-triazine-3,5(2H,4H)-dione, said arylamine being of the formula



wherein each of R_2 and R_6 is hydrogen, fluoro, chloro, cyano or methyl, with the proviso that at least one of R_2 and R_6 is hydrogen or fluoro;

each of R_3 and R_5 is selected from a first sub-group consisting of hydrogen, cyano, trifluoromethyl, halogen and lower alkyl; a second sub-group consisting of lower alkoxy and lower alkylthio; a third sub-group consisting of nitro and thiocyanato;

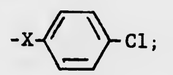
R_4 is R_3 or a fourth sub-group consisting of NR_7R_8, alkylsulfonyl having 1 to 9 carbon atoms, SO_2NRR_1, lower alkanoyl, $—CH_2—NR_{11}R_{12}$,



with the provisos that when R_4 is SO_2NRR_1 or alkanoyl, at least one of R_3 and R_5 is other than hydrogen; and when at least one of R_3 and R_5 is selected from the second sub-group, R_4 is selected from the first, third or fourth sub-groups; and when R_3 or R_5 is methyl or chloro and X is sulfur, $—SO_2—$ or



then R_4 is other than



R is methyl, ethyl, allyl, propargyl, phenyl, benzyl or p-chlorophenyl;

R_1 is methyl, ethyl, allyl or propargyl;

R and R_1 when taken together with the nitrogen to which they are attached are morpholino, thiomorpholino, pyrrolo, pyrrolino, pyrrolidino, N-(lower alkyl)piperazino, hexamethyleneimino, 3,4-dichloropiperidino, thiazolidino, Δ^3-tetrahydropyridino or piperazino;

Each of R_7 and R_8 is lower alkyl of from 1 to 4 carbon atoms; R_7 and R_8 when taken together with the nitrogen atom to which they are attached are morpholino, thiomorpholino, pyrrolo, pyrrolino, pyrrolidino, piperidino, N-(lower alkyl) piperazino, hexamethyleneimino, thiazolidino, Δ^3-tetrahydropyridino or piperazino;

R_9 is hydrogen, halogen, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, lower alkoxy, trifluoromethyl or nitro;

R_{10} is lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, trifluoromethyl, lower alkanoyl or $SO_2NR'R'_1$;

R′ when taken alone is hydrogen, lower alkyl, allyl, propargyl, phenyl, benzyl, p-chlorophenyl, β-hydroxyethyl, β-acetoxyethyl, β-methoxyethyl, β-methylthioethyl, β-methylsulfonylethyl or cyclopropyl;

R'_1 when taken alone is hydrogen, lower alkyl, propargyl, β-hydroxyethyl, β-acetoxyethyl, β-methoxyethyl, β-methylthioethyl, β-methylsulfonylethyl, γ-(β-methoxyethoxy)-propyl, cyclopropyl or cyclopentyl;

R′ and R′$_1$ when taken together with the nitrogen to which they are attached complete a morpholino or pyrrolidino ring;

R_{11} and R_{12} taken together with the nitrogen to which they are attached complete a morpholino, thiomorpholino or thiazolidino ring;

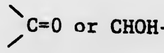
X is selected from the group consisting of oxygen, sulfur,



=NH, —S → O, $—SO_2—$ and —CHOH—;

X_1 is $—OCH_2—$, $—SCH_2—$, $—SO_2CH_2—$, $—CH_2—$, $—OCH_2—CO—$ or $—NCH_2—$;

X_2 is oxygen, sulfur, —SO—, $—SO_2—$,



X_3 is oxygen, sulfur or $—OCH_2—$;

each of Y and Y_1 is selected from the group consisting of hydrogen, nitro, cyano, halogen, lower alkyl and lower alkoxy;

Y_2, Y_3 and Y_4 are each hydrogen, halogen, lower alkyl or trifluoromethyl and

Z is hydrogen, lower alkylthio or halogen.

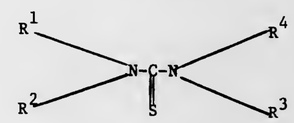
3,883,528

PREPARATION OF 2(ARYL)-AS-TRIAZINE-3,5(2H,4H)-IONE COCCIDIOSTATS

Banavara L. Mylari, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 19, 1974, Ser. No. 462,198
Int. Cl. C07d *55/10*
U.S. Cl. 260—248 AS **7 Claims**

1. A process for the preparation of 2-(aryl)-as-triazine-3,5(2H,4H)dione coccidiostats which comprises contacting the corresponding triazinedione-6-carboxylic acid with at least 0.1 molar proportion of a reagent of the formula



at a temperature of from about 120° to 220°C. until reaction is substantially complete,

wherein R^1, R^2, R^3 and R^4 are each selected from the group consisting of hydrogen, amino, lower alkylamino, lower alkyl, and phenyl, with the proviso that only up to one of R^1, R^2, R^3, and R^4 is amino or lower alkylamino and that when one of R^1, R^2, R^3 and R^4 is amino or lower alkylamino, the remaining substituents are each hydrogen or lower alkyl, and with the further proviso that only up to two of R^1, R^2, R^3 and R^4 may be phenyl and when there are two such phenyl substituents, at least one of the remaining substituents is hydrogen.

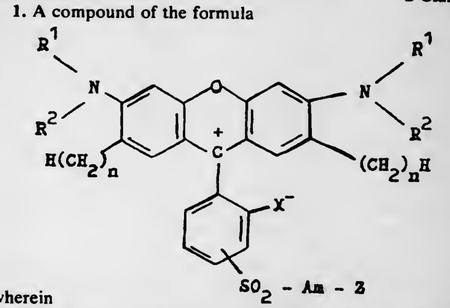
3,883,529

NEW CELLULOSE REACTIVE DYESTUFFS

Peter William Austin, Blackley, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 4, 1972, Ser. No. 311,522
Claims priority, application United Kingdom, Dec. 15, 1971, 58228/71
Int. Cl. C07d *55/18, 55/20*
U.S. Cl. 260—249.5 **2 Claims**

1. A compound of the formula



wherein

R^1 represents hydrogen or alkyl having 1–4 carbon atoms;

R^2 represents alkyl having 1–4 carbon atoms, phenyl or phenyl having 1–2 substituents selected from the group consisting of NO_2, Cl, Br, and CF_3;

each *n* independently represents 0 or 1;

X^- represents SO_3^- or CO_2^-

Am is NH or a diamine selected from the group consisting of ethylene diamine, N-β-hydroxyethyl ethylene diamine, 1,4-phenylenediamine-2-sulphonic acid, 1,3-phenylenediamine-4-sulphonic acid, 4,4′-diaminodiphenylether-3,3′-disulphonic acid, 4,4′-diaminostilbene-2,2′-disulphonic acid, 4,4′-diaminodiphenyl-2,2′-disulphonic acid, 4,4′-diamino-3,3′-dimethyldiphenyl-2,2′-disulphonic acid and 4,4′-diamino-3,3′-dimethoxydiphenyl-2,2′-disulphonic acid,

the said SO_2 being attached to one of the two nitrogens of said diamine and the said Z being attached to the other

3,883,535

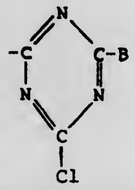
RADIOPAQUE DERIVATIVES OF TRIIODOBENZOIC

3,883,537

NEW 1,1A,6,10

the said SO_2 being attached to one of the two nitrogens of said diamine and the said Z being attached to the other of said diamine nitrogens, and

Z has the formula



wherein B is selected from the group consisting of Cl; NH_2; anilino substituted by up to 2 substituents selected from SO_3H, CH_3 and COOH; N-ω-sulphomethyl-anilino; N-methyl sulphoanilino; aminodisulphoanilino; naphthylamino substituted by up to 3 SO_3H groups; sulphatoethylsulphonylanilino; methoxy; phenoxy; sulphophenoxy; and sulphoanilino and disulphoanilino, both of which are further substituted by a member selected from 2-chloro-4-amino-s-triazin-6-ylamino, 2-chloro-4-sulphophenylamino-s-triazin-6-ylamino and dichloro-s-triazinylamino.

3,883,530

CHLORINE SUBSTITUTED METHYLPYRIDAZINES

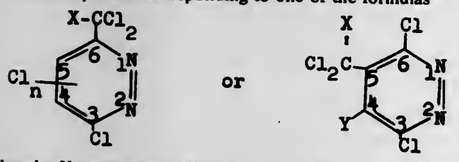
Donald E. Bublitz, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 20, 1972, Ser. No. 299,417

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A **10 Claims**

1. A compound corresponding to one of the formulas



or

wherein X represents chlorine or hydrogen, Y represents chlorine or hydrogen and *n* represents the integer 1 or 2.

3,883,531

PERHYDROPHTHALAZIN-1(2H)-ONE AND PROCESS

Elvio Bellasio, Albate-Como, Italy, assignor to Gruppo Lepetit S.p.A., Milano, Italy

Filed Apr. 6, 1973, Ser. No. 348,831

Claims priority, application Italy, Apr. 17, 1972, 49700/72

Int. Cl. C07d *51/06*

U.S. Cl. 260—250 P **4 Claims**

1. Perhydrophthalazin-1(2H)-one.

3,883,532

2-SUBSTITUTED -4,5-DIAMINO-6-CYANOPYRIMIDINES

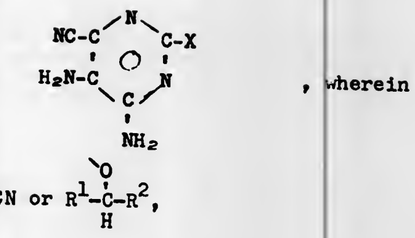
Robert W. Begland, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 14, 1973, Ser. No. 341,249

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 C **4 Claims**

1. A compound of the formula



, wherein

X is CN or ,

R^1 and R^2, alike or different, being H or alkyl, alkoxy, alkenyl, alkynyl or alkoxyalkyl of up to 7 carbons, unsubstituted or substituted with up to 14 halogen and/or nitro, or phenyl, unsubstituted or substituted with up to 5 halogen and/or nitro, with the proviso that any α-carbon in R^1 or R^2 carries no more than one fluoro, chloro or nitro substituent.

3,883,533

PROCESS FOR PREPARING 1,4-DIAZABICYCLO OCTANE

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 27, 1973, Ser. No. 428,645

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 T **4 Claims**

1. The process of reacting 1,4-bis(formyl)-piperazine with ethylene glycol at a temperature of from about 200°C. to about 400°C. and a pressure of from about atmospheric to about 200 atmospheres to produce 1,4-diazabicyclo[2.2.2]octane, and recovering the last-named compound.

3,883,534

ANTHRAQUINONE DYES

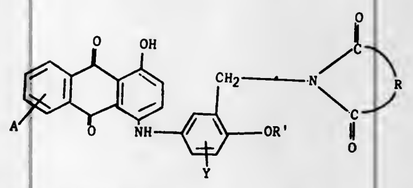
Charles H. Chang, Piscataway, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 6, 1972, Ser. No. 312,476

Int. Cl. C07d *27/52*

U.S. Cl. 260—281 **7 Claims**

1. A compound of the formula



in which A is selected from the group consisting of hydrogen, chlorine, bromine, and lower alkyl; R represents a member selected from the group consisting of alkylene of from 2 to 4 carbon atoms, vinylene, 1,2-benzene, 1,2-cyclohexane, 1,8-naphthalene, and 1,2-cyclohex-4-ene; R′ is lower alkyl; and Y is selected from the group consisting of hydrogen, hydroxy, chlorine, bromine, lower alkyl, and lower alkoxy.

3,883,535

RADIOPAQUE DERIVATIVES OF TRIIODOBENZOIC ACID WITH HETEROCYCLIC SIDE CHAINS

Ernst Felder, and Davide Pitre, both of Milan, Italy, assignors to Bracco Industria Chimica, Societa per Azioni, Milan, Italy

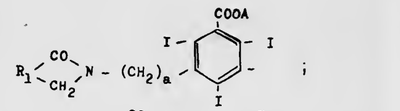
Filed Apr. 7, 1969, Ser. No. 814,193

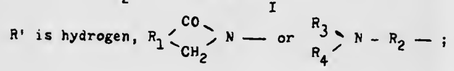
Claims priority, application Switzerland, May 2, 1968, 6625/68

Int. Cl. C07d *29/28, 29/30*

U.S. Cl. 260—293.64 **19 Claims**

1. A compound of the formula R - R′ wherein R is



R′ is hydrogen,  ;

R_1 is alkylene having 2 or 3 carbon atoms;

R_2 is $-(CH_2)_a$;

R_3 is hydrogen or acetyl;

R_4 is hydrogen, methyl, or R—NH—CO—R_5—CO—, R_3 being hydrogen when R_4 is R—NH—CO—R_5—CO—;

R_5 is alkylene or polyoxaalkylene having 4 to 8 carbon atoms;

a is either zero or one; and

A is hydrogen or a non-toxic metal or amine, the compound being water-soluble when A is said metal or amine.

3,883,536

3,3-DISUBSTITUTED-2-BENZYL-4-PIPERIDINOLS

Antony Marie Akkerman, Amsterdam, Netherlands, and Paul Adriaan Jan Janssen, Vosselaar, Belgium, assignors to ACF Chemiefarma N.V., Amsterdam, Netherlands

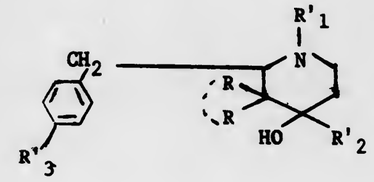
Division of Ser. No. 41,079, May 27, 1970, Pat. No. 3,764,606. This application Feb. 12, 1973, Ser. No. 331,764

Feb. 12, 1973, Ser. No. 331,764

Int. Cl. C07d *29/18*

U.S. Cl. 260—293.83 **3 Claims**

1. A compound selected from the group consisting of 3,3-di-substituted 2-benzyl-4-piperidinols having the formula



in which both substituents R are selected from the class consisting of methyl, ethyl and groups which, when taken together with the carbon atom to which they are bonded, form cyclopentyl and cyclohecyl, R'_1 is selected from the class consisting of hydrogen atom, methyl and benzyl, R'_2 is selected from the class consisting of alkyl containing up to three carbon atoms, ethinyl, phenyl and pyridyl, and R'_3 is selected from the class consisting of hydrogen atom, hydroxy and methoxy, and salts of said substituted 2-benzyl-4-piperidinols.

3,883,537

NEW 1,1A,6,10 B-TETRAHYDRO-1,6-METHANO-DIBENZO[A,E]CYCLOPROPA[C]CYCLOHEPTENE DERIVATIVES

Herbert Schroter, Fullinsdorf, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

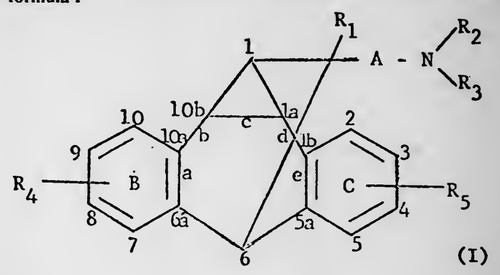
Filed July 5, 1973, Ser. No. 376,670

Claims priority, application Switzerland, July 7, 1972, 10215/72

Int. Cl. C07d *29/10*

U.S. Cl. 260—293.62 **20 Claims**

1. A new 1,1a,6,10b-tetrahydro-1,6-methano-dibenzo[a,e]cyclopropa[c]cycloheptene derivative having the formula I



(I)

wherein R_1 represents hydrogen or the hydroxy group, R_2 and R_3 represent hydrogen or alkyl groups having 1 to 3 carbon atoms, R_4 and R_5 represent hydrogen, and A represents the direct bond, an alkylene radical having 1 to 3 carbon atoms, or together with

the 1-methyl-4-piperidyl radical, as well as its pharmaceutically acceptable addition salts with inorganic or organic acids.

3,883,538

DIOXOLANES AND OXATHIOLANES

Matthias Pailer; Friedrich Takacs, and Wolfgang Streicher, all of Vienna, Austria, assignors to Rowa Wagner KG, Bensberg, Germany

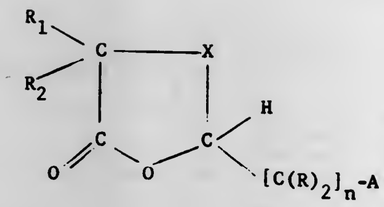
Continuation of Ser. No. 806,295, March 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 584,111, Oct. 4, 1966, abandoned. This application Jan. 26, 1973, Ser. No. 326,618

Claims priority, application Austria, Oct. 5, 1965, 8981/65; Mar. 15, 1968, 2591/68

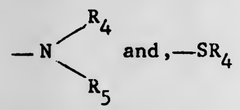
Int. Cl. C07d *29/24*

U.S. Cl. 260—293.67 **14 Claims**

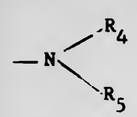
1. A compound selected from the group consisting of bases of the formula:



the non-toxic quaternary ammonium salts and the non-toxic acid addition salts thereof wherein R_1 and R_2 are each a member selected from the group consisting of phenyl, alkyl having 1 to 4 carbon atoms, cycloalkyl having 5 to 6 carbon atoms in the ring, and alkoxy-phenyl wherein the alkyl portion of said alkoxy group contains 1 to 2 carbon atoms, or taken together are 2,2'-diphenylene, R represents a member selected from the group consisting of hydrogen and lower alkyl, n is an integer of 1 to 4, X represents a member selected from the group consisting of oxygen and sulfur atoms, A represents a member selected from the group consisting of halogen,



wherein R_4 and R_5 each represents a member of the group of hydrogen and alkyl having up to 8 carbon atoms, and groups in which



represents a member selected from the group consisting of piperidino, morpholino and pyrrolidino.

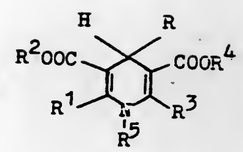
3,883,539
4-(2-CHLOROETHYLAMINO)-1-METHYLPIPERIDINE DIHYDROCHLORIDE
Thomas J. Schwan, 8 Hillview Dr., Norwich, N.Y. 13815
Filed Jan. 25, 1974, Ser. No. 436,460
Int. Cl. C07d *29/28*
U.S. Cl. 260—293.87 **1 Claim**

1. 4-(2-Chloroethylamino)-1-methylpiperidine dihydrochloride.



3,883,540
UNSYMMETRICAL ESTERS OF N-SUBSTITUTED 1,4-DIHYDROPYRIDINE 3,5-DICARBOXYLIC ACID
Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Germany
Filed Feb. 28, 1973, Ser. No. 336,605
Claims priority, application Germany, Sept. 12, 1972, 2210672
Int. Cl. C07d *31/36, 31/46*
U.S. Cl. 260—294.9 **25 Claims**

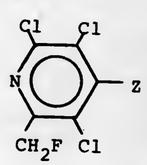
1. A compound of the general formula:



in which
R is mono-, di- or trisubstituted phenyl, in which the substituents are selected from the group consisting of nitro, cyano, azido and $S(O)_n$-lower alkyl, wherein $n = 0$, 1 or 2, lower alkyl, lower alkoxy and halo, the total number of said substituents being not more than 3 and at least one of said substituents being nitro, cyano, azido or $S(O)_n$-lower alkyl,
R^1 and R^3, independent of the other, is hydrogen or lower alkyl;
R^2 and R^4 are different from one another and are lower alkyl, alkenyl of 2 to 4 carbon atoms alkynyl of 2 to 4 carbon atoms, lower alkoxy(lower alkyl) or lower cycloalkyl, unsubstituted or substituted by hydroxy;
R^5 is lower alkyl or benzyl,
or a pharmaceutically acceptable acid addition salt thereof.

3,883,541
4-AMINO-3,5,6-TRICHLORO-2-(FUNCTIONALLY SUBSTITUTED METHYL) PYRIDINE COMPOUNDS
Pamela M. Hamilton, Sunnyvale, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Continuation of Ser. No. 117,707, Feb. 22, 1971, abandoned. This application Mar. 2, 1973, Ser. No. 337,724
Int. Cl. C07d *31/36*
U.S. Cl. 260—295 R **2 Claims**

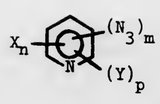
1. A 4-amino-3,5,6-trichloro-2-(substituted methyl) pyridine compound having the formula



wherein Z is amino, loweralkylamino of 1 to 4 carbon atoms, or di(loweralkyl)amino wherein each alkyl contains 1 to 4 carbon atoms and F is an oxyalkanoic acid group of 1 to 4 carbon atoms, the loweralkyl esters thereof of 1 to 4 carbon atoms or the alkali metal or alkaline earth metal salts thereof.

3,883,542
PYRIDYL AZIDES AND DERIVATIVES THEREOF
Calvin E. Pannell, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 230,975, March 1, 1972, Pat. No. 3,773,774. This application July 25, 1973, Ser. No. 382,432 July 25, 1973, Ser. No. 382,432
Int. Cl. C07d *31/34*
U.S. Cl. 260—295 R **2 Claims**

1. A compound of the formula



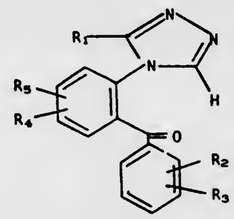
wherein, in said formula, each X is, independently, Cl, Br, I or F; Y is —COOH or —COOR' (R' being an alkyl, aryl, alkaryl or aralkyl group of up to 18 carbon atoms in the alkyl portion, wherein said aryl moiety is a carbocyclic aryl of up to 10 carbon atoms); m is 1 to 4; n is 0 to 4; p is 0 to 2; and the sum of $m + n + p$ is from 2 to 5.

3,883,543
N-ALKYL-1,4-DIHYDROPYRIDINES
Friedrich Bossert, Wuppertal-Elberfeld, Germany, assignor to Bayer Aktiengesellschaft, Germany
Division of Ser. No. 201,152, Nov. 22, 1971, Pat. No. 3,773,773, which is a continuation of Ser. No. 35,574, May 7, 1970, abandoned. This application Nov. 2, 1973, Ser. No. 412,477
Claims priority, application Germany, May 10, 1969, 1923990
Int. Cl. C07d *31/36*
U.S. Cl. 260—295.5 B **2 Claims**

1. N-n-butyl-2,6-dimethyl-4-(3'-nitro-6'-chlorophenyl)-1,4-dihydropyridine-3,5-dicarboxylic acid dimethyl ester.

3,883,544
PREPARATION OF TRIAZOLYBENZOPHENONES
Jackson B. Hester, Jr., Galesburg, and Martin Gall, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 351,141, April 16, 1973, Pat. No. 3,842,089, which is a continuation-in-part of Ser. No. 172,918, Aug. 18, 1971, abandoned. This application June 21, 1974, Ser. No. 481,504
Int. Cl. C07d *55/06, 57/00*
U.S. Cl. 260—296 R **9 Claims**

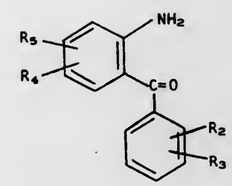
1. A process for the production of 2-(3-substituted-4H-1,2,4-triazol-4-yl)benzophenones of the formula VI:



VI

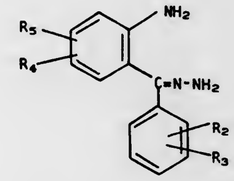
wherein R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, cycloalyl of 3–8 carbon atoms, inclusive, phenyl, and 2-, 3-, and 4-pyridyl and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, halogen, nitro, alkyl, and alkoxy, in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive, which comprises the following steps:

1. reacting a 2-aminobenzophenone of formula I



I

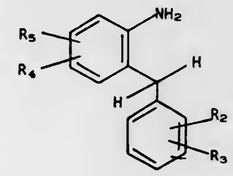
wherein R_2, R_3, R_4, and R_5 are defined as above, with hydrazine hydrate to obtain the corresponding hydrazone II:



II

wherein R_2, R_3, R_4, and R_5 are defined above;

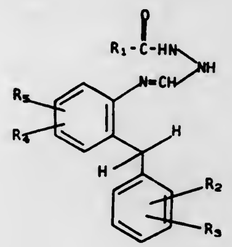
2. treating compound II with a strong base at 100°–150° C. to obtain the corresponding 2-benzylaniline of formula III:



III

wherein R_2 , R_3, R_4, and R_5 are defined as above;

3. heating compound III with triethylorthoformate or trimethylorthoformate, followed by treating with an acid hydrazide of the formula
$NH_2—NH—CO—R_1$
wherein R_1 is defined as above, at room temperature to obtain the corresponding 1-acyl or aroyl-2-[N-(α-phenyl-o-tolyl)formimidoyl]hydrazine (IV) of the formula:

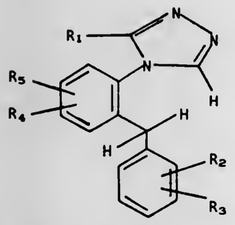


IV

wherein R_1, R_2, R_3, R_4, and R_5 are defined as above;

4. cyclizing IV by heating it in diglyme to obtain the corresponding 4-[α-(phenyl)-o-tolyl]-3-substituted-4H-1,2,4-triazole V:

3,883,547
1,2,3-THIADIAZOLE DERIVATIVES



V

wherein R_1, R_2, R_3, R_4, and R_5 are defined as above;

5. oxidizing V with Jones' reagent to obtain the corresponding 2-(3-substituted-4H-1,2,4-triazol-4-yl)benzophenone VI of above.

3,883,545

CERTAIN 1-HYDROXY-2-PYRIDONES

Gerhard Lohaus, Kelkheim/Taunus, and Walter Dittmar, Hofheim/Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

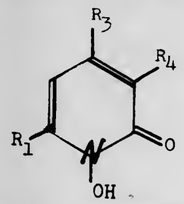
Continuation of Ser. No. 199,320, Nov. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 851,428, Aug. 19, 1969, abandoned. This application Dec. 22, 1972, Ser. No. 317,387

Claims priority, application Germany, Aug. 31, 1968, 1795270

Int. Cl. C07d *31/30*

U.S. Cl. 260—297 Z **9 Claims**

1. A 1-hydroxy-2-pyridone of the formula



wherein R_1 is alkyl of 7 to 11 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, cyclohexylalkyl or phenylalkyl both having 1 to 3 carbon atoms in the alkylene chain and wherein phenylalkyl may be substituted in the phenyl ring by one chlorine or fluorine atom, or α-furyl, and R_3 and R_4 are hydrogen or lower alkyl.

3,883,546

S-HETEROCYCLIC DERIVATIVES OF PHOSPHINE OR PHOSPHITE GOLD MERCAPTIDES

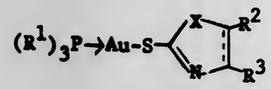
Blaine M. Sutton, Hatboro, and Joseph Weinstock, Phoenixville, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Aug. 1, 1973, Ser. No. 384,666

Int. Cl. C07d *91/32, 85/44, 49/36*

U.S. Cl. 260—299 **6 Claims**

1. A compound of the formula:



in which:

R^1 is lower alkyl, lower alkoxy, phenyl or phenoxy, with each alkyl or alkoxy having from one to three carbon atoms;

X is S, NH, NCH_3 or O;

R^2 and R^3 are hydrogen or together form a 1,2-benzo radical; and

indicates an optional double bond.

3,883,547

1,2,3-THIADIAZOLE DERIVATIVES

Heinz Schulz, and Friedrich Arndt, both of Berlin, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

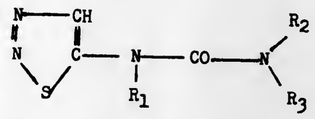
Filed Feb. 26, 1973, Ser. No. 335,661

Claims priority, application Germany, Mar. 23, 1972, 221463

Int. Cl. C07d *91/54*

U.S. Cl. 260—306.8 D **10 Claims**

1. Compounds of the formula:



wherein R_1 is hydrogen, methyl or ethyl; R_2 is hydrogen or alkyl having from 1 to 4 carbon atoms; R_3 is selected from the group consisting of alkyl, having from 1 to 4 carbon atoms, cyclopentyl, cyclohexyl, methylcyclohexyl, phenyl or substituted phenyl having one or more substituents from the group consisting of chlorine, methyl, methoxy, trifluomethyl, and nitro and when taken together with the amino-nitrogen, R_2 and R_3 can be morpholino, piperidino, or pyrrolidino.

3,883,548

3-ARYLTHIOALKYL-4-OPTIONALLY SUBSTITUTED SYDNONES

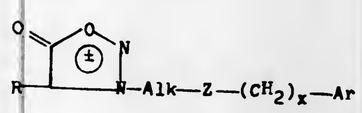
John B. Hill, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 312,708, Dec. 6, 1972, abandoned. This application Apr. 6, 1973, Ser. No. 348,755

Int. Cl. C07d *85/50*

U.S. Cl. 260—307 A **22 Claims**

1. A compound of the formula



wherein R represents hydrogen, lower alkyl, phenyl, or bromo; Alk represents alkylene containing more than 1 and fewer than 5 carbons; Z represents oxygen, thio, sulfinyl, or sulfonyl; x represents 0 or 1; and Ar represents naphthyl, phenyl, or phenyl substituted by members selected from less than 3 of the group consisting of lower alkyl, halogen, lower alkoxy, and nitro.

3,883,549

FLUORESCENT ARYL 3,3-PYRAZOLYL-2-PYRAZOLINES

Ian Pearson, Harlow, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

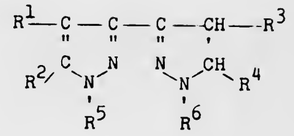
Filed Feb. 5, 1973, Ser. No. 329,328

Claims priority, application United Kingdom, Feb. 10, 1972, 6384/72

Int. Cl. C07d *49/28*

U.S. Cl. 260—310 D **7 Claims**

1. An aryl-3,3'-pyrazolyl-2-pyrazoline of the formula:



wherein R^1 to R^4 independently represent hydrogen or alkyl with up to 4 carbon atoms, and

R^5 and R^6 independently represent phenyl or naphthyl which may be substituted with one substituent from the group of halogen, alkyl with up to 4 carbon atoms, alkoxy with up to 4 carbon atoms, and alkylthio with up to 4 carbon atoms.

3,883,550

HERBICIDES

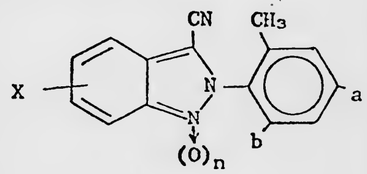
Steven Jerome Goddard, West Grove, Pa., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed May 20, 1974, Ser. No. 471,808

Int. Cl. C07d *49/02*

U.S. Cl. 260—310 C **4 Claims**

1. A compound of the formula:



wherein

a is chlorine, bromine or methyl;

b is chlorine, bromine, or methyl;

X is hydrogen or fluorine; and

n is 0 or 1

3,883,551

THIENOBENZOPYRANS AND THIOPYRANOBENZOPYRANS

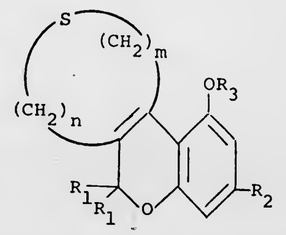
Raj K. Razdan, Belmont, and Harry G. Pars, Lexington, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 852,928, Aug. 25, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 210,170

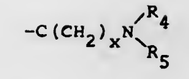
Int. Cl. C07d *65/08;* **A61k** *27/00*

U.S. Cl. 260—327 TH **19 Claims**

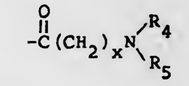
1. A compound of the formula



wherein *m* and *n* are each 0, 1, 2 or 3 and $m+n$ is 2 or 3; R_1 is loweralkyl; R_2 is alkyl or cycloalkylloweralkyl and R_3 is hydrogen, loweralkyl, loweralkanoyl, carbamyl, N-loweralkylcarbamyl, N,N-diloweralkylcarbamyl, phosphonyl, hemisuccinate, phosphate, dialkylaminoalkyl of the structure



or acid addition salt thereof, or dialkylaminoalkanoyl of the structure



or acid addition salt thereof, wherein *x* is 1 through 6 and R_4 and R_5 are loweralkyl; the loweralkyl groups containing from 1 through 6 carbon atoms, the alkyl groups containing from 1 through 20 carbon atoms and the cycloalkyl groups containing from 3 through 8 ring carbon atoms.

3,883,552

(D1)-THIOPHOSPHORIC ACID ESTERS

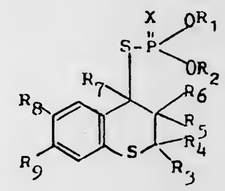
Gerhard Hörlein, Frankfurt, Main, and Gerhard Salbeck, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Main, Germany

Continuation-in-part of Ser. No. 293,133, Sept. 28, 1973, abandoned, and a continuation-in-part of Ser. No. 293,134, Sept. 28, 1973, abandoned. This application July 10, 1973, Ser. No. 377,954

Int. Cl. C07d *65/08*

U.S. Cl. 260—327 TH **9 Claims**

1. A compound of the formula



(I)

wherein

R_1 and R_2 are alkyl having from one to six carbon atoms;

R_3, R_4, R_5, R_6, R_7 are hydrogen or alkyl having from one to four carbon atoms; at least three of the radicals R_3 to R_7 being hydrogen;

R_8, R_9 are hydrogen, halogen, alkyl or alkoxy each having from one to four carbon atoms;

X is oxygen or sulfur.

3,883,553

DICYCLOALKANO [E,G] TETRAHYDROISOINDOLINES

Gilbert H. Berezin, West Chester, Pa., and Walter E. Meier, Wilmington, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation of Ser. No. 77,312, Oct. 1, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,468

Int. Cl. C07d *27/48*

U.S. Cl. 260—326.1 **3 Claims**

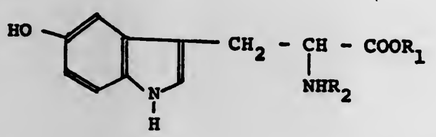
1. A compound selected from 2-benzyl-dicycloheptano[e,g]3a,3b,13a,13b-tetrahydroisoindoline and its addition salts with nontoxic acids.

3,883,554
PROCESS FOR PREPARING 5-HYDROXY-TRYPTOPHAN AND ITS DERIVATIVES

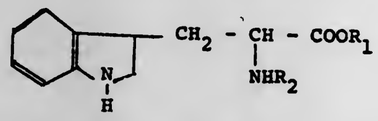
Yasuki Mori, Kawasaki, and Moriyuki Sato, Sapporo, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 190,392, Oct. 18, 1971, abandoned. This application May 8, 1973, Ser. No. 358,518
Claims priority, application Japan, Oct. 26, 1970, 45-93459
Int. Cl. C07d *27/60*
U.S. Cl. 260—326.14 T 4 Claims

1. A process for the preparation of a compound of the formula:



which comprises oxidizing a compound of the formula:



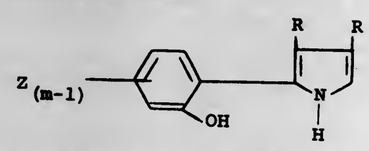
wherein R_1 represents hydrogen, alkyl of 1 to 4 carbon atoms, benzyl or phenethyl; R_2 represents hydrogen, acetyl, propionyl, mono- or di-haloacetyl, benzoyl, mono- or di-substituted benzoyl, said substituent being selected from the group consisting of halogen, nitro, loweralkyl and loweralkoxy, benzyloxycarbonyl, t-butyloxycarbonyl or trityl; with an oxidizing agent selected from the group consisting of hydrogen peroxide, chromic anhydride and potassium nitrosodisulfonate, in a solvent selected from the group consisting of water, inorganic acids, organic acids, alcohols, alkylamines and mixtures thereof, at a temperature of from −10°C. to 60°C.

3,883,555
INTERMEDIATES FOR DIPYRRYLMETHENE DYES

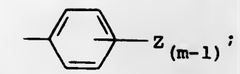
Stanley M. Bloom, Waban, and Paulina P. Garcia, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 723,474, April 23, 1968, Pat. No. 3,691,161. This application May 5, 1972, Ser. No. 250,596
Int. Cl. C07d *27/26*
U.S. Cl. 260—326.5 J 4 Claims

2. A pyrrole of the formula:

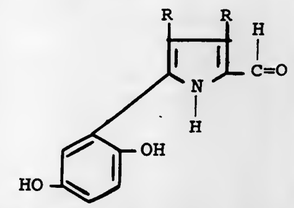


where: one R is hydrogen while the other is a substituent chosen from the group consisting of methyl, ethyl, phenyl

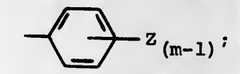


each Z is hydroxy, methyl or methoxy and *m* is a positive integer 1 to 3.

3. A pyrrole of the formula:



where: one R is hydrogen while the other is a substituent chosen from the group consisting of methyl, ethyl, phenyl



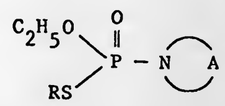
each Z is hydroxy, methyl or methoxy and *m* is a positive integer from 1 to 3.

3,883,556
THIOPHOSPHORIC ACID AMIDES AS NEMATOCIDES, INSECTICIDES AND ACARICIDES

Denis Varsanyi, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 9, 1973, Ser. No. 377,465
Claims priority, application Switzerland, July 13, 1972, 10529/72
Int. Cl.[2] C07D *103/00, 105/00*
U.S. Cl. 260—326.61 3 Claims

1. A compounds of the formula



wherein R represents n-propyl or n-butyl, and A represents ethylene, 1-methylethylene, 1,1-dimethylethylene, 2-butenylene or 2-pentenylene.

3,883,557
TRIMETHYLFLUORAN COMPOUNDS

Sheldon Farber, Appleton, Wis., and Arthur J. Wright, Jamestown, Ohio, assignors to NCR Corporation, Dayton, Ohio

Division of Ser. No. 383,218, July 27, 1973, abandoned, which is a continuation-in-part of Ser. No. 340,799, March 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 243,871, April 13, 1972, abandoned. This application June 26, 1974, Ser. No. 484,021
Int. Cl. C07d *7/42*
U.S. Cl. 260—335 2 Claims

1. The compound 1′,3′,4′-trimethyl-6′-benzylaminofluoran.

3,883,558
4-N-BUTYROXYMETHYL-1,3-DIOXOLANES

Dietmar Lampersky, Wangen-Dubendorf, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Filed July 12, 1972, Ser. No. 270,879
Claims priority, application Switzerland, July 23, 1971, 10893/71
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 4 Claims

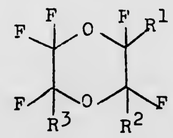
1. A compound selected from the group consisting of 2-(1′-propenyl)-4-n-butyroxymethyl-dioxolane; 2-methyl-2-(1′-hydroxyethyl)-4-n-butyroxymethyl-dioxolane and 2-(2′-methyl-propyl)-4-n-butyroxymethyl-dioxolane.

3,883,559
FLUORINATED DIOXAN DERIVATIVES

James Burdon; Paul Leslie Coe; Ian William Parsons, and John Colin Tatlow, all of Birmingham, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 10, 1972, Ser. No. 296,136
Claims priority, application United Kingdom, June 9, 1972, 27007/72
Int. Cl. C07d *15/14*
U.S. Cl. 260—340.6 3 Claims

1. A hexafluoro- or heptafluoro-1,4-dioxan derivative of the formula:



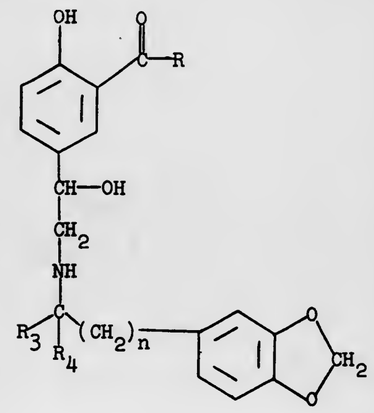
wherein one or two of R^1, R^2 and R^3 is or are hydrogen, two or one respectively of R^1, R^2 and R^3 being fluorine.

3,883,560
SALICYLAMIDOPHENETHANOLAMINES

John T. Suh, Mequon, and Thomas M. Bare, Milwaukee, both of Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed July 5, 1973, Ser. No. 376,707
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 5 Claims

1. A compound of the formula



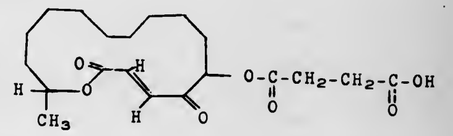
in which *n* is 1 to 3, R is NH_2 and R_3 and R_4 are hydrogen or a lower alkyl of one to four carbon atoms, and pharmaceutically acceptable acid addition salts thereof.

3,883,561
ANTIBIOTIC LACTONES

Karl H. Michel, and Marvin M. Hoehn, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 16, 1972, Ser. No. 298,053
Int. Cl. C07d *9/00*
U.S. Cl. 260—343 3 Claims

1. Antibiotic A-26771 factors B which has the structural formula

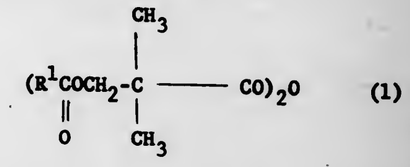


3,883,562
PROCESS FOR THE MANUFACTURE OF PIVALOLACTONE

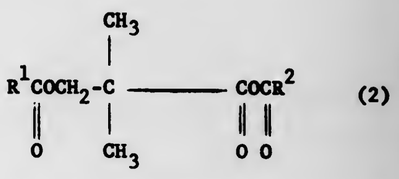
Hans-Jürgen Arpe, Fischbach, Taunus, Germany, and Lothar Heinz Hönig, deceased, late of Frankfurt am Main, Germany (by Anneliese Hönig, nee Münich, co-heiress), assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 34,640, May 4, 1970, abandoned. This application Jan. 12, 1973, Ser. No. 323,253
Claims priority, application Germany, May 4, 1970, 1923703
Int. Cl. C07d *3/00*
U.S. Cl. 260—343.9 5 Claims

1. A process for the manufacture of pivalolactone which comprises the step of thermally decomposing the anhydride of a β-acyloxypivalic acid of the formula (1)



in which R^1 is hydrogen or an alkyl group with up to 5 carbon atoms, or the mixed anhydride of a β-acyloxypivalic acid and a lower aliphatic carboxylic acid of the formula (2)



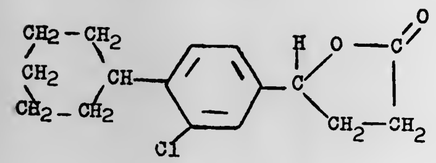
in which R^1 and R^2 have the meaning given above for R^1, at temperatures within the range of from 150°C. to 350°C. in the presence of a molecular sieve formed of a crystalline aluminum silicate of a uniform pore size, the alkali metal ions of which have been exchanged for protons or alkaline earth metal ions, said ion exchange having been carried out in two stages with intermittent heating of the molecular sieve to a temperature of 500°C. to 700°C.

3,883,563
4-(4'-CYCLOHEXYL-3'-CHLOROPHENYL)-γ-BUTYROLACTONE

Francois Krausz, Montpellier, and Marcel Daniel Pierre Brunaud, St. Jean de Vedas, both of France, assignors to C M Industries, Paris, France

Continuation-in-part of Ser. No. 420,277, Dec. 29, 1973, which is a continuation of Ser. No. 35,919, May 8, 1970, abandoned. This application July 19, 1974, Ser. No. 489,983
Claims priority, application France, Aug. 6, 1973, 73.28636
Int. Cl. C07d 5/06
U.S. Cl. 260—343.6 **1 Claim**

1. A compound of the formula



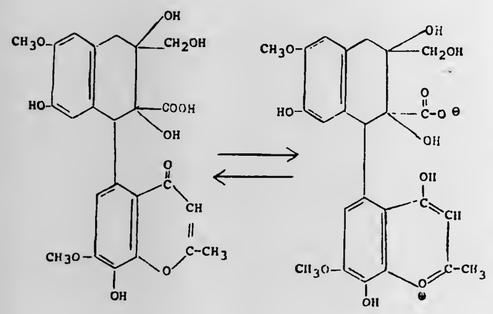
(I)

3,883,564
PRODUCTS FROM PLICATIC ACID AND PROCESS

Donald W. Langille, deceased, late of Vancouver, British Columbia, Canada (by Olive I. Langille, petitioner), assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 712,337, March 8, 1968, Pat. No. 3,773,792, which is a continuation of Ser. No. 425,066, Jan. 12, 1965, abandoned. This application Aug. 27, 1973, Ser. No. 392,053
Int. Cl. C07d 7/32
U.S. Cl. 260—345.2 **3 Claims**

1. The crystalline yellow compound having the melting point of 239°C and the structural formula

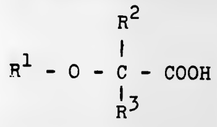


3,883,565
ESTER OF α-TOCOPHEROL

Thomas Patrick Cunningham Mulholland, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 24, 1973, Ser. No. 409,315
Claims priority, application United Kingdom, Oct. 24, 1972, 48929/72
Int. Cl. C07d 7/22
U.S. Cl. 260—345.5 **2 Claims**

1. An ester of α-tocopherol with an acid of the formula:



wherein R^2 and R^3 are both methyl and R^1 is p-chlorophenyl, 4-(p-chlorophenyl)benzyl, 4-(p-chlorophenyl)phenyl or 4-(1,2,3,4-tetrahydronaphth-1-yl)phenyl; or R^2 is hydrogen, R^3 is p-chlorophenoxy and R^1 is p-chlorophenyl; or R^2 is hydrogen, R^3 is p-chlorophenyl and R^1 is m-trifluoromethylphenyl.

3,883,566
PURIFICATION AND HYDROGENATION OF FURAN CONCENTRATES

Marvin M. Johnson, and Donald C. Tabler, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 175,432, Aug. 27, 1971, abandoned. This application Sept. 6, 1972, Ser. No. 286,728
Int. Cl. C07d 5/02
U.S. Cl. 260—346.1 R **9 Claims**

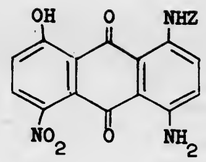
1. A process for extending the life of hydrogenation catalysts and improving the hydrogenatability of furan concentrates to produce high purity tetrahydrofuran products which comprises contacting a furan concentrate containing deleterious unsaturated hydrocarbon contaminants and sulfur compounds, but which is substantially free of high boiling materials, prior to hydrogenation, with zinc oxide at a temperature ranging from about 550 to about 850°F for a finite period of time sufficient to render innocuous compounds present in said concentrate which tend to inactivate hydrogenation catalysts, and hydrogenating said concentrate substantially free of catalyst inactivating materials by contacting with a hydrogenation catalyst and hydrogen under hydrogenation conditions sufficient to hydrogenate said unsaturated hydrocarbons to paraffinic materials and convert said concentrate substantially to a high purity tetrahydrofuran product.

3,883,567
ANTHRAQUINONE DYESTUFFS

Edwin Dennis Harvey, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 25, 1970, Ser. No. 40,374
Claims priority, application United Kingdom, June 17, 1969, 30618/69
Int. Cl. C09b 1/50
U.S. Cl. 260—379 **6 Claims**

1. Water-insoluble anthraquinone dyestuff having the formula



wherein Z is selected from the group consisting of lower alkoxy lower alkyl, cyclohexyl, benzylcyclohexyl, phenyl lower alkyl, phenyl, lower alkylphenyl, lower alkoxy phenyl, chlorophenyl, bromophenyl, hydroxy lower alkoxy phenyl and hydroxy lower alkylphenyl.

3,883,568
2-(2'ETHYLHEXYL)-QUINIZARIN

Robert J. Turner, Lake Geneva, Wis.; David L. Booth, and Richard D. Berry, both of Crystal Lake, Ill., assignors to Morton-Norwich Products, Inc., Chicago, Ill.

Division of Ser. No. 152,922, June 14, 1971, Pat. No. 3,764,273. This application May 14, 1973, Ser. No. 359,963
Int. Cl. C07c 49/74
U.S. Cl. 260—383 **1 Claim**

1. The compound 2(2-ethylhexyl) quinizarin.

3,883,569
NOVEL 3α-HYDROXYSTEROIDS OF THE 5α-PREGNANE SERIES

Gordon Hanley Phillipps, Wembley; Christopher Earle Newall, Acton, and Martin Christopher Cook, Chalfont St. Peter, all of England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

Filed Dec. 16, 1971, Ser. No. 208,985
Claims priority, application United Kingdom, Dec. 17, 1970, 60066/70
Int. Cl. C07c 169/32
U.S. Cl. 260—397.45 **12 Claims**

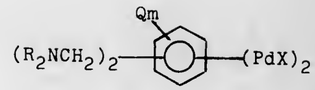
1. A steroid of the 5α-pregnane series possessing a 3α-hydroxy group, a 10-hydrogen or methyl group, and 11-oxo group, a 17α-hydrogen atom, a 20-oxo group and a group of the formula -XR at the 21-position, wherein X represents a group of the formula —OCO— or —OCOO— and R represents:
   a. an alkyl group of 1–5 carbon atoms or a benzyl group, each of said alkyl or benzyl groups being substituted by a group of the formula $-NR^1R^2$ wherein R^1 and R^2 are the same or different and each represents a hydrogen atom or an alkyl group having 1–4 carbon atoms or wherein R^1 and R^2 together with the nitrogen atom represent a piperazino or morpholino group or such a group substituted by at least one alkyl group containing 1–6 carbon atoms; or a pyridyl group;
   b. a nitrobenzyl group when X is —OCO—; or
   c. a lower alkyl group containing 1–5 carbon atoms when X is —OCOO—.

3,883,570
BIS(DIALKYLAMINOMETHYL)-PHENYLENEDIPALLADIUM (II) COMPOUNDS

Swiatoslaw Trofimenko, Newark, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 75,233, Sept. 24, 1970, Pat. No. 3,770,785, Continuation-in-part of Ser. No. 792,841, Jan. 21, 1969, abandoned. This application Sept. 6, 1973, Ser. No. 394,824
Int. Cl. C07f 15/00
U.S. Cl. 260—429 R **6 Claims**

1. A compound of the formula



wherein
the R's, alike or different, are lower alkyl;
Q is primary or secondary lower alkyl, lower alkoxy, halo, nitro, cyano or lower alkoxycarbonyl;
m is 0, 1 or 2; and
X is Cl or Br, with the proviso that each palladium atom is ortho to an R_2NCH_2 group.

3,883,571
LIQUID DIPHENYLMETHANE DIISOCYANATE COMPOSITIONS

Dennis Charlton Allport, and Graham Briggs, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 10, 1973, Ser. No. 395,599
Claims priority, application United Kingdom, Sept. 26, 1972, 44404/72
Int. Cl. C07c 119/04
U.S. Cl. 260—453 AM **3 Claims**

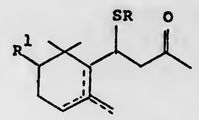
1. A diphenylmethane diisocyanate composition which consists essentially of a 4,4'-diphenylmethane diisocyanate containing not more than 10 percent of isomers thereof, and in which from 15 to 30 percent of the isocyanate groups have been reacted at a temperature of 40° to 120°C with a mixture of three alkylene glycols, said alkylene glycols being selected from the group consisting of diethylene glycol, triethylene glycol, tetraethylene glycol, 1,2-propylene glycol, 1,3-propylene glycol, neopentyl glycol, 1,3-butane diol and 1,2-butane diol each of said glycols being present in said mixture in such proportions that no one glycol constitutes more than 50 or less than 25 molar per cent of said total glycols.

3,883,572
NOVEL MERCAPTODERIVATIVES OF IONONES AND IRONES

Daniel Helmlinger, Dubendorf; Dietmar Lamparsky, Wangen-Dubendorf; Peter Schudel, Grut; Trudi Sigg-Grütter, Winterthur, and Jost Wild, Zurich, all of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 203,112, Nov. 26, 1971, Pat. No. 3,845,134. This application Mar. 29, 1974, Ser. No. 456,341
Int. Cl. C07c 153/01
U.S. Cl. 260—455 R **2 Claims**

1. Ionone and irone derivatives of the general formula



(I)

wherein R represents the acetyl group and R^1 represents a hydrogen atom or the methyl group and wherein the broken lines denote a double bond which is present in one of the three indicated positions.

3,883,573
COMMERCIAL FIXED-BED ACRYLONITRILE OR

3,883,575
PROSTAGLANDIN B-ANALOGS

wherein A is alkylene of one to 10 carbon atoms, inclusive,

3,883,573
COMMERCIAL FIXED-BED ACRYLONITRILE OR METHACRYLONITRILE

Ernest C. Milberger, Solon; Serge R. Dolhyj, Parma, and James F. White, Akron, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed June 15, 1973, Ser. No. 370,287
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 **4 Claims**

1. In the process for preparing acrylonitrile or methacrylonitrile by the reaction of a mixture of propylene or isobutylene, ammonia and molecular oxygen in the presence of an ammoxidation catalyst in a fixed-bed reactor containing one or more tubes, the improvement comprising

using two catalysts in each of one or more of the tubes of the fixed-bed reactor—the first catalyst being a catalyst consisting of an essentially inert support material with an outer surface and coating of a catalytic material strongly adhering to the outer surface of the support, and the second catalyst being a catalyst consisting essentially of the catalytic material and

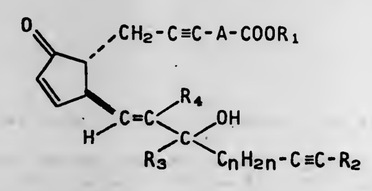
arranging the catalysts in the tube of the fixed-bed reactor in such a manner that the first catalyst contacts the reactants first and the second catalyst contacts the reactants subsequent to contact with the first catalyst.

3,883,574
PROSTAGLANDIN A_3 ANALOGS

Udo F. Axen, Comstock, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 112,032, Feb. 2, 1971, Pat. No. 3,775,462, which is a continuation-in-part of Ser. No. 30,312, April 20, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,906
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468 D **23 Claims**

1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein R_1 is hydrogen, alkyl of 1 to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with 1 to 3 chloro or alkyl of 1 to 4 carbon atoms, inclusive, or β,β,β-trichloroethyl; wherein R_2 is alkyl of one to 4 carbon atoms, inclusive, substituted with zero to 3 fluoro; wherein R_3 and R_4 are hydrogen or alkyl of 1 to 4 carbon atoms, inclusive; wherein A is alkylene of 1 to 10 carbon atoms, inclusive, substituted with zero to 2 fluoro, and with one to 5 carbon atoms, inclusive, between $-COOR_1$ and



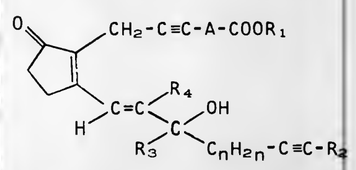
or a pharmacologically acceptable salt thereof when R_1 is hydrogen.

3,883,575
PROSTAGLANDIN B_3 ANALOGS

Udo F. Axen, Comstock, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 112,032, Feb. 2, 1971, Pat. No. 3,775,462, which is a continuation-in-part of Ser. No. 30,312, April 20, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,986
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468 D **23 Claims**

1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein R_1 is hydrogen, alkyl of 1 to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with 1 to 3 chloro or alkyl of 1 to 4 carbon atoms, inclusive, or β,β,β-trichloroethyl; wherein R_2 is alkyl of 1 to 4 carbon atoms, inclusive, substituted with 0 to 3 fluoro; wherein R_3 and R_4 are hydrogen or alkyl of 1 to 4 carbon atoms, inclusive; wherein n is an integer of 1 to 4, inclusive; wherein A is alkylene of 1 to 10 carbon atoms, inclusive, substituted with zero to 2 fluoro, and with 1 to 5 carbon atoms, inclusive, between $-COOR_1$ and



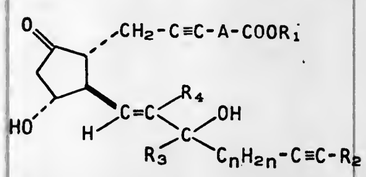
or a pharmacologically acceptable salt thereof when R_1 is hydrogen.

3,883,576
PROSTAGLANDIN E_3 ANALOGS

Udo F. Axen, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 112,032, Feb. 2, 1971, Pat. No. 3,775,462, which is a continuation-in-part of Ser. No. 30,312, April 20, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,973
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468 D **23 Claims**

1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein R_1 is hydrogen, alkyl of 1 to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one to 3 chloro or alkyl of 1 to 4 carbon atoms, inclusive, or β,β,β-trichloroethyl; wherein R_2 is alkyl of one to 4 carbon atoms, inclusive, substituted with zero to 3 fluoro; wherein R_3 and R_4 are hydrogen or alkyl of 1 to 4 carbon atoms, inclusive; wherein n is an integer of 1 to 4, inclusive;

wherein A is alkylene of one to 10 carbon atoms, inclusive, substituted with zero to 2 fluoro, and with one to 5 carbon atoms, inclusive, between $-COOR_1$ and



or a pharmacologically acceptable salt thereof when R_1 is hydrogen.

3,883,577
PROCESS FOR PREPARING HIGH MOLECULAR WEIGHT POLYISOCYANATES

Antonio Rabizzoni, Busto, and Aldo Trovati, Novara, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Sept. 21, 1973, Ser. No. 399,722
Claims priority, application Italy, Sept. 22, 1972, 29524/72
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **7 Claims**

1. Process for preparing high molecular weight polyisocyanates by reaction of addition between an alkyl or alkylaryldiisocyanate and an active hydrogen-containing compound selected from aliphatic diols, triols and polyhydric alcohols, characterized in that

a. The alkyl or alkylaryldiisocyanate is reacted at a temperature comprised between 20° and 100°C with the active hydrogen-containing compound in a solvent having a strong affinity for the reaction product, said solvent being only partly miscible with aliphatic and/or cycloaliphatic hydrocarbons and having a low boiling point, the molar ratio isocyanic equivalents —NCO/hydroxy equivalents —OH being comprised between 2 and 3;

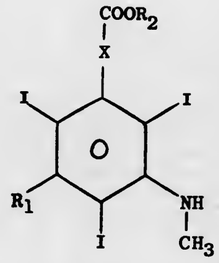
b. The alkyl or aryldiisocyanates are extracted at a temperature from 20°to 50°C from the solution obtained in (a) either batchwise or continuously with an extracting mixture comprising aliphatic and/or cycloaliphatic hydrocarbons, preferably in admixture with the same reaction solvent medium.

3,883,578
RADIOPAQUE AGENTS

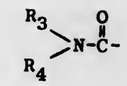
Heinz Gries, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Sept. 29, 1971, Ser. No. 184,941
Claims priority, application Germany, Oct. 2, 1970, 2050217
Int. Cl. C07c *101/54*
U.S. Cl. 260—471 R **27 Claims**

1. Compounds of the formula



wherein R_1 is H, I, $-NHCH_3$, mono-lower-alkanoyl-amino, N-lower alkyl-lower-alkanoyl-amino, di-lower-alkanoyl-amino, lower-alkanoyl-aminomethyl or carbamoyl of the formula



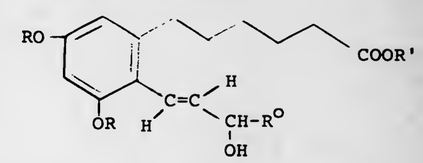
wherein R_3 and R_4 are each hydrogen, lower alkyl or hydroxy-lower-alkyl; R_2 is H or lower alkyl; and X is a C—C single bond or lower alkylene; and physiologically acceptable salts thereof.

3,883,579
1-(2',4'-DISUBSTITUTED-6'-ω-SUBSTITUTED-HEXYL-1'-HENYL)-1-OLEFIN-3-OLS

Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., E. Hanover, N.J.

Division of Ser. No. 201,109, Nov. 22, 1971, Pat. No. 3,804,883, which is a continuation-in-part of Ser. No. 86,270, Nov. 2, 1970, abandoned. This application Dec. 14, 1973, Ser. No. 424,817
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 R **9 Claims**

1. A compound of the formula:



wherein

R° is straight chain alkyl of 4 to 6 carbon atoms,

R′ is hydrogen, a pharmaceutically acceptable salt-forming cation or alkyl of 1 to 4 carbon atoms, and

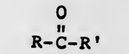
both Rs which are the same, are hydrogen, alkyl of 1 to 3 carbon atoms or —COR″ wherein R″ is alkyl of 1 to 4 carbon atoms.

3,883,580
ASYMMETRIC REDUCTION OF KETONES TO FORM OPTICALLY ACTIVE ALCOHOLS

Arthur John Solodar, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 9, 1972, Ser. No. 224,971
Int. Cl. C07c *125/04, 29/16*
U.S. Cl. 260—482 C **19 Claims**

1. A process for preparing an optically active secondary alcohol comprising reacting an optically inactive ketone having no asymmetric atoms of the formula



where R is different from R′ and where both R's can be any substituted or unsubstituted monovalent hydrocarbon group attached directly to the carbonyl group through a carbon atom,

with hydrogen in the presence of an optically active catalyst which is a coordination complex comprising

a. a Group VIII metal having an atomic number greater than 43, in combination with

b. at least one optically active phosphine or arsine ligand wherein the optical activity results from having three different groups bonded to the phosphine or arsine atom.

3,883,581

3,883,581
PREPARATION OF BROMINATED PENTAERYTHRITOLS AND ESTERS UTILIZING CERTAIN DIBASIC ACIDS

Ralph A. Davis, Midland; Ronald G. Tigner, Coleman; R. Garth Pews, Midland; Jurgen H. Exner, Midland, and Carl L. Gibbons, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 23, 1973, Ser. No. 363,203
Int. Cl. C07c *69/44, 69/60*
U.S. Cl. 260—485 G **9 Claims**

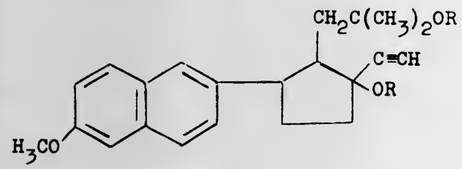
1. A process for preparing mixtures of brominated pentaerythritols and brominated neopentyl esters, comprising contacting pentaerythritol with HBr and from about 0.2 mole percent to about 50 mole percent, based on pentaerythritol charged, of an acid selected from the group consisting of aliphatic saturated dicarboxylic acids or their anhydrides, free of any substitutents except halogen, having from 3 to 10 carbon atoms in their molecule and aliphatic monoethylenically unsaturated dicarboxylic acids selected from the group consisting of maleic, fumaric, itaconic, citraconic, their anhydrides and halogenated derivatives, at a temperature of from about 85° to about 140°C., in the liquid phase and in an inert solvent, the product mix being determined by the amounts of HBr and dicarboxylic acid used.

3,883,582
2-ETHYNYL-2-HYDROXY-5-(6-METHOXY-2-NAPHTHYL)-ALPHA, ALPHA-DIMETHYLCYCLOPENTANEETHANOL AND ESTERS

Leland J. Chinn, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Apr. 30, 1973, Ser. No. 355,777
Int. Cl. C07c *69/14, 69/24*
U.S. Cl. 260—488 CD **3 Claims**

1. A compound of the formula



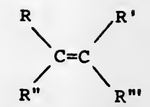
wherein R represents lower alkanoyl.

3,883,583
OIL SOLUBLE ANIONIC SURFACE ACTIVE AGENT

Masuzo Nagayama, and Hiroshi Okada, both of Tokyo, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 51,323, June 30, 1970, abandoned. This application Dec. 8, 1972, Ser. No. 313,427
Int. Cl. C07c *143/02*
U.S. Cl. 260—513 R **2 Claims**

1. A low viscosity, oil-soluble surface active agent prepared by sulfonating monoolefin of the formula



wherein R is alkyl, R′, R″ and R‴ each is hydrogen or alkyl, with the proviso that not all of R′, R″ and R‴ are hydrogen and with the further proviso that the total number of carbon atoms of R, R′, R″ and R‴ is 30 to 38, by contacting a thin film of said olefin with a gas having a temperature of 30° to 100°C and containing 1 to 10 vol. percent of SO_3 and the balance is inert gas, at a molar ratio of SO_3/olefin in the range of 0.5 to 1.5/1.0, at a reaction temperature from 5° to 100°C above the solidifying point of said olefin, to form a sulfonated reaction product, containing alkenesulfonic acids and sultones,

and neutralizing said reaction product by adding to said reaction product from 0.6 to 1.0 equivalents, based on the SO_3 reacted, of an alkali metal, ammonium or alkaline earth metal hydroxide or carbonate, the amount added being sufficient to render the reaction mixture alkaline and then maintaining said reaction mixture at a temperature of 100° to 200°C for a period of 1 minute to 7 hours to hydrolyze the sultones.

3,883,584
PROCESS FOR THE PREPARATION OF TEREPHTHALIC ACID

Yataro Ichikawa, Iwakuni, Japan, assignor to Teijin Ltd., Osaka, Japan

Filed Nov. 17, 1972, Ser. No. 307,394
Claims priority, application Japan, Nov. 25, 1971, 46-94664; Oct. 11, 1972, 47-101099
Int. Cl. C07c *63/02, 63/26*
U.S. Cl. 260—524 A **13 Claims**

1. In the process for the preparation of terephthalic acid by oxidizing paraxylene and/or paratoluic acid with a molecular oxygen-containing gas in the liquid phase, the improvement which consists essentially of carrying out said oxidation reaction

1. in the substantial absence of a lower fatty acid or halogen compound;
2. in the presence of a catalyst consisting essentially of cobalt or an organic cobalt compound and manganese or an organic manganese compound, which are at least partially soluble in the reaction mixture, the sum total of cobalt and manganese calculated as metals, present in the total oxidation reaction mixture being in the amount of 0.005 to 0.5 percent by weight, the weight ratio, calculated as metals, of the cobalt and manganese being 99.8:0.2 to 20:80; and
3. at a temperature in the range of 150° to 220°C.

3,883,585
PROCESS FOR PURIFYING AND STABILIZING AQUEOUS ALKALI METAL SALT SOLUTIONS OF SORBIC ACID

Hans Fernholz, Fischbach, Taunus; Hans-Joachim Schmidt, Falkenstein, Taunus, and Friedrich Wunder, Florsheim am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 380,745, July 19, 1973, abandoned. This application Jan. 17, 1974, Ser. No. 434,042
Claims priority, application Germany, Mar. 3, 1973, 2310758
Int. Cl. C07c *57/10*
U.S. Cl. 260—526 N **7 Claims**

1. A process for purifying and stabilizing an aqueous alkali metal salt solution of sorbic acid which comprises treating the solution with surface-active carbon derived from mineral coal.

3,883,586
PROCESS FOR PREPARING ESTERS OF OMEGA-AMINODODECANOIC ACID

Iwao Yokoyama; Hiroo Sasaki; Tetsuo Tanaka, and Keiichi Kihara, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Feb. 15, 1974, Ser. No. 442,883
Claims priority, application Japan, Mar. 19, 1973, 48-3086
Int. Cl. C07c *101/18*
U.S. Cl. 260—404 **10 Claims**

1. A process for preparing an ω-aminododecanoic acid ester having the formula

$$H_2N-(CH_2)_{11}COOR_3$$

wherein R_3 represents a saturated C_{1-4} alkyl group; which comprises the step of: reacting an ω-nitrocarboxylic acid ester having the formula

$$O_2N-(CH_2)_3-R_1-(CH_2)_2-R_2-(CH_2)_2-COOR_3$$

wherein R_1 and R_2 are both $-CH_2-CH_2-$ or $-CH=CH-$, or R_1 is $-CH_2CH_2-$ when R_2 is $-CH=CH-$ or R_1 is $-CH=CH-$ when R_2 is $-CH_2CH_2-$ and R_3 represents a saturated C_{1-4} alkyl group, with hydrogen in a hydrocarbon solvent in the presence of a palladium, platinum or nickel hydrogenation catalyst.

3,883,587
PROCESS FOR MANUFACTURING POLYOL ESTERS OF CARBOXYLIC ACID

Hiroshi Isa, Funabashi; Takeo Inagaki, Yachiyo; Yasuhiro Kiyonaga, Narashino, and Masuzo Nagayama, Tokyo, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1973, Ser. No. 422,578
Claims priority, application Japan, Dec. 11, 1972, 47-124646
Int. Cl. 260 *497;* **C07c** *67/00*
U.S. Cl. 260—410.6 **8 Claims**

1. In a process for preparing polyol esters of carboxylic acids, comprising reacting an olefin having from 4 to 30 carbon atoms and a polyhydric alcohol, wherein the molar ratio of said olefin to the reactive hydroxyl groups of said polyhydric alcohol is about 1/1 or more, with an excess of carbon monoxide at a pressure in the range of from 60 to 300 kg/cm², the reaction being carried out at a temperature of from 90° to 250° C., in the presence of a first catalyst of cobalt, nickel or rhodium, and a second catalyst of pyridine or a derivative of pyridine, and removing carbon monoxide to produce an intermediate reaction product containing the unreacted polyhydric alcohol, the improvement which comprises the step of:

reheating said intermediate reaction product containing the unreacted polyhydric alcohol to a temperature of from 60° to 300°C. without distilling off the unreacted polyhydric alcohol for a period of time effective to complete the conversion of hydroxyl groups in said polyhydric alcohols to ester groups whereby to obtain polyol ester of carboxylic acid at a high purity and a high yield.

3,883,588
METHOD OF PREPARING ACRYLIC ACID

Francis W. Schlaefer, Pennsauken, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 124,889, March 16, 1971, abandoned. This application Nov. 9, 1973, Ser. No. 414,470
Int. Cl. C07c *51/32, 57/04*
U.S. Cl. 260—533 N **5 Claims**

1. In a process of oxidizing α,β-unsaturated aliphatic hydrocarbons selected from the group consisting of propylene, butene-1, isobutylene, pentene-1, hexene-1, and octene-1, by means of oxygen contact with said hydrocarbon and with a fixed bed catalyst comprising oxides of cobalt and molybdenum, the improvement, prior to the introduction of hydrocarbon and during bringing the reactor up to reaction temperature, and after terminating the flow of hydrocarbon and during cooling of the reactor, of continuously passing an oxygen-containing gas through the reactor in an amount which results in an oxygen level at the reactor outlet such that after scrubbing with water the gas stream contains at least 1.5 percent oxygen.

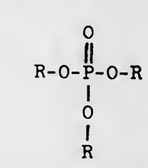
4. In a process of oxidizing α,β-unsaturated aliphatic hydrocarbons selected from the group consisting of propylene, butene-1, isobutylene, pentene-1, hexene-1, and octene-1, by means of oxygen contact with said hydrocarbon and with fixed bed catalyst comprising oxides of cobalt and molybdenum, the improvement of controlling the dependent variables of the amounts of the various feed stream components and the reactor effluent composition by maintaining the steam level at at least 15 percent of the feed stream, the hydrocarbon at a level of less than 20 percent of the feed stream, and the oxygen level in the feed stream at a level such that the gaseous reactor effluent, after water washing, contains at least 1.5 percent oxygen.

3,883,589
PREPARATION OF MONOHALOACYL HALIDES

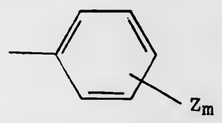
Virgil W. Gash, and Donald E. Bissing, both of Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 16, 1973, Ser. No. 379,899
Int. Cl. C07c *51/58, 50/20*
U.S. Cl. 260—544 Y **19 Claims**

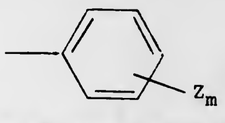
1. A process for the preparation of a monohaloacyl halide which comprises reacting a ketene selected from the group consisting of unsubstituted ketene, methyl ketene, dimethyl ketene, ethyl ketene, diethyl ketene, phenyl ketene and diphenyl ketene and a halogenating agent selected from the group consisting of chlorine, bromine, iodine, iodine monochloride, iodine monobromide and bromine monochloride in the presence of a solvent of the formula



wherein each R is independently alkoxyalkyl, alkyl, substituted alkyl of the formula $-C_xH_{2x-y+1}R^1_y$ wherein R^1 is halo, phenyl, or substituted phenyl of the formula



wherein each Z is independently halo, trihalomethyl, cyano, nitro, lower alkyl or lower alkoxy, and m is an integer from 1 through 3, inclusive, provided that when each Z is nitro, m cannot exceed 2, x is an integer from 1 through 8, inclusive, and y is an integer from 1 through 3, inclusive, phenyl or substituted phenyl of the formula



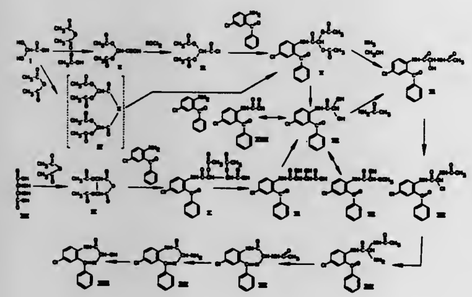
wherein each Z is independently halo, trihalomethyl, cyano, nitro, lower alkyl or lower alkoxy, and m is an integer from 1 through 3, inclusive, provided that when each Z is nitro, m cannot exceed 2 or two R's when taken together are alkylene of the empirical formula C_nH_{2n} wherein n is an integer from

2 through 8, inclusive, and having from two through four carbons, inclusive, in a continuous chain.

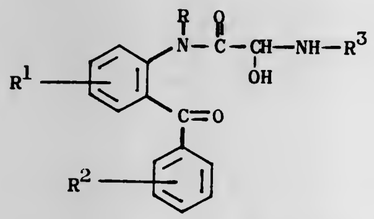
3,883,590
PREPARATION OF N-ALKYLARYLCARBOXAMIDES
Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of Ser. No. 148,916, June 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 853,963, Aug. 28, 1969, Pat. No. 3,634,510. This application Apr. 2, 1973, Ser. No. 347,588
Int. Cl. C07c *103/34*
U.S. Cl. 260—558 R **10 Claims**

1. A one-step process for the preparation of an N-alkylarylcarboxamide or an N-alkylarylalkylcarboxamide which comprises reacting an aryl or an arylalkyl cyanide with an alkyl or cycloalkyl halide in the presence of water and a chloride of a metal selected from the group consisting of copper, iron, aluminum and zinc at a temperature in the range of from about 50° to about 250° C. and at a pressure in the range of from atmospheric to about 100 atmospheres, and recovering the resultant N-alkylarylcarboxamide.

3,883,591
INTERMEDIATES FOR THE PREPARATION OF 1,3-DIHYDRO-2H-1,4-BENZODIAZEPIN-2-ONES
Ronald J. McCaully, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.
Division of Ser. No. 802,345, Feb. 26, 1969, Pat. No. 3,763,171. This application Feb. 15, 1973, Ser. No. 332,862
Int. Cl. C07c *103/50*
U.S. Cl. 260—562 N **2 Claims**



1. A compound of the structure:



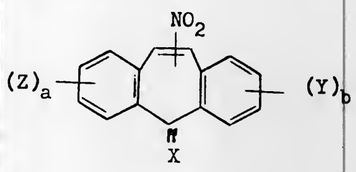
wherein R is hydrogen, methyl, ethyl, propyl, allyl, methyl allyl, benzyl or phenylethyl; R^1 is hydrogen, lower alkyl, chlorine, bromine, trifuloromethyl, nitro, or methylsulfonyl; R^2 is hydrogen, lower alkyl, chlorine, bromine, trifluoromethyl, nitro, or methylsulfonyl; and R^3 is acetyl or propionyl.

3,883,592
THIOCARBAMYL SULFENAMIDES
Marion J. Gattuso, Hoffman Estates, and Robert J. Arnold, Chicago, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Apr. 20, 1972, Ser. No. 246,049
Int. Cl. C07d *87/46*
U.S. Cl. 260—567 **4 Claims**

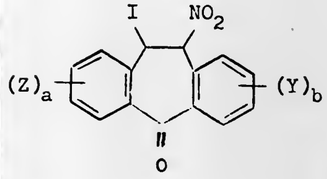
1. N,N-dialkylthiocarbamyl-N'-phenylsulfenamide in which each alkyl contains from 1 to 10 carbon atoms.

3,883,593
10-NITRO-5H-DIBENZO(A,D)CYCLOHEPTEN-5-ONES AND SELECTED DERIVATIVES
Gilbert H. Berezin, West Chester, Pa., and George Albert Boswell, Jr., Wilmington, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.
Filed Feb. 11, 1974, Ser. No. 441,658
Int. Cl. C07c *49/76, 49/80, 49/82*
U.S. Cl. 260—590 **6 Claims**

1. A fungicidal compound having a formula selected from the group consisting of:

A. 

and

B. 

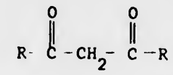
wherein
X is O;
Y and Z independently are halogen, nitro, CF_3, lower alkyl, lower alkoxy, lower alkylsulfonyl, and
a and *b* independently are 0–2, their sum being no greater than 2.

3,883,594
PROCESS FOR THE ACYLATION OF AROMATIC HYDROCARBONS
Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Apr. 11, 1974, Ser. No. 459,976
Int. Cl. C07c *49/76*
U.S. Cl. 260—592 **8 Claims**

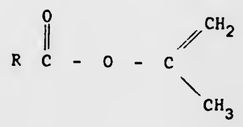
1. In a process for the acylation of an aromatic hydrocarbon with a carboxy acyl halide in contact with a Friedel-Crafts catalyst, the improvement which comprises reacting said aromatic hydrocarbon and carboxy acyl halide in the presence of a saturated hydrocarbon which contains at least one tertiary carbon atoms, or which is isomerized to form a saturated hydrocarbon containing a tertiary carbon atom during the reaction, and recovering the resultant acylated aromatic compounds.

3,883,595
PROCESS FOR THE PREPARATION OF BETA DICARBONYL
Edward S. Rothman, North Hills, and Gordon G. Moore, Willow Grove, both of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Continuation-in-part of Ser. No. 41,573, May 28, 1970, abandoned. This application Dec. 19, 1973, Ser. No. 426,160
Int. Cl. C07c *49/02*
U.S. Cl. 260—595 **7 Claims**

1. A process for the preparation of symmetrical beta dicarbonyl compounds of the formula



wherein R is a straight chain alkyl group having from 7 to 17 carbon atoms, comprising heating at temperature of from about 20° to 50°C. in the presence of a saturated alkane solvent having a carbon chain length of from 5 to 10, aluminum chloride and an enol ester of the formula



wherein R is an alkyl group from 7 to 17 carbon atoms, said solvent dissolving both the aluminum chloride and the enol ester and being inert to the reactants and to the product.

3,883,596
FLUORINE AND SULFUR-CONTAINING COMPOSITIONS
Robert Bonner Hager, Collegeville; Sameeh Said Toukan, Phoenixville, and Gerald Joseph Walter, King of Prussia, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.
Division of Ser. No. 283,886, Aug. 25, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 459,136
Int. Cl. C07c *149/18*
U.S. Cl. 260—609 R **5 Claims**

1. A twin-tailed alcohol of the structure: $[R_f(CH_2)_nSCH_2]_2CHOH$ wherein *n* is 1–12 is selected from

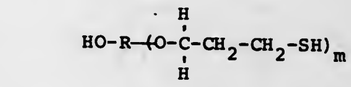
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3,883,597
PHOSPHORUS CONTAINING AROMATIC POLYMERS AND PROCESS FOR PRODUCING FLAME RESISTANT TEXTILES
Donald J. Daigle, New Orleans; George L. Drake, Jr., and Wilson A. Reeves, both of Metarie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Division of Ser. No. 141,356, May 7, 1971. This application Mar. 28, 1972, Ser. No. 238,927
Int. Cl. C07f *9/28*
U.S. Cl. 260—606.5 P **10 Claims**

1. The phenolic methylol phosphine adduct obtained by reacting tris(hydroxymethyl)phosphine with a phenolic compound selected from the group consisting of phenol, o-cresol, m-cresol, p-cresol, catechol, resorcinol, hydroquinone, and phloroglucinol, in a molar ratio such that the number of methylol phosphorus radicals of the tris(hydroxymethyl)phosphine exceeds the number of hydrogen atoms attached to ring carbons ortho or para to the phenolic hydroxyl groups of the phenolic compound.

3,883,598
OXY, HYDROXY CONTAINING ALIPHATIC SULFIDES
James L. Guthrie, Ashton, and Shrikant V. Dighe, Silver Spring, both of Md., assignors to W. R. Grace & Co., Washington Research Center, Columbia, Md.
Filed Sept. 4, 1973, Ser. No. 393,862
Int. Cl.² C07C *149/18*
U.S. Cl. 260—609 R **3 Claims**

1. An ether thiol of the formula:

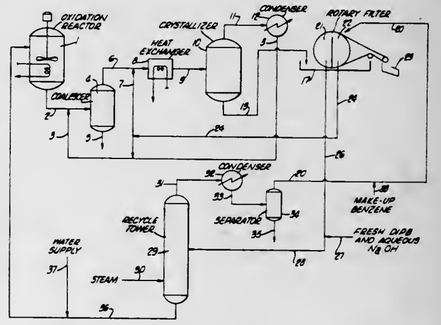


wherein R is the backbone of a saturated aliphatic polyol consisting of atoms of carbon, hydrogen and oxygen and free of reactive functional groups, said polyol containing up to 15 carbon atoms and *m* is an integer of 1 to 7.

3,883,599
MANUFACTURE OF THIOPHENOLS
Jean Francois Mariotti; Jean Henri Blanc, and Claude Thibault, all of Pau, France, assignors to Societe Nationale des Petroles d'Aquitaine, Paris, France
Filed Feb. 8, 1974, Ser. No. 440,844
Int. Cl. C07c *149/28*
U.S. Cl. 260—609 D **15 Claims**

1. Method of producing a thiophenol, which consists in heating the corresponding cyclohexylmercaptan in vapor state with sulfur dioxide and an inert gas, at a temperature of 300° to 800°C, in contact with a dehydrogenation catalyst the specific area of which is at least 300 square metres per gram, the contact being maintained until a substantial portion of the cyclohexylmercaptan is converted into thiophenol.

3,883,600
PRODUCTION OF PARADIALKYLBENZENE DIHYDROPEROXIDE
Glenn E. Miller, Pasadena, Tex., assignor to The Goodyear Tire and Rubber Company, Inc., Los Angeles, Calif.
Filed May 4, 1970, Ser. No. 34,455
Int. Cl. C07c *73/06*
U.S. Cl. 260—610 B **14 Claims**



1. In a continuous process for the production of paradialkylbenzene dihydroperoxide by the liquid phase oxidation of a para-dialkylbenzene selected from the group consisting of diisopropylbenzene and di(sec-butyl) benzene, with molecular oxygen in the presence of an aqueous alkali metal hydroxide wherein the oxidation reaction product is treated with hydrocarbon which forms a minimum boiling azeotrope with water, in which the dihydoperoxide is insoluble and the monohydroperoxide and dialkylbenzene are soluble at tem-

peratures below about 85°F and which is selected from the class consisting of benzene, toluene and xylene, the volume ratio of said hydrocarbon to the organic phase of said reaction product being at least about 0.05:1, and wherein paradialkylbenzene dihydroperoxide is subsequently separated as a solid in a solid-liquid separation step from the oxidation reaction product and the filtrate from said separation, containing paradialkylbenzene monohydroperoxide and unreacted paradialkylbenzene, are recycled to the oxidation reaction, the improvement comprising the steps of:

a. combining said filtrate with an amount of fresh feed dialkylbenzene sufficient to replace that consumed in the oxidation reaction and with an aqueous alkali metal hydroxide solution, in an amount such that the bottom product from step b) contains from about 0.05 about 0.15 percent by weight alkali metal hydroxide,

b. treating the mixture of filtrate, dialkylbenzene and aqueous alkali metal hydroxide in a steam stripping column to yield an overhead product comprising said hydrocarbon substantially free of dialkylbenzene and monohydroperoxide and a bottom product comprising dialkylbenzene, monohydroperoxide, and aqueous alkali metal hydroxide substantially free of the hydrocarbon,

c. recycling said steam stripping column bottoms product into the oxidation reactor as oxidation reaction feed material.

7. In a continuous process for producing paradialkylbenzene dihydroperoxide by the liquid phase oxidation of a para-dialkylbenzene hydrocarbon selected from the group consisting of diisopropylbenzene and di(sec-butyl) benzene, with moelcular oxygen in the presence of an aqueous alkali metal hydroxide and the subsequent recovery of paradialkylbenzene dihydroperoxide by crystallization from the organic phase separated from the oxidation reaction product, the improvement which comprises:

a. treating the oxidation reaction product with a first hydrocarbon stream comprising a hydrocarbon which forms a minimum boiling azeotrope with water, in which the dihydroperoxide is insoluble and the monohydroperoxide and dialkylbenzene are soluble at a temperature below about 85°F and which is selected from the class consisting of benzene, toluene and xylene, in a volume ratio of hydrocarbon to organic phase of said oxidation reaction product of at least about 0.05:1,

b. separating the mixture of said reaction product and said first hydrocarbon into an aqueous phase and an organic phase,

c. treating the organic phase with a second hydrocarbon stream comprising the same hydrocarbon as the first hydrocarbon in step a) in a ratio of hydrocarbon to organic phase of about 0.2:1 to about 0.5:1,

d. vaporizing substantially all of the water remaining in the organic phase as the hydrocarbon-water azeotrope,

e. condensing the vapors from step d) and recycling said condensate to said first hydrocarbon stream,

f. recovering para-dialkylbenzene dihydroperoxide from the organic phase by crystallization and a subsequent solid-liquid separation,

g. washing the separated solids from step f) with a hydrocarbon stream comprising the hydrocarbon of said first and second hydrocarbon streams, and

h. recycling said wash liquid to said second hydrocarbon stream.

3,883,601
4,4-METHYLENEBIS (2,6-DIARALKYLPHENOLS

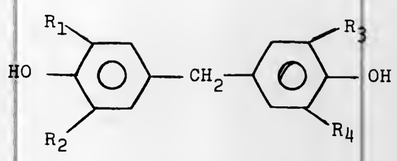
Gordon D. Brindell, Crystal Lake, and Rudy F. Macander, Cary, both of Ill., assignors to The Quaker Oats Company, Barrington, Ill.

Division of Ser. No. 253,342, May 15, 1972, Pat. No. 3,816,544. This application Mar. 11, 1974, Ser. No. 449,651

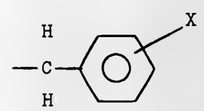
Int. Cl. C07c *43/20*

U.S. Cl. 260—613 R **3 Claims**

1. A composition of the formula:



wherein R_1, R_2, R_3, and R_4 are aralkyl groups of the following structure:



where X is alkoxy group containing from 1–13 carbon atoms.

3,883,602
PREPARATION AND ISOLATION OF CHLOROMETHYL METHYL ETHER BY SOLVENT EXTRACTION

Lawrence A. Ens, Ann Arbor, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 19, 1973, Ser. No. 380,776

Int. Cl. C07c *41/00, 41/12*

U.S. Cl. 260—614 R **7 Claims**

1. A process for preparing chloromethyl methyl ether containing less than 5 ppm of bis(chloromethyl) ether comprising:

A. Saturating methylal with hydrogen chloride under essentially anhydrous conditions to form an equilibrium mixture of chloromethyl methyl ether, methylal, hydrogen chloride and methanol;

B. Selectively extracting the chloromethyl ether from the equilibrium mixture at a temperature of from −10° to 40°C with an inert liquid C_6–C_{12} aliphatic hydrocarbon having a boiling point between about 65° to 225°C and a limited solubility for methanol of less than 5 g/100 g liquid extractant at 20°C; and

C. Recovering chloromethyl methyl ether from the extractant liquid.

3,883,603
ADAMANTYL-(1)-β-NAPHTHOL

Yoshiaki Inamoto; Masaaki Takaku; Hirokazu Nakayama, and Morimasa Taniguchi, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1971, Ser. No. 208,913

Claims priority, application Japan, Dec. 23, 1970, 45-117165

Int. Cl. C07c *37/00*

U.S. Cl. 260—619 D **1 Claim**

1. An adamantyl-(1)-β-naphthol having a melting point of 194°–195°C.

3,883,604
PROCESS FOR PREPARING PERFLUOROALKYLIODIDE TELOMERS

Werner Rudolph, Anderten/Han.; Joachim Massonne, Hannover; Horst H. Jager, Bettingen, and Heinz Gress, Hannover, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Filed July 8, 1971, Ser. No. 165,849

Claims priority, application Germany, July 11, 1970, 2034472

Int. Cl. C07c *19/00*

U.S. Cl. 260—653.1 T **16 Claims**

1. In a process for producing telomers of a perfluoroalkyl iodide or a perfluoroalkyl diiodide which comprises reacting a perfluoroalkyl iodide or a perfluoroalkyl diiodide containing not more than three carbon atoms in its molecular structure with perfluoroethylene, perfluoropropylene, or a monochloro-substituted perfluoroethylene or a monochloro-substituted perfluoropropylene at a temperature between 50° and 350°C and a pressure between 0 and 200 atmospheres in the presence of a catalyst the improvement comprising using the catalyst in the form of particles prepared by mixing together a metal salt of the group consisting of halides, phosphates, carbonates, nitrates, sulfates, cyanides, and hydrides of sodium, potassium, magnesium, calcium, strontium, barium, copper, silver, gold, zinc, cadmium, mercury, yttrium, titanium, zirconium, niobium, tantalum, ruthenium, rhodium, aluminum, indium, gallium, thallium, lead, vanadium, maganese, nickel, tin, antimony, and cobalt, and an amine of the group consisting of primary, secondary and tertiary alkylamines, cycloalkylamines, arylamines, and alkanolamines containing at least two and at most six carbon atoms or a mixture of the said amines in a ratio by weight of the metal salt to amine between 100 : 1 and 1 : 4, heating the mixture of said metal salt and amine at a temperature between 100° and 250°C, and, after cooling the catalyst mixture, comminuting the same.

3,883,605
PREPARATION OF 1,2-DICHLOROETHANE AND 1,1,2,2-TETRACHLOROETHANE BY OXYCHLORINATION

Albert Antonini, Paris; Claude Kaziz, La Courneuve, and Georges Wetroff, Le Thillay, all of France, assignors to Produits Chimiques, Pechiney-Saint-Gobain, France

Filed May 20, 1968, Ser. No. 730,608

Claims priority, application France, May 19, 1967, 67.106976

Int. Cl. C07c *17/00*

U.S. Cl. 260—658 R **15 Claims**

1. A process for preparation of 1,2-dichloroethane and 1,1,2,2-tetrachloroethane containing less than 2 mole % chlorinated ethylenic derivatives by oxychlorination of ethylene and 1,2-dichloroethylene with a fluid bed catalyst comprising the steps of passing a gaseous mixture consisting essentially of molecular oxygen-containing gas, hydrochloric acid, ethylene and 1,2-dichloroethylenes, in which the ethylene makes up 40 to 95 molar % of the sum of the ethylene and dichloroethylenes and the ratio of HCl to the total of ethylene and dichloroethylenes is within the range of 1.6 to 2.4 and the ratio of oxygen to the total of ethylene and dichloroethylenes is within the range of 0.40 to 0.70, through a catalytic reaction zone at a temperature within the range of 200° to 360°C. with the catalytic reaction zone containing an oxychlorination catalyst deposited on a carrier having an average surface area within the range of 10–200 m^2/q in a fluidized state.

3,883,606
CONVERSION OF UNSATURATED COMPOUNDS

Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 4, 1971, Ser. No. 186,410

Int. Cl. C07c *3/62*

U.S. Cl. 260—678 **12 Claims**

1. A process for converting an unsaturated compound which comprises contacting at least one convertible unsaturated reactant selected from the group consisting of acyclic mono- and nonconjugated polyenes having at least 3 carbon atoms per molecule including cycloalkyl, cycloalkenyl, and aryl derivatives thereof; cyclic mono- and polyenes having at least 4 carbon atoms per molecule including alkyl and aryl derivatives thereof; mixtures of at least 2 of the above olefins; mixtures of ethylene and at least 1 of the above olefins; alkynes containing from 3 to about 20 carbon atoms per molecule and selected from the group consisting of cyclic and acyclic alkynes containing from 1 to about 5 triple bonds per molecule; mixtures of at least 2 of said alkynes; and mixtures of acetylene and at least 1 of the above alkynes with a catalyst comprising a promoter selected from the group consisting of oxides of tungsten, molybdenum and rhenium, on a support selected from the group consisting of silica and aluminum phosphate, and further promoted with an effective amount of an oxide of a rare earth metal having an atomic number of from 57 through 71, inclusive, under conditions suitable for converting said unsaturated reactant to a significant degree according to the olefin or alkyne reaction and the temperature is selected within the ranges in the following table for the specific catalyst utilized

Catalyst	Temperature Range, °F.
Rare Earth Metal Oxide/Tungsten Oxide/Silica	400–1100
Rare Earth Metal Oxide/Tungsten Oxide/Aluminum Phosphate	600–1200
Rare Earth Metal Oxide/Molybdenum Oxide/Silica	600–1100
Rare Earth Metal Oxide/Molybdenum Oxide/Aluminum Phosphate	600–1200
Rare Earth Metal Oxide/Rhenium Oxide/Silica	300–1100
Rare Earth Metal Oxide/Rhenium Oxide Aluminum phosphate	−60–1000.

3,883,607
OLEFIN HYDROGENATION USING H_nMoO_3

William C. Neikam, Chester, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

Division of Ser. No. 270,751, July 11, 1972, abandoned. This application Feb. 13, 1974, Ser. No. 442,268

Int. Cl. C07c *5/02*

U.S. Cl. 260—683.9 **2 Claims**

1. A process for hydrogenating an olefin which consists of contacting vapors of said olefin at a temperature of from about 75°C. to about 200°C. with a compound of the formula H_nMoO_3 where n is about 1.5 to about 2.5.

3,883,608
PROCESS FOR THE POLYMERIZATION OF DODECALACTAM IN THE PRESENCE OF POTASSIUM CARBONATE

Remy Hebert, Serquigny, France, assignor to Aquitaine Total Organico, Courbevoie, France

Continuation-in-part of Ser. No. 203,432, Nov. 30, 1971, Pat. No. 3,799,912. This application Jan. 21, 1974, Ser. No. 435,192

Claims priority, application France, Nov. 30, 1970, 70.42887

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L 14 Claims

1. A process for the polymerization of dodecalactam to a moldable polyamide in which most of the polymerization operation is performed in the presence of water, at a temperature of between 280° and 335°C, using potassium carbonate as a catalyst.

3,883,609
SYNERGISTIC VULCANIZATES OF POLY-CARBORANYLENESILOXANE POLYMERS

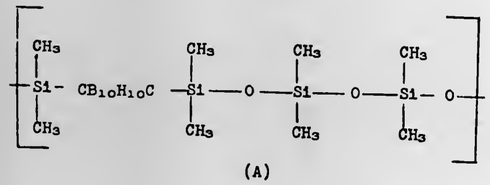
Trescott B. Larchar, Sr., Hamden, and Robert N. Scott, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 1, 1973, Ser. No. 402,443

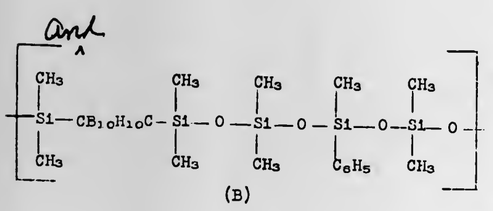
Int. Cl. C08g *47/02*

U.S. Cl. 260—825 7 Claims

1. A vulcanizate of a mixture of polycarboranylenesiloxane polymers A and B said polymers having recurring structural units of the formulas:



(A)



(B)

wherein from about 1:20 to about 1:1.67 parts of polymer B to parts of polymer A by weight are used.

3,883,610
CROSSLINKED POLYBENZOXAZOLE COPOLYMER AND A PROCESS FOR PREPARING THE SAME

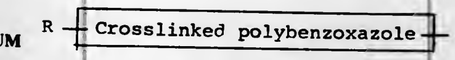
Jean Odier, Antony, France, assignor to Societe Anonyme Francaise du Feredo, Paris, France

Filed Aug. 14, 1973, Ser. No. 388,151

Int. Cl. C08g *37/16, 41/04*

U.S. Cl. 260—841 7 Claims

1. Crosslinked polybenzoxazole copolymer of the formula



in which R is a member selected from the group consisting of hydrogen and R';

R' is a member selected from the group consisting of O, OCH_2, NH and CH_2CHOH; and

R'' is phenoplast in an amount between 5 and 80% by weight of the whole.

3,883,611
COPOLYESTER(ETHYLENE TEREPHTHALATE/TETRAMETHYLENE DIBROMOTEREPHTHALATE) A NEW BLOCK POLYMER

James P. Nelson, Woodridge, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed June 15, 1972, Ser. No. 263,198

Int. Cl. C08g *39/02*

U.S. Cl. 260—860 1 Claim

1. The new composition of matter poly(ethylene terephthalate/tetramethylene dibromoterephthalate) consisting of a random structure of blocks of reoccurring structural units of 95 to 70 weight percent of poly(ethylene terephthalates) and 5 to 30 weight percent of poly(tetramethylene dibromoterephthalate).

3,883,612
LOW-SHRINK THERMOSETTING POLYMERS

Ivor Pratt, Tunbridge Wells, England, and Ulrich Boschert, Tallmadge, Ohio, assignors to SCM Corporation, Cleveland, Ohio

Filed Feb. 8, 1973, Ser. No. 330,474

Int. Cl. C08f *21/00*

U.S. Cl. 260—862 7 Claims

1. A low-profile molding resin composition for thickening with Group II metal oxides, hydroxides, or alkoxides, comprising:

a stable resin emulsion comprising by weight a mixture of at least 25% of a dicyclopentadiene terminated ethylenically unsaturated polyester polymer, about 5 to 20% of an acid functional thermoplastic polymer, and about 40 to 58% of an ethylenically unsaturated monomer;

said dicyclopentadiene polyester being the esterification product of an alpha,beta-ethylenically unsaturated dicarboxylic acid, dicyclopentadiene, and glycol, said dicarboxylic acid esterified with about 0.1 to 0.4 moles of dicyclopentadiene per mole of dicarboxylic acid; said polyester produced by first reacting a molar excess of said polycarboxylic acid with said glycol to produce an acid terminated prepolymer, and then reacting the dicyclopentadiene with said prepolymer and

said thermoplastic polymer being a copolymer of ethylenically unsaturated monomers comprising by weight from about 5–50% of (a) a lower alkyl ester of an unsaturated acid selected from the group of acrylic acid or methacrylic acid, and (b) an unsaturated acid selected from the group consisting of acrylic acid or methacrylic acid, and substantially the balance being (c) vinyl acetate, said thermoplastic polymer having an acid number of at least about 0.4.

3,883,613
FLAME RETARDANT COMPOSITION OF POLYPHENYLENE ETHER, STYRENE RESIN AND TRIMESITYL PHOSPHATE AND PROCESS FOR THE PREPARATION THEREOF

Glenn D. Cooper, Delmar, N.Y., assignor to General Electric Company, Pittsfield, Mass.

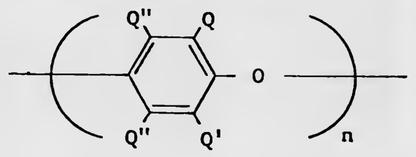
Filed Dec. 4, 1972, Ser. No. 311,838

Int. Cl. C08g *43/02*

U.S. Cl. 260—874 10 Claims

1. A process for decreasing the self-extinguishing time of a normally flammable composition comprising

i. a polyphenylene ether of the formula



wherein the oxygen ether atom of one unit is connected to the benzene nucleus of the next adjoining unit; Q is a monovalent substituent selected from hydrogen, a hydrocarbon radical, a halohydrocarbon radical having at least two carbon atoms between the halogen atom and the phenol nucleus, hydrocarbonoxy radicals and halohydrocarbonoxy radicals having at least two carbon atoms between the halogen atom and the phenol nucleus; Q' and Q'' are the same as Q and in addition, halogen, with the proviso that Q, Q' and Q'' are all free of a tertiary alpha-carbon atom and *n* is a whole number of at least 50; and

ii. a styrene resin,

said process comprising adding a flame retardant compound consisting essentially of from about 0.5 to about 15 parts by weight of trimesityl phosphate per 100 parts by weight of component (i) and component (ii) to said composition.

3,883,614
ABS/VINYL ACETATE POLYMER BLENDS

Frederick Elias Carrock, Paramus, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed July 25, 1973, Ser. No. 382,438

Int. Cl. C08f *15/00, 19/00*

U.S. Cl. 260—876 R 10 Claims

1. A polymeric molding composition with improved environmental stress crack resistance comprising an ABS type graft polymer formed by copolymerizing on a rubbery base material a mixture of (1) a monovinyl aromatic compound in which the vinyl group is attached directly to a carbon atom of the aromatic nucleus and (2) a non-aromatic vinyl or vinylidene monomer and, blended with said ABS type graft polymer, a vinyl acetate polymer at least 50% of which by weight represents vinyl acetate, the amount of said vinyl acetate polymer being at least 0.5% but less than 50% of the weight of it and said ABS type graft copolymer combined.

3,883,615
FLAME-RETARDANT IMPACT-RESISTANT RESIN COMPOSITION

Teizo Kudo; Shinji Tokuhara, and Keiichi Chata, all of Saitama, Japan, assignors to Daicel Ltd., Higashi-ku, Osaka, Japan

Filed Aug. 13, 1973, Ser. No. 388,052

Claims priority, application Japan, Aug. 24, 1972, 47-84830

Int. Cl. C08f *15/00, 19/00*

U.S. Cl. 260—876 R 5 Claims

1. A flame-retardant, impact-resistant resin composition, consisting essentially of

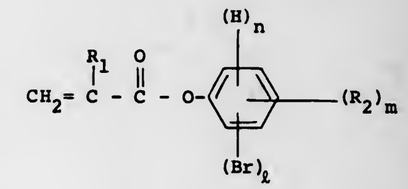
A. rubber-modified copolymer, containing admixed therein,

B. from 10 to 20 parts by weight, per 100 parts by weight of copolymer A, of chlorinated polyethylene, chlorinated ethylene-propylene copolymer, chlorinated ethylene-butene copolymer or chlorosulfonated polyethylene, having a chlorine content of from 25 to 45 percent by weight,

said copolymer A comprising (a) from 3 to 30 percent by weight of rubber component and (b) from 97 to 70 percent by weight of resin component, said resin component (b) consisting of

1. at least 40 percent by weight of resin component (b) of aromatic monoalkenyl compound,

2. from 15 to 35 percent by weight of resin component (b) of a compound, or mixture of compounds of the formula



wherein

R_1 is H or CH_3,

R_2 is alkyl of one to 4 carbon atoms, or chlorine,

l is an integer of 2, 3, 4 or 5,

m and *n* each is an integer of 0, 1, 2 or 3 provided that the sum of $l+m+n$ is 5;

3. the balance of ethylenically unsaturated monomer copolymerizable with said aromatic monoalkenyl compound.

3,883,616
PROCESS FOR PREPARING RUBBER-CONTAINING STYRENE RESINS

Yukio Hozumi; Saizo Ikeda, both of Osaka, and Toshikazu Hayaoka, Saitama, all of Japan, assignors to Daicel Ltd., Osaka, Japan

Filed May 1, 1973, Ser. No. 356,145

Claims priority, application Japan, May 4, 1972, 47-44331

Int. Cl. C08f *7/02*

U.S. Cl. 260—880 R 8 Claims

1. In a process for preparing rubber-containing styrene resins, in which a solution of (A) from 2 to 20 parts by weight of butadiene synthetic rubber, dissolved in (B) 100 parts by weight of monovinyl aromatic monomer or monomer mixture comprising monovinyl aromatic monomer and monomer copolymerizable therewith, is subjected to bulk polymerization at least until phase inversion has occurred and then is subjected to suspension polymerization to obtain the resin product, in which the bulk polymerization is carried out in a vessel having wall means defining a circulatory flow path for the solution undergoing polymerization and having an impeller for effecting circulatory flow of the solution through said path and imposing shear on the rubber particles that form in the solution during bulk polymerization, the improvement in the bulk polymerization step which consists essentially of rotating said impeller beginning at the latest by the time when phase inversion commences, and thereby continuously and repeatedly circulating the entirety of the polymerization liquid during the remainder of the bulk polymerization step in unidirectional, non-turbulent, laminar flow through a shear zone at a uniform rate of from 4 to 36 circulations per minute of the entirety of the polymerization liquid and in the range calculated by the formula

$-0.064x^2+3x+6 >$ number of cycles of circulation

of the entire polymerization liquid per minute > $-0.064x^2+3x-10$, wherein x is the weight of rubber dissolved in 100 parts of (B),

said shear zone being defined by a radial flow turbine impeller whose blades extend substantially to the wall of said path whereby said shear zone extends substantially entirely across said path so that as the polymerization liquid moves unidirectionally through the shear zone its direction of flow is changed by said blades from a direction parallel to the axis of rotation of said impeller to a direction radially thereof, and said polymerization liquid is simultaneously subjected to a uniform shear force at a mean shear rate of from 60 to 200 sec^{-1}

wherein mean shear rate $= 2.7 \sqrt{P_v G_c/\mu}$

in which

P_v = power consumption for operating the impeller per unit volume of the polymerization liquid, in units Kg/sec. m^2

G_c = gravitation conversion factor, in units Kg . m/Kg sec^2

μ = viscosity of polymerization liquid, in units Kg/m . sec

the rotation of the impeller being continued until the conversion of monomer to polymer has increased from 4 to 35 percent more than said conversion at the time of commencement of phase inversion in the polymerization liquid and the entirety of said polymerization liquid has been circulated through said shear zone from 200 to 2200 times and is higher than the value calculated from the formula

$$-3.84x^2 + 180x - 600,$$

wherein x has the same meaning as defined above.

3,883,617

RESIN MASSES COMPRISING A METHYL METHACRYLATE POLYMER MATRIX AND A STYRENE POLYMER DISPERSE PHASE

Manfred Krieg, Darmstadt, and Adolf Wohnhas, Darmstadt-Arheilgen, both of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed May 22, 1973, Ser. No. 362,719

Claims priority, application Germany, May 26, 1972, 2225578

Int. Cl. C08f 29/50

U.S. Cl. 260—883 **9 Claims**

1. A thermoplastically formable synthetic resin mass adaptable to the preparation of light-diffusing shaped bodies, said mass comprising 98 to 99.99 parts by weight of

A. a polymer having an index of refraction between 1.47 and 1.52 which is

A 1. a homopolymer of methyl methacrylate or

A 2. a copolymer formed from a monomer mixture comprising at least 70 percent by weight of methyl methacrylate and at most 30 percent by weight of at least one other monovinyl or monovinylidene monomer copolymerizable with methyl methacrylate; and 0.01 to 2 parts by weight of a cross-linked styrene copolymer having an index of refraction greater than 1.52 and less than 1.59 dispersed in component (A) in the form of particles having an average diameter between 0.5 and 30 microns, said copolymer being the product obtained by the thermal cross-linking of at least one thermally cross-linkable copolymer (B) comprising

B 1. 70 to 99 percent by weight of styrene and

B 2. 1 to 30 percent by weight of at least one monovinyl or monovinylidene monomer having mutually reactive hydroxymethylamide side groups or alkoxymethylamide side groups having 1 – 6 carbon atoms in the alkyl portion thereof, said resin mass being prepared by dissolving said thermally cross-linkable copolymer (B), in the presence of a free-radical forming polymerization initiator, in methyl methacrylate or said monomer mixture, heating to a temperature below about 100°C. to initiate polymerization; and, after completion of the polymerization, during which said cross-linkable copolymer precipitates in particulate form, heating the resultant resin mass to a temperature above 100°C. to effect cross-linking of said cross-linkable copolymer to form said cross-linked copolymer.

3,883,618

O-ALKYL-S-ALKYL-O-(1-HYDROCARBYLOXY CARBONYL1-PROPEN-2-YL)-DITHIOPHOSPHATES

Alexis A. Oswald, Mountainside; Paul L. Valint, Woodbridge, and George N. Schmit, Scotch Plains, all of N.J., assignors to Ciba-Geigy AG, Basel, Switzerland

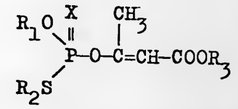
Filed Sept. 6, 1973, Ser. No. 394,694

Claims priority, application Switzerland, Sept. 8, 1972, 13226/72; July 30, 1973, 11103/73

Int. Cl. C07f 9/16; A01n 7/36

U.S. Cl. 260—941 **12 Claims**

1. A compound of the formula



wherein R_1 represents methyl or ethyl, R_2 represents alkyl with 3 to 5 carbon atoms, R_3 represents alkyl with 1 to 3 carbon atoms, allyl, alkinyl with 3 to 6 carbon atoms, benzyl, α-methylbenzyl, methoxyethyl, methoxy-ethoxyethyl or 1-methyl-2-methoxyethyl, and X represents oxygen or sulphur.

3,883,619

PHOSPHORUS AND ALCOHOLIC HYDROXY CONTAINING POLYETHERS AND THEIR PRODUCTION

Herbert Jenkner, Cologne, Germany, assignor to Chemische Fabrik Kalk GmbH, Cologne, Germany

Filed Apr. 8, 1974, Ser. No. 459,269

Claims priority, application Germany, Apr. 12, 1973, 2318328

Int. Cl. C07f 9/32

U.S. Cl. 260—952 **4 Claims**

1. A process for the production of alcoholic hydroxy group and phosphorus-containing polyethers suitable for the formation of soft and semi-hard polyurethane foam in which white phosphorus is reacted with an alkali metal hydroxide, water and a lower alkanal in the presence of a lower alkanol at a temperature between about 30° and 75°C., the quantities of alkali metal hydroxide, water and alkanal respectively supplied to the reaction being about 0.75 to 0.85, 0.75 to 0.85 and 2 to 4 mol per g.-atom of white phosphorus, to produce a reaction mixture containing a reaction product primarily comprising an alkali metal salt of a bis-(hydroxyalkane)-phosphinic acid, adding sufficient mineral acid to the reaction mixture to convert the said alkali metal salt of the phosphinic acid to the free acid, distilling off the volatile components to leave a product consisting essentially of the free bis-(hydroxyalkane)-phosphinic acid and reacting said free phosphinic acid with at least one epoxy compound at a temperature between about 30° and 160°C., the quantity of epoxy compound being such as to provide at least 2 mole per g.-atom of phosphorus contained in said free phosphinic acid, to produce said alcoholic hydroxy group and phosphorus-containing polyether, the improvement which comprises reacting said alcoholic hydroxy group and phosphorus-containing polyether compound with an anhydride of a monocarboxylic acid having form two to four carbo atoms at a temperature of from about 20° to 120°C., with agitation to produce a reaction product primarily comprising the 2 to 4 carbon acid ester of the said polyether.

4. The product of the process of claim **1.**

3,883,620

POLYHALOALKYL PHOSPHATE ESTERS

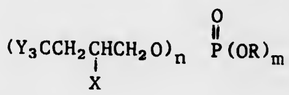
Richard J. Turley, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 21, 1973, Ser. No. 334,336

Int. Cl. C07f 9/16

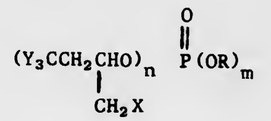
U.S. Cl. 260—963 **12 Claims**

1. A tetrahalobutyl phosphate ester having the formula



wherein R represents methyl or ethyl,
X represents chlorine or bromine,
each Y represents independently chlorine or bromine,
n represents an integer from 1 to 3, and
m represents an integer from 0 to 2,
with the proviso that $m + n = 3$.

6. A tetrahalobutyl phosphate ester having the formula



wherein
R represents an alkyl group having 1 to 4 carbon atoms,
X represents chlorine or bromine,
each Y represents independently chlorine or bromine,
n represents an integer from 1 to 3, and
m represents an integer from 0 to 2,
with the proviso that $m + n = 3$.

3,883,621

CARBURETOR FOR INTERNAL COMBUSTION ENGINES

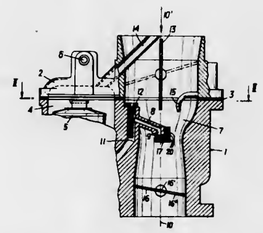
Georg Hammerschmied, Leonhardstrasse 52, Graz, Austria

Filed Jan. 10, 1973, Ser. No. 322,535

Claims priority, application Austria, Jan. 14, 1972, 343/72; Oct. 25, 1972, 9135/72

Int. Cl. F02m 19/08

U.S. Cl. 261—78 R **7 Claims**



1. A carburetor for internal combustion engines comprising a suction pipe for combustion air having a first suction pipe portion and a second suction pipe portion adjoining the former in the direction of the combustion air flow, a throttle valve located in the second suction pipe portion and rotatable around an axis extending in transverse relation to the axis of the suction pipe, a fuel outlet arm arranged in said first suction pipe portion and presenting a fuel outlet, a screen having grid-like perforations and arranged in said first suction pipe portion adjacent the fuel outlet arm, said screen forming at the most an acute angle with the axis of the suction pipe and providing flow control surfaces for the combustion air in the suction pipe, and said fuel outlet arm protruding radially into the suction pipe and presenting a laterally flattened portion to which said screen is attached in spaced relation.

3,883,622

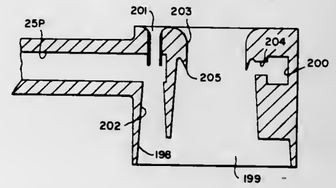
AIR VALVE PRESSURE DIAPHRAGM CARBURETOR

Stephen Woods, 311 Mason, Ann Arbor, Mich. 48103

Continuation-in-part of Ser. No. 335,550, Feb. 26, 1973, Pat. No. 3,796,413, which is a continuation-in-part of Ser. No. 175,539, Aug. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 846,563, July 31, 1969, Pat. No. 3,618,904, which is a continuation-in-part of Ser. No. 822,828, April 9, 1969, Pat. No. 3,556,067, which is a continuation-in-part of Ser. No. 629,488, April 10, 1967, abandoned. This application Jan. 14, 1974, Ser. No. 433,196

Int. Cl. F02m 19/08

U.S. Cl. 261—78 R **9 Claims**



1. In a carburetor, an air intake passage having an annular restriction forming a main venturi, a booster venturi member disposed in the throat of said main venturi and having a through air passage provided with an annular restriction forming a booster venturi, said booster venturi member having a fuel channel surrounding said through air passage, axially extending venturi apertures opening into said fuel channel to admit air thereinto from the upstream side of said booster venturi member to disperse and atomize fuel in said fuel chamber, and outlet apertures respectively aligned with said venturi apertures and leading from said fuel channel to discharge the air and dispersed and atomized fuel from said fuel channel to the downstream side of said booster venturi member.

3,883,623

PROCESS FOR CONTROLLING END-POINT DENSITY OF SINTERED URANIUM DIOXIDE NUCLEAR FUEL BODIES AND PRODUCT

Kenneth W. Lay, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 17, 1972, Ser. No. 298,255

Int. Cl. G21c 21/00

U.S. Cl. 264—0.5 **4 Claims**



1. A process for controlling end-point density of a sintered uranium dioxide nuclear fuel body by forming discrete low density porous regions therein comprising the steps of provid-

ing uranium dioxide powder having an oxygen to uranium

d. casting the resulting solution onto a polished plane sur-

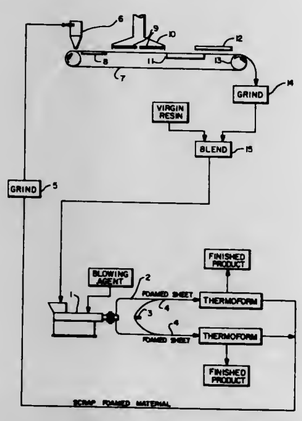
ing uranium dioxide powder having an oxygen to uranium atomic ratio ranging from about 2.00 to 2.25 and ranging in size up to about 10 microns, admixing said uranium dioxide powder with a precursor to uranium dioxide having an average agglomerated particle size significantly larger than that of the uranium dioxide powder and ranging from about 20 microns to one millimeter, said precursor being a solid and having a density lower than that of uranium dioxide, forming the resulting mixture into a green body having a density ranging from about 30% to 70% of theoretical, said green body has a structure composed of a substantially uniform matrix of the uranium dioxide powder with discrete low density regions of said precursor therein, said precursor being used in an amount which results in said discrete low density regions in the green body ranging from about 5% to 25% by volume of said green body, heating said green body to decompose said precursor before reaching sintering temperature, and sintering the body to produce a sintered body having discrete low density porous regions with a density significantly lower than that of the surrounding sintered uranium dioxide, said discrete low density porous regions reducing the end-point density of said sintered body by at least 2%, said sintered body having an end-point density ranging from 85% to 95% of theoretical.

3,883,624

RECOVERY AND UTILIZATION OF SCRAP IN PRODUCTION OF FOAMED THERMOPLASTIC POLYMERIC PRODUCTS

Robert P. McKenzie, and Clifford P. Rouden, both of Edmonton, Alberta, Canada, assignors to Grandview Industries, Limited, Alberta, Canada

Continuation of Ser. No. 200,057, Nov. 18, 1971, abandoned. This application May 15, 1973, Ser. No. 360,558
Int. Cl. B29h *19/00*
U.S. Cl. 264—37 **5 Claims**



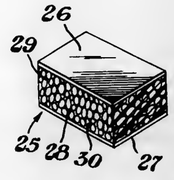
1. The method for converting foamed polystyrene scrap into particulate material having a bulk density approximately equal to that of virgin polymeric material used to form said scrap and suitable for re-extrusion into foamed polystyrene sheet, comprising grinding the scrap into fragments,
   at least 90% of the resulting ground scrap having a particle size larger than 10 mesh,
   the ground scrap having maximum dimension not exceeding 1 in.;
continuously depositing said fragments on a moving endless metallic belt to form on the belt a bed of fragments,
   said bed having a depth of 0.25–3.5 in.;
continuously advancing the belt, with said bed supported thereon, through a heating zone and thereby heating said fragments to a temperature above the fusion temperature of polystyrene but below the thermal degradation temperature thereof,
   said fragments fusing during passage through the heating zone, and the resulting bodies of fused polystyrene joining with the bodies of fused polystyrene from adjacent fragments,
   the initial depth of said bed of fragments being such that the total fused polystyrene is inadequate to cover the surface area of the belt, and the fused polystyrene therefore forming on the belt as a reticulated layer;
then continuously advancing the belt, with the reticulated layer of fused polystyrene supported thereon, through a cooling zone and thereby cooling the belt and the fused polystyrene to a temperature not exceeding about 55°F., whereby the fused material is caused to solidify into a thin, brittle reticulated web;
bending the belt away from said reticulated web, whereby said web is separated from said belt and said web is broken into individual pieces; and grinding said pieces to produce particles of solid polystyrene of a size suitable for extrusion.

3,883,625

METHOD FOR MAKING EXPANDABLE PLASTICS

Lowell S. Thomas, and Kenneth J. Cleereman, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 14,882, Feb. 12, 1970, abandoned, which is a division of Ser. No. 691,299, Dec. 18, 1967, abandoned. This application Mar. 29, 1973, Ser. No. 345,885
Int. Cl. B29d *27/00*
U.S. Cl. 264—45.6 **8 Claims**



2. The method of claim 1 including heat forming the laminate during heating of the inner layer wherein both the inner and outer layers are raised to a heat forming temperature.

3,883,626

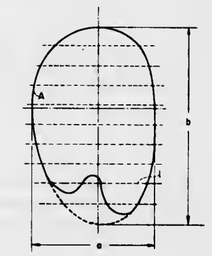
POROUS CELLULOSE ACETATE MEMBRANE AND A PROCESS FOR THE MANUFACTURE OF SAME

Kenji Kamide, Kyoto; Seiichi Manabe; Etsuko Osafune, both of Osaka, and Tomio Sakamoto, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Nov. 22, 1972, Ser. No. 308,769
Int. Cl. B29d *27/04*; C08b *21/04*
U.S. Cl. 264—49 **11 Claims**

1. A process for the manufacture of a cellulose acetate porous membrane which comprises:
   a. dissolving in a main organic solvent cellulose acetate having an acetyl content of 20 to 62.5%, the cellulose acetate being dissolved in the solvent in a weight ratio of 5 to 40% relative to the solvent,
   b. adding to the solution a diluent solvent having a boiling point higher than the main solvent,
   c. adding to the resulting solution a metal salt, wherein the metal is selected from Groups I–III of the Periodic Table and has an ionic radius of less than 1.33 A, said metal salt being added to the solution in a weight ratio of 20 to 200% relative to the acetate to provide a homogeneous solution,

   d. casting the resulting solution onto a polished plane surface to form a thin film,
   e. removing the solvent from the film by evaporation at a temperature of less than 50°C and



   f. removing the metal salt from the film by dissolving the salt therefrom to produce a porous membrane.

3,883,627

MOLDING PROCESS FOR PRODUCING SUBSEQUENT ARTICLES FROM A MASTER

Martin Fitts, Portland, Oreg., assignor to Cook Paint and Varnish Co., Kansas City, Mo.

Filed June 6, 1973, Ser. No. 367,361
Int. Cl. B29c *1/02, 17/04, 7/00*
U.S. Cl. 264—51 **6 Claims**

1. A molding process comprising:
1. placing a heat curable elastomeric sheet material comprising curing agent and urethane elastomeric gum stock or silicone gum stock over a master which is to be copied, said heat curable elastomeric sheet material being one which does not cause inhibition between the master and the heat curable elastomeric sheet material;
2. vacuum drawing the sheet material against the master;
3. enclosing the master sheet material within a frame;
4. then forming a foamed polymeric backing in situ to force the heat curable elastomeric sheet material against the master to copy the shape of the master in the heat curable elastomeric sheet material;
5. curing the elastomeric sheet material in the shape of the master; and
6. molding articles in the shape of the master in a mold constructed from the cured elastomeric sheet material.

3,883,628

SILICONE RELEASE AGENT

Eugene Ray Martin, Onsted, Mich., assignor to Stauffer Chemical Company, Adrian, Mich.

Filed May 14, 1973, Ser. No. 360,276
Int. Cl. C08f *11/04*; C08g *31/02*
U.S. Cl. 264—54 **10 Claims**

9. The process of claim 8 wherein a gaseous expanding agent is generated in the reaction mixture resulting from the reaction of said organic polyisocyanate with the organic compound before said reaction mixture has gelled and become tack-free, whereby the polyurethane articles obtained are cellular.

3,883,629

INJECTION MOLDING OF LAMINAR ARTICLES HAVING A FOAM CORE AND AN INTEGRAL SKIN

Paul Johnson Garner, Thorpe Bay, and David Fairclough Oxley, St. Albans, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 887,751, Dec. 23, 1969, abandoned. This application Sept. 12, 1972, Ser. No. 288,328
Claims priority, application United Kingdom, Dec. 31, 1968, 61963/68
Int. Cl. B29d *27/00, 9/00*
U.S. Cl. 264—55 **10 Claims**

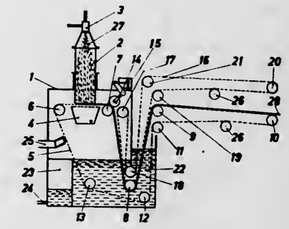
1. In an injection molding process for the production of laminar articles having a core of a synthetic polymeric resin composition enclosed by a skin of a dissimilar synthetic polymeric resin composition, wherein a molten charge of an injection moldable skin forming synthetic polymeric resin composition is injected into a mold cavity and, before the interior of the skin forming composition has set, a molten charge of an injection moldable core forming synthetic polymeric resin composition is injected into the interior of the skin forming composition, and the compositions are maintained in the mold cavity until they have set, the improvement comprising filling the mold cavity with said skin forming composition and then injecting the core forming composition so that the injection pressure of the core forming composition forces the mold cavity to enlarge to accommodate the core forming composition as it is injected.

3,883,630

PROCESS FOR THE RECOVERY OF SYNTHETIC FIBRILS

Carlo Raganato, Castiglioncello, Italy, assignor to Solvay & Cie, Brussels, Belgium

Filed Sept. 6, 1972, Ser. No. 286,683
Claims priority, application Italy, Sept. 9, 1971, 63876/71
Int. Cl. B29b *5/04*
U.S. Cl. 264—102 **11 Claims**



1. In a process for the recovery of synthetic polymer fibrils which are in the presence of vapors of an organic solvent, the improvement comprising the steps of
1. passing a movable porous support through a closed vessel which is maintained free of air and contains water vapors, which water vapors are of a liquid which is immiscible with the organic solvent and inert in relation to the polymer of which the fibrils are composed, said water vapors acting to reduce condensation of the solvent vapors in the closed vessel and having a partial pressure between 5% and 80% of the total pressure prevailing in the vessel;
2. introducing the fibrils and organic solvent vapors into the vessel and depositing the fibrils in the form of a sheet onto the movable porous support in the vessel;
3. continuously extracting the solvent vapors from the vessel by suction; and
4. continuous extracting from the vessel the sheet of fibrils formed in the vessel by passing it through a hydraulic seal constituted by water in the form of a liquid phase to remove any remaining traces of solvent from the fibrils.

3,883,631

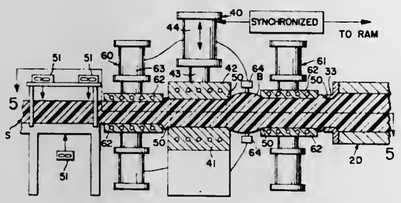
3,883,631
METHOD AND MEANS FOR MAKING HIGH MOLECULAR WEIGHT POLYETHYLENE SHEETS

Coyt E. Murray, Gastonia, N.C., assignor to Impact Plastics, Incorporated, Gastonia, N.C.

Continuation of Ser. No. 596,932, Nov. 25, 1966, abandoned. This application Aug. 21, 1969, Ser. No. 860,145

Int. Cl. B29f *3/08*

U.S. Cl. 264—210 R **16 Claims**



1. A method of transforming high molecular weight polyethylene having a molecular weight of at least 1,000,000 from granular resin to a solid state which comprise:

a. heating the resin above its crystalline melting point,

b. moving the heated resin in one direction through an extruder of given cross-sectional internal dimension while confining the resin against radial movement and while cooling the resin to an amorphous state within the extruder,

c. moving the amorphous resin in said one direction beyond the extruder and across an air space and into a finishing die spaced sufficiently close to the extruder to engage the resin in its amorphous condition and spaced beyond the extruder a distance sufficient to permit formation of a reservoir of resin in the air space between the extruder and the finishing die,

d. applying inward pressure on the amorphous resin at the finishing die sufficient to exert a back pressure on the amorphous resin in the opposite direction to said one direction and create a reservoir in the space between the finishing die and the extruder of greater cross-sectional dimension than said given dimension.

3,883,632
METHOD OF FORMING THERMOPLASTIC MATRIX INCLUDING PREHEATING OF THERMOPLASTIC BLANKS

Robert P. Petrochko, Somerville, and Thomas E. Hayes, High Bridge, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,882

Int. Cl. B41c *3/06;* **B29d** *9/06;* **B29b** *3/00*

U.S. Cl. 264—322 **7 Claims**

1. A process for forming a highly accurate thermoplastic matrix which comprises:

a. placing an original form on the lower platen of a press;

b. covering the exposed surface of said original form with a thin layer of insulating material;

c. placing a thermoplastic matrix blank over said insulating material;

d. covering said matrix blank with a metallic release plate;

e. closing said press and applying pressure to said matrix blank not greater than essentially contact pressure while applying heat sufficient to raise the temperature of said thermoplastic blank to a point above the softening point, but below the flow point of said thermoplastic while maintaining the said original form at a temperature below the point at which sufficient softening of the original form occurs to cause significant deformation of said original form when said pressure is applied;

f. opening said press and removing said insulation material, matrix blank and release plate;

g. stripping said insulation material from the surface of said matrix blank;

h. reinserting said matrix blank and release plate into said press so as to place the exposed surface of said matrix blank in contact with said original form;

i. closing said press and supplying sufficient heat to said matrix blank to raise the temperature of at least a portion of said thermoplastic matrix blank to a point above the flow point of said thermoplastic;

j. applying sufficient pressure so that the thermoplastic blank is embossed at the molding interface so as to replicate the surface details of the original form; and

k. cooling the resulting matrix and separating the said matrix from the original form.

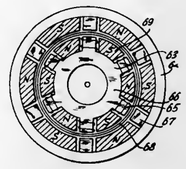
3,883,633
COMMUTATORLESS MOTOR

Wolfgang Kohler, Berlin, Germany, assignor to Akademie der Wissenischaften der DDR, Berlin, Germany

Filed Feb. 4, 1974, Ser. No. 438,985

Int. Cl. H02k *29/02*

U.S. Cl. 310—152 **21 Claims**



1. A commutatorless motor comprising an iron-free rotor having drive coils and rectifying means connected to the drive coils, and a stator comprising poles of constant magnetic field strength arranged with alternating polarity, pole means adapted to provide an alternating magnetic field and mounted between poles of constant magnetic field strength, and coil means on said pole means, said coil means comprising means for coupling energy to the motor for driving said rotor, said drive coils being the sole coils on said rotor.

3,883,634
LIQUID-LIQUID EXTRACTION OF GERMANIUM FROM AQUEOUS SOLUTION USING HYDROXY-OXIMES

Archille DeSchepper, Lichtaart, and Antoine Van Peteghem, Olen, both of Belgium, assignors to Metallurgie Hoboken-Overpelt, Brussels, Belgium

Filed Apr. 26, 1974, Ser. No. 464,387

Claims priority, application Belgium, May 14, 1973, 67596

Int. Cl. B01d *11/04;* **C01g** *17/00*

U.S. Cl. 423—89 **16 Claims**

1. A process for liquid-liquid extraction of germanium from an aqueous solution, in which an organic liquid containing hydroxy-oxime is used as extractant comprising contacting an aqueous solution containing germanium and an acid selected from the group consisting of 10 to 500 grams per liter of hydrochloric acid, 10 to 500 grams per liter of sulfuric acid, and 10 to 100 grams per liter of hydrofluoric acid, with an organic liquid selected from the group consisting of non-diluted hydroxy-oxime, a solution of hydroxy-oxime in an aliphatic solvent, a solution of hydroxy-oxime in an aromatic solvent, and a solution of hydroxy-oxime in a mixture of an aliphatic and an aromatic solvent, separating the organic liquid phase containing extracted germanium from the residual aqueous phase, and recovering the extracted germanium from the separated organic phase by contacting with an agent selected from the group consisting of water, acids, and bases.

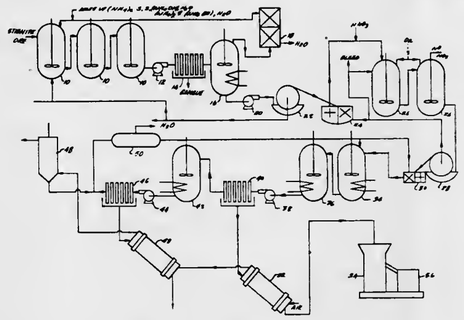
3,883,635
HYDRO-METALLURGICAL PREPARATION OF THE OXIDES OF ANTIMONY AND ANTIMONIC ACID

Booker W. Morey, Pasadena, and John Richard McKinley, Claremont, both of Calif., assignors to Occidental Petroleum Corp., Los Angeles, Calif.

Continuation of Ser. No. 213,929, Dec. 30, 1971, abandoned. This application June 6, 1973, Ser. No. 367,451

Int. Cl. C01b *29/00;* **C01c** *1/00;* **C01b** *17/00*

U.S. Cl. 423—87 **15 Claims**



1. A process for the production of antimony oxide and/or antimonic acid from stibnite-bearing ores and ore concentrates which comprises:

a. contacting the stibnite-bearing ore with an aqueous leach solution comprising from about 5 to about 30% by weight ammonium sulfide and from about 0.1 to about 10 percent by weight sulfur at a temperature from ambient to about 90°C to form an ore gangue and a mother liquor containing extracted antimony sulfide;

b. separating the mother liquor from the gangue;

c. eliminating ammonia from the mother liquor and forming a precipitate of antimony sulfide and sulfur;

d. reacting the formed precipitate with an aqueous oxidizing nitric acid solution containing from 1 to about 70 percent by weight nitric acid at a temperature from ambient to about 150°C and a pressure from atmospheric to about 300 psig to form a slurry of insoluble sulfur and antimony compounds selected from the group consisting of the oxides of antimony and antimonic acid in the nitric acid solution;

e. separating the sulfur and antimony compounds from the nitric acid solution; and

f. separating the sulfur from the antimony compounds.

3,883,636
CHLORINATION PROCESS

Colin Francis Cole, and Kenneth Arkless, both of Teeside, England, assignors to British Titan Limited, Billingham, Teeside, England

Continuation-in-part of Ser. No. 321,969, Jan. 8, 1973, abandoned, which is a continuation of Ser. No. 775,906, Nov. 14, 1969, abandoned. This application Jan. 24, 1973, Ser. No. 326,415

Claims priority, application United Kingdom, Nov. 17, 1967, 52511/67

Int. Cl. C01g *23/02*

U.S. Cl. 423—74 **17 Claims**

1. In a process for chlorinating a finely divided titaniferous material at least 30 percent by weight of which has a particle size greater than 180 microns in a fluidized bed in the presence of a carbonaceous reducing agent, the improvement comprising increasing the efficiency of chlorination, as measured by the chlorine utilization or CO ratio of the gases produced in the chlorination reaction, by conducting the chlorination in the presence of an added source of an element selected from the group consisting of chromium, lanthanum, and vanadium, in an amount of from 0.01 to 2.5 percent by weight expressed as the additive element based on the weight of titanium dioxide in the titaniferous material.

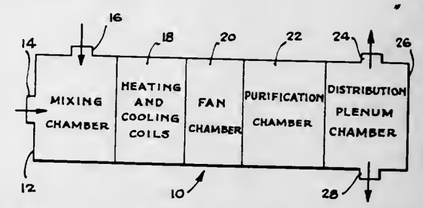
3,883,637
CATALYTIC METHOD OF PURIFICATION OF AIR FOR MOTOR VEHICLE PASSENGER COMPARTMENT

John W. Benedict, Louisville, Ky., assignor to Girdler Chemical, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 128,925, March 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 779,030, Nov. 26, 1968, abandoned. This application June 25, 1973, Ser. No. 373,396

Int. Cl. B01d *46/00*

U.S. Cl. 423—230 **6 Claims**



1. A method for removing air-borne sulfur compounds from air entering a motor vehicle passenger compartment through a ventilation conduit system, said method consisting of essentially of the steps of impregnating a selected quantity of activated charcoal with selected copper compounds in amounts such that said activated charcoal contains from about 0.5 percent to about 5 percent by weight as free copper and from about 0.25 percent to about 3 percent by weight as free chromium in proportions such that the molar ratio of copper to chromium is from about 1:1 to about 8:1, mixing the impregnated charcoal so formed with an emulsion of liquid and a soluble thermal setting binder consisting essentially of polyvinyl acetate and solvent until the mixture becomes tacky; placing said mixture in a mold of selected configuration, pressing the mixture to form a briquette, and heating the briquette as formed to set the binder to form said impregnated charcoal into a catalytically active filter element, and mounting said filter element in the ventilation conduit of said vehicle and passing said air through the filter element at an hourly space velocity of from about 5 times 10 to the forth to about 1.5 times ten to the sixth.

3,883,638
PROCESS FOR REMOVING SULFUR DIOXIDE AND SULFUR TRIOXIDE FROM WASTE GAS AND PRODUCING SULFUR THEREFROM

Philippe Renault, Noisy-le-Roi; Claude Dezael, Maisons-Laffitte; Andre Deschamps, Chatou, and Sigismond Franckowiak, Montesson, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, France

Filed Mar. 15, 1973, Ser. No. 341,468

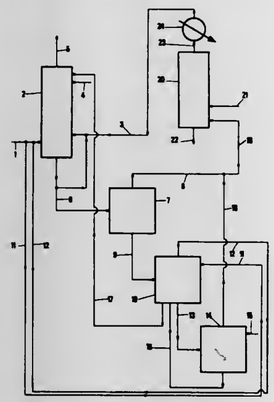
Claims priority, application France, Mar. 15, 1972, 72.09117

Int. Cl. C01b *17/04*

U.S. Cl. 423—242 **5 Claims**

1. In a process for purifying a waste gas containing sulfur dioxide and sulfur trioxide, wherein the waste gas is contacted with ammonia and water, so as to obtain an aqueous solution of ammonium salts, containing ammonium sulfites and sulfates, this solution is heated up to a sufficient temperature for converting the ammonium sulfites to sulfur dioxide and ammonia, at least a portion of said sulfur dioxide is reacted with hydrogen sulfide, so as to obtain sulfur, and the ammonia is recycled to the waste gas contacting zone, the improvement comprising the additional step of further heating the solution to 160°–300°C., the sulfites of which have been converted, so

as to melt the ammonium sulfates, treating it with at least a portion of the waste gas before contact of said portion with ammonia and water, said portion being thereafter contacted with said ammonia and water, so as to transform the ammo-



nium neutral sulfate to the corresponding ammonium hydrogen sulfate, reacting the latter with a reducing agent at 150°–350°C., so as to convert it to sulfur dioxide and ammonia and treating said sulfur dioxide and ammonia as above indicated.

3,883,639
METHOD OF REMOVING SULFUR-CONTAINING GASES FROM WASTE GAS

Walter A. Cronkright, Jr., Somerville, N.J., and Bernard G. Mandelik, Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.

Continuation-in-part of Ser. No. 171,267, Aug. 12, 1971, abandoned. This application Dec. 21, 1972, Ser. No. 317,484
Int. Cl. C01b *17/00*
U.S. Cl. 423—242 **10 Claims**

1. A process for removing sulfur dioxide from industrial waste gas which comprises:

scrubbing waste gas in a contacting zone with an aqueous medium having a pH below 7.1 containing clacium carbonate, carbon dioxide and at least about 3 weight percent of a soluble sulfate selected from the group consisting of sodium, lithium, potassium, magnesium, and ammonium sulfates;

precipitating solids selected from the group consisting of calcium sulfite and calcium sulfate from the aqueous medium;

removing a portion of said solids; and

introducing a remaining portion of the solids with said aqueous medium to the contacting zone.

3,883,640
SODIUM PERCARBONATE CRYSTALS

James Crosby Smart, Runcorn, England, assignor to Imperial Chemical Industries Limited, Millbank, London, SW1P 4QG, England

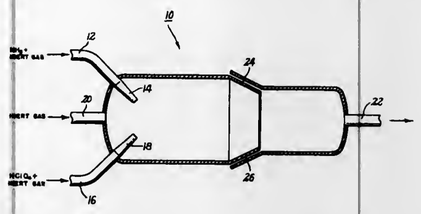
Filed Jan. 15, 1973, Ser. No. 323,351
Claims priority, application United Kingdom, Jan. 26, 1972, 3680/72
Int. Cl. C01c *15/10*
U.S. Cl. 423—415 P **2 Claims**

1. In a process for the preparation of sodium percarbonate crystals from an aqueous solution of sodium percarbonate, the improvement which comprises incorporating in the said aqueous solution a water soluble acrylic polymer polyelectrolyte the concentration of said polyelectrolyte being between 10 and 10,000 parts per million by weight of sodium percarbonate to be crystallized from the said solution.

3,883,641
VAPOR PHASE METHOD OF MAKING AMMONIUM PERCHLORATE

Raymond Conrad, Russellville, Ala., assignor to Thiokol Corporation, Bristol, Pa.

Filed Feb. 22, 1971, Ser. No. 117,513
Int. Cl. C01b *11/18*
U.S. Cl. 423—476 **6 Claims**

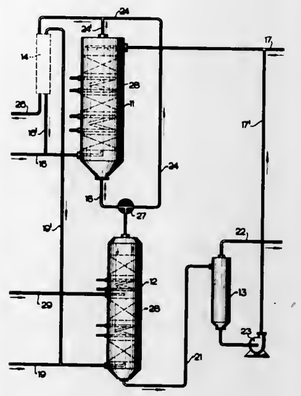


1. The method of making fine ammonium perchlorate particles which comprises reacting gaseous ammonia with substantially anhydrous perchloric acid vapor to form finely particulate ammonium perchlorate and recovering the particulate ammonium perchlorate thus formed.

3,883,642
PRODUCING CONCENTRATED HYDROFLUORIC ACID SUBSTANTIALLY FREE FROM IMPURITIES USING POLYETHER AND POLYOL ABSORBENTS AND NITROGEN FLUSHING GAS

Bruno Franke; Erich Hallbauer, both of Castrop-Rauxel, and Wolfgang Laue, Waltrop, all of Germany, assignors to BUSS Aktiengesellschaft, Basel, Switzerland

Continuation of Ser. No. 248,940, May 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 805,757, March 10, 1969, abandoned. This application June 5, 1973, Ser. No. 367,102
Claims priority, application Germany, Mar. 9, 1968, 1667537
Int. Cl. C01b *7/22*
U.S. Cl. 423—483 **8 Claims**

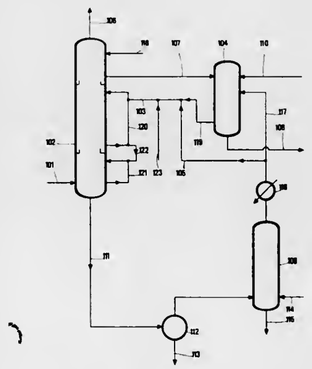


1. A process for producing concentrated hydrofluoric acid substantially free of SiF_4 from a fluid material selected from the group consisting of (1) solutions of fluorine compounds including H_2SiF_6 and (2) gaseous mixtures containing HF, SiF_4 and H_2O, which comprises treating the fluid as a solute in an absorption column at a temperature of at least 100°C with a solvent comprising a selectively absorbent organic selected from the group of aliphatic polyethers and polyols, flushing the solvent carrying the solutes with oxygen-free nitrogen countercurrent to the solvent in a stripping column separate from the absorption column at a temperature of at least 100°C, the nitrogen thereby taking off SiF_4 and H_2O, removing (1) the nitrogen loaded with SiF_4 and H_2O and (2) the solvent separately from the stripping column and thereafter separating the hydrofluoric acid from the solvent.

3,883,643
PROCESS FOR PURIFYING INDUSTRIAL GASES CONTAINING SULFUR DIOXIDES

Philippe Renault, Noisy-le-Roi; André Deschamps, Chatou, and Claude Dezael, Maisons-Laffitte, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed June 6, 1972, Ser. No. 260,279
Claims priority, application France, June 7, 1971, 71.20628; June 23, 1971, 71.22966
Int. Cl. C01b *17/04, 17/60*
U.S. Cl. 423—574 **1 Claim**



1. A process for purifying an industrial gas which simultaneously contains sulfur dioxide and at least one of oxygen and sulfur trioxide, comprising the steps of:

a. contacting said gas with an aqueous solution of ammonia and/or of ammonium sulfite in a contact zone so as to form additional ammonium sulfite and sulfate in said aqueous solution, and then separating the gas from said aqueous solution,

b. contacting the gas separated from the aqueous solution in step a) with water in an additional contact zone at 0°–100°C, so as to obtain a dilute aqueous solution of ammonium sulfite and a further purified gas,

c. alternatively contacting said dilute solution of ammonium sulfite with a first bed and a second bed of weak anionic resin, thereby retaining SO_2 thereon and recovering therefrom dilute ammonia solution,

d. heating the aqueous solution separated from step a) to form a gaseous mixture of H_2O, SO_2 and NH_3,

e. reacting said gaseous mixture from step (d) with H_2S in a reaction zone to form sulfur and recovering ammonia therefrom,

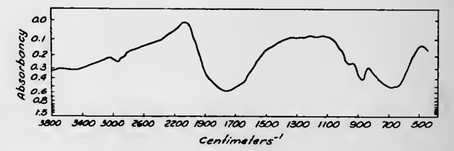
f. alternatively passing a portion of recovered ammonia in the condensed form through said first bed and said second bed of weak anionic resin to form a solution of ammonium sulfite, provided one only of the beds is contacted with said condensed form while the other is contacted with the dilute solution of step (c), and

g. passing said solution containing ammonium sulfite recovered from step (f) to the contact zone of step (a).

3,883,644
ALUMINUM HYDRIDE

Norman E. Matzek, Midland, and Donald F. Musinski, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 23, 1962, Ser. No. 234,277
Int. Cl. C01b *6/00*
U.S. Cl. 423—645 **1 Claim**



1. A novel, crystalline substantially non-solvated aluminum hydride having the unique X-ray diffraction as follows:

d	I/I_1	d	I/I_1
5.6	100	1.44	5
3.28	60	1.41	12
3.21	10	1.395	5
2.79	60	1.281	6
2.29	12	1.271	2
2.12	50	1.144	5
1.855	3	1.123	0.8
1.77	3	1.090	0.8
1.635	7	1.060	2
1.61	8	1.045	0.8
1.60	8	1.015	3
1.57	3	1.004	0.8
1.54	2		

and an infrared spectrum having significant absorption maxima at 640 cm^{-1}, 680 cm^{-1}, 870 cm^{-1}, 955 cm^{-1}, 1,020 cm^{-1}, 1,650 cm^{-1} and 1,760 cm^{-1}

3,883,645
PREPARATION OF BERYLLIUM HYDRIDE

Charles R. Bergeron, Baton Rouge, and Ralph W. Baker, Greenwall Springs, both of La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 365,232, April 30, 1964, abandoned. This application Dec. 8, 1967, Ser. No. 690,712
Int. Cl. C01b *6/00*
U.S. Cl. 423—645 **14 Claims**

1. In a process for the preparation of beryllium hydride which comprises pyrolyzing, while in a solvent inert under the reaction conditions with respect to reactants and products and at a temperature in the range of from about 150° to about 220°C. sufficient to result in the formation of beryllium hydride, a compound selected from the group consisting of beryllium dialkyls and etherates thereof wherein each alkyl radical contains from 4 to 20 carbon atoms, the pyrolysis being carried out under an atmosphere inert under the reaction conditions with respect to reactants and products, the improvement which comprises agitating the reaction mixture during the course of the reaction in such manner as to introduce mechanical energy into the reaction mixture at the rate of from about 0.002 to about 0.30 horsepower per gallon of the said reaction mixture.

3,883,646
PREPARATION OF BERYLLIUM HYDRIDE

Charles B. Roberts, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 28, 1967, Ser. No. 694,786
Int. Cl. C01b *6/04*
U.S. Cl. 423—645 **3 Claims**

1. A process for preparing a beryllium hydride product which comprises:

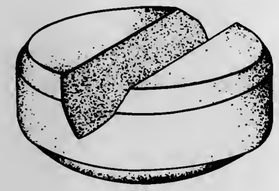
a. reacting beryllium borohydride and aluminum hydride trimethylamine adduct in quantities sufficient to provide a $Be(BH_4)_2/AlH_3.N(CH_3)_3$ molar ratio of at least 3/2, said reaction being conducted at from about room temperature to about 60°C. for a period of from about 5 minutes to about 2 hours, and in the presence of an inert, substantially moisture free atmosphere, and

b. heating the resulting product mass at a temperature of from about 75° to about 100°C. and a maximum pressure of about 1 millimeter mercury absolute thereof to separate and remove volatile by-product materials and unreacted reactants from the beryllium hydride product.

3,883,647
TABLET FORMULATION

Ehud Geller, King of Prussia, Pa., assignor to Ives Laboratories, New York, N.Y.

Filed Dec. 6, 1972, Ser. No. 312,469
Int. Cl. A61j *3/10*; A61k *9/00*
U.S. Cl. 424—15 **5 Claims**



1. A pharmaceutical tablet which is adequately imprinted with indicia or embossing and scored to form a groove which is one-third to two-thirds the depth of the total tablet thickness to facilitate separation into subdivisions containing substantially equal amounts of a pharmaceutically active ingredient comprising a directly compressed formulation of 5 to 10 milligrams of an active ingredient, the remainder being 45 to 99.7 percent by weight of microcrystalline cellulose and 0.3 to 0.4 percent by weight of magnesium stearate, along with fillers, extenders, flavoring and the like.

3,883,648
METHOD OF MAKING STABLE GRANULES OF N-4-[2-(5-CHLORO-2-METHOXYBENZAMIDO)-ETHYL]-HENYLSULFONYL-N'-CYCLOHEXYL UREA AND ITS SALTS AND PROCESS FOR PREPARING SAME

Gerhard Ross, Liederbach, Taunus, and Bernhard Reul, Schneidhain, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 29, 1973, Ser. No. 410,311
Claims priority, application Germany, Oct. 31, 1972, 2253318; Oct. 31, 1972, 2253317
Int. Cl. A61k *27/12*
U.S. Cl. 424—44 **4 Claims**

1. A method for making stable granules of N-4-[2-(5-chloro-2-methoxybenzamido)ethyl]-phenylsulfonyl-N'-cyclohexyl urea or a physiologically compatible salt thereof which comprises preparing a solution or a dispersion of said compound or salt in a melt of a water-soluble carrier material selected from the group consisting of polyglycols having a molecular weight of from 2000 to 20000, addition products thereof with propylene oxide, and mixtures of said polyglycols or addition products with pharmacologically compatible surface-active substances, together with at least an amount of an alkali metal carbonate or bicarbonate effective to stabilize said compound or salt against the temperatures of the melt, and then solidifying the molten mass into droplet granules.

3,883,649
JOLIPEPTIN AND THE PROCESS FOR PRODUCING THE SAME

Mikiko Ito, and Yasuo Koyama, both of Tokyo, Japan, assignors to Kayaku Antibiotic Research Co., Ltd., Japan

Filed Nov. 9, 1972, Ser. No. 305,081
Int. Cl. A61k *21/00*
U.S. Cl. 424—118 **2 Claims**

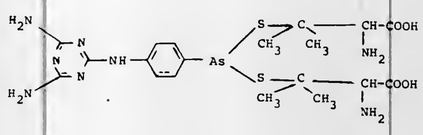
1. A process for producing the jolipeptin, which comprises cultivating a strain of *Bacillus polymyxa subsp. colistinus* KOYAMA, ATCC No. 21830 in a cultured broth containing a nitrogen source and a carbon source at a culture temperature of about 28°–35°C, until a sufficient amount of jolipeptin has been imparted too said broth.

3,883,650
TREATMENT OF FILARIASIS

Ernst Albert Hermann Friedheim, Genf, Switzerland, and Dieter Duwel, Hofheim/Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

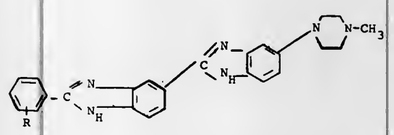
Filed July 18, 1972, Ser. No. 272,726
Claims priority, application Switzerland, July 20, 1971, 10701/71
Int. Cl. A61k *27/00*
U.S. Cl. 424—245 **6 Claims**

1. A pharmaceutical composition for treating filariasis, which comprises, a therapeutically effective amount of a phenylarsenicdithio compound of the formula



I

and an effective therapeutic amount of a compound of the formula



II

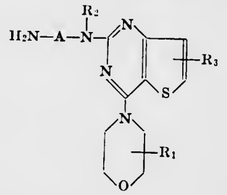
wherein R is hydroxy, methoxy, ethoxy or chlorine or the physiologically tolerable salts thereof, the molar ratio of compound I to compound II being between 1: 1.5 and 1:3.

3,883,651
PHARMACEUTICAL COMPOSITIONS CONTAINING A 2-(AMINOALKYLAMINO)-4-AMINO-THIENO[3,2-D]PYRIMIDINE AND METHOD OF USE

Eberhard Woitun; Berthold Narr, and Wolfgang Schroter, all of Biberach an der Riss, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

Division of Ser. No. 60,933, Aug. 4, 1970, Pat. No. 3,838,121.
This application Aug. 22, 1974, Ser. No. 499,460
Claims priority, application Germany, Aug. 8, 1969, 1940572; July 2, 1970, 2032686; July 2, 1970, 2032687
Int. Cl. A61u *27/00*
U.S. Cl. 424—248 **11 Claims**

1. A pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective platelet inhibiting amount of a compound of the formula



wherein

R_1 is hydrogen or methyl,

R_2 is hydrogen, methyl or ethyl,

R_3 is hydrogen, 6-methyl or 7-methyl, and

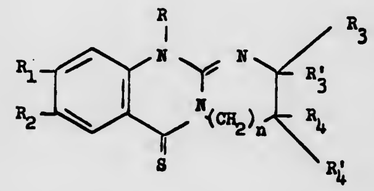
A is straight or branched alkyl of 2 to 6 carbon atoms, or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

3,883,652
CERTAIN SUBSTITUTED-TRICYCLIC QUINAZOLIN-THIONES USED AS BRONCHODILATORS

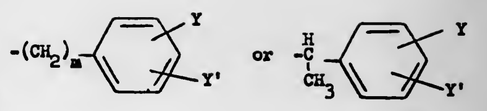
Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., East Hanover, N.J.

Filed Jan. 19, 1973, Ser. No. 325,078
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 **5 Claims**

1. A method of effecting bronchodilation in mammals in need thereof comprising administering to said mammals, a bronchodilating effective amount of a compound of the formula:



wherein each of R_1 and R_2 is, independently, hydrogen, fluoro chloro or alkyl of 1 to 3 carbon atoms, or both are alkoxy of 1 to 2 carbon atoms; or one is hydrogen and the other bromo or alkoxy of 1 to 2 carbon atoms, n is 0 or 1;
each of R_3, R'_3, R_4 and R'_4 is hydrogen or alkyl of 1 to 3 carbons provided that no more than 3 of R_3, R'_3, R_4 and R'_4 are alkyl, R is alkyl of 1 to 6 carbon atoms,



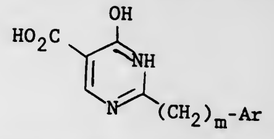
m is 1 or 2, each of Y and Y' is, independently, hydrogen, fluoro, chloro or alkyl of 1 to 3 carbon atoms, or both are alkoxy of 1 to 2 carbon atoms, or one is hydrogen and the other bromo or alkoxy of 1 to 2 carbon atoms,
or a pharmaceutically acceptable acid addition salt thereof.

3,883,653
METHOD OF PREVENTING ASTHMATIC SYMPTOMS

Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Oct. 24, 1972, Ser. No. 299,871
Int. Cl.² A61K *27/00*
U.S. Cl. 424—251 **6 Claims**

1. A method of preventing asthmatic symptoms in a human who is subject to bronchoconstriction, said method comprising administering to said human about 20 to 200 mg. per day of a compound selected from the group consisting of



and the pharmaceutically acceptable basic salts thereof wherein Ar is selected from the group consisting of phenyl and substituted phenyl wherein said substituent is selected from the group consisting of methyl, methoxy, hydroxy, nitro, chloro, fluoro, 3,4-dimethoxy, 3,4,5-trimethoxy and alkanoylamino having from 2 to 3 carbon atoms and m is an integer of 0 or 1.

3,883,654
BASIC QUINOBENZAZEPINES COMPOSITIONS AND METHODS OF USE

Gerhard Hackmack, Aumuhle, and Heinz Gunter Menge, Dettingen, both of Germany, assignors to Byk Gulden Lomberg Chemische Fabrik GmbH, Konstanz, Germany

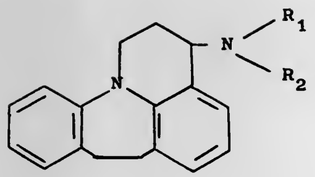
Continuation-in-part of Ser. No. 112,046, Feb. 2, 1971, Pat. No. 3,830,818. This application Feb. 21, 1974, Ser. No. 444,427
Claims priority, application Germany, Feb. 3, 1970, 2004818
Int. Cl. A61k *27/00*
U.S. Cl. 424—258 **11 Claims**

1. A pharmaceutical composition containing a pharmaceutical carrier and, as active agent, a pharmacologically-active concentration of a 2,3,7,8-tetrahydro-1H-quino[1,8-ab][1]benzazepine compound selected from the group consisting of a 3-amino-2,3,7,8-tetrahydro-1H-quino[1,8-ab][1]benzazepine of the formula

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3,883,662



wherein each of R_1 and R_2 is a member selected from the group consisting of hydrogen and alkyl with 1 to 4 carbon atoms, and the pharmaceutically-acceptable acid-addition salt thereof.

3,883,655

ERGOCORNINE OR 2-BROMO-α-ERGOCYPTINE IN THE TREATMENT OF PARKINSONISM

Kjell Fuxe, Stockholm, Sweden, assignor to Sandoz Ltd., Basel, Switzerland

Filed Oct. 11, 1973, Ser. No. 405,463
Int. Cl. A61k *27/00*
U.S. Cl. 424—261 5 Claims

1. A method of treating Parkinson's disease in an animal which comprises administering to an animal in need of such treatment a therapeutically effective dose for treating Parkinson's disease of ergocornine or 2-bromo-α-ergocyptine as active agent in free base form in pharmaceutically acceptable acid addition form thereof.

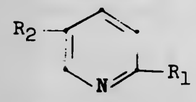
3,883,656

PHARMACEUTICAL PREPARATIONS FOR THE TREATMENT OF HYPERTONIA

Phyllis Roberta Hedwall, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,156
Claims priority, application Switzerland, Nov. 11, 1971, 16377/71; Sept. 15, 1972, 13545/72
Int. Cl. A61k *27/00*
U.S. Cl. 424—263 10 Claims

1. A pharmaceutical preparation for treating hypertonia which contains an effective amount of an antihypertensive amino acid compound selected from the group consisting of an α-amino-α-methyl-β-(hydroxylated phenyl)-propionic acid, a non-toxic salt thereof and a lower alkyl ester thereof; and an effective amount of a β-hydroxylase inhibitor compound selected from the group consisting of a compound of the formula



wherein R_1 is an esterified, amidised or free carboxyl group and R_2 is an alkyl group, a non-toxic salt thereof, bis-(diethylthiocarbamoyl)-disulphide and bis-[(3-aza-3-methylhexylene-1,6)-thiocarbamoyl]-disulphide.

3,883,657

5,5-DIMETHYL-10-HYDROXY-8-(3-METHYL-2-OCTYL)--(2-PROPYNYL)-1,2,3,4-TETRAHYDRO-5H-[1]-BENZOPYRANO[3,4-D]PYRIDINE AS A SEDATIVE HYPNOTIC

Louis Selig Harris, Richmond, Va.; Harry George Pars, Lexington, Ill.; Raj Kumar Razdan, Belmont, Ill., and Anthony Thomas Dren, Waukegan, Ill., assignors to Sharps Associates, Cambridge, Mass.

Continuation-in-part of Ser. No. 283,436, Aug. 24, 1972. This application May 3, 1974, Ser. No. 466,541
Int. Cl. A61k *27/00*
U.S. Cl. 424—263 2 Claims

1. A method of inducing and/or prolonging sleep, without significantly reducing REM sleep, comprising administering a therapeutically effective amount of 5,5-dimethyl-10-hydroxy-8-(3-methyl-2-octyl)-2-(2-propynyl)-1,2,3,4-tetrahydro-5H-[1]benzopyrano[3,4-d]pyridine to a mammalian patient.

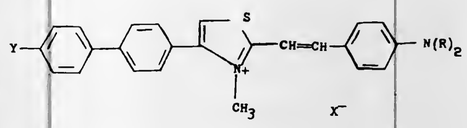
3,883,658

METHOD OF TREATING NEMATODE INFESTATIONS

Arthur P. Phillips, Raleigh, and Robert B. Burrows, Cary, both of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

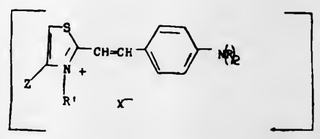
Continuation-in-part of Ser. No. 760,966, Sept. 19, 1968, Pat. No. 3,641,012, and a continuation-in-part of Ser. No. 760,965, Sept. 19, 1968, abandoned. This application May 24, 1971, Ser. No. 146,549
Int. Cl. A01n *9/02;* A61k *27/00*
U.S. Cl. 424—270 43 Claims

1. A nematocidal composition which contains a nematocidally effective amount of a compound of the formula



where Y is hydrogen, where R is methyl and where X^- is an anion of a pharmaceutically acceptable acid and a carrier therefor suitable for oral administration.

8. A nematocidal composition which contains a nematocidally effective amount of a compound of the formula



where Y is selected from the group consisting of lower alkoxy and hydrogen, wherein R′ is lower alkyl and where X^- is an anion of a pharmaceutically acceptable acid and a carrier therefore suitable for oral administration.

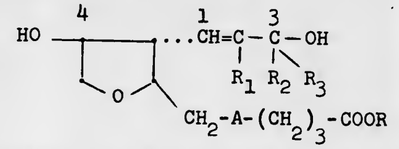
3,883,659

9-OXAPROSTAGLANDIN COMPOSITIONS

Isidoros Vlattas, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 18, 1973, Ser. No. 361,694
Int. Cl. A61k *27/00*
U.S. Cl. 424—285 3 Claims

1. A pharmaceutical composition comprising a a compound, corresponding to the formula



wherein each of R and R_3 is lower alkyl, lower alkenyl, lower alkynyl, (3 to 7 ring-membered cycloalkyl or cycloalkenyl)-C_mH_{2m} wherein *m* is an integer from 0 to 4, or Ph-C_nH_{2n}, wherein Ph is phenyl, (lower alkyl)-phenyl, (lower alkoxy)-phenyl, (lower alkylenedioxy)-phenyl, (halogeno)-phenyl, (trifluoromethyl)-phenyl, (nitro)-phenyl or (di-lower alkylamino)-phenyl and *n* is an integer from 1 to 4, or R is also hydrogen, Ph, an alkali metal or one equivalent of an alkaline earth metal and R_3 is also (lower alkoxy or halo)-lower alkyl, A is ethylene or ethenylene, R_1 and R_2 are hydrogen or lower alkyl, or the 1,2-dihydro-derivatives thereof containing no double-bond at the 1-chain-carbon atom in an amount sufficient for producing a prostaglandin-like effect, together with a pharmaceutical excipient.

3,883,660

TREATMENT OF PAIN, FEVER OR INFLAMMATION WITH 5-FLUORO-2-METHYL-1-CP-METHYLSULFINYL-BENZYLIDENE)-3-INDENYLACETALDEHYDE

Tsung-Ying Shen, Westfield, and Howard Jones, Holmdel, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 248,291, April 27, 1972, abandoned. This application Sept. 7, 1972, Ser. No. 287,130
Int. Cl. A61k *27/00*
U.S. Cl. 424—303 2 Claims

2. A method of treating pain, fever or inflammation which comprises administering to a host a therapeutically effective amount of 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-3-indenylacetaldehyde.

3,883,661

ACNE TREATMENT

John M. Young, Redwood City, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 197,117, Nov. 9, 1971, abandoned. This application Oct. 16, 1973, Ser. No. 406,937
Int. Cl.[2] A61K *27/00*
U.S. Cl. 424—320 12 Claims

1. A method for controlling acne which comprises topically applying to an acne affected skin area an effective amount of a composition consisting essentially of a pharmaceutically acceptable carrier and about 0.1% to about 30% of a diethanolamide of a saturated or unsaturated alkanoic acid containing from 12 to 18 carbon atoms, inclusive, and permitting said composition to remain on said acne affected skin area to allow the percutaneous absorption thereof into the sebaceous glands of the skin, whereby the acne condition in the treated area is controlled.

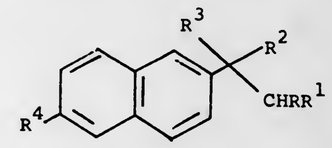
3,883,662

METHOD FOR DELAYING THE ONSET OF, OR POSTPONING, PARTURITION

Milan R. Henzl, Palo Alto, and Adolph P. Roszkowski, Saratoga, both of Calif., assignors to Syntex Corporation, Panama, Panama

Filed Mar. 29, 1973, Ser. No. 345,879
Int. Cl.[2] A61K *27/00*
U.S. Cl. 424—333 10 Claims

1. A method comprising administering to a pregnant mammal a compound selected from the group of compounds represented by the formula:



(I)

wherein, R is hydrogen and R^1 is hydroxy or a conventional hydrolyzable ester thereof; or R and R^1 together form =O; one of R^2 and R^3 is hydrogen, the other is hydrogen, methyl, ethyl or difluoromethyl; or R^2 and R^3 taken together are methylene, halomethylene or ethylene; and R^4 is alkyl, cycloalkyl, trifluoromethyl, vinyl, ethynyl, fluoro, chloro, alkoxy, alkoxymethyloxy, difluoromethoxy, alkylthio, alkoxymethylthio or difluoromethylthio; said compound being administered in a therapeutically effective amount adapted to delay the onset of parturition or to postpone parturition.

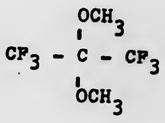
3,883,663

ANESTHETIZING COMPOSITION AND METHOD

George L. Moore, South Plainfield, and Ross C. Terrell, Plainfield, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Division of Ser. No. 168,379, Aug. 2, 1971, Pat. No. 3,745,220. This application Mar. 16, 1973, Ser. No. 341,909
Int. Cl. A61k *27/00*
U.S. Cl. 424—341 2 Claims

1. A method of anesthetizing an anesthetic-susceptible mammal which comprises administering to the mammal an anesthetically-effective amount of an aliphatic ether compound of the formula



as an inhalation anesthetic, while administering life supporting amounts of oxygen.

3,883,664

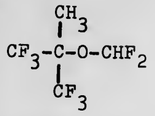
HEXAFLUORO-T-BUTYL DIFLUOROMETHYL ETHER AS AN INHALATION ANESTHETIC

Louise S. Croix, Summit, N.J., assignor to Airco, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 326,481, Jan. 29, 1973, abandoned, which is a continuation of Ser. No. 174,957, Aug. 8, 1971, abandoned. This application May 9, 1974, Ser. No. 468,478
Int. Cl. A61k *27/00*
U.S. Cl. 424—342 2 Claims

2. A method of anesthetizing an anesthetic-susceptible mammal which comprises administering to the mammal an

anesthetically effective amount of hexafluoro-t-butyl difluoromethyl ether of the formula:



as an inhalation anesthetic while administering life-supporting amounts of oxygen.

3,883,665

FLUORINATED ISOPROPYL DERIVATIVES AS INHALATION ANESTHESIAS

Louise S. Croix, Summit, N.J., assignor to Airco, Inc., New York, N.Y.

Filed Dec. 8, 1966, Ser. No. 600,011
Int. Cl. A61k *27/00*
U.S. Cl. 424—342 **4 Claims**

1. A respirable anesthetic composition comprising 1,1,1,3,3,3-hexafluoroisopropyl methyl ether, having the formula $(CF_3)_2CHOCH_3$ in admixture with a sufficient amount of oxygen to support life and in suitable proportions for the production of anesthesia.

3,883,666

CHEWING GUM BASE AND CHEWING GUM MADE THEREFROM

James Teng, St. Louis County, and Marcella C. Stubits, St. Louis, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Mar. 11, 1974, Ser. No. 450,052
Int. Cl. A23g *3/00, 3/30*
U.S. Cl. 426—3 **5 Claims**

1. A chewing gum comprising as an essential ingredient a chewing gum base of a hydroxypropyl starch acetate.

3,883,667

IMPROVING GOUDA CHEESE FLAVOR

Hendrik Jan Hofman, and Dirk Sloot, both of Vlaardingen, Netherlands, assignors to Lever Bros. Company, New York, N.Y.

Filed June 21, 1973, Ser. No. 372,112
Claims priority, application United Kingdom, June 21, 1972, 29052/72
Int. Cl. A23l *1/26*
U.S. Cl. 426—538 **8 Claims**

1. A process for improving the old Gouda cheese flavor of an edible Gouda flavored product lacking in old Gouda cheese flavor, in which a calcium salt of an unsubstituted mono- or di-C_4 to C_8 carboxylic acid is added to the edible Gouda flavored product to give between 1 and 5,000 ppm of the salt in said edible product.

3,883,668

IMPROVING GOUDA CHEESE FLAVOR

Dirk Sloot, Vlaardingen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed June 21, 1973, Ser. No. 372,113
Claims priority, application United Kingdom, June 21, 1972, 29053/72; June 21, 1972, 29054/72
Int. Cl. A23l *1/26*
U.S. Cl. 426—535 **7 Claims**

1. In a process for enhancing or imparting an old Gouda-cheese flavor to a Gouda flavored food product, lacking in said old Gouda cheese flavor, the improvement comprising adding to the food product 2,4-dithiapentane and/or trans-anethole to give between 0.005 and 0.05 ppm of dithiapentane and/or between 0.05 and 5 ppm trans-anethole in the food product.

3,883,669

METHOD OF INCREASING THE PROTEIN CONTENT OF WHEAT FLOUR BASED, LOW SHORTENING, LOW SUGAR BAKED AND FRIED PRODUCTS

Cho C. Tsen, and William J. Hoover, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Continuation-in-part of Ser. No. 78,239, Oct. 5, 1970, Pat. No. 3,780,188. This application Nov. 12, 1973, Ser. No. 415,012The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.
Int. Cl. A21d *2/14, 2/26;* **A23l** *1/16*
U.S. Cl. 426—549 **13 Claims**

1. A composition for preparing wheat flour based, low shortening, low sugar baked or fried products, comprising:
a quantity of wheat flour;
from 0 to 8 percent (baker's weight) of sugar;
from 0 to 6 percent (baker's weight) of shortening;
a quantity of protein supplement sufficient to provide at least about 2¼ percent by weight of additional protein to the baked or fried product and selected from the group consisting of soy flour, soy isolates, nonfat milk solids, whey products, fish protein concentrate, cottonseed flour, chick-pea flour, sesame seed flour, corn-soy-milk blend flour, wheat protein concentrate, wheat gluten, defatted wheat germ, Torula yeast, wheatsoy blend flour, edible single cell proteins, and mixtures thereof; and
from about 0.1 to 3 percent (baker's weight) of an additive selected from the group consisting of the edible alkali and alkaline earth metal salts of the acyl lactylates of C_{16}–C_{18} fatty acids, with the average number of lactylic group in said additive ranging from about 0.5 to 4.

3,883,670

POURABLE CREAM CONCENTRATE

Henricus Jacobus Pennings, Beijerland, Netherlands, and Norbert Herendi, Delmenhorst, Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 7, 1973, Ser. No. 423,372
Int. Cl. A23d *5/00*
U.S. Cl. 426—568 **9 Claims**

1. Pourable cream concentrate comprising by weight: 35–50 percent of fat of a dilatation value at 20°C of at least 200; 0.1–1.5 percent of α-monoglycerides; 1–6 percent of egg yolk; at least 5 percent of sugar, the upper limit being determined by the solubility of the sugar in the aqueous phase; 5–15 percent of polyalcohols selected from the group consisting of glycerol, mannitol and sorbitol; 0–6 percent of vegetable phosphatides; 0–5 percent of egg white; 0–1 percent of stabilizer; the balance being an aqueous phase.

3,883,671

WETTING THE SURFACES OF DOUGH PIECES PRIOR TO FRYING TO ELIMINATE BLISTERING

Mounir A. Shatila, Blackfoot, Idaho, assignor to American Potato Company, San Francisco, Calif.

Filed May 7, 1973, Ser. No. 357,997
Int. Cl. A23l *1/00, 1/12*
U.S. Cl. 426—303 **5 Claims**

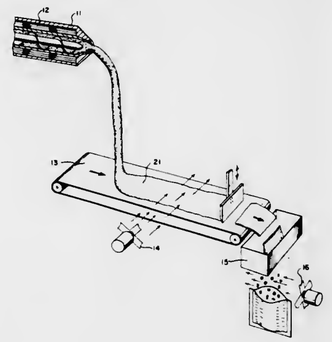
1. A process for the production of a blister-free chip-like snack comprising the steps of:
a. formulating a dough of 25–50% moisture content comprising solids selected from the group consisting of potato, corn, wheat and rice solids and water;
b. forming potato chip sized pieces having a thickness in the range of 0.030–0.045 inch from said dough;
c. moistening the surfaces of said pieces with water;
d. introducing said moistened pieces into hot fat in less than 1 minute following said moistening step before the added surface moisture penetrates appreciably into said formed pieces and deep fat frying said moistened pieces to produce a blister-free potato chip-like snack.

3,883,672

METHOD OF MAKING A DRY TYPE PET FOOD HAVING A MEAT-LIKE TEXTURE AND COMPOSITION THEREOF

David P. Bone, Palatine, and Edward L. Shannon, Barrington, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed June 12, 1974, Ser. No. 478,888
Int. Cl. A23j *3/00*
U.S. Cl. 426—311 **16 Claims**



1. A method for the production of a dry pet food containing less than 15 percent moisture by weight and having a soft, elastic, meat-like texture and marbled appearance comprising the steps of:
A. blending a mixture comprising fat, a proteinaceous adhesive, a plasticizing agent, and sufficient water for processing, wherein said proteinaceous adhesive is present in an amount from about 4 to about 60 percent by weight; and said plasticizing agent is present in an amount of from about 2 to about 40 percent by weight,
B. cooking while extruding a mass of said mixture in a non-uniform manner such that a portion of said mass is subject to at least 50 and up to 1,500 more processing units than the remaining portion of said mass, said processing units consisting of the product of seconds X degrees fahrenheit, and
C. cooling the extruded cooked mixture.

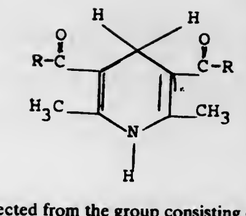
3,883,673

STABILIZATION OF CAROTENE

Solomon Aronovich Giller, ulitsa Pernavas 10, kv. 76; Gunar Yanovich Dubur, ulitsa Suvorova 117, kv. 12, both of Riga; Yan Rikhardovich Uldrikis, ulitsa Darza, 2, kv. 2, Elgava; Gunar Jamovich Tirzit, ulitsa Zhagatu, 22, kv. 33, Riga; Andrei Robertovich Valdman, ulitsa Lenina, 167, Riga; Ivan Markovich Zakharchenko, ulitsa P. Stuckhi, 9/11, kv. 4, Riga; Yazep Yanovich Spruz, ulitsa Lenina, 103, kv. 8, Rezekne; Vitaly Evgenievich Ronis, ulitsa Ermolovoi, 17, kv. 66, Moscow, and Alexandr Andrejevich Makarov, P/o Lugovaya, 3, Moskovskaya Oblast, all of U.S.S.R.

Division of Ser. No. 269,391, July 6, 1972, abandoned, which is a division of Ser. No. 55,288, July 15, 1970, abandoned. This application May 4, 1973, Ser. No. 357,271
Claims priority, application U.S.S.R., July 22, 1969, 135274
Int. Cl. A23l *1/26*
U.S. Cl. 426—311 **2 Claims**

1. A method of stabilizing carotene contained in fodder products, such as grass flour, comprising treating said fodder products with a 3,5-dicarbonyl derivative of 2,6-dimethyl-1,4-dihydropyridine, conforming to the general formula:



where R is selected from the group consisting of a lower alkyl and an alkoxy, said derivative being taken in the form of a solution in ethanol or in isopropanol or in a vegetable oil in such an amount that the content of the stabilizer in the resulting fodder product is 0.2 g per kg.

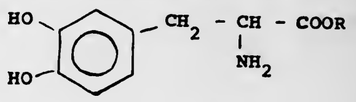
3,883,674

METHOD OF STABILIZING ORGANIC COMPOUNDS AGAINST OXIDATION WITH DOPA OR DOPA DERIVATIVES

Sadayoshi Ninagawa, Yokohama, and Shito Takeshita, Kawasaki, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 17, 1973, Ser. No. 389,205
Claims priority, application Japan, Sept. 1, 1972, 47-87790
Int. Cl. A23d *5/04*
U.S. Cl. 426—544 **5 Claims**

1. A method of protecting an organic material against oxidation which comprises mixing said material with an antioxidant which is a compound of the formula



or an acid addition salt of said compound,
a. in said formula R being alkyl having 4 to 24 carbon atoms,
b. said material being an oil, fat, or wax of animal, vegetal, or mineral origin and sensitive to oxidation by atmospheric oxygen, and
c. the amount of said antioxidant being sufficient to retard said oxidation.

3,883,675

METHOD FOR PREPARING BLAND CASEINATES

Joanne G. Fujii, Chicago, Ill., assignor to Beatrice Foods Company, Chicago, Ill.

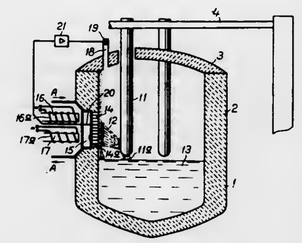
Filed July 28, 1972, Ser. No. 276,168
Int. Cl. N23j *1/20*
U.S. Cl. 426—656 **14 Claims**

1. A method of producing a bland caseinate comprising preparing a solution of an alkaline earth salt selected from a nitrate, carbonate, sulfate, acetate and halide, heating the solution to a temperature of at least 194°F., adding to the solution with stirring an alkali or alkaline earth caseinate while maintaining said temperature and dissolving the said caseinate, allowing a coagulum to form, separating the coagulum from the mother liquid and washing the coagulum, the caseinate being in the solution in an amount of between 1 and 30 w/w% and the said salt being in the solution in an amount of between 20 and 60 w/w% based on the weight of the caseinate.

3,883,676
METHOD FOR TEXTURIZING PARTICULATE PROTEIN MATERIAL
Palmer K. Strommer, Osseo, Minn., assignor to General Mills, Inc., Minneapolis, Minn.
Filed Oct. 18, 1973, Ser. No. 407,750
Int. Cl. A23j 3/00
U.S. Cl. 426—511 **8 Claims**

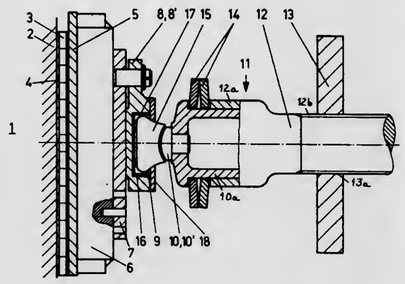
1. In a method for texturizing particulate protein material including feeding the particulate protein material to an elongated pressurized treating chamber, said protein material having a moisture content of between 4 and 40 percent by weight, said chamber having an inlet at one end and an outlet at the other end, said material having sufficient protein content for texturizing, subjecting said particulate material while in said inlet with pressurized fluid from the chamber and subjecting the material to a steam flow from the direction of the inlet into the elongated chamber thereby texturizing said protein material, the steam flow being of sufficient force to propel said material through the elongated chamber and out of the outlet, the pressure in said chamber being at least about 15 p.s.i.g., the steam temperature in said chamber being at least 250°F.; the improvement comprising: the step of cutting said texturized protein material while in said elongated pressurized treating chamber.

3,883,677
ELECTRIC ARC FURNACE HAVING SIDE-WALL LINING PROTECTION
Bertil Hanas, and Jan Marchner, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Apr. 5, 1974, Ser. No. 458,353
Claims priority, application Sweden, Apr. 5, 1973, 7304776
Int. Cl. F27d 1/00
U.S. Cl. 13—35 **5 Claims**



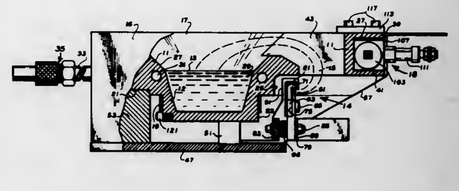
1. An electric arc furnace comprising at least one electrode having an end forming an arc producing an arc flare, a side wall lining having at least one portion having an inside positioned to be bombarded by said flare, said portion having an outside, a magnet having pole-piece ends on said outside forming a magnet flux field traveling through said portion and beyond said inside and on said inside holding ferro-magnetic particles forming a flare shield until the particles are heated to their Curie point temperatures, and a feeder for feeding said field with replacement ferro-magnetic particles at temperatures lower than their Curie point temperatures; wherein the improvement comprises said lining having an outer surface in which a recess is formed at said portion so that said portion has a reduced wall thickness through which said flux field must travel, and means between said magnet and recess for water-cooling said portion of reduced wall thickness.

3,883,678
INDUCTION TYPE CRUCIBLE FURNACE
Fritz Hegewaldt, Herdecke; Hans Werner Mauve, Lunen-Brambauer, and Otto Erdmann, Dortmund, all of Germany, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland
Filed Mar. 5, 1974, Ser. No. 448,407
Claims priority, application Germany, Mar. 16, 1973, 2313157
Int. Cl. H05b 5/18
U.S. Cl. 13—27 **4 Claims**



1. In a crucible furnace of the induction type the combination comprising a ceramic melting pot, said melting pot being supported at the inner side of an induction coil, transformer-lamination packets distributed around and in contact with the outer side of said coil in uniformly spaced relation, support plates secured along the periphery of said transformer-lamination packets, a thrust bearing secured at the side of each said support plate, each said thrust bearing being constructed as an electrical insulator and provided with a recess in which a press head engages and including a cover member which surrounds and captures a portion of said press head, and each said press head being constructed as an electrical insulator and disposed at the end of a radially adjustable clamping means threadedly engaged with an upright post forming a component of the mounting base of the furnace.

3,883,679
VAPOR SOURCE ASSEMBLY
Robert L. Shrader, Castro Valley, and Kazumi N. Tsujimoto, El Cerrito, both of Calif., assignors to Airco, Inc., Montvale, N.J.
Continuation-in-part of Ser. No. 386,489, Aug. 8, 1973, abandoned. This application May 6, 1974, Ser. No. 466,996
Int. Cl. H01j 37/14
U.S. Cl. 13—31 **4 Claims**

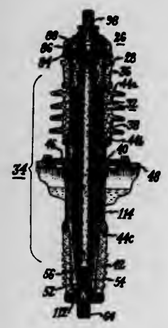


1. A vapor source assembly comprising means forming a crucible for containing material to be vaporized, an electron beam gun for producing an electron beam, deflecting means for producing at least one magnetic field having lines of force extending transversely of the path of the electron beam to deflect the electron beam through an arcuate path from said electron beam gun to said crucible, said deflecting means including a pair of pole members positioned on opposite sides of said crucible and between which the lines of force of the magnetic field extend, and magnetic shield means positioned between said pole members and said crucible for preventing at least some of the lines of force extending between said pole members from passing through said crucible.

3,883,680
HIGH VOLTAGE ELECTRICAL BUSHING INCORPORATING A CENTRAL CONDUCTOR EXPANDABLE EXPANSION CHAMBER
William A. Keen, Jr., Cheshire, Mass., assignor to General Electric Company
Filed Jan. 18, 1974, Ser. No. 434,386
Int. Cl. H01b 17/26, 17/34
U.S. Cl. 174—12 BH **15 Claims**

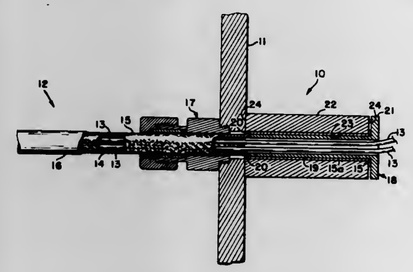
1. An electrical bushing assembly of the type having,
a hollow insulating housing,
an elongated hollow conductor extending through the hollow portion of said hollow insulating housing,
a dielectric fluid inside said hollow insulating housing completely surrounding said elongated hollow conductor, said dielectric fluid having a temperature dependent volume; wherein the improvement comprises:
a. a dielectric fluid-containing chamber, inside said elongated hollow conductor, having at least two fluid barriers, at least one of which is movable to vary the volume of said dielectric fluid-containing chamber; and

b. an opening into said dielectric fluid-containing chamber that allows movement of said dielectric fluid into



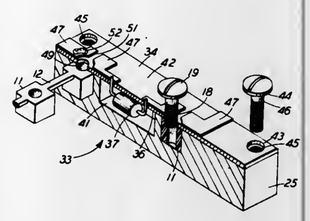
and out of said dielectric fluid-containing chamber in response to thermal expansion and contraction of said dielectric fluid.

3,883,681
ANCHOR ASSEMBLY FOR STRENGTH MEMBER OF COMMUNICATION CABLE
Robyn M. Campbell, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 17, 1973, Ser. No. 425,357
Int. Cl. H02g 3/06
U.S. Cl. 174—65 R **2 Claims**



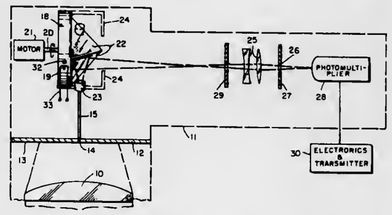
1. A secure mechanical interconnection comprising:
a wall member having an opening therethrough;
a coaxial cable having at least one axially extending conductor of electromagnetic energy, insulation covering said conductor, an elongate braided conductive shielding coaxially disposed about said insulation and an elongate flexible covering coaxially carried on said shielding, said cable extending through said opening in said wall member;
a rigid elongate tubular-shaped member having an inner diameter sized to contain and containing said conductor therethrough and further having an outer diameter sized to fit and fitting within said braided conductive shielding in a slidable relationship, said elongate tubular-shaped member being provided with an annular rounded shoulder at one end and a radially extending rim at its opposite end and;
a rigid cylindrically-shaped member coaxially carried on said rigid elongate tubular-shaped member by having a coaxial bore sized to fit about said tubular-shaped member and said braided conductive shielding, said cylindrically-shaped member being configured with oppositely facing ends for mechanically engaging an inner surface of the wall member and said radially extending rim of said tubular-shaped member, as a tensile force is exerted on said coaxial cable, said braided conductive shielding uniformly gripping said elongate tubular-shaped member along the surfaces defined by said outer diameter and said rounded shoulder and said radially extending rim bearing against one oppositely facing end of said rigid cylindrically-shaped member to transfer the tensile force to the wall member via the other oppositely facing end of said rigid cylindrically-shaped member.

3,883,682
CIRCUIT ASSEMBLY
Albert W. Cagle, Raytown; Wayne E. Greer, Independence, and Wilbur J. Weight, Lee's Summit, all of Mo., assignors to Western Electric Co., Inc., New York, N.Y.
Division of Ser. No. 228,152, Feb. 22, 1972. This application May 6, 1974, Ser. No. 467,360
Int. Cl. H05k 1/12
U.S. Cl. 174—68.5 **5 Claims**



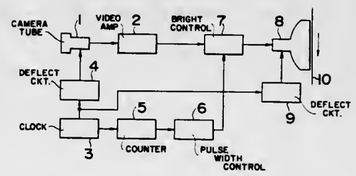
1. A circuit board assembly comprising:
a base having a flat surface, a plurality of cavities located according to a defined pattern in the flat surface, and a plurality of channels located in the plane of the flat surface, each of the channels connecting one of the cavities with at least one other adjacent one of the cavities;
an array of fasteners comprised of a plurality of apertured blocks, and a plurality of runners interconnecting the blocks into a self-supporting structure, the runners positioning the blocks substantially according to the pattern of cavities in the base, each of the blocks occupying one of the cavities in the flat surface of the base, the runners being positioned within the channels;
a circuit board located with one side thereof contiguous to the flat surface of the base and to the array of fasteners, the board having (1) a plurality of apertures arranged in a pattern which coincides with the pattern of cavities, the apertures in the board being coaxially aligned with the apertures of the fasteners located within the cavities, and (2) a circuit conductor pattern on a second side facing away from the base, the conductor pattern including a plurality of conductor pairs corresponding in number to the apertures through the board, each conductor pair straddling one of the apertures in the board; and
a plurality of wide-headed contact screws inserted into each of the apertures in the board and extending through the board into locking engagement with the apertures of the fasteners, the head of each screw adapted to make contact with both conductors of the corresponding pair of conductors for establishing electrical continuity between such pair of conductors.

3,883,683
HIGH SPEED LINE SCANNER
Herman I. Pardes, Wanamassa, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed July 9, 1963, Ser. No. 294,795
Int. Cl. H04n 7/00
U.S. Cl. 178—6 **4 Claims**



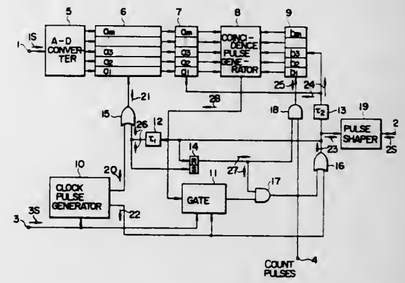
1. In combination with a moving vehicle a line scanning apparatus secured to the vehicle comprising a main imaging lens to image the subject upon a focal plane, a thin flexible fiber optic unit of sheet-like form having its fibers arranged in the same lateral sequence at its input and output ends and operable to transmit one scan line at a time from said focal plane to an arcuate line at its output end, a driven scanner rotating upon an axis at the center of said arcuate line having at least one scanning lens of short focal length fixed on the scanner to move close to the said arcuate end of the fiber optic unit in focus with the ends of the fibers, means to produce timing signals at the beginning and end of each line scanned, a fixed condenser lens, a mirror fixed to the scanner positioned to reflect light passing through the scanner lens to said condensing lens, a fixed aperture plate acting to reduce the reflected light passing the condenser lens to a small area beam, light sensing means receiving said small beam and communication and reproduction means modulated by the output of said sensing means.

3,883,684
SYSTEM FOR RECORDING AN INSTANTANEOUS CONFIGURATION OF MOVING BODIES
Yoshizo Ikegami, Amagasaki, and Kenzo Yamanouchi, Kobey, both of Japan, assignors to Konan Camera Research Institute, Japan
Filed Apr. 6, 1973, Ser. No. 348,602
Claims priority, application Japan, Apr. 10, 1972, 47-36336
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 **11 Claims**



1. A system for obtaining a record of the configuration at a required location of bodies moving in the same general direction, comprising fixed camera means for constantly scanning a line covering a location at which it is desired to obtain a record and for producing video output signals indicative thereof, video signal memory means responsive to said video output signals for synchronously converting said video output signals to photo-signals to be recorded, and recording material means movable in a predetermined direction relative to said video signal memory means, said recording material means being responsive to said photo-signals for producing on the surface thereof a photo-image corresponding to the scene scanned by said camera means, said video signal memory means including line means for producing on the photo-image on the surface of said recording material means lines extending transversely to the direction of movement thereof and being indicative of predetermined intervals of time.

3,883,685
PICTURE SIGNAL CONVERSION SYSTEM
Yasufumi Yumde, and Takashi Furuhata, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan
Filed July 17, 1973, Ser. No. 379,950
Claims priority, application Japan, July 19, 1972, 47-72341
Int. Cl. H04n 7/12
U.S. Cl. 178—6.8 **24 Claims**



1. A signal conversion system for converting a picture signal into a pulse train signal of a low frequency band, comprising:
analog to digital converting means for converting a picture signal into a coded signal by sampling the picture signal;
a digital memory having a capacity capable of storing at least one frame of a picture signal converted into the digital signal, in and from which the digital signal can be written and read by the application of a pulse signal thereto;
means for producing clock pulses having periods equal to the sampling periods by the analog to digital converting means;
a hold circuit for temporarily storing one coded sample value read from the digital memory;
means for producing a reference pulse signal having a predetermined period;
counting means for counting the number of pulses of the reference pulse signal produced by the pulse signal producing means;
a coincidence circuit for producing a coincidence pulse when the coded signal stored in the hold circuit and the coded signal corresponding
to the number counted by the counting means are in agreement with each other;
means for writing the picture signal of one frame coded by the analog to digital converting means, successively, sample value by sample value, in the digital memory by the application thereto of the clock pulses from the clock pulse producing means;
means for producing, upon completion of writing the picture signal of one frame in the digital memory, a pulse to output it as one of the pulses of an output pulse train signal, and to apply it to the digital memory to read one sample value of the stored coded signal therefrom, and for storing the read out one sample value in the hold circuit;
means for supplying the coincidence circuit with the coded signal stored in the hold circuit and the coded signal representative of the number of pulses of the reference pulse signal counted by the counting means to compare them; and
means for providing the coincidence pulse produced by the coincidence circuit as the pulse train signal, for resetting the counting means and the hold circuit by the coinci-

dence pulse, and for applying the coincidence pulse to the digital memory to read therefrom the next one coded

detector means receiving an uninterrupted sequence of bits

dence pulse, and for applying the coincidence pulse to the digital memory to read therefrom the next one sample value of the stored coded signal which is stored in the hold circuit.

3,883,686

METHOD TO REDUCE THE EFFECT OF A LOSS OF INFORMATION DURING TRANSMISSION COMPRESSED BAND WIDTH AND DEVICE FOR CARRYING OUT THE METHOD

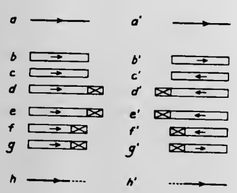
Anton Christian Jacobaeus, and Lars Ake Wern, both of Stockholm, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Sept. 20, 1973, Ser. No. 399,400

Claims priority, application Sweden, Oct. 12, 1972, 13182/72

Int. Cl. H04n *1/38*

U.S. Cl. 178—6.8 **10 Claims**



5. In a system for transmitting TV-pictures, apparatus for transmitting at compressed bandwidth a PCM-signal representing the light intensity of picture elements sequentially scanned in a TV-frame conprising: a coder means for sequentially coding analog light intensity signals to first PCM-words, each PCM-word representing the light intensity of a picture element; storage means for sequentially registering the first PCM-words representing a first set of the picture elements in a first group and for sequentially registering the first PCM-words representing a second set of picture elements in a second group, and for sequentially reading out the first PCM-words of said first group and said second group so that the words of one of the groups are read out in the same order as the first PCM-words are generated by said coder means and the words of the other group are read out in the opposite order; and recoder means receiving the read-out first PCM-words from said storage means for recoding said first PCM-words to second PCM-words representing compressed coded information about the picture elements.

3,883,687

CODED SIGNAL SYNCHRONIZING DEVICE

Claude Stenstrom, Villebon sur Yvette, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel

Filed Sept. 26, 1973, Ser. No. 400,831

Claims priority, application France, Sept. 26, 1972, 72.34053

Int. Cl. H03k *5/00, 13/00*

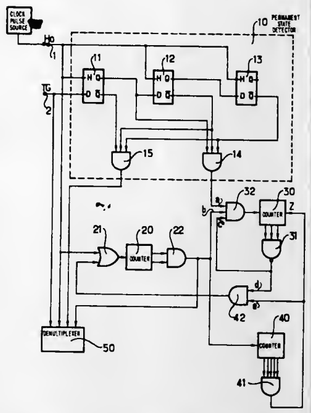
U.S. Cl. 178—69.5 R **9 Claims**

1. A synchronization device for use in the receiving unit of a data transmission system providing signals of first and second levels and operating by division of time into intervals having a fixed duration subdivided into subintervals during which a signal transition between said first and second levels may occur, with coding of the interval in which a transition appears being represented by a word of *p* bits identifying the order of the subinterval thereof in which the transition occurs and the coding of the interval in which no transition occurs being represented by a first permanent word of *p* bits for one level and a second permanent word of *p* bits for a second level, comprising

detector means receiving an uninterrupted sequence of bits for detecting each occurrence of one of said first and second permanent words and providing an output in response thereto,

means providing clock signals synchronized to said sequence of bits,

first counter means responsive to said clock signals for providing a synchronizing output for each count of *p* clock signals,



second counter means responsive to the outputs of said detector means and said first counter means for counting the number of occurrences of said one of said first and second permanent words in synchronism with said synchronizing output, and

control means responsive to said first and second counter means for advancing the count of said first counter means independently of said clock signals each time the count of said second counter means is less than a prescribed amount within an interval of a given number of synchronizing outputs.

3,883,688

METHOD AND ARRANGEMENT FOR RECORDING BY A WRITING BEAM

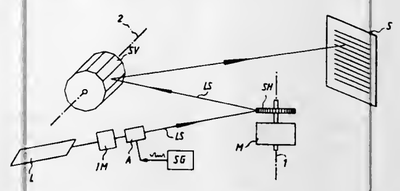
Ulrich Greis, Weyarn, and Josef Helmberger, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 26, 1974, Ser. No. 446,019

Claims priority, application Germany, Mar. 29, 1973, 2315594

Int. Cl. H04n *5/66, 5/84*

U.S. Cl. 178—6.7 R **15 Claims**



7. An arrangement for line-by-line recording of information by a controlled writing beam comprising means for generating a writing beam; a recording medium spaced from said generating means; means for controlling movement of said writing beam to produce on said recording medium a plurality of substantially parallel recording lines spaced in transverse direction from each other, said controlling means producing in said recording lines transverse deflections forming a repeating error pattern; and means for superimposing deflections to said beam in accordance with statistical fluctuations to suppress said error pattern.

3,883,689

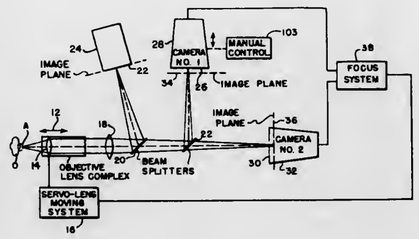
SERVO-CONTROLLED INTRAVITAL MICROSCOPE SYSTEM

Momtaz N. Mansour; Harold J. Wayland, both of Pasadena, and Carl P. Chapman, La Crescenta, all of Calif., assignors to The United States of America as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Sept. 4, 1973, Ser. No. 394,149

Int. Cl. H04n *5/38*

U.S. Cl. 178—7.2 **7 Claims**



1. Microscope apparatus for viewing a moving area of an object comprising:

lens means positioned behind the object;

lens moving means for moving the lens means;

viewing means positioned behind the lens means;

first and second video camera means positioned behind the lens means for generating video signals, the first camera means positioned slightly behind the image plane of the lens means and the second camera means positioned slightly in front of the image plane of the lens means;

beamsplitter means positioned behind the lens means and in front of the viewing means and the video camera means, to pass light to the viewing means and each camera means;

first and second focus sensor circuits respectively connected to the outputs of the video camera means, each focus circuit including a first electrical filter for passing only predetermined high frequency components of the video signal, low pass filter means for integrating signals representing the high frequency components, and means for coupling the first filter to the low pass filter means;

difference circuit means coupled to the outputs of the first and second focus means for generating a signal value representing the difference between the outputs of the low pass filter means of the two focus circuits; and

servo means coupled to said difference means for energizing the lens moving means to move the lens means with a directional component toward and away from the object.

3,883,690

JUNCTION UNIT ALTERNATIVELY PROVIDING BRANCH LINE BROADCASTING OF DATA AND BRANCH LINE SELECTION

Leo Michael Kolensky, Irvington; Randolph John Pilc, Holmdel; Walter Rudolph Schaefer, Wall Township, Monmouth, and Allan Howard Willand, Loch Arbour, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 19, 1973, Ser. No. 426,333

Int. Cl. H04h *9/00;* **H04l** *25/20*

U.S. Cl. 178—73 **8 Claims**

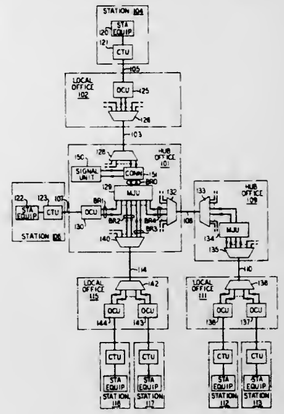
1. A junction unit interconnecting a plurality of two-way branch lines, one of the branch lines extending to control equipment, the junction unit comprising,

means for repeating signals received from each of the branch lines,

means for broadcasting the repeated signals to all of the other branch lines,

means for blocking the repeated signals,

means for distinguishing between the reception of data signals and control signals from each of the branch lines



and for enabling the blocking means in response to the reception of control signals, and

means responsive to branch line selection signals received from the branch line extending to the control equipment for disabling the distinguishing means of the selected branch line and of the control branch line and for enabling the blocking means of each unselected branch line whereby the control branch line and the selected branch line are enabled to interchange both data and control signals.

3,883,691

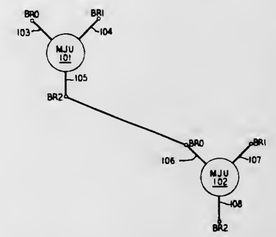
JUNCTION UNIT ALTERNATIVELY PROVIDING BRANCH LINE BROADCASTING AND EXCLUSIVE TWO-BRANCH INTERCONNECTION

Randolph John Pilc, Holmdel, and Gabriel Gary Schlanger, West Orange, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1973, Ser. No. 427,318

Int. Cl. H04h *9/00;* **H04l** *25/20*

U.S. Cl. 178—73 **15 Claims**



1. A junction unit for terminating a plurality of two-way branch lines, the junction unit including signal paths interconnecting an incoming side of each branch line with outgoing sides of all of the other branch lines,

Characterized in that

the junction unit further includes means responsive to con-

current reception of signals from the incoming sides of two of the branch lines for severing signal paths exclusive of the signal paths interconnecting the two branch lines.

3,883,692

DECODER APPARATUS WITH LOGIC CIRCUIT FOR USE WITH A FOUR CHANNEL STEREO

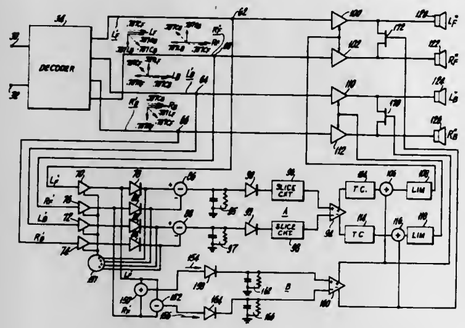
Katsuaki Tsurushima, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 272,439, July 17, 1972, Pat. No. 3,786,193. This application June 7, 1973, Ser. No. 367,886

Claims priority, application Japan, June 16, 1972, 47-60100

Int. Cl. H04r *5/00*

U.S. Cl. 179—1 GQ **8 Claims**



1. Four channel stereo system decoder apparatus for converting first and second composite signals L_T and R_T respectively containing, dominant left-front (L_F) aand right-front (R_F) signal components, each including side-effect left-back (L_B) and right-back (R_B) signal components, if present, and wherein the L_B signal components have substantially equal magnitudes and are in substantially quadrature relationship with each other in the L_T and R_T composite signals and the L_B signal component in one of the L_T and R_T composite signals is in leading relationship with the L_B component in the other of the L_T and R_T composite signals and wherein the R_B signal components have substantially equal magnitudes and are in substantially quadrature relationship with each other in the L_T and R_T composite signals and the R_B signal component in one of the L_T and R_T composite signals is in lagging relationship with the R_B signal component in the other of the L_T and R_T composite signals, into four separate output signals designated as first, second, third and fourth output signals, respectively predominantly containing L_F, R_F, L_B and $R_B$signal components, respectively, the apparatus comprising in combination: a decoding matrix having first and second input terminals to which the L_T and R_T composite signals are respectively applied, first, second, third and fourth output terminals at which the first, second, third and fourth output signals appear; a plurality of phase-shifting networks and a plurality of combining networks connected to each other between the input terminals and the output terminals and being operative to transfer substantially equal amounts of L_F, R_F, L_B and R_B signal components as dominant signals in phase with each other to the first, second, third and fourth output terminals, respectively, the L_F and R_F dominant signals each being accompanied by lower amplitude, quadrature related L_B and R_B signal components with the L_B components accompanying each one of the dominant L_F and R_F signals being in phase opposition to the R_B components accompanying the other of the dominant L_F and R_F signals and the L_B and R_B dominant signals each being accompanied by lower amplitude, quadrature related L_F and R_F signal components with the L_F signal components accompanying each one of the dominant L_B and R_B signals being in phase opposition to the R_F signal components accompanying the other of the L_B and R_B signals; first, second, third and fourth variable transmission means connected to the first, second, third and fourth output terminals, respectively, of the decoding matrix; first logic means having first, second, third and fourth input terminals connected to the first, second, third and fourth output terminals, respectively, of the decoding matrix, the first logic means including first, second, third and fourth rectifiers for full wave rectifying the signals appearing at the first, second, third and fourth input terminals of the first logic means, respectively, first subtracting means for subtracting the second rectified signal from the first rectified signal to produce a first difference signal, second subtracting means for subtracting the fourth rectified signal from the third rectified signal to produce a second difference signal and first comparing means for comparing the magnitudes of the first and second difference signals to produce first and second control signals; second logic means having means for receiving the signals applied to the first and second input terminals of the first logic means, combining means for combining the signals received by the second logic means, third subtracting means for subtracting the signal received from the second input terminal of the first logic means from the signal received from the first input terminal of the first logic means, fifth and sixth rectifiers for full wave rectifying the output signals derived from the combining means and the third subtracting means, respectively, and second comparing means for comparing the magnitudes of the output signals derived from the fifth and sixth rectifying means and for producing third and fourth control signals; and means for selectively applying the first, second, third and fourth control signals to the first, second, third and fourth variable transmission means to substantially eliminate crosstalk signal components from the signals transmitted by said first, second, third and fourth variable transmission means.

3,883,693

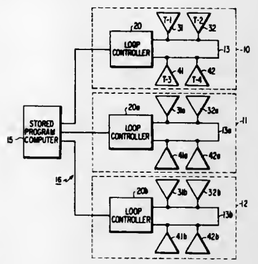
DIGITAL COMMUNICATION SYSTEM

Clarence J. Moore, Philadelphia, Pa., assignor to Applied Information Industries, Moorestown, N.J.

Filed July 11, 1972, Ser. No. 270,649

Int. Cl. H04j *3/08*

U.S. Cl. 179—15 AL **12 Claims**



1. A digital communication system for a plurality of transmitting and receiving terminals connected to a loop signal path, said system comprising the steps of:

transmitting in a certain sequence on said loop path at regular time periods digital messages to be received by said terminals in said sequence and having data words and identifying addresses individually associated with said terminals,

receiving from said loop path digital reply messages transmitted by said terminals,

and storing said reply messages in association with said identifying addresses for subsequent transmitting to said terminals in said sequence,

and linking certain terminals for intercommunication including changing the setting of said sequence of terminals that receive said digital messages,

and repeating a substantial number of times for each sequence setting the operational cycle of said transmitting, receiving and storing steps.

3,883,694

LOUD SPEAKER FOR TELEPHONE

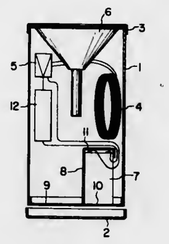
Kenichi Watanabe, 4-14-17, Naka-machi, Setagaya-ku, Tokyo, Japan

Filed Apr. 27, 1973, Ser. No. 354,999

Claims priority, application Japan, May 8, 1972, 47-53466; Dec. 23, 1972, 48-618; Dec. 30, 1972, 48-1049

Int. Cl. H04m *1/21*

U.S. Cl. 179—1 HF **2 Claims**



1. A loud-speaker device for use with a telephone comprising a case of non-magnetic material, said case having an axis and two opposite ends extending transverse to said axis so that the case can be rested on either of said ends on a supporting surface in proximity to a telephone receiver which is also rested on said supporting surface, said axis being vertical whichever of said ends is rested on the supporting surface, said case containing a pick-up coil for receiving electromagnetic energy from voice frequency current of the telephone, means for amplifying voice frequency current generated in the coil from said energy, a speaker for transducing the output of said amplifier to audible sound, a source of electrical power connected to the amplifier for making the amplifier operational and a switch included in a connection from the power source to the amplifier for turning the power to the amplifier on or off, said switch being a gravity operated switch which activates the amplifier when the case is rested on one end and deactivates the amplifier when the case is rested on the other end, and in which said speaker is at an end of the case and a cover closes said end, and means on the exterior of said cover for indicating the position of the pick-up coil within the case.

3,883,695

ALARM REPORTING SYSTEM FOR TRANSMITTING DIGITAL ALARM SIGNALS VIA A TELEPHONE LINE

Richard Leroy Bickel, Dallas, and Richard Carroll Osborne, Richardson, both of Tex., assignors to Vertex Science Industries, Inc., Dallas, Tex.

Filed May 14, 1973, Ser. No. 359,723

Int. Cl. H04m *11/04*

U.S. Cl. 179—5 R **9 Claims**

1. An alarm reporting system comprising:

a plurality of sensor consoles each having at least one alarm sensor connected thereto,

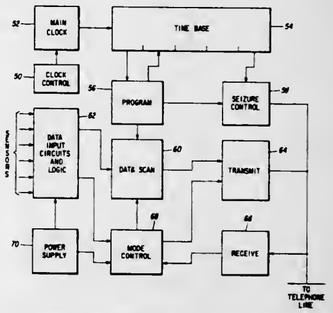
means in each said sensor console for seizing a conventional telephone line in response to the detection of an alarm situation by one of said alarm sensors,

dialing means in said sensor consoles for transmitting digital dialing signals over the seized telephone line,

a central station responsive to the ringing of the dialed telephone line for transmitting over the telephone line to the calling sensor console a digital handshake signal,

transmission means at said calling sensor console responsive to the reception of said handshake signal for transmitting over the telephone line first digital alarm signals representative of the identity of the calling sensor console and of the nature of the alarm situation,

means at said central station for storing said first digital alarm signals and for transmitting another digital handshake signal, whereupon said transmission means transmits a second digital alarm signal over the telephone lines,



comparator means at said central station for generating an alarm indication if said first and second digital alarm signals match according to predetermined criteria,

means for dialing a second alternate telephone number if the telephone is not answered at said central station, and means for slowing down the transmission of said digital alarm signals via the telephone lines to the alternate telephone station.

3,883,696

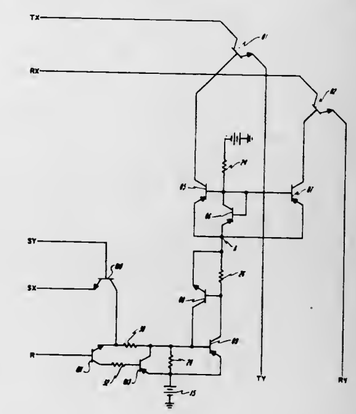
SOLID STATE CROSSPOINT SWITCH

Glenn L. Richards, Caledonia, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 232,031, March 6, 1972, Pat. No. 3,789,151. This application Sept. 28, 1973, Ser. No. 401,744. The portion of the term of this patent subsequent to Jan. 29, 1991, has been disclaimed.

Int. Cl. H04q *3/50*

U.S. Cl. 179—18 GF **2 Claims**



1. A solid state crosspoint switch for interconnecting a first and second lead with a third and fourth lead, respectively, comprising:

two semiconductor devices, each having a controllable path poled for conducting current in the same direction through the interconnection and a control terminal for controlling the amount of current flow therethrough, the

current path of a first one of said devices being connected between the first and third leads, the current path of a

conference to cause code representations of each speech sample from said one of said N subscribers to be transmit-

between 0.3 and 3 radians, the lower frequency limit of the

groove and for generating a second electrical signal in

current path of a first one of said devices being connected between the first and third leads, the current path of a second one of said devices being connected between the second and fourth leads; and

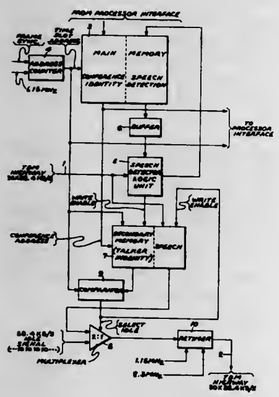
control circuit means connected to the control terminals of said first and second semiconductor devices responsive to switching signals for enabling or disabling both current paths thereof simultaneously, said control circuit means including high impedance current regulating means for providing a substantially fixed current when enabling said first and second semiconductor devices, a flip-flop which is set to enable said current regulating means and reset to disable said current regulating means and first and second switching circuits, said first switching circuit being responsive to a first switching signal for setting said flip-flop and said second switching circuit being responsive to a second switching signal in the presence of the first switching signal for resetting said flip-flop.

3,883,697

DIGITAL CONFERENCE CIRCUIT

Colin R. Brown, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Oct. 18, 1973, Ser. No. 407,686
Int. Cl. H04m *3/56*
U.S. Cl. 179—18 BC **14 Claims**



1. A digital conference circuit for an automatic telephone exchange comprising:

a first TDM (time division multiplex) signal input highway from said exchange to said circuit;

a second TDM signal output highway from said circuit to said exchange;

a main memory having M storage sections each associated with a different one of M channels of said TDM signal, where M is an integer greater than one;

addressing means coupled to said main memory to select in sequence each of said storage sections;

inputs from said exchange coupled to said main memory to set up a conference for N subscribers, said conference being identified by a given digital number which is stored in each of N of said storage sections, each of said N subscribers being connected to said circuit by a different one of N of said channels of said TDM signal, each of said N channels corresponding to a different one of said N of said storage sections, where N is an integer greater than one but less than M; and

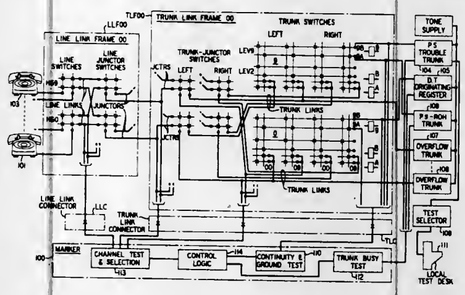
detection and storage means coupled to said addressing means, said first and second highways and said main memory, said detection and storage means being responsive to speech from one of said N subscribers in said conference to cause code representations of each speech sample from said one of said N subscribers to be transmitted to the others of said N subscribers in said conference over said second highway in the appropriate ones of said N of said channels of said TDM signal and to transmit a no-signal code to said one of said N subscribers over said second highway in the appropriate one of said N of said channels of said TDM signal.

3,883,698

ARRANGEMENT FOR HANDLING PERMANENT SIGNALS

John Mason Catterall, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 10, 1974, Ser. No. 432,289
Int. Cl. H04m *3/14*
U.S. Cl. 179—18 F **10 Claims**



1. In a telephone system having a plurality of network switching stages interconnected by links for extending communication paths between said stages,

a first group of trunks connected to one of said stages,

a second group of trunks connected to said links,

trunk test means for ascertaining the availability of trunks in said first group,

channel test means for ascertaining the availability of said links, and

control means responsive to the unavailability of trunks in said first group for using said channel test means for selecting an idle one of said second group trunks.

3,883,699

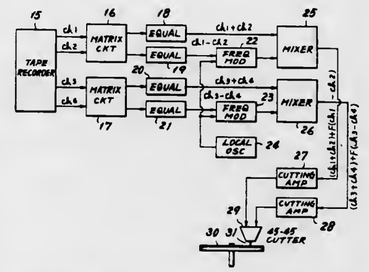
SYSTEM FOR RECORDING AND/OR REPRODUCING FOUR CHANNEL SIGNALS ON A RECORD DISC

Nobuaki Takahashi, Yamato, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Continuation of Ser. No. 92,803, Nov. 25, 1970, Pat. No. 3,686,471. This application June 12, 1972, Ser. No. 261,914
Claims priority, application Japan, Nov. 28, 1969, 44-95587; Mar. 15, 1970, 45-21826; Mar. 24, 1970, 45-24579; July 5, 1970, 45-58313The portion of the term of this patent subsequent to July 11, 1989, has been disclaimed.
Int. Cl. G11b *3/00, 3/74;* **H04b** *5/00*
U.S. Cl. 179—100.4 ST **26 Claims**

1. A system for recording four channel signals in a single groove cut on a record disc, said system comprising signal source means for supplying four separate channel signals, matrix circuit means for composing a first sum signal and a first difference signal responsive to the first and second channel signals and also a second sum signal and a second difference signal responsive to the third and fourth channel signals of the four separate channel signals, single oscillator means for generating a carrier wave having a predetermined frequency, first modulator means for angle modulating said carrier wave with the first difference signal, second modulator means for angle modulating said carrier wave with the second difference signal, each of said modulator means comprising means whereby the phase angle deviation of said carrier wave is

between 0.3 and 3 radians, the lower frequency limit of the carrier wave in the output of each of said modulator means being higher than the upper frequency limit of the first and second sum signals, first mixer means for mixing and multiplexing the first sum signal with the output signal of the first modulator means, second mixer means for mixing and multiplexing the second sum signal with the output signal of the second modulator means, and means for simultaneously recording the output signal of said first mixer means on one wall of a single groove of the record disc and recording the output signal of said second mixer means on the other wall of the groove.

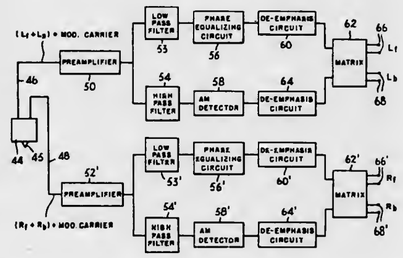


3,883,700

SYSTEM FOR REPRODUCING FOUR CHANNEL SIGNALS RECORDED ON A DISC RECORD

Benjamin B. Bauer, Stamford; Daniel W. Gravereaux, Wilton, and Emil L. Torick, Darien, all of Conn., assignors to CBS Inc., New York, N.Y.

Division of Ser. No. 428,294, Dec. 26, 1973, which is a continuation of Ser. No. 169,219, Aug. 5, 1971, abandoned. This application Apr. 30, 1974, Ser. No. 465,467
Int. Cl. G11b *3/00*
U.S. Cl. 179—100.4 ST **2 Claims**



1. A system for reproducing first, second, third and fourth audio signals which are recorded in a single groove cut on a record disc, wherein a signal representative of the combination of a signal representative of the sum of said first and second audio signals and a single sideband signal with carrier of predetermined frequency modulated by a signal representative of the difference of said first and second audio signals is recorded on one wall of the record groove and a signal representative of the combination of a signal representative of the sum of said third and fourth audio signals and a single sideband with carrier of said predetermined frequency modulated by a signal representative of the difference of said third and fourth audio signals is recorded on the other wall of the record groove, and wherein the lower frequency limit of each of said single sideband with carrier signals is higher than the upper frequency limit of said sum signals, said reproducing system comprising:

pickup means for generating a first electrical signal in response to the signals recorded on the one wall of the groove and for generating a second electrical signal in response to the signals recorded on the other wall of the groove,

first low pass filter means to which said first electrical signal is applied for deriving the signal representative of the sum of said first and second audio signals and first high pass filter means to which said first electrical signal is applied for deriving the single sideband with carrier which is modulated with the signal representative of the difference of said first and second audio signals,

second low pass filter means to which said second electrical signal is applied for deriving the signal representative of the sum of said third and fourth audio signals and second high pass filter means to which said second electrical signal is applied for deriving the single sideband with carrier which is modulated with the signal representative of the difference of said third and fourth audio signals,

first amplitude detector means for demodulating the single sideband with carrier derived by the first high pass filter means to thereby reproduce the signal representative of the difference of said first and second audio signals,

second amplitude detector means for demodulating the modulated carrier wave derived by the second high pass filter means to thereby reproduce the signal representative of the difference of said third and fourth audio signals,

first matrix means responsive to the sum signal derived by said first low pass filter means and the reproduced signal from said first amplitude detector means for separately reproducing the original first and second audio signals, and

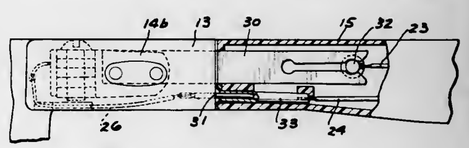
second matrix means responsive to the sum signal derived by said second low pass filter means and the reproduced signal from said second amplitude detector means for separately reproducing the original third and fourth audio signals.

3,883,701

EYEGLASS FRAME WITH HEARING AID

Anthony Delorenzo, 19236 Grand River, Detroit, Mich. 48223

Filed Mar. 18, 1971, Ser. No. 125,480
Int. Cl. G02c *11/06*
U.S. Cl. 179—107 S **2 Claims**



1. The combination comprising

an eyeglass frame front,

a pair of temple tips connected to the frame front,

a pair of electrical lead wires mounted in said frame front, the free ends of said electrical lead wires extending to said temple tips,

a first electric hearing element in one temple,

a second electric hearing element in the other temple,

a first member on said temple tip to which one of said lead wires is connected,

a second member on said temple electrically connected to said hearing element in said temple,

said members having transversely engageable interlocking electrically conductive portions engageable upon relative axial movement of said temple tip and temple toward one another to form a mechanical and electrical connection between said members and the respective temple tip and temple,

and frictionally engageable electrically conductive members on said temple tip and said temple respectively, electrically connected to said other lead wire and said

hearing element in said temple and engageable upon relative axial movement of said temple tip and temple toward one another to provide an electrical connection between said pair of members,

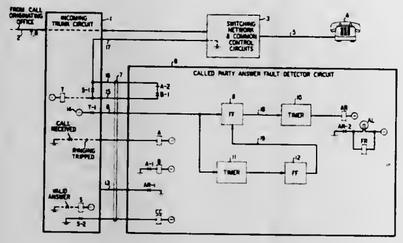
said first member comprising a bifurcated member, said second member comprising a stud engageable by said bifurcated member.

3,883,702

COMMUNICATION PATH FAULT DETECTOR

Alfred Zarouni, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 20, 1974, Ser. No. 471,673
Int. Cl. H04m *3/22*
U.S. Cl. 179—175.3 R **11 Claims**



1. A circuit for use on a communication connection to detect an undesired condition which trips called station ringing and interferes with a called station answer signal needed for call charging and comprising

means responsive to a receipt of a signal signifying a tripping of called station ringing following a receipt of a call for producing a test signal persistent for a prescribed duration,

means activated by said test signal for generating a timed interval an expiration of which indicates an undesired condition that interferes with a valid called station answer signal, and

means responsive to a receipt of a valid called station answer signal during the persistence of said test signal for deactivating said generating means to arrest a generation of said timed interval prior to said expiration.

3,883,703

METHOD FOR CONDITIONING TRANSMISSION LINES UTILIZING ADJUSTABLE EQUALIZERS AND A RECORDING TECHNIQUE

Joseph Kenneth Unger, Morristown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 414,964
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 R **14 Claims**



1. A method for conditioning a transmission line with an adjustable equalizer device, said transmission line linking two communications stations, said method comprising the steps of:

transmitting a magnetically pre-recorded test signal from one station to the other station over the unequalized transmission line linking said two stations;

recording the received signal on a magnetic storage medium at said other station in response to said test signal;

playing said recorded received signal through said equalizer device off-line;

adjusting said equalizer device for a desired response to said recorded received signal; and

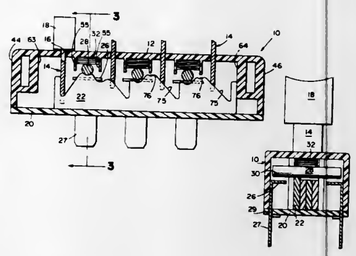
inserting said adjusted equalizer in said transmission line between said two stations.

3,883,704

MULTIPLE PUSHBUTTON SLIDE SWITCH ASSEMBLY WITH LAMINATED SLIDE ACTUATOR MEANS FOR ROD CONTACTS

Charles Azel Barney, Stow, Mass., assignor to Ark-Les Switch Corporation, Watertown, Mass.

Filed Mar. 1, 1974, Ser. No. 447,092
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 EB **4 Claims**



1. A multiple pushbutton slide switch comprising

a housing having an upper wall

a set of slides within said housing, each slide having a single camming edge adjacent said upper wall providing actuator camming surfaces and contact camming surfaces thereon

a plurality of slide actuating elements extending through said upper wall and reciprocable between said upper wall and said slide set, having slide engaging surfaces adjacent said actuator camming surfaces for operating said slides

a plurality of pairs of fixed terminal elements mounted adjacent said housing on either side of said set of slides, each said fixed terminal element havjng a fixed contact portion

a plurality of bodily movable contact elements each having a slide contacting midportion for engagement with said contact camming surfaces on said slides

biasing means biasing said movable contact elements toward said fixed contact portions

each said movable contact element having opposite ends reciprocable in and out of contact with said fixed contact portions of a said pair of fixed terminal elements.

3,883,705

CAM OPERATED, PIVOTED CONTACT SWITCH ASSEMBLY HAVING SPLIT HOUSING AND SAFETY COVER

Robert W. Sebastian, Wheaton; Harry W. Olson, Woodridge, and Thomas F. Silberg, Downers Grove, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jan. 11, 1974, Ser. No. 432,555
Int. Cl. H01h *21/80*
U.S. Cl. 200—6 B **20 Claims**

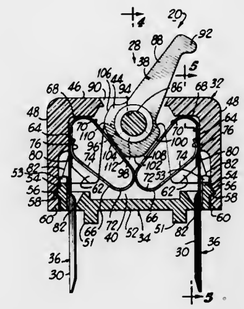
1. A switch assembly comprising:

a housing including a top wall and opposed side walls defining a cavity;

a pair of similar terminals mounted in said cavity, each including a spring contact portion having a base and a loop extending from said base;

said bases being positioned against said opposed side walls and said loops extending toward one another within said cavity, portions of said loops normally abutting one another;

a switch operator pivotally mounted within said cavity for rotational movement between first and second positions



about an axis between said side walls and generally parallel to said side and top walls; and

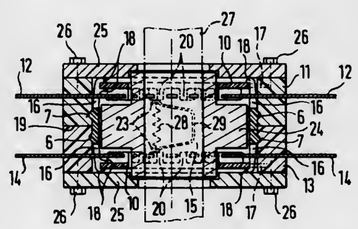
cam means on said operator engageable with at least one said spring contact portion for separating said contact portions upon pivoting of said operator from said first to said second position.

3,883,706

MULTIPLE ROTARY WAFER TYPE SWITCH WITH AXIAL BRIDGING CONTACTS AND MULTIPLE WAFER CONNECTING RING

Karl Glaser, Hohlweg 18, 7021, Stetten, Filder, Germany

Filed Dec. 6, 1973, Ser. No. 422,135
Claims priority, application Germany, Dec. 7, 1972, 2260018
Int. Cl. H01h *19/04*
U.S. Cl. 200—11 A **10 Claims**



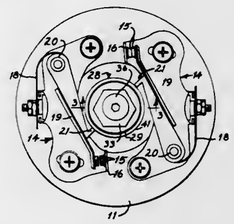
1. Multiple rotary changeover switch comprising at least two circular insulating members each having a central opening, said members being assembled with end faces thereof being in contact and their openings in registry, radially inwardly extending contact tongues embedded in said insulating members for cooperation with a rotor having contact bridges arranged in said central openings, and an elastically deformable connecting ring disposed in said central openings and axially overlapping said insulating members, and complimentary projections and grooves provided on said connecting ring and insulating members, whereby said connecting ring resiliently engages said insulating members and holds them coaxially towards one another in said assembled relationship.

3,883,707

AUTOMOTIVE DISTRIBUTOR CIRCUIT BREAKER WITH ECCENTRICALLY MOUNTED, ROLLER BEARING TYPE CAM

Robert Wenzlaff, Seattle, Wash., assignor to Breakthrough Research & Development Corp., Spokane, Wash.

Filed Jan. 17, 1974, Ser. No. 434,295
Int. Cl. H01h *3/42*
U.S. Cl. 200—30 R **4 Claims**



1. In an ignition distributor of the type mounted on an internal combustion engine and including a distributor drive shaft having an outer end operatively powered by said engine to rotate about a fixed axis, at least one set of normally-closed, spring-loaded contact points mounted to a plate adjacent said distributor drive shaft and having a wiper associated with one of the contact points, said wiper being biased toward the fixed axis, and contact point actuator means mounted to the outer end of the distributor drive shaft for rotation therewith, said contact point actuator means having an exterior surface thereon in engagement with the wiper for operating the wiper in response to rotation of the distributor drive shaft to move the wiper radially with respcet to said fixed axis, thereby opening and closing said contact points, an improvement in said contact point actuator means comprising:

a drive member mounted to the outer end of the distributor drive shaft for rotation therewith about said fixed axis, said member having an eccentric exterior surface centered about an actuator axis parallel to and spaced from said fixed axis;

an actuator member rotatably mounted to the eccentric exterior surface of said drive member for free rotation of said actuator member relative to said drive member about said actuator axis, said actuator member having an exterior surface engaged by said wiper, whereby rotation of said distributor drive shaft serves to rotate said drive member about said fixed axis and permits the actuator member to wobble the exterior surface of said actuator member against the wiper and thereby alternately open and close the contact points without relative sliding movement between said actuator member and said wiper.

3,883,708

TIMER SWITCH ASSEMBLY WITH INDEPENDENTLY CONTROLLED MANUAL AND MOTOR DRIVEN CAMS

Irving Gebel, Skokie, and Michael H. Enger, Schaumburg, both of Ill., assignors to Controls Company of America, Schiller Park, Ill.

Filed Jan. 14, 1974, Ser. No. 432,852
Int. Cl. H01h *43/10*
U.S. Cl. 200—38 R **3 Claims**

1. A timer comprising,

an electric motor including a housing and a drive shaft projecting from and normal to the housing,

a cam mounted on and driven by the motor drive shaft,

normally open switch means periodically actuated to closed position by said cam as the cam rotates,

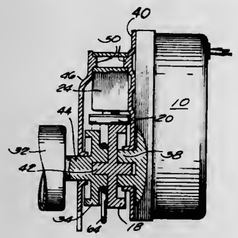
a bracket mounted on and parallel to the housing,

a manually operated actuator journaled in the bracket and rotatable between an inoperative position and an opera-

tive position in which it actuates said switch means to

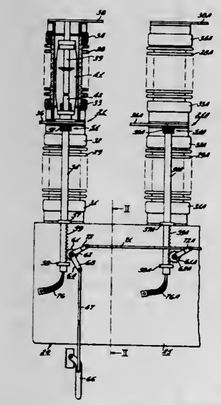
3,883,710

tive position in which it actuates said switch means to closed position and keeps the switch means closed independently of the cam,



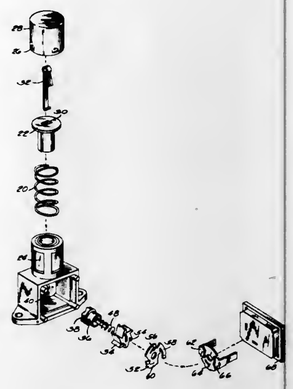
said actuator including a shaft one end of which journals said cam and the other end of which projects through the bracket for manual operation.

3,883,709
VACUUM CAPACITOR SWITCH HAVING GROUNDING SWITCH MEANS
David R. Cole, Tigard, Oreg., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 7, 1973, Ser. No. 422,893
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **3 Claims**



1. In a multiphase vacuum capacitor switch having a supporting base;
a plurality of vacuum interrupters each of which has a pair of separable contacts one of which is stationary and the other of which is movable into and out of engagement with said stationary contact;
a grounding contact associated with each vacuum interrupter, said grounding contact being supported by its associated vacuum interrupter and in electrical conducting relationship with the movable contact of the vacuum interrupter;
a grounded contact rod for each of said vacuum interrupters, said grounded contact rods being carried by said supporting base in position to engage with an associated grounding contact;
operating means connected to said grounding contact rods for effecting the simultaneous movement of said grounding contact rods; and,
a single actuator connected to said operating means for effecting operation of said operating means.

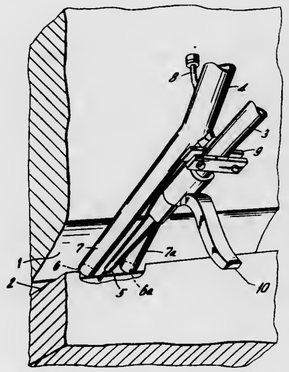
3,883,710
HEADLIGHT DIMMER SWITCH
Tore B. Hanssen, and Albert F. Ditzig, both of Roselle, Ill., assignors to Controls Company of America, Schiller Park, Ill.
Filed Nov. 14, 1973, Ser. No. 415,837
Int. Cl. H01h *1/56, 13/58*
U.S. Cl. 200—156 **3 Claims**



1. A switch including
a housing,
a plunger mounted in the housing for reciprocal motion and biased outwardly,
an electrically conductive wiper mounted in the housing for rotation in discreet steps and having three equally spaced resilient wiper arms,
three contacts fixed in the housing about the axis of rotation of the wiper for engagement by the wiper arms,
the first and third of said contacts being diametrically opposed with each being in the general shape of a segment of an annulus,
the second of said contacts including two connected diametrically opposed contact portions each having the general shape of a segment of an annulus,
the contact portions of said second contact lying between the first and third contacts and having greater angular embrace than the first and third contacts so the second contact is always engaged by a wiper arm and the next to be engaged contact of the first and third contacts will be engaged before engagement with the other of the first and third contacts is broken,
two of the three wiper arms always contacting the second contact in any at-rest position.

3,883,711
METHOD AND APPARATUS FOR FORMING TRANSVERSE WELDED SEAMS BETWEEN VERTICALLY ORIENTED WORKPIECES
Hans Fischer, Nurnberg, and Herbert Hellendrung, Oberhausen, both of Germany, assignors to Gutehoffnungshutte Sterkrade Akt., Germany
Division of Ser. No. 267,046, June 28, 1972, Pat. No. 3,777,105. This application July 2, 1973, Ser. No. 375,868
Claims priority, application Germany, June 29, 1971, 2132143
Int. Cl. B23k *9/18*
U.S. Cl. 219—73 **2 Claims**

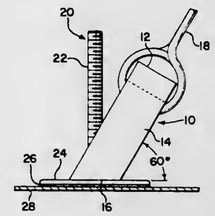
1. Apparatus for forming transversely extending welded seams between facing edges of vertically oriented thick plate sections, by submerged arc welding, in which the upper edge of a lower plate section is formed with a longitudinally extending V-groove and the facing lower edge of an upper plate section is formed with intersecting bevelled faces extending longitudinally thereof defining a V shape nose with the apex angle of the nose being substantially smaller than the apex angle of the facing groove to provide oppositely facing elongated welding grooves having upper and lower faces sloping upwardly and diverging outwardly of the plate sections, said apparatus comprising, in combination, welding wire feed means operable to guide a welding wire downwardly and laterally inwardly into the welding groove, and including a wire feed nozzle projectable into the groove; means engaging the welding wire fed by the wire feed means to supply welding current thereto; a welding powder feed pipe fixedly connected to said welding wire feed means; said welding powder feed pipe being in the form of a Y-pipe including a downwardly and laterally inwardly extending stem and downwardly diverging leading and trailing legs communicating with said steam and dimensioned to project into the welding groove, and each having a powder discharge opening at its lower end; said



powder discharge openings being arranged before and behind said wire feed nozzle in the direction of movement of said welding apparatus along the welding groove and substantially in alignment with said wire feed nozzle; clamp means secured to said welding powder feed pipe and embracing said welding wire feed means for adjustment of said welding powder feed pipe longitudinally of said welding wire feed means; and means communicating with the stem of said powder feed pipe upstream of the diverging legs thereof and operable to supply a gas under pressure to the welding powder in said pipe; said powder discharge openings being elliptical with the major axes of the ellipses extending in the welding direction and their minor axes being equal to the diameter of the wire feed nozzle; said powder feed pipe being formed of a non-magnetizable metal; said leading leg supplying welding powder into the welding groove in advance of said wire feed nozzle, and said trailing leg supplying welding powder into the groove behind said wire feed nozzle to replenish the welding powder removed by said wire feed nozzle.

3,883,712
INDUCTION HEATING SYSTEM
Robert Burke McBriarty, Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Oct. 1, 1973, Ser. No. 398,718
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.79 **4 Claims**

1. A U-shaped induction heating core for use in activating adhesive in a heat activable adhesive fastener member, such as a stud with an adhesive carrying base extending generally 90° to the axis of the stud, the core including a pair of parallel legs interconnected by a bridge section extending substantially perpendicular to the legs, the bridge section and legs having substantially rectangular cross-sectional configurations with the axes of the bridge and legs lying in in the same plane, the free terminal extremity of each leg forming substantially flat, planar end surfaces which are coplanar with each other, and therefore adapted for intimate contact with the base of a fastener so that flux may be channeled directly through the base without allowing an appreciable amount of flux leakage, the planar end surfaces being disposed at an acute angle to the



plane which includes the axes of the bridge and legs, and therefore presents end surface areas greater than the cross-sectional area of the legs, wherein a magnetic flux path created in the core through the use of a current carrying coil wound thereabout may be minimized thus minimizing the core losses while allowing the flux path to be completed through the base of the fastener member directly beneath the axis of the stud.

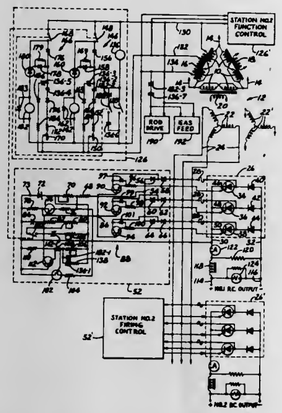
3,883,713
FLUX CORED ELECTRODE
Samuil Gurevich, ulitsa Kioto, 9, kv. 89; Vadim Nikolaevich Zamkov, ulitsa Stanislavskogo, 3, kv. 4; Valery Pavlovich Prilutsky, ulitsa Melnikova, 48, kv. 6; Vladimir Filippovich Topolsky, Bulvar Lesi Ukrainki, 3, kv. 2; Nikolai Vasilievich Podkopai, Bulvar Lesi Ukrainki, 2, kv. 8; Semen Leonidovich Dykhno, ulitsa Nkolsko-Botanicheskava, 15/17, kv. 4, and Sergei Afanasievich Manoilo, ulitsa Demuana Bednogo, 12, kv. 33, all of Kiev, U.S.S.R.
Filed Apr. 25, 1973, Ser. No. 354,438
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **3 Claims**

1. A flux-cored electrode for the fuse welding of metals in a protective atmosphere, comprising: a metal casing made from titanium or its alloys and a flux core which contains in per cent by weight:
calcium fluoride 25–52
magnesium fluoride 45–60
strontium 3–15.

3,883,714
D. C. POWER SUPPLY FOR ARC WELDING WITH SCR CONTROLLING THREE-PHASE POWER
Jasper Lewis James, Rte. 9, Greenville, Tenn. 37743
Filed July 16, 1973, Ser. No. 379,594
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 WR **11 Claims**

1. A D.C. arc welding power supply utilizing three-phase power comprising
a three-phase transformer having primary windings for receiving three-phase power and secondary windings for delivering power in three phases to three respective power conductors,
a three-phase rectifier bridge including three unidirectionally-conductive thyristors each having a power circuit and a gate electrode, with the power circuit serially connected to a respective one of said power conductors and conductive of current unidirectionally upon receipt of a firing signal at the respective gate electrode, and direct current output conductors for receiving said unidirectional current and applying said current to a welding torch,

a timing pulse generator having a reference terminal, an input terminal, and an output terminal, said input terminal being coupled to all of said three power conductors to supply phase reference signals and power to said timing pulse generator, said reference terminal being coupled to one of said output conductors, said timing pulse generator being responsive to said phase reference signals for producing timing pulses on said output terminal following respective phase reference signals, said timing pulse generator including variable control means for controlling the phases of said timing pulses relative to the respective phases of the voltages on said power conductors,



a firing signal generator including a separate amplifying means for each phase, each such amplifying means having an input coupled to said output terminal and being responsive to said timing pulses by generating temporally corresponding firing signals and including means for applying such firing signals to a respective one of said gate electrodes, whereby the current through the respective thyristors is controlled by said control means,

and torch switch means having an off condition and an on condition, said torch switch means being coupled to said timing pulse generator for normally inhibiting said firing signals when in said off condition even though full voltage is applied to said primary windings, and when actuated to said on condition permitting the generation of said firing signals.

3,883,715

CONTROLLED ENVIRONMENT MODULE

Charles Henry Gebo, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,137
Int. Cl. H05b *1/00*
U.S. Cl. 219—210 **10 Claims**

1. A controlled environment module for electronic circuits comprising:

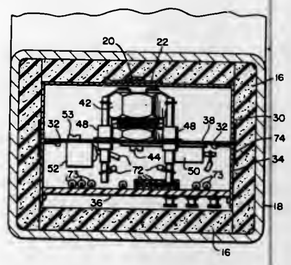
an electrically conductive metallic enclosure;

means for mounting electronic circuits within said metallic enclosure to provide a low impedance path for thermal conduction between the enclosure and the electronic circuits;

coaxial electromagnetic radiation isolating feedthrough means extending through said metallic enclosure for providing electrical connections to the electronic circuits within said metallic enclosure, wherein said metallic enclosure and said coaxial electromagnetic radiation isolating feedthrough means provide an electromagnetic shield for the electronic circuits;

heater means mounted on the exterior of said metallic enclosure for applying heat thereto when energized;

temperature sensing means mounted on the exterior of said metallic enclosure with a low impedance path for thermal conduction between said temperature sensing means and said metallic enclosure;



a thermally insulating housing enclosing said metallic enclosure, said heater means, and said temperature sensing means; and

circuit means extending through said housing for providing connections to said coaxial electromagnetic radiation isolating feedthrough means, said heater means and said temperature sensing means.

3,883,716

TEMPERATURE CONTROLLED SOLDERING INSTRUMENT

William S. Fortune, Panorama City, Calif.

Filed Mar. 8, 1971, Ser. No. 121,808
Int. Cl. H01b *1/02*; **B23k** *3/04*
U.S. Cl. 219—241 **6 Claims**



1. A soldering instrument having an electronic temperature control comprising:

a. a soldering tip;

b. a hollow sleeve connected to said soldering tip;

c. a heater element disposed in said sleeve for heating said tip;

d. a temperature sensor disposed in said sleeve and in close proximity to said tip;

e. a hollow one piece handle having a tapered bore;

f. means for securing said sleeve to said handle;

g. two opposed, longitudinally extending grooves formed in the internal walls of said tapered bore of said handle such

that said grooves converge toward each other from one end of said handle to the other;

h. a circuit board disposed in said grooves of said handle and positioned thereby, said circuit board mounting an electronic control circuit;

i. said electronic control circuit including a potentiometer for setting the desired temperature of said tip;

j. said circuit board having a width sized such that when inserted into said handle through the end thereof having the wider groove separation, said circuit board can only be pushed toward the other end to a position such that said potentiometer carried thereby is disposed in alignment with said aperture in said handle; and

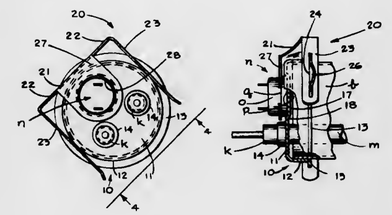
k. a rotatable control button disposed in said aperture and having an element thereon disposed for rotation of said potentiometer, whereby rotation of said control button will vary said potentiometer to set the desired temperature.

3,883,717

MOUNTING INSTALLATION FOR TEMPERATURE SENSING SWITCH

Michael J. DelPercio, 16 Quail Run Dr., Imperial, Mo. 63502

Filed Apr. 1, 1974, Ser. No. 456,986
Int. Cl. H05b *1/02*; **H01h** *37/04*
U.S. Cl. 219—328 **4 Claims**



1. For sensing the temperature of a fluid within and adjacent to an end of a cylindrical member,

a thermoswitch installation including

an end cap sealed to such cylindrical member, and

a thermoswitch external to and having a temperature-sensing face in contact therewith, characterized in that

the thermoswitch temperature-sensing face is planar, and

the end cap has a planar surface indentation of such size as to accommodate said temperature-sensing face of the thermoswitch,

the end cap further having an outstanding flange, in combination with

clip means to mount the thermoswitch to opposed portions of the end cap flange and urge its temperature-sensing face into contact with said planar surface indentation, wherein

the clip means is formed of springy metal and includes

a base portion,

slotted spring-like leg members extending outward therefrom and opposed to each other, the leg members having slots greater in width than the thickness of the cap flange and lying in a common plane, and

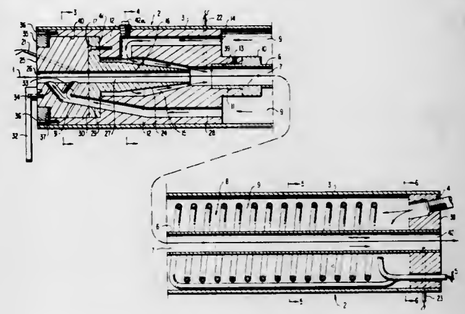
a thermoswitch-holding portion extending angularly from the base portion and when mounted being substantially parallel to said planar surface indentation of the end cap, whereby on mounting the thermoswitch in the said holding portion so extending angularly from the base portion, and on mounting the clip means with its slotted leg members embracing opposed portions of the flange of said end cap, the temperature-sensing face will be urged into intimate contact with said planar surface indentation of the end cap.

3,883,718

APPARATUS FOR THERMALLY PROCESSING OF CONTINUOUS LENGTHS OF FIBROUS MATERIALS

George R. Ferment, Dover; Stuart M. French, Chatham, both of N.J., and Paul A. Sessa, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Jan. 31, 1974, Ser. No. 438,303
Int. Cl. F27b *9/06*
U.S. Cl. 219—388 **7 Claims**



1. In an apparatus for thermally processing continuous lengths of fibrous materials wherein said fibrous materials are passed through a heating unit to take-up means, said heating unit including,

an elongated cylindrical heat treatment tube having an inlet end and outlet end for the continuous passage therethrough of said fibrous materials to be heat treated,

wherein the improvement comprises:

an elongated cylindrical jacket coaxially surrounding said heat treatment tube for providing an annular chamber about said heat treatment tube;

end closures being positioned in the annular chamber between said cylindrical jacket and said heat treatment tube closing the annular chamber at its ends;

means for introducing a fluid into said annular chamber;

an electric resistance heating coil mounted within the interior of said cylindrical jacket for heating the fluid and promoting the conduction of heat from said annular chamber through said heat treatment tube to heat continuous lengths of fibrous materials passing therethrough;

means connected to the inlet end of said heat treatment tube for introducing heated fluid from said annular chamber into said heat treatment tube to thereby further heat said continuous lengths of fibrous materials passing through said heat treatment tube; and

heat recovery means connected at the outlet end of said cylindrical heat treatment tube for receiving at least a portion of the heat passing through the outlet end of said cylindrical heat treatment tube and for delivering said heat into said annular chamber.

3,883,719

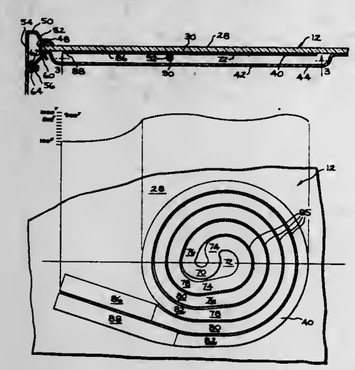
GLASS-CERAMIC COOKTOP WITH FILM HEATERS

Bohdan Hurko, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 10, 1974, Ser. No. 468,753
Int. Cl. H05b *3/68*
U.S. Cl. 219—464 **13 Claims**

1. A solid plate surface heating unit comprising a flat plate having an electrical film heater in winding strip form of generally uniform thickness bonded to the underside thereof, the resistance per unit area of the heated portion of the film heater varying in increasing proportion to the distance of the given area from an imaginary center line of the film heater pattern to give a biased heat distribution toward the outside of the film heater pattern so that the temperature distribution across the top surface of the solid plate is substantially uni-

form, the resistance per unit area at a given distance from the center being substantially constant, while the resistance per



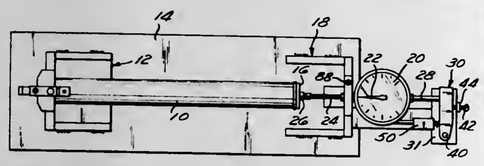
unit area varies in steps on an ascending curve as the distance of a particular area increases from the center of the film heater pattern.

3,883,720

OVEN FOR TESTING OR CALIBRATING PROBE-TYPE THERMOSTATS

Harold F. Saider, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio

Filed Dec. 3, 1973, Ser. No. 421,419
Int. Cl. H05b 3/58
U.S. Cl. 219—535 **20 Claims**



1. An oven for heating a probe-type thermostatic switch, said probe-type thermostatic switch having a switch portion and a cannula portion, said oven comprising in combination:
a. a linearly expansible body defining an oven chamber dimensioned to receive said cannula portion;
b. means for heating the body;
c. means for fixedly supporting the body at one location, the balance of said body being free to move in response to a change in temperature;
d. means for regulating the heat input to said body; and
e. means coacting between a point remote from the fixed location of said body and said heat regulating means to sense linear movement of said point relative to said fixed location as a result of change in temperature and operable to control said heat regulating means.

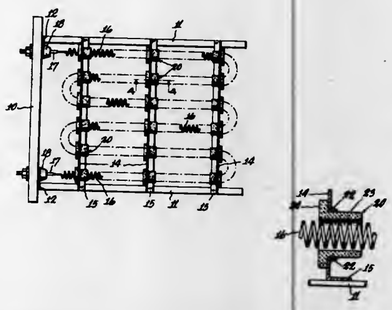
3,883,721

OPEN COIL ELECTRIC HEATER ASSEMBLY

Donald W. Paulson, Esmond, and Dennis J. Harnish, Rockford, both of Ill., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 20, 1974, Ser. No. 452,708
Int. Cl. H05b 3/06
U.S. Cl. 219—532 **3 Claims**

1. An electric heater assembly for supporting a plurality of reaches of a sinuously formed helical resistance element, comprising:
a heat resistant base,
a thin metal plate secured to said base forming a rigid assembly therewith, said thin plate constituting the sole support for said element reaches adjacent thereto,
said plate having a plurality of apertures therethrough and through which said reaches extend,
said plate at the periphery of said apertures having a serrated configuration to define a plurality of tongues in circumferentially spaced relation extending radially inwardly of said apertures,
said tongues when unstressed being disposed in the plane of said plate,
and a plurality of rigid tubular heat resistant insulating bushings, each having a radial flange thereon, one surrounding each reach where the latter extends through a plate aperture thereby to insulate the reach from said plate,



each said bushing having a diameter slightly greater than the diameter of said aperture measured between the radially innermost extremities of said tongues when unstressed,
each bushing fitting within and extending through a respective aperture thereby to stress and deflect said tongues in a common direction for radial gripping engagement with said bushing,
said bushing radial flange abutting said plate in an axial direction and radially outwardly of said aperture at a point axially spaced from the point of tongue engagement with the bushing,
said spaced axial and radial engagement of said plate with said bushing constituting the sole support of said bushing in said plate, thereby providing an effective, simple and stable support for said electric element reaches in said heater assembly.

3,883,722

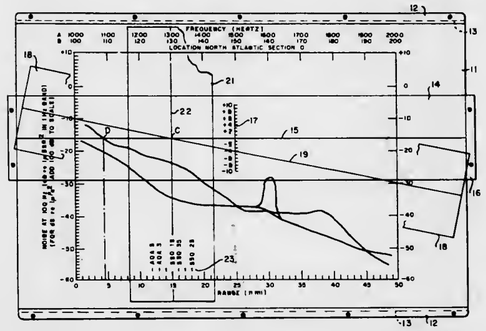
ACTIVE AND PASSIVE SONAR RANGE COMPUTER

Daniel Barron, 15023 Kalmia Dr., Laurel, Md. 20810

Filed June 21, 1973, Ser. No. 371,422
Int. Cl. G06
U.S. Cl. 235—61 B **3 Claims**

1. A hand operated sonar range computer, which comprises, a base,
said base including rails along opposite edges on each side of said base with a spacing between the rail and said base,
a frequency slider secured at the edge of said base and movable along the surface of said base in a line perpendicular to said rails,
a hairline on the center of said frequency slider extending across the length thereof,
a decibel cursor movable across the base for alignment with different values,
a target slider secured in place at its edges by said rails for movement along said base by use of said rails,
a center line across said target slider perpendicular to said hairline on said frequency slider,
graduations on opposite side of said target slider center line representative of different types of sonar equipment, and

a propagation loss insert positioned on said base under said target slider and held in place by said rails,



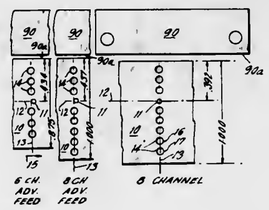
whereby said elements cooperate to determine range in accordance with different parameters of the sea relative to the depth of sonar equipment used.

3,883,723

PAPER TAPE READER

Edward Lukstas, Windsor, Conn., assignor to Varisystems Corporation, Plainview, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,112
Int. Cl. G06k 7/10; H04l 15/18
U.S. Cl. 235—61.11 E **16 Claims**



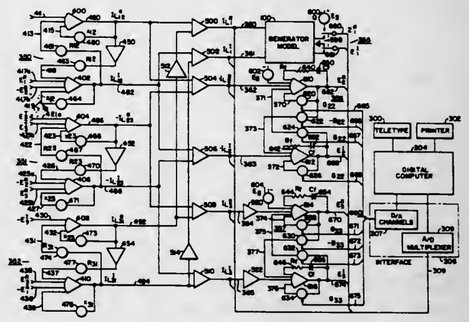
1. Guide means for a paper tape reader adapted to accommodate tapes of differing hole patterns and/or tape widths comprising:
first and second spaced parallel tape guide plates for receiving and guiding a punched paper tape therebetween;
a tape reader comprising:
a light source assembly mounted upon said first plate;
a sensor assembly mounted upon said second plate and having a sensor means at each channel position of the tape adapted to generate a pulse when illuminated by the source assembly;
a paper tape guide member rotatably mounted to the input end of one of said guide plates;
said guide member having a plurality of guide slots arranged about the periphery of the guide member, the size and position of each of said slots being adapted to receive a particular punch tape;
each of said slots being adapted to be selectively positioned into alignment with the guide surface of one of said guide plates to align the channels of the tape passing over the slot with the source and sensor assemblies.

3,883,724

HYBRID ANALYZER FOR FAST LOAD FLOW AND TRANSIENT SOLUTION OF POWER SYSTEMS

Ashok H. Pradhan, and Fred S. Marton, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 11, 1973, Ser. No. 396,259
Int. Cl. G06j 3/00; G06g 7/62; G06f 15/56
U.S. Cl. 235—151.21 **37 Claims**



1. A minimum element DC circuit for representing an electric power system transmission line in accordance with preselected stability criteria and comprising a first circuit for generating an output current signal corresponding to a first coordinate component of at least the series branch equivalent current in the actual system transmission line, said first circuit having as inputs voltage phasor signals representative of first coordinate components of actual voltages at buses to which the transmission line is connected, a second circuit for generating an output current signal corresponding to a second coordinate component of at least the series branch equivalent current in the actual system transmission line, said second circuit having as inputs voltage phasor signals representative of second coordinate components of actual voltages at said buses to which said transmission line is connected, means for representing at least the series branch impedance of the actual transmission line interconnected between said first and second circuits in accordance with said preselected stability criteria allowing for minimum element simulation.

3,883,725

DATA COMPOSITING AND ARRAY CONTROL SYSTEM

J. Robert Fort; James A. Westphal, both of Altadena, and Donald R. Julles, Chatsworth, all of Calif., assignors to Geophysical Systems Corporation, Pasadena, Calif.

Filed May 7, 1973, Ser. No. 358,078
Int. Cl. G01v 28
U.S. Cl. 235—151.3 **8 Claims**

1. In a data recording system having a repetitive source, in which on each repetition of said source one or more analog signals are detected, processed and axis-crossing-coded to form pulses which are stored, and said stored pulses are read out at selected digitalizing intervals to form a train of single bit signals, and said trains transmitted to a storage means, the method of recording and compositing said trains of single bit signals compositing the steps of:
a. controlling a magnetic disc means by clock means to run at constant speed, said disc having a plurality of tracks each with a transducing head;
b. responsive to said disc rotation producing said first train of single bit signals;
c. storing in sequence, along said tracks, in a first plurality of single bit spaced locations, each of the bits in said first train;
d. repeating said source and responsive to said disc rotation producing and transmitting to said disc a second train of single bit signals representative of a second record;

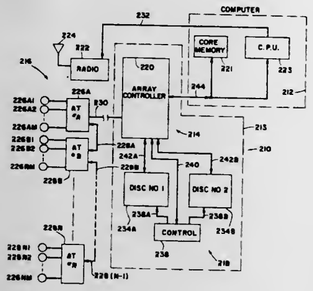
e. reading out from said disc said stored first train of bits in said first single bit locations;

3,883,727

cyclically storing said reduced vector length as a residue

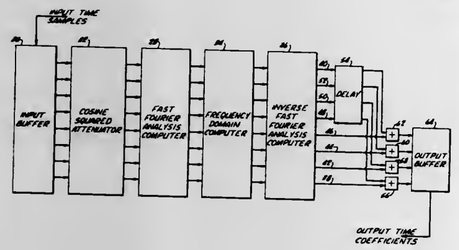
3,883,730

e. reading out from said disc said stored first train of bits in said first single bit locations;
f. storing said second train of single bit signals in said first plurality of spaced single bit locations; and



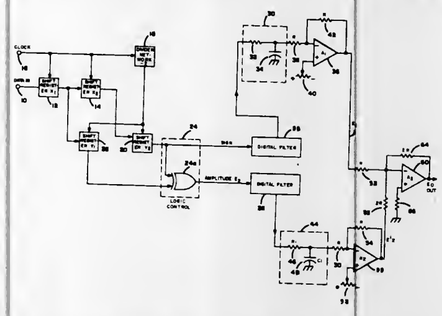
g. storing said first train of bits in a second pluraliaty of spaced multiple bit word locations.

3,883,726
REDUNDANT FAST FOURIER TRANSFORM DATA HANDLING COMPUTER
Ralph Otto Schmidt, Santa Ana, Calif., assignor to Interstate Electronics Corporation, Anaheim, Calif.
Continuation of Ser. No. 182,685, Sept. 22, 1971, abandoned. This application May 18, 1973, Ser. No. 361,533
Int. Cl. G06f *15/34*
U.S. Cl. 235—152 8 Claims



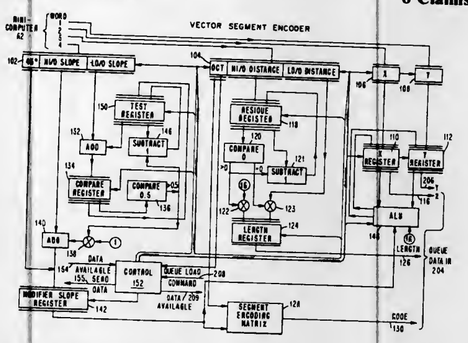
1. A system for transforming input time domain data samples, comprising:
a buffer responsive to said input time domain samples for combining said input time domain samples into data sets, selected ones of said input time domain samples being combined into more than one data set;
an attenuator responsive to said data sets produced in said buffer for attenuating certain of said input time domain samples of said data sets to produce attenuated output data sets;
a first computer receiving said attenuated output data sets for performing calculations on said output data sets according to the Cooley-Tukey fast Fourier transform algorithm to produce frequency domain coefficients;
a second computer coupled to said first computer for performing calculations on said frequency domain coefficients according to the reverse Cooley-Tukey fast Fourier transform algorithm to produce time domain coefficients; and
means responsive to said second computer for combining said coefficients to remove from said coefficients the effects of said attenuator.

3,883,727
MULTILEVEL DIGITAL FILTER
Richard L. Stuart, and Arvind M. Bhopale, both of Belts, Md.
Filed July 5, 1972, Ser. No. 269,048
Int. Cl. G06f *1/02*, *15/34*
U.S. Cl. 235—152 5 Claims



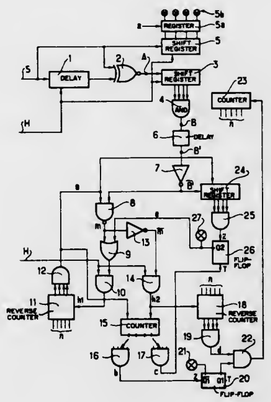
1. A four-level digital filter system for data modems comprising means for converting the incoming data input into first and second parallel inputs, logic control means connected to said inputs for converting said inputs into a sign bit output and an amplitude bit output, first and second digital shaping filters connected to the said outputs for shaping each said output into the inverse Fourier transform of the time response of a substantially ideal low-pass filter, means for adding a bias term to the outputs of one of said digital shaping filters so as to produce a modified output, and summing means for summing said modified output with the output of the other of said digital filters to produce a four-level signal.

3,883,728
DIGITAL VECTOR GENERATOR
Alfred A. Schwartz, Gaithersburg, Md., and Joseph R. Stewart, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 335,377, Feb. 23, 1973. This application Nov. 15, 1973, Ser. No. 416,330
Int. Cl. G06f *15/20*
U.S. Cl. 235—152 6 Claims



6. An encoding means for accepting data from a data processor describing the origin, slope and length of a vector to be represented, decomposing said vector into a connected sequence of vector segments, and encoding said segments as vector segment words containing coordinate, length and symbol code data comprising:
a register means for accepting from said data processor, slope, octant, length and coordinate data for the vector to be represented;
a vector length residue means for accepting from said register means said vector length data, cyclically reducing said vector length by subtracting a standard subvector length, cyclically storing said reduced vector length as a residue length, cyclically testing said residue length and cyclically outputting a length for a subvector into which said vector to be represented is decomposed;
a slope modification means for accepting from said register means said slope data, cyclically adding the difference between said slope data and a standard slope for a vector segment into which said vector to be represented is decomposed, as a cummulative slope round-off error, correcting selected vector segments for the cummulative slope round-off error, and cyclically outputting the modified slope of vector segments into which said vector to be represented is decomposed, as a symbol code;
a coordinate calculating means for cyclically accepting said modified slope data and said coordinate data and cylically generating the coordinates for the origin of vector segments into which the vector to be represented is decomposed.

3,883,729
TIME MULTIPLEX FRAME CORRELATION DEVICE
Francois Augier de Cremiers, Paris, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, France
Filed Feb. 12, 1974, Ser. No. 441,738
Claims priority, application France, Feb. 12, 1973, 73.04906
Int. Cl. G06f *15/34*
U.S. Cl. 235—181 10 Claims



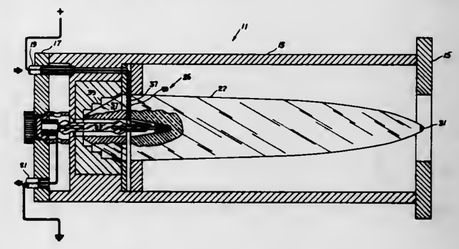
1. Device for the automatic search for the characteristic data elements of a time multiplexing frame having an unknown number N of bits and at least one repetitive word comprising clock means providing clock signals at the frequency of the bits in said time multiplexing frame, a delay circuit having a variable delay of *n* clock signals, a correlation circuit receiving directly at a first input successive bits of successive frames and at a second input said successive bits via said delay circuit, a detection circuit means for detecting *s* successive coincidences between the successive bits and the delayed bits, and control means for varying the delay of said delay circuit until *s* successive coincidences are detected for which the number N of bits in the frame is equal to the number *n* of clock signals.

3,883,730
ILLUMINATED DECORATIVE DISPLAY
Robert A. Dickson, 33A Knowles Ave., Daly City, Calif. 94014
Filed Sept. 13, 1973, Ser. No. 396,942
Int. Cl. F21l *1/00*
U.S. Cl. 240—10.6 R 1 Claim



1. An illuminated display device comprising: a rectangular battery case, a self-supporting electrically conductive wire extending upwardly from said battery case, a bulb supported over said base solely by said wire in electrical communication therewith, and a light transmitting flexible plastic elliptical sleeve press-fitted on the four vertical edges of said battery case to enclose the case, wire, and bulb while being spaced apart from said wire and bulb, said bulb positioned to transmit light through substantially the entire surface of said sleeve including that portion enclosing said battery case.

3,883,731
LIGHT SOURCE WITH HIGH EFFICIENCY LIGHT COLLECTION MEANS
Harvey L. Morton, Lafayette, and Bradley H. Oland, Oakland, both of Calif., assignors to Tinsley Laboratories, Inc., Berkeley, Calif.
Division of Ser. No. 388,376, March 5, 1973, Pat. No. 3,825,741. This application Apr. 26, 1974, Ser. No. 464,547
Int. Cl. F21v *7/04*
U.S. Cl. 240—41.38 R 2 Claims



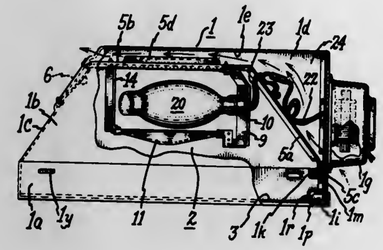
1. A reflector for an axial light source comprising,
a conical light transmissive body having a first index of refraction, said conical body having an axially extending aperture therethrough for accommodating a coaxially extending light source, an apex end and an output end opposite the apex end, and a conical surface inclined with respect to a coaxially extending light source at an angle for forwardly reflecting light rays directed thereon;
reflector means surrounding said conical surface and spaced therefrom for reflecting light escaping from said conical body back into said body; and
a medium having a second index of refraction greater than the first index of refraction within the space between said

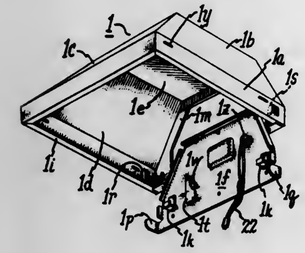
conical body and said reflector means, said medium surrounding the conical body and being in interface therewith.

3,883,732
CEILING LUMINAIRE

David D. Peterson, 74 Lantern Ln., North Kingstown, R.I. 92852, and James L. Grindle, 404 Overlook Ter., Hendersonville, N.C.

Continuation of Ser. No. 311,455, Dec. 4, 1972, abandoned. This application Dec. 6, 1973, Ser. No. 422,271
Int. Cl. F21v 21/04
U.S. Cl. 240—73 BC 15 Claims





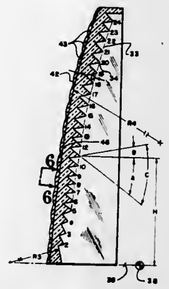
7. A luminaire comprising, in combination, a housing comprising a top, a plurality of side walls and an open bottom, one of said side walls being detachably mounted on said housing and turnably engaging said housing for movement between an installed position forming a side wall of said housing and a detached position away from said housing, electrical operating means mounted on said detachable side wall, an optical assembly in said housing comprising optical support means detachably secured to said housing, and light transmitting cover means removably closing the open bottom of said housing.

13. A luminaire comprising, in combination, a housing comprising a top, a plurality of side walls and an open bottom, one of said side walls being detachably mounted on said housing, electrical operating means mounted on said detachable side wall, an optical assembly in said housing comprising optical support means, and a reflector and lamp holder means secured to said optical support means, said optical support means being detachably secured to said housing for movement of said optical assembly as a unit selectively into and out of said housing through the open bottom thereof, and light transmitting cover means removably closing the open bottom of said housing.

3,883,733
OPTICAL CONSTRUCTION OF A LENS

Robert I. Nagel, Skokie, Ill., assignor to John Voevodsky, Portola Valley, Calif.

Filed Mar. 18, 1974, Ser. No. 451,767
Int. Cl. F21v 5/04
U.S. Cl. 240—106.1 4 Claims



1. An optical lens comprising at least one thin wall section of a spherical shell,
a plurality of similar coterminous aspheric convex lenses on the convex side of said shell,
a plurality of concentric lenses having triangular cross sections on the concave side of said shell having vertices at radii H describing an angle C as given in the following table where angles A and B and the dimension D are as indicated by reference to the accompanying drawings:

TABLE I

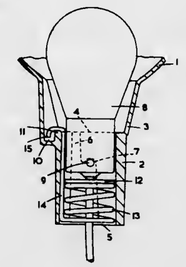
No.	H	A	B	C	D
1	.000	—	—	—	.051
2	.220	63°304	4°	67°30′	.062
3	.346	57°30′	4°	61°30′	.080
4	.478	54°30′	7°	" "	.086
5	.620	30°	10°30′	40°30′	.125
6	.716	31°	9°30′	" "	"
7	.811	32°30′	8°	" "	"
8	.907	34°	6°30′	" "	"
9	1.002	35°30′	5°	" "	"
10	1.120	35°	12°	47°	"
11	1.232	36°	11°	"	
12	1.344	37°	10°	"	"
13	1.456	38°	9°	"	"
14	1.568	39°	8°	"	"
15	1.700	38°30′	16°	54°30′	"
16	1.827	39°30′	15°	"	"
17	1.955	40°30′	14°	"	"
18	2.082	41°	13°30′	"	"
19	2.209	41°30′	13°	"	"
20	2.337	42°30′	12°	"	"
21	2.463	43°	11°30′	"	"
22	2.591	43°30′	11°	"	"
23	2.718	44°30′	10°	"	"
24	2.846	45°30′	9°	"	"

3,883,734
BULBHOLDERS

John Richard Lincoln Joiner, Sutton Coldfield, and Alan John Covel, Solihull, both of England, assignors to The Lucas Electrical Company Limited, Birmingham, England

Filed Dec. 12, 1973, Ser. No. 424,002
Claims priority, application United Kingdom, Dec. 12, 1972, 57180/72
Int. Cl. H01r 13/16
U.S. Cl. 240—143 7 Claims

1. A bulbholder comprising a tubular body open at both ends, opposed recesses and shoulders in said body for receiving, in bayonet fashion, a bulb when passed into said body via one of the open ends thereof, said tubular body being internally tapered inwardly towards said one of the open ends, a compression spring disposed in said body and arranged to urge said bulb, in use, against said shoulders, and an extension of

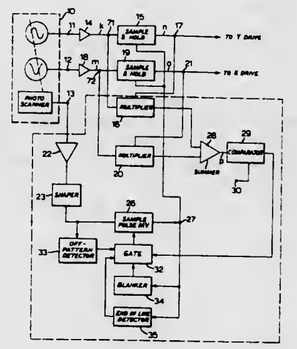


said compression spring engaging the body so as to prevent said compression spring from passing through the other open end of said body.

3,883,735
LINE TRACER

Francis P. Murphy, Hamilton, Ontario, and Robert E. Parker, Dundas, Ontario, both of Canada, assignors to Westinghouse Canada Limited, Hamilton, Ontario, Canada

Filed Dec. 26, 1973, Ser. No. 430,916
Int. Cl. G05b 1/00
U.S. Cl. 250—202 6 Claims



1. A circular scanning line tracer including optical means to scan an illuminated pattern and produce a train of pulses in accordance with the front and rear crossing of the line by the scan, a pair of sinusoidal reference signals phase related to the rotational position of the scan, means comprising gating means for selecting from said train of pulses those pulses indicative of the front crossing of the line by the scan, means to utilize the pulses so selected to sample said sinusoidal reference signals and produce co-ordinate signals representative of the direction of the line relative to the rotational position of the scan, means to combine said coordinate signals with said sinusoidal signals to produce a directional sinusoid of constant amplitude with phase representative of the direction of the line and means to derive from said directional sinusoid, a gating signal to control said gating means.

3,883,736
REMOTE CONTROL UNIT

William S. Liddell, 612 W. Las Palmas Dr., Fullerton, Calif. 92635

Filed Jan. 14, 1974, Ser. No. 433,231
Int. Cl. G06m 7/00
U.S. Cl. 250—221 7 Claims

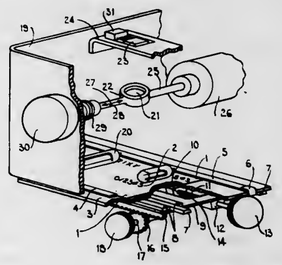


1. A remote control unit for rotating a controlled device of the type including a rotary selector and shaft comprising:
an activator on said device including a source of radiated signal to direct a radiated signal along a selected path and first sensing means for sensing signals reflected back from said path;
a signal unit remote from said device and including directional reflecting means for positioning in said path to intercept said radiated signal and reflecting it back to said first sensing means;
mask means on said signal unit for normally blocking said selected path to said reflecting means;
mounting means mounting said mask means from said signal unit for shifting thereof from its closed position confronting said reflecting means to an open position opening said path to said reflecting means;
actuating means on said signal unit and coupled with said mask to normally maintain said mask in its closed position and operable upon actuation thereof to shift said mask to its open position; and
control means connected to said sensing means for rotating said selector shaft and operative in response to registration on said sensing means of said reflected signal to rotate said rotary selector shaft.

3,883,737
CIRCUITS FOR THE GENERATION OF CLOCK PULSES FOR USE WITH A SCANNING DEVICE

Walter Robert Throssell, Hitchin, and Paul Raymond Fryer, Stevenage, both of England, assignors to International Computers Limited, London, England

Continuation-in-part of Ser. No. 219,468, Jan. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 190,729, Oct. 20, 1971, abandoned. This application July 20, 1973, Ser. No. 380,955
Claims priority, application United Kingdom, July 1, 1971, 30849/71; Nov. 25, 1971, 54691/71
Int. Cl. G06k 9/12
U.S. Cl. 250—235 2 Claims



1. Scan control apparatus for generating timing signals, including;

means for repeatedly scanning in sequence a succession of adjacent areas of similar extent, the scanning means comprising:

a static photosensitive device;

an optical imaging system positioned between the photosensitive device and the areas to be scanned; and

means for oscillating the optical system at a nonuniform velocity to image successive ones of the areas on to the photosensitive device as the system moves during each half-cycle of oscillation;

velocity sensing means coupled to the scanning means and responsive to movement of the optical system to produce a velocity signal having a magnitude varying in accordance with the variation in velocity of the system and a polarity dependent on the direction of movement of the system during each successive half-cycle of oscillation;

means for generating a succession of timing signals; and

circuit means associated with the timing signal generator responsive to the velocity signal to control the generation of each of the successive timing signals to occur respectively in synchronism with the scanning of the successive adjacent areas and responsive to said polarity to render effective only those parts of the velocity signal produced during alternate half-cycles of oscillation to inhibit the generation of timing signals except during movement in a predetermined direction.

3,883,738

METHODS OF ANALYSIS OF RADIOACTIVE MATERIAL SEPARATED INTO SOLID AND LIQUID PHASES

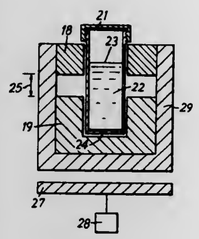
John Stuart Glover, and Bryan Peter Shepherd, both of Amersham, England, assignors to The Radiochemical Centre Limited, England

Filed Dec. 8, 1972, Ser. No. 313,263

Claims priority, application United Kingdom, Dec. 16, 1971, 58566/71

Int. Cl. G21h *1/00*

U.S. Cl. 250—303 **3 Claims**



1. A method of performing an analysis in which a radioactive element or compound is partitioned between a liquid phase and a denser solid phase, which method comprises measuring the level of radioactivity of only one of the two phases while that phase is in contact with the other phase, wherein the measuring device is collimated and screened so as to measure the radioactivity of substantially the whole of the liquid phase but not of the solid phase.

3,883,739

METHOD FOR THE QUALITATIVE AND QUANTITATIVE DETECTION OF VAPOURS FROM LOW VOLATILITY COMPOUNDS

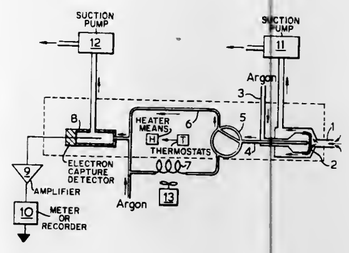
Anthony Jenkins, 54 Finchams Close, Linton, Cambridge, England

Filed May 2, 1973, Ser. No. 356,286

Claims priority, application United Kingdom, Feb. 2, 1973, 5285/73

Int. Cl. G01b *1/18*

U.S. Cl. 250—304 **20 Claims**



1. A method of detecting and identifying components in an atmosphere, comprising the steps of:

isolating present components of interest from the atmosphere and conveying a direct continuous flow of the isolated components to a detector;

detecting the presence of the isolated components in the detector to thereby establish that the detected components are present in the atmosphere;

thereafter continuing a flow of isolated components;

separating said components of the continued isolated flow from each other;

flowing such separated individual components to the detector; and

identifying said individual components in the detector.

3,883,740

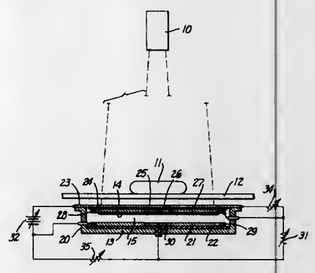
IONOGRAPHY IMAGING CHAMBER FOR VARIABLE DISTANCE X-RAY SOURCE

Andrew P. Proudian, Chatsworth, Calif., assignor to Xonics, Incorporated, Van Nuys, Calif.

Filed Aug. 14, 1973, Ser. No. 388,262

Int. Cl. G03b *41/16*

U.S. Cl. 250—315 **9 Claims**



1. In an imaging chamber for an X-ray system having first and second substantially planar electrodes of low conductivity material,

means for mounting said electrodes in the chamber in spaced relation defining a gap therebetween for an imaging medium responsive to incoming radiation,

means for connecting a power supply to the center of said first electrode and to the periphery of said second electrode, and

a first resistance connected between the periphery of said first electrode and the center of said second electrode completing a current path across the power supply to produce an electrostatic field in the gap,

with the conductivity per unit area of each of said electrodes varying from a central zone to said peripheries such that the electrostatic potential at the gap surfaces of the electrodes approximates the electrostatic potential for concentric spherical metal electrodes,

the improvement comprising a second resistance electrically connected in parallel between the center and periphery of one of said electrodes for producing different currents in said first and second electrodes and thereby compensate for movement of an X-ray source relative to said chamber.

3,883,741

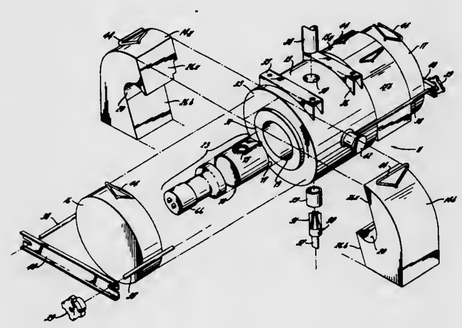
SCINTILLATION COUNTER, MAXIMUM GAMMA ASPECT

Arnold David Thumim, Chicago, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed July 27, 1973, Ser. No. 383,085

Int. Cl. G01t *7/08*

U.S. Cl. 250—328 **3 Claims**



1. In a scintillation counter for detecting and measuring the gamma activity of a sample, including

a vertical sample receiving zone within a massive lead radiation shield,

a scintillator crystal in gamma-transmissive relation with said sample receiving zone,

at least one photomultiplier tube in light-transmissive relation with said scintillator crystal,

a vertical bore extending upwardly through said shield to said sample receiving zone, and

an elevator in said vertical bore for transferring said sample into and out of said sample receiving zone,

the improvement whereby the gamma detecting efficiency of said counter is maximized, comprising:

a sample receiving zone substantially longer than said sample, and

an upstanding elevator extension platform having a plurality of thin vertical sample-supporting members to position said sample above the bottom of the sample receiving zone, so that transversely-emitted gamma radiation leaving the bottom of said sample is permitted to reach said scintillator crystal.

3,883,742

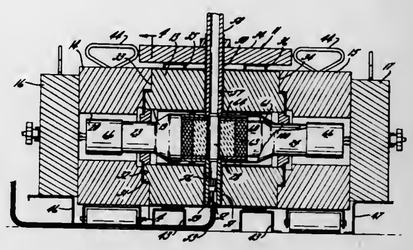
SCINTILLATION COUNTER, SEGMENTED SHIELD

Robert E. Olson, Glen Ellyn, and Arnold David Thumim, Chicago, both of Ill., assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed July 27, 1973, Ser. No. 383,097

Int. Cl. G01t *7/08*

U.S. Cl. 250—328 **5 Claims**



1. In a scintillation counter having

a sample-receiving zone within a massive lead radiation shield,

at least one photomultiplier tube assembly responsive to light scintillations produced from radiation emitted by said sample, said tube having an elongated shape and being removably contained within said shield,

the improvement whereby said lead radiation shield is disassembleable into a plurality of segments to allow installation and removal of said photomultiplier tube, and which segments, when assembled, prevent straight-line access of external radiation through said lead shield into said sample-receiving zone or into said assembly, comprising:

a sample-zone-surrounding segment having an axial cylindrical bore sufficiently large in diameter to receive one section of said elongated photomultiplier tube assembly,

an intermediate segment having an axial cylindrical bore coaxial with said sample-zone-surrounding segment for receiving a second section of said photomultiplier tube assembly, said intermediate segment being longitudinally divided into two segments for radial outward movement of each segment to permit access to said second photomultiplier tube assembly section, and

an end cap segment covering the bore of said intermediate segment, the parting surfaces of said segments thereby having no surfaces offering straight-line access of external radiation through said lead shield into said sample-receiving zone or into said assembly.

3,883,743

FILM NEGATIVE DISPLAY SYSTEM

Rudolf J. Hradcovsky, and Adriena M. Hradcovsky, both of 27 W. Beech St., Long Beach, N.Y. 11561

Filed Dec. 13, 1973, Ser. No. 424,207

Int. Cl. G01n *21/34*

U.S. Cl. 250—329 **16 Claims**

1. A system for viewing black-and-white negatives in positive image form for subsequent printing comprising

a support frame;

a housing adjustably mounted on said support frame for movement therealong;

a white light source mounted in said housing for projecting light in a predetermined path;

a condensor mounted in said housing in said path;

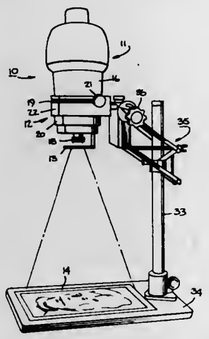
a lens system mounted on said housing in said path for passage of the light therethrough;

a negative mounting means removably mounted in said housing upstream of said lens system relative to said white light source and in said path;

an infra-red filter mounted on said housing for movement into and out of said path downstream of said lens relative to said white light source lens;

an ultra-violet light source for projecting ultra-violet light; and

a plate mounted in said path in spaced relation to said housing for visual viewing, said plate having a luminescent coating thereon to receive ultra-violet light from said ultra-violet light source for activation of said coating and to receive infra-red light from said white light source through said filter for quenching the received ultra-violet light on said plate whereby upon mounting of a black-and-white negative in said negative mounting means and activation of said light sources, a positive reverse image of the negative appears on said plate for viewing.



3,883,744

MACHINES FOR EXAMINING PNEUMATIC TIRES

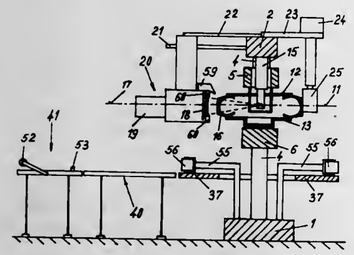
Horst Steffel, Fischerweg 2, 24 Lubeck-Gothmund, Germany

Filed Nov. 13, 1972, Ser. No. 305,910

Claims priority, application Germany, Nov. 23, 1971, 2157964

Int. Cl. G03b *41/16*

U.S. Cl. 250—360 **3 Claims**



1. A tire-examining device comprising in combination: first disk means having a first circumscribing flat lower face extending in a first plane, and for rotation of said first face along said first plane around a first central axis structure extending transversely of the first disk means; a first shaft means rotatably mounting said first disk means for said first rotation; second disk means having a second circumscribing flat upper face extending in a second plane substantially parallel to the first plane with second central axis structure extending transversely to the second disk means and substantially coaxially with said first axis strcture; the flat lower face and the flat upper face each being of predetermined diameter greater than diameters of annular beads of a tire to be mounted therebetween such that in opposing relationship the flat lower face and the flat upper face are gripable in vise manner against opposite side faces of a tire mounted for inspection; plate moving axially one of the first disk means and the second disk means relative to the other to and fro upwardly and downwardly along first and second central axis structure such that distance between the first face and the second face is variable; X-ray means axially extending transversely substantially centrally through one of the first and second disk means, for directing radiation laterally between the first and second flat faces, the X-ray means being mounted such that it is independent of rotation of the first and second disk means; gas-injection means having passage structure defining a passage extending about centrally through at least one of said first and second disk means, for gas injection into and exhaustion of gas from inner-tire space of a tire vise-mounted with opposite side-walls thereof sealably between the first and second disk means; projection screen means having a projection surface mounted to extend substantially transversely to and aligned with the space between said first and second planes and in alignment with and substantially perpendicular to said laterally directed radiation from said X-ray means; the projection screen means including said projection surface, spring lever elements, and screen-mounting elements operatively interconnected for moving the screen surface substantially perpendicularly to and fro alternately toward and away from the X-ray means; and a part of the lever elements being spring-biased by the spring lever elements to be positioned against and for movement by an outer tire tread of a tire being mounted between the first and second flat faces such that the screen projection surface becomes positioned distantly from the X-ray means when a tire of larger diameter is mounted and becomes positioned closer when a tire of small diameter is mounted between the first and second disks, said plate moving means including a light-receiving element and switch circuitry connected thereto such that blocking of light to the light-receiving element causes movement of one or more of the first and second disk means toward one-another to terminate automatically, the light-receiving element being positioned to receive a light beam between the first and second disk means and for a tire mounted therebetween to block a beam of light to the light-receiving means when the tire's opposite side walls become both engaged between the first and second disk means.

3,883,745

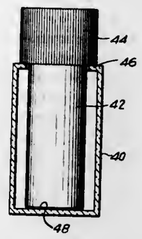
COMBINED HOLDER AND ADAPTER FOR LIQUID SCINTILLATION COUNTERS

Herman Glasser, New Hyde Park, N.Y., assignor to Nuclear Associates, Inc., Westbury, N.Y.

Continuation of Ser. No. 15,577, Feb. 27, 1970, abandoned. This application June 18, 1973, Ser. No. 371,271

Int. Cl. G01t *1/20*

U.S. Cl. 250—363 **4 Claims**



1. A method for assaying radioactivity of a sample of a liquid, using a liquid scintillation counter having a standard sample container wherein the standard sample container has a standard outer cross-section and defines an interior space having a standard volume, including a standard interior height and a standard interior width,

the sample of the liquid being tested having a relatively small volume less than the standard volume, the method comprising placing the relatively small sample in a sample inner container, the sample inner container having an outer cross-section and defining an interior space having a height at least equal to the standard interior height and a width less than the standard interior width; removably inserting the sample inner container into an adapter holder formed of a clear, transparent material, the adapter holder comprising a longitudinally extending side wall defining an inner cross-section and an outer cross-section, the outer cross-section being substantially congruent to the standard outer cross-section and the inner cross-section of the adapter holder being larger than the outer cross-section of the inner container, but providing a relatively close fitting relationship along at least a portion of the longitudinally extending sidewall of the adapter holder so as to center the sample inner container within the adapter holder; whereby when the adapter holder, including the sample inner container inserted therewithin, is placed into the scintillation counter, the scintillation counter can accurately assay the radioactivity of the relatively small sample contained within the sample inner container.

3,883,746

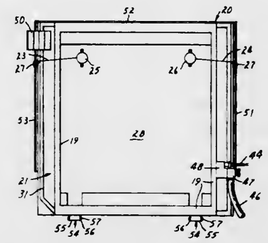
DAYLIGHT-LOADING FILM-HOLDER FOR EXPOSING VERTICALLY DISPOSED X-RAY FILM

Charles J. Gifford, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 23, 1973, Ser. No. 418,418

Int. Cl. G03b *41/16*

U.S. Cl. 250—475 **6 Claims**



1. A rapidly loaded film-holder adapted to be mounted in a vertical position and to hold X-ray film under vacuum pressure while the film is exposed, comprising (1) a shallow receptacle that comprises a rigid large-area back plate and edgewalls attached around the periphery of the back plate, the edgewalls extending perpendicularly from one side of the back plate to define an open front of the receptacle, and the edgewalls comprising at least at their outer extremity a resilient gasket member that extends continuously around the open front of the receptacle and whose outer extremity defines a single plane; (2) a rigid large-area front plate pivotably attached to the receptacle in position to rest against the outer extremity of the gasket member to close the receptacle and adapted to be drawn toward the back plate a uniform amount over the whole area enclosed by the gasket member; (3) a pressure plate supported in front of and parallel to the back plate; (4) a first intensifying screen attached over the pressure plate and a second intensifying screen attached over the inside surface of the front plate; (5) limiting means for limiting pivotal movement of the front plate from its closed position to an opened rest position; (6) positioning means on said front plate for holding said X-ray film in defined positions on the inside surface of the front plate; (7) engagement means for holding the front plate in closed position in engagement against the gasket member; and (8) an exhaust port located in the receptacle or front plate for attachment to a vacuum source, whereby a vacuum may be formed within the film-holder to draw the front plate toward the bottom plate and tightly sandwich film between the two intensifying screens.

3,883,747

X-RAY INTENSIFYING SCREEN

Robert H. Murashige, Los Altos, and Henry L. Myers, San Jose, both of Calif., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 6, 1973, Ser. No. 422,280

Int. Cl. H01j *1/62*

U.S. Cl. 250—483 **4 Claims**

1. An X-ray intensification screen comprising a substrate support coated with dispersion of a phosphor having the formula $[M_{x-1}\ Tb_x]_2\ O_2S$ wherein M is lanthanum, gadolinium or yttrium and x has a value in the range 0.003 to 0.08 and a dye preferentially absorbing green light in a transparent binder, the dye content being equal to from 0.0003 to 0.5 percent by weight of the contained phosphor.

3,883,748

PHOSPHOR FOR THERMOLUMINESCENT TYPE RADIATION DOSIMETER

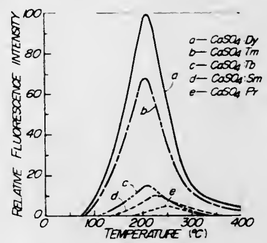
Naohiro Nada, Nishinomiya, and Tadaoki Yamashita, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 96,995, Dec. 10, 1970, abandoned, which is a continuation of Ser. No. 709,757, March 1, 1968, abandoned. This application Apr. 13, 1973, Ser. No. 350,728

Claims priority, application Japan, June 29, 1967, 42-42231; Dec. 28, 1967, 42-90231; Dec. 28, 1967, 42-91231; Dec. 28, 1967, 42-92231

Int. Cl. G01t *1/11*

U.S. Cl. 250—484 **1 Claim**



1. A process for measuring radiation dose by the thermoluminescence of calcium sulfate comprising

irradiating a thermoluminescent phosphor containing calcium sulfate as the principal constituent and an impurity element selected from the group consisting of dysprosium, thulium, terbium and praseodymium,

heating said irradiated thermoluminescent phosphor to above the maximum glow peak temperature of said impurity element to emit light, and

measuring the emitted light from said phosphor and determining the radiation dose therefrom.

3,883,749

RADIO OPAQUE GLOVES

Arthur V. Whittaker, Poland, Ohio; Ralph E. Whittaker, Jr., Upper Saint Clair, Pa.; Robert A. Goldstrom, New Kensington, Pa., and Frederick J. Shipko, Spring Church, Pa., assignors to Arco Nuclear Company, Leechburg, Pa.

Filed Aug. 15, 1972, Ser. No. 280,909

Int. Cl. G21f *3/02*

U.S. Cl. 250—516 **2 Claims**

1. A glove protecting the wearer from a significant portion of the radiation hazards of fluoroscopic systems consisting of thin polymeric films having inner and outer unloaded layers

and an internal layer containing a screening agent of the class consisting of depleted uranium dioxide, lead oxide, and mix-

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3,883,751

3,883,752

input terminals of said operational amplifier, said thermo-

and an internal layer containing a screening agent of the class consisting of depleted uranium dioxide, lead oxide, and mixtures thereof, said film containing from 10 per cent to 45 per cent by weight of said screening agent, and said film having an average thickness within the range from 5 mils to 25 mils, various portions of the film being at least 25 per cent thicker



than other portions to provide greater protection from radiation at such thicker portions, the thinner portions being not more than 10 mils thick, whereby sensitivity through such thin portion is preserved, such thinner portions being at the fingertip portion of the glove whereby tactile sensitivity through the fingertip is enhanced to permit a surgeon to employ such gloves within a fluoroscopic radiation zone.

3,883,750

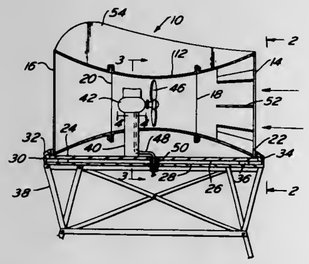
METHOD AND APPARATUS FOR GENERATING POWER FROM WIND CURRENTS

Rudyard S. Uzzell, Jr., Bryn Mawr, Pa., assignor to Natural Energy Systems, Inc., Philadelphia, Pa.

Filed Jan. 30, 1974, Ser. No. 437,948

Int. Cl. F03d 9/00

U.S. Cl. 290—55 **8 Claims**



1. A wind-driven energy-generating device comprising a Venturi-shaped chamber having a central throat portion and enlarged end portions at opposite sides of said throat portion, one end portion being an upstream end portion and the other a downstream end portion, both of said end portions being open, said chamber being mounted for rotation on an axis provided by a first support means, a second support means extending into said throat portion, said second support means being positioned downstream from said first support means whereby said second support means is eccentric to said first support means, an energy generating means mounted on said second support means, a fan connected to said energy-generating means, said fan being mounted for rotation on said second support means within said throat portion, said throat portion being free of fixed blade construction, said fan being radially spaced from the wall area defining said throat portion, said second support means, energy generating means and fan having a center of gravity offset from said axis provided by said first support means and a wind-operable orienting rudder, said rudder extending longitudinally of said chamber and being positioned radially outward of said chamber.

3,883,751

ELECTRICAL SYSTEMS FOR VEHICLE SAFETY HARNESS

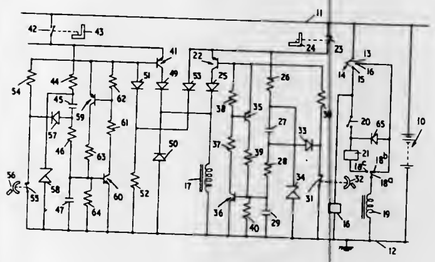
Peter Hugh Salway, Birmingham, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Jan. 11, 1974, Ser. No. 432,614

Claims priority, application United Kingdom, Feb. 7, 1973, 6011/73

Int. Cl. B60r 21/10

U.S. Cl. 307—10 SB **4 Claims**



1. An electrical system in a road vehicle, comprising in combination: a starter motor, a manually operable switch for energizing said starter motor, a solenoid which when energized operates said starter motor, a normally closed relay contact between said starter switch and said solenoid, a relay winding for opening said contact, a battery, first and second supply lines coupled to said battery, a first control network connecting said relay winding between said supply lines when the driver's seat of said vehicle is occupied and the driver's seat belt is not fastened, and a second control network connecting said relay winding between said supply lines when the passenger's seat is occupied and the passenger's seat belt is not fastened, each of said first and second control networks comprising a seat switch which is closed when the associated one of said seats is occupied, a seat belt switch which is opened when the associated one of said seat belts is fastened, a first transistor having its collector/emitter path in series with said seat switch and said relay winding between said supply lines, a first resistor connected between said seat belt switch and the base of said first transistor, said seat belt switch when closed rendering said first transistor conductive so that said relay winding is energized when said seat switch is also closed, and latch circuit means connected to the base of said first transistor, rendering said first transistor conductive if said seat belt switch is opened before said seat switch is closed and comprising second and third transistors having their collector/emitter paths in parallel circuits between the base of said first transistor and one of said supply lines, and their bases connected in said parallel circuits so that said second and third transistors are both conductive or non-conductive simultaneously, each maintaining the other in its conductive or non-conductive state, a capacitor connected between said seat switch and the base of said third transistor, and a diode connecting said capacitor via said seat belt switch to said one of said supply lines.

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OPTICAL MATERIAL

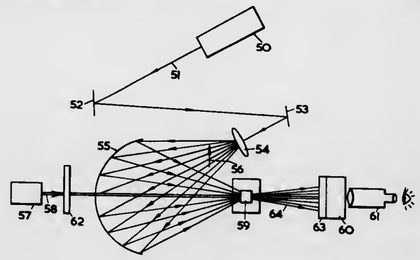
Philip Hywel Davies; Maurice Vernon Hobden; Kenneth Fraser Hulme, and Oliver Jones, all of Malvern, England, assignors to National Research Development Corporation, London, England

Division of Ser. No. 71,666, Sept. 14, 1970, Pat. No. 3,696,038, which is a continuation-in-part of Ser. No. 689,175, Dec. 8, 1967, abandoned. This application Mar. 6, 1972, Ser. No. 232,039

Claims priority, application United Kingdom, Dec. 9, 1966, 55201/66

Int. Cl. H03f 7/04

U.S. Cl. 307—88.3 **4 Claims**



1. A non-linear radiation frequency mixing device comprising a synthetic cell-free optically transparent crystal having dimensions significantly greater than one millimeter of a material selected from the group of materials consisting of Ag_3AsS_3, Ag_3SbS_3 and a solid solution of $Ag_3As_xSb_{1-x}S_3$ ($1 > x > 0$), said crystal being optically transparent in a major part of the wavelength range of about 0.6 μm to 13 μm; and at least one generating means for generating a beam of intense coherent optical electromagnetic radiation, said generating means being arranged to irradiate said crystal whereby the frequency of said radiation is mixed in said crystal with another frequency to produce, by virtue of the non-linear electric properties of said material, an output frequency related to said mixed frequencies.

3,883,753

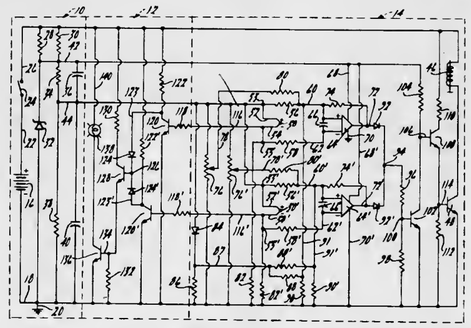
THERMOCOUPLE-FAILURE WARNING CIRCUIT

Clarence E. Harrison, Jr., Madison Heights, and Siang-Shen Johnson Yun, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,954

Int. Cl. H01h 35/00

U.S. Cl. 307—117 **6 Claims**



1. A thermocouple-failure warning circuit for use with a thermocouple-controlled operational amplifier, said warning circuit comprising, in combination, first and second voltage supply leads for connection to a source of DC electrical potential; a thermocouple having first and second leads coupled to input terminals of said operational amplifier, said thermocouple first lead being coupled to said first voltage supply lead; a resistor, said thermocouple second lead being coupled through said resistor to said second voltage supply lead; a warning device; a transistor having an output circuit and a control electrode, the output circuit of said transistor being connected with said warning device to control the actuation of said warning device; first circuit means for coupling said warning device and transistor output circuit across a source of electrical potential; and second circuit means for changing the state of conduction of the output circuit of said transistor if either said thermocouple is open-circuited between its first and second leads or if said thermocouple is short-circuited to the electrical potential of said second voltage supply lead, said circuit means being connected to said transistor control electrode and having an input electrical lead connected to said thermocouple second lead, whereby, said warning device may be actuated by a change in the state of conduction of aid transistor output circuit if said thermocouple is open-circuited or short circuited.

3,883,754

FREQUENCY-VOLTAGE CONVERTER CIRCUIT, PARTICULARLY FOR AUTOMOTIVE APPLICATIONS

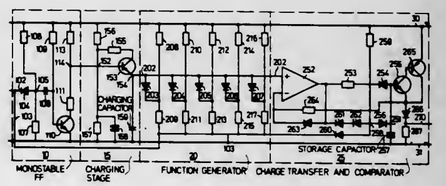
Helmut Fleischer, Schwieberdingen, and Eberhard Schnaibel, Hemmingen, both of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Feb. 7, 1974, Ser. No. 440,371

Claims priority, application Germany, Mar. 21, 1973, 2314016

Int. Cl. G06g 7/24

U.S. Cl. 307—229 **14 Claims**



1. Frequency-voltage converter circuit having a monostable flip-flop (FF) (10) to which a signal of varying frequency is applied;

charge storage means (159) connected to the monostable FF (10) to be charged upon change of state thereof;

a function generator (15) controlling the discharge of said charge storage means and providing for a hyperbolic discharge rate thereof;

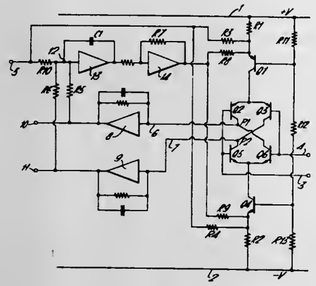
a storage capacitor (257) and a charge transfer circuit therefor, the charge storage capacitor being charged to a value representative of the charge, or remaining charge, of the charge storage means, after discharge through the function generator;

wherein the improvement comprises an operational amplifier (252) forming part of the charge transfer circuit (25), and a discharge circuit for the storage capacitor (257) including a discharge diode (254), said discharge circuit being connected to and controlled by the output of the operational amplifier (252).

3,883,755
ELECTRONIC PHASE-SENSITIVE DETECTOR CIRCUIT WITH D.C. DRIFT NEUTRALIZATION

Eric Andrew Faulkner, Home Close, Bradcutts Ln., Cookham Dean, Berkshire, England

Filed Nov. 20, 1973, Ser. No. 417,617
Claims priority, application United Kingdom, Nov. 30, 1972, 55255/72
Int. Cl. H03d *13/00, 1/18*
U.S. Cl. 307—232 **6 Claims**



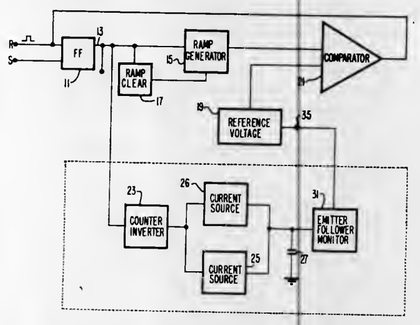
1. An electronic phase-sensitive detector circuit comprising two sections each of which sections comprises a signal translation device and two alternative paths for current therethrough with a switching device in each path, the switching devices of one section being complementary to the switching devices of the other section, connection means for enabling reference signals to be applied so as to cause one or other of the switching devices of each section to conduct depending on the polarities of the reference signals, junctions between respective paths of the two sections through which current conduction is simultaneous, connection means for enabling an input signal to be applied to at least one of the signal translation devices, output means connected to each of the said junctions to provide respective output signals representative of the difference in current flows between the two paths connected to a junction, means for obtaining a signal representative of the mean value of the output signals, integrating means for the aforesaid signal, and means for applying the output of the integrating means to at least one of the signal translation devices in a manner to tend to neutralise dc drift.

3,883,756
PULSE GENERATOR WITH AUTOMATIC TIMING ADJUSTMENT FOR CONSTANT DUTY CYCLE

Thomas J. Dragon, Southfield, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 27, 1973, Ser. No. 428,730
Int. Cl. H03k *5/04*
U.S. Cl. 307—265 **5 Claims**

1. Circuitry for generating a train of substantially rectangular pulses in response to a train of trigger signals comprising:
flip-flop means having set and reset states and an output, said output being set by each of said trigger signals, to initiate a said rectangular pulse;
means for generating ramp voltage signals having identical initial levels, each generation being activated when said flip-flop means is set and deactivated when said flip-flop means is reset;
reference means for generating a reference voltage level;
means for resetting said flip-flop upon equality of said reference and ramp voltages to terminate a said rectangular pulse; and
means for automatically varying said reference voltage level in accordance with the variation in the time lapse between said pulses so as to maintain the duration of said

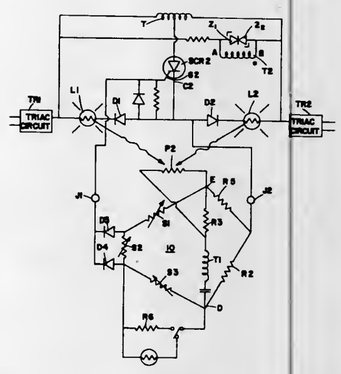


rectangular pulses as a constant multiple of said time lapse between said pulses.

3,883,757
BRIDGE CIRCUIT FOR ENVIRONMENTAL CONDITION CONTROL

Frederick N. Lancia, 1260 Gresham Rd., Columbus, Ohio 43204; Albert O. Kesterson, 6566 Calgary Ct., Columbus, Ohio 43239, and Ralf C. Liebert, 580 Keys Ln., Worthington, Ohio 43085

Filed Apr. 20, 1972, Ser. No. 245,872
Int. Cl. H03k *3/42*
U.S. Cl. 307—311 **10 Claims**

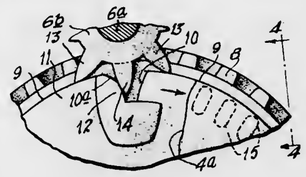


1. A condition responsive control circuit comprising:
a bridge of interconnected electrical components balanced at some predetermined condition,
one of said components variably responsive to variation to said predetermined condition,
a semi-conductive responsive means, and
a first and second gate means biased by said semi-conductive means in response in either phase to an unbalance in said bridge;
said bridge including an additional component connected between two of said interconnected components, and said additional component also connected to said first and second gate means, wherein
said additional component operative to provide a set point for said variably responsive component comprises a pair of diodes and a variable resistor, one of said diodes current conducting and the other of said diodes blocking in dependance upon the direction of current flow through said resistor.

3,883,758
ONE-WAY DIRECTION CONTROL FOR SYNCHRONOUS MOTORS

Walter L. Lechner, New Providence, R.I., assignor to Engler Instrument Company, Jersey City, N.J.

Filed May 24, 1974, Ser. No. 473,069
Int. Cl. H02k *7/10*
U.S. Cl. 310—41 **7 Claims**



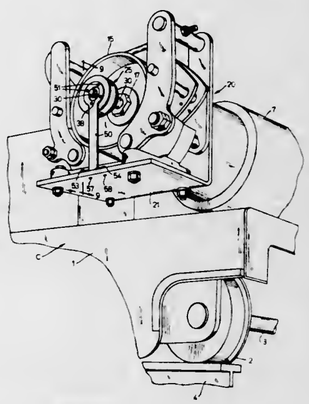
1. The combination with the shaft of a synchronous motor that is capable of starting to rotate in either direction when current is applied, a driving element rotatable about an axis, a driving connection between said shaft and said element providing for continuous rotation of said shaft and said element by said shaft in either of opposite directions, and means permitting said rotation freely in one direction and for blocking rotation in the opposite direction, said means comprising a pinion having a cylindrical body rotatably mounted on an axis parallel to said axis of the driving element and disposed in spaced relation to the periphery of said driving element, said driving element having a circumferential smooth surface and a notch opening through said circumferential surface and one end surface of said driving element and also having a lug projecting from said end surface at one side of said notch, said body of said pinion having a plurality of equidistantly circumferentially spaced teeth, certain of which denoted primary teeth are of a radial length to enter and leave said notch during revolution of said driving element in one direction and are of a length longitudinally of said body to engage said circumferential smooth surface of said driving element while alternate teeth denoted secondary teeth are of a length longitudinally of the said body to be engaged by said lug on said driving element upon revolution of said element in either direction, each of said secondary teeth and the two of said primary teeth at opposite sides of each secondary tooth being so related to each other, to said notch and to said lug on said driving element that upon rotation of said driving element in one direction said lug will engage said secondary tooth and rotate said pinion to move one of said primary teeth into and out of said notch in the driving element and dispose both of said two primary teeth in relatively slidable contact with said circumferential surface of the driving element and thereby hold the pinion momentarily against rotation and permit free rotation of said driving element and said motor shaft in said one direction, while when the driving element is urged to rotate in the opposite direction said lug will engage said secondary tooth so that said primary teeth which are in contact with said circumferential surface on the driving element will block rotation of said pinion and said driving element and said motor shaft in said opposite direction.

3,883,759
ELECTRIC TACHOMETER AND MOUNTING MEANS THEREFOR

Robert E. Mierendorf, Greendale, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Sept. 4, 1973, Ser. No. 394,058
Int. Cl. H02k *5/26*
U.S. Cl. 310—91 **8 Claims**

1. In combination: an electric motor having a housing; a rotatable first shaft driven by said motor and having an axis; a plate member lying in a plane generally parallel to and spaced from said axis, said plate being in a fixed position position with respect to said motor housing; said first shaft being capable of exhibiting nonrotational movement in any direction transverse to or parallel to said plate member during rotation; motor control means for said motor; and electric tachometer comprising a stator and a rotor for measuring rotary motion of said first shaft and for providing an electric output signal related thereto to said rotor control means for effecting controlling of said motor, said stator having a hole therein; connecting means including a stub shaft engageable with said stator for connecting said rotor to an end of said first shaft to effect rotation of said rotor and so that said first shaft affords mechanical support to said tachometer and effects nonrotational movement of said tachometer; and restraining means to prevent rotational movement of said stator but to

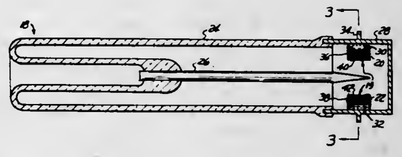


permit nonrotational movement of said tachometer in any direction transverse or parallel to said plate member resulting from nonrotational movement of said first shaft, said restraining means comprising a first member connected to and extending from said stator toward said plate member, said restraining means further comprising a pair of spaced apart threaded holes in said plate member, a pair of second members spaced apart from each other in a direction transverse to said axis for engagement with said first member, each of said second members having a slot therethrough, the longitudinal axis of each slot being disposed in a direction transverse to said axis, and bolts for adjustably securing said second members in desired positions, each bolt extending through the slot in its associated member and into an associated hole in said plate member.

3,883,760
FIELD EMISSION X-RAY TUBE HAVING A GRAPHITE FABRIC CATHODE

Thomas C. Cunningham, Jr., Ann Arbor, Mich., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Apr. 7, 1971, Ser. No. 131,881
Int. Cl. H01j *35/06*
U.S. Cl. 313—55 **1 Claim**



1. In a field emission x-ray tube requiring a large electric potential in order to provide x-rays and having an evacuated

envelope with an anode mounted within said envelope, the improvement comprising:

a field emission cathode formed from a woven fabric, said fabric having a predetermined number of threads disposed in a first direction and having free ends for emitting electrons, a second predetermined number of threads disposed in a second direction, said second number of threads crossing and supporting said electron emitting threads;

said fabric also having a sufficiently high resistivity to temperature to resist erosion by melting and sublimation during operation of the field emission x-ray tube, a sufficiently high tensile strength to resist being pulled apart by the large electric potential required by the field emission x-ray tube during operation, and a sufficiently low electric resistivity to provide a predetermined large number of electrons in response to said large electric potential;

said electrons being accelerated by said large electric potential to strike said anode and provide a predetermined number of x-rays;

said fabric cathode being mounted within said envelope in a spaced, insulated relationship with respect to said anode;

said anode comprising a pointed rod; and

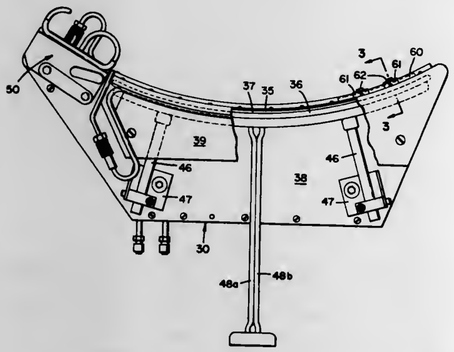
said fabric cathode comprising a washer-shaped annulus defining a plane spaced from said anode, said spacing causing a large portion of the electrons emitted from said cathode during operation of the x-ray tube to strike the tip of said anode and thereby causing a large portion of the x-radiation emitted by said x-ray tube to be emitted from substantially the same position.

3,883,761

ELECTROSTATIC EXTRACTION METHOD AND APPARATUS FOR CYCLOTRONS

George O. Hendry, Napa, Calif., assignor to The Cyclotron Corporation, Berkeley, Calif.

Filed Dec. 8, 1972, Ser. No. 313,451
Int. Cl. H05l *13/08*
U.S. Cl. 313—62 **3 Claims**



1. Improved apparatus for electrostatically deflecting a beam of charged particles at an extraction radius in the fringe magnetic field of an isochronous cyclotron comprising

means defining an electrostatic field across a deflection channel at the extraction radius, the location of said field increasing in radius with respect to the center of the cyclotron; and

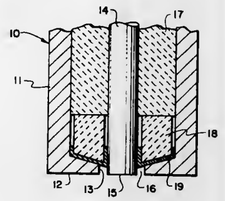
magnetic material positioned inside and adjacent to at least a portion of said channel to reduce the cyclotron fringe field at the channel and to focus the beam of charged particles radially with respect to the center of the cyclotron, by concentrating the lines of magnetic force of said fringe field inwardly of but immediately adjacent to said channel to reduce said fringe field and then to reverse the normally decreasing field gradient in said channel.

3,883,762

ELECTRICAL DISCHARGE DEVICE COMPRISING AN INSULATOR BODY HAVING AN ELECTRICALLY SEMI-ONDUCTING COATING FORMED THEREON

Robert C. Harris, Unadilla, and Helmut P. Meyer, Sidney, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed June 17, 1974, Ser. No. 480,199
Int. Cl. H01t *13/02*
U.S. Cl. 313—130 **5 Claims**



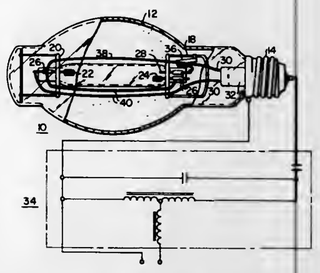
1. In a shunt-type igniter plug comprising an outer metal shell, a ground electrode integral with said shell, a central electrode having a firing tip, said central electrode mounted in an insulator disposed within said shell, the firing tip of said central electrode being in opposed spaced relation to the ground electrode forming a spark gap therebetween, and improved electrically semi-conducting means adjacent said spark gap and in electrical contact with the opposed electrodes, said improved electrically semi-conducting means comprising a beryllium oxide ceramic body disposed about said central electrode, said ceramic body having formed thereon and bonded thereto an electrically semi-conducting coating, said coating comprising a sintered mixture of lanthanum oxide and cuprous oxide, said coating being in electrical contact with said opposed electrodes and forming a bridge across said spark gap.

3,883,763

SELF-CONTROLLED ARC STREAM IN GASEOUS DISCHARGE LAMPS

Joseph P. Kearney, Teaneck, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 16, 1974, Ser. No. 506,640
Int. Cl. H01j *17/14*
U.S. Cl. 313—154 **4 Claims**



1. In combination with a discharge lamp of the type wherein an elongated arc tube having a main electrode in either end, between which electrodes an arc is established during operation, and which arc tube is contained within a light transmitting outer envelope, the improvement which comprises:

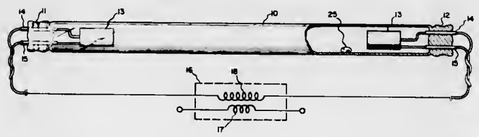
at least three refractory metal conductors located inside of said outer envelope, and outside and in close proximity to said arc tube and running generally parallel to the longitudinal axis of said arc tube, said conductors being electrically connected in series with said main electrodes and being electrically connected such that when said lamp is operated with said arc other than substantially vertical, at least one of said conductors is generally above said arc tube and is carrying current in the same direction as said arc, and at least two of said conductors are generally below said arc tube and carrying current in the opposite direction as said arc, whereby the magnetic effect from the current in both the conductor above the arc tube and the conductors below the arc tube tends to counteract the natural upward bowing of the arc.

3,883,764

CATHODE STRUCTURE FOR HIGH CURRENT, LOW PRESSURE DISCHARGE DEVICES

Peter D. Johnson, Schenectady, and John M. Anderson, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 4, 1974, Ser. No. 448,018
Int. Cl. H01j *61/08*
U.S. Cl. 313—212 **11 Claims**



1. In a high current, low pressure discharge device including an evacuable envelope having a partial pressure of an ionizable material therein and electrode structures for establishing an electric discharge therein, said electrode structures including an improved cathode structure comprising:

a refractory metal cylinder;

an emissive mix coated filament coaxially supported within said cylinder;

means for electrically connecting the ends of said filament together; and means for applying a voltage to said electrode structures for establishing an electric discharge within said envelope.

3,883,765

HIGH-PERFORMANCE EMITTER FOR THERMOELECTRONIC DIODES

Jean-Paul Durand, Paris; Jacques Gillardeau, Longjumeau, and Robert Faron, Nyon, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 25, 1973, Ser. No. 363,867
Claims priority, application France, June 2, 1972, 72.19985
Int. Cl. H01j *1/14, 19/06*
U.S. Cl. 313—346 **11 Claims**

1. A high-performance emitter for thermoelectronic diodes comprising a fissile fuel member, at least one refractory metal emitting layer deposited on the periphery of said member, said fissile fuel member being a solid bar, radial cuts, in said bar



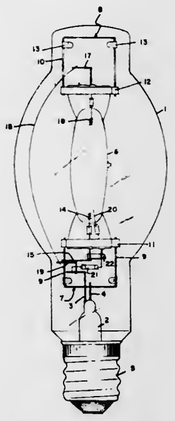
said cuts forming reinforcing hoops when said layer has been deposited.

3,883,766

METHOD OF OPERATING HIGH-INTENSITY ARC DISCHARGE LAMP

Timothy Fohl, Carlisle, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed July 19, 1973, Ser. No. 380,739
Int. Cl. H01j *17/16*
U.S. Cl. 313—220 **3 Claims**



1. In a high-intensity arc discharge lamp having a generally tubular arc tube disposed within an outer envelope, the arc tube having an electrode at each end, the improvement which comprises an expanded section in the arc tube intermediate the electrodes, the shape of the expanded section being such as to eliminate radial convective flow between the upward and downward convective flows within the arc tube during normal lamp operation.

3,883,767

HEATER FOR FAST WARMUP CATHODE

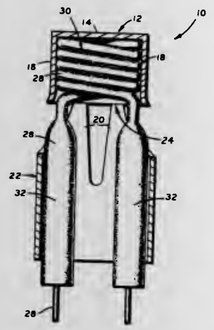
nonconductive spacing means holding said electrodes apart

of spaced apart bridges extending across said perforation in a third sets thereof and said control grid means of said first

3,883,767
HEATER FOR FAST WARMUP CATHODE

William E. Buescher, and Donald R. Kerstetter, both of Emporium, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Feb. 8, 1974, Ser. No. 440,684
Int. Cl. H01j 1/15, 19/08; H01k 1/02
U.S. Cl. 313—341 2 Claims

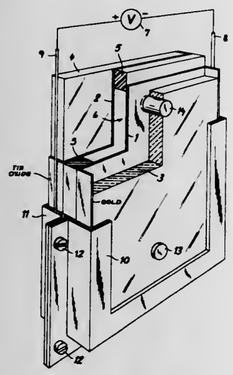


1. A heater for a fast warmup cathode comprising: a metallic, electrically conductive core; and an electrically insulating coating surrounding said core; said heater being formed to provide a coiled body having a pair of legs extending therefrom, the height of said coiled body being small compared with the length of said legs; the insulating coating on said pair of legs having a thickness about 400% greater than the thickness of the insulating coating on the coils of said coiled body portion.

3,883,768
ELECTROLYTIC LIGHT SOURCE

Michel Voïnov, and James Dunnett, both of Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge, Geneva, Switzerland

Filed Nov. 12, 1973, Ser. No. 414,825
Claims priority, application Sweden, Nov. 13, 1972, 16470/72
Int. Cl. H01j ; H01k
U.S. Cl. 313—358 19 Claims

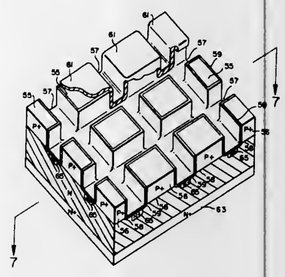


1. An electrolytic light source comprising:
a pair of electrodes with broad parallel surfaces closely confronting each other, at least one of said electrodes being optically transparent;
nonconductive spacing means holding said electrodes apart by a distance of not more than about 50 microns and forming therewith a fluidtight chamber;
an ionically conductive liquid in said chamber including a fluorescent material dissolved therein; and
a supply of direct current for placing across said chamber a continuous voltage difference of not more than about 5 volts sufficient to ionize a constituent of said liquid with release of cations and anions whose interaction induces the emission of luminous energy by said fluorescent material, said electrodes respectively forming an anode and a cathode connected across said source.

3,883,769
VIDICON CAMERA TUBE AND TARGET

Ronald M. Finnila, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 19, 1971, Ser. No. 173,207
Int. Cl. H01j 29/45, 31/38
U.S. Cl. 313—367 3 Claims



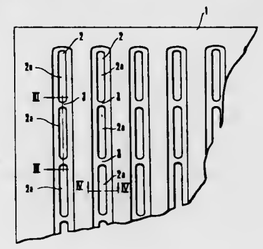
1. A vidicon camera tube comprising:
A. an evacuated envelope having a radiation transmissive window;
B. a charge storing target facing said window and including:
1. an N conductivity type silicon substrate disk having an array of P+ conductivity mesas extending from one of its two major faces, each said mesa forming a P-N junction with the underlying portion of said substrate;
2. a silicon dioxide layer covering the wall of said mesas and the surface of said substrate between said mesas;
3. a P+ conductivity type grid formed of said substrate immediately below that portion of the substrate surface that is covered by said silicon dioxide layer entirely below the level of said P-N junctions, and spaced from said array of mesas; and
4. an N+ conductivity type layer formed of the other of the two major faces of said substrate, said other substrate face being next to said window; and
C. means facing said array of mesas for generating a beam of electrons and means for scanning said array of mesas therewith.

3,883,770
COLOUR PICTURE TUBES

Junichi Yamada, and Etuzo Terashima, both of Mobara-City, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 4, 1973, Ser. No. 321,019
Claims priority, application Japan, Jan. 19, 1972, 47-008061
Int. Cl. H01j 29/06
U.S. Cl. 313—403 10 Claims

1. In a color picture tube comprising a colour selecting member provided with a plurality of stripe shaped parallel perforations extending in a direction parallel to one side of the picture displayed by said tube, each stripe shaped perforation being divided into a plurality of slit shaped sections by means of spaced apart bridges extending across said perforation in a direction perpendicular to said first mentioned direction, a fluorescent screen including a plurality of stripe shaped phosphors corresponding to said stripe shaped perforations, and an electron gun assembly, the improvement wherein the height of

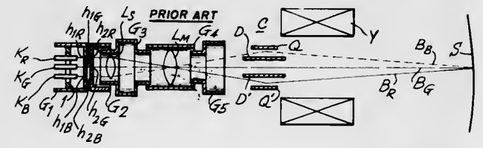


said bridges is made approximately one-half the thickness of said colour selecting member so that adjacent said slit shaped sections are separated by said bridges on the side facing to said electron gun assembly whereas they merge with each other on the side facing to said fluorescent screen to form said perforation as continuous stripe shaped openings.

3,883,771
COLLINEAR ELECTRON GUN SYSTEM INCLUDING ACCELERATING GRID HAVING GREATER EFFECTIVE THICKNESS FOR OFF AXIS BEAMS

Akio Ohgoshi, 5-6 Akabane-Kita 1, Kita-ku, Tokyo; Senri Miyaoka, Jutaku No. 13, 1-chome, Fujisawa-shi, Kanagawa, and Yosihiharu Katagiri, 18-104 Fujimi Jutaku, 6-189 Fujimi-cho, Tachikawa-shi, Tokyo, all of Japan

Continuation-in-part of Ser. No. 13,909, Feb. 25, 1970. This application Sept. 21, 1972, Ser. No. 290,985
Claims priority, application Japan, Mar. 7, 1969, 44-17325
Int. Cl. H01j 29/50, 31/20
U.S. Cl. 313—412 10 Claims

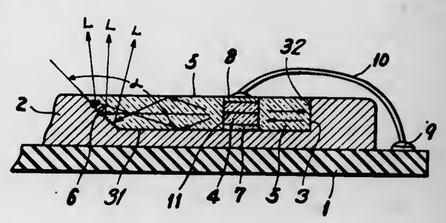


1. A cathode ray tube comprising: a screen; and electron gun means comprising beam producing means including a first set of cathode and control grid means providing a central beam source located on the axis of the tube for directing a central electron beam along said axis toward said screen and second and third sets of cathode and control grid means providing said beam sources spaced from said central beam source at opposite sides of the latter for directing respective side beams toward said screen in a common plane containing said axis of the tube, accelerating grid means spaced from said control grid means in the direction toward said screen and having a central aperture and two side apertures respectively aligned with said central and side beams, and a main focusing lens comprising a plurality of electrode means arranged in sequence along said axis between said accelerating grid means and said screen, said accelerating grid means cooperating with said beam producing means to establish electric fields for narrowing said beams to minimum cross-sections at respective crossover points adjacent said accelerating grid means, means for directing said side beams to intersect said central beam at a location in the main focusing lens whereby said side beams pass through the main focusing lens at angles to said axis and the focusing effect thereon is different from that on said central beam, said cathode and control grid means being substantially equidistant from each other in said first, second and third sets thereof and said control grid means of said first, second and third sets being substantially equidistant from said location in said main focusing lens where said side beams intersect said central beam, said accelerating grid means having greater effective thickness at said portions thereof containing said side apertures than at the portion thereof containing said central aperture, whereby an electric field established between said accelerating grid means and said electrode means of said main focusing lens panetrates said central and side apertures of the accelerating grid means to different extents and thereby disposes said crossover points of said side beams and said central beam, respectively, at different distances from said main focusing lens to compensate for said different focusing effects.

3,883,772
ELECTRIC LIGHT-EMITTING APPARATUS

Kazuo Wako, Joyo, and Kenichi Konishi, Kyoto, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Apr. 26, 1973, Ser. No. 354,885
Claims priority, application Japan, May 2, 1972, 47-44139
Int. Cl. H01j 1/62, 63/04
U.S. Cl. 313—499 7 Claims



1. A light-emitting apparatus, comprising:
an electrically conductive substrate having a predetermined number of recesses, each recess having a flat bottom, smooth vertical side walls and an oblique side wall having a rough surface for diffused reflection, said oblique side wall defining an obtuse angle with the flat bottom;
a light-emitting diode secured on the bottom of each of said recesses, one electrode thereof being electrically connected to said bottom;
a transparent light-conductive resin wafer tightly embedded in each of said recesses and surrounding said light-emitting diode, an oblique light reflecting roughened face being defined by said oblique side wall, light rays emitted from the light-emitting diode being thereby reflected out from the wafer;
an insulating substrate supporting said conductive substrate; and,
a wire connecting the other electrode of each of said light-emitting diodes to a connecting tab on said insulating substrate.

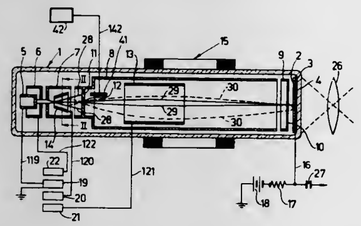
3,883,773
DEVICE COMPRISING A TELEVISION CAMERA TUBE

Johannes Hendrikus Theodorus van Roosmalen, and Johannes Cornelis Vermulst, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 9, 1970, Ser. No. 53,419
Claims priority, application Netherlands, July 11, 1969, 6910673
Int. Cl. H01j 31/26
U.S. Cl. 315—10 7 Claims

1. A device comprising a television camera tube, which tube has a target plate for integrating the picture information of a scene to be recorded and an electron gun for producing an

electron beam directed towards the target plate, said electron gun comprising a cathode, a control grid and an acceleration anode, a diaphragm being present in said tube between the control grid and the target plate to limit the electron beam, said device comprising a focusing lens to focus the electron beam onto the target plate, and deflection means for periodically scanning the target plate by the said diaphragm-limited electron beam for stabilisation of the potential of the target plate at substantially the cathode potential for producing output signals corresponding to the integrated picture information, said deflection means comprising a line deflection member for line scans and line flybacks and a frame deflection member for frame scans and frame flybacks, characterized in that the device comprises a lens element connected to a first pulse generator for producing, during flybacks, a beam crossover substantially at the area of the said diaphragm and a second pulse generator for producing simultaneously a cathode potential which is increased relative to the potential of the target plate, and an additional deflection member connected to a third pulse generator for producing during flybacks an extra deflection of the electron beam.

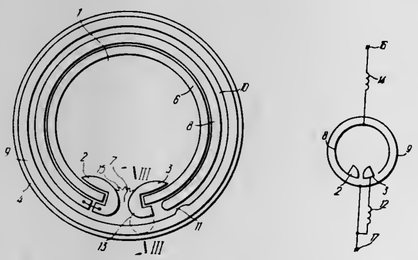


3,883,774

LIGHTNING ARRESTER SPARK GAP

Vladimir Andreevich Volkenau, 11 Parkovaya ulitsa 48, korpus 2, kv. 61; Gennady Georgievich Lavrentiev, Ketcherskaya ulitsa 6, korpus 2, kv. 125, and Vitaly Vladislavovichs Shmatovich, Meierovsky prospekt, 28, korpus 1, kv. 50, all of Moscow, U.S.S.R.

Filed Apr. 24, 1974, Ser. No. 463,789
Int. Cl. H01j *19/78*
U.S. Cl. 315—58 **4 Claims**



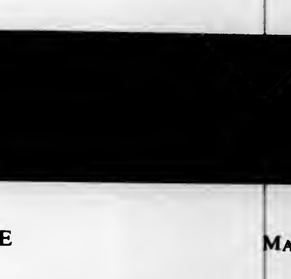
1. A lightning arrester spark gap comprising: two plates of arc-resisting insulating material, forming a narrow arc interrupting chamber; at least two, first and second, electrodes the working surfaces whereof extend in the direction of stretching the arc, which electrodes are disposed in said arc interrupting chamber; a series blow-cut coil; a third electrode electrically connected to said first electrode of said interrupting chamber, made in the form of a split ring, said third electrode being an extension of said first electrode of said arc interrupting chamber and encompassing the latter over most of its perimeter; a fourth electrode made in the form of a solid ring, arranged coaxially with said third electrode; an annular gap formed by said third and fourth electrode; a portion of said gap in direct proximity to the free end of said third electrode, wherein a flashover occurs; said fourth electrode being electrically connected to said second electrode of said arc interrupting chamber so that the arc periodically appearing between said electrodes determines the moment at which active quenching of the arc starts at currents below a preset value.

3,883,775

GAS DISCHARGE DISPLAY SYSTEM WITH CURRENT SUPPRESSION MEANS

Willem Aling, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1973, Ser. No. 422,586
Claims priority, application Netherlands, Jan. 8, 1973, 7300217
Int. Cl. H01j *17/48*
U.S. Cl. 315—84.6 **10 Claims**



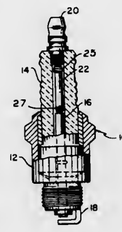
1. A gas discharge display device comprising first and second groups of output transistors, first and second control circuits coupled to said first and second groups of output transistors, respectively, for controlling the conduction in said output transistors, a gas discharge display tube comprising a first electrode system arranged in a discharge space of the tube and having a plurality of electrodes coupled to output electrodes capacitively coupled via said capacitance means to necting further electrodes of said first group of output transistors to a terminal of an electric supply source, capacitance means, said display tube including a second electrode system arranged in the tube discharge space and having a plurality of electrodes capacitively coupled via said capacitance means to output electrodes of the second group of output transistors, means connecting further electrodes of said second group of output transistors to a point of substantially the same potential as the said supply source terminal, a switch coupled to the first control circuit for suppressing the current through the display device when the electrodes of the first electrode system are not energized, and means for coupling the output electrodes of the second group of output transistors through a load impedance means and said switch to a further terminal of the supply source.

3,883,776

IGNITION CIRCUIT RADIATION SUPPRESSION STRUCTURE

Norman H. Berry, 49 Cambridge, Pleasant Ridge, Mich. 48069

Continuation-in-part of Ser. No. 226,042, Feb. 14, 1972, Pat. No. 3,771,006. This application Oct. 9, 1973, Ser. No. 404,170. The portion of the term of this patent subsequent to Nov. 6, 1990, has been disclaimed.
Int. Cl. H01t *13/04*
U.S. Cl. 315—85 **6 Claims**



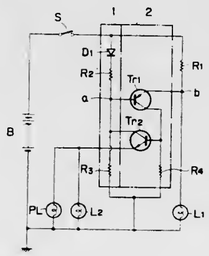
1. An ignition circuit including a spark plug having a pair of lower spaced apart electrodes, a spark plug lead wire connected in series with the spaced apart electrodes of the spark plug, and a wire wound ignition circuit radiation suppression resistor connected in series with the series connected spark plug lead wire and electrodes of the spark plug and positioned closely adjacent the electrodes of the spark plug, which resistor has an inductance of between 10 and 800 microhenries and a resistance of between 15 and 30 ohms.

3,883,777

DEVICE FOR AUTOMATICALLY COMPENSATING FAILURE OF A LAMP

Masayuki Morita, Tokoname, Japan, assignor to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho, Aichi Prefecture, Japan

Filed Aug. 1, 1973, Ser. No. 384,533
Claims priority, application Japan, Aug. 2, 1972, 47-90364; Sept. 8, 1972, 47-104230
Int. Cl. H05b *39/10, 41/46*
U.S. Cl. 315—88 **9 Claims**



1. An apparatus for automatically detecting and compensating failure of a first lamp normally energizable from a power supply, comprising in combination:

means including a series resistor connecting said first lamp across said power supply and responsive to conduction through said first lamp for creating a voltage drop in said series resistor;

first and second normally non-conductive transistors of opposite polarity;

means connecting a main current electrode of said normally non-conductive first transistor between said first lamp and series resistor and responsive to loss of said voltage drop upon failure of said first lamp for turning on said first transistor;

bias means connecting the base of said first transistor to said power supply for enabling said main current electrode to control turn on of said first transistor;

means coupling said first transistor to the base of said second transistor and responsive to first transistor conduction for turning on said second transistor;

feedback means coupling a main current electrode of said second transistor to said bias means and responsive to conduction of said second transistor for increasing conductive bias on said first transistor base and accelerating switching of said first and second transistors into conduction; and

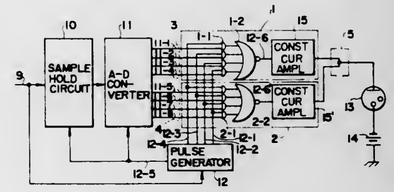
a back-up lamp and means coupling same to said second transistor and responsive to conduction of said second transistor for energizing said back-up lamp.

3,883,778

DRIVING APPARATUS FOR DISPLAY ELEMENT

Tetsunori Kaji, and Seiichi Murayama, both of Kokubunji, Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 3, 1973, Ser. No. 421,351
Int. Cl. H04n *5/66*
U.S. Cl. 315—205 **11 Claims**



1. An apparatus comprising:

a display element;

first means for quantizing input signals representing the degree of brightness to which said display element is to be energized;

second means for digitizing the output from said first means;

a plurality of first AND gates to one of whose input terminals signals corresponding to predetermined upper bits within the output signals from said second means are applied;

a plurality of second AND gates to one of whose input terminals signals corresponding to predetermined lower bits within the output signals from said second means are applied;

third means for generating pulse signals varying in width within a predetermined range;

fourth means for applying simultaneously said pulse signals in the increasing order of their pulse width to the other input terminals of said first and second AND gates;

first and second OR gates to which the output signals from said first and second AND gates are applied, respectively;

fifth and sixth means to which the output signals from first and second OR gates are applied, for respectively generating output signals having different respective amplitudes;

seventh means for adding the outputs from said fifth and sixth means, together; and

means for supplying the output of said seventh means to said display element.

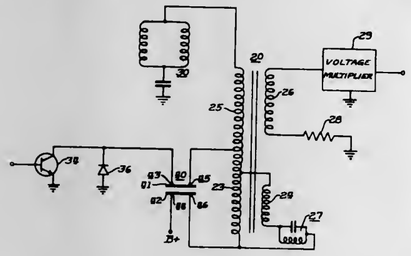
3,883,779

a parallel circuit comprising a resistance element and a

3,883,779
FOUR-LEAD TUNING CAPACITOR FOR TELEVISION DEFLECTION SYSTEM

Terence J. Kiteley, Schaumburg, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed July 2, 1973, Ser. No. 375,585
Int. Cl. H01j *29/70*
U.S. Cl. 315—379 **4 Claims**

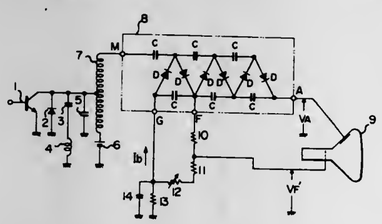


1. A television receiver including: a picture tube and associated deflection apparatus, said tube requiring a high DC potential; a tuned sweep transformer and a tuning capacitor supplying appropriate currents to said deflection apparatus; high voltage amplifying and rectifying means for producing said high DC potential from the output of said tuned sweep transformer, said transformer having an output voltage generating capability, in the event of failure occurring in said tuning capacitor, which is in excess of a predetermined safe level; and a source of B+ potential; said tuning capacitor including a pair of insulated foil electrodes, at least one of said foil electrodes being DC connected in the current path between said source of B+ potential and said transformer whereby in the event of failure of said capacitor, the voltage generated by said sweep transformer decreases.

3,883,780
CATHODE-RAY TUBE DRIVING SYSTEM

Terubiro Tsukuda, Osaka; Noboru Yasumatsuya, Neyagawa; Takashi Tsutsumi, Takatsuki; Taiichi Saeki, Katano, and Yasuyoshi Hirai, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 21, 1972, Ser. No. 317,308
Claims priority, application Japan, Dec. 24, 1971, 47-218; Dec. 24, 1971, 47-219; Dec. 24, 1971, 47-220; Dec. 23, 1971, 47-504
Int. Cl. H01j *29/70*
U.S. Cl. 315—408 **9 Claims**

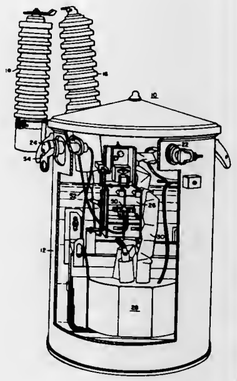


1. In a cathode-ray tube driving circuit which includes a horizontal deflection circuit having a flyback transformer generating flyback pulses, the improvement comprising:
a high-voltage rectifying and n-times multiplying circuit having a first input coupled to an output of said flyback transformer to rectify and boost the voltage of said flyback pulses, the nth output of said rectifying and multiplying circuit being coupled to the anode of said cathode-ray tube;
a parallel circuit comprising a resistance element and a capacitance element having a first common terminal connected to ground and a second common terminal connected to a second input terminal of said high voltage rectifying and multiplying circuit;
resistance means coupled between said second common parallel circuit terminal and a third terminal of said high voltage rectifying and multiplying circuit, the voltage at said third terminal being the flyback pulse input voltage multiplied and rectified m-times (where m and n are positive integers and m n); and
means coupling an intermediate tap of said resistance means to a focusing electrode of said cathode ray tube for applying a voltage derived from said resistance means to said focusing electrode.

3,883,781
REMOTE CONTROLLED CIRCUIT INTERRUPTER

John F. Cotton, Athens, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 6, 1973, Ser. No. 394,906
Int. Cl. H01h *37/00*
U.S. Cl. 317—14 R **32 Claims**

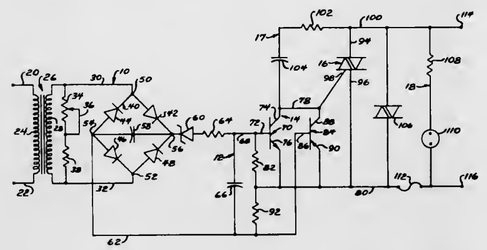


1. A circuit breaker comprising:
a stationary contact;
a movable contact;
an elongated contact arm carrying said movable contact at one end thereof;
a primary latch supported for movement about a first axis and being in a latching position, latching the other end of said elongated contact arm;
a second latch in a latched position;
biasing means biasing said second latch toward a tripping position;
a bimetal actuated latch latching said second latch in the latched position;
a spring operating mechanism pivotally connected to said contact arm intermediate the end of said contact arm and being operable to pivot said contact arm about said other end on said primary latch between open and closed positions with a snap action;
a signal latch in a latched position;
said bimetal actuated latch latching said signal latch in the latched position;
a pair of signal contacts associated with said signal latch and being movable from an open to a closed position when said signal latch is released;
said bimetal actuated latch being responsive to current flowing through the circuit breaker so upon the occurrence of lesser overloads above a predetermined value, said bimetal actuated latch releases said signal latch, whereupon said pair of signal contacts moves to a closed position and upon the occurrence of a greater overload above a predetermined value, said bimetal actuated latch also releases said second latch, whereupon said biasing means moves said second latch to effect movement of said primary latch to unlatch said elongated contact arm, whereupon said spring operating mechanism moves said contact arm to a tripped open position; and,
signal reset means being responsive to an electric signal to reset said signal latch in a latch position.

3,883,782
OVERCURRENT RELAY CIRCUIT

Robert W. Beckwith, 1002 Greenfield Ln., Mount Prospect, Ill. 60056

Filed May 31, 1974, Ser. No. 474,874
Int. Cl. H02h *3/10*
U.S. Cl. 317—16 **19 Claims**



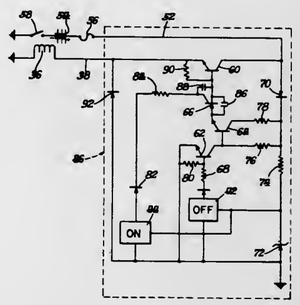
1. An electric circuit for use in controlling an electric current, comprising: means for receiving a sensed current; shorting means connected to the means for receiving the sensed current, said shorting means being responsive to an electrical condition of the sensed current; solid-state bi-directional switching means having a pair of main terminals and a gate, said shorting means being connected between one of said main terminals and the gate of the solid-state bi-directional switching means, said shorting means controlling said solid-state bi-directional switching means; capacitive means connected between the gate and the other of said main terminals of said solid-state bi-directional switching means, said capacitive means coupling transients from the other of said main terminals to the gate of the solid-state bi-directional switching means to maintain a conducting state through the solid-state bi-directional switching means during change in direction of the current between the main terminals; and means for connecting the solid-state bi-directional switching means to the electric current to be controlled.

3,883,783
ELECTRONIC COMPONENT POSITIONER FOR LOADER VEHICLES AND THE LIKE

Joe E. Fuzzell, Peoria, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Division of Ser. No. 287,604, Sept. 11, 1972, Pat. No. 3,782,248. This application Nov. 2, 1973, Ser. No. 412,208
Int. Cl. H01h *47/32*
U.S. Cl. 317—148.5 R **3 Claims**

1. A logic control circuit for energizing and deenergizing a selected device via a given voltage source, said logic control circuit comprising:
a conductive device;
circuit means operatively associated with said conductive device and adapted to couple said selected device to said voltage source in response to conduction through said conductive device and to uncouple said selected device from said voltage source upon termination of conduction through said conduction device;
first and second sequentially operable triggering means having a sequence of operations that after termination of said first triggering means said second triggering means operates and terminates and then operates and terminates again and then said first triggering means operates;
means responsive to operation of said first triggering means for rendering said conductive device nonconductive during operation of said first triggering means and for conditioning said conductive device for conduction after termination of operation of said first triggering means;
means responsive to operation of said second triggering means for initiating conduction through said conductive device during operation of said second triggering means and for maintaining conduction through said conductive device until a subsequent operation of said first triggering means.



3,883,784
ELECTRICAL DEVICE WITH HIGH DIELECTRIC CONSTANT

Robert L. Peck, Willimantic; Jefferey B. Otto, Brooklyn, and Alexandra G. Pappajtion, Danielson, all of Conn., assignors to Robert L. Peck, Willimantic, Conn.

Continuation of Ser. No. 226,429, Feb. 15, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,611
Int. Cl. H01g *3/06*
U.S. Cl. 317—258 **13 Claims**



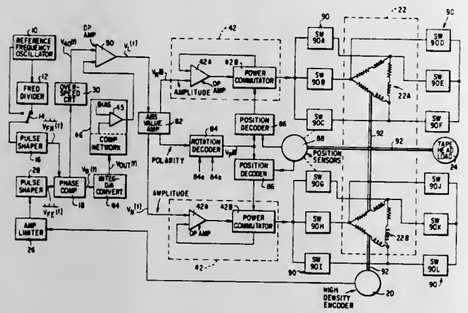
1. An electrical device including as assembled parts:
a pair of conductive elements; and
a solid polymeric association product between said conductive elements, said polymeric association product being characterized by a multiplicity of ionic donors or interstitial impurities which act as ionic donors and a multiplicity of ionic acceptors, said polymeric association product having a dielectric constant of at least 10 at room temperature and at a frequency between 120hz and 1,000hz.

3,883,785

LOW SPEED PHASELOCK SPEED CONTROL SYSTEM

Robert W. Fulcher, College Park, and John Sudey, Timonium, both of Md., assignors to The United States of America as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Sept. 27, 1973, Ser. No. 401,466
Int. Cl. H02p *5/00*
U.S. Cl. 318—314 **7 Claims**



1. In combination, a brushless D.C. motor and motor speed control system for controlling the speed of said motor, said system comprising:

means for generating a reference frequency signal; sensor means responsive to the motor for producing angular position signals and including an output signal having a frequency in accordance with the speed of the motor;

phase comparator means for comparing the reference frequency signal with the sensor output signal and for producing an output pulse train in which each pulse thereof is determined in accordance with the difference in frequency and phase between the reference frequency signal and the sensor output signal;

integrator-digital-to-analog converter means for converting the output of said phase comparator into an analog error signal voltage,

biasing means for converting said analog error signal voltage to a bi-directional error signal voltages; and means responsive to the bi-directional error signal voltage of said biasing means for controlling acceleration or deceleration of said motor to achieve symmetrical bi-directional torque control thereof.

3,883,786

PULSE WIDTH MODULATED SERVO SYSTEM

Lawrence S. McNaughton, Stuarts Draft; John M. Rhoades; Irvin L. Erler, both of Waynesboro, all of Va., and Kenneth M. Watkins, Fairview, Pa., assignors to General Electric Company, Salem, Va.

Filed Oct. 12, 1973, Ser. No. 405,936
Int. Cl. H02h *7/08*
U.S. Cl. 318—317 **20 Claims**

1. a circuit for driving a d-c motor from a d-c voltage source in response to a commanded velocity signal comprising:

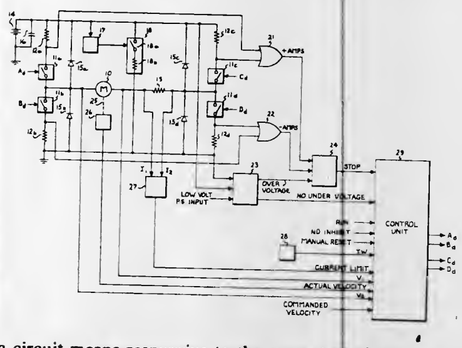
a. four switch elements connected to form a bridge, the motor being connected across one diagonal of the bridge and the d-c voltage source being connected across the other diagonal of the bridge so that when one pair of diagonally opposed switches is closed the voltage source will drive current through the motor in one direction and when the other pair of diagonally opposed switches is closed the voltage source will drive current through the motor in the other direction;

b. four diodes, each diode being connected in parallel with one of the switch elements and poled to conduct current into the positive terminal of the voltage source;

c. means for generating a signal proportional to the actual velocity of the motor;

d. current sensing means responsive to the motor armature current for generating a current limit signal having a first signal level when the motor armature current is less than a selected value and having a good signal level when the motor armature current is greater then the selected value;

e. a summing amplifier responsive to the commanded velocity signal and to the actual velocity signal for generating a velocity error signal that is proportional to the difference between the commanded velocity signal and the actual velocity signal;



f. a circuit means responsive to the current sensing means second level for causing the summing amplifier velocity error signal to be modified so that the motor armature current is limited;

g. switch control means responsive to the velocity error for operating the switch elements, the polarity of the velocity error signal determining which switch elements are to be closed and the magnitude of the velocity error signal determining the duration said switch elements are closed, said motor drive circuit operating to make the actual velocity of the motor equal the commanded velocity.

3,883,787

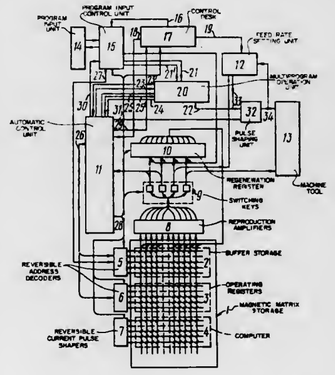
DEVICE FOR NUMERICAL PROGRAMMED CONTROL

Alexei Pavlovich Guldenbalk, ulitsa Kalgaeva 3, kv. 19, Leningrad; Vitaly Ivanovich Ivchenko, Furmanny pereulok 7, kv. 8; Teodor Iosifovich Kazakevich, 6 Novopodmaskovny pereulok, 10, kv. 28, both of Moscow; Leonid Pavlovich Koslov, prospekt Shvernika 47, kv. 49, Leningrad; Vladimir Grigorievich Kolosov, prospekt Shvernika 47, kv. 48, Leningrad; Ninel Iosifovna Kolosova, prospekt Marisa Toreza, 40, korpus 1, kv. 152, Leningrad; Viktor Fedorovich Melekhin, prospekt Nauki, 12, Korpus 6, kv. 87, Leningrad; Leonid Semenovich Popandopulo, Lodochnaya ulitsa 29, kv. 138, Moscow; Sergei Leonidovich Chechurin, ulitsa Manchesterskaya, 12 kv. 29, Leningrad; Pavel Sergeevich Ivanov, Bulvarnaya ulitsa, 89, kv. 22, Leningrad; Vyacheslav Semenovich Korolev, ulitsa Ushinskogo, 18, kv. 111, Leningrad; Vadim Nikolaevich Kushnikov, ulitsa Sedova, 140, kv. 27, Leningrad; Vladimir Fedorovich Sokolov, ulitsa Pulkovskaya, 25, kv. 62, Moscow, and Vyacheslav Anatolievich Chiganov, ulitsa Mira 21, kv. 10, Leningrad, all of U.S.S.R.

Filed July 26, 1973, Ser. No. 383,305
Int. Cl. G05b *19/18*
U.S. Cl. 318—569 **2 Claims**

1. A device for numerical programmed control of relative movement of a tool and a workpiece along an outline in an industrial plant equipped with an automatic processing machine-tool, comprising: a control desk; an automatic control unit having inputs and outputs; a program input control unit connected to said control desk and to said automatic control unit and having an output; a program input unit connected to said program input control unit, a feed rate setting unit connected to said control desk and having an output, a pulse

shaping unit for the shaping of pulses corresponding to elementary movements, said pulse shaping unit being connected to said automatic control unit, to said processing automatic machine-tool, and to said feed rate setting unit, reversible address decoders having address write inputs, reversible current pulse shapers, reproduction amplifiers, switching keys for the switching of output signals of the reproduction amplifiers, regeneration registers, operating registers, a buffer storage and a computer; said operating registers, buffer storage and computer forming a common magnetic matrix storage including common digit buses and three groups of address buses; two fo said groups of the address buses of said matrix storage corresponding to said buffer storage and to said operating registers, said third group of the address buses corresponding to said computer and being, via said reversible current pulse shapers, connected to said outputs of said automatic control unit corresponding to the readout of said reversible address decoders and reversible current pulse shapers; said write inputs of said reversible address decoder of the buffer storage being connected to said outputs of said automatic control unit and program input control unit respectively, said write address



inputs of said reversible address decoder of the operating registers being connected to said outputs of said automatic control unit; said common digit buses of said matrix storage being connected, via said reproduction amplifiers and switching keys of output signals of the reproduction amplifiers, to said regeneration register, automatic control unit, feed rate setting unit and processing machine-tool; and a multiprogram operation unit including inputs corresponding to interrogations for performing one of the programs and outputs corresponding to the beginning of one of the programs; there being connected to said inputs corresponding to the interrogations for performing one of the program an output of said program input control unit, an output of said feed rate setting unit and outputs of said automatic control unit, there being connected to said start input of said multiprogram operation unit an output of said automatic control unit, a signal indicating the availability of said computer for executing the next program appearing at said output of said automatic control unit, said outputs of said multiprogram operation unit corresponding to the beginning of one of the programs being connected to the start inputs of said automatic control unit.

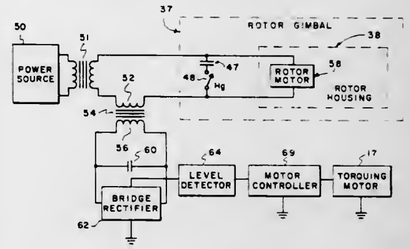
3,883,788

GYROSCOPE ORIENTATION CONTROLLER

Roy E. Storey, Jr., Rosenberg, Tex., assignor to Sperry-Sun Well Surveying Company, Sugar Land, Tex.

Filed Oct. 26, 1973, Ser. No. 409,850
Int. Cl. G05b *11/12*, *17/00*, *11/01*; **B64c** *17/02*
U.S. Cl. 318—648 **23 Claims**

1. In a gyroscope for use in a borehole survey instrument, a rotor orienting system, comprising: means for providing to the gyroscope rotor motor a power signal having an impulse characteristic; means for producing a ringing characteristic in the power signal; means for varying the state of a parameter



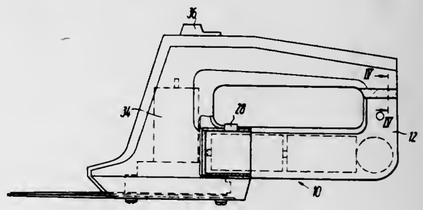
of the ringing characteristic; means for detecting the state of the parameter; and means for orienting the rotor in response to the state of the parameter of the ringing characteristic.

3,883,789

POWER PACK

Dieter Achenbach, Betzdorf, Sieg; Siegfried Adolf Joswig, Kausen b. Betzdorf, and Walter Kolb, Betzdorf, Sieg, all of Germany, assignors to Wolf-Gerate GmbH, Betzdorf, Germany

Filed Mar. 19, 1974, Ser. No. 452,634
Claims priority, application Germany, June 8, 1973, 2329415
Int. Cl. H01m *45/00*
U.S. Cl. 320—2 **4 Claims**



1. A power pack for use with a hand tool comprising a housing, an electric motor positioned within the forward end of said housing; a reciprocating tool assembly extending from the forward end of said housing and being coupled for operation to said motor; an integral handle portion extending rearwardly from the rear upper portion of said housing; the rearmost free end of said handle having a downwardly facing groove defined by a pair of spaced surfaces;

the lower rear portion of said tool housing having a hollow rearwardly facing collar;

first electrical contact means along one interior surface of said collar; one wall of said collar having an opening;

said power pack comprising:

an L-shaped housing;

a plurality of batteries in said L-shaped housing;

means in said L-shaped housing for electrically connecting said batteries;

one limb of said L-shaped housing having a configuration conforming to the shape of the hollow limb receiving collar provided at the lower rear end of said tool housing; said one limb being adapted to be slidably inserted into said hollow collar;

second electrical contact means along one exterior portion of said one limb and means for connecting said second contact means to said batteries; said second contact means slidably engaging said first contact means when said one limb is inserted into said collar;

the remaining limb of said L-shaped housing having a T-shaped projection for slidably engaging the facing edges

of said spaced surfaces when said one limb is inserted into

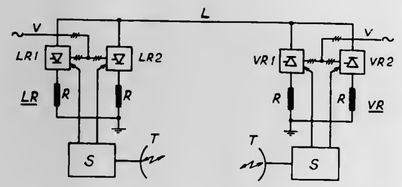
the cathodes of said SCRs being connected to an output

a. detecting means for detecting said harmonic components

a source of electrical energy having an armature shaft;

of said spaced surfaces when said one limb is inserted into said hollow collar;
said one limb having a locking projection, biasing means for urging said locking projection outwardly and into said collar opening to lock said L-shaped housing in said collar when said one limb is inserted into said hollow collar;
said tool housing handle and said L-shaped housing collectively defining a large opening for receiving the operator's hand to facilitate gripping of the tool.

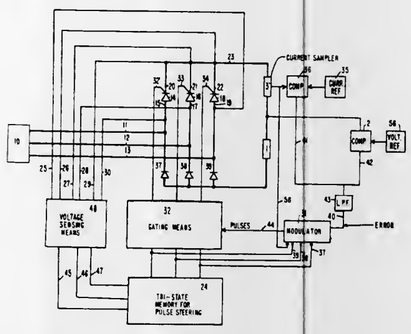
3,883,790
DIRECT CURRENT POWER TRANSMISSION
Bertil Hammarlund, and Lars-Erik Juhlin, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Feb. 8, 1974, Ser. No. 440,873
Claims priority, application Sweden, Feb. 14, 1973, 02049
Int. Cl. H02j *3/36*
U.S. Cl. 321—2 **7 Claims**



1. Power transmission for high voltage direct current comprising a direct current line (L) and convertor stations (LR, VR) connected thereto, each convertor station including a current control system, at least one station being a rectifier station and at least one station being an inverter station, the convertors in the inverter station being inverters, the convertors in the rectifier station being rectifiers, alternating current networks (V) at least one connected to each of said convertor stations, each convertor station comprising at least two convertors (1, 2) connected in parallel, each control system (6–8) including means to set the total current of the station as well as the current in the individual convertors in agreement with a predetermined current order (9), a telecommunication means (T) between said convertor stations for coordinating the total current of the stations, means for replacing said telecommunication line in case of a fault in it, said means comprising in each convertor station a means (11) to sense at least one of the magnitudes current or voltage on the d.c. line, means connected to said sensing means and to the current control system (8) of the station to reduce the current order set in the station in response to a sudden interference in at least one of the magnitudes current or voltage, and, in the inverter station, means (32, 42) responsive to current disappearance in one of the inverters of the station to reduce temporarily the internal direct voltage of the other inverter to approximately zero.

3,883,791
THREE PHASE SEQUENCE INSENSITIVE FULL RANGE SCR FIRING CIRCUIT
William B. Zelina, Edinboro, and Joseph M. Allison, Wesleyville, both of Pa., assignors to McGraw-Edison, Elgin, Ill.
Filed Mar. 15, 1974, Ser. No. 451,687
Int. Cl. H02m *7/20*
U.S. Cl. 321—5 **9 Claims**

1. A three phase, sequence insensitive, full range SCR firing circuit comprising
a three phase power supply comprising three SCRs each having anodes, cathodes, and gates,
the cathodes of said SCRs being connected to an output line,
power lines connected to said anodes,
gating means connected to said gates,
a tri-state memory means connected to said gating means, said tri-state memory being adapted to follow said power supply phase sequence,



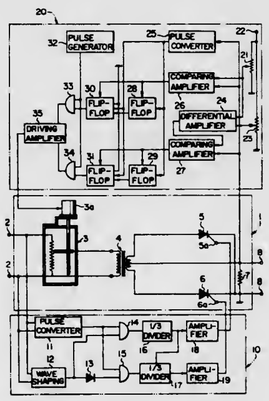
and a modulator means connected to said tri-state memory means for generating the pulse for said gating means,
said tri-state memory means being adapted to steer said pulse from said modulator means to said gates of said SCRs whereby the output of said SCRs is controlled over substantially a full range of power output.

3,883,792
OPTIMUM CONTROL SYSTEM FOR MINIMIZING HARMONIC EFFECTS IN HVDC POWER CONVERTERS
Frederick J. Ellert, Broomall, Pa., assignor to General Electric Company, Philadelphia, Pa.
Filed June 28, 1973, Ser. No. 374,682
Int. Cl. H02m *1/12*
U.S. Cl. 321—9 R **10 Claims**

1. In a system for controlling HVDC power converters connected to alternating voltage electric power lines, the HVDC converters comprising a plurality of controllable electric current conducting valves arranged to be periodically fired in a predetermined sequence in timed relation to the alternating voltage cycle, the firing angles at which said valves respectively are switched from nonconducting to conducting states being controllable, the alternating voltage on said lines having a certain fundamental frequency and a plurality of harmonic components which occur therein due to the switching action of said valves, the improvement comprising:

a. detecting means for detecting said harmonic components of the alternating voltage on said lines and for providing an electrical representation of the magnitude of each of said harmonic components,
b. calculating means responsive to said electrical representations for calculating performance indexes representing the degree of undesirability of a certain intensity of harmonic component occurrence, and
c. control means responsive to said performance indexes operating to vary the relative firing angles of the respective ones of said valves for changing the value of said performance indexes toward an optimum value,
thereby minimizing the undesirable effects of said harmonic component occurrence.

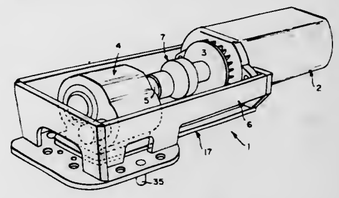
3,883,793
POWER SUPPLY SYSTEM FOR ELECTROLYTIC GRINDING APPARATUS
Yasushi Mizuhara, Kamakura, and Yasuo Suzuki, Yokohama, all of Japan, assignors to Hitachi Seiko Ltd., Japan
Filed July 27, 1973, Ser. No. 383,050
Claims priority, application Japan, July 31, 1972, 47-76001
Int. Cl. B23p *1/04*
U.S. Cl. 321—18 **7 Claims**



1. A power supply system for an electrolytic grinding apparatus comprising:
a power supply circuit for lowering an a.c. voltage of a commercial frequency to a working voltage level and rectifying the lowered voltage to obtain a d.c. voltage having a pulsating waveform as an output, which constitutes the working voltage;
a phase reducing circuit for setting the repetition frequency of said d.c. output voltage waveform in synchronism with said a.c. voltage; and
a voltage control circuit for comparing said d.c. output voltage with a predetermined reference voltage and controlling the peak value of said d.c. output voltage to a predetermined level.

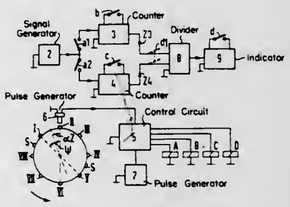
3,883,794
ELECTRICAL POWER GENERATING APPARATUS
Theodore Edward Sivley, Mountain View, Calif., assignor to Whamco, Mtn. View, Calif.
Filed Dec. 26, 1972, Ser. No. 317,922
Int. Cl. B60k *17/28;* **H02p** *15/00*
U.S. Cl. 322—41 **4 Claims**

1. An assembly for producing electrical energy in an automotive vehicle having a transmission comprising:
a source of electrical energy having an armature shaft;
a gear assembly having an input shaft and an output shaft;
a means for frictionally coupling said armature shaft of said energy source and said output shaft of said gear assembly, said coupling means having a first means coupled to said armature shaft and a second means coupled to said output shaft, said first and said second means having facing surfaces which slip relative to each other for permitting relative rotation betwen said armature shaft and said output shaft in response to a predetermined force; and



a relatively rigid housing having a base portion with a substantially vertical flange portion attached thereto, said source mounted on said flange portion and said gear assembly mounted on said base portion, for receiving said source and said gear assembly, said housing including means for maintaining said armature shaft in substantial coaxial alignment with said output shaft, a means for mounting said housing to a transmission in a vehicle, and a means for coupling said input shaft of said gear assembly to said transmission.

3,883,795
ELECTRONIC IGNITION ANGLE MEASURING APPARATUS
Erwin Klein, and Herbert Lucke, both of Regensburg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Mar. 14, 1973, Ser. No. 341,141
Claims priority, application Germany, Mar. 16, 1972, 2212813
Int. Cl. F02p *17/00*
U.S. Cl. 324—16 R **5 Claims**



1. An electronic ignition angle measuring apparatus for an internal combustion engine including a first pulse generator coupled to the distributor of the engine for generating ignition pulses, and a second pulse generator for generating pulses at a frequency which depends upon the speed of rotation of the engine and in a predetermined phase relationship with respect to top dead center of the cylinders of the engine comprising: signal generating means;
first and second signal summing means each comprising an analog integrator, coupled and responsive to said signal generating means;
control means including a logic control circuit, coupled to said signal generating means, said first and second summing means, and to the first and second pulse generators, and responsive to a first pulse signal generated by said second pulse generator prior to the generation of an

ignition pulse by said first pulse generator so as to activate one of said summing means, to said ignition pulse generated subsequent to the generation of said first pulse signal so as to activate the other of said summing means, and to a second pulse signal generated by said second pulse generator subsequent to the generation of said first pulse signal within one revolution of the engine crankshaft from the generation of said first pulse signal so as to deactivate both of said first and second summing means, said integrators summing signals transmitted thereto by said signal generating means and said control means, and said control means controlling said summing of said signals;

signal dividing means, coupled to said first and second summing means, for generating a signal representative of the ignition angle measured, and including a first integrator coupled to one of said first and second summing means, a comparator coupled to said first integrator and to the other one of said first and second summing means, a second integrator, coupled to said signal generating means and to said indicating means, first switching means coupled to said first and second integrators and said logic control circuit, and second switching means coupled to said signal generating means and said second integrator and responsive to said comparator;

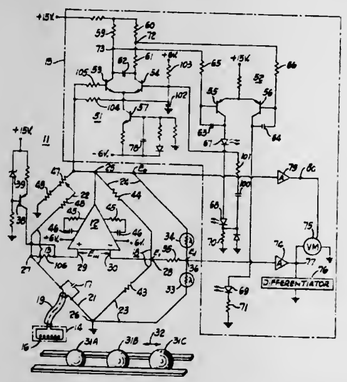
means, coupled to said signal dividing means, and responsive to the signal generated thereby, for indicating the ignition angle measured.

3,883,796

PROXIMITY PROBE WITH OUTPUT PROPORTIONAL TO TARGET DISTANCE

Frederick R. Holt, Cleveland, and Noah Flueckiger, Solon, both of Ohio, assignors to Acme-Cleveland Corporation, Cleveland, Ohio

Filed Sept. 5, 1972, Ser. No. 286,276
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 PS **13 Claims**



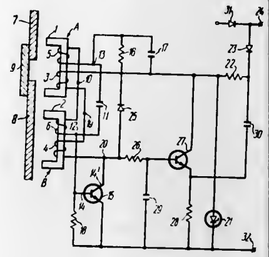
1. A proximity probe circuit, comprising in combination,
an amplifier having an output and an input,
feedback means connecting said amplifier output to said amplifier input,
a proximity probe,
means connecting said probe as part of said feedback means to produce a signal at said input of said amplifier which is gradually variable in accordance with the change of distance from said probe to a conductive target,
a bridge circuit having arms as part of said feedback means, variable means in said feedback means and included in two of said arms of said bridge circuit,
and output means connected to said amplifier and including means controlling said variable means in accordance with said amplifier output to decrease the input signal to said amplifier upon an increase of amplifier output.

3,883,797

APPARATUS FOR CHECKING THE CONTINUITY OF METALLIC PIPES USING AN OSCILLATOR WHOSE FREQUENCY CHANGES AT DISCONTINUITIES

Abram Lvovich Abrukin, Vorobievskoe shossa, 11, kv. 5, Moscow, U.S.S.R.

Filed June 20, 1974, Ser. No. 481,404
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **2 Claims**



1. An apparatus for checking-up the continuity of metallic pipes comprising: means for inducing magnetic field in the pipe being checked, said field being changed upon the occurence of a discontinuity in said pipe, and a converter for converting a change in the magnetic field into an electric signal carrying the information on the discontinuity of said pipe, said means and said converter comprising two transformers with open magnetic circuits mounted in a fixed position relative to each other, the magnetic circuits of said transformers being completed during the checking-up by the body of the pipe being checked, and an electronic amplifier circuit with positive feedback formed by the windings of said transformers, the primary windings of said transformers being matchingly interconnected and coupled to the output of said electronic amplifier circuit, and the secondary windings of said transformers having different number of turns being oppositely connected in series and coupled to the input of said electronic amplifier circuit, the ratio between the number of turns of said primary windings and the difference in the number of turns of said secondary windings complying with the condition

$K\beta > 1$ wherein K is gain of said electronic amplifier circuit, and β is resultant transformation ratio of the system of the interconnected transformers, whereby, upon the occurence of a discontinuity in the pipe being checked, the frequency of the electric signal at the output of said electronic amplifier circuit is changed.

3,883,798

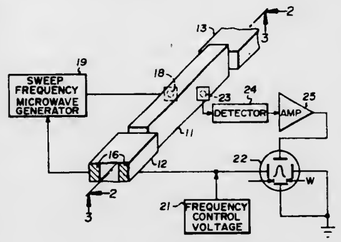
FREE FLOW RESONANT CAVITY MEASURING APPARATUS

John Marshall Free, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 250,301, May 4, 1972, abandoned. This application Apr. 19, 1974, Ser. No. 462,467
Int. Cl. G01r *27/04*
U.S. Cl. 324—58.5 C **8 Claims**

1. A system in which microwave techniques are applied to a solid particulate medium having continuous flow in the system for exposing the medium to resonant electromagnetic energy comprising:

wave guide means for defining a substantially uniformed cross-sectioned continuous feed path including resonant cavity means and end pipe means at opposite ends of the resonant cavity means, each end pipe means being arranged relative to said resonant cavity means to electrically close one end of the resonant cavity means while maintaining said feed path mechanically unobstructed; and



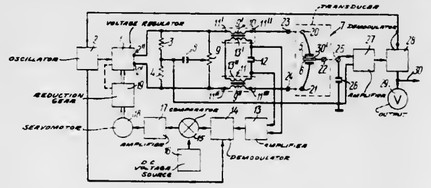
means coupled with said end pipe means for continuously maintaining said resonant cavity means filled with said medium.

3,883,799

METHOD FOR STABILIZING CONDUCTANCE OF CONVERSION OF MECHANICAL DISPLACEMENTS INTO ELECTRIC SIGNAL OF CAPACITANCE TRANSDUCER AND DEVICE FOR EFFECTING SAME

Lev Petrovich Ulyanov, Eropkinsky pereulok, 7, kv. 6, Moscow, U.S.S.R.

Filed Dec. 28, 1973, Ser. No. 429,398
Claims priority, application U.S.S.R., Dec. 29, 1972, 1860251; Dec. 29, 1972, 1860252
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 R **2 Claims**



1. A method for stabilizing the conductance of conversion of mechanical displacements into an electric signal of a capacitance transducer having two capacitors incorporated into a bridge circuit, consisting in shunting the output of said capacitance transducer, continuously measuring the total current of said two capacitors of said capacitance transducer, controlling the supply voltage of the capacitance transducer and stabilizing said total current, which is being measured, of said two capacitors of said capacitance transducer.

3,883,800

CAPACITIVE SENSOR POSITION DETECTING SYSTEMS FOR MAGNETIC TAPES AND THE LIKE

Jean G. Dupont, L'Hay-les-Roses, France, assignor to Compagnie Internationale pour l'Informatique, Louveciennes, France

Filed Jan. 8, 1974, Ser. No. 431,764
Claims priority, application France, Jan. 8, 1973, 73.00443
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 R **10 Claims**

10. In a capacitive position sensing system for permanently measuring the position within a hollow duct of an end loop of a conducting tape the electrical linear resistance of which may have a range of from about 0.5 ohm to about 1,000 megohms, the combination comprising:

said duct;

a plurality of metallized electrodes applied along one wall of the duct along which the said end loop is displaced;

a further metallizated electrode surrounding the said plurality of electrodes,

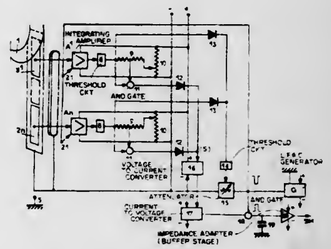
means applying an A.C. voltage of rectangular waveform to the said further electrode;

a plurality of integrating operational amplifiers equal to the number of said plurality of metallized electrodes, each having an input connected to a corresponding one of said plurality of electrodes;

a plurality of threshold circuits one connected respectively to the output of each said amplifier;

a plurality of AND gates each having one input respectively connected directly to the output of one of said threshold circuits;

a plurality of adjustable voltage circuits one also connected to the output of one of said threshold circuits respectively



and each having an output tap connected to the other input of one of said AND gates respectively, said adjustable voltage circuits being adjusted to add to the output voltage of its respective threshold circuit, a constant bias which is progressively increased from each circuit to the next; and

a logical-OR circuit having as many inputs as are outputs of the said AND-gates;

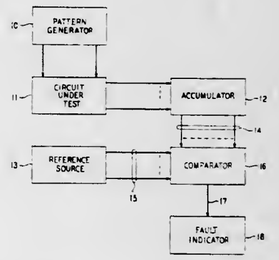
said means applying said A.C. voltage of rectangular waveform to said further electrode providing a complete charge within an alternation of a single polarity of said waveform of any condenser comprised by said further electrode, each one of the said metallized electrodes of the plurality and that part of the tape facing any one of the said electrodes of the plurality.

3,883,801

FAULT TESTING OF LOGIC CIRCUITS

Garry Carson Hess, Champaign, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 7, 1973, Ser. No. 413,674
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 R **11 Claims**



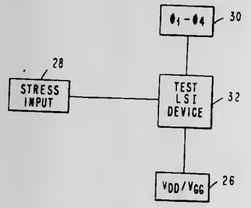
1. A logic circuit tester of the type in which a sequence of input vectors activates a logic circuit under test to yield a corresponding sequence of output vectors, said tester comprising:

an accumulator for summing the sequence of output vectors from the logic circuit under test into a single characterizing test sum vector,
means for adding the overflow bit of said accumulator to the least significant input bit thereof,
a reference source providing a reference sum vector characterizing a properly functioning logic circuit of the type under test, and
a comparator responsive jointly to the respective test and reference sum vectors for indicating the state of correspondence thereof and hence the state of operativeness of the logic circuit under test.

3,883,802
PROCESS FOR STRESS TESTING FET GATES WITHOUT THE USE OF TEST PATTERNS

Yogishwar Kumar Puri, Vienna, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1973, Ser. No. 425,042
Int. Cl. G01r *31/26*
U.S. Cl. 324—73 R **7 Claims**



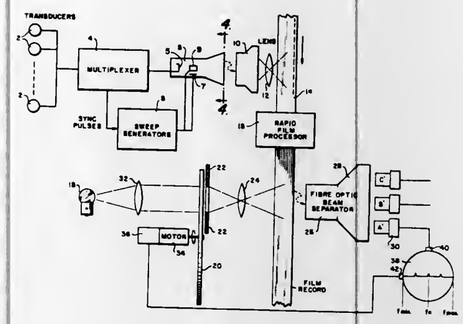
1. In a testing process for dynamic, random logic FET circuit arrays without the use of test patterns comprising the steps of
a. providing a plurality of clock phases to each dynamic, random logic FET circuit in an array under test, the clock phases having a prescribed time relation to one another to transfer information through the array of logic circuits,
b. providing operating potentials to each random logic FET circuit under test,
c. providing an initial stress voltage to each random logic FET circuit in the array adapted to receive a data input,
d. and cycling the clock phases in reverse order to the prescribed time relation for transferring information through the array of logic circuits.

3,883,803
NON-COHERENT MULTI-CHANNEL OPTICAL SPECTRUM ANALYZER

Philip J. Donald, Woodbury, N.J.; George W. Hunka, Churchville, and Jack J. Rudnick, Bala Cynwyd, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 26, 1968, Ser. No. 709,860
Int. Cl. G01r *23/18*
U.S. Cl. 324—77 K **4 Claims**

1. Apparatus for analyzing the frequency content of an electrical input signal comprising:
electronic display means connected to said input signal for converting said input signal into an intensity modulated optical signal;
means for projecting said optical signal;
movable photo-sensitive recording means for recording said projected optical signals at a preselected speed for providing a time base for said recording;
means for generating a plurality of optical reference signals, each of said optical reference signals being representative of a different particular frequency within a preselected frequency band;
means for comparing the frequency of said optical signal with said reference signals;

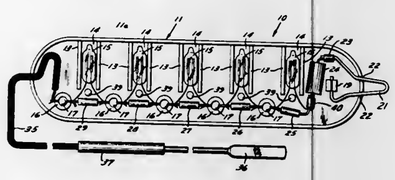


means responsive to said comparison means for detecting coincidence of frequency of said optical signal with the frequency of any of said reference signals; and
means for determining the frequency of the reference signals coinciding with said optical signals.

3,883,804
ELECTRICAL FENCE-TESTER HAVING A PLURALITY OF CONNECTORS FOR CONNECTING THE TESTER COMPONENTS

Robert M. Wilson, Battle Creek, Mich., assignor to Dare Products, Incorporated, Battle Creek, Mich.

Filed Apr. 16, 1973, Ser. No. 351,798
Int. Cl. G01r *19/16*; H01r *9/00, 13/46*
U.S. Cl. 324—122 **5 Claims**

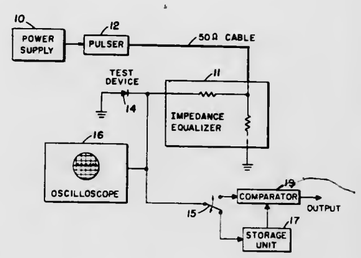


1. An electrical fence tester comprising:
A. a container,
B. a cover adapted to be mounted on said container and to be affixed thereto,
C. an electrical circuit comprising:
1. a plurality of resistors connected in series, the values of said resistors decreasing from one end to the other,
2. a plurality of glow lamps one connected across each of said resistors,
3. a plurality of electrical connectors connecting the respective leads of said glow lamps and said resistors to each other, each connector comprising:
a. a pillar integrally molded to said container having non-threaded axial channel and having an open transverse slot provided at the end of said pillar and communicating with said axial channel, and
b. a protuberance axially slidably disposed in said axial channel in contact engagement with the walls of said axial channel engaging and maintaining the electrical leads from said glow lamps and said resistors in electrical contact,
4. external terminals connected to said circuit.

3,883,805
DETERMINATION OF THE SUSCEPTIBILITY OF SEMICONDUCTOR DEVICES TO THERMAL SECOND BREAKDOWN

Norman S. Cohn, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 7, 1974, Ser. No. 449,187
Int. Cl. G01r *31/26*
U.S. Cl. 324—158 D **4 Claims**

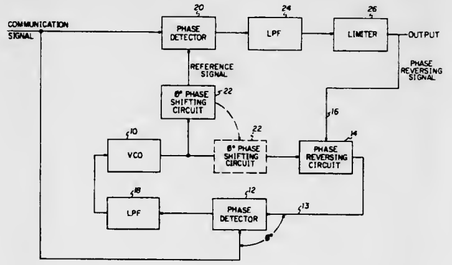


1. A method of determining the susceptibility of a semiconductor device to thermal second breakdown comprising the steps of:
measuring magnitudes of voltage rise factors for a set of preliminary test devices;
measuring magnitudes of damage resistance factors for said set of preliminary test devices;
measuring a magnitude of a voltage rise factor for said semiconductor device;
comparing said magnitude of said voltage rise factor of said semiconductor device to said magnitudes of said set of preliminary test devices to select the damage resistance factor of said semiconductor device from corresponding magnitudes of said compared voltage rise factors thereby indicating the susceptibility of said semiconductor device.

3,883,806
DEMODULATOR CIRCUIT FOR PHASE MODULATED COMMUNICATION SIGNALS

Vincent R. DeLong, Marion, and Robert L. Craiglow, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, Dallas, Tex.

Filed Mar. 7, 1974, Ser. No. 449,158
Int. Cl. H03d *3/00*
U.S. Cl. 325—320 **4 Claims**

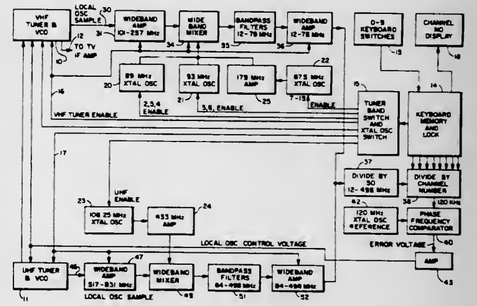


1. A demodulator circuit for providing a local reference signal for coherently demodulating communication signals containing phase modulation in the form of phase reversals in the carrier signal, comprising:
a voltage controlled oscillator for phase locked loop operation;
phase shifting circuit means for providing a reference signal which is out of phase with the output of said voltage controlled oscillator by the same amount and in a direction opposite to the phase shift produced by phase locked loop operation;
first detector circuit means for providing a bilevel phase reversing signal which constitutes the demodulated output whose level is dependent on the phase difference between the communication and reference signals;
phase reversing circuit means for providing a signal at its output which is 0° or 180° out-of-phase with the output of said voltage controlled oscillator, the phase shift being dependent on the level of said phase reversing signal; and
second detector circuit means for applying to said voltage controlled oscillator a control signal which is indicative of the phase difference between the communication signal and the output of said phase reversing circuit means.

3,883,807
TUNING CONTROL SYSTEM

Jade H. Alberkrack, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed May 30, 1974, Ser. No. 474,665
Int. Cl. H04b *1/26*
U.S. Cl. 325—420 **15 Claims**



1. A tuning control system for a wave signal receiver capable of receiving signals in a plurality of frequency bands and having local oscillator means tunable to different transmitted signals in such bands in response to a tuning control signal, said tuning control system including in combination:
mixer means having an output and at least first and second input;
means for applying output signals from the local oscillator means to at least a first input of said mixer means;
first and second gated offset oscillator means enabled for operation by an enabling gating signal and each producing output signals on an output terminal thereof at a different frequency having a predetermined relationship with a different frequency band which the wave signal receiver is capable of receiving, the outputs of said first and second gated offset oscillators each being coupled with a second input of said mixer means;
selection means coupled with said first and second gated offset oscillator means for supplying an enabling gating signal to a selected one of said first and second gated offset oscillator means corresponding to the frequency band in which a desired selected transmitted signal appears;
programmable frequency divider means coupled with the output of said mixer means and coupled with and controlled by said selection means for dividing the frequency of the output signal of said mixer means by an amount having a predetermined relationship with said desired selected transmitted frequency;

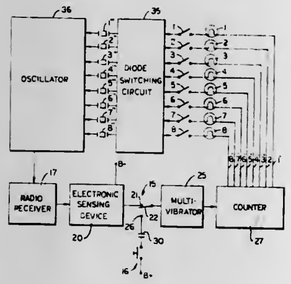
reference oscillator means producing a reference signal on an output thereof;

phase comparator means having an output and first and second inputs coupled respectively to the output of said reference oscillator means and the output of said programmable frequency divider means, the output of said phase comparator means providing a control voltage for tuning the local oscillator means.

3,883,808
RADIO

Joseph E. Boone, 4808 Eastbourne Dr., Indianapolis, Ind. 46226, and Louis E. Schonegg, R.R. No. 3, Box 610 C, Brownsburg, Ind. 46112

Filed July 29, 1969, Ser. No. 845,683
Int. Cl. H04B 1/32
U.S. Cl. 325—335 **18 Claims**



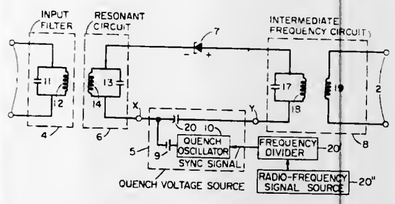
1. Radio apparatus comprising a radio receiver, said receiver being tunable to several different frequencies, means for stepping said receiver through said several frequencies in a regular order, means for locking said receiver on a given frequency as long as there is a signal received on that frequency, and for causing automatic resumption of said stepping after the signal ceases, means for causing said stepping to be automatic, means for visually indicating the frequency to which the receiver is tuned, squelch means for automatically muting the audio during said automatic stepping and switch means for manually precluding the operation of said locking means in response to signals on any selected single one of the frequencies while permitting operation of said locking means in response to signals on other frequencies of the several frequencies during said automatic stepping operation.

3,883,809
SUPERREGENERATIVE MIXERS AND AMPLIFIERS

Peter Ver Planck, Arlington, and Godfrey T. Coate, Belmont, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 637,743, May 11, 1967, abandoned. This application Dec. 11, 1970, Ser. No. 97,332
Int. Cl. H03d 1/22
U.S. Cl. 325—429 **17 Claims**

1. A superregenerative mixer comprising, in combination, a resonant circuit having an input to receive a radio-frequency signal and having its resonant frequency substantially at the center frequency of said radio-frequency signal, a tunnel diode electrically connected to the resonant circuit, bias means electrically connected in the mixer circuit for establishing an operating point on the tunnel diode current versus voltage characteristic, quench means electrically connected to said tunnel diode and operable to move the operating point of said tunnel diode between regions of negative and positive incremental conductance at a quench frequency much less than the frequency of said signal to cause oscillations in said resonant circuit periodically to grow and decay at the quench frequency, said radio-frequency signal and high-order harmonics of the quench frequency being amplified and mixed by the tunnel diode to produce a resultant intermediate-frequency signal, and intermediate-frequency circuit means electrically connected to said tunnel diode to separate the intermediate-frequency signal generated in said tunnel diode from other signals and couple the intermediate-frequency signal thereby derived to an output, said quench means being

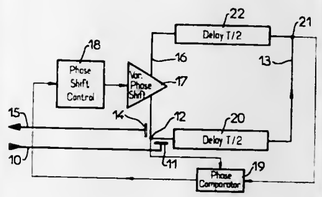


operable to provide a quench frequency one of whose high-order harmonics differs from the radio-frequency signal by the frequency of the intermediate-frequency signal, thereby providing a plurality of quench-frequency high-order harmonics to beat with the plurality of frequency components of the amplified radio-frequency signal to produce said intermediate-frequency.

3,883,810
DEVICE FOR THE USE IN FREQUENCY OF A SHORT DURATION ELECTRICAL SIGNAL

Maurice Tacussel, Boulogne-Billancourt, France, assignor to Electronique Marcel Dassault, Paris, France

Filed May 16, 1973, Ser. No. 360,849
Claims priority, application France, May 26, 1972, 72.18964
Int. Cl. H03b 3/08
U.S. Cl. 328—155 **7 Claims**

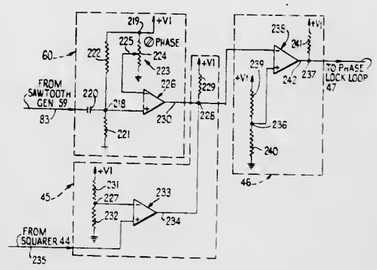


1. A device for storing a short duration signal comprising a read-in-station having an input means for receiving the signal, a read-out-station having an output means for transmitting the signal, a first signal delay means, a second signal delay means, said stations and said delay means being serially connected to form a closed signal-recirculation loop with said second signal delay means being located to receive the signals from said first signal delay means, phase comparator means connected to said read-in-station and to a point of said loop between said first and second delay means, means for adjustably phase shifting a signal circulating between said read-out-station and said second delay means, and phase shift control means coupling said phase comparator means and said means for adjustably phase shifting the circulating signal, whereby the transit time around the loop of the circulating signal is so controlled as to provide at the read-out-station a signal in phase with the signal introduced at the read-in-station.

3,883,811
DENSITOMETER

Gerald Lance Schlatter, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 423,409, Dec. 10, 1973. This application Aug. 12, 1974, Ser. No. 496,633
Int. Cl. H03k 5/153
U.S. Cl. 328—155 **4 Claims**

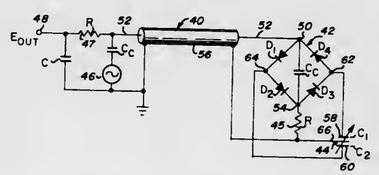


1. Apparatus for producing a sine wave signal manually adjustable in phase, said apparatus comprising: a phase adjustment circuit having input and output leads; first means having an output lead connected to said circuit input lead and actuable to produce a saw-tooth signal having ramps, said first means being actuable to impress said saw-tooth signal repeatedly at a predetermined fundamental frequency on said circuit input lead, the rate of change of the magnitude of said signal with respect to time being constant during actuating portions of said signal during which said ramps are generated, said circuit including adjustment means to cause a pulse to be impressed upon said circuit output lead each time the magnitude of said ramp becomes equal to a predetermined magnitude, said predetermined magnitude being adjustable with said adjustment means; a phase lock loop having input and output leads; and second means connecting said circuit output lead to said phase lock loop input lead, said phase lock loop producing a sine wave signal on said output lead thereof of said predetermined fundamental frequency and of a phase adjustable in accordance with the adjustment of said adjustment means.

3,883,812
DIODE-QUAD BRIDGE CIRCUIT MEANS

Dean R. Harrison, Sunnyvale, and John Dimeff, San Jose, both of Calif., assignors to The United States of America as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Continuation-in-part of Ser. No. 209,618, Dec. 20, 1971, abandoned. This application Jan. 16, 1974, Ser. No. 433,968
Int. Cl. H03d 1/10; H03k 17/56
U.S. Cl. 329—166 **10 Claims**



1. Diode-quad bridge circuit means comprising:

a diode bridge including first, second, third and fourth bridge terminals consecutively coupled together by four diodes polarized in circulating relationship;

a coaxial cable including an inner conductor and an outer conductor, one end of said inner conductor being coupled to said first bridge terminal, and one end of said outer conductor being coupled to said third bridge terminal;

a signal source for developing a signal of balanced alternating polarity, said signal source having a first source terminal coupled to the other end of said outer conductor, and a second source terminal;

a first coupling capacitor coupling said second source terminal to the other end of said inner conductor;

a second coupling capacitor coupling said first bridge terminal to said third bridge terminal;

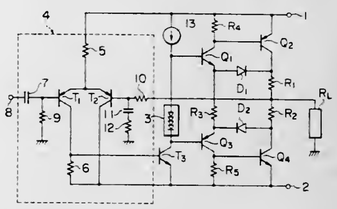
a first impedance means connected between said second bridge terminal and said one end of said outer conductor; a second impedance means connected between said fourth bridge terminal and said one end of said outer conductor; and

an output terminal coupled to said other end of said inner conductor whereby the voltage developed between said output terminal and said first source terminal is proportional to the difference of the impedances of said first impedance means and said second impedance means divided by the sum of the impedances of said first impedance means and said second impedance means.

3,883,813
LOW-FREQUENCY POWER AMPLIFIER

Mamoru Sekiya, Nagoya, Japan, assignor to Shin-Shirasuna Electric Corporation, Nagoya-shi, Aichi-ken, Japan

Filed Feb. 11, 1974, Ser. No. 441,420
Claims priority, application Japan, July 19, 1973, 48-82268
Int. Cl. H03f 3/18
U.S. Cl. 330—13 **1 Claim**



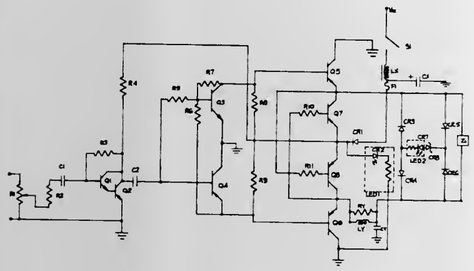
1. A low-frequency amplifier circuit arrangement designed for Class "B" or "AB" operation, comprising:

a first amplifier stage including a first transistor of a first conductivity-type and a second transistor of a second conductivity-type having the base thereof connected with the collector of said first transistor; a second amplifier stage including a third transistor of said second conductivity-type and a fourth transistor of said first conductivity-type having the base thereof connected with the collector of said third transistor; said second and fourth transistors having the collectors thereof connected to a load to alternately drive said load; and means for preventing said first and third transistors from being brought into cut-off condition, regardless of whether one of said second and fourth transistors are driving said load; said means comprising bias circuit means connected between the bases of said first and third transistors, a non-grounded resistor through which the emitters of said first and third transistors are connected to each other, a first diode having the anode and cathode thereof connected to the emitter of said first transistor and the collector of said second transistor respectively, and a second diode having the anode and cathode thereof connected to the collector of said fourth transistor and the emitter of said third transistor respectively.

3,883,814
HIGH FIDELITY SOLID STATE MOBILE AMPLIFIER

Richard J. Weisenberger, 8 Kentaboo Dr., Erlanger, Ky. 41018

Filed May 1, 1974, Ser. No. 466,021
Int. Cl. H03f 3/04
U.S. Cl. 330—14 18 Claims

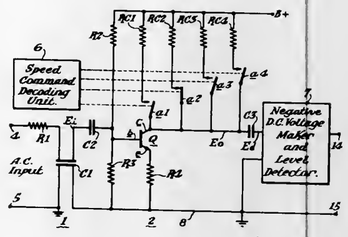


10. A direct coupled transformerless power amplifier operating from a single-ended power source and adapted to amplify a grounded input audio signal, said amplifier comprising:
a. a full wave transistor bridge circuit including four transistors of like conductivity;
b. a first pair of said four transistors having their emitters connected together at a first node, said first node being in electrical communication with said single-ended power source;
c. a second pair of said four transistors each having its collector connected to a reference potential wherein the collectors of said first pair of said four transistors are connected respectively to the emitters of said second pair of said four transistors, said connections defining second and third nodes;
d. said second node being in electrical communication via first resistive means with the base of the transistor of said first pair of said four transistors whose collector terminates in said third node, said third node being in electrical communication via second resistive means with the base of the transistor of said first pair of said four transistors whose collector terminates in said second node;
e. a load connected across said second and third nodes to receive the output of said transistor bridge circuit;
f. an input driver stage including first and second input transistors of opposite conductivity the emitter of said first input transistor and the collector of said second input transistor being connected together at said reference potential;
g. the collector of said first input transistor being connected to the base of the transistor of said second pair of said four transistors whose emitter terminates in said second node, via third resistive means to said first node and via fourth resistive means to its base, and
the emitter of said second input transistor being connected to the base of the transistor of said second pair of said four transistors whose emitter terminates in said third node and via fifth resistive means to said first node; and
h. the base of said first input transistor being connected via resistive means to the base of said second input transistor and
the bases of said first and second input transistors in electrical communication with said ungrounded audio input signal.

3,883,815
FAIL-SAFE SELECTABLE LOW-PASS FILTERING

Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Aug. 15, 1973, Ser. No. 388,370
Int. Cl. H03f 3/04
U.S. Cl. 330—21 8 Claims

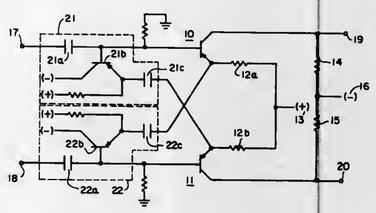


1. A vital type of a selectable low-pass filtering circuit comprising, a half section filter network including a resistive element and a four-terminal capacitive element, said four-terminal capacitive element having a first and a second pair of terminals, said first pair of terminals coupled to a source of a.c. input signals, and a variable gain amplifier having its input connected to said second pair of terminals and having its output coupled to at least a select one of a plurality of load resistors so that the gain of the amplifier is varied in accordance with the value of the selected load resistor.

3,883,816
DIFFERENTIAL AMPLIFIER

Donald T. Best, Lafayette Hill, and John B. Schwarz, Abington, both of Pa., assignors to Sperry Rand Corporation, Blue Bell, Pa.

Filed Mar. 11, 1974, Ser. No. 450,122
Int. Cl. H03f 3/68
U.S. Cl. 330—30 R 1 Claim

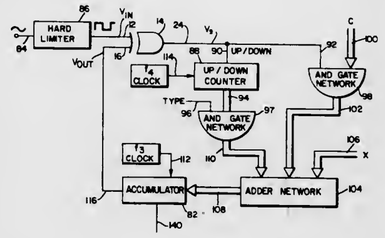


1. A differential amplifier comprising: a pair of transistor elements each having base, emitter, and collector electrodes, separate impedance means connecting the respective emitter electrodes to a source of operating potential, output signal means connecting the collector electrodes to a source of operating potential, a pair of input signal terminals, a first signal path coupling the first of said pair of input signal terminals to the base electrode of a first one of said pair of transistors, a second signal path coupling the second of said input signal terminals to the base electrode of the second of said pair of transistors, a first emitter follower transistor cross coupling the said first input signal terminal to the emitter of said second transistor of said pair of transistors, and a second emitter follower transistor cross coupling the second of said pair of input terminals to the emitter electrode of the first of said pair of transistors.

3,883,817
DIGITAL PHASE-LOCKED LOOP

Rodger A. Cliff, Upper Marlboro, Md., assignor to United States Government National Aeronautics and Space Adm., Office of General Counsel-Code GP, Washington, D.C.

Filed Aug. 20, 1973, Ser. No. 389,929
Int. Cl. H03b 3/04
U.S. Cl. 331—1 A 3 Claims

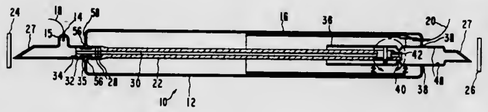


1. A phase-locking apparatus for producing a system output signal having a phase which is responsive to the phase of an input signal comprising:
phase detector means responsive to the input and system output signals for deriving a two state output signal from the phase detector means having a variable duty cycle indicative of the relative phase of the input and system output signals;
an accumulator having an output terminal on which is derived said system output signal; and
incrementing means including means for adding a signal representing a first constant to the accumulator at a fixed rate in response to the first output state of the phase detector and means for adding to the accumulator a signal representing a second constant at the fixed rate in response to the second output state of the phase detector.

3,883,818
METAL-VAPOR LASER WITH IMPROVED VAPOR CONDENSING MEANS

Steven James Heising, San Jose; Mark W. Dowley, Palo Alto, and William A. Shull, Portola Valley, all of Calif., assignors to Coherent Radiation, Palo Alto, Calif.

Filed Apr. 27, 1973, Ser. No. 354,988
Int. Cl. H01s 3/22, 3/05
U.S. Cl. 331—94.5 G 13 Claims

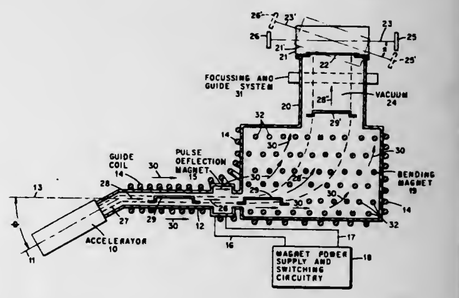


1. A gas laser comprising:
a. means for enclosing a lasing medium comprising at least one normally non-gaseous constituent which is in the vapor state during the operation of the laser;
b. an anode and a cathode and a direct current electrical discharge therebetween through said lasing medium;
c. a bore tube for confining said discharge and having an open end at the cathode end of the laser;
d. an optical resonator axially aligned with at least a part of said electrical discharge path;
e. means for transporting said vaporized constituent along said bore tube in the direction of said open end of said bore tube;
f. means for causing condensation of said vaporized constituent outside the region of said electrical discharge comprising physical barrier means for reversing the path of said direct current electrical discharge as the electrical discharge exits from said open end of said bore tube to separate said electrical discharge from said transported vaporized constituent; and
g. means for accepting the condensation of the spent vaporized constituent outside of the region of the discharge after said transported vaporized constituent exits from said open end of said bore tube and is separated from said electrical discharge.

3,883,819
APPARATUS FOR UNIFORM PUMPING OF LASING MEDIA

William C. Condit, and Samuel F. Eccles, both of Livermore, Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation-in-part of Ser. No. 315,261, Dec. 14, 1972, abandoned. This application May 23, 1974, Ser. No. 472,928
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 PE 10 Claims



1. An apparatus for uniform pumping of a contained lasing media with short and intense electron pulses, comprising a linear electron accelerator for producing electron pulses, beam pipe means operatively connected to receive electron pulses from said linear electron accelerator, magnetic means operatively connected to said beam pipe means and to a vessel containing said lasing media for turning the electron pulse around a point where it moves laterally with respect to rather than axially parallel to said vessel containing said lasing media, guide coil means for wrapping electron trajectory of the thus produced pulses into tight spirals thereby slowing the forward velocity of the electrons traveling toward said lasing media, said guide coil means being positioned around said beam pipe means and said magnetic means, and window means positioned between said magnetic means and said vessel for admitting the electron pulses into said vessel which pump said lasing media contained in said vessel to an excited state creating a population inversion in said lasing media.

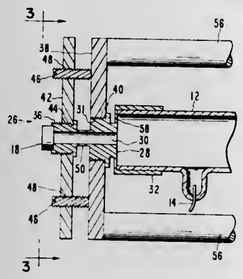
3,883,820
GAS LASER HAVING IMPROVED MULTIPLE-PART RESONATOR ADJUSTMENT

Edward Samuel Burns, Woodside, and Steven James Heising, San Jose, both of Calif., assignors to Coherent Radiation, Palo Alto, Calif.

Filed Apr. 27, 1973, Ser. No. 355,154
Int. Cl. H01s 3/22, 3/05
U.S. Cl. 331—94.5 C 5 Claims

1. A gas laser comprising:
a. envelope means for enclosing the gaseous medium;
b. means for exciting said gaseous laser medium to provide energy levels therein required for laser action;
c. a pair of optical resonator mirrors; and
d. a mirror support and alignment assembly for at least one of said resonator mirrors comprising:

i. a flexible hub member having a central aperture therethrough axially aligned with the gaseous medium, said hub member having a threaded outside surface;
ii. means for mounting a resonator mirror to sealingly cover the central aperture of said hub member;
iii. mirror adjustment and baseplates each having a threaded central aperture for screwed-on engagement with said threaded surface of said hub member so that



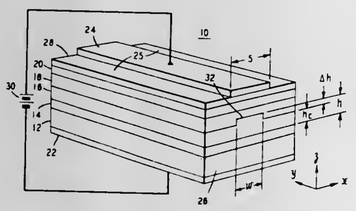
said plates are parallel and spaced apart from each other, said mirror adjustment plate being situated nearest to said mirror;
iv. said mirror adjustment plate having a plurality of bores located through the periphery thereof; and
v. adjusting members extending through each of said peripherally-located bores to buttingly engage said baseplate for flexing said hub member to optically align and adjust said optical resonator mirrors.

3,883,821

SINGLE TRANSVERSE MODE OPERATION IN DOUBLE HETEROSTRUCTURE JUNCTION LASERS HAVING AN ACTIVE LAYER OF NONUNIFORM THICKNESS

Stewart Edward Miller, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 17, 1974, Ser. No. 434,181
Int. Cl. G02f *3/00*
U.S. Cl. 331—94.5 H **7 Claims**



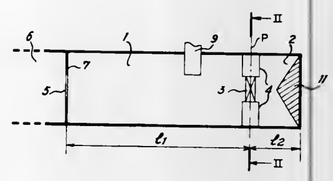
1. In a double heterostructure junction laser, a semiconductor body comprising first and second wide bandgap layers, a relatively narrower bandgap third region disposed intermediate to and contiguous with said first and second layers, and a p-n junction located in said third region; characterized in that said third region includes an active region of greater thickness than the remainder of said third region, the dimensions of said active region being effective to confine radiation to substantially a single transverse mode when said p-n junction is forward biased.

3,883,822

NEGATIVE RESISTANCE DIODE OSCILLATOR

Jean-Raymond Basset, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 10, 1973, Ser. No. 423,488
Claims priority, application France, Dec. 12, 1972, 72.44177
Int. Cl. H03b *7/06*
U.S. Cl. 331—107 R **3 Claims**



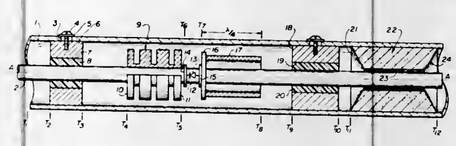
1. An oscillator comprising:
a metallic body formed with a prismatic main cavity, resonant at a predetermined operating frequency, and an adjoining low-Q auxiliary cavity constituting an extension of said main cavity, said cavities meeting at a common transverse plane;
a negative-resistance diode with an axis in said plane connected across said cavities, said main cavity having an output end coupled to an external load and spaced from said plane by substantially half a wavelength at said operating frequency; and
a dissipative load in said auxiliary cavity separated from said plane by a distance substantially less than the spacing of said plane from said output end.

3,883,823

BROAD BAND HIGH FREQUENCY CONVERTER WITH INDEPENDENT CONTROL OF HARMONIC FIELDS

Martin I. Grace, Framingham, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 8, 1974, Ser. No. 486,546
Int. Cl. H03b *5/12*
U.S. Cl. 331—107 R **8 Claims**



1. A high frequency energy converter comprising:
first and second conductor means spaced apart in longitudinally aligned relation,
third conductor means coextensive with said first and second conductor means,
semiconductor means forming first and second conductive junction means at said first and second conductor means, distributed filter means conductively disposed on one of said first or third conductor means adapted to pass high frequency fundamental energy,
first impedance matching means spaced with respect to said distributed filter means opposite said semiconductor means and conductively disposed on one of said first or third conductor means,
capacitive means coupled to said second conductor at said second junction for forming a substantial short circuit between said second and third conductor means with respect to harmonics of said high frequency fundamental energy greater than the fourth harmonic thereof,

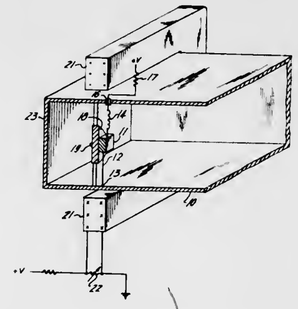
folded choke means conductively disposed on said capacitive means for forming a substantial short circuit at said second junction means between said second and third conductor means with respect to said high frequency fundamental energy and odd harmonics thereof, and
second impedance matching means spaced with respect to said folded choke means opposite said semiconductor means and conductively disposed on one of said second or third conductive means for independently controlling the impedance between said second and third conductor means at said second junction means with respect to even harmonics of said fundamental frequency energy.

3,883,824

DIELECTRIC-YIG TUNER FOR BULK OSCILLATORS

Maurice Weiner, Ocean Township, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 30, 1974, Ser. No. 493,000
Int. Cl. H03b *7/14*
U.S. Cl. 331—107 G **10 Claims**



1. In combination:
means for defining an electromagnetic field bounding region:
a device mounted in said electromagnetic field bounding region; said device having a negative resistance portion on its characteristic;
means for biasing said device into said negative resistive portion of its characteristic;
a dielectric resonator mounted in said electromagnetic field bounding region adjacent to said device;
a YIG sample mounted in said electromagnetic field bounding region adjacent to said dielectric resonator; and
means for providing an adjustable magnetic field to said YIG sample.

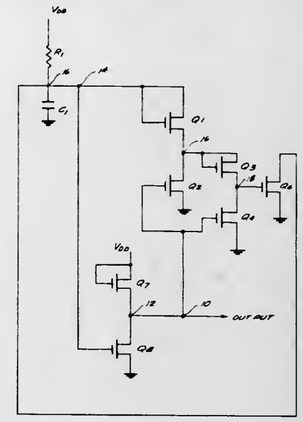
3,883,825

INTEGRATED CIRCUIT RELAXATION OSCILLATOR HAVING MINIMAL EXTERNAL PADS

Burton E. Cohen, Huntington Station, N.Y., assignor to General Instrument Corporation, Clifton, N.J.

Filed Feb. 19, 1974, Ser. No. 443,235
Int. Cl. H03b *5/24*
U.S. Cl. 331—111 **24 Claims**

1. An oscillator circuit comprising an output node, a control node, first means operatively connected to said output node and said control node and responsive to the voltage at said control node such that when the voltage at said control node is at a first value to charge said output node to a given voltage and when the voltage at said control node is at a second value to charge said output node to a different voltage, charging means operatively connected to said control node and effective to charge said control node from said first value through said second value to a third value over a period of time, and second means operatively connected to said control node and effective to return said control node to said first value when



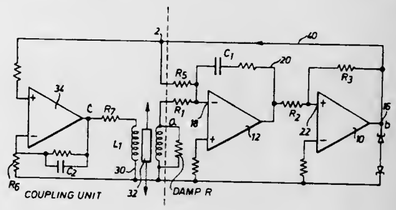
it reaches said third value and then permit it to recharge to said third value.

3,883,826

ADJUSTABLE FREQUENCY OSCILLATOR WITH REGENERATIVE FEEDBACK AND A COUPLING UNIT INCLUDING A DIFFERENTIAL AMPLIFIER FOR ADJUSTING THE FEEDBACK

Ian John Kirby, Reading, England, assignor to Imperial Chemical Industries Limited, London, England

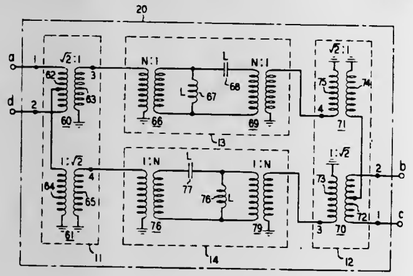
Continuation of Ser. No. 269,023, July 5, 1972, abandoned.
This application Nov. 13, 1973, Ser. No. 415,320
Claims priority, application United Kingdom, July 15, 1971, 33236/71
Int. Cl. H03k *3/295*
U.S. Cl. 331—143 **7 Claims**



1. An adjustable frequency oscillator comprising
a negative feedback, operational amplifier functioning as an integrator whose output is connected to a bistable-bipolar threshold device, said threshold device comprising an operational amplifier connected as a Schmitt trigger and having a resistive negative feedback loop for providing a bistable-bipolar output and switching the bipolar output from one stable state to the other stable state each time the input voltage applied thereto exceeds a predetermined fraction of the bipolar output and has a polarity opposite to the bipolar output,
a regenerative feedback connection between the output of the threshold device and an input of the integrator and
an adjustable coupling unit for adjusting the amount of regenerative feedback including a differential transformer having a primary winding feed from the output of said thershold device and a secondary winding connected to the input to said integrator, and a further operational amplifier connected to the output of said device having a

negative feedback loop including a resistance and a capacitance connected in parallel, said further operational amplifier connecting said primary winding, to the output of said operational amplifier functioning as a Schmitt trigger.

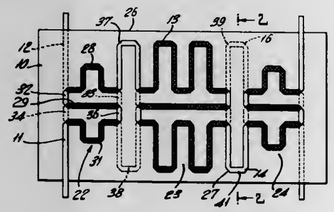
3,883,827
TANDEM ARRAYS OF IN-PHASE COUPLERS
Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 2, 1974, Ser. No. 466,213
Int. Cl. H01p 5/04
U.S. Cl. 333—10 **15 Claims**





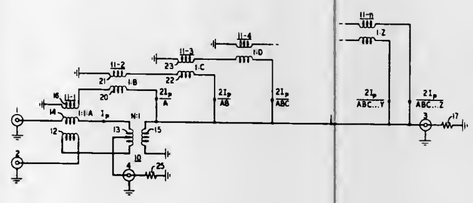
1. An in-phase hybrid coupler circuit having a prescribed overall signal division ratio which varies as a function of frequency over a given frequency band of interest comprising:
a tandem array of in-phase hybrid couplers at least one of which has a signal division ratio that varies as a function of frequency over said band of interest and is different from said prescribed signal division ratio.

3,883,828
HIGH-POWER COUPLER SYNTHESIS
Joseph D. Cappucci, Wayne, N.J., assignor to Merrimac Industries, Inc., West Caldwell, N.J.
Filed June 3, 1974, Ser. No. 475,603
Int. Cl. H01p 5/14
U.S. Cl. 333—10 **9 Claims**



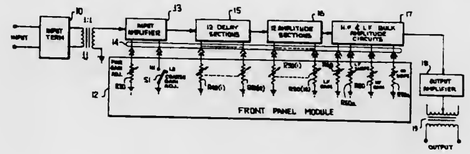
7. A distributed parameter device having a center operating frequency including:
first and second lines electromagnetically coupled to each other; said first line providing first and second terminals at opposite ends thereof; said second line providing third and fourth terminals at opposite ends thereof; said electrical length of said first and second lines being equal; said first and second line exhibiting an even mode impedance of Z_e when said first, second, third and fourth terminals are terminated in an impedance of Z_t; said first and second lines exhibiting an odd mode impedance of Z_o when said first, second, third and fourth terminals are terminated in said impedance of Z_t, where:
$Z_t = \sqrt{Z_e Z_o}$;
said first and second coupled lines exhibiting equal phase velocity in said even and odd modes of excitation;
third and fourth lines electromagnetically coupled to each other; said third line providing fifth and sixth terminals at opposite ends thereof; said fourth line providing seventh and eighth terminals at opposite ends thereof; said electrical length of said third and fourth lines being equal; said third and fourth lines exhibiting said even mode impedance of Z_e when said fifth, sixth, seventh and eighth terminals are terminated in said impedance of Z_t; said third and fourth lines exhibiting said odd mode impedance of Z_o when said fifth, sixth, seventh and eighth terminals are terminated in said impedance of Z_t; said third and fourth coupled lines exhibiting equal phase velocity in said even and odd modes of excitation;
a fifth line for connecting said second terminal to said fifth terminal; said fifth line covering the shortest distance between said second and fifth terminals;
a sixth line for connecting said fourth terminal to said seventh terminal; said sixth line covering the shortest distance between said fourth and seventh terminals;
said first and third lines being less than a quarter wavelength at said center operating frequency.

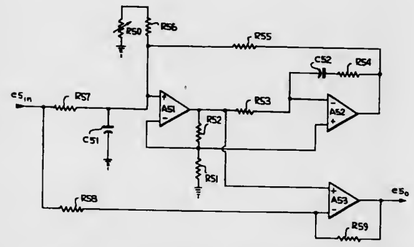
3,883,829
TRANSFORMER WITH ADJUSTABLE TURNS RATIO
Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 22, 1974, Ser. No. 472,116
Int. Cl. H03h 7/00; G05f 3/04
U.S. Cl. 333—11 **4 Claims**



1. A transformer circuit comprising:
a two-winding principle transformer having an actual primary winding-to-secondary winding turns ratio of N:1;
and at least one three-winding vernier transformer whose first, second, and third windings are in the ratio of 1:1:A; one end of said first winding being connected to one end of the primary winding of said principle transformer;
one end of said second winding being connected to the other end of said primary winding;
said first and second windings being further arranged so that the magnetic fields produced thereby by a common current flowing through said first, second and primary windings add constructively;
and means for connecting the third winding of said vernier transformer across the secondary winding of said principle transformer;
said transformer circuit having an effective turns ratio N_{eff}:1 between the other ends of said first and second windings and said secondary winding of $(N \pm 2/A)$:1.

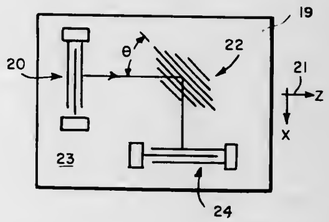
3,883,830
LINE CONDITIONER WITH INDEPENDENT GAIN AND DELAY CONTROL
Norris C. Hekimian, Rockville, Md., assignor to Hekimian Laboratories, Inc., Rockville, Md.
Filed May 13, 1974, Ser. No. 469,707
Int. Cl.² H03H 7/14
U.S. Cl. 333—28 R **35 Claims**





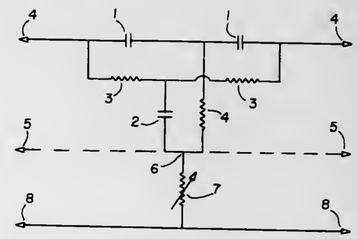
1. A line conditioner system providing adjustable compensation for frequency-dependent distortion introduced by a transmission line onto signals within a prescribed frequency range which are transmitted along the transmission line, said system comprising:
broadband input amplifier means arranged to receive signals from said transmission line, said broadband amplifier having an adjustable gain for all signal frequencies in said prescribed frequency range;
a plurality of cascaded delay circuits connected in cascade with said broadband amplifier means, each delay circuit being tuned to a different frequency within said prescribed frequency range and including delay adjustment means for adjusting signal delay therethrough in a relatively small range of frequencies centered at said tuned frequency, each delay circuit having a constant gain versus frequency characteristic;
a plurality of cascaded amplitude circuits connected in cascade with said delay circuits, each amplitude circuit being tuned to a different mid-band frequency within said prescribed frequency range and including amplitude adjustment means for adjusting circuit gain in a relatively small range of frequencies centered at said tuned frequency, said amplitude adjustment means being connected to vary the bandwidth and mid-band frequency gain of said circuit such that the product of said bandwidth and mid-band frequency gain is independent of adjustments of said amplitude adjustment means; and
output amplifier means connected in cascade with said delay and amplitude circuits for providing an output signal from said system and providing a system output impedance which is matched to a predetermined impedance;
wherein each of said delay circuits includes:
a delay circuit input terminal;
a first active gyrator simulating an inductive impedance and connected in series with said delay circuit input terminal;
a capacitor connected in parallel across said gyrator; and
said delay adjustment means in the form of an adjustable resistance connected between ground and the end of said capacitor remote from said delay circuit input terminal.

3,883,831
SURFACE WAVE DEVICES
Richard C. Williamson, Framingham, and Ernest Stern, Concord, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Sept. 27, 1973, Ser. No. 401,461
Int. Cl. H03h 9/26, 9/30; H01v 7/00
U.S. Cl. 333—30 R **43 Claims**



1. A device for handling surface elastic waves comprising
a substrate capable of propagating surface elastic waves having a selected direction of propagation on a selected surface thereof;
first transducer means formed on said surface for generating surface elastic waves on said surface in said direction;
at least one set of parallel reflective elements having preselected dimensions being formed at said surface and arranged at a preselected angle of incidence to the direction of propagation of said surface elastic waves to provide a reflection of said surface elastic waves at a preselected angle of reflection;
at least one of the dimensions of said reflective elements arranged to vary in a predetermined manner from element to element for achieving a non-linear relationship between the path length of said surface elastic wave and the frequency of said wave to provide a filtering action for said reflected surface elastic wave; and
second transducer means formed on said surface for receiving said reflected and filtered surface elastic waves.

3,883,832
SINGLE ELEMENT CONTROLLED PARALLEL-T AUDIO NETWORK
James Wayne Fosgate, 3023 E. Charles Oak Rd., Phoenix, Ariz. 85032
Filed Nov. 6, 1972, Ser. No. 304,204
Int. Cl. H03h 7/10, 7/16
U.S. Cl. 333—70 CR **1 Claim**



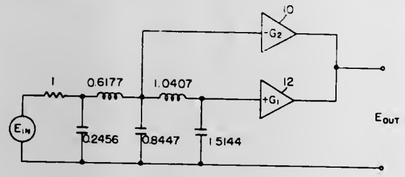
1. A single element controlled parallel-T network comprising: a pair of capacitors coupled together in series; a first conductor coupling said capacitors; a pair of fixed resistors coupled together in series; a second conductor coupling said resistors; a third resistor having one end thereof coupled to

said first conductor between said capacitors; said third resistor having an opposite end; and a third capacitor having one side coupled to and between said pair of fixed resistors; said third capacitor having an opposite side; a third conductor coupling said opposite side of said third capacitor to said opposite end of said third resistor; and a variable resistor having one end coupled to said third conductor; said variable resistor having a second end; a first terminal coupling at said second end of said variable resistor; second and third terminal couplings at opposite sides of said first pair of capacitors from said first conductor; said fixed resistors having opposite ends from those connected to said second conductor; said last mentioned opposite ends coupled to respective ones of said second and third terminal couplings, whereby adjustment of said variable resistor may cause a change in frequency at which maximum attenuation occurs.

3,883,833
LINEAR PHASE FILTER WITH DETERMINABLE GAIN CHARACTERISTIC

Koho Ozone, Webster, and Uno Randmere, Victor, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,052
Int. Cl. H03h *7/10, 7/32*
U.S. Cl. 333—70 R **1 Claim**

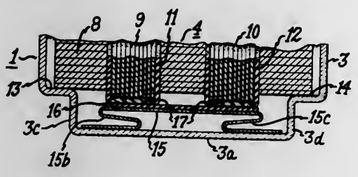


1. A "phase less" corrected linear phase filter comprising a linear phase filter of the LC type having an open circuit termination, amplifiers having high input impedances, the inputs of said amplifiers being connected to selected junctions between the reactive components of the filter, and means connecting the outputs of said amplifiers to a common output terminal so that the signal at the common output terminal represents the sum of the output signals of the amplifiers.

3,883,834
BALLAST TRANSFORMER WITH HEAT DISSIPATING DEVICE

Carl M. Osteen, Zirconia, N.C., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 13, 1973, Ser. No. 424,559
Int. Cl. H01f *27/08*
U.S. Cl. 336—61 **6 Claims**

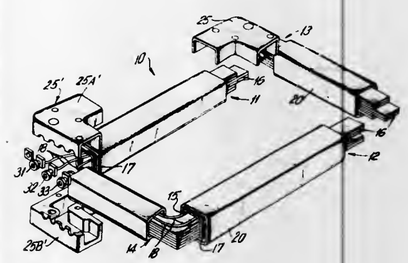


1. An electrical ballast device comprising, in combination, a housing of heat conductive material having a wall, an inductive ballast device mounted in said housing comprising a core and coil assembly, a heat conductive resilient member arranged between said core and coil assembly and said housing wall and resiliently urged in thermal contact therewith for transmitting heat from said assembly to said housing for dissipation thereby, and electrically insulating and thermally conducting means interposed between said resilient member and said core and coil assembly, said resilient member being formed of a top and compressible spring leg means, said inductive ballast device resting on said top and holding said spring leg means compressed in contact with said housing wall, said core and coil assembly comprising an elongated core member and coil means surrounding said core member, said coil means resting against said resilient member, said electrically insulating and thermally conducting means being arranged between said coil means and the top of said resilient member, said electrically insulating and thermally conducting means comprising a layer of elastic material on said coil means and a sheet of dielectric material between said elastic material and said resilient member.

3,883,835
GROUND FAULT SENSOR CURRENT TRANSFORMER

John A. Pagon, Clearwater, and Spotz Erwin, Largo, both of Fla., assignors to Electromagnetic Industries, Inc., Clearwater, Fla.

Filed July 10, 1974, Ser. No. 487,362
Int. Cl. H01f *17/06, 27/02*
U.S. Cl. 336—90 **7 Claims**



1. A current transformer, particularly for use with a ground fault current sensor, comprising, in combination, a rectangular core of ferromagnetic metal, said core having four legs disengageably interengaged, at the corners of the core, at right angles to each other; respective secondary winding sections wound on at least two of said legs and connected to each other and to output terminals; respective tubes of dielectric material telescoped over each leg, said tubes enclosing said winding sections; and four corner brackets of dielectric material each receiving and clamping the ends of two tubes and the core at a respective corner of said core; two of said brackets being readily removable, together with the tube and core leg extending therebetween, to provide for installation of said transformer over existing ductwork and bus-bars.

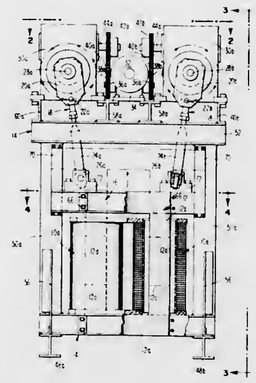
3,883,836
VARIABLE INDUCTIVE REACTOR

Charles F. Ward, Jr., Malvern, Pa., and Norman L. Smith, Haddonfield, N.J., assignors to James G. Biddle Company, Plymouth Meeting, Pa.

Filed Apr. 22, 1974, Ser. No. 462,634
Int. Cl. H01f *21/06*
U.S. Cl. 336—134 **9 Claims**

1. A variable inductive reactor comprising,
a pair of laminated iron core members, each having at least a portion of generally U-shape, the legs of which are opposed and together define a magnetic circuit, said core members being separable to provide air gaps in the magnetic circuit between the opposed legs,

a frame supporting one of said core members,
coil means supported on said frame and positioned to surround at least one of said opposed legs at the air gap, thereby to provide a variable inductive reactor,
movable support means for supporting the other of said core members having a slidable cooperative relationship with said frame whereby movement is restricted to a predetermined fixed and repetitive path producing an

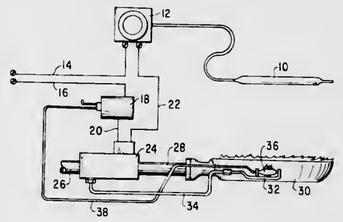


opening of the air gap in one direction and a closing of the air gap in the other direction of movement,
actuator means acting between the frame and the support means to produce such movement and including a pair of symmetrically arranged crank elements connected to articulated linkages, and
drive means to move the cranks in synchronism between predetermined positions providing preselected alternative core positions.

3,883,837
THERMAL RESPONSIVE SWITCH

Denis G. Wolfe, Santa Ana, and Joseph S. Danon, El Toro, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 5, 1973, Ser. No. 412,844
Int. Cl. H01h *37/40*
U.S. Cl. 337—326 **11 Claims**

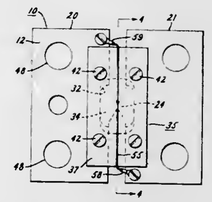


1. A thermal responsive switch comprising
a pair of contacts,
means forming a chamber,
a charge of gas in the chamber,
a carbonaceous adsorbent material in the chamber capable of adsorbing a quantity of the gas, and
a member movable in response to a change in gas pressure in the chamber for moving one of the pair of contacts relative to the other contact,
said carbonaceous adsorbent material being formed from a synthetic polymer selected from the group consisting of polyvinylidene chloride and polyvinylidene fluoride by removing the non-carbon components to produce cavities of sufficient size to adsorb the gas.

3,883,838
HIGH-CURRENT CURRENT-LIMITING FUSE

Ernest H. Bogert, Media, and Peter Kotos, Havertown, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Apr. 1, 1974, Ser. No. 456,701
Int. Cl. H01h *85/04*
U.S. Cl. 337—295 **10 Claims**



1. A current-limiting fuse comprising:
a. a plate of high-conductivity metal having a central longitudinal axis and two spaced-apart notches extending transversely of said axis from opposite lateral edges of said plate to points near said axis, thereby dividing said plate into: (a_1) two tang portions spaced apart along said longitudinal axis at opposite sides of said notches and (a_2) a neck portion interconnecting said tang portions and located between the inner ends of said notches,
b. said tang portions constituting fuse terminals and said neck portion constituting fusible conducting means for carrying current between said tang portions and for melting in response to overcurrents,
c. said neck portion being integral with said tang portions, the junctions between said neck portion and said tang portions being free of solder, and the neck portion, the tang portions, and said junctions all being of the same material and formed from the same part,
d. each of said tang portions having a relatively large cross-section in any plane therethrough normal to said longitudinal axis compared to the cross-section of said neck portion in any plane therethrough normal to said longitudinal axis,
e. a housing of insulating material surrounding said neck portion and comprising: plates of insulating material at opposite faces of said conductive plate and portions of insulating material extending into said notches,
f. and means for securing said insulating plates to said tang portions and to each other, thereby effectively preventing motion of said tang portions relative to each other,
g. said tang portions having end regions located outside said housing adapted to be secured to external circuitry.

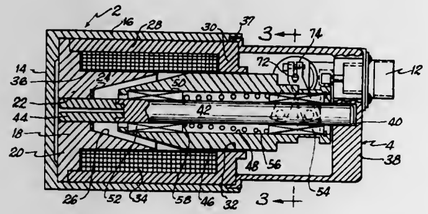
3,883,839
POSITIONING DEVICE

William J. Barrett, and Hal G. Meyer, both of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.

Filed Oct. 29, 1973, Ser. No. 410,784
Int. Cl. H01l *13/00*; **H02k** *41/02*
U.S. Cl. 338—116 **10 Claims**

1. A positioning device comprising a base formed of magnetizable material having an end portion provided with an opening in the center thereof and a central cup portion extending from said end portion having an interior surface tapering from its free end toward said end portion, a coil housing of magnetizable material extending from said end portion and having a

central opening at its end remote from said end portion, an annular actuating coil supported between said end portion and said end of said coil housing remote from said end portion, an actuator shaft mounted in said opening in said end with its longitudinal center line passing through the center line of said central cup interior and said central opening in said coil housing, a hollow actuator of magnetizable material encompassing said actuator shaft and tapered at one end whereby its outer



surface at said one end conforms to the interior surface of said central cup, a first bushing mounted in said actuator at said tapered end and having rolling bearings engaging said actuator shaft, a second bushing mounted in said actuator at its other end and having rolling bearings engaging said actuator shaft, a spring exerting a force on said actuator to urge said actuator away from said end portion of said base whereby the actuator is variably positioned along the actuator shaft as a function of the energization state of said coil.

3,883,840
ADJUSTABLE SPINDLE-TYPE RESISTOR ELEMENT

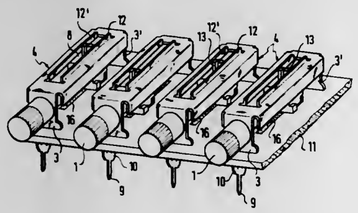
Peter Dornen, Riemerling; Martin Hindermayr, Ayling, and Ferdinand Wagner, Munich, all of Germany, assignors to Firma Wilhelm Ruf OHG, Hohenkirchen, Germany

Filed Oct. 17, 1973, Ser. No. 407,145

Claims priority, application Germany, Oct. 18, 1972, 723818

Int. Cl. H01c *9/02*

U.S. Cl. 338—128 **8 Claims**



1. An adjustable resistor element adapted to be mounted as a single element, or as one of a bank of similar elements, on a printed circuit board or the like in such a way that it cooperates with an elongated horizontal resistor slide track in the form of a resistive layer on the circuit board, or an equivalent variable resistance line, by contacting the slide track at a given, movable point along its length, the circuit board being assumed horizontal for purposes of definition used hereinbelow, the resistor element comprising in combination:

a horizontally extending housing of malleable, electrically conductive sheet metal having an elongated center panel and integral vertical end panels at the front and rear ends thereof;

a threaded horizontal spindle journalled in horizontally aligned bores in the vertical end panels of the housing, the spindle including an adjusting knob at its front end outside the forward vertical end panel;

a sliding block threaded for cooperation with the spindle so as to move therealong under spindle rotation, the sliding block carrying a flexible sliding finger having a contact point with the aforementioned slide track, or equivalent, of a printed circuit board;

means for axially retaining the spindle;

means for electrically connecting the sliding finger of the sliding block to the housing;

means defined by the housing for longitudinally guiding the sliding block against rotation; and

mounting means for connecting the end panels of the resistor element to the printed circuit board.

3,883,841
METHOD AND DEVICE FOR THE PRECISE LOCALIZED DETERMINATION OF THE ACOUSTIC IMPEDANCE OF MATERIAL SITUATED IN PROXIMITY TO THE WALL OF A BOREHOLE

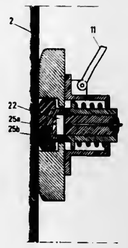
Guy Norel, Ru eil-Malmaison, and Robert Desbrandes, Clichy, both of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, France

Filed Feb. 22, 1973, Ser. No. 334,710

Claims priority, application France, Feb. 22, 1972, 72.06010

Int. Cl. G01v *1/40*

U.S. Cl. 340—15.5 A **24 Claims**



1. A method for the precise localized determination of the acoustic impedance of materials situated in proximity to the wall of a drilled well, into which there is introduced a measuring sonde connected by means of electrical conductors to a surface apparatus for processing the data supplied by said sonde, comprising the successive steps of:

a. emitting an acoustic impulse in a direction substantially perpendicular to the wall of the well traversing the mterials the acoustic impedance of which is to be determined, and through at least two intermediate elements having accurately known acoustic characteristics, a first of said intermediate elements being in contact with said materials;

b. receiving at least one acoustic impulse being reflected substantially perpendicularly to the contact surface of said first intermediate element and said materials;

c. generating in response to said reflected impulse, an electric signal representative of said acoustic impulse;

d. transmitting said electric signal to said means for processing the data supplied by said sonde; and

e. generating, in response to said electric signal, a resultant signal being representative of the acoustic impedance of said materials.

3,883,842
TRAFFIC STAGING CONTROL SYSTEM

Anthony B. Marmo, 7916 Coral Blvd., Miramar, Fla. 33023

Filed May 29, 1973, Ser. No. 364,436

Int. Cl. G08g *1/085*

U.S. Cl. 340—41 R **4 Claims**

1. A uni-directional traffic control system for limiting the flow of traffic on a uni-directional highway to a desired maximum rate of flow comprising a staging area consisting of a plurality of successive contiguous staging zones of predetermined average vehicle capacity, a plurality of spaced unidirectional stop and go traffic signals on said staging area, the size of each staging zone being determined by the spacing of the traffic signals, one signal being at the entrance to said staging area and one signal being at the exit end of each staging zone, said traffic signals being coordinated to provide a stop indication at only one signal at a time while simultaneously providing a go indication at each other signal, the stop indication progressing successively from the foremost signal at prescribed intervals to the next rearward signal, and then, at a prescribed time interval, the cycle is repeated indefinitely.

SEQUENCE TABLE

EVENT NUMBER	TIME INTERVAL (seconds)	START TIME	SIGNAL CONDITION D	C	B	A	RESULTS	NUMBER OF CARS RELEASED
1	45	0	G	G	G	R	Cars collect in staging zone AB	0
2	20	45	G	G	R	G	Cars leave zone AB, collect in zone BC	15
3	25	65	G	R	G	G	Cars leave zone BC, collect in zone CD	15
4	30	90	R	G	G	G	Cars leave zone CD, collect behind D	15
5	45	120	G	G	G	R	Same as event 1	0
6	20	165	G	G	R	G	Same as event 2	15
and so on ----------								

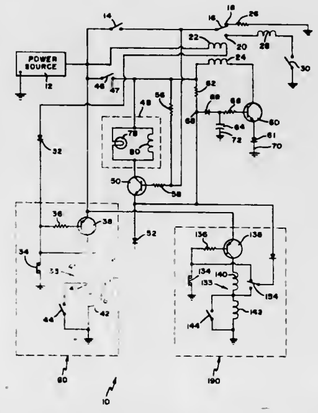
3,883,843
SEAT BELT SYSTEM WITH STARTER ENGINE LOCK AND ALARM

Juhan Telmet, Warren, and Richard C. Stouffer, Auburn Heights, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,580

Int. Cl. B60r *21/10*

U.S. Cl. 340—52 E **9 Claims**



1. A safety system adapted to be disposed in a vehicle having a starter motor and including a belt having a protracted and a retracted position comprising:

a. a power source for supplying electrical power;

b. a seat switch connected to said power source and associated with the driver's seat of the vehicle;

c. said seat switch having an open position when said seat is unoccupied and a closed position when said seat is occupied;

d. a belt switch associated with said belt and having an open position when said belt is in protracted position and a closed position when said belt is in retracted position, said belt switch being connected to the tap of a split coil relay having a plurality of coils connected to said power source through the emitter-collector circuit of a PNP transistor, the base of said transistor being connected to ground through a resistor and said seat switch;

e. circuit means associated with said starter motor and connected to said seat and belt switches through the arm of said split coil relay so as to be grounded when said belt switch is in the closed position for disabling said starter motor while the seat is occupied until the belt is moved from a retracted to a protracted position.

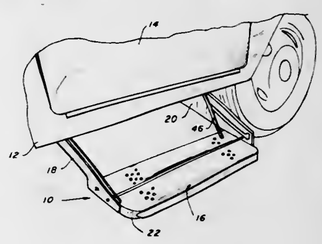
3,883,844
SIGNAL MEANS FOR VEHICLE RETRACTABLE STEP

George F. Wood, II, 2842 E. 26th St., Tulsa, Okla. 74114

Filed Feb. 25, 1974, Ser. No. 445,360

Int. Cl. B60r *3/02*

U.S. Cl. 340—52 R **8 Claims**



1. In combination with step means for vehicles, said step means being extendable and retractable between a passenger receiving position and a substantially concealed position, signalling apparatus comprising switch means operable by said step means for closing upon extension of the step means into said passenger receiving position and opening upon retraction of the step means into said concealed position, and a signal means operably connected with said switch means for activation upon closing of said switch means to provide indication of the extended position of the step means.

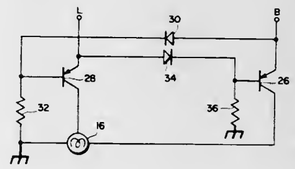
3,883,845
SIGNAL LIGHT ADAPTER FOR TRAILERS

Peter Michael DeVita, 1752 John St., Thornhill, Ontario, Canada

Filed Sept. 10, 1973, Ser. No. 395,932

Int. Cl. B60q *1/00*

U.S. Cl. 340—67 **4 Claims**



1. An electrical signal processing system for a trailer having at least one lamp at its rear left corner and at least one lamp at its rear right corner, each intended to indicate both a brake signal and a respective left or right turn signal; where means is provided in a vehicle intended for towing said trailer, for generating a brake signal on a brake signal line and a turn signal on a turn signal line, where said turn signal comprises a series of voltage pulses at a different level than a system reference voltage so that the visible turn signal indicated by a lamp connected to said turn signal line is a flashing illumination, and said brake signal is a steady voltage at a different level than said system reference voltage so that the visible brake signal indicated by a lamp connected to said brake signal line is a steady illumination; comprising:

means for connecting said at least one lamp at each corner of said trailer to said brake signal line and the respective turn signal line of said towing vehicle;

and a priority signal circuit interposed between each said at least one lamp and said brake line and respective turn signal line for inhibiting a brake signal to said lamp when a turn signal is on said respective turn signal line, including sensing means to sense the presence or absence of a turn signal on said respective turn signal line, said sensing means being operable from the voltage of the signal being senses, and being connected to gate means for inhibiting a brake signal to said lamp so as to impress a voltage derived from said signal being sensed onto said gate means;

said gate means for inhibiting a brake signal to said lamp being such that when a turn signal is sensed by said sensing means, said gate means inhibits said brake signal voltage from being impressed on said lamps;

said priority signal circuit being comprised of elements which become operative and derive their operating power from said brake and signal lines only when signals are generated on said lines from said towing vehicle, said electrical signal processing system remaining otherwise inactive;

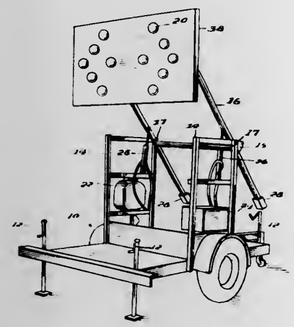
said brake signal line and a turn signal line of said towing vehicle being each respectively connected to a first terminal of a respective first and second switching means, and also to a second terminal on the other of said first and second switching means, the outputs of each of said first and second switching means being connected together to said lamp;

each of said first and second switching means being a transistor whose base is said second terminal; where each said base is connected through a diode to the respective one of said turn signal line or said brake signal line of said towing vehicle, so that each transistor is turned off in the presence of a voltage pulse on said turn signal line and a voltage on said brake signal line.

3,883,846
ADVANCE WARNING TRAFFIC DIRECTION CONTROL SYSTEM FOR USE AT SELECTED ROADWAY SITES

William L. Bruner, London, Ky., assignor to F & B Electronics, London, Ky.

Filed July 13, 1972, Ser. No. 271,494
Int. Cl. B60q *1/24*
U.S. Cl. 340—109 **11 Claims**

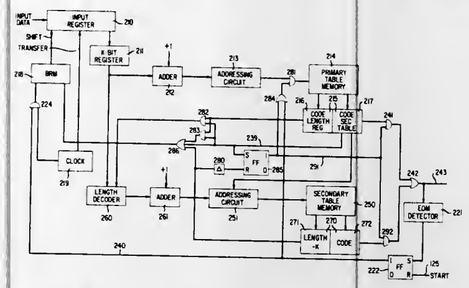


1. An apparatus for supporting a sign panel of signal lights comprising a base; cradle means extending vertically from said base; lift frame means pivotally mounted in said cradle means for movement of one end thereof to selected heights; and a sign panel of signal lights pivotally mounted on said one end of said lift frame means for movement to selected angular positions with respect to said lift frame.

3,883,847
UNIFORM DECODING OF MINIMUM-REDUNDANCY CODES

Amalie Julianna Frank, Chatham Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 28, 1974, Ser. No. 455,668
Int. Cl. H03k *13/24*
U.S. Cl. 340—146.1 R **9 Claims**



1. Apparatus for decoding an ordered sequence of variable-length input binary codewords each associated with a symbol in an N-symbol output alphabet comprising

A. a memory storing a first plurality of words each storing information relating to an output symbol,

B. means for selecting a fixed-length K-bit sample, $K \geq 2$, from said input sequence,

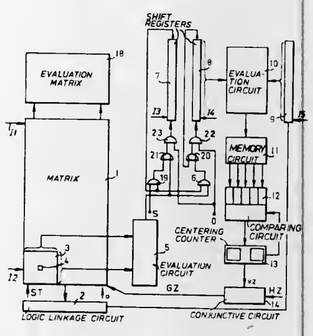
C. means for deriving address signals based on said sample of bits, and

D. means for reading information from the location in said memory specified by said address.

3,883,848
METHOD OF AND CIRCUIT ARRANGEMENT FOR CENTERING A CHARACTER

Konrad Minck, Hegne, and Klaus Joachim, Constance, both of Germany, assignors to LICENTIA Patent-Verwaltungs GmbH, Frankfurt am Main, Germany

Filed Nov. 28, 1972, Ser. No. 310,075
Claims priority, application Germany, Nov. 30, 1971, 2159307
Int. Cl. G06k *9/04*
U.S. Cl. 340—146.3 H **9 Claims**

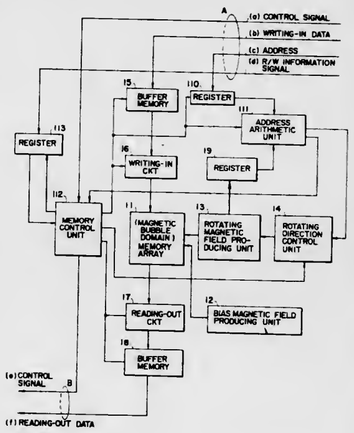


1. In a method of centering a character, in a character recognition apparatus containing means providing electrical signals constituting a matrix representation of components and background of such character, the centering being in a selected centering direction and relative to a selected ppoint corresponding to a given matrix element, the improvement comprising: evaluating the electrical signals corresponding to at least a portion of such matrix to provide output signals identifying the location in such matrix portion of points substantially on the center line of a character component which extends transversely to such centering direction; and processing such output signals for forming centering criteria indicative of the location of such center line relative to such selected point along such selected centering direction for proper centering of the character, wherein said step of processing comprises developing signals representing centering criteria of different priorities from such output ssignals, and using the signal representing the centering criterion of highest priority during scanning of a character to effect centering of the character.

3,883,849
MEMORY UTILIZING MAGNETIC BUBBLE DOMAIN DEVICE

Yuzo Kita, and Fumiyuki Inose, both of Kokubunji, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 9, 1973, Ser. No. 349,632
Claims priority, application Japan, Apr. 7, 1972, 47-34363
Int. Cl. G06f *1/00*
U.S. Cl. 340—172.5 **11 Claims**



1. A memory comprising:

a magnetic bubble array having a plurality of magnetic bubble shift loops capable of shifting magnetic bubbles in both directions along the loop, a magnetic bubble generating element for generating magnetic bubbles, and a magnetic bubble sensing element for sensing said magnetic bubbles;

a first register including means for storing the address of the data to be written into the memory array;

a second register including means for storing the address of the position of the bubble generating element on the magnetic bubble memory array;

address arithmetic means including means for comparing the address of the data to be written into the memory array stored in the first register with the address of the position of the bubble generating element on the magnetic bubble memory array stored in the second register and for supplying a directional rotation signal corresponding to the type of non-equal comparision resulting therefrom;

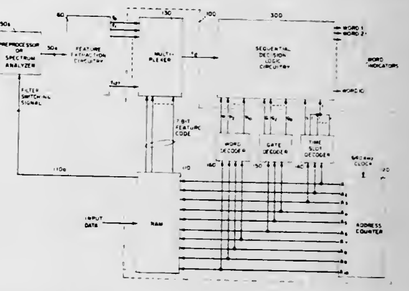
drive means for shifting the magnetic bubbles in a selected direction along the loop by an electric signal applied to the magnetic bubble shift loops; and

magnetic field rotation direction control means responsive to said address arithmetic means for supplying to said drive means said directional rotation signal which designates the direction in which the magnetic bubbles are to be shifted.

3,883,850
PROGRAMMABLE WORD RECOGNITION APPARATUS

Thomas B. Martin, Burlington, and Marvin B. Herscher, Camden, both of N.J., assignors to Threshold Technology, Inc., Cinnaminson, N.J.

Filed June 19, 1972, Ser. No. 264,232
Int. Cl. G06f *7/04, 15/34*; G10l *1/02*
U.S. Cl. 340—172.5 **11 Claims**



1. Apparatus which receives input data representative of speech feature sequences expected to occur characteristically during selected words, and which is programmable thereby to recognize these words when they are subsequently received in spoken form, comprising:

a. feature generating means for processing received spoken words and generating feature output signals on particular ones of a number of feature output lines, the particular ones being dependent upon the features present in a given spoken word;

b. at least one sequential logic chain which includes a plurality of logic units, each logic unit having a logic input line, and each logic unit being activated according to its relative position within the sequential logic chain by the occurrence in sequence of feature output signals on the logic input lines;

c. means for storing the input data for each selected word; and

d. program operable means responsive to the input data stored in said storing means for effectively coupling selected ones of said feature output lines to said logic input lines, the coupling selections being variable and in accordance with the stored input data, such that said sequential logic chain is activated by the particular sequence of feature output signals corresponding to a given selected word.

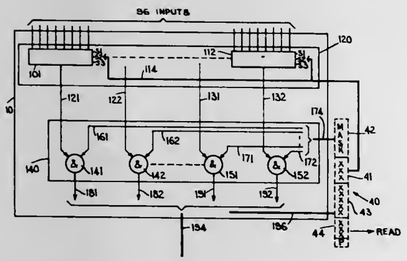
3,883,851
DATA PROCESSING ARRANGEMENTS

John Alfred Drake; Alan James Payne, both of Biggleswade, and Andrew Ronald Reichert, Stevenage, all of England

Filed July 24, 1972, Ser. No. 274,831
Claims priority, application United Kingdom, July 23, 1971, 34683/71
Int. Cl. G05b *11/00*
U.S. Cl. 340—172.5 **4 Claims**

1. A peripheral unit function control device for a data processing system, including a plurality of groups of input lines; a plurality of output lines; means for storing program instructions, each instruction having at least a function field specifying a functional linkage to be set up between input and output lines, an input group selection field and an input mask field; an instruction register arranged to receive a selected instruction from the store; means connected to the instruction register responsive to the input group selection field of an instruction in the instruction register to select a plurality of

input lines, one from each group; gating means responsive to the input mask field to enable only prescribed ones of the selected lines; processing means connected between the selected input lines and the output lines including gated paths arranged to condition the output lines to fulfil a functional

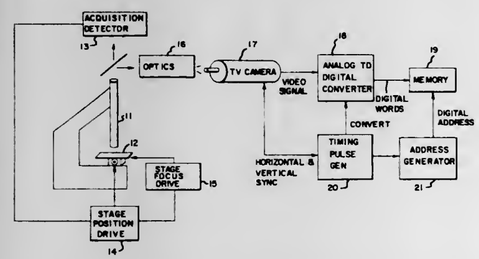


linkage in response to the enablement of input lines; and control means responsive to said function field to render different ones of said gated paths effective to carry signals in dependence upon respectively different functional linkages specified by said function field.

3,883,852
IMAGE SCANNING CONVERTER FOR AUTOMATED SLIDE ANALYZER

Douglas A. Cotter, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 20, 1973, Ser. No. 353,004
Int. Cl. G06f *13/08*; G06r *9/16*
U.S. Cl. 340—172.5 **11 Claims**



1. A system producing stored digital words representing the optical characteristics of an analytical slide comprising:

means for producing an optical image of said analytical slide,

a scanning detector for sequentially scanning at least a portion of said optical image of said slide in a raster of scan lines to produce an analog electrical signal representing said optical image along said scan lines,

an analog to digital converter responsive to a timing pulse input for producing a digital word representing the magnitude of said analog signal at the occurrence of each timing pulse,

an addressable memory for storing each digital word at memory locations specified by a digital address supplied thereto,

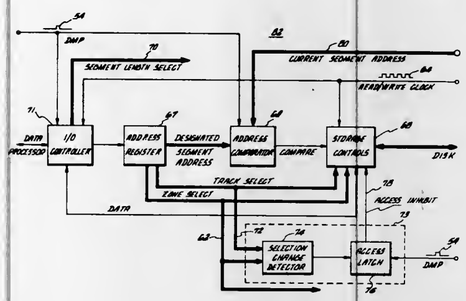
a timing pulse generator for generating said timing pulses, said timing pulses being applied to said analog to digital converter at intervals commensurate with the conversion rate at which said analog to digital converter performs each conversion, said conversion rate being matched with the cycle time of said memory, said timing pulses occurring at different times relative to at least two successive scan lines, and

an address generator for generating the digital address at which each digital word is to be stored, said digital address being applied to said memory for storing each digital word.

3,883,853
ADDRESS GENERATOR FOR ROTATING DATA STORAGE DEVICES

Harry C. O'Brien, Thousand Oaks; James V. Rubino, Newberry Park, and Herbert J. Smith, Thousand Oaks, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 2, 1973, Ser. No. 385,145
Int. Cl. G06f *13/04*; G11b *27/20*
U.S. Cl. 340—172.5 **36 Claims**



1. In a data storage system adapted to organize the storage of data into individually addressable segments of tracks on a rotating memory store, the tracks being grouped into a plurality of zones wherein each zone is characterized by a distinct predetermined zone frequency for recording and retrieving data, the zone frequency characterizing each one of said zones being a frequency different from any other zone frequency, said system including means for generating a coded zone selecting signal to select a particular zone for access; an address generator for providing a current segment address which comprises:

means directly assoicated with the memory store for generating a memory store clock signal having a predetermined frequency responsive to the speed of rotation of the memory store wherein the frequency of said memory store clock signal may be higher than all of said zone frequencies, lower than all of said zone frequencies, intermediate any two of said zone frequencies, or substantially equal to any one of said zone frequencies, as desired;

circuit means for deriving a plurality of read/write clock signals from said memory store clock signal, each one of said read/write clock signals comprising a pulse train having a distinct frequency substantially equal to a different one of said zone frequencies whereby each of said read/write clock signals is independently associated with a distinct one of said zones for synchronizing the recording of data in and retrieving of data from segments in the assoicated zone

first counting circuit means for counting the pulses of a read/write clock signal, said first counting circuit means having a modulo equal to the number of bits storable in a segment and generating an output pulse each time the number of read/write clock signal pulses counted therein reaches said modulo;

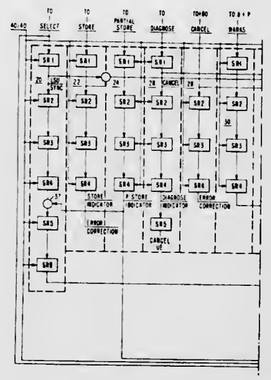
second counting circuit means for accumulating a current segment address therein by counting the output pulses of said first counting circuit means, and

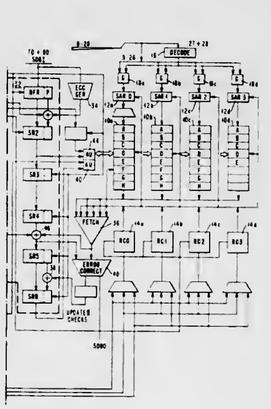
means generating a mark pulse each time the memory store completes a revolution for resetting said first and second counting circuit means in response to each occurrence of said mark pulse.

3,883,854
INTERLEAVED MEMORY CONTROL SIGNAL AND DATA HANDLING APPARATUS USING PIPELINING TECHNIQUES

Gary R. Heinberg; Darryl S. Jones, both of Poughkeepsie, and Thomas R. Wright, Shokan, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Nov. 30, 1973, Ser. No. 420,490
Int. Cl. G06f *13/06*
U.S. Cl. 340—172.5 **5 Claims**





1. In an interleaved memory having a plurality of storage units each controlled by timed operating pulses from a separate ring counter driven by a clocking source which determines the intervals at which the storage units can be operated, an improved storage control unit comprising:

a. a first plurality of multi stage shift registers driven by said clocking source for receiving control information;

b. a second plurality of multi stage storage registers driven by said clocking source for receiving data to be stored into the interleaved memory so that the data will be stepped along with the control signals;

c. means for supplying a control signal to at least the ring counter supplying operating pulses to the storage unit of interleaved memorys being accessed and to the shift registers to start the ring counter and the shift registers so that as a result of the shift registers being driven by the same clocking source as the ring counter the shift registers and ring counter operate in synchronism;

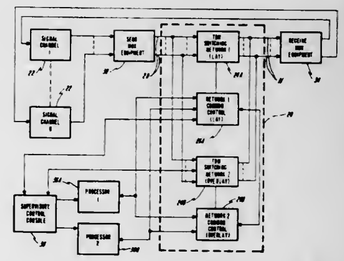
d. gate means coupling selected stages of the second plurality of storage registers to the interleaved memory to permit data in the second plurality of storage registers to pass through said gate means and into the accessed storage unit of the interleaved memory if the gates are open when said data is at said selected stages; and

e. logic means coupling the gate means to selected stages in first plurality of shift registers for opening the gate means to permit the passage of data at a selected stage of said second plurality of shift registers into the accessed memory unit only at those times that control information in the selected stages of the first plurality of shift registers indicates data at a selected stage in the second plurality of shift registers should be entered into the accessed memory unit of the interleaved memory.

3,883,855
CONTROL SYSTEM FOR A DIGITAL SWITCHING NETWORK

Barrie Brightman, Webster; George Datsko, Rochester, both of N.Y.; Edward W. Moll, King of Prussia, Pa., and William H. Stewart, Scio, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Division of Ser. No. 401,534, Sept. 27, 1973. This application Apr. 5, 1974, Ser. No. 458,382
Int. Cl. H04j *3/02*, *3/00*
U.S. Cl. 340—172.5 **10 Claims**



1. A control circuit for controlling the translation from line time slots to switching time slots of digital time divided multiplex signals by a memory circuit, wherein the control circuit receives from a processor and stores parallel binary input control data corresponding to line time slot addresses and transmits parallel binary output data to said memory in a changeable sequence, said control circuit comprising:

a plurality of recirculating memories, a separate one for each parallel bit of digital control data to be received, said recirculating memories having a plurality of serial storage locations corresponding to said switching time slots continually circulating in synchronism between the input and output thereof;

write circuit means responsive to a write enabling signal for simultaneously storing parallel binary input control data in corresponding storage locations in each of the recirculating memories;

time slot means for determining to which switching time slot an individual line time slot will be translated and for providing a said write enabling signal at the determined switching time slot;

erase circuit means responsive to an erase enabling signal for simultaneously erasing any digital information stored in corresponding storage locations in said recirculating memories; and

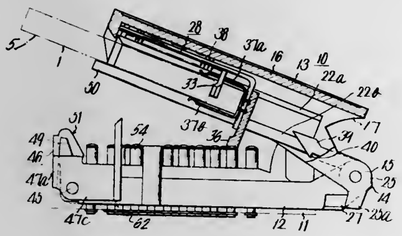
transmit circuit means for simultaneously transmitting output data in parallel binary form from corresponding storage locations in said recirculating memories to the memory circuit, wherein said digital time divided multiplex

signals are written into the memory sequentially at said line time slots and read from the memory according to the transmitted sequence of parallel binary output data.

3,883,856
PROGRAM INPUT SYSTEM USING A MEMORY CASSETTE

Etsuro Saito, Atsugi, and Shooichi Matsui, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 12, 1973, Ser. No. 323,254
Claims priority, application Japan, Jan. 31, 1972, 47-13509[U]; Jan. 31, 1972, 47-13510[U]; Jan. 31, 1972, 47-13511[U]
Int. Cl. G11c *17/00*; **G06k** *7/06*, *19/00*
U.S. Cl. 340—173 SP **11 Claims**



1. A memory cassette, comprising:
a housing formed of a top wall, a bottom wall and a plurality of side walls joining the top and bottom walls to thereby define a cavity within said housing; and
a circuit board disposed within said cavity, said circuit board having memory circuit elements and electric contacts connected to said memory circuit elements;
at least one of said top and bottom walls having differently dimensioned apertures therein aligned with corresponding circuit board electric contacts so that said corresponding circuit board electric contacts are visible through said apertures and said apertures are adapted to receive external electrical connecting means that are insertable therethrough into electric contact with said corresponding circuit board electric contacts.

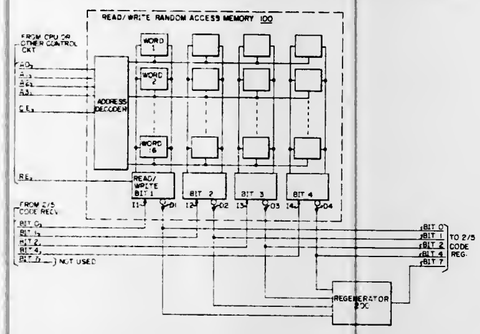
6. A program input apparatus for receiving an electronic memory cassette of the type having a substantially flat housing, electronic circuits within the housing and electrical contacts connected to the electronic circuits and exposed in a pattern on the exterior surface of the cassette housing, the program input apparatus comprising a base plate, a frame pivoted on the base plate and rotatable between an open and a closed position, means within the frame for receiving the cassette including a cassette carrier movably mounted within the frame, and electrical contacts on the base plate arranged in a pattern corresponding to the pattern of the cassette contacts to form electrical connections between the respective base contacts and the corresponding respective cassette contacts when the frame is in its closed position.

3,883,857
DIGIT REGENERATION IN TWO-OUT-OF-FIVE FORMAT CODE SYSTEMS

Stig E. Magnusson, Chicago, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 1, 1974, Ser. No. 456,585
Int. Cl. G11c *13/00*
U.S. Cl. 340—173 R **6 Claims**

1. A memory system connected between, a source of five element coded signals and an output circuit, and including circuit connections to a control circuit, said memory system comprising:
storage means initially operated in response to said control circuit to store four elements of each of said coded signals from said signal source and further operated in response to said control circuit to readout said four stored elements; regeneration means connected between said storage means and said output circuit, operated in response

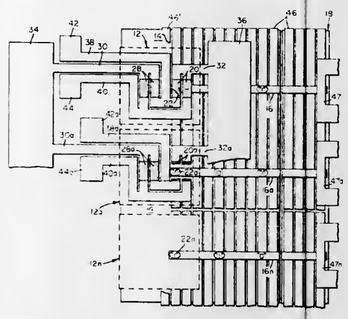


to said four elements readout of said storage means to regenerate the fifth element of each coded signal, and transmit said fifth element to said output circuit;
and said output means operated in response to the combination of said four elements of said coded signals readout of said storage means and said fifth element of said coded signals received from said regeneration means.

3,883,858
MAGNETORESISTIVE READOUT TRANSDUCER FOR SENSING MAGNETIC DOMAINS IN THIN FILM MEMORIES

Heinz Lienhard, Greifensee, Switzerland; Walter S. Carter, Ruislip, England, and Irving W. Wolf, Palo Alto, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Dec. 17, 1973, Ser. No. 424,924
Int. Cl. G11c *11/14*, *19/00*
U.S. Cl. 340—174 EB **2 Claims**



1. A magnetoresistive readout system for integral disposition with readout regions of respective storage channels in a thin film storage device including first and second magnetoresistive element means formed of respective magnetoresistive thin films integrally disposed within the thin film storage device, comprising the combination of:
said first magnetoresistive element means including a pair of active magnetoresistive thin film elements disposed in magnetic field coupling relation with a selected readout region of a respective storage channel;
said second magnetoresistive element means including a pair of balance magnetoresistive thin film elements electrically coupled to the pair of active magnetoresistive thin film elements to define a balanced bridge configuration:

wherein the bridge generates a bipolar read signal in direct response to the passage of a magnetic domain adjacent only the active elements; said second balance elements being sufficiently spaced from any storage channels to have no magnetic coupling with any magnetic domains;
readout circuit means coupled to the bridge defined by the active and balance pairs of elements for generating a logic output indicative of the presence and the absence of magnetic domains in magnetic coupling relation with only the active elements;
said readout circuit means including strobe means for selectively sampling the output of the bridge only during a time window commensurate with passage of the domain adjacent the pair of active elements, and differential amplifier means to provide a signal magnitude equal to the difference between the positive and negative values of the bipolar read signal generated during said time window and for generating binary logic output signals indicative of the presence or absence of a domain adjacent only the active elements.

3,883,859
LOAD HEIGHT INDICATION

Edward F. Ancheta, 2244 Jennie St., Honolulu, Hawaii 96819

Filed Dec. 29, 1972, Ser. No. 319,746
Int. Cl. B66c *13/46*
U.S. Cl. 340—267 C **5 Claims**

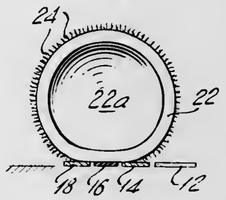


1. Load height indicating apparatus for tower cranes having a base, a column extending upward from the base, a jib extending horizontally from the column and mounted for rotation on the column, rotating means connected to the jib and to the column for rotating the jib on the column, a trolley mounted on the jib for selectively positioning on the jib, propelling means connected to the jib and to the trolley for moving the trolley on the jib, hoisting means connected to the trolley for lifting loads, and load engaging means connected to the hoisting means for engaging and holding loads on the hoisting means below the trolley, and control means connected to the rotating means, to the propelling means and to the hoisting means for separately controlling those means, the improvement comprising measuring means connected to the hoisting means for determining the condition of the hoisting means and thus determining position of the load engaging means with respect to the trolley, telemetering means connected to the measuring means for telemetering condition of the measuring means, and indicator means connected to the telemetering means and mounted near the control means for indicating condition of the measuring means and hence position of the load.

3,883,860
ELECTRIC INDICATOR SYSTEM FOR BALL GAMES

Henry von Kohorn, Greenwich, Conn., assignor to John J. Schlager, Springfield, N.J.

Filed Nov. 8, 1973, Ser. No. 413,761
Int. Cl. G08b *21/00*
U.S. Cl. 340—323 **10 Claims**

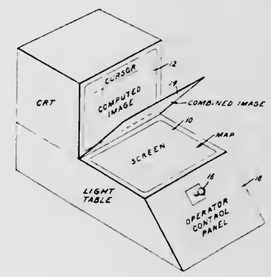


1. An electric out ball indicator system for a ball and court game comprising
a. a non-conductive playing area defined by court lines,
b. at least two spaced parallel, current-conductive strips adjacent to said court lines and exterior to said playing area,
c. an insulating strip located between said spaced, current-conductive strips,
d. an electric power source connected to said current-conductive strips, and
e. an electric indicator,
wherein said a–e define an open electrical circuit; said system further containing a ball provided with current-conductive fibers on its outer surface, such that an out ball will close said open circuit and activate said indicator when contact is made between said current-conductive fibers of said ball and said spaced, current-conductive strips so as to close said open electrical circuit.

3,883,861
DIGITAL DATA BASE GENERATOR

Robert A. Heartz, Deland, Fla., assignor to General Electric Company, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,253
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 R **4 Claims**



1. A digital data base generator comprising:
memory means for storing in digital form a data base descriptive of a selected land mass;
display means for displaying a selected portion of the data base in graphic form;
comparison means for comparing the displayed selected portion of the data base with a graphic depiction of land mass information from another source related to said selected portion of the data base; and
control means for modifying said data base.

3,883,862

SIGNAL COLLECTING AND DISTRIBUTING SYSTEMS

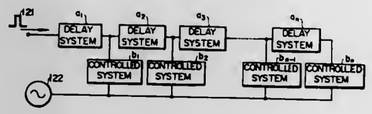
Jun-Ichi Nishizawa; Ichiemon Sasaki; Katsuhiko Ishida, all of Sendai; Syoji Tauchi, Kokubunji; Takeshi Nishimura, Tokyo; Takeo Seki, Kokubunji, and Noboru Kozuma, Tokyo, all of Japan, assignors to Semiconductor Research Foundation and Hitachi, Ltd.

Division of Ser. No. 216,532, Jan. 10, 1972, which is a division of Ser. No. 616,385, Feb. 15, 1967, Pat. No. 3,634,849. This application Nov. 21, 1973, Ser. No. 418,129

Claims priority, application Japan, Feb. 19, 1966, 41-9987; Mar. 12, 1966, 41-15163; Mar. 25, 1966, 41-18324; Apr. 2, 1966, 41-20528; Apr. 25, 1966, 41-25890; Apr. 25, 1966, 41-25891; Apr. 25, 1966, 41-25892

Int. Cl. H04n *1/04*

U.S. Cl. 340—324 M 15 Claims



1. A switching control system comprising:

a plurality of spaced controllable signal elements,

a switching means connected to said signal elements for actuating said elements in a predetermined sequential order including an active transmission line capable of attenuationless propagation at a constant rate including a plurality of transmission elements connected in tandem, each transmission element being connected to a respective signal element and including a negative resistance device capable of reshaping and amplifying said switching signals, and

generator means connected to said transmission line for applying switching signals thereto,

control signal generator means connected to said electroluminescent devices for providing a plurality of signals for selectively controlling said devices.

3,883,863

INTEGRATING ANALOG TO DIGITAL CONVERTER WITH VARIABLE TIME BASE

Frank G. Willard, Pitcairn, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 2, 1973, Ser. No. 402,684

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 NT 22 Claims

1. A dual slope analog to digital converter to convert an analog input signal in response to a conversion request signal generated by a digital data processor, said converter being adapted to reject an AC voltage superimposed on an analog voltage to be converted forming the analog input signal by integrating the analog input signal for a time interval equal to an integer number of cycles of the AC voltage, comprising:

an integrator to integrate and decrease the integral of the analog input signal to zero;

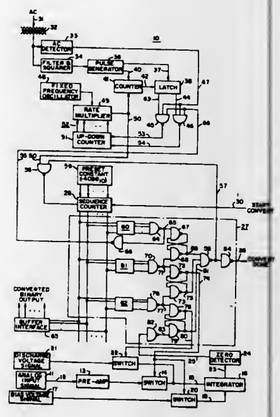
a clock signal generator to generate a series of repetitive pulses;

a sequence counter to count generated clock signal pulses and generate signals in accordance with the counted pulses;

means to detect the time period of each cycle of the AC voltage;

means to control the repetition rate of the clock signal pulses to cause a distinct number of clock signal pulses to occur during a detected AC cycle time period, the conversion request signal being generated at a time independent of the beginning of a detected AC cycle; and

means responsive to the signals generated by the sequence counter to govern the integrator to commence integrating an analog input signal in response to the conversion request signal and to continue such integration for a time interval during which the sequence counter counts the distinct number of clock signal pulses, to discharge the



integrator thereafter at a constant rate until the output signal of the integrator reaches a predetermined level, and to generate signals representative of the number of clock signal pulses counted by the sequence counter during discharge of the integrator.

3,883,864

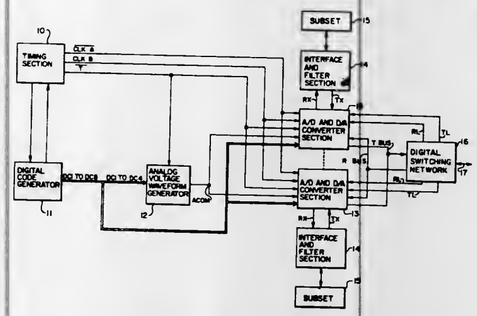
ANALOG-TO-DIGITAL AND DIGITAL-TO-ANALOG CONVERTER APPARATUS

Robert M. Thomas, Maitland, Ontario, Canada, assignor to GTE Automatic Electric (Canada) Ltd., Brockville, Ontario, Canada

Filed Feb. 22, 1974, Ser. No. 444,890

Int. Cl. H03k *13/17*

U.S. Cl. 340—347 AD 7 Claims



1. Analog-to-digital and digital-to-analog converter apparatus comprising

digital code generating means for producing a sequence of digital code signals during a comparison period of each operating cycle;

analog voltage generating means for producing an analog voltage waveform during the comparison period of each operating cycle and being synchronized with said digital code generating means whereby for each digital code signal a corresponding analog voltage signal is produced at the same instant during the comparison period of each operating cycle;

analog input signal storage means for storing an analog input signal prior to a comparison period;

analog comparison means coupled to the analog input signal storage means and to the analog voltage generating means for comparing the stored analog input signal with said analog voltage waveform during a comparison period and for producing an output signal when the voltage of the analog voltage waveform is equal to the stored analog input signal;

digital storage means coupled to the digital code generating means and to the analog comparison means for storing a digital signal equal to the digital code signal being produced by the digital code generating means in response to an output signal from the analog comparison means whereby a digital signal corresponding to the voltage of the stored analog input signal is stored in the digital storage means during the comparison period;

digital input signal storage means for storing a digital input signal prior to a comparison period;

digital signal comparison means coupled to the digital input signal storage means and to the digital code generating means for comparing the stored digital input signal with said sequence of digital code signals during a comparison period and for producing an output signal when the two digital signals are equal; and

analog storage means coupled to the analog voltage generating means and to the digital signal comparison means for storing an analog signal equal to the analog signal being produced by the analog voltage generating means in response to an output signal from the digital signal comparison means whereby an analog signal corresponding to the stored digital input signal is stored in the analog storage means during the comparison period.

3,883,865

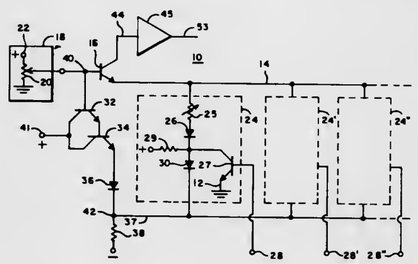
D TO A CONVERTER WITH HIGH-SPEED, TRANSIENT-REE SWITCHING CIRCUITRY

John C. Freeborn, West Covina, Calif., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Jan. 30, 1974, Ser. No. 437,908

Int. Cl. H03k *13/04*

U.S. Cl. 340—347 DA 10 Claims



1. In a digital-to-analog converter of the type wherein current in a conductor at a positive reference voltage is selectively conducted to ground through at least one of a plurality of parallel branches, each comprising a resistor connected to the conductor and a first NPN transistor having its emitter connected to ground, the improvement which comprises:

a first diode in series with the resistor and the transistor so that its anode is connected to the resistor and its cathode is connected to the collector of the transistor;

bias means for biasing the collector of the transistor to a voltage more positive than the positive reference voltage; and

clamping means for limiting the voltage at the collector of the transistor to a voltage no more positive than necessary to prevent conduction through said first diode.

3,883,866

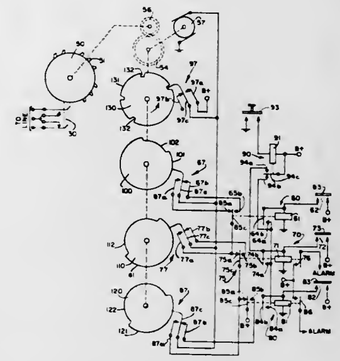
ALARM GENERATOR

John K. Kneeland, Mill Ln., Old Lyme, Conn. 06371

Filed Aug. 14, 1973, Ser. No. 388,225

Int. Cl. G08c *1/00*

U.S. Cl. 340—356 11 Claims



1. An alarm generator adapted to be located on a premises to be protected against the occurrence of a plurality of events, and supervised at a point remote from the premises, comprising means for producing at least one code signal for transmission to the remote point, a rotatably mounted code wheel programmed to cause said producing means to produce a predetermined code signal for each revolution of said code wheel, a motor for rotating said code wheel, a plurality of switching means for coupling power to said motor, a plurality of event inputs each providing an enabling voltage in response to occurrence of one of the plurality of events, said switching means being respectively coupled to said plurality of event inputs and each being responsive to the presence of the associated enabling voltage to couple the power to said motor, a plurality of control mechanisms respectively coupled to said plurality of switching means and operatively coupled to said motor, each of said control mechanisms having means responsive to a predetermined rotation of said motor to operate said switching means to stop said motor, whereby said code wheel is caused to rotate a number of revolutions corresponding to the predetermined rotation of said motor, and reset means for causing said switching means to deliver power to said motor, each of said control mechanisms having further means responsive to a further predetermined rotation of said motor to stop said motor, whereby said code wheel is caused to rotate a further number of revolutions corresponding to the further predetermined rotation of said motor.

3,883,867

INFORMATION INPUT DEVICE

Isao Hatano, Kyoto; Akira Nagano, Nagaokakyo, and Kazuaki Urasaki, Mukou, all of Japan, assignors to Omron Tateisi Electronics Co., Japan

Filed Apr. 4, 1973, Ser. No. 347,657

Claims priority, application Japan, May 4, 1972, 47-33629

Int. Cl. H04l *15/06*

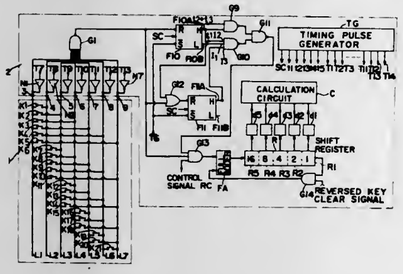
U.S. Cl. 340—365 R 3 Claims

1. An information input device which comprises means for generating a plurality of timing signals in different timings, a plurality of input lines connected with said generating means for respectively receiving the timing signals generated thereby, a plurality of key contacts, each of said key contacts being connected between a different pair of said input lines and operable in response to an external instruction applied thereto, a first NAND gate connected with each of said input lines, a first flip-flop being set by one of said timing signals and

reset by an output from said first NAND gate, a second flip-

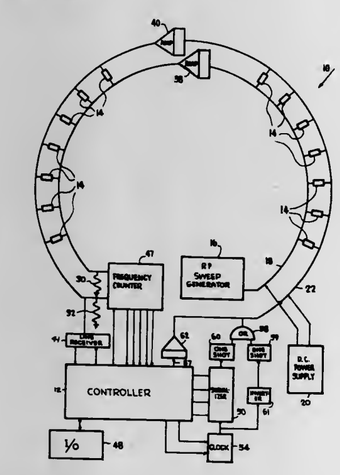
output signal whose

reset by an output from said first NAND gate, a second flip-flop being set by said one of said timing signals and reset by said output from said NAND gate generated after said first flip-flop has been set, a second NAND gate having a first terminal adapted to receive a bit timing signal having the 2^1s and 2^2s weights and a second terminal adapted to receive a set output from said first flip-flop, a third NAND gate adapted to receive a reset output from said first flip-flop, a set output from said second flip-flop and a bit timing signal having the 2^0



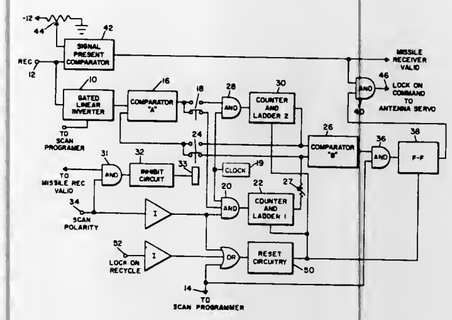
s weight, a fourth NAND gate adapted to receive an output from said second NAND gate and an output from said third NAND gate, a first AND gate adapted to receive an output from said fourth NAND gate, a full adder adapted to receive an output from said first AND gate, a shift register for storing an output from said full adder, gating means for supplying an output from said shift register to said full adder independent of said output from said first AND gate, and gating circuit for reading out the content stored in said shift register.

3,883,868
SWEEP FREQUENCY CONTROL APPARATUS AND METHOD
Ronald S. Palmer, 5784 Herma, San Jose, Calif. 95123
Filed July 23, 1973, Ser. No. 381,837
Int. Cl. H04n *7/10*
U.S. Cl. 340—408 **10 Claims**



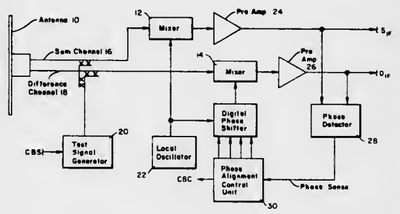
1. Apparatus for controlling the operation of a plurality of spaced, independent, actuatable mechanisms comprising: a control module for each mechanism, respectively, each module having first means permitting an enabling device capable of resonanting at a predetermined frequency to be inductively coupled thereto; a sweep generator operable to provide an output signal whose frequency varies successively over a range of frequencies; first conductor means common to the modules for coupling the sweep generator thereto to permit said output signal to be applied simultaneously to the modules, each module having second means thereon responsive to said output signal when the module is inductively coupled to an enabling device and when the output signal has the frequency at which the corresponding enabling device resonates for generating a first signal indicating the inductive coupling between the module and the enabling device and indicating the resonant condition of the last-mentioned enabling device, each module having third means responsive to a second signal for actuating the corresponding mechanism; a central controller; and second conductor means common to said modules for connecting said controller thereto to permit said controller to receive a first signal from a module, said controller being operable to successively address the modules and to generate a second signal after a first signal has issued from a module, said second conductor means being operable to direct the second signal to the third means of a module to actuate the corresponding mechanism.

3,883,869
ACQUISITION LOGIC CIRCUITRY
Peter M. Buccieri, Bridgeport, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 2, 1970, Ser. No. 128,599
Int. Cl. G01s *7/02*
U.S. Cl. 343—7 A **3 Claims**



1. In an acquisition logic circuit for acquiring a radiating source with a tracking antenna the combination comprising:
a. a first comparator circuit having a first input coupled to a signal source and having a second input and an output;
b. a first counting circuit having an input and an output;
c. a second counting circuit having an input and an output;
d. switch circuit means coupled to said first comparator circuit and to said first and second counting circuits for successively comparing the outputs of said first and second counting circuits with the input of said first comparator circuit;
e. second comparator circuit means having a first input coupled to the output of said first counter and a second input connected to the output of said second counter and generating an output signal when said two inputs are equal;
f. an AND circuit having a first input coupled to the output of said second comparator circuit and having a second input coupled to a valid signal indicator for producing an output signal representing alignment of the missile antenna with the radiating source.

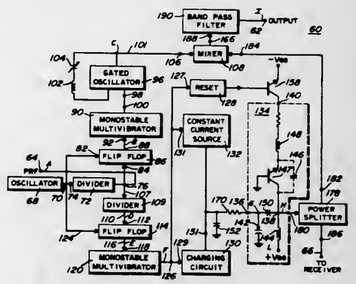
3,883,870
SYSTEM FOR PHASE ALIGNING PARALLEL SIGNAL PROCESSING CHANNELS
William J. Kunz, Torrance, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 17, 1973, Ser. No. 426,289
Int. Cl. G01s *7/40*
U.S. Cl. 343—17.7 **4 Claims**



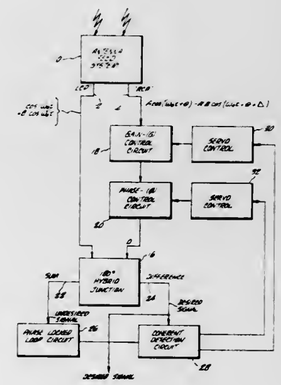
1. A system for automatically phase aligning two signal processing channels of the type which includes a mixer for frequency translation and a local oscillator coupled to the mixer in each processing channel; said system comprising:
test generator means for applying test signals, having a preselected phase relationship, to the input section of each processing channel;
phase detector means coupled to the output section of each said processing channel for providing a binary phase sense signal indicative of whether the phase between the channels' output signals is more or less than a preselected value;
a digitally controllable phase shifter coupled between the local oscillator and the mixer of one of said signal processing channels; and
control means coupled to said phase shifter and responsive to said phase sense signal, for controlling the phase shift of the local oscillator's output signal applied through said phase shifter so as to cause a preselected phase relationship between the output signals from said two processing channels; said control means including an up/down counter, first logic means for causing said counter to count up when said binary phase sense signal is of one state and to count down when said binary phase sense signal is of the other state, and second logic means for sensing the change of states of said binary phase sense signal and for inhibiting counting by said up/down counter after a preselected number of said binary signal state changes have been sensed; and means for applying the output signals from said up/down counter to said phase shifter so that the phase shift applied to the local oscillator's output signal by said phase shifter is controlled as a function of the count held in said up/down counter.

3,883,871
METHOD AND MODULATION SYSTEM FOR AMBIGUITY REDUCTION IN PULSED RADAR
Randolph G. Moore, 3836 N. 60th Pl., Phoenix, Ariz. 85251
Filed Mar. 12, 1973, Ser. No. 340,501
Int. Cl. G01s *9/23*
U.S. Cl. 343—17.2 R **25 Claims**

1. A modulation code generator for use in a pulsed radar system to shift some of the unwanted ambiguity peaks off of the time axis, including in combination:
first oscillator means providing a pulse modulated signal at an output terminal thereof, said pulse modulated signal having a pulse repetition rate;
second oscillator means providing a frequency modulated signal at an output terminal thereof, said frequency modulated signal having a frequency deviation which is a multiple of said pulse repetition rate of said pulse modulated signal; and
signal combining means having an output terminal, a first input terminal connected to said output terminal of said first oscillator means and a second input terminal connected to said output terminal of said second oscillator means, said signal combining means combining said pulse modulated and said frequency modulated signals to provide an output signal at said output terminal thereof during the times that said pulse modulated and said frequency modulated signals simultaneously exist, said output signal being suitable for transmission by a radar system and for shifting some of the unwanted ambiguity peaks off of the time axis.



3,883,872
SYSTEM FOR INTERFERENCE SIGNAL NULLING BY POLARIZATION ADJUSTMENT
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; John E. Ohlson, Marina, and William F. Williams, Torrance, both of Calif.
Filed June 28, 1973, Ser. No. 374,422
Int. Cl. H04b *7/00*
U.S. Cl. 343—100 PE **14 Claims**



1. A receiving system for selecting a desired one of two orthogonally polarized signals occupying the same bandwidth, said receiving system including:
an orthomode antenna having two output ports at which components of said two orthogonally polarized signals are provided;
a hybrid junction having a pair of input terminals for respectively receiving signals from the two output ports of said

orthomode antenna, and sum and difference output ter-

orthomode antenna, and sum and difference output terminals at which are respectively provided a sum signal representing the sum of the signals applied to said hybrid junction and a difference signal representing the difference of the signals applied to said hybrid junction;

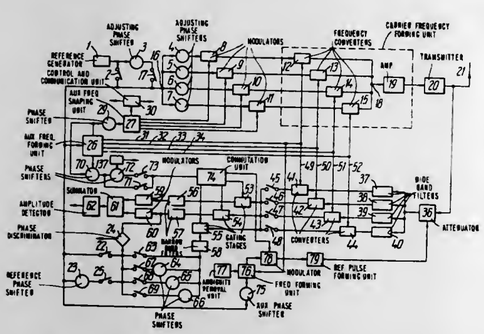
detection means for coherently detecting the presence of components of the undesired one of said two orthogonally polarized signals that may appear in said difference signal, said detection means providing error signals; and

adjustment means responsive to said error signals for automatically nulling said components of said undesired signal to have said difference signal continually represent the desired one of said orthogonally polarized signals.

3,883,873
METHOD OF UNAMBIGUOUS DETECTING THE POSITION OF MOVING OBJECT, ALSO GROUND STATION AND RECEIVER DISPLAY OF RADIO NAVIGATION SYSTEM FOR EFFECTING SAME

Evgeny Alexandrovich Mosyakov, Zvezdny bulvar, 1, kv. 28; Jury Vasilievich Rtischev, Sevasto-polsky prospekt, 34, kv. 18; Efim Zakharovich Berer, Volgo-gradsky prospekt, 135. korpus 1, kv. 45; Vladimir Markovich Leus, Novo-Kuzminskaya 16, korpus 1, kv. 129; Viktor Petrovich Lukeev, Polyarnaya ulitsa, 9, korpus 4, kv. 416; Evgeny Markovich Rodionov, Avangardnaya ulitsa, 22/32, kv. 115; Vladimir Lvovich Levitsky, 2 Mosfilmovsky pereulok, 3, kv. 24; Vladimir Surenovich Akopyan, B. Gnezdnikovsky pereulok, 10, kv. 730; Jury Yakovlevich Mindlin, Kolokolnikov pereulok, 12, kv. 29; Evgeny Ivanovich Balashov, Prospekt Vernadskogo, 111, kv. 88; Isaak Efimovich Kinkulkin, Lavrushinsky pereulok, 17, kv. 15; Galina Petrovna Shumakova, Kolomensky proezd, 1/1, korpusa, kv. 90, all of Moscow; Evgeny Tikhonovich Fedotov, 3 Tsvetochny pereulok, 3, Balashikhinsky raion, poselok Saltykovka, and Vladimir Fedorovich Lazarev, ulitsa Butlerova, 10, kv. 247, Moscow, all of U.S.S.R.

Filed Nov. 1, 1972, Ser. No. 302,814
Int. Cl. G01s *1/24*
U.S. Cl. 343—103 **10 Claims**

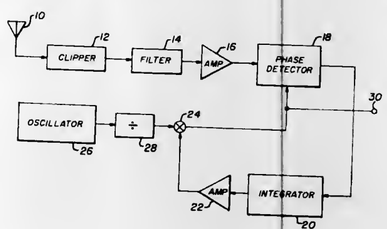


1. A method for the unambiguous detecting of the position of a moving object relative to at least three stationary ground stations of a radio navigation system, one station thereof being the main station, said method comprising generating at said stations and transmitting therefrom signals alternately in the form of long trains comprising a multitude of successive groups of radio pulses with various carrier frequencies and a repetition interval, which depends only on the delay time of the radio pulses reflected by the ionosphere, the repetition frequency of transmitted radio pulses being equal to the frequency at which the most coarse determination of the position of a moving object is effected, the phases of signals on various carrier frequencies being in constant relationship upon transmission; the main station being caused to transmit additionally a synchronizing signal within the spaces between the radio pulses of fundamental signals which carry phase information while the long pulse train of synchronizing signal is being transmitted; said synchronizing signal determining the sequence of transmission of said trains by the stations in a general transmission cycle, said radio pulses generating an electromagnetic field with predetermined frequency and phase relationships; said long trains, as well as the signals reflected by the ionosphere, being received by a receiver-display which determines the sequence of transmissions of pulse trains by the stations in the general cycle resorting to the synchronizing signal, performs a search for radio pulses within each long train and division of signals into waves propagated over the earth surface and waves reflected by the ionosphere; said receiver-display then converting the radio pulses of surface waves with various carrier frequencies into undamped oscillations having the same intermediate frequency and a duration equal to that of the long trains, which corresponds to those transmitted by said stations, whereas the relative phases of said oscillations depending on the phase of transmitted signals; said receiver-display executing also the measure of difference in phase between said I.F. oscillations within each long train, said difference in phase being equivalent to the phase of signals at the beat frequency of two carrier frequencies; said receiver-display then effecting the measurements of the difference in phase of radio pulses at repetition frequency and the difference between said differences in phase of I.F. oscillations, the two being obtained within different long trains for removing any possible ambiguity and defining accurately the position of a moving object by using the difference in phase between said I.F. oscillations obtained on one of the carrier frequencies within various of the long trains, determining according to said synchronizing signal the sequence of transmission of pulse trains by the station in the general cycle, then in the range of each long train of radio pulses are being searched, said signals being divided into signals propagating over the earth surface and signals reflected by the ionosphere, the signal phase on one of the carrier freequencies measured, the phase difference of two signals determined on one of the carrier frequencies, the difference being used for detecting the exact position of a moving object, signal phases being compared on beat frequencies and radio pulse repetition frequency, the comparison result being used for removing ambiguity of position of a moving object.

3,883,874
SYSTEM FOR PROVIDING A REFERENCE FREQUENCY SOURCE

Eric R. Swanson, 640 Sinergate Ave., San Diego, Calif. 92106

Filed Sept. 28, 1973, Ser. No. 401,732
Int. Cl. G01s *1/30*
U.S. Cl. 343—105 R **1 Claim**



1. Standard frequency apparatus comprising:

antenna means for receiving VLF signals transmitted from a number of remote sources;

clipper means connected to the output of said antenna means, filter means connected to the output of said clipper means and amplifier means connected to the output of said filter means, said serially connected clipper, filter and amplifier means being responsive to said VLF signals to produce a first signal at a frequency f_1;

oscillator means for producing a second signal at a frequency f_2;

phase detector means having a first input connected to the output of said amplifier means, a second input and an output;

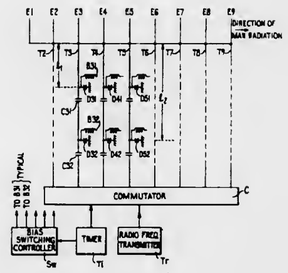
phase shifter means having a first input connected to the output of said oscillator means, a second input and an output, integrator and amplifier means connecting the output of said phase detector means to the second input of said phase shifter means, said phase shifter output ($f_2 \pm \Delta f$) being connected to the second input of said phase detector means whereby when $f_1 = f_2 \pm \Delta f$, the output of said phase detector is equal to zero; and,

output terminal means connected to the output of said phase shifter means to produce said standard frequency when $f_2 \pm \Delta f = f_1$.

3,883,875
ENDFIRE COMMUTATED ANTENNA ARRAY

Ian W. McClymont, and Sharad V. Parekh, both of Harlow, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 2, 1974, Ser. No. 429,956
Int. Cl. G01s *1/38*
U.S. Cl. 343—106 D **5 Claims**



1. A Doppler navigation beacon system having a commutated linear array of n radiator elements for radiating in substantially equal radiation patterns during the successive excitation of corresponding elements of said array, comprising the combination of:

transmitter means for generating a radio frequency signal;

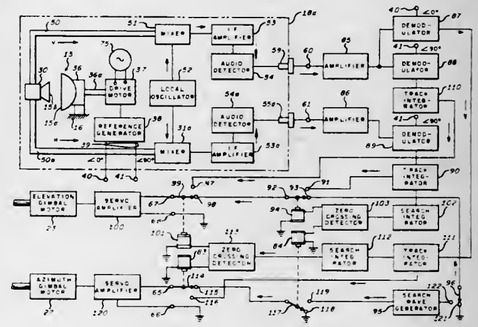
radio frequency energy commutator means for discretely switching said radio frequency signal among at least a first portion of said elements according to a predetermined sequence, said elements thereby becoming driven elements;

and switching means operating synchronously with said commutator means, for causing an element of said array adjacent to the driven element at any time, to act as a reflecting element, said switching means also operating to cause a second portion of the other elements of said array to be substantially electrically transparent, said driven elements thereby providing substantially equal radiation patterns maximized in the direction opposite said reflecting element with respect to each excited element.

3,883,876
HIGH FREQUENCY RADIOMETRIC TARGET SEEKING AND TRACKING APPARATUS

Robert S. Roeder, Dunedin, Fla., and David S. Siegel, Silver Springs, Md., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 5, 1972, Ser. No. 215,694
Int. Cl. G01s *5/02*
U.S. Cl. 343—117 R **8 Claims**



1. In a high frequency target detector system having antenna means for conically scanning about a boresight direction coupled to receiver means for generating error signals representing the deviation of said boresight direction from said target:

means responsive to said receiver means for causing said antenna means automatically to search in elevation and to locate the natural high frequency noise maximum proximate the earth's horizon,

means responsive to said receiver means for causing said antenna means to lock on said noise maximum for automatically tracking said noise maximum in elevation,

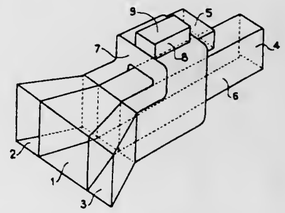
means responsive to said receiver means for causing said antenna means automatically to search and locate in azimuth a target while automatically tracking said noise maximum,

means responsive to said receiver means for causing said antenna means automatically to lock on said target for automatically tracking said target in azimuth while automatically tracking said noise maximum in elevation, and means responsive to said receiver means for causing said antenna means automatically to track said target in azimuth and elevation.

3,883,877
OPTIMIZED MONOPULSE ANTENNA FEED

Maurice Chabah; Yves Commault, and Yves Campan, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 20, 1974, Ser. No. 444,147
Claims priority, application France, Feb. 23, 1973, 73.06564
Int. Cl. H01q *13/00*
U.S. Cl. 343—778 **12 Claims**



1. In an antenna system, an optimized monopulse feed for supplying at three outputs a sum signal Σ and two difference

signals ΔE and ΔH respectively which are a function of the angular deviation of an object in space with respect to the axis of the antenna, comprising:

a rectangular main waveguide for propagating simultaneously at least the fundamental mode and one odd mode, said main guide terminating at one end in a radiating aperture;

a first coupling microwave circuit coupled to the other end of said main guide for extracting said fundamental mode corresponding to the sum signal, at a first output, and said odd mode corresponding to a first difference signal, at a second output;

two lateral rectangular wave guides placed at each side of the main guide respectively, for propagating the fundamental mode, each lateral guide being terminated at one end in a radiating aperture, and,

a second coupling microwave circuit having two inputs connected at the other end of the two lateral guides for extracting the waves which are in phase opposition in the lateral guides, corresponding to the second difference signal, at an output thereof, and for reflecting the waves which are in phase in said lateral guides.

3,883,878

METHOD AND APPARATUS FOR RECORDING THE NUMBER OF PHENOMENA

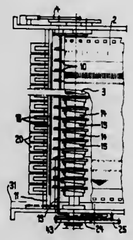
Paul Bommer, Zumbach Electronic-Automatic, CH-2552 Orpund, Switzerland

Filed Apr. 6, 1973, Ser. No. 347,320

Claims priority, application Switzerland, Apr. 10, 1972, 5258/72

Int. Cl. G01d *9/30*

U.S. Cl. 346—1 **15 Claims**



1. A method for recording of the number of phenomena occurring in different places during succeeding recording periods onto a recording tape, comprising the steps of producing an electric signal by each phenomenon, transmitting signals produced in one place each to a stepping relay, advancing said recording tape in its longitudinal direction after each recording period, stepwise advancing a control element by each of said stepping relays in a plane parallel to the advancing direction of said tape, shifting a recording element by each of said control elements in a direction perpendicular to the advancing direction of said tape, thereby recording during each recording period records in a direction transverse to the advancing direction of said recording tape and resulting each from the addition of a number of unit steps equal to a number of phenomena occurring during said recording period in one of said places, the total length of each record in transverse direction corresponding to said number of phenomena occurring in one of said places.

3,883,879

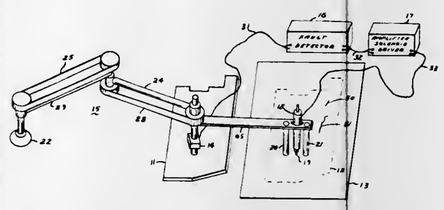
PORTABLE PANTOGRAPH C-SCAN RECORDING FLAW DETECTING SYSTEM

Donald D. Kettering, Stony Brook, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1973, Ser. No. 392,384

Int. Cl. G01d *5/02*; **G01n** *29/04*

U.S. Cl. 346—33 F **1 Claim**



1. A portable manually scanned flaw detecting and recording system for recording on a sheet of paper, in one-to-one correspondence; flaws in a structure below a determined area of the surface of the said structure being tested for flaw defects, the said system comprising:

a. a parallel motion mechanism having a fixed pivot and a movable pivot with a blade, moving in parallel relationship, having a first end and a second end attached at the said first end to the said movable pivot;

b. a suction cup attached at the said fixed pivot of the parallel motion mechanism to removably attach the said mechanism to the said surface of the said structure being tested;

c. a flaw sensor attached to the said movable pivot and positioned in detecting relationship to the said surface of the said structure, providing an electrical output indication of a flaw in the said structure;

d. a hand wheel attached to the said movable pivot for manually scanning the said sensor over the said determined area;

e. a writing pen;

f. means for positioning the said writing pen at the said second end of the said blade, the said positioning means including;

1. a retracting spring holding the tip of the said pen above the said paper,

2. a solenoid having a plunger attached to the said pen for moving the said pen against the force of the said retracting spring into writing engagement on the said paper when the said solenoid is energized,

3. a support rod positioning the writing tip of the said pen over and away from the said sheet of paper when the said solenoid is not energized,

4. means for manually engaging the said pen into writing relationship on the said paper; and

g. means cooperating with the output of the said flaw sensor and the said solenoid for energizing the said solenoid when the said sensor is passed over a flaw.

3,883,880

EXPOSURE APPARATUS FOR MANUFACTURING FLUORESCENT SCREENS OF COLOUR PICTURE TUBES

Eiichi Yamazaki, Ichihara; Koichi Maruyama; Toshio Ueda, both of Mobara, and Iwao Ogura, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

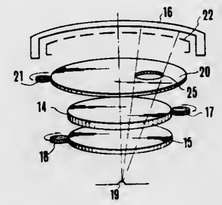
Filed Dec. 12, 1973, Ser. No. 424,092

Claims priority, application Japan, Dec. 25, 1972, 47-129272

Int. Cl. G03b *27/00*

U.S. Cl. 354—1 **7 Claims**

1. In an exposure apparatus for manufacturing a fluorescent screen of a colour picture tube of the class wherein a correction lens is interposed between a source of light and an assembly of a shadow mask and panel on which said fluorescent screen will be developed, the improvement which comprises composite correction lens means including at least two correction lenses, a shield member positioned between said composite correction lens means and said assembly, said shield member provided with a perforation for exposing a selected area of said panel, and means for varying the relative angular position of said composite correction lens means and said shield member for moving said selected area over a selected portion on said panel corresponding to the correction provided by said lens means.



3,883,881

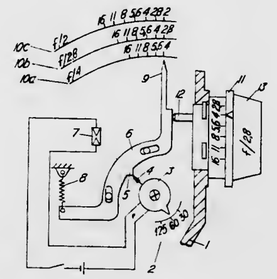
PHOTOGRAPHIC CAMERA HAVING AN INTERCHANGEABLE OBJECTIVE

Heinz Schulze, Dresden, Germany, assignor to Veb Pentacon Dresden, Dresden, Germany

Filed Oct. 2, 1972, Ser. No. 293,914

Int. Cl. G03b *7/06*

U.S. Cl. 354—46 **1 Claim**



1. In a photographic camera assembly an interchangeable objective which has a housing, a non-preselectable diaphragm, diaphragm setting means within the housing for adjusting said diaphragm, a camera housing, an exposure meter arranged in the camera housing and including a photoelectric device positioned in the light path of the assembly camera, a moving coil, and a needle attached to said moving coil, settable indicating means movable within the housing and a return spring acting on said indicating means, whereby alignment of said needle with said indicating means indicates correct exposure, a fine control element affixed to said objective housing, said control element being immovable with respect to said diaphragm setting means for cooperation with said indicating means when said objective is fixed in said camera housing, to hold said indicating means against said return spring in a position corresponding to the widest aperture which can be set on said objective.

3,883,882

ELECTRIC SHUTTER CONTROL CIRCUIT FOR SINGLE LENS REFLEX CAMERAS

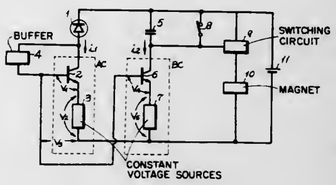
Chiharu Mori, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1972, Ser. No. 296,038

Claims priority, application Japan, Oct. 14, 1971, 46-81143

Int. Cl. G03m *7/08*

U.S. Cl. 354—51 **9 Claims**



1. An electric shutter control circuit for a single lens reflex camera comprising:

a. first and second circuit sections, each comprising:

a transistor having an emitter-collector electrode circuit having first and second sides and a base electrode circuit,

a constant-voltage source having first and second sides, the first side being coupled to a first side of the emitter-collector electrode circuit of said transistor, wherein said constant voltage source comprises the serial connection of a variable resistor and means providing a logarithmic function output, and an operational amplifier responsive to said logarithmic function output for providing between said first and second sides said constant-voltage independent of current therethrough;

b. current controlling photosensitive means coupled to a first side of the emitter-collector electrode circuit of the transistor in the first circuit section for controlling the amount of current through such transistor corresponding to the intensity of received light;

c. a bias circuit responsive to the current from said photosensitive means for applying a corresponding bias current to the base electrodes of both said transistors in both said circuit sections;

d. a capacitor having first and second sides, the first side being coupled to the second side of the emitter-collector electrode circuit of the transistor in the second circuit section, enabling such transistor to provide a constant-current charge to the capacitor; and

e. means for providing a source of potential across the second sides of said photosensitive means and said constant-voltage source of said first circuit section and a source of potential across said second sides of said capacitor and constant-voltage source of said second circuit section;

f. the variable resistor in at least one of the circuit sections being arranged to provide an adjustable signal corresponding to photographic determining factors.

3,883,883

REMOTE CONTROL DEVICE FOR CAMERA

Yozo Sano, Fujiwasa-shi, Kanagawa-ken; Sadahiko Tsuji, Yokohama; Yukio Mashimo, Tokyo, and Masaharu Ito, Kawasaki-shi, Kanagawa-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Sept. 20, 1973, Ser. No. 399,192

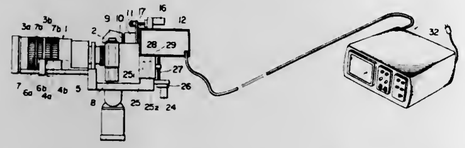
Claims priority, application Japan, Sept. 22, 1972, 47-95300; Sept. 22, 1972, 47-110317

Int. Cl. H01j *29/89*

U.S. Cl. 47-110316 **5 Claims**

1. A remote control photographing system comprising, in combination, a photographic camera having a viewfinder optical system including a photographing lens providing an

image of a scene at a focusing plane; an image pick up device having an image pick up optical system including a distance adjusting means, for setting the distance of said image pick up optical system, and having an image pick up tube including a photosensitive plane for forming an image of a scene viewed by said image pick up optical system; displacement means operable to displace said image pick up device between a first position, in which the optical axis of said image pick up optical system is aligned with the optical axis of said viewfinder optical system for viewing of the image in the focusing plane of said viewfinder optical system, and a second position in which the optical axis of said image pick up system is out of alignment with that of said viewfinder optical system for direct

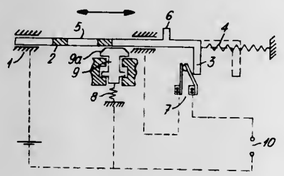


viewing of a scene by said image pick up optical system; locking means operable to releasably latch said distance adjusting means at the shortest distance setting in which the image in the focusing plane of said viewfinder optical system is focused on the photosensitive plane of said pick up tube with said image pick up device in said first position; release means operable to release said locking means responsive to displacement of said image pick up device to said second position by said displacement means; and a television monitor connected to said image pick up tube and operable to display the image formed on said photosensitive plane, said television monitor including selectively operable operative means controlling said distance adjusting means and said displacement means.

3,883,884
PHOTOGRAPHIC CAMERA HAVING AN ACCESSORIES MOUNTING SHOE

Harald Fuchsel, Dresden, Germany, assignor to Veb Pentacon Dresden, Dresden, Germany

Continuation-in-part of Ser. No. 359,969, May 14, 1973, abandoned. This application Mar. 21, 1974, Ser. No. 453,550
Claims priority, application Germany, Nov. 17, 1972, 166905; Jan. 15, 1973, 2301819
Int. Cl. G03b *15/03*
U.S. Cl. 354—126 **3 Claims**



1. In a photographic camera having a flashgun mounting shoe with a centre contact device disposed therein, a cable socket contact device located on the camera, a first circuit comprising a synchronous shutter switch and said centre contact device, a second circuit comprising said synchronous shutter switch and said cable socket contact device, the provision of

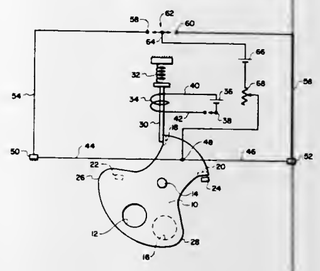
a. a further switch arranged in said second circuit,

b. an insulating slide located in said shoe and adapted to be operated by the flashgun and which co-operates both with the centre contact device and said further switch to open the latter when the flashgun is inserted and closed when the flashgun is not present.

3,883,885
HIGH-SPEED SHUTTER

Carl Orlando, 47 Willow Rd., New Shrewsbury, N.J. 07724

Filed Dec. 4, 1973, Ser. No. 421,551
Int. Cl. G03b *9/10*
U.S. Cl. 354—258 **5 Claims**



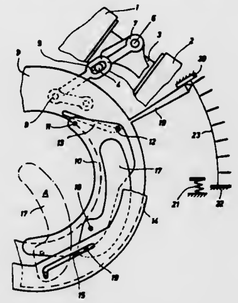
1. In a camera, a shutter mechanism comprising a shutter mounted in the camera for movement between two positions, a length of wire secured at one end to the camera and mechanically linked to the shutter at the other end for moving the shutter from one of its positions to its other position, said wire being of the type which when stretched is quiescent at its stretched length and has a memory for its prestretched length and is characterized by a martensitic critical temperature, shutter cocking means linked to said shutter for moving the shutter from its other position to its one position and for stretching said wire, said shutter cocking means including a second length of wire of the same kind of material as the first-recited wire and secured at one end to the camera and at its other end mechanically linked to the shutter said lengths of wire being oriented in opposition, and a current pulse generator connected to the second length of wire for producing a transient temperature rise in the second length of wire with a peak at least as high as its martensitic critical temperature and of sufficient persistence to return the latter to its prestretched length and to move the shutter to its one position and to stretch the first-recited wire.

3,883,886
PHOTOGRAPHIC DIAPHRAGM AND CAMERA

Bodo Mielke, Wolfenbuttel, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Continuation-in-part of Ser. No. 335,914, Feb. 26, 1973, Pat. No. 3,812,501, which is a continuation-in-part of Ser. No. 155,415, June 22, 1971, Pat. No. 3,724,350. This application Apr. 2, 1974, Ser. No. 457,169
Claims priority, application Germany, Apr. 4, 1973, 2316812
Int. Cl. G03b *9/06*
U.S. Cl. 354—271 **7 Claims**

1. A photographic diaphragm comprising a series of diaphragm leaves **10** pivoted for swinging movement from maximum aperture position to minimum aperture position, there being a small central opening for passage of light when said leaves are in minimum aperture position, a pivoted closing element **17** separate from said diaphragm leaves for obstructing passage of light through said small central opening so that said diaphragm may be used to prevent entrance of all light through the lens of a camera on which said diaphragm is mounted while taking a reading of stray light entering the camera elsewhere, adjusting mechanism for adjusting the position of said diaphragm leaves **10**, said closing element **17** being coupled to said adjusting mechanism to be moved thereby, a fixed ring, and a cam slot **15** in said fixed ring, said adjusting mechanism including a driving ring **9**, said closing

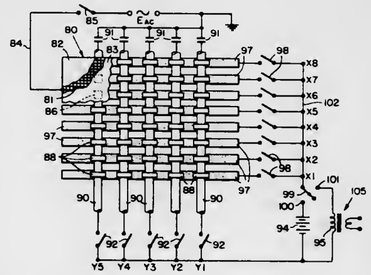


element **17** being pivotally mounted on said driving ring **9** and having a control pin **16** engaged in said cam slot **15**.

3,883,887
METAL OXIDE SWITCHING ELEMENTS

Thomas L. Robinson, Sr., East Aurora, N.Y., assignor to Astronics Corporation, East Aurora, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,268
Int. Cl. H01l *11/00*
U.S. Cl. 357—2 **5 Claims**



1. An electrical switching circuit, comprising

an aluminum element having thereon an aluminum oxide film normally having a high resistance to current flow,

a plurality of spaced electrodes mounted at the side of said film opposite said aluminum element,

means for connecting said aluminum element and a selected one of said electrodes across a pulsating voltage supply, said film changing its resistance, when said pulsating voltage reaches a predetermined value above zero, from a high to a low value only in the area thereof which is in contact with said selected electrode, and

means for applying a reset voltage between said element and said selected electrode to switch said selected area of said film back from said low to said high value of resistance when said pulsating voltage falls below said predetermined value,

said selected area of said film remaining in its low resistance mode, regardless of the value of said pulsating voltage, until switched back to its high resistance mode by said reset voltage, and

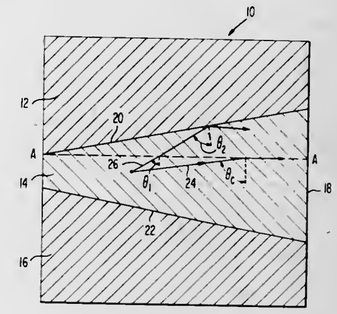
said connecting means comprising an electrical conductor connected to said pulsating voltage supply and having one end confronting the oxide film on said element and positioned to register selectively with said electrodes, and

means for effecting relative movement between said element and said conductor selectively to cause said one end of said conductor to register with a selected electrode to apply the pulsating voltage thereacross.

3,883,888
EFFICIENCY LIGHT EMITTING DIODE

Henry Kressel, Elizabeth, N.J., and Harry Francis Lockwood, New York, N.Y., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 414,757
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 357—16 **5 Claims**

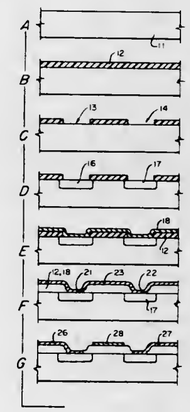


1. A semiconductor light emitting diode comprising a body of single crystalline material having a pair of spaced heterojunctions extending to an edge and said heterojunctions being divergent with respect to each other to said edge.

3,883,889
SILICON-OXYGEN-NITROGEN LAYERS FOR SEMICONDUCTOR DEVICES

John H. Hall, Saratoga, Calif., assignor to Micro Power Systems, Inc., Santa Clara, Calif.

Filed Apr. 15, 1974, Ser. No. 460,736
Int. Cl. H01l *5/00, 3/00*
U.S. Cl. 357—73 **5 Claims**



1. In a semiconductor device of the type which includes a substrate of semiconductor material of one conductivity type and a region of opposite conductivity type extending therein and to form a junction therewith which extends to one surface of the device, a protective layer carried on said one surface of the device and extending over said junction to passivate and protect the junction, said layer comprising a composition of silicon, oxygen and nitrogen ($Si_x O_y N_z$) in which

$x = 30\%$ to 40%

$y = 45\%$ to 55%
$z = 10\%$ to 20%

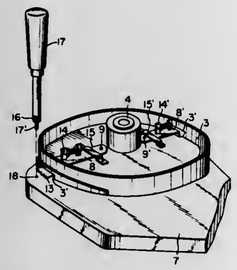
where z, y and z are the atomic percentages for silicon, oxygen and nitrogen respectively.

3,883,890

DEVICE FOR DETECTING THE ROTATING PHASE OF ROTARY MAGNETIC HEADS OF VIDEO TAPE RECORDING APPARATUS

Shizuhiko Tanigawa, and Shozo Kanda, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 15, 1973, Ser. No. 406,537
Claims priority, application Japan, Oct. 20, 1972, 47-121616[U]
Int. Cl. G11b 27/36, 21/04
U.S. Cl. 360—31 **4 Claims**



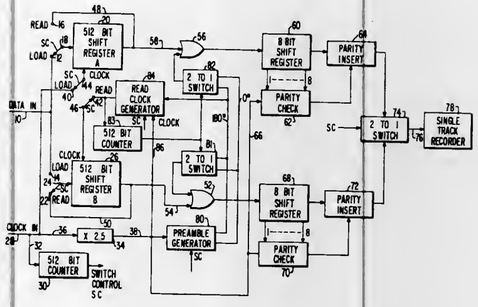
1. A device for detecting the rotating phase of a rotary magnetic head of a video tape recording apparatus comprising
a. a base;
b. a stationary cylindrical drum mounted upon said base;
c. a rotating member mounted above said stationary drum for rotation about the axis thereof, the walls of said rotating member being defined by a round cylindrical surface;
d. a plurality of magnetic heads provided with tips and mounted upon said rotating member, the tips of said plurality of magnetic heads extending radially outwardly beyond the outer periphery of said rotating member;
e. means for detecting the passage of said plurality of magnetic heads through a predetermined position, said detecting means comprising a plurality of first detecting elements positioned beneath said rotating member, each first detecting element being aligned with each of said plurality of magnetic heads and within the cylindrical surface defining said rotating member, and a second detecting element mounted upon an upper surface of said stationary drum in opposed relation with the path of said first element on said rotating member;
f. means for angularly displacing said second detecting element upon said stationary drum along said path of said first detecting element, thereby adjusting the mutual angular positions of the detecting elements from the exterior of the rotary head assembly while said video tape recording apparatus is transporting the video tape; and
g. said means for positioning said second detecting elements upon said stationary drum comprising a plurality of mounts equal in number to said second detecting elements; one end of each of said plurality of mounts being equiangularly pivoted on said stationary drum symmetrically with respect to the axis of said rotating member and as close to the axis of said rotating member as practicable so that they are movable substantially about the axis of said rotating member; and
wherein the side wall of said stationary drum is provided with slits, the other end of each of said plurality of mounts extending radially beyond the outer periphery of said stationary drum through said slits formed through the side wall thereof.

3,883,891

REDUNDANT SIGNAL PROCESSING ERROR REDUCTION TECHNIQUE

Charles Robert Thompson, Blackwood, and Robert Jones Flint, Somerdale, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 22, 1974, Ser. No. 499,603
Int. Cl. G11b 5/09
U.S. Cl. 360—47 **10 Claims**



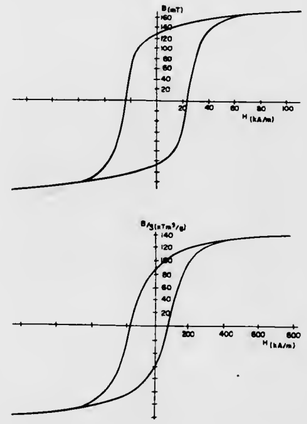
1. In combination:
first means adapted for connection to a source of information signals;
first and second channels connected to said first means, each of said channels having a signal storage means;
second means for loading a first block of said information signals into said first channel signal storage means at a first clock rate;
third means for reading out said first block of information signals from said first channel signal storage means and for re-loading said first block of signals into said first channel signal storage means and for subsequently reading out said re-loaded first block of signals from said first channel signal storage means at a second clock rate higher than said first clock rate;
fourth means for loading a second block of said information signals into said second channel signal storage means at said first clock rate during the time interval corresponding to the operation of said third means;
fifth means for reading out said second block of information signals from said second channel signal storage means and for re-loading said second block of information signals into said second channel signal storage means and for subsequently reading out said re-loaded second block of information signals from said second channel signal storage means at said second clock rate at times corresponding to the loading of said first channel signal storage means at said first clock rate; and
switch means connected to said first and second channels operable for providing at a given terminal, in a serial stream of signals, first and second representations of said first block of information signals from said first channel and first and second representations of said second block of information signals from said second channel.

3,883,892

METHOD OF MAKING MAGNETIC RECORDINGS WHICH CANNOT BE ALTERED WITHOUT IT BEING NOTICED

Eckart Kneller, Bochum; Eberhard Koester, Frankenthal; Gerd Wunsch, Speyer; Paul Deigner, and Dieter Graw, both of Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Oct. 16, 1973, Ser. No. 406,972
Claims priority, application Austria, Oct. 20, 1972, 8986/72
Int. Cl. G01d 15/12; G11b 23/28
U.S. Cl. 360—59 **9 Claims**



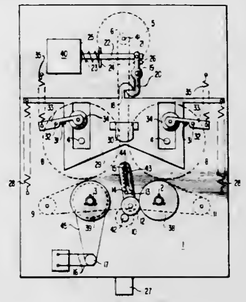
1. A method of making magnetic recordings on magnetic recording media which cannot be altered without it being noticed, wherein on a magnetic recording medium containing exchange-anisotropic magnetizable material, which material consists of a ferri- or ferromagnetic component to which there is coupled an antiferromagnetic component in respect of which, below a given temperature T_S lower than the Neel temperature T_N of the antiferromagnetic component, the critical magnetic field required to bring about the irreversible rotation of the antiferromagnetic axis and, in addition, the magnetic field needed for the production of any magnetizing structure leading to the irreversible rotation of the antiferromagnetic axis are stronger than the strongest magnetic field H_{sm} that can be produced with the technical means used in the magnetic recording of signals, so that all magnetization structures capable of being produced in magnetic fields smaller than, or equal to, H_{sm} vanish again partly or completely after the magnetic field has been turned off, such that the signals previously fixed at a temperature above T_S will either be completely or partly regenerated automatically or can be restored
a. the signals are recorded at a temperature above or below the temperature T_S and the magnetic recording medium, after the recording has been made, is heated to a temperature above this temperature T_S and at least to a temperature T_{AFS};
b. the magnetic recording medium is then cooled to a temperature below the temperature T_S, and
c. is subsequently provided with an indicator irreversibly indicating the fact that the magnetic recording medium has been reheated to a temperature equal to or above T_S, and
d. the recording is then marked at both ends by physical or chemical means.

3,883,893

MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS

Yoshiharu Ueki; Yoshio Maruyama; Yoshihiro Magata; Akihiro Fushimi, and Katsuhisa Shimizu, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 11, 1974, Ser. No. 450,260
Claims priority, application Japan, Mar. 9, 1973, 48-27805
Int. Cl. G11b 15/18, 15/44, 23/04
U.S. Cl. 360—74 **5 Claims**



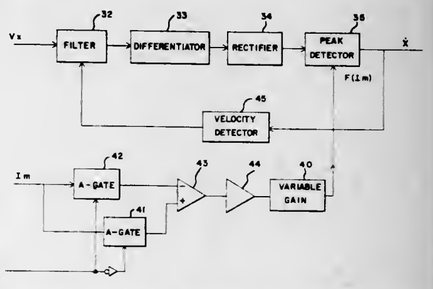
1. In a casette tape recording and reproducing device of the type having rotatable supply and take-up spindles to engage the supply and take-up reels in the casette, at least one capstan tape driving means, at least one pinch roller selectably engageable with said capstan, a motor driven means to rotate said at least one capstan, and a moveable carriage to bring said pinch rollers into contact with said capstan and the transducer head into contact with the tape, the improvements comprising:
a. means to rotate said supply spindle in a rewind direction, by running the motor in the reverse direction,
b. means for sensing rotation of the take-up spindle in the rewind direction,
c. means responsive to said sensing means to change the direction of the motor to the forward direction, and to move the carriage so as to engage the transducer head with the tape and bring said at least one pinch roller into contact with said at least one capstan to provide a driving movement to the tape.

3,883,894

DISK DRIVE SERVO SYSTEM

Terry G. Johnson, San Jose, Calif., assignor to Storage Disk Corporation, Louisville, Colo.

Filed Oct. 19, 1973, Ser. No. 407,884
Int. Cl. G11b 21/08, 19/14
U.S. Cl. 360—78 **4 Claims**

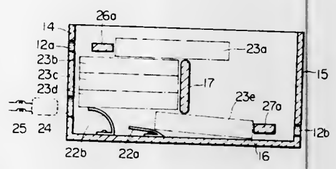


1. An electronic tachometer for a magnetic disk subsystem of the type including:
magnetic disks which are mounted for common rotation;
an access mechanism carrying magnetic heads into read-

write relationship with the tracks of said magnetic disks;
a motor for driving said access mechanism;
a servo disk mounted for concurrent rotation with said other disks, said servo disk having recorded thereon a magnetic pattern which produces from a head in reading relationship therewith an oscillating position signal representing the position of said access mechanism with respect to the tracks of said disks during a seek for a particular track;
a variable bandwidth filter for receiving and filtering said position signal;
differentiating means coupled to said variable bandwidth filter to receive a filtered signal therefrom and to produce a velocity signal which represents the velocity of said access mechanism across the tracks of said magnetic disks except during those intervals when said oscillating position signal undergoes a reversal in amplitude change;
means for generating a current signal representing the current supplied to said motor driving said access mechanism;
integrating means for integrating said motor current signal;
combining means for combining the differentiated position signal and the integrated current signal to produce an output signal representing access mechanism velocity with respect to said tracks;
a velocity detector coupled to said combining means for producing an output signal representing the velocity being applied to said velocity detector, the output of said velocity detector being applied to said variable bandwidth filter to change the bandwidth of said filter so that said filter has a broad bandwidth for high velocity signals and a lower band width for low velocity signals;
said motor current signal having a polarity in the reverse direction which is the opposite of its polarity when said rotary access mechanism is being driven in the forward direction, said integrated motor current signal being applied to add to the voltage on said combining means during the acceleration portion of a seek and being applied to subtract from said voltage during a deceleration portion of a seek; and
a variable gain circuit, said motor current signal being applied through said variable gain circuit to said combining means, said variable gain circit including means for switching the gain of said motor current signal between a gain less than one and a gain greater than one during the accelerate and decelerate portions of each seek.

3,883,895
CARTRIDGE CHANGER
Youichi Kawaharasaki, Yokohama, Japan, assignor to Victor Company of Japan, Limited
Filed June 13, 1973, Ser. No. 369,569
Claims priority, application Japan, June 14, 1972, 47-70196[U]
Int. Cl. G11b *15/68, 25/06*
U.S. Cl. 360—92 **6 Claims**

1. An automatic cartridge changer for use with a plurality of cartridges and a magnetic head, comprising:
a housing having a first wall which defines a pair of parallel, horizontal slots, the housing having a second wall which has an aperture for said magnetic head defining a cartridge playing and recording position in the housing;
cartridge guide means in said housing forming first and second compartments therein, said second compartment receiving a stack of cartridges, and said first compartment receiving a separate cartridge;
spring means in said second compartment for upwardly biasing the stack of cartridges to vertically align one of the stacked cartridges with said cartridge playing and recording position;
a pair of parallel horizontal gear racks vertically spaced apart and disposed along said first wall, each being horizontally moveable in opposite directions and each having, at one end of the rack, a lug projecting through and slidable along a corresponding one of said slots, said

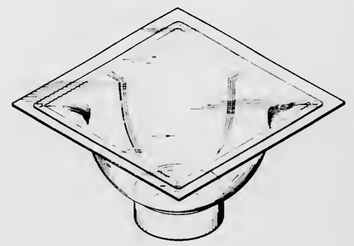


guide means defining upper and lower apertures between said first compartment and said second compartment for enabling the lug of one rack to push a separate cartridge from the second compartment into a lowermost position in the first compartment between said spring means and the stack to become a stacked cartridge, and for enabling the lug of the other rack to simultaneously push an uppermost stacked cartridge from the first compartment into the second compartment to enable it to fall therein and to become said separate cartridge; and
a pinion located between and meshing with both gear racks for simultaneously moving them in mutually opposite directions to move their respective lugs and thereby to move said separate cartridge and an uppermost stacked cartridge in and from said second and first compartments respectively to said first and second compartments, to thereby change the alignment of stacked cartridges with said cartridge playing and recording position.

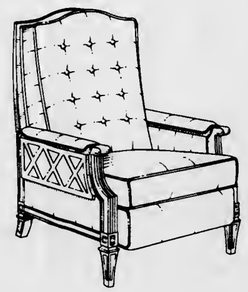
DESIGNS

MAY 13, 1975

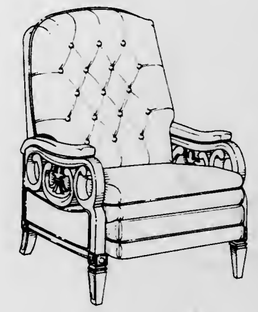
235,084
TABLE
Lynn H. Kephart, Arlington, Tex.
(R.R. 1, Box 383, Marathon, Fla. 33050)
Filed Mar. 8, 1973, Ser. No. 339,264
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



235,085
CHAIR
Thomas Winrow, Naperville, Ill., assignor to Mohasco Corporation, Amsterdam, N.Y.
Filed Aug. 8, 1973, Ser. No. 386,810
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



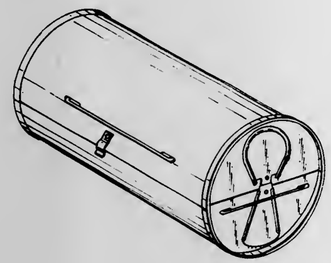
235,086
CHAIR
George Mergenov, Closter, N.J., assignor to Mohasco Corporation, Amsterdam, N.Y.
Filed Aug. 23, 1973, Ser. No. 391,162
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



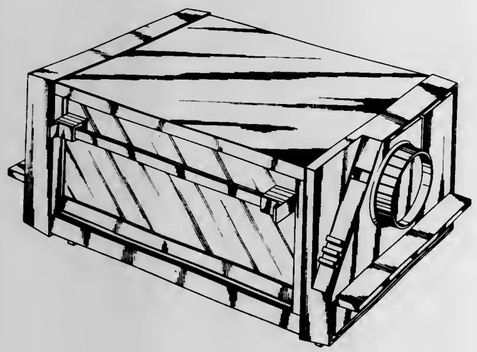
235,087
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Mohasco Corporation, Amsterdam, N.Y.
Filed July 23, 1973, Ser. No. 382,090
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



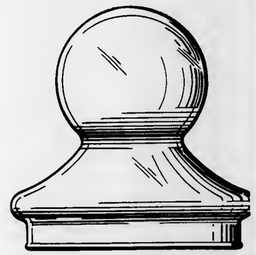
235,088
PORTABLE BARBECUE
Frederick J. Erickson, 3910 51st St., Des Moines, Iowa 50130
Filed Aug. 30, 1973, Ser. No. 392,865
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110



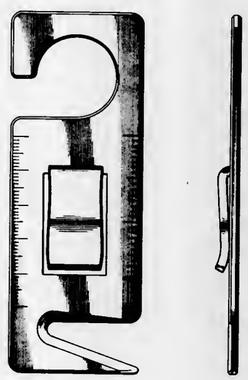
235,089
BROILER
George T. Lloveras, New York, N.Y., assignor to Cornwall Corporation, Boston, Mass.
Filed Oct. 1, 1973, Ser. No. 402,149
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—126



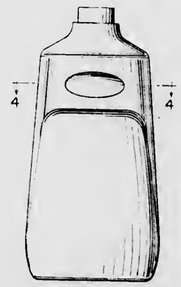
235,090
CANISTER LID OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Oct. 24, 1973, Ser. No. 409,080
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—131



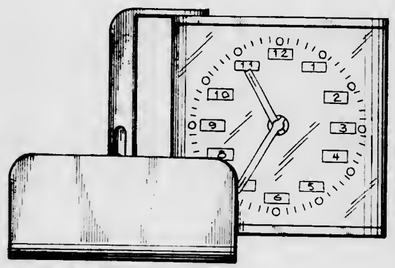
235,091
COMBINED LETTER OPENER AND MEASURING INSTRUMENT
Robert H. C. M. Daenen, Erembodegem, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 10, 1973, Ser. No. 387,307
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—104



235,092
BOTTLE
Donald J. Leary, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 13, 1973, Ser. No. 388,051
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—149



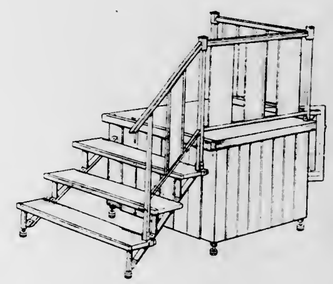
235,093
COMBINED TRAVEL CLOCK AND CASE
Klaus Kroner, Magstadt, Wurttemberg-Baden, Germany, assignor to Blessing-Werke KG., Waldkirch im Breisgau, Germany
Filed Aug. 24, 1972, Ser. No. 283,509
Claims priority, application Germany Feb. 25, 1972
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—18



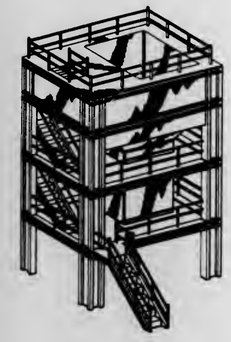
235,094
MARINE LIFESAVER RADIO BEACON
Joseph William Murphy, 10568 Holman Ave., Los Angeles, Calif. 90024; Wayne Anderson Taylor, 1340 W. Compton Blvd., Gardena, Calif. 90247; and Thomas Aloysius Aspell, Jr., 25913 Viana Ave., Lomita, Calif. 90717
Filed June 29, 1973, Ser. No. 374,820
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—109



235,095
COMBINED ENTRANCE STAIRCASE AND ENCLOSED STORAGE COMPARTMENT FOR MOBILE HOMES
Francis L. Stauben, 8303 Philadelphia Road, Baltimore, Md. 21206
Filed May 30, 1973, Ser. No. 365,364
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—7 R



235,096
ASPHALT PLANT TOWER OR SIMILAR ARTICLE
Frederick A. Mohr, Signal Mountain, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.
Filed Dec. 17, 1973, Ser. No. 425,337
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



235,097
SADDLE HORN LASSOING TRAINER
Wilburn Ashley Davis, P.O. Box 6752, Lubbock, Tex. 79413
Filed Aug. 3, 1973, Ser. No. 385,460
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



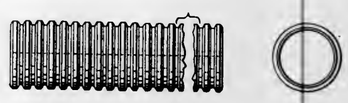
235,098
FAUCET HANDLE
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Aug. 20, 1973, Ser. No. 389,562
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—29



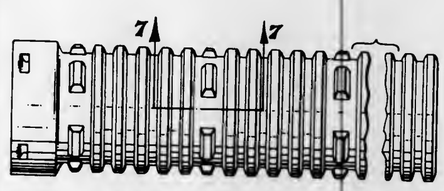
235,099
SPOUT
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Aug. 20, 1973, Ser. No. 389,805
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



235,100
CORRUGATED PIPE
Ernest J. Maroschak, Roseboro, N.C., assignor to Plastic Tubing, Inc.
Filed Dec. 5, 1973, Ser. No. 421,859
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45

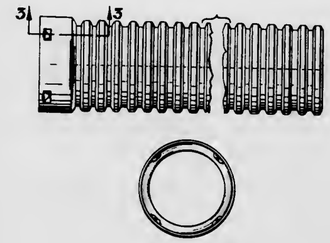


235,101
CORRUGATED PIPE
Ernest J. Maroschak, Roseboro, N.C., assignor to Plastic Tubing, Inc.
Filed Dec. 5, 1973, Ser. No. 422,020
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45





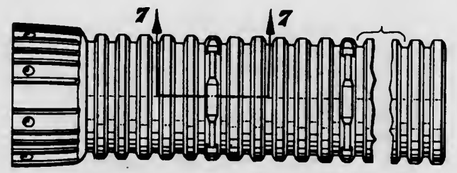
235,102
CORRUGATED PIPE
Ernest J. Maroschak, Roseboro, N.C., assignor to Plastic Tubing, Inc.
Filed Dec. 5, 1973, Ser. No. 422,021
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45



235,103
CORRUGATED PIPE
Ernest J. Maroschak, Roseboro, N.C., assignor to Plastic Tubing, Inc.
Filed Dec. 5, 1973, Ser. No. 422,022
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45



235,104
CORRUGATED PIPE
Ernest J. Maroschak, Roseboro, N.C., assignor to Plastic Tubing, Inc.
Filed Dec. 5, 1973, Ser. No. 422,023
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45

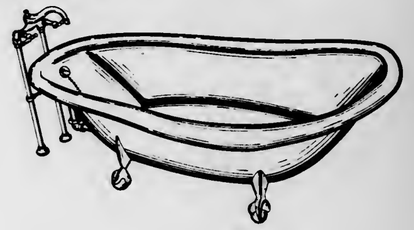




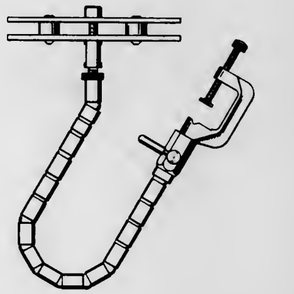
235,105
BATH TUB
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Aug. 20, 1973, Ser. No. 389,561
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55

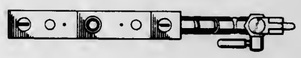


235,106
COMBINED BATHTUB AND PLUMBING FIXTURES THEREFOR
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Aug. 20, 1973, Ser. No. 389,582
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—56

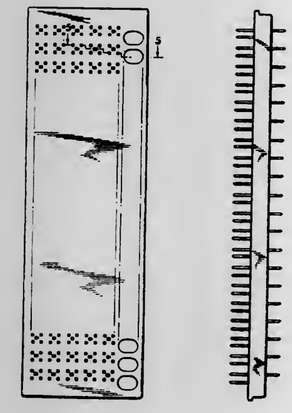


235,107
FLEXIBLE SUPPORT FOR DENTAL AND SURGICAL INSTRUMENTS
David T. Adler, Plainview, N.Y. (5 Lenox Ave., Farmingdale, N.Y. 11735)
Filed Apr. 5, 1973, Ser. No. 348,184
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 B

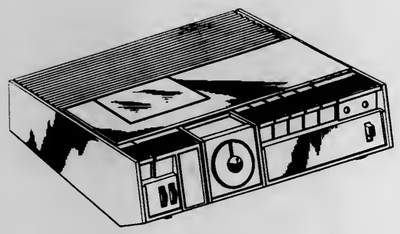




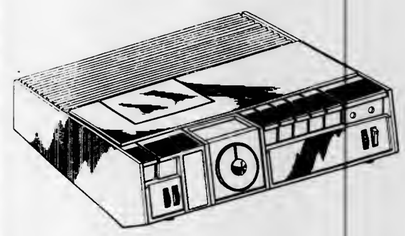
235,108
UNIVERSAL CONNECTOR BLOCK FOR TELEPHONE FRAME EQUIPMENT
Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.
Filed June 12, 1972, Ser. No. 262,139
Term of patent 14 years
Int. Cl. D14—*08*
U.S. Cl. D26—14 R



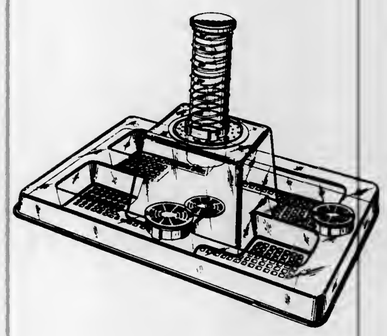
235,109
DICTATION RECORDING AND PLAYBACK APPARATUS OR SIMILAR ARTICLE
David K. Walz, Atlanta, Ga., assignor to Lanier Electronic Laboratory, Inc., Atlanta, Ga.
Filed Jan. 9, 1974, Ser. No. 432,055
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



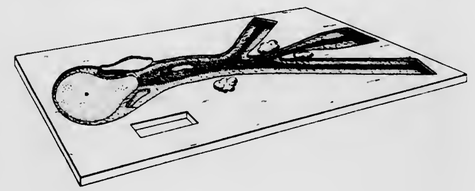
235,110
TRANSCRIPTION PLAYBACK APPARATUS OR SIMILAR ARTICLE
David K. Walz, Atlanta, Ga., assignor to Lanier Electronic Laboratory, Inc., Atlanta, Ga.
Filed Jan. 9, 1974, Ser. No. 432,057
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



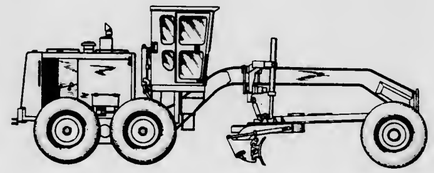
235,111
SMALL ANIMAL PLAYGROUND
David D. Lovitz, Short Hills, N.J., and Ness Eastman, Rego Park, and William H. Davidson, Katonah, N.Y., assignors to The Hartz Mountain Corporation, Harrison, N.J.
Filed Nov. 19, 1973, Ser. No. 416,925
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



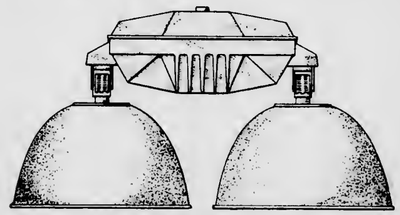
235,112
GOLF GAME BOARD
James T. Reese, 5350 Meadowlark Drive NW., North Canton, Ohio 44720
Filed Oct. 24, 1973, Ser. No. 409,061
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GL



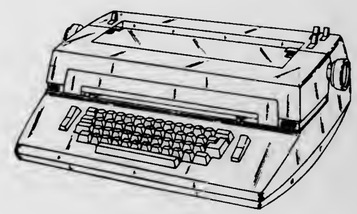
235,113
MOTOR GRADER VEHICLE
Vergil P. Hendrickson, Harold M. Johnson, Virgil H. Johnson, and Paul C. Rosenberger, Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 30, 1973, Ser. No. 355,543
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D40—5



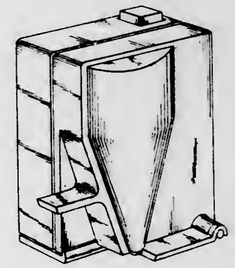
235,114
TWIN LAMP LUMINAIRE
Frank V. Steenhoven, Hudson, and Jerry L. Hurley, Ravenna, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Feb. 14, 1974, Ser. No. 442,971
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 R



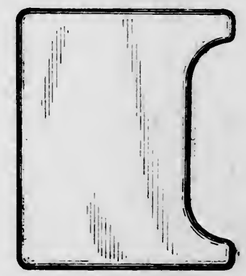
235,115
TYPEWRITER
Manfred Link, Nuremberg, Germany, assignor to Triumph Werke Nurnberg A.G., Nuremberg, Germany
Filed Oct. 16, 1973, Ser. No. 406,948
Claims priority, application Germany July 2, 1973
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



235,116
HAND HELD PRINTER
Myron F. Davis, Jr., Boca Raton, Fla., and Walter Furlani, Poughkeepsie, N.Y., assignors to International Business Machines, Inc., Armonk, N.Y.
Filed July 26, 1974, Ser. No. 492,320
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



235,117
UMBRELLA HANDLE
Peter Stamm, Witzhelden, Germany, assignor to Telesco Brophey, Limited, Montreal, Quebec, Canada
Filed July 13, 1973, Ser. No. 378,948
Claims priority, application Germany Jan. 30, 1973
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3 A



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF MAY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See—*
Swanson, John L., 3,883,132.
A. E. Staley Manufacturing Co.: *See—*
Peos, Charles E., 3,883,455.
A. Kettenbach, Firma: *See—*
Jahn, Ulrich W. K., 3,882,601.
Abex Corporation: *See—*
Viles, Alan H; and Smith, Gary C., Jr., 3,882,891.
Abos, Ralph L., to Dynapunch Systems, Inc. Power stylus. 3,883,055, Cl. 225-103.000.
Abrahamson, Gerald R.: *See—*
Mereness, Charles E.; and Abrahamson, Gerald R., 3,882,581.
Abramitis, Walter William; and Callahan, John J., to Akzona Incorporated. Plant growth regulators. 3,883,342, Cl. 71-76.000.
Abrukin, Abram Lvovich. Apparatus for checking the continuity of metallic pipes using an oscillator whose frequency changes at discontinuities. 3,883,797, Cl. 324-37.000.
Accurso, Serafino. Electrically Rocked Crib. 3,882,556, Cl. 5-109.000.
ACF Chemiefarma N.V.: *See—*
Akkerman, Antony Marie; and Janssen, Paul Adriaan Jan, 3,883,536.
ACF Industries, Incorporated: *See—*
Jourdan, Jerry W., 3,883,111.
Kolb, John P., 3,883,113.
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Barney, Charles Azel, to Ark-Les Switch Corporation. Multiple push-button slide switch assembly with laminated slide actuator means for rod contacts. 3,883,704, Cl. 200-5.0EB.

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Bauer, Andreas, to Volkswagenwerk Aktiengesellschaft. Crush resistant compartment for vehicles. 3,883,171, Cl. 296-28.00R.

Bauer, Benjamin B.; Gravereaux, Daniel W.; and Torick, Emil L., to CBS Inc. System for reproducing four channel signals recorded on a disc record. 3,883,700, Cl. 179-100.4ST.

Bauerfeind, Klaus, to Motoren-und Turbinen-Union Munchen GmbH. System arrangement for governing gas turbine engines, especially gas turbine aero-engines. 3,882,672, Cl. 60-39.28R.

Baughman, Kenneth H., to General Electric Company. Centering and anchoring device. 3,883,206, Cl. 312-351.000.

Baumgarte, Ulrich; Weigold, Siegfried; and Scheuermann, Werner, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Dyeing and printing textiles with vat dyes using reductones and/or reductonates. 3,883,299, Cl. 8-34.000.

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Logan, Ralph Andre; Schwartz, Bertram; Tracy, Joseph Charles, Jr.; and Wiegmann, William, 3,883,219.
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Bellasio, Elvio, to Gruppo Lepetit S.p.A. Perhydrophthalazin-1(2H)-one and process. 3,883,531, Cl. 260-250.00P.

Bellco Glass, Inc.: *See—*
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Benedict, John W., to Girdler Chemical, Inc. Catalytic method of purification of air for motor vehicle passenger compartment. 3,883,637, Cl. 423-230.000.

Bengtson, Paul J. Game apparatus. 3,883,137, Cl. 273-1.00R.

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Bennett, David, to North Hants Engineering Company Limited. Watercraft. 3,882,815, Cl. 115-70.000.

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Berezin, Gilbert H.; and Meier, Walter E., to du Pont de Nemours, E. I., and Company. Dicycloalkano [E,G] tetrahydroisoindolines. 3,883,553, Cl. 260-326.100.

Berezin, Gilbert H.; and Boswell, George Albert, Jr., to du Pont de Nemours, E. I., and Company. 10-Nitro-5h-dibenzo(a,d)cycloheptene-5-ones and selected derivatives. 3,883,593, Cl. 260-590.000.

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Bergeron, Charles R.; and Baker, Ralph W., to Ethyl Corporation. Preparation of beryllium hydride. 3,883,645, Cl. 423-645.000.

Bergeron, Josef F., to Jet Lube, Inc. Grease composition. 3,883,439, Cl. 252-37.200.

Bergner, Isidore. Shuttle fur. 3,882,904, Cl. 139-213.000.

Bergwerksverband GmbH: *See*—
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Bernard, Richard A.; and Bernard, Arthur A., to Dover Corporation. Filter, particularly for smoke solids filtration. 3,883,331, Cl. 55-381.000.

Bernhoft, Gerald W., to Koehring Company. Control means for a pair of fluid motors. 3,883,023, Cl. 214-762.000.

Berry, Norman H. Ignition circuit radiation suppression structure. 3,883,776, Cl. 315-85.000.

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Bicosa-Societe de Recherches: *See*—
Courier de Mere, Henri Edouard Francois Marie, 3,883,246.

Billig, Frederick S.; Pirkle, James C., Jr.; and Grenleski, Stephen E., Jr., to United States of America, Navy. High reactivity fuels for supersonic combustion ramjets. 3,883,376, Cl. 149-22.000.

Billot, Jean, to Rafaut & Cie. Device for picking up and ejecting loads under an airplane. 3,883,097, Cl. 244-137.00R.

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Bishop, John J., to NCR Corporation. TiO_2 pigmented coatings, credit cards and processes relating thereto. 3,883,470, Cl. 260-39.00P.

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Black, Robert B. Air-abrasive prophylaxis equipment. 3,882,638, Cl. 51-12.000.

Blake, William Wayne, to Caterpillar Tractor Company. Transmission control system with dual purpose modulating. 3,882,980, Cl. 192-3.570.

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Boehringer Ingelheim G.m.b.H.: *See*—
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Bogert, Ernest H.; and Kotos, Peter, to General Electric Company. High-current current-limiting fuse. 3,883,838, Cl. 337-295.000.

Boise Cascade Corporation: *See*—
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Bolin, Stephen Ray: *See*—
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Bolle, Daniel, to Etablissement Manitra. Incinerator for domestic and industrial solid, semi-liquid or liquid waste. 3,882,801, Cl. 110-14.000.

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Bommer, Paul. Method and apparatus for recording the number of phenomena. 3,883,878, Cl. 346-1.000.

Bone, David P.; and Shannon, Edward L., to Quaker Oats Company, The. Method of making a dry type pet food having a meat-like texture and composition thereof. 3,883,672, Cl. 426-311.000.

Bookout, Floyd V., to Rock-Ola Manufacturing Corporation. Can and bottle vendor. 3,883,038, Cl. 221-67.000.

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Booth, David L.: *See*—
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Bouldoires, Jean-Pierre; and Bally, Jacques, to Societe d'Assistance Technique Pour Produits, Nestle S.A. Freeze-drying process and apparatus. 3,882,610, Cl. 34-5.000.

Bowe Bohler & Weber Maschinenfabrik: *See*—
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Bowles, Arnold G., to National Forge Company. Isostatic press. 3,882,589, Cl. 29-428.000.

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Bracco Industria Chimica, Societa per Azioni: *See*—
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Brassat, Bert, to Bayer Aktiengesellschaft. Process for the production of polyamide mouldings. 3,883,469, Cl. 260-37.00N.

Braun, Erich, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Safety installation for two circuit brake systems of motor vehicles. 3,883,189, Cl. 303-84.00R.

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Breakthrough Research & Development Corp.: *See*—
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Brightman, Barrie; Datsko, George; Moll, Edward W.; and Stewart, William H., to Stromberg-Carlson Corporation. Control system for a digital switching network. 3,883,855, Cl. 340-172.500.

Brindell, Gordon D.; and Macander, Rudy F., to Quaker Oats Company, The. 4,4-Methylenebis (2,6-diaralkylphenols. 3,883,601, Cl. 260-613.00R.

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Brouwer, Charles William; and Cowan, Larry Clyde, to Leesona Corporation. Fluid operable binary control system with diagnostic indicators. 3,882,893, Cl. 137-557.000.

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Brown Oil Tools, Inc.: *See*—
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Brown, Roland Clough. Instant twistopen can. 3,883,033, Cl. 220-266.000.

Browne Engineering Corporation: *See*—
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Browne, Ronald O., to Browne Engineering Corporation. Modular pump assembly. 3,883,275, Cl. 417-503.000.

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Bruner, William L., to F & B Electronics. Advance warning traffic direction control system for use at selected roadway sites. 3,883,846, Cl. 340-109.000.

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Bucalo, Louis, to Investors In Ventures, Inc. Methods and devices for reducing lumen constriction. 3,882,845, Cl. 128-1.00R.

Buccieri, Peter M., to United States of America, Navy. Acquisition logic circuitry. 3,883,869, Cl. 343-7.00A.

Buccino, Jerry M. Spring clamp tool for servicing shock absorbers. 3,883,116, Cl. 254-10.500.

Buchinski, Joseph J.; and Smietana, Thaddeus, to Texas Instruments Incorporated. Method for improving the stainless steel surface finish on a composite metal laminate. 3,882,648, Cl. 51-328.000.

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Buchler, Joseph; Gross, Otto; and Parker, Bernard, to Buchler Instruments Division Nuclear-Chicago. Micropipetter, especially for the discharge of a sample and a diluent. 3,883,044, Cl. 222-309.000.

Budzich, Tadeusz. Load responsive control valve. 3,882,896, Cl. 137-596.100.

Buescher, William E.; and Kerstetter, Donald R., to GTE Sylvania Incorporated. Heater for fast warmup cathode. 3,883,767, Cl. 313-341.000.

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Burckhardt, Manfred H.; Krohn, Hellmut; Grossner, Horst; and Florus, Hans-Jorg, to Daimler-Benz Aktiengesellschaft. Installation for the control of the brake slippage and for the prevention of the locking of wheels of vehicles, especially motor vehicles. 3,883,183, Cl. 303-21.00P.

Burdon, James; Coe, Paul Leslie; Parsons, Ian William; and Tatlow, John Colin, to Imperial Chemical Industries Limited. Fluorinated dioxan derivatives. 3,883,559, Cl. 260-340.600.

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Burns, Edward Samuel; and Heising, Steven James, to Coherent Radiation. Gas laser having improved multiple-part resonator adjustment. 3,883,820, Cl. 331-94.50C.

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Cagle, Albert W.; Greer, Wayne E.; and Weight, Wilbur J., to Western Electric Co., Inc. Circuit assembly. 3,883,682, Cl. 174-68.500.

Caldon, Frank R.; Pimentel, Joseph E.; and Lewis, Clifford J., to National Lead Company. Process for the recovery of antimony. 3,883,345, Cl. 75-1.000.

Calhoun, Michael B., to Otis Engineering Corporation. Subsurface safety valve with auxiliary control fluid passage openable in response to an increase in control fluid pressure. 3,882,935, Cl. 166-224.00A.

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Cannan, Bernard M.; and DeBoo, Daniel A., to Servicemaster Industries Inc. Muffler for vacuum-inducing motor. 3,882,961, Cl. 181-50.000.

Cannon, Roger B.; and Raddatz, Dwight B., to Ball Corporation. Method and apparatus for providing and maintaining separation of multiple strands from a slitting operation. 3,883,088, Cl. 242-75.200.

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Carlin, Joseph T., to Texaco Inc. Tertiary oil recovery process involving multiple cycles of gas-water injection after surfactant flood. 3,882,940, Cl. 166-273.000.
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Cassidy, Don; and Barkhau, Ray W., to L. C. Cassidy & Son, Inc. Mineral fiber production method and apparatus. 3,883,334, Cl. 65-2.000.
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Felder, Ernst; and Pitre, Davide, to Bracco Industria Chimica, Societa per Azioni. Radiopaque derivatives of triiodobenzoic acid with heterocyclic side chains. 3,883,535, Cl. 260-293.640.
Feldman, Nicholas; and Ilnyckyj, Stephan, to Exxon Research and Engineering Company. Hydrogenated alkyl aromatics as petroleum distillate fuel cold flow improvers. 3,883,318, Cl. 44-62.000.
Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung: *See—*
Herzog, Rudolf, 3,882,567.
Feldner, George F., to Lummus Company, The. Flue gas distributor and radiator for uniform heat transfer. 3,882,826, Cl. 122-333.000.
Ferment, George R.; French, Stuart M.; and Sessa, Paul A., to Celanese Corporation. Apparatus for thermally processing of continuous lengths of fibrous materials. 3,883,718, Cl. 219-388.000.
Fernholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich, to Hoechst Aktiengesellschaft. Process for purifying and stabilizing aqueous alkali metal salt solutions of sorbic acid. 3,883,585, Cl. 260-526.00N.
Ferro-Tech, Inc.: *See—*
Holley, Carl A., 3,883,281.
Fichtel & Sachs AG: *See—*
Limbacher, Bernhard; and Fadler, Kurt, 3,882,979.
Fikse, Tyman H., to Pointer-Willamette Trailer Co., Inc. Vehicle with steerable rear wheels. 3,883,158, Cl. 280-404.000.
Filipski, Anna M.; and Filipski, Roman F. Protective device for wallets, purses and the like. 3,882,915, Cl. 150-35.000.
Filipski, Roman F.: *See—*
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Finck, Ludwig C., to Eberhard Faber GmbH, Firma. Plastic mass for modelling purposes and a method for forming imprints from the mass. 3,883,456, Cl. 260-23.0XA.
Finnila, Ronald M., to Hughes Aircraft Company. Vidicon camera tube and target. 3,883,769, Cl. 313-367.000.
Firestone Tire & Rubber Company, The: *See—*
Lohr, Delmar F., Jr.; and Kay, Edward Leo, 3,883,457.
Lohr, Delmar F., Jr.; and Kay, Edward Leo, 3,883,460.
Fischbach, Wolfgang, to Heinrich Baumgarten, Eisen- und Blechwarenfabrik. Handle for pots, pans, and the like. 3,883,169, Cl. 294-31.00R.
Fischbein, Harold; Fischbein, I. George; and Shark, Sam, to Dave Fischbein Manufacturing Co. Bag feeding apparatus for bag closing machine. 3,882,657, Cl. 53-77.000.
Fischbein, I. George: *See—*
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Fischer, Adolf; and Rohr, Wolfgang, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Substituted O-[aminosulfonyl]-glycolic amides. 3,883,509, Cl. 260-239.00B.
Fischer, Hans; and Hellendrung, Herbert, to Gutehoffnungshutte Sterkrade Akt. Method and apparatus for forming transverse welded seams between vertically oriented workpieces. 3,883,711, Cl. 219-73.000.
Fisher, Walter, to Texaco Canada Limited. Automatic drain valve for a floating roof. 3,883,032, Cl. 220-219.000.
Fitts, Martin, to Cook Paint and Varnish Co. Molding process for producing subsequent articles from a master. 3,883,627, Cl. 264-51.000.
Flack, Max L.; Foshee, William R.; and Le Tourneau, Ralph E., to Best Lock Corporation. Attack-resistant padlock. 3,882,699, Cl. 70-38.00A.
Flaischlen, Ekkehard, to Fortuna-Werke Maschinenfabrik AG. Workpiece holder. 3,882,647, Cl. 51-237.00R.
Fleischer, Helmut; and Schnaibel, Eberhard, to Robert Bosch G.m.b.H. Frequency-voltage converter circuit, particularly for automotive applications. 3,883,754, Cl. 307-229.000.
Fletcher, James C. Physical correction filter for improving the optical quality of an image. 3,883,436, Cl. 250-219.0QA.
Flicker, Howard D., to Singer Company, The. Wear-resistance of knitting machine support members. 3,882,695, Cl. 66-115.000.
Flieder, Robert A.: *See—*
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Forster, Hans-Joachim M.; Steinbrenner, Hans; Eltze, Georg; and Florus, Hans-Jorg, 3,882,740.
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Floter, Manfred, deceased (by Floter, Hannelore Emmi, administratrix); Beulker, Franz; Plevak, Lubomir; and Becker, Kunibert, to Gewerkschaft Eisenhutte Westfalia. Roof supports for long wall mining installations. 3,883,179, Cl. 299-321.000.
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Fohl, Timothy, to GTE Sylvania Incorporated. Method of operating high-intensity arc discharge lamp. 3,883,766, Cl. 313-220.000.
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Formwalt, Charles William; Frank, John Lewis; and Schneider, Allen Paul, to Deere & Company. Fluid actuated control device. 3,882,759, Cl. 91-167.000.
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Forsberg, K. Holger; Hamalainen, Lauri; Melaja, Asko J.; and Virtanen, Jouko Johannes, to Suomen Sokeri Osakeyhtio. pH adjustment in fructose crystallization for increased yield. 3,883,365, Cl. 127-60.000.
Forster, Hans-Joachim M.; Steinbrenner, Hans; Eltze, Georg; and Florus, Hans-Jorg, to Daimler-Benz Aktiengesellschaft. Process for controlling the working oil pressure as a function of engine torque for shifting elements of automatically shifted transmissions, especially for motor vehicles. 3,882,740, Cl. 74-866.000.
Fort, J. Robert; Westphal, James A.; and Juiles, Donald R., to Geophysical Systems Corporation. Data compositing and array control system. 3,883,725, Cl. 235-151.300.
Fortuna-Werke Maschinenfabrik AG: *See—*
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Fortune, William S. Temperature controlled soldering instrument. 3,883,716, Cl. 219-241.000.
Fosgate, James Wayne. Single element controlled parallel-T audio network. 3,883,832, Cl. 333-70.0CR.
Foshee, William R.: *See—*
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Fox, Richard Q., to Westinghouse Electric Corporation. Roll eccentricity correction system and method. 3,882,705, Cl. 72-11.000.

Franckowiak, Sigismond: *See—*
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Francois, Robert E.; Davis, William R.; and Sandstrom, Wayne M., to United States of America, Navy. Torpedo control. 3,882,808, Cl. 114-20.00R.

Frank, Amalie Julianna, to Bell Telephone Laboratories, Incorporated. Uniform decoding of minimum-redundancy codes. 3,883,847, Cl. 340-146.10R.

Frank, John Lewis: *See—*
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Franke, Bruno; Hallbauer, Erich; and Laue, Wolfgang, to BUSS Aktiengesellschaft. Producing concentrated hydrofluoric acid substantially free from impurities using polyether and polyol absorbents and nitrogen flushing gas. 3,883,642, Cl. 423-483.000.

Frazier, Wallace N. Bumper-actuated trigger mechanism for vehicle safety crash bag. 3,883,156, Cl. 280-150.0AB.

Frederickson, James D.; Hickman, Ella Sue; and Harper, Edward D., to R. J. Reynolds Tobacco Company. Tobacco expansion process. 3,882,874, Cl. 131-140.00P.

Free, John Marshall, to Hoffmann-La Roche Inc. Free flow resonant cavity measuring apparatus. 3,883,798, Cl. 324-58.50C.

Freeborn, John C., to Honeywell, Inc. D to a converter with high-speed, transient-free switching circuitry. 3,883,865, Cl. 340-347.0DA.

Freisler, Erhard; and Jud, Karl, to Ruti Machinery Works Ltd. Adjustable sley sword pivoting bearing. 3,882,902, Cl. 139-190.000.

French, Stuart M.: *See—*
Ferment, George R.; French, Stuart M.; and Sessa, Paul A., 3,883,718.

French, William George; Pearson, Arthur David; and Tynes, Arthur Richard, to Bell Telephone Laboratories, Incorporated. Glass melting method. 3,883,340, Cl. 65-134.000.

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Fricker, Siegfried; and Reinkensmeier, Horst, to Fricker, Siegfried. Hoisting shackle with quick release attachment means. 3,883,170, Cl. 294-83.00R.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
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Schwarz, Wilhelm, 3,883,127.

Friedabaugh, Lee: *See—*
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Friedheim, Ernst Albert Hermann; and Duwel, Dieter, to Hoechst Aktiengesellschaft. Treatment of filariasis. 3,883,650, Cl. 424-245.000.

Friedrich Deckel Aktiengesellschaft: *See—*
Muller, Johann, deceased, 3,882,758.

Frimberger, Eckart. Reanimation device. 3,882,860, Cl. 128-145.700.

Fritz, Charles H., to SGL Industries, Inc. Vehicle roll-over protection device. 3,882,957, Cl. 180-104.000.

Frohbieter, Edwin H., to Whirlpool Corporation. Compactor apparatus. 3,882,771, Cl. 100-53.000.

Frost, Charles B.: *See—*
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Frost, Charles W. Smoking pipe. 3,882,875, Cl. 131-173.000.

Frostig, Amos, to Etablissement Salgad. Explosive projectile. 3,882,779, Cl. 102-49.100.

Fryer, Paul Raymond: *See—*
Throssell, Walter Robert; and Fryer, Paul Raymond, 3,883,737.

Fuchsel, Harald, to Veb Pentacon Dresden. Photographic camera having an accessories mounting shoe. 3,883,884, Cl. 354-126.000.

Fuhring, Heinrich; and Sieber, Johannes Helmut, to Bowe Bohler & Weber Maschinenfabrik. Method of and apparatus for the recovery of solvent gases from an air stream. 3,883,325, Cl. 55-20.000.

Fuji Photo Film Co., Ltd.: *See—*
Tamai, Yasuo; Osawa, Sadao; Honjo, Satoru; Umehara, Akira; Yamamoto, Masaya; Tsuji, Nobuo; Takashina, Naomitsu; and Nagashima, Wakio, 3,883,440.

Fujii, Joanne G., to Beatrice Foods Company. Method for preparing bland caseinates. 3,883,675, Cl. 426-656.000.

Fujii, Motoharu: *See—*
Takahashi, Isao; Fujii, Motoharu; Kawakubo, Kazuo; Ariga, Masao; and Sugiura, Susumu, 3,883,242.

Fujii, Shoichiro; and Takanohashi, Kunio, to Takeda Chemical Industries, Ltd. Method for purification of cephalexin. 3,883,519, Cl. 260-243.00C.

Fujikawa, Kanichi; Takahashi, Ryohei; Yokomichi, Isao; Kimura, Fumio; Kaji, Takeo; and Sakashita, Nobuyuki, to Ishihara Sangyo Kaisha Ltd. Method of tobacco sucker inhibition. 3,883,343, Cl. 71-78.000.

Fujikawa, Yasuo, to Mitsubishi Jukogyo Kabushiki Kaisha. Cast piece supporting apparatus for a continuous casting machine. 3,882,924, Cl. 164-283.00R.

Fujikura Densen Kabushiki Kaisha: *See—*
Nakamoto, Teruyuki; Shingo, Yoshioki; Yamaguchi, Tetsuo; and Endo, Yukio, 3,883,443.

Fujimoto, Yasuo; Masumura, Isao; and Hashimoto, Yukio, to Kyowa Hakko Kogyo Co., Ltd. Resins containing dithioic acid groups. 3,883,490, Cl. 260-79.5NV.

Fujinaga, Taitiro; and Miura, Katuo, to Shibata Kagaku Kikai Kogyo Kabushiki. Detector of trace substance in water. 3,883,414, Cl. 204-195.00R.

Fujioka, Masayuki, to Leo Mfg. Co., Ltd. Piezo-electric type gas lighter. 3,883,289, Cl. 431-131.000.

Fujita, Teizo; and Kikuchi, Masao, to Izumi Denki Company Limited. Socket assembly. 3,883,210, Cl. 339-198.00S.

Fukami Co., Ltd.: *See—*
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Fukami, Toshihiro, to Fukami Co., Ltd. Method and apparatus for bandsawing operation with profiling mechanism capable of automatic copying of a model. 3,882,742, Cl. 83-56.000.

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Fukui, Kanji; and Otsuki, Akira, to Alps Electric Co., Ltd. Fine tuning shaft for TV tuner. 3,882,733, Cl. 74-10.540.

Fukushima, Kenya: *See—*
Kawamoto, Toshiharu; Itoh, Yoji; Hiyoudo, Kouji; and Fukushima, Kenya, 3,882,709.

Fulcher, Robert W.; and Sudey, John, to United States of America, General Counsel-Code GP. Low speed phaselock speed control system. 3,883,785, Cl. 318-314.000.

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Fuxe, Kjell, to Sandoz Ltd. Ergocornine or 2-bromo-α-ergocyptine in the treatment of parkinsonism. 3,883,655, Cl. 424-261.000.

Fuzzell, Joe E., to Caterpillar Tractor Company. Electronic component positioner for loader vehicles and the like. 3,883,783, Cl. 317-148.50R.

G. D. Searle & Co.: *See—*
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Gaburo, Isabelle R. Method of applying garment trim. 3,882,549, Cl. 2-244.000.

GAF Corporation: *See—*
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Gagner, Joseph L. Belt buckle. 3,882,617, Cl. 40-21.00C.

Galantay, Eugene E., to Sandoz-Wander, Inc. 1-(2',4'-Disubstituted-6'-ω-substituted-hexyl-1'-phenyl)-1-olefin-3-ols. 3,883,579, Cl. 260-473.00R.

Galbreath, Gerald W.; Dietrich, Alfred T.; and Mosbarger, George E., to Overhead Door Corporation. Door lock with safety release. 3,883,164, Cl. 292-92.000.

Galer, Abel, to SA Louise NV. Apparatus for de-slagging casting ladles. 3,883,124, Cl. 266-37.000.

Gall, Martin: *See—*
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Galmiche, Pierre Michel Andre; Jourdier, Henri Jacques; and Odeyer, Pierre Paul Louis, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Device for programming the afterburning-initiation phase in a turbojet engine. 3,882,675, Cl. 60-243.000.

Gambell, James W.: *See—*
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Ganoung, David P. Capacitive discharge ignition system utilizing a feedback controlled oscillator. 3,882,839, Cl. 123-148.00R.

Garbini, Eraldo; Lissoni, Umberto; and Cislaghi, Bruno, to Saer di Trezzi Eduige. Apparatus for continuously joining or paper printing flat materials. 3,883,386, Cl. 156-380.000.

Garcia, Paulina P.: *See—*
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Garner, Paul Johnson; and Oxley, David Fairclough, to Imperial Chemical Industries Limited. Injection molding of laminar articles having a foam core and an integral skin. 3,883,629, Cl. 264-55.000.

Garrett, Clyde Barner; and Thayer, William Stansbury, to Koppers Company, Inc. Method and apparatus for accurate die-cutting. 3,882,745, Cl. 83-311.000.

Gash, Virgil W.; and Bissing, Donald E., to Monsanto Company. Preparation of monohaloacyl halides. 3,883,589, Cl. 260-544.00Y.

Gates Rubber Company, The: *See—*
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Gattuso, Marion J.; and Arnold, Robert J., to Universal Oil Products Company. Thiocarbamyl sulfenamides. 3,883,592, Cl. 260-567.000.

Gawlick, Heinz; and Stahlmann, Rudolf, to Dynamit Nobel Aktiengesellschaft. Blank cartridge for training purposes. 3,882,778, Cl. 102-39.000.

Gawlick, Heinz; Stahlmann, Rudolf; and Jensen, Ernst, to Dynamit Nobel Aktiengesellschaft. Rifle grenade, particularly for firing tear gas or flare projectiles. 3,882,780, Cl. 102-65.200.

Gayler, Ronald, to United Kingdom Atomic Energy Authority. Reverse osmosis apparatus. 3,883,434, Cl. 210-330.000.

Gazzo, Joseph F. Building heating and cooling system. 3,882,928, Cl. 165-12.000.

Geary, Arthur L., to Brunswick Corporation. Twist drawn wire. 3,883,371, Cl. 148-32.000.

Gebel, Irving; and Enger, Michael H., to Controls Company of America. Timer switch assembly with independently controlled manual and motor driven cams. 3,883,708, Cl. 200-38.00R.

Gebo, Charles Henry, to Sybron Corporation. Controlled environment module. 3,883,715, Cl. 219-210.000.

Gebr. Hofmann KG: *See—*
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Geiger, Rolf, to Hoechst Aktiengesellschaft. Process for the manufacture of insulin, analogs and derivatives thereof. 3,883,496, Cl. 260-112.700.

Geiger, Rolf; and Jager, Georg, to Hoechst Aktiengesellschaft. Process for the manufacture of insulin, analogs and derivatives thereof. 3,883,500, Cl. 260-112.700.

Geisow, Bernard H.; and Harrelson, Lamon. Method and apparatus for impressing identifying characters into metal bar stock. 3,882,772, Cl. 101-4.000.

Geller, Ehud, to Ives Laboratories. Tablet formulation. 3,883,647, Cl. 424-15.000.

Gendron, Aubrey Stewart; and Ettel, Victor Alexander, to International Nickel Company, Inc., The. Electrodeposition of thick nickel deposits on permanent cathode blanks. 3,883,411, Cl. 204-12.000.

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General Technical Services, Inc.: *See—*
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Genesio, Jesus F., to Messa-Maquinas de Escrever, S.A.R.L. Error correction system for typewriters or printing devices. 3,882,990, Cl. 197-181.000.

Geophysical Systems Corporation: *See—*
Fort, J. Robert; Westphal, James A.; and Juiles, Donald R., 3,883,725.

Geo. W. King Limited: *See—*
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Gerbig, Hans Erwin, to AEG-Elotherm GmbH. Electronic conveyor for molten metal with elevated pouring tube. 3,883,045, Cl. 222-372.000.

Gerster, John F., to Riker Laboratories, Inc. Substituted pyrido(1,2,3-de)-1,4-benzoxazines. 3,883,522, Cl. 260-244.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
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Gibbs, F. Jack, to Dow Chemical Company, The. Shipping package. 3,883,000, Cl. 206-432.000.

Gifford, Charles J., to Minnesota Mining and Manufacturing Company. Daylight-loading film-holder for exposing vertically disposed x-ray film. 3,883,746, Cl. 250-475.000.

Gilchrist, Timothy Michael. Floor supporting framework. 3,882,651, Cl. 52-226.000.

Gillardeau, Jacques: *See—*
Durand, Jean-Paul; Gillardeau, Jacques; and Faron, Robert, 3,883,765.

Giller, Solomon Aronovich; Dubur, Gunar Yanovich; Uldrikis, Yan Rikhardovich; Tirzit, Gunar Jamovich; Valdman, Andrei Robertovich; Zakharchenko, Ivan Markovich; Spruz, Yazep Yanovich; Ronis, Vitaly Evgenievich; and Makarov, Alexandr Andrejevich. Stabilization of carotene. 3,883,673, Cl. 426-311.000.

Gillessen, Dieter; Rudinger, Josef; and Studer, Rolf, to Hoffmann-La Roche Inc. [Ile^3, Leu^4]-vasopressin analogs. 3,883,498, Cl. 260-112.500.

Ginsberg, Guenter; Godin, Thomas John; and Simpson, Ronald Olin, to Coulter Electronics, Inc. Pinch valve construction. 3,882,899, Cl. 137-627.500.

Girdler Chemical, Inc.: *See—*
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Girling Limited: *See—*
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Glaister, Frank J., to Chomerics, Inc. Connectors. 3,883,213, Cl. 339-61.00M.

Glaser, Karl. Multiple rotary wafer type switch with axial bridging contacts and multiple wafer connecting ring. 3,883,706, Cl. 200-11.00A.

Glass, Frederic E. Retractable bed. 3,882,554, Cl. 5-10.00R.

Glasser, Herman, to Nuclear Associates, Inc. Combined holder and adapter for liquid scintillation counters. 3,883,745, Cl. 250-363.000.

Glatthaar, Reinhard: *See—*
Asztalos, Stefan; Kneuer, Rudolf; Stephan, Alfred; and Glatthaar, Reinhard, 3,882,687.

Glattli, Hans-Heinrich; and Klink, Walter, to Pneumotech AG. Program-carrier for use in fluid-operated programming systems. 3,882,895, Cl. 137-594.000.

Glaxo Laboratories Limited: *See—*
Phillipps, Gordon Hanley; Newall, Christopher Earle; and Cook, Martin Christopher, 3,883,569.

Gleason Works, The: *See—*
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Glomski, Norman J.; and Jackman, Kim K., to Heil Co., The. Tailgate lift mechanism. 3,883,014, Cl. 214-77.00P.

Gloucester Engineering Co. Inc.: *See—*
Schott, Charles M., Jr., 3,883,389.

Glover, John Stuart; and Shepherd, Bryan Peter, to Radiochemical Centre Limited, The. Methods of analysis of radioactive material separated into solid and liquid phases. 3,883,738, Cl. 250-303.000.

Godar, Joseph Lambert, Jr.: *See—*
Rentmeester, Kenneth Richard; and Godar, Joseph Lambert, Jr., 3,883,035.

Goddard, Steven Jerome, to du Pont de Nemours, E. I., and Company. Herbicides. 3,883,550, Cl. 260-310.00C.

Godin, Thomas John: *See—*
Ginsberg, Guenter; Godin, Thomas John; and Simpson, Ronald Olin, 3,882,899.

Godley, Kevin Michael; and Creme, Laurence Neil. Apparatus for playing musical instruments. 3,882,754, Cl. 84-320.000.

Goeft, Manfred: *See—*
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Goldberg, Ilya Alexandrovich: *See—*
Chemeris, Oleg Nikolaevich; Tretyakov, Evgeny Vasilievich; Didkovsky, Viktor Kirillovich; Kanfer, Vilen Davidovich; Paschenko, Nikolai Konstantinovich; Zeltser, Izmail Grigorievich; Ljukimson, Grigory Mikhailovich; Bashkatov, Alexandr Nikolaevich; Melnikov, Boris Nikolaevich; Medzhibozhsky, Miron Yakovlevich; Goldberg, Ilya Alexandrovich; Juzefovsky, Izrail Abramovich; Ratmansky, Rafail Davidovich; Irkha, Viktor Nikolaevich; Borisov, Jury Nikolaevich; and Kurochkin, Fedor Filippovich, 3,883,078.

Goldfarb, Adolph E.; and Benkoe, Erwin. Doll with pneumatic means for reciprocally moving eyes. 3,882,631, Cl. 46-44.000.

Goldfarb, Adolph E.; Strader, Judith D.; and Strader, George C., to Mattel, Inc. Doll. 3,882,633, Cl. 46-151.000.

Goldmann, Wolf: *See—*
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Goloff, Alexander; and Sommars, Mark F., to Caterpillar Tractor Company. Valve lash adjuster. 3,882,834, Cl. 123-90.430.

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Gordon, Julian D.: *See—*
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Goring, Cleve A. I.; and Scott, Henry H., to Dow Chemical Company, The. Bis-alkylene pyrophosphate-urea reaction products as slow-release fertilizers. 3,883,341, Cl. 71-29.000.

Goupy, Marcel; and Roubinet, Pierre, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Composite vehicle bumper. 3,883,168, Cl. 293-98.000.

Grace, Martin I., to Sperry Rand Corporation. Broad band high frequency converter with independent control of harmonic fields. 3,883,823, Cl. 331-107.00R.

Grah, Lieselore: *See—*
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Granville-Phillips Co.: *See—*
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Gravereaux, Daniel W.: *See—*
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Grawey, Charles E.; Ball, Glenn A.; and Zook, Donald G., to Caterpillar Tractor Company. Pneumatic core press. 3,883,287, Cl. 425-405.00R.

Gray, Joseph E.: *See—*
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Grebenstein, Hermann, to Oehler-Syhlen-Lagertechnik A.G. Load displacement apparatus. 3,883,022, Cl. 214-750.000.

Green, Richard L., to Monsanto Company. Fire resistant jet fuel compositions. 3,883,319, Cl. 44-62.000.

Greene, Robin Nikolas; and Lewis, Kathrine Johnson, to du Pont de Nemours, E. I., and Company. Fast curing heat stable elastomeric compositions. 3,883,472, Cl. 260-42.520.

Greer, Wayne E.: *See—*
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Gregory, Harold; and Willshire, Ian Robert, to Imperial Chemical Industries Limited. Polypeptides from urogastrone. 3,883,497, Cl. 260-112.00R.

Greis, Ulrich; and Helmberger, Josef, to Agfa-Gevaert Aktiengesellschaft. Method and arrangement for recording by a writing beam. 3,883,688, Cl. 178-6.70R.

Grenleski, Stephen E., Jr.: *See—*
Billig, Frederick S.; Pirkle, James C., Jr.; and Grenleski, Stephen E., Jr., 3,883,376.

Gresham, John T., to FMC Corporation. Flame-Retardant Polyester Fiber Compositions. 3,883,478, Cl. 260-45.80R.

Gress, Heinz: *See—*
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Gries, Heinz, to Schering Aktiengesellschaft. Radiopaque agents. 3,883,578, Cl. 260-471.00R.

Griffith, Robert G.: *See—*
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Grindle, James L.: *See—*
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Grindle, Paul D. Apparatus and method for presentation of reading materials. 3,882,620, Cl. 40-343.000.

Gritschke, Martin; and Kretschmann, Bernd, to Zimmer Aktiengesellschaft. Device for suppressing bobbin vibrations in winding machines. 3,883,082, Cl. 242-18.00B.

Gross, Heinz; Wade, Harry C.; and Witts, John W. Method and apparatus for producing helical seam welded steel. 3,882,706, Cl. 72-17.000.

Gross, Otto: *See—*
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Grossblatt, Gerald H. Zinc plating baths. 3,883,405, Cl. 204-55.00Y.

Grossner, Horst: *See—*
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Grove, Marvin H., to M & J Valve Company. Valve apparatus for pipe lines. 3,883,115, Cl. 251-366.000.

Grundstuckverwaltungsgesellschaft Muller & Co. KG: *See—*
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Grundy, Reed H., to Westinghouse Air Brake Company. Fail-safe selectable low-pass filtering. 3,883,815, Cl. 330-21.000.

Gruppo Lepetit S.p.A.: *See—*
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GTE Automatic Electric (Canada) Ltd.: *See—*
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GTE Sylvania Incorporated: *See—*
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Fohl, Timothy, 3,883,766.

Gugliotta, Paul F. Pipe-and-ball truss array. 3,882,650, Cl. 52-223.00R.

Guilino, Gunther, to Optische Werke G. Rodenstock. Automatic, recording refractometer. 3,883,233, Cl. 351-6.000.

Guillaud, Michel Pierre, to Societe Anonyme, Secmer la Tronche. Process for mixing two or more liquid or pastry products under high pressure and mixing head therefor. 3,883,121, Cl. 259-4.000.

Guillot, Jack, to Bennes Marrel. Rotary heat exchanger, in particular for a gas turbine. 3,882,926, Cl. 165-8.000.

Guldenbalk, Alexei Pavlovich; Ivchenko, Vitaly Ivanovich; Kazakevich, Teodor Iosifovich; Koslov, Leonid Pavlovich; Kolosov, Vladimir Grigorievich; Kolosova, Ninel Iosifovna; Melekhin, Viktor Fedorovich; Popandopulo, Leonid Semenovich; Chechurin, Sergei Leonidovich; Ivanov, Pavel Sergeevich; Korolev, Vyacheslav Semenovich; Kushnikov, Vadim Nikolaevich; Sokolov, Vladimir Fedorovich; and Chiganov, Vyacheslav Anatolievich. Device for numerical programmed control. 3,883,787, Cl. 318-569.000.

Gulla, Peter; and Schutzenauer, Dieter, to Daimler-Benz Aktiengesellschaft. Device for level and/or temperature control of liquids. 3,882,967, Cl. 184-103.00R.

Gullino, Pietro M.: *See—*
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Gurevich, Samuil; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Dykhno, Semen Leonidovich; and Manoilo, Sergei Afanasievich. Flux cored electrode. 3,883,713, Cl. 219-146.000.

Gutehoffnungshutte Sterkrade Akt.: *See—*
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Guthrie, James L.; and Dighe, Shrikant V., to W. R. Grace & Co., Washington Research Center. Oxy, hydroxy containing aliphatic sulfides. 3,883,598, Cl. 260-609.00R.

Gutshall, Charles E., to Elco Industries, Inc. Controlled-drive sealing fastener. 3,882,752, Cl. 85-1.0JP.

Haake, Gerhard: *See—*
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Haas-Jordan Company: *See—*
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Hackmack, Gerhard; and Menge, Heinz Gunter, to Byk Gulden Lomberg Chemische Fabrik GmbH. Basic quinobenzazepines compositions and methods of use. 3,883,654, Cl. 424-258.000.

Hacoba-Textilmaschinen GmbH & Co. KG: *See—*
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Hafele, Robert X.: *See—*
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Hager, Robert Bonner; Toukan, Sameeh Said; and Walter, Gerald Joseph, to Pennwalt Corporation. Fluorine and sulfur-containing compositions. 3,883,596, Cl. 260-609.00R.

Hahne, Walter B., to Pre-Cast Concrete Products, Limited. Mold for making meter box covers and the like. 3,883,109, Cl. 249-91.000.

Hakes, Gary A., to Caterpillar Tractor Company. Automatic retarder control system. 3,882,973, Cl. 188-181.00R.

Hall, John H., to Micro Power Systems, Inc. Silicon-oxygen-nitrogen layers for semiconductor devices. 3,883,889, Cl. 357-73.000.

Hall, Robert P., Sr., to Arvin Industries, Inc. Drive for magnetic recording disc or tape cassettes. 3,883,090, Cl. 242-199.000.

Hallamore Inc.: *See—*
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Halocarbon Products Corporation: *See—*
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Hamalainen, Lauri: *See—*
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Hamilton, Clayton H., to Conifer Laboratories, Inc. Method for testing pregnancy. 3,883,304, Cl. 23-230.00B.

Hamilton, Pamela M., to Dow Chemical Company, The. 4-Amino-3,5,6-trichloro-2-(functionally substituted methyl) pyridine compounds. 3,883,541, Cl. 260-295.00R.

Hammarlund, Bertil; and Juhlin, Lars-Erik, to Allmanna Svenska Elektriska Aktiebolaget. Direct current power transmission. 3,883,790, Cl. 321-2.000.

Hammerschmied, Georg. Carburetor for internal combustion engines. 3,883,621, Cl. 261-78.00R.

Hamuro, Junji, to Ajinomoto Co., Inc. Method of solubilizing polysaccharides. 3,883,505, Cl. 260-209.00R.

Hanas, Bertil; and Marchner, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Electric arc furnace having side-wall lining protection. 3,883,677, Cl. 13-35.000.

Hance, Richard J.: *See—*
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Hanford, William E., to World Water Resources, Inc. Portable water supply system. 3,883,429, Cl. 210-104.000.

Hanke, David E., to Kimberly-Clark Corporation. Water-dispersible plastic tampon insertion tubes and the like. 3,882,869, Cl. 128-263.000.

Hannestad, Arne Ludvig: *See—*
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Hansen, O. Duane, Jr. Power actuated folding goose neck trailer. 3,883,019, Cl. 214-506.000.

Hanson, Alden B.; and Hanson, Chris A., to Hanson Industries Inc. Method of fitting a ski boot. 3,882,561, Cl. 12-142.00P.

Hanson, Chris A.: *See—*
Hanson, Alden B.; and Hanson, Chris A., 3,882,561.

Hanson Industries Inc.: *See—*
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Hanssen, Tore B.; and Ditzig, Albert F., to Controls Company of America. Headlight dimmer switch. 3,883,710, Cl. 200-156.000.

Hansson, Gunnar Christer, to Atlas Copco Aktiebolag. Hoist. 3,883,119, Cl. 254-168.000.

Harada, Tetuya: *See—*
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Hardesty, Richard H. Method for forming tabulating card sets. 3,883,130, Cl. 270-18.000.

Hardtmann, Goetz E., to Sandoz-Wander, Inc. Certain substituted-tricyclic quinazolin-thiones used as brochodilators. 3,883,652, Cl. 424-251.000.

Hare, Robert B.: *See—*
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Harrelson, Lamon: *See—*
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Harris, Bernard; Johnson, Russell P.; and Lambert, Gerald G., to Rexnord, Inc. Valve body. 3,883,114, Cl. 251-366.000.

Harris-Intertype Corporation: *See—*
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Harris, Louis Selig; Pars, Harry George; Razdan, Raj Kumar; and Dren, Anthony Thomas, to Sharps Associates. 5,5-Dimethyl-10-hydroxy-8-(3-methyl-2-octyl)-2-(2-propynyl)-1,2,3,4-tetrahydro-5h-[1]-benzopyrano[3,4-d]pyridine as a sedative hypnotic. 3,883,657, Cl. 424-263.000.

Harris, Robert C.; and Meyer, Helmut P., to Bendix Corporation, The. Electrical discharge device comprising an insulator body having an electrically semi-conducting coating formed thereon. 3,883,762, Cl. 313-130.000.

Harrison, Clarence E., Jr.; and Yun, Siang-Shen Johnson, to Ford Motor Company. Thermocouple-failure warning circuit. 3,883,753, Cl. 307-117.000.

Harrison, Dean R.; and Dimeff, John, to United States of America, General Counsel-Code GP. Diode-quad bridge circuit means. 3,883,812, Cl. 329-166.000.

Hart, John Austin: *See—*
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Hart, Ralph H.: *See—*
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Hart, William S. Advertising and display device. 3,882,618, Cl. 40-125.00H.

Hartman, John M.: *See—*
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Harvey, Barry J., to Carborundum Company, The. Refractory insulating compositions. 3,883,359, Cl. 106-64.000.

Harvey, Edwin Dennis, to Imperial Chemical Industries Limited. Anthraquinone dyestuffs. 3,883,567, Cl. 260-379.000.

Hasbro Industries, Inc.: *See—*
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Hashimoto, Junichi: *See—*
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Hashimoto, Yukio: *See—*
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Haslam, Bryan S.: *See—*
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Hass, Wynn M., to Southwire Company; and National Steel Corp. Anode press with vibration and compaction rate sensing means. 3,883,278, Cl. 425-135.000.

Hatano, Isao; Nagano, Akira; and Urasaki, Kazuaki, to Omron Tateisi Electronics Co. Information input device. 3,883,867, Cl. 340-365.00R.

Hathaway, Lucille. Diaper. 3,882,870, Cl. 128-284.000.

Hatzitheodorou, George Christou. Flushing device for dental bridges. 3,882,865, Cl. 128-232.000.

Hauffe, William L.: *See—*
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Hausner, Robert: *See—*
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Haven, Herm L.: *See—*
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Haverkamp, Wilhelm, to Heinrich Koppers GmbH. Device for gasification of solid fuels. 3,883,321, Cl. 48-73.000.

Hayaoka, Toshikazu: *See—*
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Hayes, Thomas E.: *See—*
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Hayward Baker Company: *See—*
Ruiz, Alvaro L., 3,883,360.

Hazelwood, Loren Richard. Dual line bowstring server. 3,882,662, Cl. 57-10.000.

Hearn, William Rouse. Flowmeter. 3,882,724, Cl. 73-215.000.

Heartz, Robert A., to General Electric Company. Digital data base generator. 3,883,861, Cl. 340-324.00R.

Hebert, Remy, to Aquitaine Total Organico. Process for the polymerization of dodecalactam in the presence of potassium carbonate. 3,883,608, Cl. 260-78.00L.

Heckner, Helmut, to Wacker Werke KG. Vibration plate system. 3,883,260, Cl. 404-133.000.

Hecla Mining Company: *See—*
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Hedwall, Phyllis Roberta, to Ciba-Geigy Corporation. Pharmaceutical preparations for the treatment of hypertonia. 3,883,656, Cl. 424-263.000.

Hegewaldt, Fritz; Mauve, Hans Werner; and Erdmann, Otto, to BBC Brown Boveri & Company Limited. Induction type crucible furnace. 3,883,678, Cl. 13-27.000.

Heil Co., The: *See—*
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Hein, Allyn John, to Caterpillar Tractor Company. Cast piston with hollow core and head cover. 3,882,762, Cl. 92-181.000.

Heinberg, Gary R.; Jones, Darryl S.; and Wright, Thomas R., to International Business Machines Corporation. Interleaved memory control signal and data handling apparatus using pipelining techniques. 3,883,854, Cl. 340-172.500.

Heine, Joseph, to Robert Bosch G.m.b.H. Spark advance mechanism for ignition distributors of internal combustion engines. 3,882,836, Cl. 123-117.00A.

Heinrich Baumgarten, Eisen- und Blechwarenfabrik: *See—*
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Heinrich Koppers GmbH: *See—*
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Heising, Steven James; Dowley, Mark W.; and Shull, William A., to Coherent Radiation. Metal-vapor laser with improved vapor condensing means. 3,883,818, Cl. 331-94.50G.

Heising, Steven James: *See—*
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Hekimian, Norris C., to Hekimian Laboratories, Inc. Line conditioner with independent gain and delay control. 3,883,830, Cl. 333-28.00R.

Helava, Uuno V., to Bendix Corporation, The. Single photo epipolar scan instrument. 3,883,251, Cl. 356-203.000.

Held, Franz. Roll slitting and winding machine. 3,883,085, Cl. 242-65.000.

Helgesson, Claes Ivar; Persson, Sven Borje Stellan; and Nilsson, Hans-Olof Ingvar, to Stig Arbman AB. Method of manufacturing a glass object by molding and sintering glass powder. 3,883,337, Cl. 65-31.000.

Hellendrung, Herbert: *See—*
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Helmberger, Josef: *See—*
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Helmer, Jerry D.; and Hughes, Kenneth E., to Battelle Memorial Institute. Artificial muscle. 3,882,551, Cl. 3-1.000.

Helmlinger, Daniel; Lamparsky, Dietmar; Schudel, Peter; Sigg-Grutter, Trudi; and Wild, Jost, to Givaudan Corporation. Novel mercaptoderivatives of ionones and irones. 3,883,572, Cl. 260-455.00R.

Hendrickson, Luther G.; and Ravasio, Dino, to United States Steel Corporation. Briquette mold pocket configuration. 3,883,110, Cl. 249-187.000.

Hendry, George O., to Cyclotron Corporation, The. Electrostatic extraction method and apparatus for cyclotrons. 3,883,761, Cl. 313-62.000.

Henmi, Kojiro: *See—*
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Henry Simon Limited: *See—*
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Henzl, Milan R.; and Roszkowski, Adolph P., to Syntex Corporation. Method for delaying the onset of, or postponing, parturition. 3,883,662, Cl. 424-333.000.

Hepp, Wolfgang; Pimiskern, Klaus; and Herbert, Werner, to Dornier System GmbH. Pedestal bearing with spiral grooves in the bearing gliding plane. 3,883,193, Cl. 308-9.000.

Heraeus-Schott Quarzschmelze GmbH: *See—*
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Herendi, Norbert: *See—*
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Hermann, Arthur D.; and Riedesel, Edwin L., to Caterpillar Tractor Company. Resilient engine mount with self-locating means. 3,883,099, Cl. 248-9.000.

Hermann, Arthur D.; Hurt, William C., II; and Miers, Bruce W., to Caterpillar Tractor Company. Resilient engine mount and alignment means and method therefor. 3,883,100, Cl. 248-9.000.

Hermann, Robert. Pick-proof lock mechanism. 3,882,703, Cl. 70-419.000.

Hermann, Walter; Kraus, Peter; and Steinmetz, Gunter, to Messerschmitt-Bolkow-Blohm GmbH. Arrangement for guiding together of two traffic streams. 3,883,098, Cl. 246-167.00R.

Herrera, Frank J., to Casa Herrara, Inc. Flour dough sheet forming and conveying systems. 3,883,283, Cl. 425-337.000.

Herscher, Marvin B.: *See—*
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Herzog, Rudolf, to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung. Wiper blade element. 3,882,567, Cl. 15-250.360.

Heslop, Lorne C. Stack forming mechanism. 3,883,010, Cl. 214-9.000.

Hess, Garry Carson, to Bell Telephone Laboratories, Incorporated. Fault testing of logic circuits. 3,883,801, Cl. 324-73.00R.
Hess, Hans-Jurgen E.; Czuba, Leonard J.; and Schaaf, Thomas K., to Pfizer Inc. Tetrazoyl derivatives of naturally occurring prostaglandins. 3,883,513, Cl. 260-240.00R.
Hester, Jackson B., Jr.; and Gall, Martin, to Upjohn Company, The. Preparation of triazolybenzophenones. 3,883,544, Cl. 260-296.00R.
Heuser, Gordon D.; and Pennell, Rolla J. Therapeutic manipulating machine for the human body. 3,882,856, Cl. 128-57.000.
Heusler, Karl; Bickel, Hans; Fechtig, Bruno; Peter, Heinrich; and Scartazzini, Riccardo, to Ciba-Geigy Corporation. 8-oxo-5-thia-1-azabicyclo(4,2,0)oct-2-ene compounds. 3,883,517, Cl. 260-243.00C.
Hewson, Kenneth E. Plastic dowel pin and wood joint assembly. 3,883,258, Cl. 403-298.000.
Heyer, David Edward, to du Pont de Nemours, E. I., and Company. Apparatus for making polymeric film. 3,883,279, Cl. 425-141.000.
Heyer-Schulte Corporation: *See—*
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Hickman, Ella Sue: *See—*
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Hilgers, Thomas M. Bracket setting tool. 3,883,064, Cl. 227-120.000.
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Jakob, Edwin, to ETA Ebauches Fabrik. Device for driving day and date indicators in a wrist-watch. 3,882,669, Cl. 58-58.000.

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Kaneko, Yuichiro; and Nishikawa, Takfhiko, to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho. Safety belt device for vehicles. 3,882,955, Cl. 180-82.00C.

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Keenan, Bernard J., Jr., to Sun Oil Company of Pennsylvania. Combination laser beam and sonic drill. 3,882,945, Cl. 175-16.000.

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Kollbach, Wilhelm, to Mannesmannrohren-Werke AG; Kraftwerk Union AG; and Sandvik Aktiebolaget. Jet sand blasting of bent tubes or rods. 3,882,639, Cl. 51-14.000.

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Koning, Menno G., to Northrop Corporation. Torquer scale factor temperature correction means. 3,882,731, Cl. 73-497.000.

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Kopetz, Kurt; Ziegenbein, Willi; and Schick, Anton, to Chemische Werke Huels Aktiengesellschaft. Fire-retardant polyolefin compositions. 3,883,481, Cl. 260-45.75B.

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Kroenke, William J., to B. F. Goodrich Company, The. Flame and smoke retardant vinyl chloride and vinylidene chloride polymer compositions. 3,883,480, Cl. 260-45.75C.

Kroenke, William J., to B. F. Goodrich Company, The. Flame and smoke retardant vinyl chloride and vinylidene chloride polymer compositions. 3,883,482, Cl. 260-45.75F.

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Kudo, Teizo; Tokuhara, Shinji; and Chata, Keiichi, to Daicel Ltd. Flame-retardant impact-resistant resin composition. 3,883,615, Cl. 260-876.00R.

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Matsushita Electric Industrial Co., Ltd.: *See*—
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Chemeris, Oleg Nikolaevich; Tretyakov, Evgeny Vasilievich; Didkovsky, Viktor Kirillovich; Kanfer, Vilen Davidovich; Paschenko, Nikolai Konstantinovich; Zeltser, Izmail Grigorievich; Ljukimson, Grigory Mikhailovich; Bashkatov, Alexandr Nikolaevich; Melnikov, Boris Nikolaevich; Medzhibozhsky, Miron Yakovlevich; Goldberg, Ilya Alexandrovich; Juzefovsky, Izrail Abramovich; Ratmansky, Rafail Davidovich; Irkha, Viktor Nikolaevich; Borisov, Jury Nikolaevich; and Kurochkin, Fedor Filippovich, 3,883,078.

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Nakanishi, Taro; Takagi, Katsumi; and Ametani, Teiji, 3,883,013.

Mitsugi, Koji: *See*—
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Miyasaka, Eiji; Yonemaru, Kenichi; and Henmi, Kojiro. Mechanism for stopping a contact screen at a predetermined position in a process camera. 3,883,245, Cl. 355-71.000.

Mizuhara, Yasushi; and Suzuki, Yasuo, to Hitachi Seiko Ltd. Power supply system for electrolytic grinding apparatus. 3,883,793, Cl. 321-18.000.

Mobil Oil Corporation: *See*—
Yan, Tsoung Y., 3,883,416.

Mohr, Robert G.; Hodges, Ronald R.; Hockenberry, Jack; Scheerhorn, Douglas; and Wilcox, Gale F., to Steelcase Inc. End panel support system. 3,883,196, Cl. 312-194.000.

Molenda, Robert P., to Minnesota Mining and Manufacturing Company. Color reversal process and developer. 3,883,354, Cl. 96-59.000.

Molex Incorporated: *See*—
Sebastian, Robert W.; Olson, Harry W.; and Silberg, Thomas F., 3,883,705.
Tomkiewicz, Thaddeus K., 3,883,207.

Moll, Edward W.: *See*—
Brightman, Barrie; Datsko, George; Moll, Edward W.; and Stewart, William H., 3,883,855.

Mollenkopf, Hans: *See*—
Ritzmann, Horst; Mollenkopf, Hans; Goldmann, Wolf; Wurr, Jurgen; and Korting, Reinhard, 3,883,294.

Molzer, Peter: *See*—
Winkle, Gunther; Schwarzler, Peter; Otto, Peter H.; Molzer, Peter; and Walkner, Christian, 3,882,790.

Monaghan, Alfred C. Method and apparatus for erecting and filling tray blanks. 3,882,655, Cl. 53-3.000.

Monsanto Company: *See—*
Gash, Virgil W.; and Bissing, Donald E., 3,883,589.
Green, Richard L., 3,883,319.
Roth, James F.; Gambell, James W.; and Penquite, Charles R., 3,883,445.
Solodar, Arthur John, 3,883,580.
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Montedison S.p.A.: *See—*
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Montgomery, Earl D.; and Montgomery, Jan Michael, to American Standard Corporation, The. Cabochon gem grinder. 3,882,641, Cl. 51-73.00R.

Montgomery, George R. Selectively operated pressurized liquid applicator for sink installation. 3,882,864, Cl. 128-230.000.

Montgomery, Jan Michael: *See—*
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Montgomery, Robert Matteson, to Texas Instruments Incorporated. Method of separating dual inline packages from a strip. 3,882,807, Cl. 113-119.000.

Mooney, Edward L.; and Pritchard, Kenneth L., to Pritchard-King, Inc. Method of assemblying a truck body. 3,882,592, Cl. 29-469.000.

Moore, Clarence J., to Applied Information Industries. Digital communication system. 3,883,693, Cl. 179-15.0AL.

Moore, Clyde T.; and Mercer, Harry L., to J. P. Stevens & Co. Inc. Process for reducing shrinkage and improving crease retention of wool-synthetic fiber blends. 3,883,300, Cl. 8-115.700.

Moore, Daniel M., to United States of America, Navy. Cable cutter assembly. 3,882,748, Cl. 83-623.000.

Moore Dry Kiln Company of Oregon: *See—*
Try, Robert W.; and Campbell, David W., 3,882,612.

Moore, George L.; and Terrell, Ross C., to Airco, Inc. Anesthetizing composition and method. 3,883,663, Cl. 424-341.000.

Moore, Gordon G.: *See—*
Rothman, Edward S.; and Moore, Gordon G., 3,883,595.

Moore, Myron C. Bicycle rack. 3,883,002, Cl. 211-18.000.

Moore, Randolph G. Method and modulation system for ambiguity reduction in pulsed radar. 3,883,871, Cl. 343-17.20R.

Moran, Harold J., to Troy Equine Products. Leg wrap. 3,882,867, Cl. 128-254.000.

Morard Pulpwood Company Limited: *See—*
Morin, Benoit L., 3,882,913.

Morelli, Joseph L., to Litton Business Systems, Inc. Typewriter ribbon loading arrangement to facilitate replacement or substitution of ribbon. 3,882,989, Cl. 197-151.000.

Morey, Booker W.; and McKinley, John Richard, to Occidental Petroleum Corp. Hydro-metallurgical preparation of the oxides of antimony and antimonic acid. 3,883,635, Cl. 423-87.000.

Morgan, Gerard E., to Riddell, Inc. Padding structure. 3,882,547, Cl. 2-3.00R.

Mori, Chiharu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electric shutter control circuit for single lens reflex cameras. 3,883,882, Cl. 354-51.000.

Mori, Yasuki; and Sato, Moriyuki, to Kyowa Hakko Kogyo Co., Ltd. Process for preparing 5-hydroxy-tryptophan and its derivatives. 3,883,554, Cl. 260-326.14T.

Morin, Benoit L., to Morard Pulpwood Company Limited. Method for delimbing felled trees. 3,882,913, Cl. 144-309.0AC.

Morita, Masayuki, to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho. Device for automatically compensating failure of a lamp. 3,883,777, Cl. 315-88.000.

Morrison, Howard J., to Marvin Glass & Associates. Baseball type game apparatus. 3,883,139, Cl. 273-89.000.

Morse, Stephen A.: *See—*
Thomas, Charles A., Jr.; Zuckerman, James E., Jr.; and Morse, Stephen A., 3,883,396.

Morton, Harvey L.; and Oland, Bradley H., to Tinsley Laboratories, Inc. Light source with high efficiency light collection means. 3,883,731, Cl. 240-41.38R.

Morton-Norwich Products, Inc.: *See—*
Turner, Robert J.; Booth, David L.; and Berry, Richard D., 3,883,568.
Wright, George C.; Bayless, Allan V.; and Gray, Joseph E., 3,883,526.

Morton, Philip Hugh, to Pel Limited. Chair shell. 3,883,176, Cl. 297-457.000.

Morton, William G. Safety helmet with individualized head-contoured liner. 3,882,546, Cl. 2-3.00R.

Mosbarger, George E.: *See—*
Galbreath, Gerald W.; Dietrich, Alfred T.; and Mosbarger, George E., 3,883,164.

Moser, Heinz: *See—*
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Motoren-und Turbinen-Union Munchen GmbH: *See—*
Bauerfeind, Klaus, 3,882,672.

Motorola, Inc.: *See—*
Alberkrack, Jade H., 3,883,807.

Mowbray, Kenneth D., to Electro Sprayer Systems, Inc. Powder collector construction. 3,882,818, Cl. 118-312.000.

MRM Industries, Inc.: *See—*
Kopernicky, Jaroslav, 3,883,057.

Muccillo, Edwin J.: *See—*
Reiley, Bertrand M.; Muccillo, Edwin J.; and Griffith, Robert G., 3,882,595.

Mueller Co.: *See—*
Leopold, Wilbur R., Jr.; Floren, Carl E.; and Hauffe, William L., 3,882,884.

Mueller, Dietrich-Wolfgang; Klug, Hans; Bronstert, Klaus; and Grah, Lieselore, to BASF Aktiengesellschaft. Flatting agents for coatings. 3,883,458, Cl. 260-28.50R.

Mueller, James P.: *See—*
Barton, James C.; Mueller, James P.; and Carter, John W., 3,883,172.

Mulholland, Thomas Patrick Cunningham, to Imperial Chemical Industries Limited. Ester of α-tocopherol. 3,883,565, Cl. 260-345.500.

Muller, Anton, to Eisen- und Drahtwerk Erlau Aktiengesellschaft. Tire chain. 3,882,918, Cl. 152-213.00R.

Muller, Jean, to Societe d'Etudes de Genie Civil et de Techniques Industrielles. Process for construction of bridges, in particular motorway flyovers. 3,882,564, Cl. 14-77.000.

Muller, Johann, deceased (by Muller, Katharina, legal representative), to Friedrich Deckel Aktiengesellschaft. Tool spindle having a clamping device for milling tools. 3,882,758, Cl. 90-11.00A.

Muller, Katharina, legal representative: *See—*
Muller, Johann, deceased, 3,882,758.

Muller, Peter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method of spinning yarns in spinning turbines. 3,882,666, Cl. 57-156.000.

Murashige, Robert H.; and Myers, Henry L., to Minnesota Mining and Manufacturing Company. X-ray intensifying screen. 3,883,747, Cl. 250-483.000.

Murayama, Seiichi: *See—*
Kaji, Tetsunori; and Murayama, Seiichi, 3,883,778.

Murphy, Francis P.; and Parker, Robert E., to Westinghouse Canada Limited. Line tracer. 3,883,735, Cl. 250-202.000.

Murphy, John D.; Pirro, John, Jr.; Lawrence, Monsey; and Wisla, Stanley F., to Atcor Inc. Apparatus for fixing radioactive waste. 3,883,441, Cl. 252-301.10W.

Murray, Coyt E., to Impact Plastics, Incorporated. Method and means for making high molecular weight polyethylene sheets. 3,883,631, Cl. 264-210.00R.

Music Man, Inc.: *See—*
Walker, Thomas A., 3,883,195.

Musinski, Donald F.: *See—*
Matzek, Norman E.; and Musinski, Donald F., 3,883,644.

Musschoot, Albert, to General Kinematics Corporation. Vibratory material handling apparatus. 3,882,996, Cl. 198-220.0DB.

Myers, Henry L.: *See—*
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Myers, Howard B.: *See—*
Jackson, Hewy E.; and Myers, Howard B., 3,882,594.

Mylari, Banavara L., to Pfizer Inc. Thermal rearrangement of 3-aryloxytriazine-5(4H)-ones. 3,883,525, Cl. 260-248.0AS.

Mylari, Banavara L., to Pfizer Inc. Preparation of 2(aryl)-as-triazine-3,5(2H,4H)-dione coccidiostats. 3,883,528, Cl. 260-248.0AS.

Nada, Naohiro; and Yamashita, Tadaoki, to Matsushita Electric Industrial Co., Ltd. Phosphor for thermoluminescent type radiation dosimeter. 3,883,748, Cl. 250-484.000.

Nadella: *See—*
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Nagano, Akira: *See—*
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Nagashima, Wakio: *See—*
Tamai, Yasuo; Osawa, Sadao; Honjo, Satoru; Umehara, Akira; Yamamoto, Masaya; Tsuji, Nobuo; Takashina, Naomitsu; and Nagashima, Wakio, 3,883,440.

Nagata, Yasunori: *See—*
Ishizawa, Kazutomo; Nagata, Yasunori; and Ikui, Hisakazu, 3,883,309.

Nagayama, Masuzo; and Okada, Hiroshi, to Lion Fat & Oil Co., Ltd. Oil soluble anionic surface active agent. 3,883,583, Cl. 260-513.00R.

Nagayama, Masuzo: *See—*
Isa, Hiroshi; Inagaki, Takeo; Kiyonaga, Yasuhiro; and Nagayama, Masuzo, 3,883,587.

Nagel, Erich: *See—*
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Nagel, Robert I., to Voevodsky, John. Optical construction of a lens. 3,883,733, Cl. 240-106.100.

Nakamichi, Niro, to Nakamichi Research, Inc. Dual capstan type tape driving mechanism for a magnetic tape machine. 3,883,059, Cl. 226-108.000.

Nakamichi Research, Inc.: *See—*
Nakamichi, Niro, 3,883,059.

Nakamoto, Teruyuki; Shingo, Yoshioki; Yamaguchi, Tetsuo; and Endo, Yukio, to Fujikura Densen Kabushiki Kaisha. Catalyst assembly for removing noxious gases from automobile exhaust. 3,883,443, Cl. 252-447.000.

Nakanishi Metal Works Co., Ltd.: *See—*
Wakabayashi, Takao, 3,882,793.

Nakanishi, Taro; Takagi, Katsumi; and Ametani, Teiji, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus of applying skids of grating structure and removing the same. 3,883,013, Cl. 214-16.40A.

Nakayama, Hirokazu: *See—*
Inamoto, Yoshiaki; Takaku, Masaaki; Nakayama, Hirokazu; and Taniguchi, Morimasa, 3,883,603.

Narita, Keizo: *See—*
Yamaguchi, Toshiaki; Narita, Keizo; and Wada, Kimihiro, 3,883,084.

Narr, Berthold: *See—*
Woitun, Eberhard; Narr, Berthold; and Schroter, Wolfgang, 3,883,651.

Naruse, Takeo; Hashimoto, Junichi; and Oikawa, Hideaki, to Pentel Kabushiki Kaisha. Mechanical pencil. 3,883,253, Cl. 401-65.000.

Nash, Alan Richard Brine. Arcuately oscillating damper. 3,882,976, Cl. 188-306.000.

National Forge Company: *See—*
Bowles, Arnold G., 3,882,589.

National Lead Company: *See—*
Caldon, Frank R.; Pimentel, Joseph E.; and Lewis, Clifford J., 3,883,345.

National Research Development Corporation: *See—*
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National Steel Corp.: *See—*
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Natural Energy Systems, Inc.: *See—*
Uzzell, Rudyard S., Jr., 3,883,750.

Nauflett, George W.; and Johnson, Craig E., to United States of America, Navy. Nitroester propellant, casing, and liner of an epoxy-polyamide copolymer containing a stabilizer. 3,882,784, Cl. 102-103.000.

NCR Corporation: *See—*
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Farber, Sheldon; and Wright, Arthur J., 3,883,557.
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Neary, Donald M.; and Doremus, John A., to Rosemount Inc. Vane type airflow sensor. 3,882,721, Cl. 73-188.000.

Nebgen, William H., to Brayton Cycle Improvement Associaton. Gasification method with fuel gas cooling. 3,882,671, Cl. 60-39.020.

Necchi, S.p.A.: *See—*
Bianchi, Nereo, 3,882,805.

Neely, James E., Jr.: *See—*
Michalik, Edmund R.; and Neely, James E., Jr., 3,883,339.

Neikam, William C., to Sun Ventures, Inc. Olefin hydrogenation using H_xMoO_3. 3,883,607, Cl. 260-683.900.

Nelson, James P., to Standard Oil Company. Copolyester(ethylene terephthalate/tetramethylene dibromoterephthalate) a new block polymer. 3,883,611, Cl. 260-860.000.

Neme, Fuhad Abdala. Self-supporting, totally combustible unit. 3,883,317, Cl. 44-14.000.

Nenner, Johannes: *See—*
Kendziora, Keinz; Nenner, Johannes; Schoer, Heinz; and Schultze, Werner, 3,882,596.

Nestenius, Nils Olof. Machines for stitching cushions, mattresses and the like. 3,883,163, Cl. 289-18.000.

Newall, Christopher Earle: *See—*
Phillipps, Gordon Hanley; Newall, Christopher Earle; and Cook, Martin Christopher, 3,883,569.

Newman, Ritchey O., Jr., to Dow Chemical Company, The. Impact absorbing structure. 3,882,970, Cl. 188-1.00C.

Newstead, Charles; and Wright, Andrew Charles Walden, to Girling Limited. Disc brake with identical removable friction pads. 3,882,972, Cl. 188-72.500.

Newton, John S., to Portec, Inc. Rail anchor. 3,883,072, Cl. 238-338.000.

NHK Spring Co., Ltd.: *See—*
Takatsu, Yukihiro, 3,883,125.

Nicholls, Lawrence George, to Girling Limited. Gas springs. 3,883,126, Cl. 267-65.00R.

Nicholson, Brian: *See—*
Cook, John E.; Nicholson, Brian; and Dabbs, Lawrence S., 3,882,773.

Niehaus, Clemens: *See—*
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Nilsson, Hans-Olof Ingvar: *See—*
Helgesson, Claes Ivar; Persson, Sven Borje Stellan; and Nilsson, Hans-Olof Ingvar, 3,883,337.

Ninagawa, Sadayoshi; and Takeshita, Shito, to Ajinomoto Co., Inc. Method of stabilizing organic compounds against oxidation with dopa or dopa derivatives. 3,883,674, Cl. 426-544.000.

Nippon Airwick Service Co., Ltd.: *See—*
Nishida, Kazuko; Bota, Kazuji; and Ando, Tadao, 3,882,713.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, 3,882,751.

Nippon Steel Corporation: *See—*
Kawamoto, Toshiharu; Itoh, Yoji; Hiyoudo, Kouji; and Fukushima, Kenya, 3,882,709.

Nire, Naomichi, to Sumitomo Metal Industries Limited. Charging coke oven blended coal and an overlay of briquettes. 3,883,399, Cl. 201-6.000.

Nishida, Kazuko; Bota, Kazuji; and Ando, Tadao, to Nippon Airwick Service Co., Ltd. Device for measuring sensuous degree of odor. 3,882,713, Cl. 73-23.000.

Nishikawa, Takfhiko: *See—*
Kaneko, Yuichiro; and Nishikawa, Takfhiko, 3,882,955.

Nishimura Seisakusho Co., Ltd.: *See—*
Yamaguchi, Toshiaki; Narita, Keizo; and Wada, Kimihiro, 3,883,084.

Nishimura, Takeshi: *See—*
Nishizawa, Jun-Ichi; Sasaki, Ichiemon; Ishida, Katsuhiko; Tauchi, Syoji; Nishimura, Takeshi; Seki, Takeo; and Kozuma, Noboru, 3,883,862.

Nishizawa, Jun-Ichi; Sasaki, Ichiemon; Ishida, Katsuhiko; Tauchi, Syoji; Nishimura, Takeshi; Seki, Takeo; and Kozuma, Noboru, to Semiconductor Research Foundation and Hitachi, Ltd. Signal collecting and distributing systems. 3,883,862, Cl. 340-324.00M.

Nissan Motor Company Limited: *See—*
Horie, Masakazu; Fukuhara, Takao; and Harada, Tetuya, 3,882,837.
Hosaka, Akio; and Baba, Kosaku, 3,882,958.
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Watanabe, Takeaki; Sakasegawa, Hiroshi; and Tanabe, Kuniyuki, 3,882,692.

Nitanda, Hiroshi: *See—*
Ito, Yoshio; Katayama, Hamime; Nitanda, Hiroshi; and Yamaguchi, Masaru, 3,883,240.

Nobelius, Gustav, to Bruun & Sorensen AB. Frameworks for shielding devices. 3,883,297, Cl. 432-249.000.

Noguchi, Masaaki: *See—*
Kanai, Toshio; Noguchi, Masaaki; Yanagioka, Hiroshi; Kogawa, Yosio; and Kondo, Susumu, 3,883,311.

Nomura, Yasushi: *See—*
Unuma, Nobumitsu; and Nomura, Yasushi, 3,883,250.

Norel, Guy; and Desbrandes, Robert, to Institut Francais du Petrole, des Carburants et Lubrifiants. Localized method and device for the precise determination of the acoustic impedance of material situated in proximity to the wall of a borehole. 3,883,841, Cl. 340-15.50A.

Norprint Limited: *See—*
Cook, John E.; Nicholson, Brian; and Dabbs, Lawrence S., 3,882,773.

North Hants Engineering Company Limited: *See—*
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Northrop Corporation: *See—*
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Nuclear Associates, Inc.: *See—*
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Nulph, Robert J.: *See—*
Anderson, Arnold L.; and Nulph, Robert J., 3,883,479.

Nummedal, Kjell; Holscher, Donald J.; Hartman, John M.; and Erb, Darrell M., to Hughes Aircraft Company. Monolithic IR detector arrays with direct injection charge coupled device readout. 3,883,437, Cl. 250-332.000.

Nutten, Warren D.; and Phillips, Bernard C., to Borg-Warner Corporation. Charge forming method and apparatus with overspeed governor. 3,882,838, Cl. 123-127.000.

Obermann, George; and Willigman, John, to Controls Company of America. Two-speed constant drive timer. 3,882,734, Cl. 74-337.500.

O'Brien, Harry C.; Rubino, James V.; and Smith, Herbert J., to Burroughs Corporation. Address generator for rotating data storage devices. 3,883,853, Cl. 340-172.500.

O'Brien, Thomas Francis; and Hodges, Jimmie Ray, to Pennwalt Corporation. Process for recovering electrolytically produced alkali metal chlorates. 3,883,406, Cl. 204-95.000.

Occidental Petroleum Corp.: *See—*
Morey, Booker W.; and McKinley, John Richard, 3,883,635.

Ocean Systems, Inc.: *See—*
March, Frank Adams; and Brown, Louis Stanislaus, 3,883,433.

Odeyer, Pierre Paul Louis: *See—*
Galmiche, Pierre Michel Andre; Jourdier, Henri Jacques; and Odeyer, Pierre Paul Louis, 3,882,675.

Odier, Jean, to Societe Anonyme Francaise du Ferodo. Crosslinked polybenzoxazole copolymer and a process for preparing the same. 3,883,610, Cl. 260-841.000.

Oehler-Syhlen-Lagertechnik A.G.: *See—*
Grebenstein, Hermann, 3,883,022.

Ogle, Robert W., to IMS Limited. Trans-a-jet 1. 3,882,909, Cl. 141-286.000.

Ogura, Iwao: *See—*
Yamazaki, Eiichi; Maruyama, Koichi; Ueda, Toshio; and Ogura, Iwao, 3,883,880.

Ohara, Akira; and Takahashi, Masa. Submerged hot gas heat exchanger. 3,882,844, Cl. 126-360.00A.

Ohgoshi, Akio; Miyaoka, Senri; and Katagiri, Yosihiharu. Collinear electron gun system including accelerating grid having greater effective thickness for off axis beams. 3,883,771, Cl. 313-412.000.

Ohlson, John E.: *See—*
United States of America, National Aeronautics and Space Administration; Ohlson, John E.; and Williams, William F., 3,883,872.

Ohnishi, Hajime: *See—*
Higuchi, Masaru; Ohnishi, Hajime; and Yagihara, Hiroshi, 3,883,464.

Ohsaki, Kiyoshi; and Takahashi, Morio, to Honda Giken Kogyo Kabushiki Kaisha. Valve operating cam device for internal combustion engine. 3,882,832, Cl. 123-90.600.

Oikawa, Hideaki: *See—*
Naruse, Takeo; Hashimoto, Junichi; and Oikawa, Hideaki, 3,883,253.

Okada, Hiroshi: *See—*
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Okazaki, Isao: *See—*
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Okumura, Takatoshi: *See—*
Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, 3,882,751.

Oland, Bradley H.: *See—*
Morton, Harvey L.; and Oland, Bradley H., 3,883,731.

Oldham, Robert R.; and Wooddell, John H., to Robert R. Oldham, Inc. Floating solids return device. 3,883,427, Cl. 210-73.000.

Olin Corporation: *See—*
Larchar, Trescott B., Sr.; and Scott, Robert N., 3,883,609.
Shapiro, Stanley; and Caron, Ronald N., 3,882,712.
Turley, Richard J., 3,883,620.

Olivier, Andre, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Gold alloy electroplating bath. 3,883,409, Cl. 204-44.000.

Ollman, Melvin L., to C-O, Inc. Truss construction. 3,882,653, Cl. 52-694.000.

Olson, Floyd B.: *See—*
Olson, Gordon G., 3,883,041.

Olson, Gordon G., to Olson, Floyd B.; and Karjala, Les R., part interest to each. Ammunition cartridge dispenser. 3,883,041, Cl. 221-227.000.

Olson, Harry W.: *See—*
Sebastian, Robert W.; Olson, Harry W.; and Silberg, Thomas F., 3,883,705.

Olson, Robert E.; and Thumim, Arnold David, to Packard Instrument Company, Inc. Scintillation counter, segmented shield. 3,883,742, Cl. 250-328.000.

Olstowski, Franciszek, to Dow Chemical Company, The. Rapid setting polyurethanes from diols and polyfunctional polyisocyanates prepared in the presence of carboxylic acid esters. 3,883,465, Cl. 260-31.200.

Olstowski, Franciszek, to Dow Chemical Company, The. Rapid setting polyurethanes from diols and polyisocyanates prepared in the presence of an organic carbonate. 3,883,466, Cl. 260-32.200.

Olstowski, Franciszek, to Dow Chemical Company, The. Rapid setting polyurethanes from diols and polyisocyanates in the presence of a hydroxyl-containing halogenated aliphatic compound. 3,883,484, Cl. 260-77.5MA.

Olympus Optical Company Limited: *See—*
Koizumi, Tsohimichi, 3,883,231.

Omega, Louis Brandt & Frere S.A.: *See—*
Schnyder, Edouard; and Liengme, Marcel, 3,883,314.

Omron Tateisi Electronics Co.: *See—*
Hatano, Isao; Nagano, Akira; and Urasaki, Kazuaki, 3,883,867.

Ono, Kazuyuki Ray, to Bellco Glass, Inc. Microculture slide chamber. 3,883,398, Cl. 195-127.000.

Optische Werke G. Rodenstock: *See—*
Guilino, Gunther, 3,883,233.

Orlando, Carl. High-speed shutter. 3,883,885, Cl. 354-258.000.

Orlomoski, Roger W., to Litton Industrial Products, Inc. Self-locking thread. 3,882,917, Cl. 151-22.000.

Ormat Turbines (1965) Ltd.: *See—*
Bronicki, Lucien Yehuda, 3,882,929.

Osafune, Etsuko: *See—*
Kamide, Kenji; Manabe, Seiichi; Osafune, Etsuko; and Sakamoto, Tomio, 3,883,626.

Osawa, Sadao: *See—*
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Osborne, Richard Carroll: *See—*
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Oshinski, Charles C.: *See—*
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Osofsky, Irving B., to United States of America, Army. Transpiration cooled nose cone. 3,883,096, Cl. 244-117.00A.

Osteen, Carl M., to General Electric Company. Ballast transformer with heat dissipating device. 3,883,834, Cl. 336-61.000.

Oswald, Alexis A.; Valint, Paul L.; and Schmit, George N., to Ciba-Geigy AG. O-alkyl-s-alkyl-o-(1-hydrocarbyloxy carbonyl-1-propen-2-yl)dithiophosphates. 3,883,618, Cl. 260-941.000.

Otis Engineering Corporation: *See—*
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Otsuki, Akira: *See—*
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Otto Engineering, Inc.: *See—*
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Otto, Jefferey B.: *See—*
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Owens-Illinois, Inc.: *See—*
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Oxley, David Fairclough: *See—*
Garner, Paul Johnson; and Oxley, David Fairclough, 3,883,629.

Oyler, Herbert J., deceased; and by Oyler, Margaret Frances, executrix. Automatic cooking apparatus. 3,882,767, Cl. 99-339.000.

Oyler, Margaret Frances, executrix: *See—*
Oyler, Herbert J., deceased; and Oyler, Margaret Frances, executrix, 3,882,767.

Ozone, Koho; and Randmere, Uno, to Stromberg-Carlson Corporation. Linear phase filter with determinable gain characteristic. 3,883,833, Cl. 333-70.00R.

Pachmayr, Frank A.; and Miller, Edward B., to Pachmayr Gun Works, Inc. Apparatus for cutting pattern in gun stock or other work piece. 3,882,911, Cl. 144-136.00J.

Pachmayr Gun Works, Inc.: *See—*
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Packard Instrument Company, Inc.: *See—*
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Pacor, Pierpaolo: *See—*
Bocca, Pier Luigi; and Pacor, Pierpaolo, 3,883,404.

Pagon, John A.; and Erwin, Spotz, to Electromagnetic Industries, Inc. Ground fault sensor current transformer. 3,883,835, Cl. 336-90.000.

Pailer, Matthias; Takacs, Friedrich; and Streicher, Wolfgang, to Rowa Wagner KG. Dioxolanes and oxathiolanes. 3,883,538, Cl. 260-293.670.

Palmer, Ronald S. Sweep frequency control apparatus and method. 3,883,868, Cl. 340-408.000.

Pannell, Calvin E., to Dow Chemical Company, The. Pyridyl azides and derivatives thereof. 3,883,542, Cl. 260-295.00R.

Pantke, Heinz-Dieter; and Pohl, Ulrich, to Thyssen Niederrhein AG Hutten- und Walzwerke. Apparatus for the reduction of iron ores by direct reduction. 3,883,123, Cl. 266-29.000.

Papai, Imre F. Pastry shell filling apparatus. 3,883,079, Cl. 241-94.000.

Papajewski, Reinhold: *See—*
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Pardes, Herman I., to United States of America, Army. High speed line scanner. 3,883,683, Cl. 178-6.000.

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McClymont, Ian W.; and Parekh, Sharad V., 3,883,875.

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Pars, Harry G.: *See—*
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Pars, Harry George: *See—*
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Pass, Roger D. Valve actuators. 3,882,760, Cl. 91-422.000.

Paul, Keith: *See—*
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Paulson, Donald W.; and Harnish, Dennis J., to Emerson Electric Co. Open coil electric heater assembly. 3,883,721, Cl. 219-532.000.

Paxall, Inc.: *See—*
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Payne, Alan James: *See—*
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Peacock, Roy Norman, to Granville-Phillips Co. Anti-wear thin film coatings and method for making same. 3,882,579, Cl. 29-95.00R.

Pearson, Arthur David: *See—*
French, William George; Pearson, Arthur David; and Tynes, Arthur Richard, 3,883,340.

Pearson, Glenn A. Novel resinous compositions comprising sequential reaction product of formaldehyde, inorganic acid, triethanolamine and urea. 3,883,462, Cl. 260-29.40R.

Pearson, Ian, to Minnesota Mining and Manufacturing Company. Fluorescent aryl 3,3-pyrazolyl-2-pyrazolines. 3,883,549, Cl. 260-310.00D.

Pearson, James M.; and Yanus, John F., to Xerox Corporation. 2-Vinyl-(9-dicyanomethylene) fluorene and derivatives thereof. 3,883,488, Cl. 260-78.40N.

Peck, Robert L.; Otto, Jefferey B.; and Pappajtion, Alexandra G., to Peck, Robert L. Electrical device with high dielectric constant. 3,883,784, Cl. 317-258.000.

Peckham, Victor A., Jr. Bicycle power brake. 3,882,971, Cl. 188-24.000.

Peiffner, Albert; and Schwieter, Ulrich, to Hoffmann-La Roche Inc. Epithio compounds. 3,883,514, Cl. 260-240.00H.

Pel Limited: *See—*
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Pelletier, Guy, to Bombardier Limited. Method and apparatuses for retreading worn tires. 3,883,382, Cl. 156-96.000.

Pelofsky, Arnold H., to Cities Service Research & Development Co. In situ production of bitumen from oil shale. 3,882,941, Cl. 166-303.000.

Peltola, Waino; and Braski, Ervin W. Timber harvester. 3,882,910, Cl. 144-3.00D.

Pennell, Anthony Robin, to Associated Portland Cement Manufacturers Limited, The. Hopper installation. 3,883,011, Cl. 214-17.00B.

Pennell, Rolla J.: *See—*
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O'Brien, Thomas Francis; and Hodges, Jimmie Ray, 3,883,406.

Penny, Robert Noel. Seal for rotary regenerative heat exchanger. 3,882,927, Cl. 165-9.000.

Penquite, Charles R.: *See—*
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Pentel Kabushiki Kaisha: *See—*
Naruse, Takeo; Hashimoto, Junichi; and Oikawa, Hideaki, 3,883,253.

Peos, Charles E., to A. E. Staley Manufacturing Co. Non-bleeding vinylidene chloride copolymer coatings. 3,883,455, Cl. 260-23.0XA.

Perego, Gianluca, to Perego-Pines S.p.A. Baby carriage frame. 3,883,149, Cl. 280-36.00B.

Perego-Pines S.p.A.: *See—*
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Perlotto, George T. Locking means for firearms. 3,882,622, Cl. 42-1.0LP.

Perrett, Darcy Glen: *See—*
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Persson, Eric J.: *See—*
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Persson, Sven Borje Stellan: *See—*
Helgesson, Claes Ivar; Persson, Sven Borje Stellan; and Nilsson, Hans-Olof Ingvar, 3,883,337.

Peter, Heinrich: *See—*
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Peterson, David D.; and Grindle, James L. Ceiling luminaire. 3,883,732, Cl. 240-73.0BC.

Petrochko, Robert P.; and Hayes, Thomas E., to Union Carbide Corporation. Method of forming thermoplastic matrix including preheating of thermoplastic blanks. 3,883,632, Cl. 264-322.000.

Pews, R. Garth: *See—*
Davis, Ralph A.; Tigner, Ronald G.; Pews, R. Garth; Exner, Jurgen H.; and Gibbons, Carl L., 3,883,581.

Pezzolo, Donald E.: *See—*
Adamian, Andrew A.; Long, David K.; and Pezzolo, Donald E., 3,882,840.

Pfiz, Albert, to Walther Buromaschinen GmbH. Device for reversing the direction of drive of an inked ribbon in a high-speed printer. 3,882,774, Cl. 101-336.000.

Pfizer Inc.: *See—*
Barth, Wayne E., 3,883,653.
Brennan, Thomas M., 3,883,527.
Hess, Hans-Jurgen E.; Czuba, Leonard J.; and Schaaf, Thomas K., 3,883,513.
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Phillipps, Gordon Hanley; Newall, Christopher Earle; and Cook, Martin Christopher, to Glaxo Laboratories Limited. Novel 3α-hydroxysteroids of the 5α-pregnane series. 3,883,569, Cl. 260-397.450.

Phillips, Arthur P.; and Burrows, Robert B., to Burroughs Wellcome Co. Method of treating nematode infestations. 3,883,658, Cl. 424-270.000.

Phillips, Bernard C.: *See—*
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Phillips Petroleum Company: *See—*
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Rogers, Ronald S., 3,882,689.
Smith, Ernest L., 3,883,066.

Phillips, Richard B., to International Paper Company. Treatment of lignocellulosic material with an aqueous containing cyanide ions and an alkaline earth metal salt. 3,883,391, Cl. 162-70.000.

Picaut, Jack: *See—*
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Pickle, Jack Lamar, Jr., to Farah Manufacturing Company, Inc. Rotary valve for a position sensing. 3,882,898, Cl. 137-625.240.

Pilc, Randolph John; and Schlanger, Gabriel Gary, to Bell Telephone Laboratories, Incorporated. Junction unit alternatively providing branch line broadcasting and exclusive two-branch interconnection. 3,883,691, Cl. 178-73.000.

Pilc, Randolph John: *See—*
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Pimentel, Joseph E.: *See—*
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Pimiskern, Klaus: *See—*
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Pirro, John, Jr.: *See—*
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Pitner, Alfred, to Nadella, a part interest. Device for mounting a radial rolling bearing. 3,883,194, Cl. 308-184.000.

Pitre, Davide: *See—*
Felder, Ernst; and Pitre, Davide, 3,883,535.

Pityo, William D., to Reel Power Equipment, Inc. Bait net. 3,882,624, Cl. 43-12.000.

Plantif, Bernard: *See—*
Doin, Bernard; and Plantif, Bernard, 3,882,673.

Plasser, Erna; Theurer, Josef; and Egleseer, Franz. Mobile track survey apparatus. 3,882,607, Cl. 33-174.00R.

Plastaspec, Inc.: *See—*
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Raabe, Fritz; and de Jong, Eduard, 3,883,487.

Platt, Gerald. Energy responsive thread. 3,883,298, Cl. 8-2.000.

Plegat, Alain Edouard, to Societe Anonyme des Usines Chausson. Suspension device for vehicle drivers cab. 3,882,956, Cl. 180-89.00A.

Plevak, Lubomir: *See—*
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Plonsker, Larry: *See—*
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Plum, Raymond W. Pruning shears. 3,882,599, Cl. 30-270.000.

Plymale, Richard W. Composition in method for treating teeth. 3,882,600, Cl. 32-15.000.

Pneumatic Scale Corporation: *See—*
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Pneumotech AG: *See—*
Glattli, Hans-Heinrich; and Klink, Walter, 3,882,895.

Podcameni, Abelardo; Goncalves, Aldo Alves; and Kirk, Sebastiao. Safety system for controlling the start-up of elevators. 3,882,969, Cl. 187-29.00R.

Podkopai, Nikolai Vasilievich: *See—*
Gurevich, Samuil; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Dykhno, Semen Leonidovich; and Manoilo, Sergei Afanasievich, 3,883,713.

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Pantke, Heinz-Dieter; and Pohl, Ulrich, 3,883,123.

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Polaert, Remy Henri Francois, to U.S. Philips Corporation. Method of forming microchannel plates having curved microchannels. 3,883,335, Cl. 65-4.000.

Polanco, Julio R. Apparatus and method for mounting dental casts. 3,882,602, Cl. 32-32.000.

Polaroid Corporation: *See—*
Bloom, Stanley M.; and Garcia, Paulina P., 3,883,555.
Charkoudian, John C., 3,883,350.
Walworth, Vivian K., 3,883,355.

Pollitt, Harry Wilfred Wallace; and Brown, Arthur William, to Associated Portland Cement Manufacturers Limited, The. Portland cements. 3,883,361, Cl. 106-89.000.

Polysar Limited: *See—*
Kent, Eric George, 3,883,459.

Polysius AG: *See—*
Ritzmann, Horst; Mollenkopf, Hans; Goldmann, Wolf; Wurr, Jurgen; and Korting, Reinhard, 3,883,294.

Ponticello, Gerald S.; Roberts, F. Edward; and Weinstock, Leonard M., to Merck & Co., Inc. 3-Methylene cephalosporins. 3,883,518, Cl. 260-243.00C.

Poole, Donald R.: *See—*
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Portec, Inc.: *See—*
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Portnoy, Harold D.: *See—*
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Portnoy, William M.: *See—*
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Powell, Earl A. Device for squaring the studs and plate members of a wall section. 3,883,117, Cl. 254-16.000.

Powell, Lawson William: *See—*
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PPG Industries, Inc.: *See—*
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Anderson, Carl C.; and Marchetti, Joseph R., 3,883,483.
Michalik, Edmund R.; and Neely, James E., Jr., 3,883,339.

Prab Conveyors, Inc.: *See—*
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Prada, Luis E.; and Bryant, Jack M., to General Electric Company. Ice bucket retrieving apparatus of a refrigerator. 3,883,204, Cl. 312-273.000.

Pradhan, Ashok H.; and Marton, Fred S., to Westinghouse Electric Corporation. Hybrid analyzer for fast load flow and transient solution of power systems. 3,883,724, Cl. 235-151.210.

Pratt, Ivor; and Boschert, Ulrich, to SCM Corporation. Low-shrink thermosetting polymers. 3,883,612, Cl. 260-862.000.

Pre-Cast Concrete Products, Limited: *See—*
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Preisig, Jurg, to Dr. Wrede & Co., Standard-Messgerate Fabrikation. System for metering a substance into liquid flowing in a conduit. 3,882,882, Cl. 137-98.000.

Presnick, Michael C. Collapsible shipping container. 3,883,065, Cl. 229-14.00R.

Prilutsky, Valery Pavlovich: *See—*
Gurevich, Samuil; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Dykhno, Semen Leonidovich; and Manoilo, Sergei Afanasievich, 3,883,713.

Prince Corporation: *See—*
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Pritchard, Frank A.; and Lovelace, Bill N. Inflatable pad. 3,883,053, Cl. 224-5.00P.

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Pritchard-King, Inc.: *See—*
Mooney, Edward L.; and Pritchard, Kenneth L., 3,882,592.

Produits Chimiques, Pechiney-Saint-Gobain: *See—*
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Produits Chimiques Ugine Kuhlmann: *See—*
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Proudian, Andrew P., to Xonics, Incorporated. Ionography imaging chamber for variable distance X-ray source. 3,883,740, Cl. 250-315.000.

Pryor, Timothy R. Z-factor and other diffractographic displacement and profile sensors. 3,883,249, Cl. 356-109.000.

Puckett, Benjamin V. Hydraulic pump with replaceable pumping member. 3,883,272, Cl. 417-383.000.

Pullen, Eric V.: *See—*
Manoogian, Alex; and Pullen, Eric V., 3,882,897.

Pullman Incorporated: *See—*
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Purcell, Robert M. Drain extension. 3,882,683, Cl. 61-13.000.

Puri, Yogishwar Kumar, to International Business Machines Corporation. Process for stress testing FET gates without the use of test patterns. 3,883,802, Cl. 324-73.00R.

Quaker Oats Company, The: *See—*
Bone, David P.; and Shannon, Edward L., 3,883,672.
Brindell, Gordon D.; and Macander, Rudy F., 3,883,601.

Quinzer, Milbert. Model aircraft control. 3,882,632, Cl. 46-77.000.

R. A. Jones & Co. Inc.: *See—*
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R. J. Reynolds Tobacco Company: *See—*
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R.S.R. Corporation: *See—*
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Raabe, Fritz; and de Jong, Eduard, to Plate Bonn Gesellschaft mit beschrankter Haftung. Copolyamides containing caprolactam, lauriclactam and hexamethylene diamine adipate. 3,883,485, Cl. 260-78.00L.

Raabe, Fritz; and de Jong, Eduard, to Plate Bonn Gesellschaft mit beschrankter Haftung. Copolyamides containing caprolactam, lauriclactam and 11-aminoundecanoic acid. 3,883,487, Cl. 260-78.00L.

Rabizzoni, Antonio; and Trovati, Aldo, to Montedison S.p.A. Process for preparing high molecular weight polyisocyanates. 3,883,577, Cl. 260-471.00C.

Racky, Werner; and Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Flame resistant thermoplastic polyesters. 3,883,474, Cl. 260-45.75B.

Racky, Werner; and Cherdron, Harald, to Hoechst Aktiengesellschaft. Moulding composition of thermoplastic materials. 3,883,475, Cl. 260-45.70P.

Raddatz, Dwight B.: *See—*
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Radiochemical Centre Limited, The: *See—*
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Rafaut & Cie: *See—*
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Raganato, Carlo, to Solvay & Cie. Process for the recovery of synthetic fibrils. 3,883,630, Cl. 264-102.000.

Rakhovsky, Vadim Izrailovich; Stotsky, Gennady Izrailovich; Mazing, Maria Andreevna; and Shustryakov, Valery Mikhailovich. Method and apparatus for measuring concentration of substance in its gaseous phase. 3,883,248, Cl. 356-85.000.

Randall, Eric N., to Corning Glass Works. Method of producing glass in a flame. 3,883,336, Cl. 65-18.000.

Randmere, Uno: *See—*
Ozone, Koho; and Randmere, Uno, 3,883,833.

Randriamanentena, Williams, to Compteurs Schlumberger. Electric pulse generating apparatus for internal combustion engines. 3,882,835, Cl. 123-117.00R.

Rank Xerox, Ltd.: *See—*
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Rao, Dhulipala M.; and Sutherland, James F., to Westinghouse Electric Corporation. Temperature measuring apparatus and method with resistance amplifier. 3,882,725, Cl. 73-342.000.

Rao, Gadicherla V. R. Quiet fan with non-radial elements. 3,883,264, Cl. 415-119.000.

Rasmussen, Loren H.: *See—*
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Rationator-Maschinenbau GmbH: *See—*
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Rausing, Anders Ruben. Non-returnable packing containers. 3,883,034, Cl. 220-268.000.

Rausing, Gad Anders, to Ladco Enterprises Limited. Cartridge for firearms. 3,882,777, Cl. 102-38.000.

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Razdan, Raj Kumar: *See—*
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Reams, William H. Speed discrimination clutch. 3,882,783, Cl. 102-79.000.

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Recherche et Industrie Therapeutiques (R.I.T.): *See—*
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Rehm, Donald S. Methods and apparatus for treating acquired myopia and similar or related eye conditions. 3,883,225, Cl. 350-146.000.

Reichert, Andrew Ronald: *See—*
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Reichert, Edgar: *See—*
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Reid, Joyce Pruitt. Bowl brush assembly. 3,883,197, Cl. 312-206.000.

Reiley, Bertrand M.; Muccillo, Edwin J.; and Griffith, Robert G., to Youngstown Sheet and Tube Company. Method of producing seamless tubing. 3,882,595, Cl. 228-158.000.

Reimann, Hans; and Jaret, Robert S., to Schering Corporation. Novel esters of megalomicin A and processes for their preparation. 3,883,507, Cl. 260-210.0AB.

Reinkensmeier, Horst: *See—*
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Remer, Robert K., to Hull-Smith Chemicals, Inc. Absorbent composition. 3,883,438, Cl. 252-1.000.

Renault, Philippe; Dezael, Claude; Deschamps, Andre; and Franckowiak, Sigismond, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for removing sulfur dioxide and sulfur trioxide from waste gas and producing sulfur therefrom. 3,883,638, Cl. 423-242.000.

Renault, Philippe; Deschamps, Andre; and Dezael, Claude, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for purifying industrial gases containing sulfur dioxides. 3,883,643, Cl. 423-574.000.

Rengo Co., Ltd.: *See—*
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Rentmeester, Kenneth Richard; and Godar, Joseph Lambert, Jr., to American Can Company. Easy opening container with safety edge compounds. 3,883,035, Cl. 220-270.000.

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Reynard, Kennard A.; and Rose, Selwyn H., to Horizons Incorporated. Flame-retardant poly (aryloxyphosphazene) copolymers. 3,883,451, Cl. 260-2.00P.

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Ripple, Warren. Loudspeaker equipment. 3,882,962, Cl. 181-154.000.

Ritzmann, Horst; Mollenkopf, Hans; Goldmann, Wolf; Wurr, Jurgen; and Korting, Reinhard, to Polysius AG. Heat treating apparatus. 3,883,294, Cl. 432-107.000.

Rosch, William J., to Oxford Laboratories. Liquid transfer pipetting device with a factory adjustable and sealable calibration stop. 3,882,729, Cl. 73-425.600.

Robbins, Albert H.: *See—*
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Roberts, George C., to Inca-One Corporation. Method for controlling odors in recirculating toilets. 3,883,303, Cl. 21-55.000.

Robertshaw Controls Company: *See—*
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Robertson, James A.; Tunison, David W.; and Fong, Andrew O. C., to FMC Corporation. Alkaline earth carbonates. 3,883,364, Cl. 106-306.000.

Robinson, Frank: *See—*
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Milleville, Bertram J.; Fowler, Herman H.; and Fowler, John H., 3,883,112.

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Roeder, Robert S.; and Siegel, David S., to Sperry Rand Corporation. High frequency radiometric target seeking and tracking apparatus. 3,883,876, Cl. 343-117.00R.

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Roeser, John O., to Otto Engineering, Inc. Mast with movable sail attaching means. 3,882,810, Cl. 114-112.000.

Rogers, Ronald S., to Phillips Petroleum Company. Flashing liquid refrigerant and accumulating unvaporized portions at different levels of a single vessel. 3,882,689, Cl. 62-115.000.

Rohatgi, Pradeep Kumar; and Woodyatt, Louis R., to Bethlehem Steel Corporation. Mold modifications for eliminating freckle defects in roll castings. 3,882,942, Cl. 164-353.000.

Rohm GmbH: *See—*
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Rooz, David L.; Brown, Ford J.; and Merwarth, Richard J., to Western Electric Co., Inc. Apparatus for forming layers of fusible metal on articles. 3,882,816, Cl. 118-57.000.

Roscoe, Joan C. Adjustable chair. 3,883,174, Cl. 297-355.000.

Rose, Boyd W. Method and apparatus for cooling eggs. 3,882,686, Cl. 62-63.000.

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Rosen, Karl Isac Joel. Thread supply device for textile machines. 3,883,083, Cl. 242-47.010.

Rosenberg, Peretz. Fluid regulating devices. 3,882,890, Cl. 137-505.440.

Rosher, Ronald, to United States of America, Navy. Double-base propellant containing organic azide. 3,883,374, Cl. 149-19.800.

Ross, Gerhard; and Reul, Bernhard, to Hoechst Aktiengesellschaft. Method of making stable granules of N-4-[2-(5-chloro-2-methoxybenzamido)-ethyl]-phenylsulfonyl-N'-cyclohexyl urea and its salts and process for preparing same. 3,883,648, Cl. 424-44.000.

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Rothenberger, Gunter, to Ing. Edwin Rothenberger, a/k/a Schweibtechnik- und Industrie-Bedarf. Apparatus for forming necks on pipes. 3,882,707, Cl. 72-117.000.

Rothman, Edward S.; and Moore, Gordon G., to United States of America, Agriculture. Process for the preparation of beta dicarbonyl. 3,883,595, Cl. 260-595.000.

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Rowe, Delton James. Method and apparatus for setting railroad tie plates. 3,882,785, Cl. 104-16.000.

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Kirk, Harry V.; and Rudy, Manfred, 3,883,385.

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Samhammer, Clair A.; Workman, David E.; and King, Marvin M., to Samsonite Corporation. Luggage case hanger apparatus. 3,883,003, Cl. 211-113.000.

Samsonite Corporation: *See—*
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Sankey, Edward L.; and Sutton, Quinton H., to RTE Corporation. Visible break tee-connector. 3,883,208, Cl. 339-92.00R.

Sano, Yozo; Tsuji, Sadahiko; Mashimo, Yukio; and Ito, Masaharu, to Canon Kabushiki Kaisha. Remote control device for camera. 3,883,883, Cl. 47-110316-.

Sargent, Charles L.; and Hoffman, John A., to Thermasan Corporation. Waste disposal system and method. 3,882,799, Cl. 110-9.00R.

Sarnoff, Stanley J.; and Calkins, George B., to Survival Technology, Inc. Hypodermic injection device having cannula covered with resilient sheath. 3,882,863, Cl. 128-218.00F.

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Sasaki, Takeo. Fuel injection control device. 3,882,829, Cl. 123-32.0EA.

Sato, Masamichi, to Rank Xerox, Ltd. Electrophotographic charging method. 3,883,349, Cl. 96-1.00R.

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Savolainen, Unto U.; and Ty, Henry, to Texas Instruments Incorporated. Shadow mask for a color television image tube. 3,883,315, Cl. 29-183.500.

Sawada, Hideo; and Kawamoto, Junji, to Daicel Ltd. Method for preparing cigarette filter of cellulose acetate fibers. 3,882,878, Cl. 131-267.000.

Saxmann, Paul E. Power means. 3,883,261, Cl. 415-7.000.

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Schaefer, Jacob W., to Bell Telephone Laboratories, Incorporated. Guided missile control systems. 3,883,091, Cl. 244-3.130.

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Schaeffer, William R.: *See—*
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Schellenberg, Heinz. Mobile lever arrangement. 3,882,964, Cl. 182-63.000.

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Schierle, Eugen. Apparatus for bending the edge of a foil around the edge of a tray. 3,882,661, Cl. 53-354.000.

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Schirmann, Jean-Pierre; and Thevenon, Marcel, to Produits Chimiques Ugine Kuhlmann. Process for the separation of ketazines from their crude synthesis mixtures. 3,883,401, Cl. 203-91.000.

Schlaefer, Francis W., to Rohm and Haas Company. Method of preparing acrylic acid. 3,883,588, Cl. 260-533.00N.

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Schmedtkord, Ultich; Saile, Roland Franz; and Papajewski, Reinhold, to Singer Company, The. Lubricant pump for sewing machines. 3,883,262, Cl. 415-90.000.

Schmerling, Louis, to Universal Oil Products Company. Preparation of n-alkylarylcarboxamides. 3,883,590, Cl. 260-558.00R.

Schmerling, Louis, to Universal Oil Products Company. Process for the acylation of aromatic hydrocarbons. 3,883,594, Cl. 260-592.000.

Schmidt, Franz; Schenk, Wolfgang; Wurmb, Rolf; Meyer-Simon, Eugen; Thurn, Friedrich M.; and Will, Werner, to BASF Aktiengesellschaft. Thermoplastic molding compositions. 3,883,468, Cl. 260-37.0AL.

Schmidt, Gunter, to Gebr. Hofmann KG. Tool for fastening compensating weights to spoked wheels. 3,882,586, Cl. 29-268.000.

Schmidt, Gunther, to Messerschmitt-Bolkow-Blohm GmbH. Main stream liquid-fuel rocket engine construction. 3,882,676, Cl. 60-245.000.

Schmidt, Hans-Joachim: *See—*
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Schmidt, Horst, to Hoechst Aktiengesellschaft. Ball and socket joints which do not require servicing and have an outer jacket of a thermoplastic, and process for their manufacture. 3,883,256, Cl. 403-141.000.

Schmidt, Karl-Walter, to Daimler-Benz Aktiengesellschaft. Exhaust installation for a rotary piston internal combustion engine. 3,882,681, Cl. 60-901.000.

Schmidt, Ralph Otto, to Interstate Electronics Corporation. Redundant fast fourier transform data handling computer. 3,883,726, Cl. 235-152.000.

Schmit, George N.: *See—*
Oswald, Alexis A.; Valint, Paul L.; and Schmit, George N., 3,883,618.

Schnaibel, Eberhard: *See—*
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Schneider, Allen Paul: *See—*
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Schneider, Friedrich; and Stockel, Dieter, to Rau, G. Method of producing a fibre-reinforced material. 3,882,587, Cl. 29-419.00R.

Schneider, Martin Victor: *See—*
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Schneider, Walter. Container in particular for use as bathroom cabinet. 3,883,027, Cl. 220-9.00F.

Schnyder, Edouard; and Liengme, Marcel, to Omega, Louis Brandt & Frere S.A. Self-lubrication bearing member. 3,883,314, Cl. 29-182.500.

Schoer, Heinz: *See—*
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Scholtholt, Hans: *See—*
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Schonegg, Louis E.: *See—*
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Schott, Charles M., Jr., to Gloucester Engineering Co. Inc. Continuous reciprocating web drive means working with intermittent heat seal forming means. 3,883,389, Cl. 156-583.000.

Schrieken, Jan, to Koninklijke Machinefabriek Stork B.V. Turbine. 3,883,265, Cl. 415-147.000.

Schroter, Herbert, to Ciba-Geigy Corporation. New 1,1a,6,10 b-tetrahydro-1,6-methano-dibenzo[a,e]cyclopropa[c]cycloheptene derivatives. 3,883,537, Cl. 260-293.620.

Schroter, Wolfgang: *See—*
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Schrotz, Kurt; and Becker, Werner, to Dymo Industries, Inc. Device for the incremental advancement of a label tape. 3,883,058, Cl. 226-53.000.

Schudel, Peter: *See—*
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Schulte, Rudolf R.; and Portnoy, Harold D., to Heyer-Schulte Corporation. Retractor for soft tissue for example brain tissue. 3,882,855, Cl. 128-20.000.

Schultze, Werner: *See—*
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Schulz, Heinz; and Arndt, Friedrich, to Schering AG. 1,2,3-Thiadiazole derivatives. 3,883,547, Cl. 260-306.80D.

Schulze, Heinz, to Veb Pentacon Dresden. Photographic camera having an interchangeable objective. 3,883,881, Cl. 354-46.000.

Schutzenauer, Dieter: *See—*
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Schwan, Thomas J. 4-(2-Chloroethylamino)-1-methylpiperidine dihydrochloride. 3,883,539, Cl. 260-293.870.

Schwartz, Alfred A.; and Stewart, Joseph R., to International Business Machines Corporation. Digital vector generator. 3,883,728, Cl. 235-152.000.

Schwartz, Bertram: *See—*
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Schwarz, John B.: *See—*
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Schwarz, Wilhelm, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Buffer having a buffer body of foamed synthetic material. 3,883,127, Cl. 267-140.000.

Schwarzler, Peter: *See—*
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Schweitzer, Earl O.: *See—*
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Scott, Robert: *See—*
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Scott, Robert N.: *See—*
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Sebastian, Robert W.; Olson, Harry W.; and Silberg, Thomas F., to Molex Incorporated. Cam operated, pivoted contact switch assembly having split housing and safety cover. 3,883,705, Cl. 200-6.00B.

Seeber, Timothy Howard: *See—*
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Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Tandem arrays of in-phase couplers. 3,883,827, Cl. 333-10.000.

Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Transformer with adjustable turns ratio. 3,883,829, Cl. 333-11.000.

Seiler, Karl; and Rau, Karlheinz, to Heraeus-Schott Quarzschmelze GmbH. Tubular quartz glass body. 3,882,901, Cl. 138-141.000.

Seiller, Pierre Francois Xavier, to Societe a Responsabilite Limitee dite: Le Presentoir Seiller. Display unit. 3,883,037, Cl. 206-5.000.

Seip, Detlev: *See—*
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Seki, Takeo: *See—*
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Sekiya, Mamoru, to Shin-Shirasuna Electric Corporation. Low-frequency power amplifier. 3,883,813, Cl. 330-13.000.

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Selz, John C. Collapsible wall container. 3,883,026, Cl. 220-6.000.

Semiconductor Research Foundation and Hitachi, Ltd.: *See—*
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Shallenberger, Dennis J.: *See—*
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Shanok, Victor; Shanok, Jesse P.; and Laszlo, Joseph, to Silvatrim Associates. Key mounting device for holding a group of selected keys in a predetermined arrangement. 3,882,704, Cl. 70-456.00R.
Shapiro, Stanley; and Caron, Ronald N., to Olin Corporation. Processing copper base alloys. 3,882,712, Cl. 72-364.000.
Shark, Sam: *See—*
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Sharps Associates: *See—*
Harris, Louis Selig; Pars, Harry George; Razdan, Raj Kumar; and Dren, Anthony Thomas, 3,883,657.
Shatila, Mounir A., to American Potato Company. Wetting the surfaces of dough pieces prior to frying to eliminate blistering. 3,883,671, Cl. 426-303.000.
Shen, Tsung-Ying; and Jones, Howard, to Merck & Co., Inc. Treatment of pain, fever or inflammation with 5-fluoro-2-methyl-1-(p-methylsulfinyl-benzylidene)-3-indenylacetaldehyde. 3,883,660, Cl. 424-303.000.
Shephard, Bernard William; and Draper, Kenneth George, to Ipeco Europe Limited. Seat with thigh support. 3,883,173, Cl. 297-312.000.
Shepherd, Bryan Peter: *See—*
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Sherwood, Kenneth C., to Kae-Tee Development Corporation. Simulated bowling game. 3,883,141, Cl. 273-121.00A.
Shibata, Hiroshi; Yamazaki, Yasuo; Kokubu, Yoshikazu; and Okazaki, Isao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Multiple vertical diaphragm type electrolytic cell for producing caustic soda. 3,883,415, Cl. 204-258.000.
Shibata Kagaku Kikai Kogyo Kabushiki: *See—*
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Shiga, Shujiro: *See—*
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Shimanckas, William J., to Outboard Marine Corporation. Marine propulsion reversing mechanism. 3,882,814, Cl. 115-34.00R.
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Shinaki, Michio, to Rank Xerox, Ltd. Detecting and removing apparatus for skew fed sheets. 3,883,134, Cl. 271-261.000.
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Shrader, Robert L.; and Tsujimoto, Kazumi N., to Airco, Inc. Vapor source assembly. 3,883,679, Cl. 13-31.000.
Shugarman, Alvin E.; and Linder, Lowell E., to Electro-Clamp Corporation. Non-shearing solderless electrical connector. 3,883,211, Cl. 339-266.00R.
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Silverstein, Abraham. Glow plate for internal combustion engine. 3,882,841, Cl. 123-193.0CP.
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Simon, Michael; and Rose, Rolf-Dieter. Electromagnetically operated overhung and/or underhung suspension vehicle. 3,882,789, Cl. 104-148.0MS.
Simonsen, Ole Finn, to Dominion Bridge Company Limited. Telescoping post. 3,883,106, Cl. 248-354.00R.
Simpatico, Anthony V., to Avon Products, Inc. Rotary extractor method and apparatus. 3,883,016, Cl. 214-152.000.
Simpkins, Kenneth Wayne. Bicycle conversion device. 3,883,157, Cl. 280-287.000.
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Sinnreich, Manfred. Surgical dilators having insufflating means. 3,882,852, Cl. 128-4.000.
Sivley, Theodore Edward, to Whamco. Electrical power generating apparatus. 3,883,794, Cl. 322-41.000.
Skeeters, William Ronald, to Hasbro Industries, Inc. Device for coating elements of continuous length. 3,882,819, Cl. 118-405.000.
Slaga, Case J., to Advertising Metal Display Co. Cantilever movable panel display rack. 3,883,004, Cl. 211-162.000.
Slaughter, Raymond Jeffrey, to British Insulated Callender's Cables Limited. Optical guides. 3,883,218, Cl. 350-96.00B.
Slinger, William R., to Treadwell Corporation. Air leak detector. 3,882,715, Cl. 73-46.000.
Sloan, Charles T.; and Zaccagnino, Nicholas V., to Bunker Ramo Corporation. Mechanism for bi-directionally driving a print head. 3,882,988, Cl. 197-66.000.
Sloot, Dirk, to Lever Brothers Company. Improving gouda cheese flavor. 3,883,668, Cl. 426-535.000.
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Stache, Ulrich; and Radscheit, Kurt, to Hoechst Aktiengesellschaft. Process for the manaufacture of β-(3-oxo-7α-thioacyl-17β-hydroxy-4-androsten-17α-yl)-propionic acid α-lactones. 3,883,512, Cl. 260-239.570.
Stack, Joseph S., to United States of America, Army. Thermally stable nitrostarch. 3,883,378, Cl. 149-108.000.
Stackman, Robert W.; and Vogt, Clifford M., to Celanese Corporation. Solutions of tetrachlorinated aromatic polyesters in methylene chloride. 3,883,467, Cl. 260-33.80R.
Stackman, Robert W.; and Berardinelli, Frank M., to Celanese Corporation. Composition for use in the formation of three-dimensional flame retardant articles. 3,883,471, Cl. 260-40.00R.
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Thomas, Lowell S.; and Cleereman, Kenneth J., to Dow Chemical Company, The. Method for making expandable plastics. 3,883,625, Cl. 264-45.600.
Thomas, Robert M., to GTE Automatic Electric (Canada) Ltd. Analog-to-digital and digital-to-analog converter apparatus. 3,883,864, Cl. 340-347.0AD.
Thomas, Stanley E., Jr. Flexible, reusable fastener. 3,882,573, Cl. 24-30.50T.
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Tomkiewicz, Thaddeus K., to Molex Incorporated. Low insertion force connector for modular circuit packages. 3,883,207, Cl. 339-75.00M.
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van der Waals, Jacobus; and Toonen, Petrus J. J., 3,882,888.
Topolsky, Vladimir Filippovich: *See—*
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Toukan, Sameeh Said: *See—*
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Tourek, James C. Beavertooth cutting edge. 3,882,749, Cl. 83-651.000.
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Townsley, Philip McNair, to John Dunn Agencies Ltd. Material for biological degradation of petroleum. 3,883,397, Cl. 195-100.000.
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Toyo Soda Manufacturing Co.; Ltd.: *See—*
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Jones, Cecil R., 3,883,012.
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Trigg, Harry E., to International Transportation Service Company. Tiedown for traffic counter hose. 3,883,102, Cl. 248-75.000.
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Trofimenko, Swiatoslaw, to du Pont de Nemours, E. I., and Company. Bis(dialkylaminomethyl)-phenylenedipalladium (II) compounds. 3,883,570, Cl. 260-429.00R.
Troisi, George A.; and Gordon, Julian D., to Dunkin' Donuts Incorporated. Automatic donut making system. 3,882,768, Cl. 99-352.000.
Troonen, Hugo; Roelants, Piet; and Boon, Bernard, to Recherche et Industrie Therapeutiques (R.I.T.). New 6-aminopenicillanic acid derivative. 3,883,511, Cl. 260-239.100.
Trosper, Milton French, Jr.: *See—*
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Troutman, James D. Telescopic sight mounting means. 3,882,609, Cl. 33-260.000.
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Troy, Amedee Roy; and Geyman, James M., to Chrysler Corporation. Dry lubricated materials. 3,883,147, Cl. 277-96.00R.
Troy Equine Products: *See—*
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Try, Robert W.; and Campbell, David W., to Moore Dry Kiln Company of Oregon. Method and apparatus for limiting the concentration of combustible volatiles in dryer emissions. 3,882,612, Cl. 34-27.000.
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Tsen, Cho C.; and Hoover, William J., to Kansas State University Research Foundation. Method of increasing the protein content of wheat flour based, low shortening, low sugar baked and fried products. 3,883,669, Cl. 426-549.000.
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Tsunoda, Yoshito, to Hitachi, Ltd. Random phase plate and optical system incorporating said plate. 3,883,232, Cl. 350-314.000.
Tsurushima, Katsuaki, to Sony Corporation. Decoder apparatus with logic circuit for use with a four channel stereo. 3,883,692, Cl. 179-1.0GQ.
Tsutsumi, Takashi: *See—*
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Tundermann, Werner O., to Colgate-Palmolive Company. Disposable foot care article and method of manufacture thereof. 3,882,868, Cl. 128-260.000.
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Turner, Abner B., to Westinghouse Electric Corporation. Self-contained waste treatment system. 3,882,552, Cl. 4-10.000.
Turner, John, to Geo. W. King Limited. Conveyor systems. 3,882,787, Cl. 104-96.000.
Turner, Robert J.; Booth, David L.; and Berry, Richard D., to Morton-Norwich Products, Inc. 2-(2'ethylhexyl)-quinizarin. 3,883,568, Cl. 260-383.000.
Turner, Robert R.; and Hart, Ralph H., to Aerofall Mills Limited. Vertical classifier. 3,883,423, Cl. 209-143.000.
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Mansour, Momtaz N.; Wayland, Harold J.; and Chapman, Carl P., 3,883,689.
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Cheng, Dah Yu. Reversed cowl flap inlet thrust augmentor. 3,883,095, Cl. 244-53.00B.
David, Robert M.; and Portnoy, William M. Insulated electrocardiographic electrodes. 3,882,846, Cl. 128-2.06E.
Ohlson, John E.; and Williams, William F. System for interference signal nulling by polarization adjustment. 3,883,872, Cl. 343-100.0PE.
Wang, Taylor G.; Saffren, Melvin M.; and Elleman, Daniel D. Material suspension within an acoustically excited resonant chamber. 3,882,732, Cl. 73-505.000.
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Unuma, Nobumitsu; and Nomura, Yasushi, to Hitachi, Ltd. Method of optically measuring the absorption of light having a specific wavelength by a sample, by adjusting the output of a detector responsive to light having wavelengths longer than the specific wavelength to a zero level. 3,883,250, Cl. 356-184.000.
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Uraya, Toru, to Kanebo Ltd. Belt conveyer. 3,882,995, Cl. 198-165.000.
Uzzell, Rudyard S., Jr., to Natural Energy Systems, Inc. Method and apparatus for generating power from wind currents. 3,883,750, Cl. 290-55.000.
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Van Assche, Daniel; and Uehlinger, Hanspeter, to Sandoz Ltd. 4-(2-Nitro-4-sulfo- or optionally substituted sulfamoylanilino)phenyl-azo-phenyl dyes. 3,883,503, Cl. 260-206.000.
Vandenberg, Edwin James, to Hercules Incorporated. Polymerization of 1,4-halosubstituted-2,3-epoxybutanes. 3,883,449, Cl. 260-2.00A.
Vanderveer, Fredric B., to Leigh Products, Inc. Sectional handle. 3,882,569, Cl. 16-114.00R.
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Van Linder, Basil R.: *See—*
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Van Linder, Ronald C.; and Van Linder, Basil R., to Kalamazoo Manufacturing Company. Grid feeder. 3,882,992, Cl. 198-24.000.
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Van Praag, Clifford. Film take-up reel. 3,883,087, Cl. 242-71.800.
van Roosmalen, Johannes Hendrikus Theodorus; and Vermulst, Joannes Cornelis, to U.S. Philips Corporation. Device comprising a television camera tube. 3,883,773, Cl. 315-10.000.
Varela, Arthur A. Golf club carrier. 3,883,150, Cl. 280-47.190.
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Viles, Alan H; and Smith, Gary C., Jr., to Abex Corporation. Check valve. 3,882,891, Cl. 137-512.150.

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Volkert, John K., to Compak Systems, Inc. Booklet with attached envelopes. 3,883,069, Cl. 229-73.000.

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von Kohorn, Henry, to Schlager, John J. Electric indicator system for ball games. 3,883,860, Cl. 340-323.000.

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Vuaille, Andre. Control rods for the flow per stroke of piston machines, especially injection pumps, and in these machines themselves. 3,883,274, Cl. 417-494.000.

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Wagner, William G., to Monsanto Company. Ethylene/vinyl chloride compositions. 3,883,461, Cl. 260-27.00R.

Wakabayashi, Takao, to Nakanishi Metal Works Co., Ltd. Tow conveyor. 3,882,793, Cl. 104-170.000.

Wako, Kazuo; and Konishi, Kenichi, to Matsushita Electronics Corporation. Electric light-emitting apparatus. 3,883,772, Cl. 313-499.000.

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Waltman, Robert E.; Coast, John B.; and Hinz, Gary A., to Ethyl Corporation. Apparatus for controlling the extrusion of parisons. 3,883,280, Cl. 425-162.000.

Waltz, H. Franklin, to Haas-Jordan Company. Umbrella tip cup. 3,882,880, Cl. 135-44.000.

Walworth, Vivian K., to Polaroid Corporation. Crystallization of silver halide within an aqueous mixture of a water soluble silver complex and a polymeric colloid binder. 3,883,355, Cl. 96-114.000.

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Watanabe, Kenichi. Loud speaker for telephone. 3,883,694, Cl. 179-1.0HF.

Watanabe, Masae, to Yamaha Hatsudoki Kabushiki Kaisha. Hydraulic shock absorber. 3,882,977, Cl. 188-322.000.

Watanabe, Takeaki; Sakasegawa, Hiroshi; and Tanabe, Kuniyuki, to Nissan Motor Company Limited. Fuel cooling device in an automotive vehicle equipped with an air conditioner. 3,882,692, Cl. 62-316.000.

Watkins, Kenneth M.: *See—*
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Watt, Gordon James. Portable precision hole finishing device. 3,882,640, Cl. 51-34.00H.

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Weber, John R.; Miller, Richard L., Jr.; and Copple, David R. Egg handling system. 3,882,769, Cl. 99-484.000.

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Weckmann, Ferdinand: *See—*
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Weight, Wilbur J.: *See—*
Cagle, Albert W.; Greer, Wayne E.; and Weight, Wilbur J., 3,883,682.

Weigold, Siegfried: *See—*
Baumgarte, Ulrich; Weigold, Siegfried; and Scheuermann, Werner, 3,883,299.

Weiner, Maurice, to United States of America, Army. Dielectric-YIG turner for bulk oscillators. 3,883,824, Cl. 331-107.00G.

Weinstock, Joseph: *See—*
Sutton, Blaine M.; and Weinstock, Joseph, 3,883,546.

Weinstock, Leonard M.: *See—*
Ponticello, Gerald S.; Roberts, F. Edward; and Weinstock, Leonard M., 3,883,518.

Weiper, Karl Heinz: *See—*
Hock, Karl; Nieroba, Alfred; and Weiper, Karl Heinz, 3,882,820.

Weisenberger, Richard J. High fidelity solid state mobile amplifier. 3,883,814, Cl. 330-14.000.

Weisglass, Louis L.; and Flieder, Robert A., to Berkey Photo, Inc. Light color regulating apparatus. 3,883,243, Cl. 355-35.000.

Weitz, Ferdinand: *See—*
Zwiep, Theodore C.; Marcus, Konrad H.; and Weitz, Ferdinand, 3,882,570.

Wellman, Lester R. Opener/re-closer for sealed containers. 3,882,999, Cl. 206-216.000.

Wells, Alan W.: *See—*
Bailey, John M.; Stratton, Michael K.; and Wells, Alan W., 3,882,842.

Wenner, John G., to Universal Oil Products Company. Sulfur oxides removal system. 3,883,326, Cl. 55-34.000.

Wenzlaff, Robert, to Breakthrough Research & Development Corp. Automotive distributor circuit breaker with eccentrically mounted, roller bearing type cam. 3,883,707, Cl. 200-30.00R.

Wenzlow, Ludwig, to Chromalloy American Corporation. Door stop for a laterally movable door. 3,883,165, Cl. 292-302.000.

Wern, Lars Ake: *See—*
Jacobaeus, Anton Christian; and Wern, Lars Ake, 3,883,686.

Werner, Hans, to Werner & Pfleiderer. Screw extruder. 3,883,122, Cl. 259-192.000.

Werner & Pfleiderer: *See—*
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Wessler, Gerald A.: *See—*
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Western Electric Co., Inc.: *See—*
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Chayka, George A.; Persson, Eric J.; and Ziobro, Norbert M., 3,882,597.
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Westinghouse Air Brake Company: *See—*
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Westinghouse Brake and Signal Co., Ltd.: *See—*
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Westinghouse Canada Limited: *See—*
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Westinghouse Electric Corporation: *See—*
Barnett, Eugene J., 3,882,843.
Cotton, John F., 3,883,781.
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Kearney, Joseph P., 3,883,763.
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Pradhan, Ashok H.; and Marton, Fred S., 3,883,724.
Rao, Dhulipala M.; and Sutherland, James F., 3,882,725.
Suozzo, John, 3,882,968.
Turner, Abner B., 3,882,552.
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Wetroff, Georges: *See—*
Antonini, Albert; Kaziz, Claude; and Wetroff, Georges, 3,883,605.

Whamco: *See—*
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Whirlpool Corporation: *See—*
Frohbieter, Edwin H., 3,882,771.
Lindenschmidt, Robert E., 3,882,637.
Tillman, Harry L., 3,883,198.

Whitaker, Raymond; and Haslam, Bryan S., to Xerox Corporation. Aperture adjustment in optical assembly. 3,883,244, Cl. 355-71.000.

White, James F.: *See—*
Milberger, Ernest C.; Dolhyj, Serge R.; and White, James F., 3,883,573.

Whitley, William P., Jr. Auxiliary roller wheel device for immersible boat trailers. 3,883,159, Cl. 280-414.00R.

Whittaker, Arthur V.; Whittaker, Ralph E., Jr.; Goldstrom, Robert A.; and Shipko, Frederick J., to Arco Nuclear Company. Radio opaque gloves. 3,883,749, Cl. 250-516.000.

Whittaker, Ralph E., Jr.: *See—*
Whittaker, Arthur V.; Whittaker, Ralph E., Jr.; Goldstrom, Robert A.; and Shipko, Frederick J., 3,883,749.

Wickham, David John, to Westinghouse Brake and Signal Co., Ltd. Fluid pressure apparatus. 3,882,723, Cl. 73-199.000.

Wickham, David John, to Westinghouse Brake & Signal Co. Ltd. Empty/load control valve apparatus. 3,883,188, Cl. 303-23.00R.

Wiczer, Max. Key for lock anti-pick device. 3,882,702, Cl. 70-406.000.

Widen, John Ake, to AGA Aktiebolag. Automatic analyzing arrangement. 3,883,306, Cl. 23-253.00R.

Wiegmann, William: *See—*
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Wiener, Liviu B. Treating of cast materials in the molten state. 3,882,922, Cl. 164-53.000.

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Wilhelm Ruf OHG, Firma: *See—*
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Wilhelm, William G., to Towmotor Corporation. Fork level indicator for a lift truck. 3,883,021, Cl. 214-672.000.

Wilkinson, Woods, Carmody, Meadows & Hall: *See—*
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Will, Werner: *See—*
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Willand, Allan Howard: *See—*
Kolensky, Leo Michael; Pilc, Randolph John; Schaefer, Walter Rudolph; and Willand, Allan Howard, 3,883,690.

Willard, Frank G., to Westinghouse Electric Corporation. Integrating analog to digital converter with variable time base. 3,883,863, Cl. 340-347.0NT.

Williams, Duane A.: *See—*
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Williams, Horace A. Pressure sensing and responding device. 3,882,900, Cl. 137-625.340.

Williams, Larry W. Combined snow-mower. 3,882,615, Cl. 37-43.00L.

Williams, Robert H. Four-phase cycle planetating piston internal combustion engine. 3,882,827, Cl. 123-8.270.

Williams, Thurston V. Adjustable bit holder. 3,882,582, Cl. 29-105.00R.

Williams, William F.: *See—*
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Williamson, Richard C.; and Stern, Ernest, to Massachusetts Institute of Technology. Surface wave devices. 3,883,831, Cl. 333-30.00R.

Williamson, William Aplin, to Clark Equipment Company. Control for dual path hydrostatic drive. 3,882,679, Cl. 60-484.000.

Willigman, John: *See—*
Obermann, George; and Willigman, John, 3,882,734.

Willshire, Ian Robert: *See—*
Gregory, Harold; and Willshire, Ian Robert, 3,883,497.

Wilson, Freddie W.; Robbins, Albert H.; Ford, Allen G.; and Wilson, Robert A., to United States of America, Navy. Ride quality control for surface effects craft. 3,882,960, Cl. 180-118.000.

Wilson, Joseph M. Clothes dryer. 3,882,613, Cl. 34-48.000.

Wilson, Julia P. Stocking puller. 3,883,052, Cl. 223-111.000.

Wilson, Robert A.: *See—*
Wilson, Freddie W.; Robbins, Albert H.; Ford, Allen G.; and Wilson, Robert A., 3,882,960.

Wilson, Robert M., to Dare Products, Incorporated. Electrical fence-tester having a plurality of connectors for connecting the tester components. 3,883,804, Cl. 324-122.000.

Windelbandt, Herbert. Apparatus for the production of hot gases. 3,883,290, Cl. 431-168.000.

Winkle, Gunther; Schwarzler, Peter; Otto, Peter H.; Molzer, Peter; and Walkner, Christian, to Krauss-Maffei A.G. Rail system for magnetic suspension vehicles. 3,882,790, Cl. 104-148.0MS.

Winter, Hermann; Smolinski, Manfred; Wolf, Hans-Georg; Roll, Harry; Hoffmann, Kurt; and Jacob, Helmut, to Chemische Werke Huls Aktiengesellschaft. Process for the preparation of emulsifier-containing polyvinyl chloride or vinyl chloride copolymer powders. 3,883,494, Cl. 260-92.80A.

Wirstlin, Arthur N.: *See—*
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Wirth, Wayne M., to Minnesota Mining and Manufacturing Company. Locking latch for a disk cartridge. 3,882,701, Cl. 70-63.000.

Wiseman, Gerald M.: *See—*
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Wittern, Francis A.; Albright, Henry J.; and Wirstlin, Arthur N., to Fawn Engineering Co. Vending machine flat helix discharge unit. 3,883,039, Cl. 221-75.000.

Wittlinger, Harold Allen, to RCA Corporation. Temperature sensing circuit. 3,882,728, Cl. 73-362.0SC.

Witts, John W.: *See—*
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Wohnhas, Adolf: *See—*
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Woitun, Eberhard; Narr, Berthold; and Schroter, Wolfgang, to Boehringer Ingelheim G.m.b.H. Pharmaceutical compositions containing a 2-(aminoalkylamino)-4-amino-thieno[3,2-d]pyrimidine and method of use. 3,883,651, Cl. 424-248.000.

Wolf, Erhard H.; and Duffy, Brian J., to American Hoechst Corporation. Quinazoline derivatives. 3,883,524, Cl. 260-247.20A.

Wolf-Gerate GmbH: *See—*
Achenbach, Dieter; Joswig, Siegfried Adolf; and Kolb, Walter, 3,883,789.

Wolf, Hans-Georg: *See—*
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Wolf, Irving W.: *See—*
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Wolfe, Denis G.; and Danon, Joseph S., to Robertshaw Controls Company. Thermal responsive switch. 3,883,837, Cl. 337-326.000.

Wolff, Robert C. Liquid transfer system. 3,883,269, Cl. 417-122.000.

Woligrocki, Gordon. Transit system. 3,882,786, Cl. 104-89.000.

Womack, Richard Arthur: *See—*
Cutting, Dale Emerson; Womack, Richard Arthur; and MacGuffie, Joseph Vernon, 3,883,421.

Woo, Charles; and Bichard, John A., to Exxon Research and Engineering Company. Two-stage synthesis of lubricating oil. 3,883,417, Cl. 208-49.000.

Wood, George F., II. Signal means for vehicle retractable step. 3,883,844, Cl. 340-52.00R.

Woodall, Hubert C., Jr., to Carolina Narrow Fabric Company. Orthopedic cast having protective sleeve. 3,882,857, Cl. 128-90.000.

Wooddell, John H.: *See—*
Oldham, Robert R.; and Wooddell, John H., 3,883,427.

Woods, Stephen. Air valve pressure diaphragm carburetor. 3,883,622, Cl. 261-78.00R.

Woodyatt, Louis R.: *See—*
Rohatgi, Pradeep Kumar; and Woodyatt, Louis R., 3,882,942.

Woolley, Robert E., to Bradbury, Linda. Telephone timer. 3,882,670, Cl. 58-145.00K.

Workman, David E.: *See—*
Samhammer, Clair A.; Workman, David E.; and King, Marvin M., 3,883,003.

World Color Press, Inc.: *See—*
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Wright, Charles M., to United States of America, Navy. 1-Azido-1,1-dinitroalkanes, useful as propellants. 3,883,377, Cl. 149-88.000.

Wright, George C.; Bayless, Allan V.; and Gray, Joseph E., to Morton-Norwich Products, Inc. 3-Benzylpyrido [3,4-e]-as-triazine and 1,2-dihydro-3-benzylpyrido[3,4-e]-as-triazine hydrochloride. 3,883,526, Cl. 260-248.0AS.

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Yagihara, Hiroshi: *See—*
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Yamada, Junichi; and Terashima, Etuzo, to Hitachi, Ltd. Colour picture tubes. 3,883,770, Cl. 313-403.000.
Yamaguchi, Masaru: *See—*
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Yamaguchi, Tetsuo: *See—*
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Yamaguchi, Toshiaki; Narita, Keizo; and Wada, Kimihiro, to Nishimura Seisakusho Co., Ltd. Film wrapping apparatus. 3,883,084, Cl. 242-56.00R.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
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Yamamoto, Katsuro, to Bridgestone Liquefied Gas Company, Ltd. Method of constructing a low temperature liquefied gas tank of a membrane type. 3,882,591, Cl. 29-455.000.
Yamamoto, Kenzo: *See—*
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Yamanaka, Shigeru; and Mitsugi, Koji, to Ajinomoto Co., Inc. Method of producing cells of algae. 3,882,635, Cl. 47-1.400.
Yamanouchi, Kenzo: *See—*
Ikegami, Yoshizo; and Yamanouchi, Kenzo, 3,883,684.
Yamao, Takashi; and Shiga, Shujiro, to Sumitomo Chemical Company, Ltd. Method for producing copolymers of 1-olefins with conjugated dienes. 3,883,493, Cl. 260-85.30R.
Yamashita, Tadaoki: *See—*
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Yamazaki, Eiichi; Maruyama, Koichi; Ueda, Toshio; and Ogura, Iwao, to Hitachi, Ltd. Exposure apparatus for manufacturing fluorescent screens of colour picture tubes. 3,883,880, Cl. 354-1.000.
Yamazaki, Yasuo: *See—*
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Yan, Tsoung Y., to Mobil Oil Corporation. Stabilization of lube oil. 3,883,416, Cl. 208-3.000.
Yanagioka, Hiroshi: *See—*
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Yancey, John W., to Caterpillar Tractor Company. Stress-Relieved Weldment for Box Sections. 3,882,654, Cl. 52-758.00B.
Yanus, John F.: *See—*
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Yasumatsuya, Noboru: *See—*
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Yates, James E.; and Washecheck, Paul H., to Continental Oil Company. Friable compositions and process for producing same. 3,883,362, Cl. 106-268.000.
Yates, James E.; and Pinto, Wilfred M., to Continental Oil Company. Friable composition and process. 3,883,363, Cl. 106-268.000.
Yentsch, Carl H.: *See—*
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Yokomichi, Isao: *See—*
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Yokoyama, Iwao; Sasaki, Hiroo; Tanaka, Tetsuo; and Kihara, Keiichi, to Toyo Soda Manufacturing Co., Ltd. Process for preparing esters of omega-aminododecanoic acid. 3,883,586, Cl. 260-404.000.
Yonemaru, Kenichi: *See—*
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Yoshida, Takashi: *See—*
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Young, Ferdinand, Jr.: *See—*
Lowderman, Ernest W.; Barrington, Leland L.; and Young, Ferdinand, Jr., 3,883,295.
Young, John M., to Syntex (U.S.A.) Inc. Acne treatment. 3,883,661, Cl. 424-320.000.
Youngman, Gary A., to Universal Oil Products Company. Moving-bed reactor with withdrawal of catalyst and effluent through the same conduit. 3,883,312, Cl. 23-288.00G.
Youngscap, Richard L., to ETS, Ltd. Combined fluid and magnetic transmission system. 3,882,791, Cl. 104-154.000.
Youngstown Sheet and Tube Company: *See—*
Reiley, Bertrand M.; Muccillo, Edwin J.; and Griffith, Robert G., 3,882,595.
Yumde, Yasufumi; and Furuhata, Takashi, to Hitachi, Ltd. Picture signal conversion system. 3,883,685, Cl. 178-6.800.
Yun, Siang-Shen Johnson: *See—*
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Zabukovec, Claude: *See—*
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Zaccagnino, Nicholas V.: *See—*
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Zackheim, Eli A. Enema syringe. 3,882,866, Cl. 128-235.000.
Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
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Zamkov, Vadim Nikolaevich: *See—*
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Zangenfeind, Helmut; and Nagel, Erich, to Agfa-Gevaert Aktiengesellschaft. Apparatus for detecting and guiding the leaders of photographic roll films. 3,883,086, Cl. 242-65.000.
Zarouni, Alfred, to Bell Telephone Laboratories, Incorporated. Communication path fault detector. 3,883,702, Cl. 179-175.30R.
Zelina, William B.; and Allison, Joseph M., to McGraw-Edison. Three phase sequence insensitive full range SCR firing circuit. 3,883,791, Cl. 321-5.000.
Zeltser, Izmail Grigorievich: *See—*
Chemeris, Oleg Nikolaevich; Tretyakov, Evgeny Vasilievich; Didkovsky, Viktor Kirillovich; Kanfer, Vilen Davidovich; Paschenko, Nikolai Konstantinovich; Zeltser, Izmail Grigorievich; Ljukimson, Grigory Mikhailovich; Bashkatov, Alexandr Nikolaevich; Melnikov, Boris Nikolaevich; Medzhibozhsky, Miron Yakovlevich; Goldberg, Ilya Alexandrovich; Juzefovsky, Izrail Abramovich; Ratmansky, Rafail Davidovich; Irkha, Viktor Nikolaevich; Borisov, Jury Nikolaevich; and Kurochkin, Fedor Filippovich, 3,883,078.
Zenith Radio Corporation: *See—*
Kiteley, Terence J., 3,883,779.
Zero Gage Company: *See—*
Macklyn, Bruce A., 3,882,604.
Macklyn, Bruce A., 3,882,608.
Zeuthen, Karl Gustav, to Rexomi A/S. Electrophotographic copying machine and a box-shaped magazine for use in such a machine. 3,883,241, Cl. 355-3.00R.
Zhdanovich, Jury Vasilievich; Lokshin, Galina Borisovna; Kuzovkov, Alexandr Dmitrievich; Rudaya, Sarra Markovna; and Solovieva, Nadezhda Konstantinovna. Chromomycinone glycoside. 3,883,506, Cl. 260-210.0AB.
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Zimmer Aktiengesellschaft: *See—*
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Zimmerman, Donald. Dozer drag-beam. 3,882,944, Cl. 172-199.000.
Zimmermann, Manfred: *See—*
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Zimmermann, Wolfgang: *See—*
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Zink, Stanley C., to Black Clawson Company, The. Doctor Blade Assembly. 3,882,817, Cl. 118-126.000.
Ziobro, Norbert M.: *See—*
Chayka, George A.; Persson, Eric J.; and Ziobro, Norbert M., 3,882,597.
Zipper, Walter J. Clip for spectacles. 3,883,236, Cl. 351-112.000.
Zook, Donald G.: *See—*
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Zuckerman, James E., Jr.: *See—*
Thomas, Charles A., Jr.; Zuckerman, James E., Jr.; and Morse, Stephen A., 3,883,396.
Zwiep, Theodore C.; Marcus, Konrad H.; and Weitz, Ferdinand, to Prince Corporation. Method and apparatus for removing an animal foot in the vicinity of the tarsus joint. 3,882,570, Cl. 17-1.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF MAY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Murphy, Preston V., to Thermo Electron Corp. Electret acoustic transducer. Re. 28,420. 5–13–75, Cl. 179—111.
Osrow, Leonard, to Osrow Products Co., Inc. Hand steamer with ironing sole. Re. 28,418, 5–13–75, Cl. 38—69.
Osrow Products Co., Inc.: *See*—
Osrow, Leonard. Re. 28,418.
Schoerner, Roger J., to Southwire Co. Method of fabricating aluminum alloy rod. Re. 28,419, 5–13–75, Cl. 148—2.

LIST OF PLANT PATENTEES

Boll, Herschel L.: *See*—
Cook, Albert B. 3,718.
Hagerstrom, Marion. 3,717.
Cook, Albert B., to Herschel L. Boll. Strawberry plant. 3,718, 5–13–75, Cl. 49.
Hagerstrom, Marion, to Herschel L. Boll. Raspberry plant. 3,717, 5–13–75, Cl. 46.
Weeks, O. L. Rose plant. 3,719, 5–13–75, Cl. 14.

LIST OF DESIGN PATENTEES

Achenbach, Walter B., to Owens-Illinois, Inc. Canister lid or similar article. 235,090, 5–13–75, Cl. D7—131.
Adler, David T. Flexible support for dental and surgical instruments. 235,107, 5–13–75, Cl. D24—1.
Aspell, Thomas A., Jr.: *See*—
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149	3,882,907
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108	3,883,378
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213R	3,882,918
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66	3,883,381
96	3,883,382
242	3,883,383
244	3,883,384
352	3,883,385
380	3,883,386
415	3,883,387
446	3,883,388
583	3,883,389
584	3,883,390
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266	3,882,921
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70	3,883,391
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53	3,882,922
250	3,882,923
283R	3,882,924
353	3,882,942
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1	3,882,925
8	3,882,926
9	3,882,927
12	3,882,928
40	3,882,929
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95	3,882,931
126	3,882,932
163	3,882,933
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267	3,882,937
270	3,882,938
273	3,882,940
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199	3,882,944
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12BH	3,883,680
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16	3,882,945
107	3,882,946
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60	3,883,392
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246	3,882,947
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	3,883,685
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79.2	3,882,953
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118	3,882,960
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154	3,882,962
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2	3,882,963
63	3,882,964
93	3,882,965
205	3,882,966
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103R	3,882,967
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22	3,882,968
29R	3,882,969
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271	3,882,975
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98	3,882,979
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63	3,883,394
100	3,883,395
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127	3,883,398
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1R	3,882,985
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66	3,882,988
151	3,882,989
181	3,882,990
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24	3,882,992
26	3,882,993
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253	3,882,994
287	3,882,998
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432	3,883,000
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309	3,883,044
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May 20, 1975

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PATENT AND TRADEMARK OFFICE NOTICES

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PATENT AND TRADEMARK OFFICE NOTICES

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WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.

Apr. 25, 1975.

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3,116,557, J. R. Trice, Jr., METHOD AND MEANS FOR LAYING SEWER PIPE, **filed** Feb. 4, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c335, *Laser Alignment, Inc. v. Coherent Radiation, Lee Jensen Sales and Di Paolo Const. Co.*

3,483,716, G. Stenzler, PERSONAL ORNAMENT WITH MOUNTING AND INDEXING MEANS FOR CENTERING VARIED NUMBERS OF JEWEL SETTINGS, **filed** Aug. 11, 1970, D.C., S.D.N.Y., Doc. 70–C–3444, *Transamerica Overseas Ltd. v. Zale Corporation.* Stipulation of dismissal, Dec. 31, 1970.

3,487,999, Nash, LaBranche, Newman and Smith, ROADWAY TOY, **filed** Jan. 9, 1970, D.C., S.D.N.Y., Doc. 70–63, *Mattel Inc. v. Fred Bronner Corporation.* Filed final judgment on consent restraining and enjoining defendants from directly or indirectly infringing claims one thru nine. Counterclaims are dismissed, Sept. 10, 1973.

3,527,320, A. L. Cunningham, EXTENDABLE SHORING SCAFFOLD, **filed** Mar. 12, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74–648–DWW, *The Ceco Corporation v. Bliss & Laughlin Industries.*

3,541,606, Heenan and Nagel, REFLECTORIZED VEHICLES AND REFLECTORS THEREFOR, **filed** Aug. 2, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2192, *Ameracc Corporation v. Sate-Lite Mfg. Co. et al.*

3,553,737, J. Bauman, METHOD OF APPLYING HAIR, **filed** Aug. 2, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–1628RFP, *Dura-Hair International, Inc. and Ultra Hair Center, Inc. v. Hair Forever Centers of San Francisco, Inc.*

3,563,088, L. R. Sperberg, NON-DESTRUCTIVE METHOD OF DETERMINING TIRE LIFE, **filed** Oct. 5, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–1067, *Lawrence R. Sperberg v. Firestone Tire and Rubber Co. et al.* Jury Trial, Verdict for the defendant, order that the complaint is hereby dismissed at plaintiff's costs, Apr. 30, 1974. **Same, filed** July 30, 1973, D.C., N.D. Ohio (Cleveland), Doc. C73–801, *Lawrence R. Sperberg v. The Goodyear Tire & Rubber Company.* Jury trial, verdict for the defendant, order that the complaint is hereby dismissed at plaintiff's costs, Apr. 25, 1974. **Same, filed** July 30, 1973, D.C., N.D. Ohio (Cleveland), Doc. C73–802, *Lawrence R. Sperberg v. The Firestone Tire & Rubber Co.* Jury trial, verdict for the defendant, order that the complaint is dismissed at plaintiff's costs, Apr. 30, 1974. **Same, filed** July 30, 1973, D.C., N.D. Ohio (Cleveland), Doc. C73–803, *Lawrence R. Sperberg v. The General Tire & Rubber Co.* Jury trial, verdict for the defendant, order that the complaint is hereby dismissed at plaintiff's costs, Apr. 30, 1974. **Same filed** July 30, 1973, D.C., N.D. Ohio (Cleveland), Doc. C73–804, *Lawrence R. Sperberg, v. B. F. Goodrich Co.* Jury trial, verdict for the defendant, order that the complaint is hereby dismissed at plaintiff's costs, Apr. 30, 1974.

3,563,851, Armour, Goldberg and Jasinski, WATER RESISTANT VINYL ACETATE COPOLYMER ADHESIVE COMPOSITIONS, **filed** July 15, 1974, D.C., E.D. Pa. (Philadelphia), Doc. 74–1785, *National Casin Company v. National Starch and Chemical Corporation.*

3,575,678, W. F. Barton, REED SWITCH ASSEMBLY, **filed** Aug. 9, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2033, *Grigsby Barton, Inc. v. M. John Petersen, doing business as M. J. Petersen & Associates.* Enter order by stipulation that cause be dismissed with prejudice, Dec. 14, 1973.

3,586,624, G. P. Larson, WASTE DISPOSAL METHOD AND SYSTEM, **filed** May 20, 1974, D.C., E.D. Pa. (Philadelphia), Doc. CA–73–1726, *Commonwealth of Pennsylvania and Western Berks Refuse Authority v. Warner Company.* Stipulation and consent judgment dismissing this action with prejudice, May 22, 1974.

3,592,256, S. H. Knight, CURTAIN CONSTRUCTION, **filed** July 25, 1974, D.C., E.D. Pa. (Philadelphia), Doc. 74–1905, *Hayes-Ivy Manufacturing, Inc. v. Economics Laboratory Manufacturing Co.*

3,670,689, M. Pappas, TILT-OPERATED HAND HELD GAS POWERED ACOUSTIC DEVICE, **filed** June 28, 1972, D.C., S.D.N.Y., Doc. 72–C–2756, *Falcon Safety Products Inc. v. Midcay Radio & Television Corp.* Filed dismissal pursuant to 41(a)(1), May 7, 1973.

3,679,006, A. R. Richmond, POWER TRAIN FOR HORIZONTAL EARTH BORING MACHINE, **filed** Sept. 10, 1974, D.C., N.D. Ohio (Cleveland), Doc. C74–815, *The Richmond Manufacturing Company v. American Augers, Inc. et al.*

3,691,972, L. D. Bylund, ALUMINOUS METAL ARTICLES AND METHOD; **3,814,590,** same, ALUMINOUS METAL ARTICLES AND ALUMINUM BASE ALLOYS, **filed** Aug. 8, 1974, D.C., N.D. Ind. (South Bend), Doc. S74–172, *Reynolds Metals Company v. Aluminum Company of America and National Can Corporation.*

3,700,792, Harrison III, Honey and Tajchman, COMPUTER ANIMATION GENERATING SYSTEM, **filed** Aug. 20, 1974, D.C., S.D.N.Y., Doc. 74–C–3603, *Computer Image Corp. v. Rutt Instruments Corp. and Rutt/Etra Video Systems, Inc.*

3,701,544, F. M. Stankovich, MOTORCYCLE FRONT END ASSEMBLY, **filed** Mar. 1, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–453–IH, *Frank M. Stankovich v. Cheat-ah Engineering Inc., Randolph L. Rhone & Russell L. Rhone, doing business R. L. R. Cycle Specialties.* Filed consent judgment and order thereon enjoining defendant from infringing plaintiff's patent. Plaintiff waives all past damages and profits, entered June 1, 1973. **Same, filed** Mar. 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c569, *Frank M. Stankovich v. Warshawsky and Co.* By agreement suit dismissed without prejudice and without costs, May 24, 1973. **Same, filed** Mar. 16, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–567–R, *Frank M. Stankovich v. Randolph L. Rhone & Russell Rhone, doing business as R.L.R. Cycle Specialties.* Filed consent judgment and order thereon enjoining defendants from infringing plaintiff's patent, entered Apr. 27, 1973.

3,719,389, Burton and Kiger, THERMOPLASTIC TUBING FURNITURE, **filed** July 11, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–1964–F, *Terra Furniture v. Grant Electrio Company et al.*

3,727,321, Waters and Liedtke, PORTABLE HAIR DRYER, **filed** May 10, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1203, *Sunbeam Corporation v. The Gillette Company.* On motion plaintiff, cause removed from status call of May 1, 1974. Voluntary dismissal without prejudice under Rule 41(a)(1)(i), Apr. 30, 1974.

3,736,197, Messerschmidt, Heyman and Johnsen II, POWDERLESS ETCHING BATH COMPOSITIONS AND ADDITIVES, **filed** May 29, 1973, D.C.N.J. (Newark), Doc. C–752–73, *Philip A. Hunt Chemical Corporation v. Mona Industries, Inc.* Stipulation and order of dismissal of action, Feb. 5, 1974.

3,743,280, D. G. Martinez, EXERCISING DEVICE, **filed** Aug. 5, 1974, D.C.N.J. (Trenton), Doc. C–74–1189, *Rainbow Lifeguard Products, Inc., etc. et al. v. General Home Products Corporation, etc.*

3,752,533, E. S. Gilbert, UPHOLSTERED SEAT, **filed** Nov. 14, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2898, *Evalin S. Gilbert v. Larry Kroll, doing business as Larry Kroll & Co. et al.* By agreement defendants, Larry Kroll, doing business as Larry Kroll & Co. and D-Zion Manufacturers, Inc., dismissed without prejudice. Filed counterclaims by "Today" in Furniture Inc. and Montgomery Ward & Co., Incorporated, Jan. 4, 1974. By agreement, order complaint and counterclaims dismissed with prejudice, Oct. 23, 1974.

3,757,194, Weber and Pugh, CORDLESS POWER TOOL HAVING REMOVABLE BATTERY PACK, **filed** Oct. 3, 1973, D.C., N.D. Ga. (Atlanta), Doc. C.A. 19090, *The Black & Decker Manufacturing Company v. Disston, Inc.*

3,771,724, Rose, Kelley and Ravitts, APPARATUS AND PROCESS FOR SPRAYING LIQUIDS, **filed** May 8, 1974, D.C., N.D. Ill. (Freeport), Doc. 74–31, *Richards of Rockford, Inc. v. Aqua-Aerobic Systems, Inc.*

3,772,241, C. H. Kroekel, UNSATURATED POLYESTER RESINOUS COMPOSITIONS, **filed** Nov. 13, 1973, D.C., N.D. Ala. (Birmingham), Doc. CA 73–L–1080–Ne, *Rohm and Haas Company v. Owens-Corning Fiberglas Corporation.*

3,775,775, A. Mazzenga, DESIGN CODING FOR COORDINATED GARMENT SETS, **filed** Sept. 25, 1974, D.C., M.D.N.C. (Greensboro), Doc. C–74–306–G, *Garan, Incorporated v. Blue Bell, Inc.*

3,775,951, Elcholz and McCambridge, VACUUM CLEANER, **filed** Feb. 19, 1974, D.C. Conn. (Bridgeport), Doc. B–74–54, *Shelton Products, Inc. v. Central Quality Industries, Inc.*

3,778,852, Penn, Penn and Roughley, WATER BED, **filed** June 24, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–1323 RHS, *Penn International Industries, Inc. v. The Pennington Corp. et al.*

3,814,590. (See 3,691,972.)

Re. 25,360. (See 2.826,760.)

Re. 25,695, Cook and Farnam, EXPLOSIVE COMPOSITION COMPRISING AMMONIUM NITRATE AND HEAT-PRODUCING METAL, **filed** July 15, 1969, D.C. Utah (Salt Lake City), Doc. C249–69, *Iron Ore Company of Canada and Ireco Chemicals v. Dow Chemical Co., etc. et al.* Patent held invalid as to each and every claim and unenforceable against Dow Chemical Co. by reason of Dow's intervening rights; Ireco Chemicals held owner of whatever rights may remain in reissue patent, Apr. 5, 1973.

D. 206,199, B. Zuckerman, GARMENT HANGER, **filed** July 10, 1968, D.C., S.D.N.Y., Doc. 68–C–2806, *Mr. Hanger, Inc. v. Warbern Plastics, Inc.* Filed consent judgment that defendant is hereby perpetually restrained and enjoined etc., Feb. 3, 1970.

D. 209,029, McFadyen and Macowski, TELEPHONE INDEX OR THE LIKE, **filed** Oct. 30, 1970, D.C., S.D.N.Y., Doc. 70–C–4781, *Ketcham & McDougall, Inc. v. Carl Mfg. Co. Ltd. of Japan.* Filed stipulation and order that this action is hereby dismissed without prejudice, May 15, 1973.

D. 227,091, Grove and Shockey, MOBIL AERIAL WORK PLATFORM, **filed** Nov. 9, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2626–DWW. *Fulton Industries, Inc. v. Calavar Corp.*

D. 233,539, E. J. Echterling, DOG FIGURE TOY BALL, **filed** May 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1129, *ATI Recreation, Inc. v. Armac Enterprises, Inc.* Final judgment, cause dismissed, Aug. 28, 1972.

Erratum

Under Patent Suits in the OFFICIAL GAZETTE of July 9, 1974, volume 924, page 162, in the paragraph beginning with 3,370,890, "Reg. No. 866,987" should be deleted. Also cross reference "Reg. No. 866,987 (See 3,370,890)" should be deleted.

Certificates of Correction for the Week of May 20, 1975

3,522,223	3,846,312	3,862,779	3,869,437

Disclaimers

3,266,008.—*Howard A. Elliott*, Detroit, Mich. ELECTRICAL

3,642,197.—*Donald E. Bean, James T. Engh, James R. Hammer*, and *John J. Iacl*, Rochester, *Myron D. Schettl*, Ore-

3,805,175.—*Ernie George Nassimbene*, San Jose, Calif. RETROSPECTIVE PULSE MODULATION DECODING

Certificates of Correction for the Week of May 20, 1975

3,522,223	3,846,312	3,862,779	3,869,437
3,641,641	3,847,221	3,862,895	3,869,453
3,703,351	3,847,224	3,862,898	3,869,478
3,706,422	3,847,375	3,862,939	3,869,596
3,707,401	3,848,208	3,863,079	3,869,764
3,742,186	3,848,767	3,863,356	3,870,060
3,745,179	3,849,106	3,863,507	3,870,235
3,747,821	3,850,769	3,863,707	3,870,434
3,755,510	3,851,339	3,863,757	3,870,442
3,770,109	3,852,451	3,863,956	3,870,525
3,772,272	3,852,879	3,864,230	3,870,590
3,772,683	3,853,347	3,864,530	3,870,591
3,775,665	3,853,378	3,864,592	3,870,614
3,784,575	3,853,404	3,864,615	3,870,630
3,785,964	3,853,439	3,864,862	3,870,816
3,789,203	3,853,962	3,864,969	3,871,071
3,792,403	3,854,676	3,864,995	3,871,127
3,793,342	3,855,166	3,865,175	3,871,435
3,793,360	3,856,611	3,865,195	3,871,595
3,793,453	3,856,736	3,865,210	3,871,745
3,802,532	3,856,782	3,865,665	3,871,967
3,803,121	3,857,033	3,865,773	3,872,053
3,809,775	3,857,059	3,865,966	3,872,197
3,819,214	3,857,303	3,866,001	3,872,455
3,820,314	3,857,496	3,866,171	3,872,746
3,821,014	3,858,113	3,866,180	3,872,844
3,824,523	3,858,364	3,866,569	3,872,913
3,824,597	3,858,462	3,866,658	3,873,157
3,833,440	3,858,751	3,866,679	3,873,340
3,833,767	3,859,688	3,867,191	3,873,348
3,836,969	3,860,050	3,867,659	3,873,359
3,838,315	3,860,073	3,867,845	3,873,552
3,838,595	3,860,556	3,867,897	3,875,710
3,838,764	3,861,033	3,867,949	3,873,882
3,838,905	3,861,422	3,868,258	3,873,974
3,839,353	3,861,746	3,868,438	3,874,439
3,841,157	3,861,816	3,868,472	3,874,466
3,841,756	3,861,821	3,868,568	3,874,596
3,843,574	3,861,905	3,868,600	3,874,898
3,843,823	3,862,003	3,868,807	3,875,365
3,845,043	3,862,255	3,868,833	
3,845,112	3,862,370	3,868,914	
3,845,364	3,862,518	3,869,302	

Disclaimers and Dedications

3,730,286.—*Peter D. Weiner*, Bryan, Tex. APPARATUS FOR IMPROVING ROTARY DRILLING OPERATIONS. Patent dated May 1, 1973. Disclaimer and dedication filed June 27, 1974, by the assignee, *Esso Production Research Company*.

Hereby disclaims and dedicates to the Public the remaining term of said patent.

3,792,948.—*James A. Martinez*, Pico Rivera, Calif. AUTOMATIC DOUGH ROLLING APPARATUS. Patent dated Feb. 19, 1974. Disclaimer and dedication filed Oct. 7, 1974, by the inventor.

Hereby disclaims and dedicates to the Public claims 1–5 of said patent.

Dedications

3,272,565.—*Richard L. Wilson*, Trafford, Pa. RAILWAY FLUID PRESSURE BRAKE APPARATUS. Patent dated Sept. 13, 1966. Dedication filed Nov. 27, 1974, by the assignee, *Westinghouse Air Brake Company*.

Hereby dedicates to the Public the entire term of said patent.

3,454,100.—*Melvin R. Lilley*, Prince George County, Va. WINDROWING FORK ARRANGEMENT FOR PEANUT DIGGER. Patent dated July 8, 1969. Dedication filed Jan. 14, 1974, by the assignee, *Ferguson Manufacturing Company*.

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers

3,266,008.—*Howard A. Elliott*, Detroit, Mich. ELECTRICAL TERMINAL AND METHOD OF APPLYING SAME TO CONDUCTORS. Patent dated Aug. 9, 1966. Disclaimer filed June 20, 1974, by the assignee, *Essex International, Inc.*

Hereby enters this disclaimer to claim 2 of said patent.

3,301,488.—*Edward O. Norris*, Westport, Conn. SPRAY GUN. Patent dated Jan. 31, 1967. Disclaimer filed Mar. 22, 1974, by the assignee, *The Gyromat Corporation*.

Hereby enters this disclaimer to claims 8 and 9 of said patent.

3,305,690.—*Edward Emanuel Sheldon*, New York, N.Y. ELECTRON DISCHARGE DEVICE WITH FIBER OPTIC END WALL. Patent dated Feb. 21, 1967. Disclaimer filed Aug. 13, 1973, by the inventor.

Hereby disclaims the term of this patent subsequent to Mar. 27, 1978.

3,328,588.—*Samuel B. Steinberg*, Baltimore, Md. APPARATUS FOR MEASURING THE EFFICACY OF AN AIR FILTER. Patent dated June 27, 1967. Disclaimer filed Nov. 19, 1974, by the assignee, *Air Techniques, Inc.*

Hereby enters this disclaimer to claims 1–7 of said patent.

3,453,504.—*James B. Compton*, Campbell, and *Frederick L. Zieber*, Mountain View, Calif. UNIPOLAR TRANSISTOR. Patent dated July 1, 1969. Disclaimer filed May 4, 1971, by the assignee, *Siliconix, Inc.*

Hereby enters this disclaimer to claims 1, 2, 6, 7, 8, 9 and 10 of said patent.

3,465,480.—*Elmer P. Hausermann*, Bensenville, Ill. APPARATUS FOR SHAPING ELECTRODES. Patent dated Sept. 9, 1969. Disclaimer filed June 10, 1971, by the inventor.

Hereby enters this disclaimer to claims 1, 2, 3 and 5 of said patent.

3,473,876.—*Samuel B. Steinber*, Baltimore, Md. PORTABLE FILTER EVALUATION DEVICE. Patent dated Oct. 21, 1969. Disclaimer filed Nov. 19, 1974, by the inventor.

Hereby enters this disclaimer to all claims of said patent.

3,486,495.—*Hollcss W. Allen*, Kansas City, Mo. ARCHERY BOW WITH DRAW FORCE MULTIPLYING ATTACHMENTS. Patent dated Dec. 30, 1969. Disclaimer filed June 18, 1974, by the assignee, *Allen Archery, Inc.*

Hereby enters this disclaimer to claims 1, 2 and 11 of said patent.

3,496,135.—*Stanley W. Caywood, Jr.*, Wilmington, Del. CRUDE EPDM COPOLYMER STABILIZED WITH A LEWIS BASE. Patent dated Feb. 17, 1970. Disclaimer filed Sept. 1, 1972, by the assignee, *E. I. du Pont de Nemours and Company*.

Hereby enters this disclaimer to claims 1–9 of said patent.

3,507,353.—*Earl F. Murphy*, Florence, Ala. NOISE ATTENUATING MEANS FOR THE DISCHARGE OF A COMPRESSOR. Patent dated Apr. 21, 1970. Disclaimer filed Jan. 31, 1975, by the assignee, *Americold Compressor Corporation*.

Hereby disclaims all the remaining portion of the term of the patent subsequent to Dec. 31, 1974.

3,642,197.—*Donald E. Bean, James T. Engh, James R. Hammer*, and *John J. Igel*, Rochester, *Myron D. Schettl*, Oronoco, *Harry J. Tashjian* and *Richard J. Ullmer*, Rochester, and *John W. Kerr*, Byron, Minn. DATA RECORDER AND VERIFIER. Patent dated Feb. 15, 1972. Disclaimer filed July 1, 1974, by the assignee, *International Business Machines Corporation*.

Hereby enters this disclaimer to claims 1 through 7 of said patent.

3,703,021.—*Allen W. Sharp*. Ottumwa, Iowa. POULTRY PROCESSING METHOD AND APPARATUS. Patent dated Nov. 21, 1972. Disclaimer filed Feb. 12, 1975, by the inventor.

Hereby enters this disclaimer to claims 1, 2, 3, 4 and 6 of said patent.

3,775,797.—*Jacob S. Kamborian*, deceased, late of Newton, Mass., by Lisbeth N. Godley, Washington, D.C., by Michael M. Becka, Watertown, Mass., by Jacob S. Kamborian, Jr., Lincoln, Mass., executors, and *Costa Caris*, East Walpole, Mass. METHOD AND MACHINE FOR LASTING. Patent dated Dec. 4, 1973, by the assignee, *The estate of Jacob S. Kamborian*, deceased.

Hereby enters this disclaimer to claims 48 through 50, 53, 54, 57, 58, 61 and 62 of said patent.

3,805,175.—*Ernie George Nassimbene*, San Jose, Calif. RETROSPECTIVE PULSE MODULATION DECODING METHOD AND APPARATUS. Patent dated Apr. 16, 1974. Disclaimer filed Jan. 17, 1975, by the assignee, *International Business Machines Corporation*.

Hereby enters this disclaimer to claims 1, 2, 3 and 8 of said patent.

3,828,321.—*John A. Wilber*, Elk Grove Village, *Verner K. Rice*, Wheaton, *Rolfe E. Buhrke*, La Grange Park, and *Donald L. Schulte*, Oak Park, Ill. SYSTEM FOR RECONFIGURING CENTRAL PROCESSOR AND INSTRUCTION STORAGE COMBINATION. Patent dated Aug. 6, 1974. Disclaimer filed Mar. 17, 1975, by the assignee, *GTE Automatic Electric Laboratories Incorporated*.

Hereby enters this disclaimer to claims 1, 4, 5 and 6 of said patent.

3,835,312.—*John A. Wilber*, Elk Grove Village, *Verner K. Rice*, Wheaton, *Rolfe E. Buhrke*, La Grange Park, and *Donald L. Schulte*, Oak Park, Ill. RECOVERY CONTROL CIRCUIT FOR CENTRAL PROCESSOR OF DIGITAL COMMUNICATION SYSTEM. Patent dated Sept. 10, 1974. Disclaimer filed Mar. 17, 1975, by the assignee, *GTE Automatic Electric Laboratories Incorporated*.

Hereby enters this disclaimer to claims 1, 3, 4, 6, 8 and 15 of said patent.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 26, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-10-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Sterolds; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-22-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	6-14-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-3-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-7-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	10-15-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-23-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-23-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	10-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-3-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-24-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-5-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	8-23-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-12-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-24-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	10-4-74

Expiration of patents: The patents within the range of numbers indicated below expire during May 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,832,959, to 2,836,825 inclusive
Plant Patents..... Numbers 1,698, to 1,713 inclusive

REISSUE PATENTS

GRANTED MAY 20, 1975

ERRATA

For CLASS	See PATENT NO.
235-153	28,421
324-065	28,422
180-005	28,423
152-330	28,424
085-013	28,427

REISSUES

MAY 20, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,421

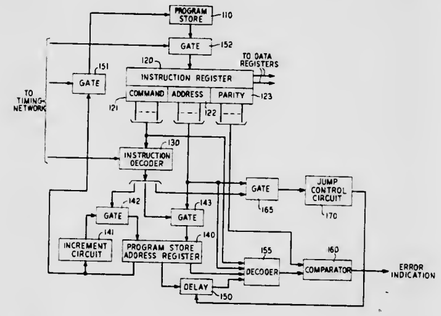
MEMORY CODING TECHNIQUE

David Michael Rouse, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original No. 3,719,815, dated Mar. 6, 1973, Ser. No. 166,130, July 26, 1971. Application for reissue May 2, 1974, Ser. No. 466,380

Int. Cl. G06f *11/00*; G11c *29/00*

U.S. Cl. 235—153 AM 8 Claims



1. In a system having a memory for storing a plurality of program and data words, apparatus *responsive to signals from said memory for storing* for detecting an error in the content or sequencing of a plurality of said words accessed from said memory comprising:

(A) means for generating for [each] *a given* word stored in said memory a first code word representative of the information content of [that] *said given* word, and of the location at which [that] *said given* word is stored in said memory and of the location of a *different* word desired to be accessed in accordance with a predetermined ordered relationship to [that] *said given* word,

(B) means for storing said first code words,

(C) means for retrieving the code word associated with a given program or data word upon the accessing of said given word,

(D) means for generating for the program or data word most recently accessed from said memory a second code word representative of the information content of [that] *said most recently accessed* word, and of the location from which [that] *said most recently accessed* word was accessed, and of the location from which a word bearing said predetermined ordered relationship to said most recently accessed word was accessed, and

(E) means for generating an error signal whenever the first and second code words associated with an accessed word do not bear a predetermined relationship to each other.

28,422

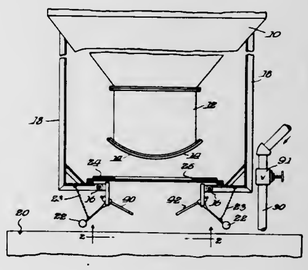
MOISTURE MEASURING AND TOTALIZING SYSTEM

Paul M. MacKinney, Wheaton, Ill., assignor to Concrete Controls Corp.

Original No. 3,631,337, dated Dec. 28, 1971, Ser. No. 834,036, June 17, 1969. Application for reissue Aug. 17, 1973, Ser. No. 389,230

Int. Cl. G01r *27/02*

U.S. Cl. 324—65 R 9 Claims



8. A system for measuring and totalizing the moisture entrained in aggregate material discharged from a storage vessel to permit said entrained moisture to be compensated for when the aggregate is mixed with water comprising:

a plurality of electrical probes arranged in an array which positions said probes for projection into a plurality of portions of a moving aggregate stream discharged from said vessel;

means for mounting said probes so that the aggregate in said vessel flows in a stream over said probes;

electrical circuit means including an energy source connected to said probes and creating an electrical reference signal which varies in amplitude proportional to the conductivity and hence the entrained moisture content of the stream of aggregate flowing past probes in each of said portions of said stream;

signal-accumulating means comprising a variable speed electrical servomotor which is quickly responsive to said variations in amplitude of said reference signal to proportionately vary the output speed of a motor shaft, said servomotor being connected to said circuit means to produce output revolutions of said motor shaft proportional to both the time interval of aggregate flow and to said signal variations produced by the variations in electrical conductivity of said flowing aggregate stream as sensed by said probes, so that the revolution of said motor shaft is thereby proportional to the total entrained moisture in the quantity of aggregate flowing past said probes; and

means activated by said motor to provide a signal representative of the total entrained moisture in the aggregate discharged from said vessel during said time interval.

28,423

SNOW VEHICLE FRONT SUSPENSION

1600–1800 p.s.i. at 300% elongation

nal path responsive to said input signal and including

28,423

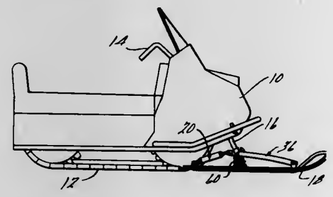
SNOW VEHICLE FRONT SUSPENSION

William W. Higginbotham, Monroe, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Original No. 3,623,564, dated Nov. 30, 1971, Ser. No. 872,992, Oct. 31, 1969. Application for reissue Nov. 24, 1972, Ser. No. 309,607

Int. Cl. B62b *17/04;* **B62m** *27/02*

U.S. Cl. 180—5 R **9 Claims**



13. A mounting assembly for operatively mounting a steerable ski on a downwardly directed steering shaft, spindle, or the like of a snow vehicle,

said assembly including an elongated arm disposed above and extending generally longitudinally of the ski,

a hydraulic, direct acting telescopic shock absorber including a cylinder member, a piston rod member reciprocable relative to said cylinder member, first attachment means on one of said members and second attachment means on the other of said members,

a first pivot mounting for connecting one end of said arm to the ski,

a second pivot mounting for connecting the opposite end of said arm to one of said attachment means of said shock absorber, the other of said attachment means of said shock absorber being connected to the ski, and

a helical coil spring having upper and lower end portions and adapted to resiliently resist relative pivotal movement between said arm and the ski,

said lower end of said spring terminating adjacent the ski and said upper end of said spring terminating adjacent said second pivot mounting.

28,424

ELASTOMERIC ARTICLES FREE FROM REINFORCING ELEMENTS

Daniel R. McGillvary, Jackson Township, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Original No. 3,701,374, dated Oct. 31, 1972, Ser. No. 52,150, July 6, 1970. Application for reissue July 17, 1974, Ser. No. 489,304

Int. Cl. B60c *5/00;* **C08g** *22/04*

U.S. Cl. 152—330 R **11 Claims**

1. A tire [I.] a portion at least of the walls of which [A.] are without reinforcing fabric and [B.] are constituted of [1.] a vulcanized elastomer having

[a.] (*a*) tensile strength at 212° F ------p.s.i.-- ≥1800
[b.] (*b*) crescent tear strength at 212° F --p.s.i.-- ≥200
[c.] (*c*) De Mattia Flex life at 176° F.
cycles-- ≥[2×10⁶] 2×10^5

and at ambient temperature

[d.] (*d*) Modulus of elongation of *at least about*
250[–400] p.s.i. at 5% elongation
[1100–1300 p.s.i. at 100% elongation
1400–1550 p.s.i. at 200% elongation
1600–1800 p.s.i. at 300% elongation
2000–2200 p.s.i. at 400% elongation
2800–3500 p.s.i. at 500% elongation]

[e.] (*e*) Tensile strength—≥2800 p.s.i.

[f.] (*f*) Elongation—≥400 p.s.i.

and

[g.] (*g*) Young's flexural modulus *of no more than about* [10,000–]15,000 p.s.i.

the vulcanized elastomer more particularly having

[h.] (*h*) a molecular weight of 800–5000 between electrostatic cross-links

and

[i.] (*i*) a molecular weight of 5100–40,000 between covalent cross-links.

28,425

OIL FILLED ELECTRIC SUBMARINE CABLE WITH OIL DUCT RESTRICTORS

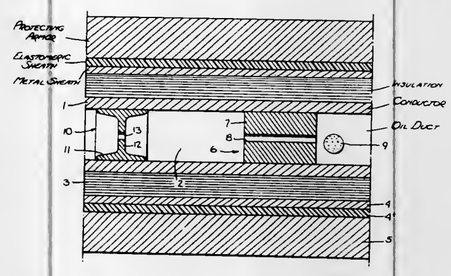
Paolo Gazzana Priaroggia, Milan, and Antonio Ferrentino, Monza, Italy, by Industrie Pirelli Societa per Azioni, Milan, Italy, assignee

Original No. 3,798,345, dated Mar. 19, 1974, Ser. No. 371,123, June 18, 1973. Application for reissue June 28, 1974, Ser. No. 483,956

Claims priority, application Italy, July 3, 1972, 26,535/72

Int. Cl. Ho1b *9/06*

U.S. Cl. 174—15 C **7 Claims**



1. In an electric cable having a duct for the flow of an insulating fluid, the combination therewith of a plurality of restrictors in said duct, said restrictors being [disposed in] spaced [relation] with respect to each other longitudinally of said duct *by a distance of at least about 200 meters* and each of said restrictors comprises a wall extending across said duct and preventing the flow of fluid along said duct but having a hole therethrough of a size which permits the flow of said insulating fluid therethrough but prevents the flow of water drops therethrough.

28,426

SIGNAL COMPRESSORS AND EXPANDERS

Ray Milton Dolby, London, England, assignor to Dolby Laboratories, Inc., New York, N.Y.

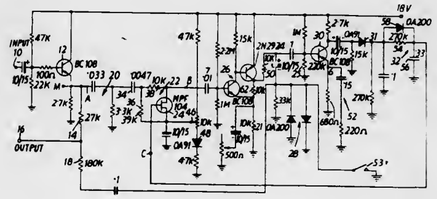
Original No. 3,631,365, dated Dec. 28, 1971, Ser. No. 867,454, Oct. 20, 1969. Application for reissue Dec. 27, 1973, Ser. No. 428,914

Claims priority, application Great Britain, July 21, 1967, 36,466/69; Nov. 1, 1968, 51,985/68

Int. Cl. H03q *7/06;* **H04b** *3/04*

U.S. Cl. 333—14 **45 Claims**

1. A signal processing system for producing an output signal in response to an input signal comprising a main signal path responsive to said input signal and including means for providing in a specified frequency band extending between first and second limits a first signal substantially proportional to said input signal, a further signal path coupled to said main signal path and responsive to a signal derived from said main signal path for producing a second signal in said specified frequency band, and signal combining means for combining said first and second signals to produce said output signal, said further signal path including a first filter having fixed value components for providing pass characteristics in a fixed band extending from said first limit to a cutoff frequency intermediate said first limit and said second limit; and means for limiting the amplitude of the output signal of the further signal path, said means including a second filter connected in cascade with said first filter and having variable cutoff



characteristics, said second filter including a variable impedance means responsive to an increase in the amplitude of at least one of the output of and the input to said further signal path for altering said cutoff characteristics from wide band pass under very low input signal conditions to progressively narrower band pass, providing a cutoff frequency which shifts away from said second limit sufficiently to attenuate, in combination with the said characteristics of said first filter, any high-level input signal components at any given frequency in said specified frequency band to a specified level corresponding in said second signal to a small fractional part of the maximum level of said input signal, while permitting input signal components below said specified level at frequencies nearer to said first limit then said given frequency to pass through said filters and to appear in said second signal with a lesser degree of attenuation.

28,427

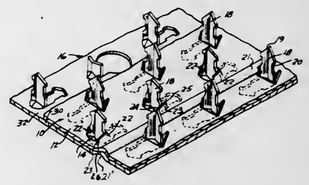
REINFORCING GUSSET PLATE

Donald C. Menge, Warren, Mich., assignor to Troy Steel Corporation, Troy, Mich.

Original No. 3,417,652, dated Dec. 24, 1968, Ser. No. 604,422, Dec. 23, 1966. Application for reissue July 22, 1969, Ser. No. 848,762

Int. Cl. A43b *23/20;* **F16b** *15/00*

U.S. Cl. 85—13 **10 Claims**



1. In combination with a flat nailing plate provided with a plurality of teeth struck out of the plate and unidirectionally projecting therefrom substantially normally to said plate and adapted to be driven into wood members, a reinforcing gusset plate having a plurality of apertures each of which correspond to one of said teeth, said teeth and said apertures being uniformly distributed over said plates with corresponding ones of said teeth and said apertures being located adjacent at least two of the side edges of said gusset plate, said teeth being V-shaped in cross section, said apertures having a straight edge, the ends of which are connected by a curved edge, so that upon said teeth being inserted through said apertures and into said wood members the axis of each tooth is substantially parallel to planes containing said straight edges and the lateral side edges of each tooth are substantially perpendicular thereto, the distance between the sides of the tooth and the edges of said apertures varies in a direction toward the apex of the V-shaped tooth, said gusset plate having teeth members formed in pairs along said curved edges of said apertures in said gusset plate, said teeth members being spaced from each other by said straight edge of said apertures and by a portion of said curved edge, said teeth members adapted to extend into said wood members with the spaces between said teeth members and between said teeth on said nailing plate providing an area for receiving portions of said wood members displaced by said teeth and said teeth members.

PLANT PATENTS

GRANTED MAY 20, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,720
RASPBERRY PLANT
John L. Franklin, Urbana, Ill., assignor to Herschel L. Boll, Champaign, Ill.
Filed Nov. 19, 1973, Ser. No. 417,430
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—46 **1 Claim**

1. A new and distinct variety of raspberry plant substantially as herein shown and described characterized by its very vigorous growth, by its very stocky canes, and by its very large fruit.

3,721
POINSETTIA PLANT
Peter J. Murison, Hoddesdon, England, assignor to Mikkelsens Inc., Ashtabula, Ohio
Filed Mar. 20, 1974, Ser. No. 453,056
Int. Cl. A01h *5/00*
U.S. Cl. Plt—86 **1 Claim**

1. A new and distinct cultivar of poinsettia characterized particularly by its distinct deep pink coloring of the bracts; ease of propagation; ability to break well when pinched thereby forming a well branched, full plant, and by its dark green foliage.

PATENTS

GRANTED MAY 20, 1975

ERRATA

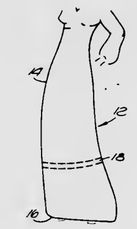
For CLASS	See PATENT NO.
075-108	3,883,908
228-176	3,883,945
228-121	3,883,946
085-075	3,884,099
280-011.13	3,884,315
194-059	3,884,330
263-650	3,884,454
296-136	3,884,523
062-222	3,884,663
062-296	3,884,667
204-113	3,884,681
428-036	3,884,753
428-398	3,884,754
250-359	3,884,816
250-385	3,884,817
250-480	3,884,818
260-252	3,884,827
206-322	3,884,935
424-092	3,885,011
424-177	3,885,012
260-327	3,885,044

PATENTS

GRANTED MAY 20, 1975

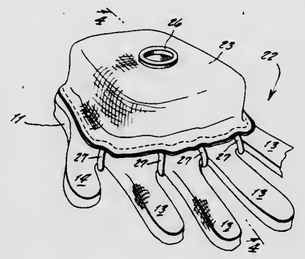
GENERAL AND MECHANICAL

3,883,896
ADJUSTABLE LENGTH GARMENT
Dona G. Cain, 723 N. Gramercy Pl., Los Angeles, Calif. 90038
Continuation-in-part of Ser. No. 293,599, Sept. 29, 1972, abandoned. This application Aug. 27, 1973, Ser. No. 391,730
Int. Cl. A41d *1/22*
U.S. Cl. 2—74 **11 Claims**



1. An adjustable length garment comprising:
an elongated length of fabric material adapted to be positioned adjacent a body portion of the wearer; and
securing means formed on the surface of said garment and transversely therearound for adjusting the length of said garment comprising tubing having an adjustable length holding member therein whose ends extend from an opening in said tubing for positioning said garment tubing on the wearer at different hem line heights said garment extending from an upper torso portion of the wearer downwardly to a hem line, said tubing being positioned in said garment intermediate said upper torso portion of the garment and said hem line said garment being formed with the top of the garment positioned at said tubing when said garment is folded, the lower edge of the inner portion of the garment adjacent the wearer being slightly higher than the hem line of the outer portion of the garment when the garment has been raised on the wearer at the hemline for enabling the garment to be worn at different hem line lengths.

3,883,897
PAINTING GLOVE
Saul Lefkowitz, and George Spector, both of c/o 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007
Filed Dec. 11, 1973, Ser. No. 423,675
Int. Cl. A41d *19/00*
U.S. Cl. 2—161 R **2 Claims**



1. A painting glove assembly comprising an outer glove adapted for being worn on a hand and an inner removable liner fitted snugly within said glove between the glove and the user's hand, said glove being made of a napped porous wool material adapted for paint application and wherein said liner includes a soft inner fibrous surface and an outer surface of water and oil resistant material, said liner further including an outwardly turned cuff portion adjacent the user's wrist overlapping the outer glove thereby forming a channel to collect paint drippings from said outer glove in further combination with a paint reservoir formed on the back side of the glove, said reservoir being lined with water and oil resistant material, including means for conducting paint from the reservoir to the palm side of said glove.

3,883,898
PROTECTIVE GLOVE FOR USE IN MEAT PROCESSING PLANTS
Robert M. Byrnes, Sr., P.O. Box 11218, Ames Avenue Station, Omaha, Nebr. 68111
Filed May 13, 1974, Ser. No. 469,863
Int. Cl. A41d *19/00*
U.S. Cl. 2—167 **1 Claim**



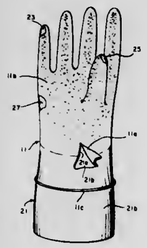
1. A glove for use by an operator in a meat processing plant who uses a knife during various meat cutting procedures in which one hand holds the knife and manipulates it adjacent the other hand which is engaged with the meat adjacent the cutting area, said glove being constructed of a flexible knitted fabric constructed of non-metallic aramid fiber, such as "Kevlar," said glove being substantially impenetrable by the knife thereby protecting the wearer from accidental injury due to cutting.

3,883,899
GLOVE
Rudolph V. Ganz, Canton, Ohio, assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.
Continuation of Ser. No. 288,381, Sept. 12, 1972, abandoned, which is a continuation of Ser. No. 159,263, July 2, 1971, abandoned, which is a division of Ser. No. 876,812, Nov. 14, 1969, abandoned. This application June 26, 1974, Ser. No. 483,160
Int. Cl. A41d *19/00*
U.S. Cl. 2—168 **11 Claims**

1. An elastic latex rubber glove formed of a film of rubber latex and having palm and finger gripping exterior surfaces,
the major hand-engaging interior surface of said glove having a molded rough finish,
said exterior palm and finger gripping surfaces of said glove being rough in finish,
the entire said glove, being an integral homogeneous film of cured rubber latex,

said exterior palm and finger gripping surfaces having tiny annular craters formed thereon,

said craters being formed of depression-forming droplets of rubber latex in integral cured state relation with and forming an integral part of the base film forming said glove,

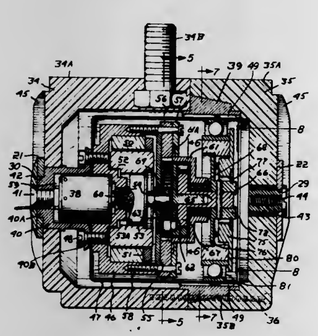


said exterior palm and finger gripping rough surface including multiple raised mesa areas of larger area than individual ones of said craters and with a plurality of said craters disposed in zones therebetween.

3,883,900
BIOELECTRICALLY CONTROLLED PROSTHETIC MEMBER

Robert B. Jerard, Brattleboro, Vt., and Cord W. Ohlenbusch, Hopkinton, Mass., assignors to Liberty Mutual Insurance Company, Boston, Mass.

Filed Sept. 7, 1973, Ser. No. 395,236
Int. Cl. A61f *1/06, 1/00*
U.S. Cl. 3—1.1 **21 Claims**



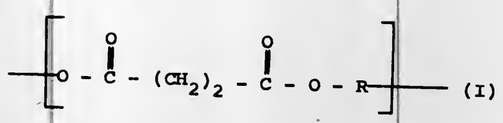
1. A prosthesis comprising a first member having a stump receiving socket and provided with a support at its distal end, a second member, a joint unit secured to the support of the first member, a pivotal connection between said joint unit and the second member relative to said first member, a drive including a direct current permanent magnet motor and a transmission housed within the unit with the output shaft of the transmission so connected to said second member that said second member is flexed relative to said first member in a direction dependent on the direction in which said motor is operating, said transmission including first and second reduction stages and a reverse locking clutch between said stages operable under the conditions that the second member is in support of a load and the motor is not operating to move the member to raise or lower the load and electric circuitry including said motor, a battery, electrodes attachable to the stump and operable to detect EMG signals from the stump muscles that were used to flex and straighten the amputee's missing joint, and signal processing means operable to convert the detected signals into signals that operate the motor in the direction and rate that corresponds to the strength of the dominant EMG signals.

3,883,901
METHOD OF REPLACING OR REPAIRING THE BODY WITH BIORESORBABLE SURGICAL ARTICLES

Jean Coquard, Grezieu-La-Varrenne; Pierre Sedivy, Sceaux; Jean Verrier, Bologne-sur-Seine, and Michel Ruaud, Ternay, all of France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed Nov. 27, 1973, Ser. No. 419,450
Claims priority, application France, Dec. 1, 1972, 72.42838
Int. Cl. A61f *1/24;* **A61l** *17/00*
U.S. Cl. 3—1 **15 Claims**

1. In a method of repairing or replacing a part of the body of a human of non-human animal by incorporating either temporarily or permanently, a surgical article, the improvement wherein the surgical article consists at least partially of a polyester of succinic acid possessing a plurality of units of the general formula:

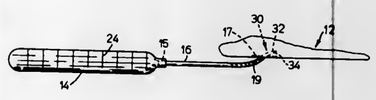


in which R represents a linear or branched alkylene radical containing 2 to 6 carbon atoms having a film- or filament-forming molecular weight.

3,883,902
VARIABLE VOLUME PROSTHETIC ASSEMBLY

Henry W. Lynch, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

Continuation-in-part of Ser. No. 281,150, Aug. 16, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,396
Int. Cl. A61f *1/00, 1/24;* **A41c** *3/10*
U.S. Cl. 3—36 **10 Claims**



1. A closed system variable volume prosthetic assembly comprising:

a first flexible container adapted to be implanted in the body,

a second flexible container having a volume greater than the volume of said first container,

a silicone gel completely filling said second container,

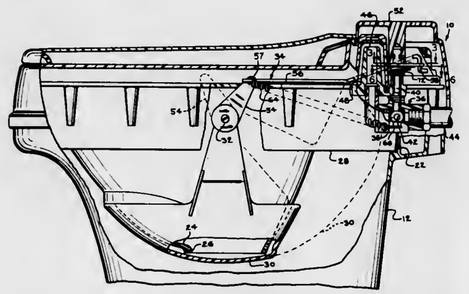
a tube sealingly connecting said second container to said first container whereby said gel can be squeezed from said second container into said first container after implantation of said first container and said assembly can be autoclaved prior to implant without contaminating the gel,

and valve means within said tube for movement to a position closing the tube after the gel has been forced into said container.

3,883,903
WATER CLOSET

Christiaan J. H. Vanden Broek, and John M. Antos, both of Ann Arbor, Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Filed May 10, 1974, Ser. No. 468,825
Int. Cl. E03d *11/10, 1/34*
U.S. Cl. 4—85 **4 Claims**

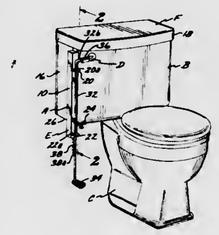


1. A water closet comprising a bowl having an open lower end, a concave pan beneath said bowl and supported thereon adjacent to the upper end thereof for pivotal movement about a horizontal axis between a first position in which said pan encloses said open lower end and a second position in which said pan is tilted in an elevated position at one side of said bowl, said pan having a depth so that when in its first position its peripheral lip is at a higher elevation than the open lower end of said bowl, water flushing means actuable for discharging flush water to the interior of said bowl, and an actuator mechanism connected to said pan and to said water flushing means and selectively operable either (1) for moving said pan to its second position and simultaneously actuating said flushing means to deliver flush water to the bowl while the pan is tilted and for returning the pan to its first position and rendering said flushing means inactive, or (2) for actuating only said flush means to deliver a desired quantity of water to said bowl while said pan is maintained in its first position.

3,883,904
FOOT ACTUATED TOILET DEVICE

Arthur W. Wittman, 12301 S. Woodruff, Downey, Calif. 90241

Filed Apr. 12, 1974, Ser. No. 460,422
Int. Cl. E03d *5/08*
U.S. Cl. 4—249 **2 Claims**



1. In combination with a toilet having a tank that pivotally supports a flushing lever, said tank including a bottom and a first vertical end wall adjacent said lever and said first wall having an upper horizontal edge, a foot operated device removably mountable on said tank for flushing said toilet, said device including:

a. a support assembly that includes an elongated body vertically disposed adjacent said first end wall, a hook mounted on the upper end of said body that engages said upper edge of said first end wall to support said body in a vertical position therefrom, an arm extending outwardly from said body, a thumb screw that engages a tapped bore in said arm, and said thumb screw when rotated in an appropriate direction in said tapped bore moving into pressure contact with said bottom to hold said assembly in a fixed position on said tank;

b. upper and lower vertically spaced brackets that project outwardly from said body and have vertically aligned bores formed therein;

c. an inverted L-shaped rod that includes first and second legs, said first leg slidably supported in said bores for vertical movement relative said tank, and said second leg disposed above said flushing lever;

d. first means on said second leg for pressure engaging said flushing lever and rotating it to a flushing position when said rod is moved downwardly relative to said body;

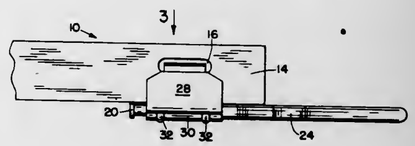
e. a pedal that may be engaged by a foot of a user, said pedal secured to said first leg and disposed at an elevated position above the floor on which said toilet rests; and

f. spring means having first and second ends, with said first end secured to said body and said second end to each rod, said spring means at all times tending to maintain said rod in a first position where said first means is adjacently disposed to and in engagement with said handle when the latter is in a non-flushing position, with said spring means capable of being temporarily deformed by a downward force exerted on said pedal to allow said rod and said first means to move downwardly to a second position and said handle to a flushing position, and said spring means moving said rod to said first position when said force is released from said pedal.

3,883,905
MATTRESS SPRING HANGER HANDLE

Robert G. Bryant, Gardner, Mass., assignor to Gem Industries Inc., Gardner, Mass.

Filed June 5, 1974, Ser. No. 476,591
Int. Cl. A47c *31/00*
U.S. Cl. 5—11 **3 Claims**



1. A hanger handle construction for a mattress support wherein said support includes an angle iron, the angle iron having a vertical portion and a horizontal portion, there being a slot in the horizontal portion,

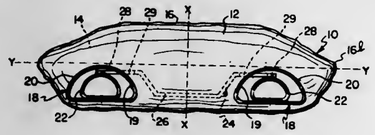
a hanger handle including a shank and an arcuate hook portion,

and a resilient clip, said clip having a terminal reverse portion to engage the lower edge of the vertical portion of the angle iron, a semi-cylindrical outstanding portion for engaging the shank of the hanger handle and holding it against the vertical portion of the angle iron, a terminal lock lip for snapping into said slot, and an outstanding loop at the junction of the vertical and horizontal portions of said angle iron, said clip being made of resilient sheet material and said outstanding loop increasing the resilient force of said clip.

3,883,906
SLEEPING PILLOW WITH ARM OPENINGS

Alray Sumpter, 936 W. 17th St., Port Arthur, Tex. 77640

Filed Feb. 28, 1974, Ser. No. 446,626
Int. Cl. A47g 9/00
U.S. Cl. 5—338 15 Claims

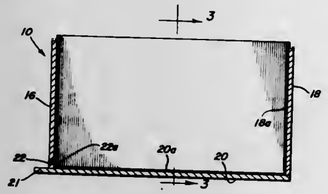


1. In a pillow for sleeping comprising, a body portion, passageway means on opposite sides of the transverse vertical center plane of said body portion and adapted to extend generally parallel to said plane for receiving therein the arms of a sleeping person, and including means pivotally mounting said passageway means relative to said body portion.

3,883,907
METAL BEEHIVE LINER

Jacob S. Foxbower, and Gerald J. Foxbower, both of Route No. 7, Box 1471, Brooksville, Fla. 33512

Filed Nov. 27, 1973, Ser. No. 419,242
Int. Cl. A01k 47/00
U.S. Cl. 6—1 9 Claims



1. For use in preventing the wax moth from destroying a beehive and its contents, wherein said beehive is of the type comprising a peripheral walled enclosure having a base closing the bottom of said enclosure, said peripheral wall including an access opening therein adjacent said base, a non-corroding metal liner in said enclosure adjacent to and at least coextensive with said peripheral wall and said base, said liner including an opening therein of substantially the same size as and adapted to be aligned with said access opening.

3,883,908
METHOD FOR PREPARING COPPER TOGETHER WITH MANGANESE SULPHATE

Platon Vladimirovich Gogorishvili, ulitsa Barnova, 124 a, kv. 6; Tengiz Pavlovich Geleishvili, ulitsa Oktyabrskaya, 34, korpus 18, kv. 2; Nina Porfirievna Zarkua, ulitsa Pekina, 11, kv. 21, all of Tbilisi; Georgy Alexeevich Nikolishvili, ulitsa Leonidze, 12, kv. 85, Rustavi; Rusudan Georgievna Dundua, 1V tupik Barnova, 16, Tbilisi; Nadezhda Georgievna Svintidze, GSSR, Bolnissky raion, selo Kazreti, Madneulsky gornoobogatitelny kombinat; Nina Ivanovna Onuchkina, ulitsa Onezhskaya, 4, kv. 46, both of Leningrad; Gaioz Grigorievich Kasradze, ulitsa Saburtalinskaya, 39, kv. 31, and Genrikh Moiseevich Kuperman, ulitsa Sovetskaya 66, both of Tbilisi, all of U.S.S.R.

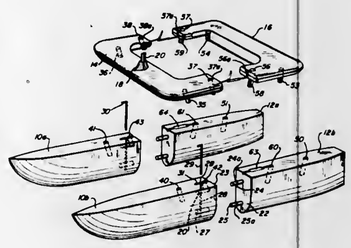
Filed Aug. 24, 1973, Ser. No. 391,250
Int. Cl. C22b 15/12; C01g 45/00, 45/10
U.S. Cl. 75—108 4 Claims

1. A method of preparing copper together with manganese sulphate comprising suspending a chalcopyrite concentrate and a manganese-containing raw material selected from the group consisting of manganese ore and manganese flotation concentrate in water, maintaining the resulting suspension with an oxygen-containing atmosphere at a temperature of 165°–185°C and a partial pressure of oxygen of 2.5–15 atm to thereby form a reaction mixture containing an aqueous solution of sulphates of copper and manganese, separating said solution from the reaction mixture, precipitating copper from the solution by reducing the copper sulphate with hydrogen at a temperature of 160°–180°C and a pressure of 30–40 atm whereby a portion of the copper remains in solution, separating the precipitated copper from the solution of manganese sulphate and sulphuric acid formed as a result of the copper reduction, purifying the solution from the admixture of the remaining copper by adding manganese sulphide to thereby form copper sulphide, separating the formed precipitate of copper sulphide, returning the copper sulphide to the stage of oxidative leaching, neutralizing the sulphuric acid by treating the solution with a manganese-containing raw material, isolating the solution of manganese sulphate, evaporating the solution and crystallizing the product.

3,883,909
SECTIONAL SMALL WATER CRAFT

Robert E. Fisher, and Leonard S. Matejcic, both of Boulder, Colo., assignors to Vervcraft, Inc., Boulder, Colo.

Filed Oct. 5, 1973, Ser. No. 404,039
Int. Cl. B63b 7/04
U.S. Cl. 9—2 S 11 Claims



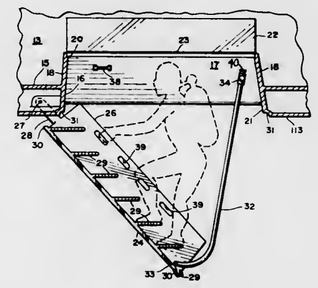
1. In a light-weight, small water craft arranged for quick assembly and disassembly having at least two sectioned hulls and a sectioned superstructure securable to the hulls and providing crew's space, the improvement which comprises:
a. means for securing the hull sections together including mating bores in said hulls registering at the joint between said sections and including pin means extending into said bores from one hull section to the other section and including means for releasably securing pins in said bores,
b. mating bores in said superstructure and in the hull sections and pin means extending from said superstructure into the hull sections, and
c. latch means for securing the superstructure to the hull sections and the hull sections together including a pair of second pin means telescoping in bores in adjacent sections of the superstructure and into bores in adjacent hull sections, said pair of second pin means having means securing the same together inclusive of quick release cinching and locking means whereby the whole assembly is secured in essentially rigid condition.

3,883,910
BOAT FOR SCUBA DIVERS AND THE LIKE

Bertram L. Naylor, III, 807 N.W. 7th Rd., Miami, Fla. 33136

Filed Jan. 16, 1974, Ser. No. 433,851
Int. Cl. B63b 3/00
U.S. Cl. 9—6 2 Claims

1. A boat having a hull portion for scuba divers and the like comprising a well having upwardly extending wall portions, said wall portions extending upwardly from said hull portion to a position above the waterline of said boat, a closure member, means pivotally mounting said closure member at said hull portion, said closure member conforming in shape with said hull portion, a plurality of steps mounted in spaced relation on the inner surface of said closure member, said steps extending at such an angle with said closure member that

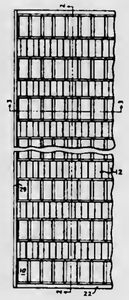


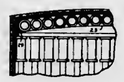
upon swinging said closure member to an open position said steps will extend substantially horizontaly, means for swinging and locking said closure member, a side wall extending along each side of said closure member, a plurality of hand receiving openings positioned on each of said side walls and a handle mounted on each of said well wall portions permitting a person climbing up and down said steps to grasp said handles and said hand receiving openings.

3,883,911
INSULATED, TUBE-FRAMED BOAT OR THE LIKE

Alvin Edward Moore, Manini Way, Diamondhead, Rt. 1, Bay St. Louis, Miss. 39520

Filed Apr. 22, 1974, Ser. No. 462,735
Int. Cl. B63b 3/00
U.S. Cl. 9—6 25 Claims



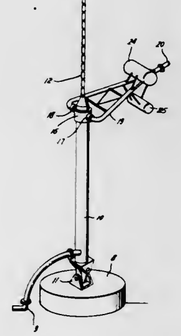


1. A device of the character described, including:
strength-providing framework of a load-holding body, comprising: a plurality of upright, body-wall tubular members, each of which has a pair of end elements and, between said end elements, a plurality of tubes and joints that connect pairs of said tubes together in a line and project beyond their outlines less than an inch; at least one body-bracing frame of four elongated, end-joined, angled beams, forming the general outlines of corners of the body, having spaces between angled sides; means fastening one group of said end elements to portions of one of said angled beams and means fastening a second group of said end elements to portions of an opposite one of said beams; a set of tubular members, having axes at angles to the axes of said upright tubular members, each of which has a pair of end portions that are fixed to and between an opposite pair of said angled beams and between said end portions a plurality of tubes and tubular-member-strengthening joints that connect said last-named tubes together in a line and project transversely to said first-named axes beyond the outlines of said tubes and means fastening said end portions to opposite portions of said angled beams; a second set of tubular members having axes at angles to the axes of said upright tubular members, each of which has a pair of end portions, the said last named end portions being adjacent to and connected to parts of said upright tubular members; an elongated, tubular-member-bracing means, fixed to tubular members at a level in the vicinity of the level of said parts;
exterior, waterproofed, body-skin means, adjacent to said tubular members and tubes;
interior skin means on the inside of said tubular members; and
thermal insulation, adjacent to said tubular members.

3,883,912
SUBMERGED HOSE ARM STABILIZING MEANS FOR SINGLE POINT MOORING SYSTEMS

Kristen I. Pedersen, Scarsdale, N.Y., assignor to Sofec, Inc., Houston, Tex.

Filed Dec. 17, 1973, Ser. No. 424,958
Int. Cl. B63b 21/52
U.S. Cl. 9—8 P 2 Claims

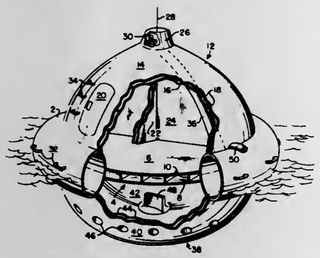


1. In a single point mooring system of the type having a buoy with means for mooring of a vessel thereto, a base anchored to the sea bottom, an upstanding cargo pipe shaft pivotally connected to said base and extending upwardly therefrom, a hose arm projecting laterally from the upper portion of said pipe shaft, a hose extending from said arm for carrying cargo to and from a vessel moored to said buoy, buoyancy tank means for supporting said arm in substantial alignment with said hose, and a pivotal connection between said arm and said pipe shaft permitting vertical swivelling of said arm relative to said pipe shaft, and hose arm stabilizing means comprising a ballast weight carried by said arm substantially laterally outwardly of said pipe shaft and substantially beneath the center of buoyancy of said arm and buoyancy tank means thereby

causing a stabilizing effect which counteracts external forces, likelihood of said fillet becoming

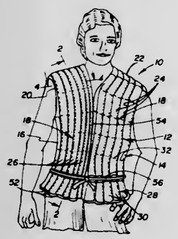
causing a stabilizing effect which counteracts external forces tending to dislodge the arm from its proper position.

3,883,913
AQUASTABILIZED SURVIVAL RAFT
James A. Givens, Seattle, Wash., assignor to Res-Q-Raft, Inc., Seattle, Wash.
Continuation-in-part of Ser. No. 216,990, Jan. 11, 1972, abandoned. This application Dec. 12, 1972, Ser. No. 314,389
Int. Cl. B63c *9/04*
U.S. Cl. 9—11 A **8 Claims**



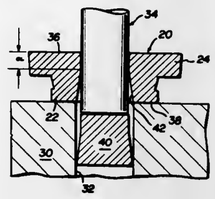
5. A stabilized inflatable float such as a life raft comprising:
bouyant means for floating on top of a liquid having a floor and inflatable flotation means surrounding said floor,
stabilizing means secured to the bottom of the bouyant means about the periphery thereof and extending downwardly therefrom, said stabilizing means comprising a flexible walled hollow chamber adapted to be filled with the supporting liquid, said chamber having a plurality of ports therein, resulting in a restricted inflow and outflow of the float-supporting liquid while creating inertia, and hollow open-ended means extending from within the chamber to a point above the surface of the supporting fluid whereby fluid captured beneath the floor may be discharged upon the buildup of excessive pressure within the chamber.

3,883,914
FLOTATION LIFE JACKET
Ronald L. Blair, 2650 W. Belden Ave., Chicago, Ill. 60647
Filed Sept. 7, 1973, Ser. No. 395,282
Int. Cl. B63c *9/10*
U.S. Cl. 9—341 **6 Claims**



1. A flotation jacket to be worn by a person around the upper part of the body and having spaced side openings through which the arms of the person extend, said jacket having a plurality of vertically extending cylindrical-shaped pockets formed in said jacket and extending around the front, back and sides of said jacket, a filler material vertically retained in said pockets, said filler material being of a cylindrical shape and of a foam material with the cylindrical outer surface skin coated, said skin coated outer cylindrical surface rendering the filler material impervious to water and reducing the likelihood of said filler becoming water-logged, thereby increasing the flotation capabilities of the jacket, said cylindrical filler being free to rotate or turn within each of said pockets to conform to the body of the person and his movements.

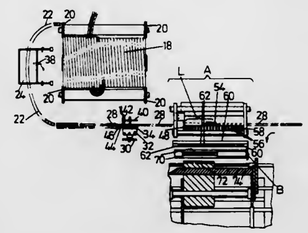
3,883,915
METHOD OF FORMING A NUT
Joseph H. Steward, Bloomfield Hills, Mich., assignor to Multifastener Corporation, Detroit, Mich.
Division of Ser. No. 414,469, Nov. 9, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,318
Int. Cl. B21d *53/24*; **B23g** *1/16*
U.S. Cl. 10—86 CL **2 Claims**



1. A method of forming a nut having a threaded bore, comprising the steps of:
a. supporting the nut blank on a die having a circular opening,
b. forming in said blank a bore comprising a cylindrical portion opening at one face of said blank at one end thereof, which cylindrical portion smoothly blends into a coaxially aligned conical portion which opens through said blank at another face of said blank at an end opposed to said one end, said conical portion having a major diameter generally equal to said die opening, by impacting the nut with a high-speed cylindrical punch coaxially aligned with said die opening, said die opening having a diameter approximately 13 to 18% greater than the diameter of said punch, and
c. tapping the internal surface of said cylindrical and conical openings, forming a continuous female thread in the nut bore defined by said openings with partially formed, truncated threads in said conical portion adjacent said opposed nut end.

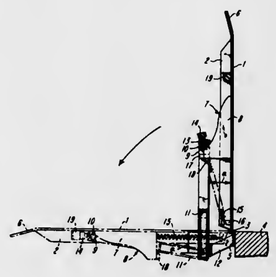
3,883,916
MACHINES FOR BINDING PACKETS OF PERFORATED SHEETS
Sidney George William Adams, Walton-on-Thames, and Edgar Horace Galliford, Esher, both of England, assignors to James Burn Bindings Limited, Esher, Surrey, England
Filed Jan. 21, 1974, Ser. No. 434,989
Claims priority, application United Kingdom, Jan. 23, 1973, 3499/73
Int. Cl. B42c *5/12, 19/00*
U.S. Cl. 11—1 A **2 Claims**

1. A machine for binding packets of perforated sheets or books with wire binding elements of the kind having a series of curved prongs on which the sheets are impaled before the prongs are closed to ring-shape by bringing their points into the vicinity of their roots, said machine comprising
an endless chain adapted to interengage a continuous strip of said binding element for delivering said continuous strip to a reception station,
a cutter head located at said reception station for cutting predetermined lengths of said binding element from said continuous strip,
intermittent drive means connected with said endless chain, said intermittent drive means stopping said endless chain after a predetermined length of said continuous strip has been fed into said reception station and starting said endless chain after said predetermined length has been removed from said reception station, thereby intermittently delivering said continuous strip into said reception station,
sensor means interconnected with said intermittent drive means and said cutter head, said sensor means causing said intermittent drive means to stop and activating said cutter head upon sensing a predetermined length of said continuous strip within said reception station,
transfer means adapted to move on a path transverse to the length of said continuous strip between a first position adjacent said reception station and a second position adjacent a binding station, said transfer means including



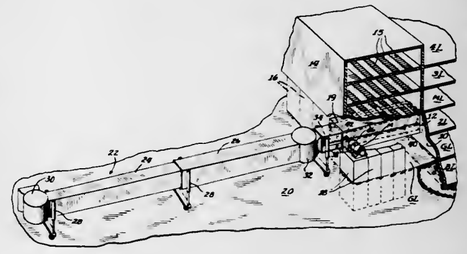
a series of guide ribs oriented transverse to the direction path of said continuous strip into said reception station, and including magnet means for retaining said wire binding element in operational relation therewith during transfer, and
pusher means adjacent said reception station and said transfer means, said pusher means including a plurality of nonmovable ribs oriented transverse to the direction path of said continuous strip and in line with said guide ribs, said transfer means and said pusher means cooperating to move a predetermined length of said continuous strip along a path transverse to its length onto said transfer means while retaining that continuous strip in desired position relative to the binding station.

3,883,917
BRIDGE FOR RAMPS
Kurt Alten, Ringstr. 14, 3015 Wenningsen, Germany
Filed Nov. 16, 1973, Ser. No. 416,391
Claims priority, application Germany, Nov. 20, 1972, 2256802
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **5 Claims**



1. In combination with a ramp, a bridge structure pivotally connected to said ramp for transferring a load over said bridge structure onto and from said ramp, said bridge structure including: a bridge plate, hinge means hingedly connecting one end portion of said bridge plate to said ramp for selectively pivoting said bridge plate about the axis of said hinge means from a substantially vertical rest position to an at least approximately horizontal position of use and vice versa, tension lever means pivotally supported by said ramp for pivoting about an axis substantially parallel to the axis of said hinge means and located in spaced relationship thereto, spring means having one end thereof anchored within the region of said axis of said hinge means and having the other end anchored within the region of the free end of said lever means, and cam means connected to said bridge plate and having a cam surface supporting said free end of said lever means, said spring means continuously urging said free end of said lever means toward said cam surface and having its shortest extension when said bridge plate occupies its substantially vertical rest position, that end of said tension spring means which is within the region of the axis of said hinge means being connected to said bridge plate, the length of said lever means approximately being equal to half the length of said bridge plate, said lever means in its substantially vertical rest position being spaced from said bridge plate by a distance approximately equalling the distance between the horizontal plane through the axis of said hinge means and the pivot axis of said lever means, said cam surface having an S-shaped contour and that portion of said cam surface which in the substantially vertical rest position of said bridge plate is closest to said roller means being concave whereas the other portion of said cam surface has a convex surface, said concave and said convex portions of said cam surface merging with each other at about the central region of said cam surface, and in said substantially vertical rest position of said bridge plate said roller means engaging and exerting pressure upon said convex portion of said cam surface.

3,883,918
TELESCOPIC CONNECTION FOR THE PROXIMATE END OF AN AIRPORT PASSENGER BRIDGE
John W. Magill, 664 N. Michigan Ave., Chicago, Ill. 60611
Continuation-in-part of Ser. No. 396,716, Sept. 13, 1973. This application Jan. 14, 1974, Ser. No. 433,006
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **1 Claim**



1. The combination with an outside wall of a multi-level airport terminal building having a ground floor level, a second floor level, and a mezzanine level, said wall projecting upwardly from the inside edge of an adjacent ground level cargo loading zone and having formed therein a rectangular passenger doorway in communication with the second floor level, and a tubular rectangular corridor-forming enclosure extending horizontally along and disposed outwards of said wall, positioned in overhanging relationship with respect to the cargo loading zone and in alignment with the space over the mezzanine level, and having a horizontal bottom wall disposed at mezzanine floor level and an outside vertical wall spaced forwardly of the building wall, of a telescopic connection for establishing two-way passenger communication between said doorway and the proximate end of an elongated passenger bridge which is tractionally supported on the ground in said cargo loading zone, said telescopic connection comprising a

fixed outer sheathe in the form of a tubular tunnel-like pas-

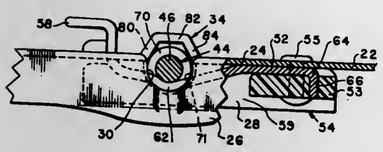
fixed outer sheathe in the form of a tubular tunnel-like passageway having its inner end in communication with said doorway and embodying horizontal top and bottom walls and vertical side walls, said sheathe closely directly underlying the corridor-forming enclosure and having its outer end terminating substantially in vertical alignment with the outer vertical wall of said corridor-forming enclosure, the bottom wall of the sheathe lying at second floor level, an inner movable tubular extension in the form of a tunnel-like passageway embodying horizontal top and bottom walls and vertical side walls, said extension being slidably disposed in telescopic fashion within said sheathe, having its outer end hingedly connected to the proximate end of said passenger bridge, and being movable between a retracted position wherein it is disposed substantially wholly within the confines of the sheathe and an advanced position wherein it is projected outwardly of the sheathe so that it is disposed for the major part thereof outwardly of the outside vertical wall of the corridor-forming enclosure, a series of antifriction rollers carried by said extension and designed for tractional engagement with the bottom wall of the tubular sheathe, an elongated toothed rack mounted on one vertical side wall of the extension and substantially midway between the upper and lower edges thereof, a stationary gear reduction device disposed exteriorly of the sheathe and having its output shaft projecting through an adjacent side wall of the latter, a stationary reversible electric motor having a drive shaft operatively connected to the input shaft of said gear reduction device, and a pair of telescopic pylons extending between the forward end region of the extension and the ground and having traction wheels at the lower ends thereof for tractionally supporting the outer end of the extension.

3,883,919

BLADE CONNECTION STRUCTURE TO ARM

William H. Harbison, Merrillville, and Leo J. Wubbe, Beverly Shores, both of Ind., assignors to The Anderson Company, Gary, Ind.

Filed Mar. 18, 1974, Ser. No. 451,749
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **6 Claims**



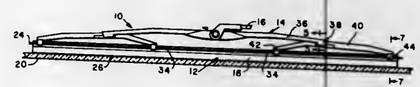
1. In a windshield wiper blade assembly having a bridge member operatively connected to a wiping element, said bridge member having a top wall and depending side walls, connector means on said bridge member for removably connecting said blade to a wiper arm, said connector means comprising a raised portion in said top wall and a pair of apertures in said side walls aligned with each other and having said raised portion extending therebetween, said raised portion having at least two planar sections angled upwardly from said top wall, and latching spring means operatively associated with said connector means, whereby a pin on said wiper arm is latched to said blade by said spring means urging said pin against said planar sections in line contact with each section.

3,883,920

BRIDGE TO LINK CONNECTION

William H. Harbison, Merrillville; John J. Plisky, Munster, and Michael G. Mohnach, Merrillville, all of Ind., assignors to The Anderson Company, Gary, Ind.

Filed Mar. 18, 1974, Ser. No. 451,751
Int. Cl. B60s *1/38*
U.S. Cl. 15—250.42 **4 Claims**



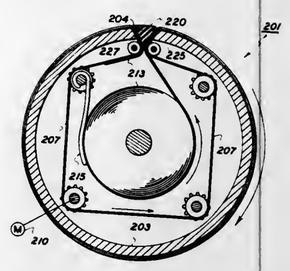
1. In a wiper for cleaning a windshield comprising a pressure distributing superstructure, a resilient wiping member, a flexible backing strip operatively associated with said wiping member, and a pair of spaced apart abutments carried by said wiping member, said superstructure having in combination a primary yoke and a secondary yoke, said secondary yoke being formed of plastic material and being in slidable engagement with the backing strip outboard of one of said abutments, said primary yoke being formed of metal material and having inturned means on at least one end portion thereof, said plastic secondary yoke having an entry portion intermediate the ends thereof, means projecting from said intermediate portion of said secondary yoke inboard of said entry portion, said inturned means of said primary yoke pivotally engaging with said projecting means of the secondary yoke, stop means on said secondary yoke inboard of said projecting means and engaged by said inturned means of said primary yoke as the inboard claw means on said secondary yoke is urged in an outboard direction by said abutment means on said wiping member for holding said superstructure firmly on said wiping member and backing strip.

3,883,921

CLEANING ROLL APPARATUS HAVING REJUVENATED CLEANING SURFACE

Raghulinga R. Thettu, Webster, and William T. White, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 19, 1973, Ser. No. 417,015
Int. Cl. G03g *15/00*
U.S. Cl. 15—256.52 **6 Claims**



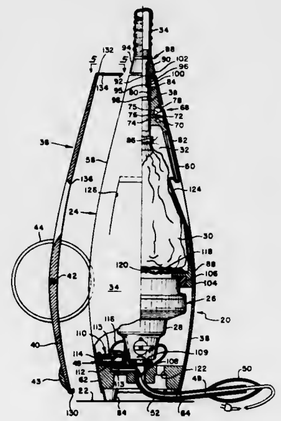
1. An improved cleaning roll apparatus for cleaning heated surfaces comprising:
a core member formed with a slot;
a flexible endless belt member encircling said core member;
A roll of thin polyester polymer film material disposed interior to the belt member and extending on overlying relationship with the belt member at one end thereof, said film material becoming tackified upon raising its temperature to a predetermined level;
means for driving said belt member causing said roll of material to unwind onto the outer surface overlying the belt member into contact with a heated surface to be cleaned at predetermined intervals to effect a rejuvenated cleaning surface.

3,883,922

VACUUM CLEANERS

Eugene T. Fleischhauer, 176 West Ln., Renovah Woods, Stamford, Conn. 06905

Filed Jan. 2, 1973, Ser. No. 320,055
Int. Cl. A47l *5/36*
U.S. Cl. 15—327 R **15 Claims**



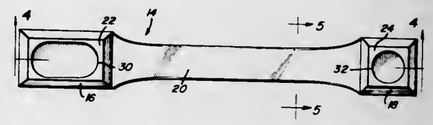
13. A canister type vacuum cleaner, which comprises: an elongated outer casing; a motor housed in said casing adjacent one end thereof; a pump housed in said casing and drive-connected to said motor; a suction hose; means for detachably fixing said hose to said casing with one end of the hose aligned with the longitudinal axis of the casing and communicating with the interior of the casing at the end of the casing opposite the motor, there being a compartment for a bag in the region of said casing into which said hose extends and said casing having a lower, surface engaging wall portion which is free of protuberances on which said vacuum cleaner can slide freely forward and backward and pivot as said vacuum cleaner is moved relative to the surface on which it is supported, said casing further having an upper wall means which is generally coextensive in length with said lower wall portion and has a continuously convex longitudinal contour, and said upper wall means including a movable portion overlying the bag housing compartment in the vacuum cleaner casing and an immobable portion; hinge means fixing one end of said movable portion to said immovable portion for pivotal movement about an axis extending transversely across said cleaner, said hinge means not protruding above the exterior surface of said upper wall means; latch means for fixing the other end of said movable portion to said immovable portion whereby said movable portion may be pivoted about said transverse axis following manipulation of said latch means to provide access to said compartment for the removal and replacement of bags, said latch lying below the surface of said upper wall means; and a hand grip integrally formed in the movable portion of said upper wall means below the surface thereof, whereby said vacuum cleaner can freely move forward and backward and pivot as said vacuum cleaner is moved relative to the surface on which it is supported by manipulation of said hose means even when it is said upper wall means that is in contact with said surface.

3,883,923

APPLIANCE AND FURNITURE FLOOR SKIS

Harold H. England, 8403-135 St., Edmonton, Alberta, Canada (T5R-0B6)

Filed June 1, 1973, Ser. No. 366,032
Int. Cl. A47b *91/06*
U.S. Cl. 16—42 **3 Claims**



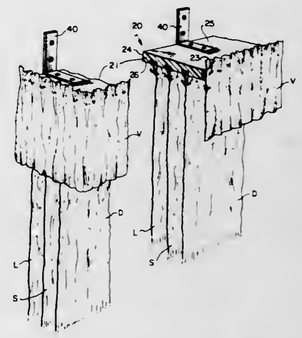
1. A reversible appliance and furniture floor ski, comprising, in combination:
a. first and second means, each including a pad, for movably supporting a spaced pair of article supports and allowing sliding movement of the article supports, each pad having parallel top and bottom faces, the top face of each pad being provided with a recess forming a socket arranged for receiving an article support and the bottom face provided with a pair of substantially parallel rounded edges and means for slidably contacting an article supporting surface for protecting same during resting and displacement of the article, the recess of one of the pads being elongated in a direction extending toward the other of the pads for permitting the pads to receive supports of different spacings, the rounded edges being transverse of the direction of elongation and forming leading and trailing edges of the pads; and
b. substantially rigid tieing means affixed to each pad for connecting together the first and second movably supporting means with sufficient strength to prevent the pads from twisting, turning, and digging into the article supporting surface, the tieing means being a longitudinal member arranged extending between and connected to the pads, and spaced from the article supporting surface.

3,883,924

DRAPERY SUPPORT MEMBER

Julia Maras Grabman, Rt. 6, P.O. Box 30, Grand Rapids, Mich. 55744

Filed Dec. 21, 1973, Ser. No. 427,401
Int. Cl. A47h *1/04*
U.S. Cl. 16—94 D **1 Claim**



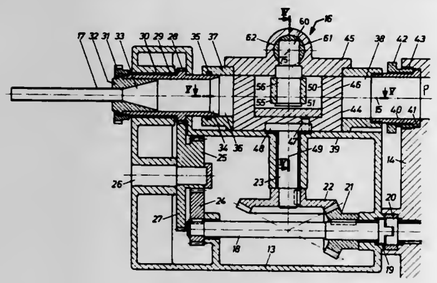
1. Apparatus for supporting a plurality of hanging structures from a building wall, comprising an elongated body having a front wall, rear wall, first and second end walls, and top and bottom walls, a plurality of first track means extending the full length of said bottom wall in generally parallel relationship with each other and said front wall, a plurality of spacer means disposed between at least one of said first track means and

said bottom wall of said body so that said one of said first track

a base having a length greater than the width of said

said bottom wall of said body so that said one of said first track means is maintained in spaced relationship to said bottom walls of said body, second track means disposed along the full length of said front wall, third track means detachably mounted on each of said first and second end walls of said body, each of said third track means being substantially coplanar with said second track means, a plurality of bracket means for supporting said elongated body on the building wall, said bracket means having one leg engaging the wall and a second leg extending substantially perpendicular to said first leg and disposed between said one of said plurality of said first track means and said bottom wall of said body, whereby said spacer means permit said body to be supported on said second leg of said mounting bracket means without interfering with said first track means.

3,883,925
APPARATUS FOR FILLING TUBULAR CASINGS
Johannes Muller, Biberach/Riss, Germany, assignor to Albert Handtmann and Metallgubwerk, Armaturen-und Fleischereimaschinen Fabrik, Biberach/Riss, Germany
Filed Apr. 24, 1972, Ser. No. 246,996
Claims priority, application Germany, Apr. 29, 1971, 2121006
Int. Cl. A22c *11/02, 11/10*
U.S. Cl. 17—33 **12 Claims**



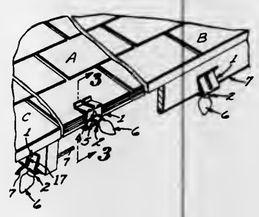
8. Apparatus for filling tubular casings with comminuted substances, comprising locating means for supporting an endless casing on a rotatable nozzle, a proportioning pump having an outlet communicating with said nozzle and an inlet communicating with a source of said substance, means for driving said proportioning pump to expel successive volumetric portions of said substance through said nozzle into said casing with an interval between successive expulsions several times shorter than the length of expulsion, and drive means for continuously rotating said nozzle at a cyclically variable speed between a maximum and a minimum, to twist off said casing after each successively expelled portion to form a link thereof, and means for synchronizing the drive means of said proportioning pump with the means for continuously driving said nozzle to simultaneously drive said nozzle so that the maximum speed said nozzle for twisting said casing occurs during the interval between successive expulsion.

3,883,926
FLEXIBLE HANGER CLAMP FOR ELECTRICAL LAMP SOCKET
Rodney Kent Reynolds, 17919 Holmes Ave., Cerritos, Calif. 90701
Filed Nov. 23, 1973, Ser. No. 418,665
Int. Cl. A44b *21/00;* **A47g** *33/16*
U.S. Cl. 24—73 CP **3 Claims**

1. A flexible hanger for mounting an elongated lamp fixture, of the type including a flat end having electrical leads projecting from the opposite sides thereof, on a mounting member having a flat side and comprising:

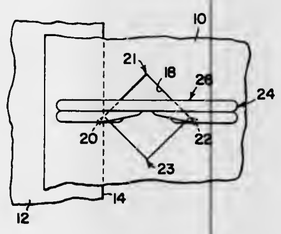
a base having a length greater than the width of said mounting member and including a through opening for confronting said flat side for projection therethrough of said elongated fixture; and

a pair of flexible legs projecting coextensively in one direction from the opposite ends of such base and angling inwardly to terminate in gripping feet spaced apart, in their unflexed condition, a distance less than the width of



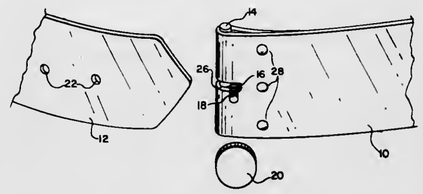
said mounting member, one of said legs being formed with an elongated open ended slot for receipt of said lead whereby said fixture may be inserted from the back side of said base, one of said leads then fitted in through the open end of said slot and said feet flexed apart for receipt over said mounting member and said hanger slid onto said mounting member to abut said flat end against said flat side and to trap said leads behind said base to hold said fixture captive on said member.

3,883,927
LATCHING DEVICE
Robert Charles Francis, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Oct. 9, 1973, Ser. No. 404,392
Int. Cl. A44b *21/00*
U.S. Cl. 24—81 **8 Claims**



1. A latching device comprising: a first member having an edge; a second member positionable adjacent to the first member and having an opening with at least two notches, one of said notches being proximate to the edge of the first member when the first member is adjacent the second; a resiliently deformable latch element mounted in the opening and having a handle portion on one side of the second member and a pair of opposite hool elements extending through the opening and overlapping the opposite sides of said member, said handle portion being resiliently deformed when the hook elements are disposed in the opening to bias the hook elements away from each other and against the opposite side of the opening, the latch element being rotatably shiftable in the opening between a first position, wherein the opposite hook elements seat in said pair of opposite notches including said one notch and the hook element in said notch overlaps the second member and the edge of the first member when the members are adjacent each other to lock the members together, and a second position wherein said one hook element clears the first member, said shifting being accomplished upon resilient deformation of the latch elements to allow the hook elements to unseat from the notches.

3,883,928
BELT BUCKLE
Gerald L. Blake, 1412 Hampshire West, Silver Spring, Md. 20903
Filed July 8, 1974, Ser. No. 486,597
Int. Cl. A44b *11/06, 11/20*
U.S. Cl. 24—163 R **5 Claims**



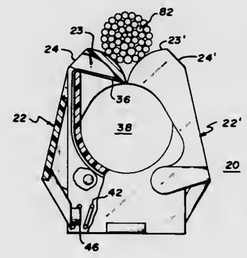
1. A belt buckle for a belt having a pierced end and a yoked loop end with a central tongue slot through which the tongue normally extends from its shaft which is held in the yoked loop of the belt, comprising

a pin mounted in said yoked loop and

a bolt extending through said slot at the inner side of said pin and forming a tongue protruding normally from the face of said loop end of the belt for receiving said pierced end at a selected hole therein, and

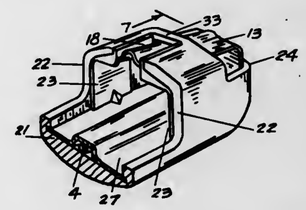
a clamp nut for mounting on the protruding end of said bolt to clamp said belt ends together in buckled position.

3,883,929
CABLE CLAMP ASSEMBLY
William A. Fortsch, Livingston, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Sept. 10, 1973, Ser. No. 396,098
Int. Cl.² F16G *11/00;* **A44B** *21/00*
U.S. Cl. 24—132 R **17 Claims**



1. A cable clamp assembly comprising: a frame member having a base portion and a pair of spaced upstanding supports, said supports extending from said base portion to define a cable receiving cavity therebetween; a first arm and a second arm arranged in a pair, each of said first and said second arms having an upper portion and a lower portion, said upper portions each having a free end, said lower portion of each of said first and second arms being pivotally coupled to said frame member generally adjacent said frame member base portion; biasing means operatively coupled to said lower portion of each of said first and second arms to cause said free ends of said upper portions thereof to be urged towards one another in contacting engagement to encompass at least a portion of said cable receiving cavity; and an elastomeric strip coupled to said frame member supports and spanning the space therebetween generally adjacent said upper portions of said first and second arms, said first and second arms being movable independently of said elastomeric strip and arranged to pivotingly spread apart and away from said cable receiving cavity to provide access to said elastomeric strip, said elastomeric strip being arranged to receive a cable to provide a cradle thereabout within said frame member cable receiving cavity.

3,883,930
SAFETY PIN
Dante V. Bagnasco, Port Washington, N.Y., assignor to Safety Snap Pin Corporation, Clifton, N.J.
Continuation-in-part of Ser. No. 229,798, Feb. 28, 1972, abandoned. This application Dec. 7, 1973, Ser. No. 422,795
Int. Cl. A44b *9/10*
U.S. Cl. 24—156 R **10 Claims**



1. A safety pin of the character described having supporting base structure, a pin shaft mounted thereon with opening bias, wing members mounted at opposite sides respectively of the base structure and having inwardly extending overhanging portions with the respective opposing edges spaced from each other, and a spring strip that is mounted on the base structure and biased to bridge the respective undersides of the overhanging portions for retaining the pin shaft in closed position, wherein the improvement comprises:

a. a rigid flange extending transversely and outwardly from each of the opposing edges of the overhanging portions to form a pin guide slot generally parallel to the pin shaft and overlying the spring strip;

b. the spring strip having oppositely inclined cam faces that extend into the guide slot and each cam face forming with the adjacent guide flange a generally V-shape trough respectively to receive the pin shaft;

c. the pin on entering the trough engaging the corresponding rigid guide flange and cam face to cam downwardly the spring strip, thereby allowing the pin to move laterally from the strip and beneath the corresponding overhanging portion;

d. and buttressing means located on the outer sides of the wing members and along the overhanging portions respectively, to join the corresponding flanges and maintain the flanges and wing members rigid with respect to the spring strip.

3,883,931
ZIPPER STRUCTURE
Everett A. Peterson, Roslyn Heights, N.Y., assignor to Everett A. Peterson, Roslyn Heights, N.Y.
Filed Nov. 5, 1973, Ser. No. 412,568
Int. Cl. A44b *19/36, 19/34*
U.S. Cl. 24—205.11 R **5 Claims**

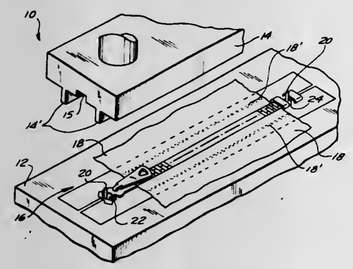
1. A zipper adapted to be heat sealed to a pair of sheets of thermoplastic material in a heat sealing die structure, said zipper comprising a pair of zipper tapes having first and second end portions, a pair of rows of zipper teeth respectively secured to said zipper tapes and adapted to be intermeshed to secure said tapes together, said zipper teeth rows extending between positions on said tapes inwardly of said first and second end portions thereby to define first and second toothless zones respectively on said zipper at the first and second end portions thereof; a zipper slide mounted on said row of zipper teeth wherein said zipper teeth are engaged when said

slide is adjacent said first toothless zone, a first rigid bridge

e. an operating member pivotally mounted on said fastener

a pair of legs arranged at an angle to one another;

slide is adjacent said first toothless zone, a first rigid bridge member operatively secured to said zipper tapes across said first toothless zone substantially adjacent to the zipper teeth at the adjacent end of said row and positioned such that it defines a first confined and marginally bounded opening in said tape between the bridge and slide when the zipper is closed, for receiving a first mounting projection on said die structure, and means operatively and permanently secured to said zipper tapes across said second toothless zone adjacent to

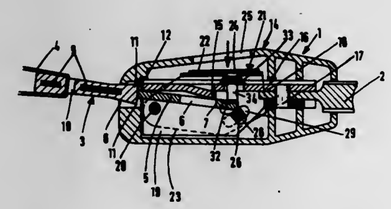


the zipper teeth at the adjacent end of said row for forming a bottom stop for said slide and having a second confined and marginally bounded opening in said means between the zipper tapes at said second toothless zone when the zipper is closed for receiving a second mounting projection on said die structure whereby said zipper is adapted to be supported in said relatively fixed position in said die structure between said mounting projections on said structure which projections respectively extend through said openings during heating sealing of said zipper tapes to said thermoplastic sheets.

3,883,932
PUSH BUTTON FASTENING DEVICE FOR SAFETY BELT PORTIONS

Hermann Meiller, Amberg, and Horst Hocke, Mimbach, both of Germany, assignors to Willibad Grammer, Amberg, Germany

Filed July 29, 1974, Ser. No. 492,784
Claims priority, application Germany, Aug. 7, 1973, 2339910
Int. Cl. A44b *19/00*
U.S. Cl. 24—230 A **11 Claims**



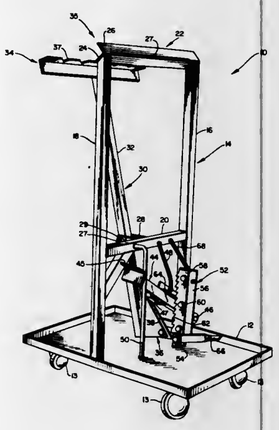
1. A push button fastener device for releasably fastening two safety belt portions, said device comprising, in combination:

a. a fastener body having an insertion aperture in one end, for inserting a tongue securable to one safety belt portion;
b. means for securing the other safety belt portion to the other end of said fastener body;
c. an abutment on said fastener body engageable with a transverse ridge on said tongue;
d. two spaced apart substantially parallel side walls on the fastener body, having aligned slots arranged obliquely relative to a line extending between said one end and said other end of said body;
e. an operating member pivotally mounted on said fastener body, about an axis perpendicular to said side walls, said operating member being of U-shaped cross-section, having a web portion constituting a push button and two side flanges, one adjacent each of said side walls of the fastener body, said flanges having aligned slots arranged at least partly obliquely relative to said line, transverse to said slots in said side flanges and at least partly overlying said slots in said side flanges;
f. a pin passing through said slots in said side flanges and said side walls; and
g. resilient means effective to urge said operating member to move said pin to engage a tongue inserted in said body, so that said transverse ridge is urged into engagement with said abutment, release of said ridge being normally prevented by the cooperating ends of said slots nearest said insertion aperture precluding movement of said pin.

3,883,933
LOCKING APPAREL CLAMP

Neal B. Kightlinger, and Rufus W. Woodall, both of Gainesville, Ga., assignors to Gainesville Manufacturing Co., Inc., Gainesville, Ga.

Filed Apr. 15, 1974, Ser. No. 460,977
Int. Cl. A44b *21/00*
U.S. Cl. 24—250 R **16 Claims**



1. An apparatus for clamping and supporting apparel such as trousers comprising:

a stationary support member;
an adjustable clamp member;
means for mounting said clamp member for relative movement with respect to said support member to define a pair or jaws, said clamp member including a cam having an operative surface extending toward said support member;
an actuation rod movable in sliding engagement with said cam surface to cause said clamp member to move with respect to said support member; and
ratchet means independent of said cam for locking said adjustable member into a position with respect to said support member.

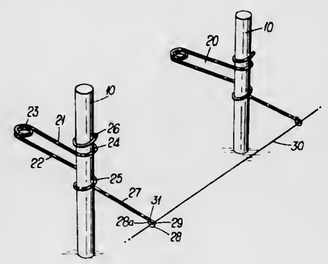
3,883,934
WIRE CLIP

William P. K. Rochfort, Fargo, N. Dak. 58102

Filed Nov. 5, 1973, Ser. No. 413,174
Int. Cl. A44b *21/00*
U.S. Cl. 24—261 R **8 Claims**

1. A clip comprising:

a. a pair of legs arranged at an angle to one another;
b. means interconnecting said legs adjacent one end thereof;
c. a helical portion in each of said legs at a position spaced from the interconnection of said legs, said helical portions having substantially at least one helix for embracing a post member and arranged with their axes substantially parallel to one another and offset laterally in a normal at-rest state of the clip, said helical portions further being offset in a direction parallel to said axes;

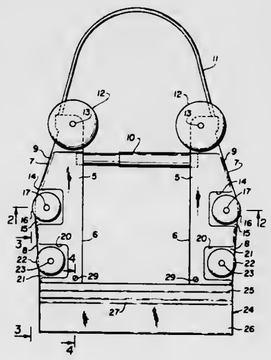


d. a further leg portion extending from and substantially beyond one of said helical portions, said further leg portion terminating in a free outer end having an open throated eye radially spaced from a post member passing through and embraced by said helical portions; and
e. means resiliently resisting movement of the helical end portions from their at-rest offset relative positions to a position wherein their respective axes are substantially coincident with one another.

3,883,935
SPREADER FOR USE WITH COMPRESSIVE SHRINKING MACHINES FOR TUBULAR KNIT FABRICS

Frank Catallo, 84 Wheatly Rd., Old Westbury, N.Y. 11568, and Donald Foreman, 160 Puritan Dr., Scarsdale, N.Y. 10583

Filed Feb. 11, 1974, Ser. No. 441,478
Int. Cl. D06c *5/00*
U.S. Cl. 26—55 R **4 Claims**

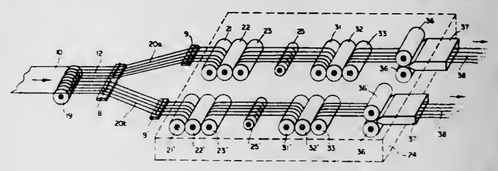


1. In a spreader for preparing a circular knit fabric tube for direct introduction into the receiving end of an associated opposed twin belt type of compressive shrinking machine; a frame comprising a pair of frame members arranged in spaced parallel relation and having outer edge portions symmetrically tapered; a horizontal guide attached to and extending forwardly from said frame for initiating the spreading and flattening of said fabric tube; two sets of laterally spaced upper and lower idler wheels mounted adjacent the front of said frame and freely rotatable about vertical axes, portions of the peripheries of said idler wheels extending laterally beyond the associated edges of said frame; two sets of oppositely driven, symmetrically opposed, upper and lower tapered rolls located intermediate the front and rear ends of said frame for advancing said fabric tube by engagement with face portions thereof adjacent the lateral edges thereof; two sets of laterally spaced upper and lower idler wheels of symmetrically opposed frustoconical configuration mounted on said frame members in opposition to said tapered rolls and freely rotatable about vertical axes whereby to define fabric-receiving nips between the opposed surfaces of said tapered rolls and said frustoconical idler wheels; and a horizontal tucker blade spanning the rear of said frame and attached to the rear ends of said frame members for introducing said spread and flattened fabric tube into the receiving end of said associated compressive shrinking machine.

3,883,936
DRAW-CRIMPING TEXTILE FILM STRANDS

Robert K. Stanley, 620 Meadowvale Ln., Media, Pa. 19063

Continuation-in-part of Ser. No. 336,617, Feb. 28, 1973, Pat. No. 3,835,513, which is a continuation-in-part of Ser. No. 124,213, March 15, 1971, Pat. No. 3,753,275, which is a continuation-in-part of Ser. No. 822,429, May 7, 1969, Pat. No. 3,570,083, which is a continuation-in-part of Ser. Nos. 678,428, Oct. 26, 1967, Pat. No. 3,462,814, and Ser. No. 302,758, July 31, 1963, Pat. No. 3,376,622, said Ser. No. 216,525, is a continuation-in-part of Ser. No. 846,457, July 31, 1969, Pat. No. 3,781,852, which is a continuation-in-part of Ser. No. 835,883, June 9, 1969, Pat. No. 3,559,254, which is a continuation of Ser. No. 349,338, March 8, 1964, Pat. No. 3,348,283. This application May 10, 1974, Ser. No. 468,731The portion of the term of this patent subsequent to Aug. 21, 1990, has been disclaimed.
Int. Cl. D02g *1/12*
U.S. Cl. 28—72.14 **12 Claims**



1. Continuous draw-crimping process for textile film strands, comprising the sequentially contiguous steps of tensioning a multiplicity of drawable textile film strands and thereby drawing them simultaneously to increased length in a plurality of drawing steps arranged side by side in a drawing zone and then compressively crimping the drawn strands.

3,883,937
METHOD OF FABRICATING A MICROMINIATURE ELECTRONIC TRIMMER CAPACITOR

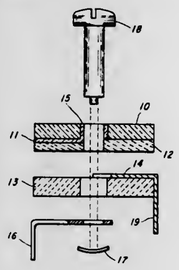
Dale Bruce Alexander, Richardson, and James Hayden Johnstone, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 3, 1974, Ser. No. 502,312
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 **8 Claims**

1. A method of fabricating a variable microminiature capacitor comprising the steps of:

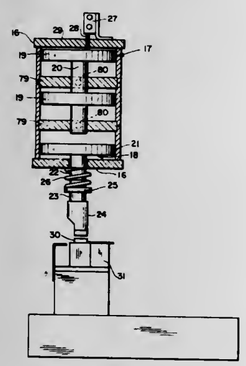
a. providing two similar disc-shaped non-conductive substrates each having a center opening therein;
b. firing one of said substrates;
c. lapping flat one major surface of said one substrate;
d. depositing a metal coating on a portion of said one major surface of said one substrate and extending into a portion of the center opening thereof, the metal coating on said one major surface forming a rotor electrode;

e. forming a layer of dielectric material on said one major surface of said one substrate completely covering the deposited metal electrode and the remaining portion of said one major surface;
f. affixing a metal stator electrode to one major surface of the other substrate;



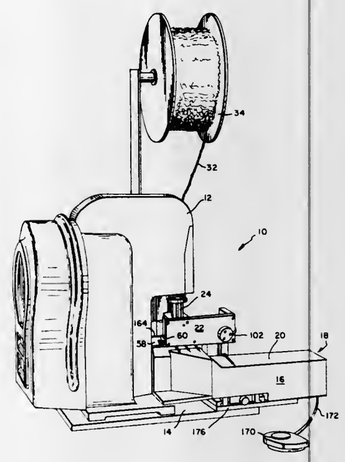
g. sandwiching said first and second substrates together with said layer of dielectric material and said stator electrode forming an interface therebetween; and
h. inserting a shaft member having an adjusting head on one end thereof through the center openings in said substrates, said shaft member making positive electrical and mechanical contact with the metal extending into the center opening of said one substrate and freely movable within the opening in said second substrate.

3,883,938
FLUID-POWERED CRIMPING PRESS
Alfred W. Schmidt, P.O. Box 787, Keystone Heights, Fla. 32656, and Richard B. Freeman, 3354 Dorchester Rd., Shaker Heights, Ohio 44120
Filed Mar. 4, 1974, Ser. No. 447,555
Int. Cl. B21f *15/00*
U.S. Cl. 29—203 DT **18 Claims**



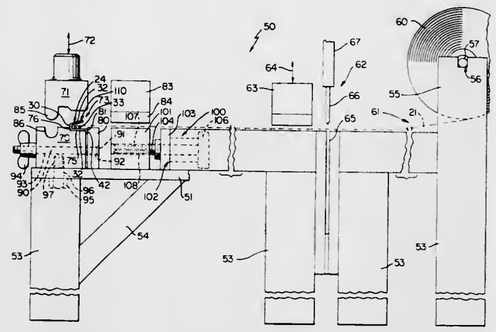
1. In a power-operated crimping press for tape-carried workpieces to be crimped, the combination of a fluid-powered first hydraulic cylinder with a ram for engaging the workpieces and exerting a crimping force thereon, press-actuating means for directing fluid under pressure to said press, first electrically-operated valve means blocking said fluid flow in its non-energized mode, spring means associated with said ram to yieldably advance said ram toward workpiece-engaging position, first electrical switch means for enerizing said first electrically-operated valve means to open position in response to closing of said switch means by movement of said ram to said workpiece-engaging position, a second hydraulic cylinder, a feed mechanism for sequentially advancing said tape-carried workpieces to crimping position and powered by said second cylinder, second valve means responsive to opening of said first electrically-operated valve means for controlling pressure fluid to said ram to cause crimping thrust of said ram, third valve means responsive to attainment of a predetermined crimping pressure by said ram for directing fluid pressure to retract said ram in opposition to said spring means and to cause resetting of said feed mechanism, and fourth valve means responsive to retraction of said ram for relieving fluid pressure on said first cylinder and directing fluid pressure to said second cylinder to advance said feed mechanism and index said tape while said spring means is advancing said ram to workpiece-engaging position to complete the operative cycle.

3,883,939
MANUALLY LOADED TERMINAL APPLICATOR
Donald Andrew Wion, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed June 5, 1974, Ser. No. 476,750
Int. Cl. H01r *43/04;* **H05k** *13/04*
U.S. Cl. 29—203 DS **14 Claims**



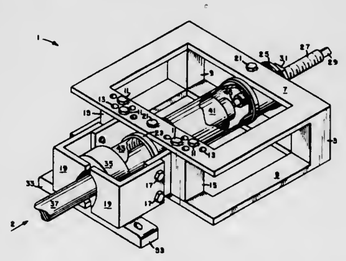
1. In an apparatus for applying terminals to the ends of wires including a terminal applying station, a loading station, and a conveyor extending between said loading station and said terminal applying station and having transverse longitudinally spaced slots adapted to receive wires therein at said loading station, each slot being defined by elastomeric material and having an open side and an opposed closed side;
the combination therewith of
means to position a wire into a slot at said loading station, said means comprising
wire engaging means, and
moving means operable to move said wire engaging means from a first position remote from the closed side of a slot at said loading station to a second position adjacent said closed side, said wire engaging means forcing said wire into contact with the closed side of said slot as it moves towards its second position.

3,883,940
APPARATUS FOR FASTENING A HOLDING BAR ON A PRINTING BLANKET
William T. Wagner, Dayton, Ohio, assignor to Dayco Corporation, Dayton, Ohio
Division of Ser. No. 349,345, April 9, 1973. This application July 11, 1974, Ser. No. 487,509
Int. Cl. B23p *11/00*
U.S. Cl. 29—243.58 **6 Claims**



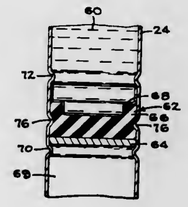
1. An apparatus for fastening a holding bar on a printing blanket; said holding bar having a bight and a pair of diverging legs extending outwardly from opposite ends of said bight; said apparatus comprising; an anvil; hammer means; fastening means for detachably fastening said holding bar to said anvil; said fastening means comprising, a cutout in said anvil defining a clamping surface, a clamping member which is movable toward and away from said cutout and having a cooperating clamping surface, said clamping surfaces being adapted to engage the outside surface of said bight and the terminal end of one of said legs respectively to clamp said holding bar against said anvil and thus enable a terminal end of said blanket to be urged between said diverging legs and against said bight; and positioning means for positioning and holding said blanket to enable said other leg to be engaged by said hammer means to deform said leg so that said legs are arranged substantially parallel with said projections piercing said blanket to fix said holding bar firmly in position.

3,883,941
UNIVERSAL-TYPE, PILLOW-BLOCK BEARING PULLER
Frederick J. Coil, 109 Latham Trailer Cts., Latham, N.Y. 12110
Filed May 1, 1974, Ser. No. 465,809
Int. Cl. B23p *19/02*
U.S. Cl. 29—259 **10 Claims**



1. A universal-type, pillow-block bearing puller for pulling a pillow-block bearing, whose size can range from small to large, supporting a corresponding size shaft, said pillow-block bearing being caged and swivel-mounted in a pillow block, said bearing puller being adapted for emplaced mounting on the working end of said shaft, said bearing puller in its emplaced mounting relationship remaining co-axial or parallel, and in direct line with the center line of said shaft and pillow-block bearing for pulling and removal of said pillow-block bearing with the fullest of applied force and greatest of ease, and without relative pillow-block-bearing movement during the pulling operation; said bearing puller comprising frame means, coupling means, spacer means, jaw means and jack-screw means; said coupling means being interposed said frame means and said spacer means, jaw means and jack-screw means, said spacer means for bearing against said pillow-block bearing to prevent relative movement of said pillow-block bearing during the pulling operation, said jaw means operatively engaging said pillow block, said jack-screw means being operative to transmit pulling force against the working end of said shaft and to transmit pulling force to said jaw means operatively engaging said pillow block, and said spacer means further maintaining said jack-screw means, co-axial or parallel, and in direct line with the center line of said shaft and pillow-block bearing.

3,883,942
METHOD OF PROVIDING A FLUID TIGHT SEAL BETWEEN A THIN WALLED TUBE AND A PISTON
Arthur A. Fichter, Jr., Saratoga; Ronald D. Danks; Farrell G. Larsen, both of San Jose, and Guy C. Throner, Jr., Saratoga, all of Calif., assignors to FMC Corporation, San Jose, Calif.
Division of Ser. No. 235,274, March 16, 1972, Pat. No. 3,811,381. This application Feb. 8, 1974, Ser. No. 440,946
Int. Cl. B23p *11/02*
U.S. Cl. 29—446 **3 Claims**

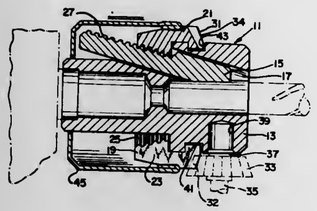


1. A method of providing a fluid tight seal between a thin walled tube and a piston which includes a pair of relatively moving rigid members with a deformable member disposed therebetween comprising the steps of; inserting the piston member into the tube, applying a compressive force to the rigid members to move the rigid members toward each other to radially expand the deformable member against the internal surface of the tube, deforming the tube for releasably locking each of the rigid members in their compressed positions to the tube, and inwardly annularly crimping the walls of the tube against the compressed deformable piston member to radially compress a portion of the deformable piston member to provide a fluid tight seal.

3,883,943
PROCESS OF MANUFACTURING DRILL CHUCKS
William Hugh Dietzen, Fayetteville, N.C., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Nov. 21, 1973, Ser. No. 417,843
Int. Cl. B23p *17/00*
U.S. Cl. 29—413 **7 Claims**

1. A method of manufacturing drill chucks comprising the steps of forming a hollow chuck nut body, cutting a pair of diametrically opposed, breaking slots in said hollow body, cutting internal threads in said body at a positive and known angular location with respect to said breaking slots, breaking said hollow body at said breaking slots to form a pair of semi-

cylindrical nut parts, assembling said nut parts to a chuck body and chuck jaws subassembly with the threads on said nut



parts engaged with threads on said chuck jaws, and assembling a sleeve over said nut parts.

3,883,944

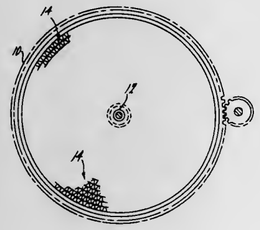
METHOD OF PREPARING OXIDATION RESISTANT MATERIALS AND STRUCTURES

Royal E. Davis, Farmington; Amedee Roy; Claude Belleau, both of Troy, and Gordon E. Allardyce, Dearborn Heights, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 318,785, Dec. 27, 1972, Pat. No. 3,807,030. This application Dec. 20, 1973, Ser. No. 426,867

Int. Cl. B23p *3/00, 19/04*

U.S. Cl. 29—460 **8 Claims**



7. The method of simultaneously diffusion alloying and bonding a matrix assembly made up for the most part of low carbon steel foil by the codiffusion of aluminum and chromium into the assembled steel parts, comprising the steps of: dipping the assembly into a slurry comprised of about 1:1 Al—Fe and Cr powders present in about a 4:5 ratio and suspended in a viscous binder vehicle;

removing excess slurry material from the assembly after withdrawing it from the slurry;

placing the assembly in a sealed diffusion container;

purging the container with argon at a temperature of about 700°–800° F. for a period of about 2 hours to substantially remove the binder vehicle;

cooling the container and contents;

introducing a mixed atmosphere of H_2 and about 1% HF by volume into the container;

causing the gas mixture to circulate through the container for about 15 minutes;

establishing a substantially static atmosphere of the mixture in the container;

heating the container contents to about 2,000° F. at an average rate of about 400°–500° F. per hour and holding the 2,000° F. temperature for about 2 hours after it is reached;

cooling the container and contents to room temperature, purging the container with argon at about 1,000° F. during cool-down, and finally removing loose residue remaining on the core.

3,883,945

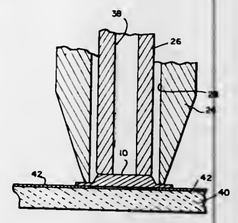
METHOD FOR TRANSFERRING AND JOINING BEAM LEADED CHIPS

George Wallis, Lexington, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Mar. 13, 1974, Ser. No. 450,599

Int. Cl. B23k *19/00;* **H05k** *3/30*

U.S. Cl. 228—176 **3 Claims**



1. A method of transferring semiconductive chips from a backing disc and joining them to a substrate comprising:

A. providing:

a. a heated sleeve

b. a tube slideably carried in a bore of said sleeve,

c. means applying a partial vacuum to said tube, and

B. retrieving said semiconductive chips from said backing disc and joining them to a circuit board by:

a. positioning said sleeve in a line with a chip,

b. advancing said tube beyond an end of said sleeve to engage said chip

c. applying a vacuum pressure to said tube to hold said chip against an end of said tube;

d. transferring said chip to align it with said substrate,

e. retracting said tube to hold said chip against said sleeve, and

f. joining said chip to said substrate.

3,883,946

METHODS OF SECURING A SEMICONDUCTOR BODY TO A SUBSTRATE

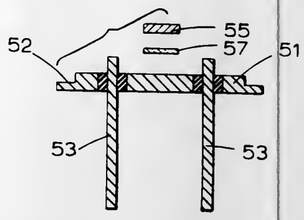
John Robert Dale, Salyfords near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 13, 1972, Ser. No. 262,342

Claims priority, application United Kingdom, June 17, 1971, 28449/71

Int. Cl. B23k *31/02*

U.S. Cl. 228—121 **33 Claims**



1. A method of forming a bond between a substantially flat surface of a semiconductor body and a substantially flat surface of a substrate via an intermediate layer of soft solder material, said bond having a bond tensile strength of approximately 20 per cent or more of the Ultimate Tensile Strength of said intermediate layer, comprising the steps of:

positioning a malleable metal layer of soft solder material having lead as the primary constituent and a melting point within the range of 300° to 327°C between a flat surface of a semiconductor body and a flat surface of a substrate; and

pressing said semiconductor body and substrate together at a pressure normal to said flat surfaces of between 1 and 5 tons per square inch at a temperature within the range of 240° to 290°C but below the melting point of said malleable metal layer at said pressure and suitably close to but below the lowest temperature at which a liquid phase forms at a surface of said malleable layer at said pressure, said temperature and pressure being maintained for a period sufficient to achieve a bond having a bond tensile strength of approximately 20 percent or more of the Ultimate Tensile Strength of said malleable layer, the maximum period required for such bonding being 30 seconds.

3,883,947

METHOD OF MAKING A THIN FILM ELECTRONIC CIRCUIT UNIT

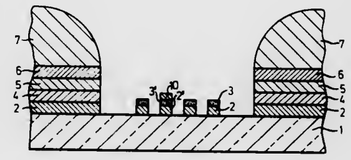
Günter Krüger, Leonberg; Helmut Baum, Stuttgart (Mohringen), and Manfred Widmaier, Leonberg-Eltingen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Division of Ser. No. 302,150, Oct. 30, 1972. This application Jan. 28, 1974, Ser. No. 437,223

Claims priority, application Germany, Nov. 5, 1971, 2155029

Int. Cl. B44d *1/18;* **C23f** *1/02*

U.S. Cl. 29—578 **5 Claims**



1. A method of manufacturing a thin film electronic circuit unit of laminate structure comprising the steps of:

applying a film of valve metal over the entire surface of an insulating substrate;

applying a three-layer metallization film over the entire surface of said film of valve metal by successively sputtering thereon a first layer of copper, an intermediate layer of a diffusion barrier metal and a second layer of copper;

applying a first mask to define the totality of a first and second pattern, said first and said second patterns communicating together in at least one location;

etching said three-layer metallization film and said valve metal film away through gaps of said first mask thereby leaving both said films in said first and second patterns; removing said first mask;

applying a second mask to protect said second pattern;

etching said three-layer metallization film, but not said valve metal film, of said first pattern with a selective etchant to expose said valve metal film of said first pattern;

partially oxidizing anodically said valve metal film of said first pattern, and thereafter removing said second mask; and

dipping the surface of said substrate which bears the aforesaid films and patterns in liquid lead-tin solder, said solder adhering, as the result of such dipping, to the three-layer metallization film of said second pattern but not adhering to said oxidized valve metal film nor to said substrate.

3,883,948

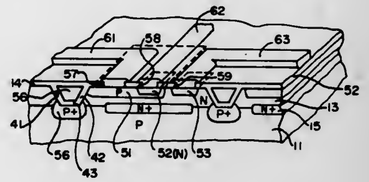
SEMICONDUCTOR STRUCTURE AND METHOD

David F. Allison, Los Altos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 2, 1974, Ser. No. 429,933

Int. Cl. B01j *17/00*

U.S. Cl. 29—577 **7 Claims**



1. In a method for forming a semiconductor structure, providing a semiconductor body having an impurity of one conductivity type therein and having a major surface lying in a <100> plane, providing an etch resistant mask on said surface and having a predetermined pattern of openings for moats formed therein, bringing an anisotropic etch into contact with the portions of said surfaces lying in the <100> plane exposed by the mask to form moats in the semiconductor body having side walls lying in a plane different from the <100> plane and at said surface defining spaced islands, said side walls defining the moats extending downwardly into the semiconductor body until they join each other to form moats which are substantially V-shaped in cross section, forming protective layers upon said side walls defining the moats, etching away portions of the protective layers in the moats so that the portions of the protective layers at the apex of the moats are removed and the thickness of the protective layers on the side walls is reduced, causing an impurity of said one conductivity type to enter the semiconductor body through the apexes of the moats to form regions of said one impurity of one conductivity type of greater concentration than that of the semiconductor body extending downwardly from the layers of the moats, forming protective layers in the apexes of the moats and adjoining the protective layers on the side walls of the moats, filling the moats with a filling material, forming devices in said islands, providing protective layers overlying said islands and adjoining the protective layers in the moats and forming leads on said layers of protective material extending through said layers of protective material to make contact with said devices in said islands and interconnecting the devices with the devices in other islands.

3,883,949

REED SWITCH MANUFACTURE

John Hill, Bickley, and Henryk Turczanski, Beckenham, both of England, assignors to Comtelco (U.K.) Limited, Tonbridge, Kent, England

Filed Dec. 11, 1973, Ser. No. 423,735

Claims priority, application United Kingdom, Feb. 6, 1973, 5839/73

Int. Cl. B23p *17/00*

U.S. Cl. 29—622 **11 Claims**

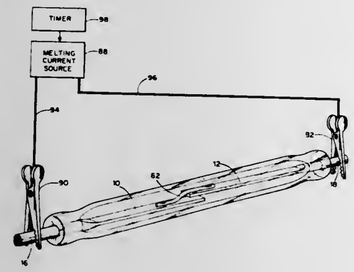
1. A method for precisely positioning a pair of coacting conductive switch contacts within a sealed enclosure comprising the steps of:

disposing said contacts in a fixed predetermined spatial relationship;

rigidly joining said contacts with an electrically conductive meltable connection while in said fixed predetermined spatial relationship;

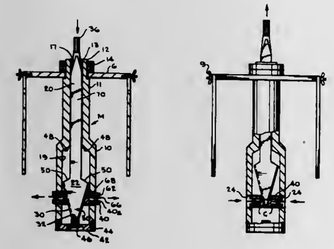
sealing said contacts while joined as aforesaid within an

enclosure whereby said rigid connection retains said contacts in said predetermined spatial relationship; and



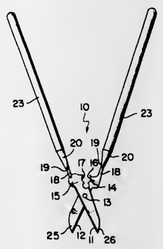
eliminating said connection between said contacts by melting said rigid connection within said enclosure.

3,883,950
INSIDE PIPECUTTER
Arthur L. Kurtz, 4202 Little Berry, Houston, Tex. 77018
Filed June 28, 1973, Ser. No. 374,523
Int. Cl. B23d *21/08, 21/14;* **B26d** *3/16*
U.S. Cl. 30—106 **5 Claims**



1. An inside pipecutter for cutting off plastic pipe encased in concrete at some desired elevation above or below the upper surface of the concrete comprising:
a. a rotatable mandrel adapted to be inserted into the upper open end of a section of plastic pipe embedded in concrete and protruding above the upper surface of such concrete;
b. guide means for supporting said rotatable mandrel adjacent its upper end with its lower end in the pipe, said guide means including a plurality of adjustable legs for supporting said mandrel at a desired elevation relative to the upper surface of the concrete;
c. cutter means carried by said rotatable mandrel and movable radially outwardly beyond the outer circumference of said mandrel and into engagement with the inner surface of the plastic pipe for cutting same;
d. means for rotating said mandrel;
e. drive means for urging said cutter means radially outwardly for cutting the pipe upon rotation of said mandrel, said drive means including a wedge shaped drive means; and
f. adjustable stop means in said mandrel for limiting downward movement of said wedge shaped drive means, said stop means being mounted for adjustment from the exterior of said mandrel.

3,883,951
LONG HANDLED SHEARS
Theodore Farrell, Pomona, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y.
Filed Aug. 7, 1974, Ser. No. 495,442
Int. Cl. B26b *13/08*
U.S. Cl. 30—226 **10 Claims**

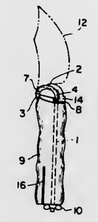


1. A long handled shears, which comprises:
a. a straight edge jaw;
b. a straight edge cutting blade;
c. said straight edge jaw pivotally mounted in a crossed scissor type assembly to said straight edge cutting blade with a stationary fulcrum pin;
d. a geometrically shaped butt end of said straight edge jaw;
e. a second geometrically shaped butt end of said straight edge cutting blade;
f. a double concave shaped inside cutting edge of said second butt end;
g. a second double concave shaped inside cutting edge of said second butt end;
h. two elongated rod members;
i. said elongated rod members affixed to the ends of said butt end and said second butt end;
j. two open ended cone shaped members;
k. said elongated rod members mounted into an opened apex end of each said cone shaped member;
l. an inside bottom base periphery of each said cone shaped member;
m. two elongated handles;
n. a means of attaching each said elongated handle to said inside bottom base periphery of each said cone shaped member;
o. said straight edge jaw tapered to a pointed outer end; p. said straight edge cutting blade tapered to a second pointed outer end;
q. said straight edge jaw beveled below said stationary fulcrum pin at an obtuse angle to a longitudinal axis of said butt end; and
r. said straight edge cutting blade beveled below said stationary fulcrum pin at an obtuse angle to a second longitudinal axis of said second butt end.

3,883,952
HIDE SPLITTING AND GUTTING DEVICE
Blaz Strovas, Borger, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed May 14, 1974, Ser. No. 469,648
Int. Cl. B26b *5/00*
U.S. Cl. 30—299 **3 Claims**

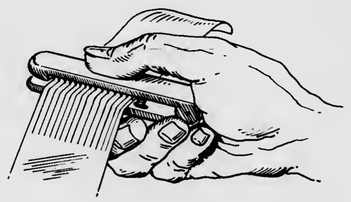
1. A hide splitting and gutting device, comprising
a rod-like shaft having an arcuate head of substantially semicircular configuration with a free end substantially diametrically opposite another end on the shaft and a slot formed therethrough from substantially one end to the other in a plane substantially perpendicular to the central axis of the arcuate head;

a handle removably affixed to the shaft around the shaft and free from the arcuate head;
a skinning blade removably affixed to the arcuate head of the shaft and extending through the slot therethrough



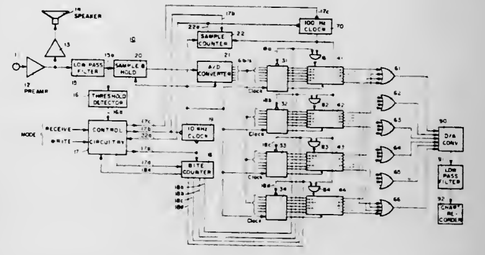
substantially coaxially with and away from the shaft; and
a hide splitting blade removably affixed to the arcuate head of the shaft and extending substantially diametrically between the ends of the arcuate head.

3,883,953
DECORATIVE RIBBON SHREDDER
James W. Saullo, Forest Ave. Ext., Jamestown, N.Y. 14701; William L. Fehlman, 168 Work St., Falconer, N.Y. 14733, and Harry W. Grosser, 1309 Forest Ave. Ext., Jamestown, N.Y. 14701
Filed Mar. 8, 1973, Ser. No. 339,427
Int. Cl. B26b *3/04*
U.S. Cl. 30—304 **4 Claims**



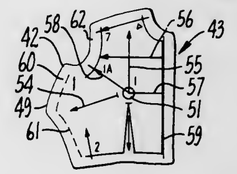
1. A hand operated tool for the purpose of stranding or shredding decorative ribbon, such as used on gift packages and the like,
said tool having a first jaw and a second jaw,
means swingably connecting said jaws together to swing relative to each other about a lateral axis,
teeth fixed to one of said jaws,
said teeth being pointed and arranged in a longitudinal row generally perpendicular to said axis about which said jaws swing,
said teeth terminating in spaced points,
said points being adapted to penetrate a ribbon disposed between said jaws and to engage the jaw adjacent said points to cause said ribbon to curl and fluff up, thus making it more attractive, this being accomplished by pulling said ribbon through said tool,
a post is fixed to one said jaw and said post is slidably received in an opening in the other said jaw whereby said post will act as a stop when said ribbon enters said tool and also serves as a spring retainer, holding the spring required to force said jaws apart after said ribbon has been pulled through, and will also act as a stop to keep said jaws from spreading too far open after said ribbon has been pulled through.

3,883,954
METHOD AND APPARATUS FOR RECORDING OCCLUSAL VIBRATIONS
Lawrence R. Simmering, Cinnaminson; Thomas B. Martin, Delran, and Marvin B. Herscher, Cherry Hill, all of N.J., assignors to Threshold Technology Inc., Cinnaminson, N.J.
Filed July 30, 1973, Ser. No. 383,900
Int. Cl. A61c *9/00*
U.S. Cl. 32—19 **8 Claims**



1. Apparatus for producing a viewable display of the acoustic vibrations resulting from an act of dental occlusion, comprising:
transducer means for generating an electrical signal representative of vibrations from oral occlusion;
threshold detection means responsive to said electrical signal for generating an enable signal when said electrical signal exceeds a predetermined threshold condition;
digitizing means responsive to said enable signal for sampling said electrical signal at a first clock rate and generating digital representations of said signal;
means for storing said digital representations;
means for reading out the stored digital representations at a second lower clock rate;
means for converting the read out digital signals to analog signals; and
means for displaying said analog signals.

3,883,955
PATTERN FITTING TOOL AND METHOD OF CUSTOM FITTING PATTERNS
Roberta F. Bush, 232 Sierra Dr., Walnut Creek, Calif. 94596
Filed June 11, 1969, Ser. No. 832,043
Int. Cl. A41h *3/00*
U.S. Cl. 33—12 **5 Claims**



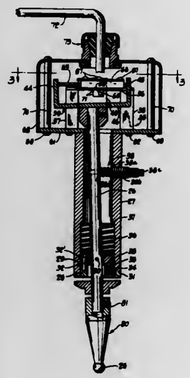
1. A plastic pattern tool for providing customized fitting suitable for fitting a female figure comprising plastic sheet material having basic pattern areas indicating a bodice front, bodice back, skirt front, skirt back and sleeve, said pattern having fixed reference markings indicating the position for the bust, seat, and elbow, and containing numbers thereon locating areas which may require pattern changes to fit unusual figures and bring the pattern changes within the main body of the pattern whereby three dimensional changes may be made throughout the pattern area, and in which the patterns contain a plurality of correctable markings indicating areas for locating darts and seams.

3,883,956

3,883,956
PROPORTIONAL CONTROL FOR GUIDANCE SYSTEM

Abraham Zeewy, University Heights, and Donald Geringer, Parma, both of Ohio, assignors to Cecil Equipment Co., Inc., Medina, Ohio

Filed Dec. 26, 1972, Ser. No. 318,493
Int. Cl. G01b 7/28
U.S. Cl. 33—23 K **18 Claims**



1. A probe for detecting the direction and its rate of change of an elevation upon a surface in motion with respect to the probe, comprising:

a body,

a probe shaft carried within said body and having a longitudinal axis with a surface portion at the end thereof, said probe shaft being pivotable in all directions about a point eccentric of said axis by one or more forces acting upon said surface contacting portion,

means for presenting continuous variable electrical resistance changeable by said pivoting of said probe shaft, thereby presenting a resistance change proportional to said pivoting of said probe shaft, and rotatable to the direction and its rate of change of said elevation with respect to the direction of motion between said probe and said elevation.

3,883,957
DIRECTIONAL GYRO INDICATOR SYSTEM

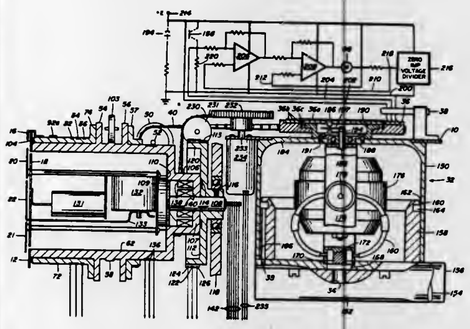
James R. Youkin, Fayetteville, Ark., assignor to Edo-Aire Mitchell Industries, Inc., Mineral Wells, Tex.

Continuation-in-part of Ser. No. 240,382, April 3, 1972. This application Aug. 21, 1973, Ser. No. 389,622
Int. Cl. G01c 19/34
U.S. Cl. 33—318 **11 Claims**

1. In an aircraft display including a generally horizontal barrel having a heading card and a bearing supporting the barrel at the rear end thereof for rotation about the axis of the barrel, the improvement comprising:

a single roller rotatable about a fixed axis and disposed underneath the barrel to rotatably support the barrel,

a pair of rollers spaced apart on the upper portion of the barrel for rotatable support of the barrel, and

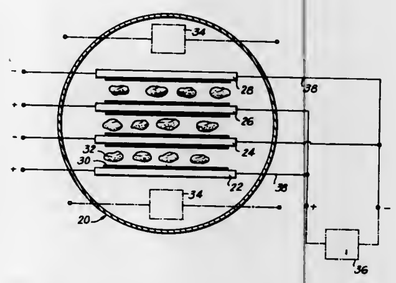


means for adjusting the relative position of said pair of rollers in order to enable centering of the heading card.

3,883,958
METHOD AND APPARATUS FOR ACCELERATED FREEZE DRYING

Antonio Domingos Filipe, Avenida Almirante Gago Coutinho, 3-3°, Libson, Portugal

Filed Jan. 14, 1974, Ser. No. 433,282
Claims priority, application Portugal, Mar. 10, 1973, 59498
Int. Cl. F26b 5/06
U.S. Cl. 34—5 **26 Claims**

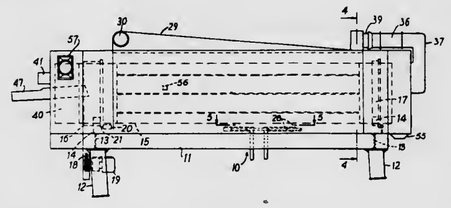


1. In a process for freeze drying a food product, the steps of situating the food product while it is in a frozen condition in an evacuated chamber between a pair of capacitor electrodes for utilizing the food product as a dielectric between said electrodes, initially exposing the latter food product, while it is situated between said capacitor electrodes, to the heat of infrared rays for extracting water from the food product by sublimation and evaporation, and after initially exposing the food product to the heat of the infrared rays for a given length of time and while continuing the exposure of the food product to the infrared rays, electrically energizing said electrodes in a manner producing between the electrodes the energy of a radio frequency field which is transformed into thermal energy by dielectric losses which occur in the interior of the food product for heating the food product simultaneously with infrared radiation and with said thermal energy resulting from dielectric losses, only after initial heating with the infrared rays for said given length of time.

3,883,959
GAS HEATED ROTARY DRIER

Richard E. G. Neville, Salisbury, England, assignor to AMF Incorporated, White Plains, N.Y.

Division of Ser. No. 379,743, July 16, 1973. This application July 12, 1974, Ser. No. 488,617
Int. Cl. F26b 19/00
U.S. Cl. 34—48 **6 Claims**

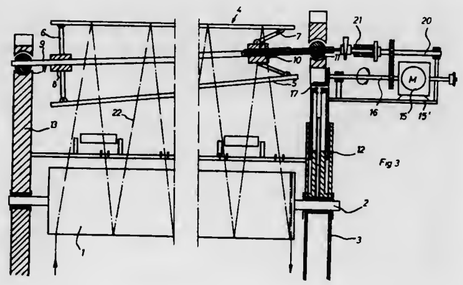


1. A rotary drier for particulate or loose material comprising a cylinder arranged to rotate about its axis inclinded to the horizontal, said cylinder having formed along its cylindrical surface a plurality of hollow paddles extending axially along said cylinder and inwardly thereof, the interior of said paddles communicating with the exterior of the cylinder, at least one gas burner arranged below the cylinder to direct flame into the interior of the hollow paddles, said cylinder being surrounded along its length by a cylindrical wall defining a combustion space between said cylinder adn said wall communicating with the interior of said paddles and the bottom therof being open to said burner, the top of the combustion space including a tapered flue gas collection manifold which communicates with a flue duct for removing waste combustion gases, means for introducing air into said cylinder, said means comprising a passageway for conducting ambient air around said cylinder to preheat the air and for separating the ambient air from combustion gases, a fan for drawing air theough said passageway and ducting for the preheated air to the interior of said cylinder, an inlet probe for introducing preheated air into said cylinder at a position intermediate its ends, and means for measuring and controlling the temperature of tobacco within said cylinder.

3,883,960
DRYING MACHINE FOR TEXTILE FABRIC WEBS

Hans Stang, Birkenweg 13, 555 Bernkastel-Kues, Germany

Continuation-in-part of Ser. No. 208,713, Dec. 16, 1971. This application Dec. 11, 1973, Ser. No. 423,763
Int. Cl. F26b 13/12
U.S. Cl. 34—153 **7 Claims**

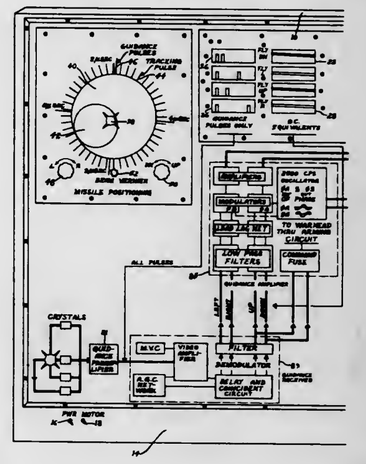


1. A drying machine for shrinking or stretching bands of textile fabric including a drying cylinder and a guide roller spaced from such cylinder, the band being spirally wound around the remote peripheral portions of the cylinder and roller and tensioned therebetween, the guide roller having an axle and a plurality of rods arranged in equiangularly spaced radial planes of said axle forming a guide roller periphery, characterized by a hub carried by the axle and being displaceable axially of the axle, a plurality of struts pivotably connected to said hub and projecting therefrom substantially radially of the axle and forming an angle of projection with the axis of the axle, each of the rods being pivotably connected to one of said struts, said struts being variable in effective length radially of the axle, and means for varying the effective length of said struts and thereby varying the diameter of said guide roller periphery including means for displacing said hub along the axle for changing the angle of projection of said struts and thereby varying the diameter of said guide roller periphery.

3,883,961
GUIDANCE AND CONTROL SYSTEMS DEMONSTRATOR FOR A GUIDED MISSILE

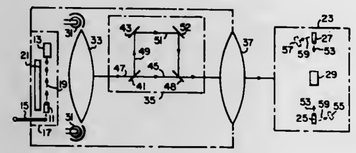
Charles A. Limouze, Dearborn, Mich., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 14, 1956, Ser. No. 628,470
Int. Cl. G09b 9/00
U.S. Cl. 35—10.4 **12 Claims**



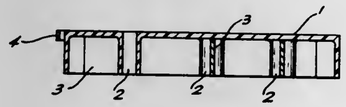
1. A functional systems demonstrator for a guided missile of the type having stabilizer wings, control wings and an electronic system for the reception of radiated guidance intelligence and the production and conversion of error signals to control signals comprising, in combination: a support structure including a panel; first means carried on said panel visually demonstrating the derivation of guidance signals by said guided missile; second means carried on said panel and connected with said first means visually demonstrating the production of error signals commensurate with deviations of said missile from a predetermined orientation in a frame of reference; third means carried on said panel visually demonstrating the conversion of said error signals into control signals, and fourth means carried on said panel visually demonstrating the correction of the orientation of the guided missile in response to said control signals.

3,883,962
DETECTION OF ABSENCE OF CONCENTRATION AND COHERENCE IN A SUBJECT
Horst Kunig, R.D. No. 1, Saltsburg, Pa. 15681
Division of Ser. No. 321,689, Jan. 8, 1973, Pat. No. 3,833,083.
This application June 19, 1974, Ser. No. 480,700
Int. Cl. B60k *27/08*; **G09b** *19/00*
U.S. Cl. 35—22 R **7 Claims**



1. Apparatus for detecting absence both of concentration and of coherence in a subject comprising a first object moveable, and to be moved by said subject over a predetermined path, from a first position to a second position, a second object substantially hidden from the direct view of the subject, said second object being disposed at said second position, said first object being moveable over a path permitting substantial deviation of said first object from direct movement over said predetermined path to said second object, and means for producing a visual image of said first and second objects showing the said movement of said first object, the said visual image being visible to said subject and serving to aid said subject in moving said first object to said second object.

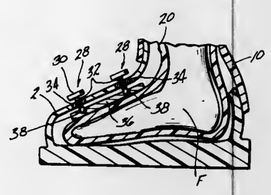
3,883,963
SPIKE AND CLEAT GUARD
Robert Barbito, Sr., 1426 Chalet Ave., Anaheim, Calif. 92802
Filed Apr. 1, 1974, Ser. No. 457,061
Int. Cl. A43b
U.S. Cl. 36—2.5 AN **3 Claims**



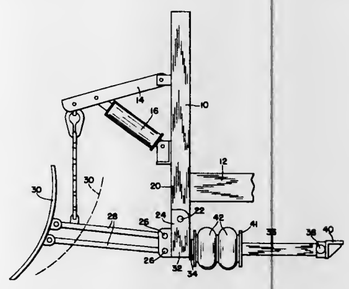
1. A spike guard comprising a sole supporting plate containing four or more female bosses, means for securing said plate in contact with the underside of a shoe containing spikes and adapted so that the said spikes become inserted inside said bosses and said plate is on the underside of said shoe.

3,883,964
SKI BOOT WITH ADJUSTABLE INSTEP PLATE
Donald R. Check, Glastonbury, Conn., assignor to Olin Corporation, New Haven, Conn.
Filed July 5, 1974, Ser. No. 486,267
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL **6 Claims**

1. A ski boot comprising an outer shell of relatively flexible material, said outer shell having an instep portion being formed as an unitary member; a plate member disposed within said boot inwardly of said instep portion, said plate member being positioned to overlie the instep of a foot disposed in said boot; and adjustment means extending through said instep portion of said boot shell, said adjustment means engaging said plate and being operative to move said plate toward and away from the instep of a foot disposed in said boot to vary the tightness of fit of said boot on the foot, and said adjustment means being manipulatable from the exterior of said boot to permit tightness adjustment without removing the foot from said boot.



3,883,965
SNOW PLOW FRAME
Real J. Poirier, Sr., and Real J. Poirier, Jr., both of 5 Bridges Rd., Brimfield, Mass. 01010
Filed Oct. 9, 1973, Ser. No. 404,593
Int. Cl. A01b *61/04*
U.S. Cl. 37—42 R **8 Claims**

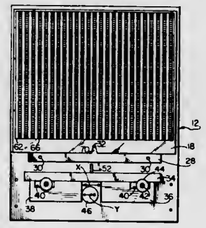


1. A snow plow and a snow plow frame for a vehicle, comprising a bracket pivoted on the frame, means mounting the snow plow on the pivoted bracket, the pivot axis of said bracket being horizontal and transverse of vehicle, direction and fielding, resilient air bag means resisting motion of the bracket in a rearward direction under impact from an obstruction encountered by the plow, the resilient means yielding to allow the plow to relatively yield from the obstruction.

3,883,966
VISUAL DISPLAY APPARATUS
Vernon A. Ludwig, Edmonton, Alberta, Canada, assignor to Valmat Signs & Signals Ltd., Edmonton, Alberta, Canada
Filed Sept. 26, 1973, Ser. No. 400,841
Int. Cl. G09f *11/00, 19/14*
U.S. Cl. 40—36 **4 Claims**

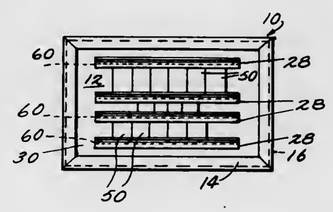
1. A visual display apparatus comprising:
a substantially planar, upstanding base;
a first member having stripes thereon, said stripes being alternately of a design color and a background color;
a second member having thereon spaced stripes of the background color and transparent spaces between said spaced background stripes;
said second member further having thereon design information comprising
a plurality of spaced design colored stripes located in some of said transparent spaces, and
a plurality of spaced transparent portions located in some of said background stripes;
means, coupled to said base, for supporting said first and second members at a lower portion of said base and

adjacent each other in overlying, upstanding arrangement for relative movement; and
means for moving said members relative to each other between a first position wherein the design colored stripes of the first member are aligned with the design colored strips on the second number and a second position wherein the design colored stripes of the first member are between the design colored stripes of the second member so that in the first position no message is displayed but in the second position a message is clearly displayed,
said means for supporting said first and second members including
a first bar rigidly connected in substantially horizontal position to said base and upon which the bottom edge of said first member rests,



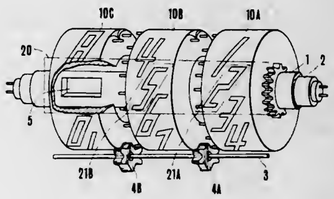
a second bar connected in substantially horizontal position to said base for translational movement and upon which the bottom edge of said second member rests, the lower of said bars porjecting forwardly of said base a distance greater than the upper one of said bars,
a pin extending outwarldy from said base at a position above said first bar, said first member having a slot extending inward from the bottom edge thereof for the reception of said pin, and
an arm rigidly connected to said second bar and extending upwardly therefrom, said second member having a slot extending inward from the bottom edge thereof for the reception of said arm.

3,883,967
SIGN WITH CHANGEABLE CHARACTER PLATES
Guy W. Barnes, 1005 S. 48th Ave., Yakima, Wash. 98902
Filed Sept. 10, 1971, Ser. No. 179,430
Int. Cl. G09f *11/30*
U.S. Cl. 40—65 **14 Claims**



1. A sign for displaying at least one horizontal row of character plates in a manner such that the character plates can be installed, removed and replaced by authorized persons, said sign comprising:
a sign backing member having at least one face;
at least two channel members secured on the backing member, one above the other so the channel members proceed horizontally across said face parallel to one another and terminating adjacent the opposite sides of said backing member;
the lower channel member having means defining an upwardly opening groove extending therealong, said groove having means defining a lip along the upper extent thereof, said lip being spaced from said face of the backing member by a distance at least equal to the thickness of a character plate adjacent the lower edge of the character plate;
the upper channel member having means defining a downwardly opening groove extending therealong, said groove having means defining a lip along the lower extent thereof, said lip being spaced from said face of the backing member by a distance at least equal to the thickness of a character plate adjacent the upper edge of the character plate;
means defining a longitudinally extending ledge within said downwardly opening groove intermediate the height of that groove, said ledge partly constricting said downwardly opening groove but leaving a gap between itself and said face of the backing member at least equal in thickness to the thickness of a character plate adjacent the upper edge of the character plate; said ledge thereby defining a compartment thereabove within said downwardly opening groove;
the distance between the upper and lower channel members being such that a character plate cannot be frontally installed and removed unless the upper edge thereof is permitted to temporarily pass said ledge and enter said compartment so the lower edge of the character plate can clear said lip of the upwardly opening groove;
and a flexible locking strip longitudinally, slidably received in said compartment, said locking strip being thicker than said gap, and said locking strip, when disposed within said compartment obstructing the compartment sufficiently to prevent character plate upper edges from passing said ledge and entering said compartment to an extent sufficient to permit the lower edges of the character plates to clear said lip of the upwardly opening groove, so that character plates may neither be frontally installed nor frontally removed when the locking strip is disposed within the compartment.

3,883,968
DIGITAL DISPLAY APPARATUS
Tomokazu Suzuki, Tokyo, Japan, assignor to Tamura Electric Works, Ltd., Tokyo, Japan
Filed Feb. 14, 1974, Ser. No. 442,618
Claims priority, application Japan, Mar. 29, 1973, 48-38013
Int. Cl. G09f *11/02*
U.S. Cl. 40—77.8 **2 Claims**



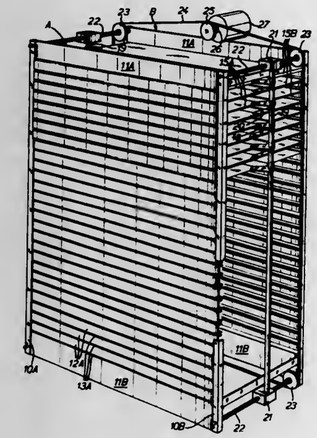
1. In a digital display apparatus of the type having a plurality of display drums, each of said display drums being provided with a plurality of display digits impressed one below the other around the peripheral surface thereof, said drums being loosely mounted on a shaft, means whereby the rotation of a display drum of a lower order of magnitude is transmitted to another display drum of an upper order of magnitude through shift pinions interposed between adjacent display drums, the improvement wherein the display digits on each display drum are substantially equal sized, discrete and inclined in the same direction and by the same angle from a plane perpendicular to

the central axis of said shaft such that a substantial portion of the lower portion of one display digit and a substantial portion of the upper portion of a sub-adjacent display digit are adjacent to each other along the axial direction of said shaft and wherein a front plate is provided in front of said display drums, said front plate being provided with a plurality of apertures or read windows equal in number to said plurality of display drums, each of said windows being so shaped as to expose only one display digit of its associated display drum, whereby the drum diameter can be reduced without a corresponding reduction in display digit size.

3,883,969
ANIMATED SURFACE DISPLAY DEVICE

Bernard Albert Amouriq, 27 Chambines, France

Filed June 28, 1972, Ser. No. 267,234
Claims priority, application France, June 29, 1971, 71.23590
Int. Cl. G09f *11/21*
U.S. Cl. 40—106.52 **10 Claims**

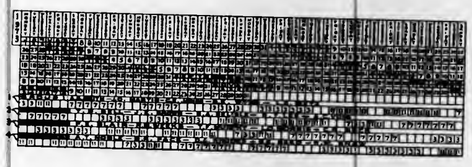


1. A display device comprising a plurality of separate facets juxtaposed in a first plane and forming an animated surface therein, said facets belonging individually to a plurality of quadrangular flexible sheets, a first plurality of guiding means disposed in said first plane and having a width not more than about 1 centimeter and a length not less than about 1 meter, each of said flexible sheets passing over one of said guiding means in the shape of a U and thus forming two parallel sides, a second plurality of second guiding means disposed in a second plane parallel to said first plane, the two sides of each said flexible sheet being coupled to each other by flexible linking means passing over one of said second guiding means in the shape of a U, and driving means connected to said flexible sheets at the rear of their guiding means and enabling said flexible sheets to effect a sliding movement on their respective guiding means, the said driving means being coupled to said flexible sheets by a plurality of lateral connectors fixed only to the corners of one side, the end of each said side of each flexible sheet being wholly free from any connection between its two corners, whereby each said connector pulls obliquely on only the corner of a corresponding flexble sheet, thereby to achieve very high definition of the display obtained by reducing the width of said facets relative to their length.

3,883,970
WORK-SHIFT INDICATOR

Leonard Earl Campbell, Jr., 460 56th Ave., Meridian, Miss. 39301

Continuation of Ser. No. 304,715, Nov. 8, 1972, abandoned.
This application Dec. 14, 1973, Ser. No. 424,857
Int. Cl. G09d *1/00*
U.S. Cl. 40—110 **5 Claims**



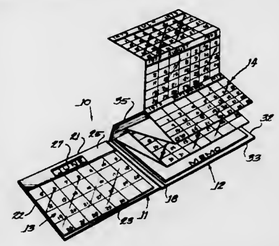
1. A work-shift indicator, comprising:
a thin rectangular sheet of stiffly flexible material, capable of being marked with symbols;
calendar-like indicia on said sheet of the months, dates and days of the weeks of a given period, comprising a number of swing-shift cycles, the said calendar-like indicia being on both sides of said sheet and in a number of successive spaces equal to the number of days in said period, arranged in parallel lines and comprising a plurality of sets of date symbols, each of said sets being equal in number of symbols to the number of days in a swing-shift cycle and ending with an end of one of said parallel lines; and an endless ribbon of flexible material, encompassing and in contact with said sheet, slidably and turnably mounted on and between two opposite edges of said sheet, having substantially the same width throughout its length and all around said sheet, and having an encompassing length substantially equal to twice the sum of the distance between said edges and the thickness of said thin sheet and sufficient clearance to allow sliding of the band on the sheet; the said band comprising an additional set of symbols indicating worker groups of said swing-shift cycles, spaced along the length of the ribbon, and comprising groups of successive figures indicating work-shift starting hours, spaced along the length of the ribbon, the said figure groups being separated from each other by off-duty spaces indicating days off of the said groups; part of the said successive figures being in a line on one side of said sheet and the other part of said successive figures being in a line on the other side of said sheet; the said figures and off-duty spaces also being in perpendicular lines that are normal to said parallel lines of the calendar-like indicia, each of the said perpendicular lines for each of the starting-hour figures and off-duty spaces in one adjusted position of said endless ribbon orthogonally intersecting a said parallel line of calendar-like indicia at an indicium indicating the day of said starting-hour figure or off-duty day of one of said groups, and in another, turned position of the ribbon indicating the day of said starting-hour figure or off-duty day of another of said groups.

3,883,971
YEAR-AT-A-GLANCE MEMO CALENDAR

Jean S. Weiss, 4147 S.W. 11th St., Miami, Fla. 33134

Filed Nov. 12, 1973, Ser. No. 415,236
Int. Cl. G09d *3/04*
U.S. Cl. 40—119 **1 Claim**

1. A calendar comprising in combination:
a substantially flat rectangularly shaped back cover having a top edge, a bottom edge, an outermost end, an innermost end, an interior surface, and an exterior surface;
a lip portion integrally formed with the back cover and extending along the back cover top edge and bent over onto itself in juxtaposition with the top portion of the cover interior surface to define a flap extending completely therealong having a terminal edge pointing in the direction of the cover bottom edge;
a substantially flat rectangularly shaped front cover of a size and configuration approximately equal to the size and configuration of the back cover, the front cover having a top edge, a bottom edge, an outermost end, an innermost end, an interior surface, and an exterior surface;
a lip portion integrally formed with the front cover and extending along the front cover top edge and bent over onto itself to be in juxtaposition with the top portion of the front cover interior surface with the terminal edge pointing in the direction of the front cover bottom end in a manner to define a flap extending completely along the top edge of the front cover;

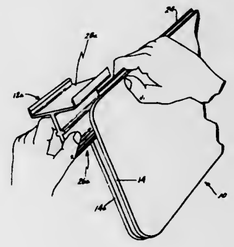


the inner end of the front cover being hingedly connected to the inner adjacent end of the back cover with the front cover swingable thereabout between a closed portion overlying the back cover with the interior surfaces of the back cover and front cover disposed in confronting relationship and an open position where the front cover and back cover are co-planar;
a pair of elongated rectangular sheets of paper each of the same length and width and each having imprinted on the face surface thereof a series of six calendar months in succession theredown from the top end to the bottom end of the face surface;
the first sheet containing the name and days of the months of January through June;
the second sheet containing the name and days of the months of July through December;
each month extending the full width of its associated sheet and approximately one-sixth the length thereof with the size of each month defining portion not exceeding the width and height of the respective covers;
a plurality of longitudinally spaced transversely extending fold lines disposed on each sheet and which are positioned intermediate the junction of the sequential months printed on the sheet such that the month defining portions on each sheet may be folded over upon each other in a variety of different ways utilizing such fold lines so that a desired month defining portion of each sheet may rest on the top of the folded sheet;
the top edge of the first sheet adapted to be placed in its folded condition beneath the flap of the front cover and held in position thereby such that the desired month indicia is visibly displayed on such cover when the covers are in the open position;
the top edge of the second sheet adapted to be placed in its folded condition beneath the flap of the back cover and held in position thereby such that the desired month is visibly displayed on such cover when the covers are in the open position;
an elongated rectangular aperture disposed centrally of the front cover flap and extending transversely therethrough; an elongated rectangular aperture disposed centrally of the back cover flap and extending transversely therethrough in a position to register with the front cover aperture when the front cover is folded about the hinge to overlie the back cover;
each of the month indicia defining portions of each of the sheets having at the top central portion thereof the name of the month for which the portion is intended;
the name of the month of the month defining portion laying topmost on the folded sheets when the same are inserted beneath the associated flap registering with the associated flap aperture for visibility of the month exteriorly of the flap, with the days of the corresponding month being visible below the associated flap;
the back cover and front cover each being manufactured of a heavy guage cardboard covered with a wood grain paper material;
and the hinge interconnecting the inner end of the front cover to the adjacent inner end of the back cover comprising a cloth material extending the complete length of the inner ends and secured thereto.

3,883,972
UNIVERSAL MOUNTING FOR VARIOUS SIGNAGE

Robert L. Propst, Ann Arbor; William E. Stumpf, Zeeland, and Michael A. Wodka, Ypsilanti, all of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Oct. 3, 1972, Ser. No. 294,657
Int. Cl. G09f *7/22*
U.S. Cl. 40—128 **24 Claims**



1. A display assembly comprising, in combination: a sign having front and rear panels spaced from each other by a spacer element, said element being recessed from the outer margins of said panels, said spacer element including means defining a keeper; and an adapter having a first portion defining a tongue means cooperatively engageable with said keeper to rigidly connect said adapter to said sign, and a second portion cooperable with a support to anchor said adapter and sign to the support, said tongue means further including one or more raised portions on each side, said raised portions abutting the inner surfaces of said panels between said spacer element and the outer margin of said panels to provide lateral supportive stability of said sign and spacer to said adapter.

3,883,973
SIGN

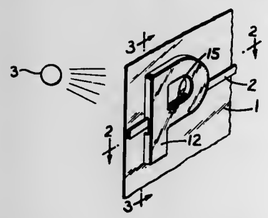
Jack Goodman, 5540 W. Harrison St., Chicago, Ill. 60604

Filed Jan. 12, 1971, Ser. No. 105,907
Int. Cl. G09f *7/02*
U.S. Cl. 40—142 **1 Claim**

1. A sign having a horizontal letter supporting rail, a letter for said rail, said letter having an L shaped mounting slot across the back thereof for the full width of the letter, with the horizontal portion of the L of the slot opening at and facing the rear of the letter and communicating with the vertical portion of the slot which is located forwardly at the rear end of the letter to define a stem between the rear edge of the vertical portion of the slot and the rear edge of the letter, the distance between the bottom of the stem and the bottom of the horizontal portion of the slot being sufficient to permit the mounting of the letter in a vertical position in front of the letter-supporting sign rail with the slot straddling the base and the top of the rail, and with the stem of the letter in a position

at the rear of the rail, and to permit lowering of the [illegible]

at the rear of the rail, and to permit lowering of the letter onto the rail to bring the opposite sides of those parts of the letter that define the vertical portion of the L shaped slot into positions on opposite sides of the rail, at least one of the opposite sides of the vertical portion of the L of the slot bearing against the side of the rail to restrict upward movement of the letter

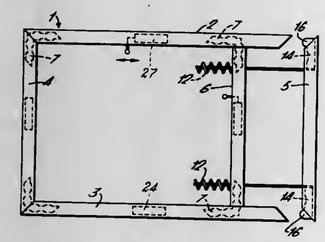


from the rail to a vertical direction, the slot being wedge shaped in a direction from the rear toward the front of the letter to cause the slot portion of the letter to wedge with the rail as the letter reaches its lowermost position, and the center of the mounting slot from the top to the bottom thereof being approximately midway between the top and the bottom of the letter.

3,883,974
FRAMES

Christopher John Ashton, Barnet, England, assignor to Marler Haley ExpoSystems Limited, Barnet, England

Filed Nov. 7, 1973, Ser. No. 406,401
Claims priority, application United Kingdom, May 24, 1973, 24873/73
Int. Cl. G09f *1/12*
U.S. Cl. 40—152 **8 Claims**

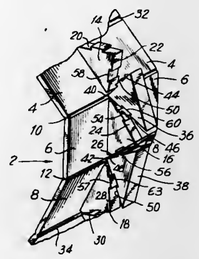


1. A frame for a display means, such as a picture, poster, display panel or the like, comprising a first pair of channel-shaped elongate members forming sides which are substantially parallel one to the other and a second pair of elongate channel-shaped members forming sides which are substantially parallel one to the other and extend at right angles to the first pair of said elongate members, each of said elongate members having four substantially parallel and spaced apart wall means whereby three parallel grooves are defined, an internal pair of said wall means having downwardly inclined lips at their free edges, and wherein there is means adapted to allow one of said elongate members to be demountable from but remaining secured to the remaining elongate members of said frame, said means comprising an intermediate channel-shaped member having walls with downwardly inclined lips at their free edges, said walls defining a groove with a width corresponding to the width of the middle groove of said first and second pairs of elongate members, said intermediate member being positioned to lie between and parallel to the elongate members of one of said pairs of elongate members and nearer to said one of said elongate members than the other, and resilient means coacting between said intermediate member and said nearer one of said elongate members for urging said nearer one of said elongate members towards said remaining elongate members of said frame, said remaining elongate members of said frame and said intermediate member being secured together by L-shaped clips which are received in said grooves, said demountable one of the elongate members having locating means protruding from the ends thereof for being received in said grooves, said locating means and said resilient means being adapted to allow movement of said one elongate member between a first position in which the locating means is received in the grooves and the frame is complete and a second position in which said one elongate member has been moved away from said intermediate member against the force of said resilient means to allow the locating means to be removed from said grooves, and said urging means permitting said one elongate member to be moved laterally with respect to the plane of the frame when said one elongate member is in said second position to allow access of a display means to one of the outer pair of three grooves and then to the other of the outer pair of the three grooves.

3,883,975
PICTURE FRAME STRIP

Robert Mentken, 51 E. 97th St., New York, N.Y. 10029

Continuation-in-part of Ser. No. 311,552, Dec. 1, 1972, abandoned. This application June 26, 1974, Ser. No. 483,162
Int. Cl. G09f *1/12*
U.S. Cl. 40—155 **12 Claims**



1. A picture-frame strip for framing pictures comprising in combination a plurality of members flexibly connected together, each member having a respectively similarly positioned and aligned second member projecting at a right angle from one side thereof, all said second members being aligned in the same plane and each having surfaces defined at least in part along lines extending from the points where the flexibly connected members are joined, inwardly, in the direction of the center of said second member, at a 45 degree angle, with regard to the respective flexibly connected member from which it projects, means spaced from an adjacent to said second member to retain a picture, removable means to be positioned between adjacent ones of said second members in the plane defined thereby to contact said adjacent second members when said respective first members are arranged in a straight line, and means to hold the ends of the strip together when said frame is formed.

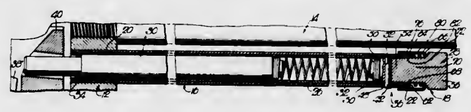
3,883,976
SAFE QUICK-RELEASE LOCK OF CARTRIDGE FEED UNIT TO MAGAZINE OF FIREARM

Gerald F. Norman, Wallingford, and William E. Osborne, Guilford, both of Conn., assignors to The Marlin Firearms Company, North Haven, Conn.

Filed Feb. 20, 1974, Ser. No. 443,942
Int. Cl. F41c *25/08*
U.S. Cl. 42—49 R **8 Claims**

1. A cartridge feed unit for a firearm with a receiver, a cartridge lifter therein, and a tubular front magazine on the receiver with a load opening forward of the latter, comprising

a tube slidable in the magazine and having an end cap accessible at the forward magazine end and manipulatable to retract the tube from and thrust it into a home position in which said cap closes the forward magazine end, a cartridge follower slidable in said tube, a compression spring in said tube between said cap and follower and preloaded to urge the latter rearwardly for holding the rearmost of any number of cartridges in the magazine, including one, in transfer engagement with the lifter, a stop in said tube to hold said follower out of jamming reach of the lifter when the magazine is empty, said cap and magazine being termed members, respectively, a

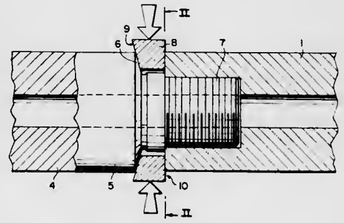


releasable connection between said members to hold said tube in said home position, with said connection providing companion pin and bayonet slot formations on the respective members, and said connection being made on said tubethrust manipulation and a succeeding twist manipulation of said cap member, and a lock for said connection providing spring means carried by one of said members, and becoming first seated on the other member and then loaded on said tubethrust manipulation of said cap member, with said spring means remaining loaded on the succeeding twist manipulation of said cap member.

3,883,977
RIFLE

Samuel A. McClure, Decatur, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 17, 1973, Ser. No. 398,228
Int. Cl. F41c *27/00*
U.S. Cl. 42—75 B **1 Claim**



1. A rifle having a receiver having an internally threaded firing chamber and a substantially planar end surface, the firing chamber opening into the end surface, said rifle comprising

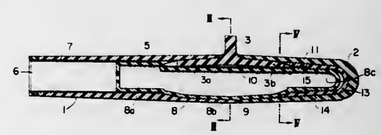
a rifle barrel having a muzzle end and a breech end having a substantially tapered surface tapering toward the breech end as it extends radially outward and an externally threaded hollow cylindrical axial projection adapted to be threadedly coupled in the firing chamber thereby permitting different caliber rifle barrels to be removably mounted on the same receiver; and

a split ring adapted to be mounted on the projection of the rifle barrel and interposed between and abutting the breech end of the rifle barrel and the end surface of the receiver thereby aligning the barrel in the receiver, one axial surface of the split ring being tapered in correspondence with the breech end of the rifle barrel and the other axial surface of the split ring being substantially planar in correspondence with the planar surface of the receiver, the split ring having a smooth inner surface, and further comprising bolt means for securing the free ends of the split ring to each other to tighten the split ring in position.

3,883,978
DEVICE FOR MOUNTING FISHING REELS TO FISHING TACKLE

Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka-ken, Japan

Filed July 12, 1973, Ser. No. 378,496
Int. Cl. A01k *87/06*
U.S. Cl. 43—22 **3 Claims**

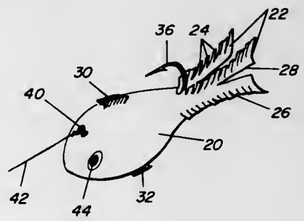


1. A device for mounting spinning reels which comprises in combination, a fore-grip portion having a front bore for attachment to an end of a fishing rod, an axially elongated connector tightly secured by one end into a rear bore of the fore-grip portion, said connector having a peripheral cut-out along a surface thereof, a portion of the peripheral cut-out extending under the fore-grip portion, a cut-out opening along the rear bore of the fore-grip portion and disposed above the peripheral cut-out, screw threads formed on the rear part of the connector, a cap-like rear-grip portion having an axial hollow recession disposed for receiving said connector and a portion of the peripheral cut-out, a securely fixed tubular cap disposed within the rear-grip portion, said tubular cap having screw threads on an inner surface thereof disposed to mate with said screw threads of the connector, the fore-grip portion being joined axially with the rear-grip portion by means of the connector, opposed flanges of a spinning reel being accommodated in the peripheral cut-out and within the fore-grip portion and the rear-grip portion, a stem member of the opposed flanges being accommodated by the cut-out opening of the fore-grip portion when the rear bore of the fore-grip portion is clamped firmly to the rear-grip portion.

3,883,979
ARTIFICIAL FISHING LURE

William O. Williams, Jr., 1309 Lynhurst Dr., Gastonia, N.C. 28052

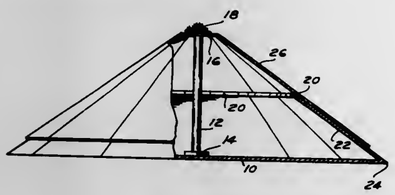
Filed Mar. 2, 1973, Ser. No. 337,302
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.09 **9 Claims**



1. An artificial fishing lure comprising a hook and a supporting portion therefor, an exterior surface-forming portion of thin, resilient, toy balloon-like material mounted on and enclosing said hook-supporting portion, said surface-forming portion including a plurality of outwardly curved tail fin-forming sections extending freely and separately in a longitudinal direction at the rear end of said surface-forming portion, said material for each of said tail fin-forming sections being formed with a concave curvature transversely to the longitudinal extent thereof to thereby form opposed fins with laterally outwardly disposed longitudinal edges, and said surface-forming portion having an open rear end between said tail

fin-forming sections through which said hook-supporting portion is insertable and removable.

3,883,980
MOUSETRAP
Steve H. Johnston, 428 Stradford Ave., Apt. 4D, Brooklyn, N.Y. 11218
Filed Mar. 11, 1974, Ser. No. 449,635
Int. Cl. A01m *23/04*
U.S. Cl. 43—69 **1 Claim**



1. A mouse trap employing bait and comprising:
a horizontal flat base member defining a regular polygon of N sides where N is an integer in excess of two;
a vertical shaft secured to the center of the member and extending vertically upward;
a small flat horizontal disc secured to the top end of the shaft and centered thereon, said disc defining the same shape of N sided regular polygon as said member but having a much smaller area, whereby each side of the disc is much shorter than the corresponding side of the member, said bait being disposed removably on top of said disc;
means disposed horizontally about the shaft at a point intermediate the ends of the shaft and having a periphery defining a regular polygon centered on said shaft, said polygon also having the same N sides and shape as the disc and member, each side of the means polygon being shorter than the corresponding side of the member and longer than the corresponding side of the disc;
N like outwardly and downwardly extending plates secured at side edges to each other, each plate being secured at its top edge to a corresponding side of the means and at its bottom edge to a corresponding side of the member, said plates peripherially enclosing and extending between the means and member; and
N like normally closed trap doors disposed between the means and disc, there being minimal separation between the doors, each door inclining downwardly and outwardly with a top edge adjacent but spaced from a corresponding side of the disc, each door being pivotally secured at a point intermediate its ends to a corresponding side of the means, the bottom edge of each door overlapping the top edge of a corresponding plate whereby the doors are normally closed by weight of gravity, any door when a mouse steps thereon, being caused to open because of the weight of the mouse, thus causing the mouse to fall through the means upon the member and be trapped alive.

3,883,981
HOLDER FOR FISHLINE RELEASE BUTTON
August C. Bohn, 1423 Walnut N.E., Grand Rapids, Mich. 49503
Filed July 18, 1974, Ser. No. 489,809
Int. Cl. A01k *91/00*
U.S. Cl. 43—43.12 **8 Claims**

1. In combination with a fishing rod and a fishing line associated with said rod, and with a ring normally traversed by said line, a ring holder comprising:
a clamping member adapted to engage said rod adjacent the tip thereof;
an arm normally extending from said clamping member parallel to said rod and beyond said tip; and



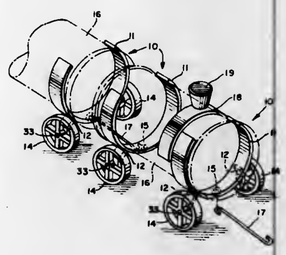
clip means adapted to releaseably secure said ring to said arm.

3,883,982
KAZOO AND FACE MASK COMBINATION
Joseph Michael McClary, Brentwood, Tenn., assignor to Kusan, Inc., Nashville, Tenn.
Filed Apr. 5, 1974, Ser. No. 458,249
Int. Cl. A63h *5/00*
U.S. Cl. 46—1 F **3 Claims**



1. The combination with a face mask having a substantially vertical slot in each side of the mouth area, of a vertically disposed kazoo diaphragm support having ends inserted in the slots for support thereby; and a cord for encircling the head of the wearer to retain said mask thereon.

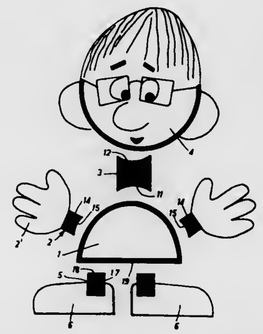
3,883,983
TOY ADAPTER ASSEMBLY
Ora Coster, Beyt Horon Street 7, Tel Baruch, Israel
Filed Nov. 8, 1973, Ser. No. 414,086
Claims priority, application United Kingdom, Mar. 9, 1973, 6526/73
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 **11 Claims**



1. A toy adapter assembly capable of being removably affixed to a container to form therewith a toy, said assembly comprising an integrally formed unit comprising a generally

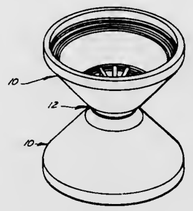
omega-shaped resilient support member with an open top for clasping the container, at least one axle bracket extending generally radially outwardly therefrom, and axle hub means on said bracket, and mobile means capable of being removably mounted on said axle hub means.

3,883,984
PUPPET LIKE DUMMY
Albert Champeaux, 9 Bis, Rue Michel Chasles, Paris, France (75012)
Filed Nov. 28, 1973, Ser. No. 419,700
Claims priority, application France, Dec. 12, 1972, 72.44104
Int. Cl. A63h *33/00*
U.S. Cl. 46—22 **9 Claims**



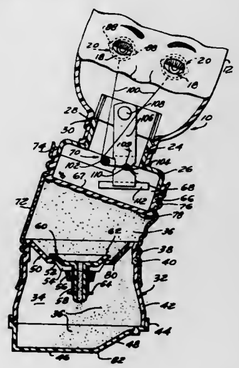
1. A dummy comprising, in combination, a plurality of elements displaceable relative to each other for representing various attitudes of a model symbolized by said dummy; at least two of said elements constituting main elements formed of a ferro-magnetic material and each having at least one substantially spherical surface portion; at least one other of said elements being constituted by a permanent magnet interposed between said two ferro-magnetic main elements; said permanent magnet having two opposite pole surfaces each in magnetic engagement with a spherical surface portion of a respective main element; said pole surfaces being concave and substantially complementary to the engaged spherical surface portion.

3,883,985
DIABLO WITH SLIDING PIN CLUTCH AND RADIAL BEARING SURFACES
Edwin A. Dawson, Jr., 5319 Kugler Mill Rd., Cincinnati, Ohio 45236
Filed Mar. 8, 1973, Ser. No. 339,869
Int. Cl. A63h *1/00*
U.S. Cl. 46—60 **10 Claims**



1. In a "diablo" type spinning toy for use with a driving string including a pair of truncated conical end bells arranged in spaced apart, nose-to-nose relationship, the improved clutch assembly in combination therewith comprising:
a. a shaft, the ends of said shaft being non-rotatively engaged in said end bells;
b. an escapement pin mounted in and slidable transversely through a transverse perforation through said shaft at the longitudinal center of said shaft;
c. a hollow clutch race having on its interior surface a plurality of camming surfaces and driving surfaces cooperating with said pin to drive said shaft at its longitudinal center in one direction and to over-run in the opposite direction; and
d. means rotatably journaling said clutch race about said shaft, said means comprising a pair of truncated conical race cups in nose-to-nose relationship, the large ends of said truncated conical race cups being provided with inturned flanges, said means further comprising surfaces on said shaft, said flanges cooperating with said shaft surfaces to provide radial bearing surfaces.

3,883,986
DOLL WITH EYE-CLOSING MEANS RESPONDING TO LATERAL TILTING AND SEPARATE EYE-CLOSING MEANS RESPONDING TO REARWARD TILTING
Herbert Thorn, Jamaica, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.
Division of Ser. No. 247,567, May 30, 1972, Pat. No. 3,789,544. This application Nov. 14, 1973, Ser. No. 415,606
Int. Cl. A63h *11/00*
U.S. Cl. 46—135 R **7 Claims**

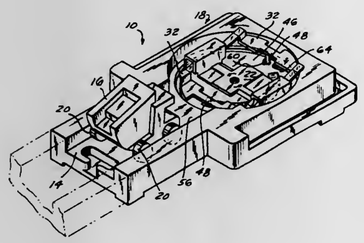


1. A toy doll including a body and head, said head having simulated facial features including eye sockets, and a pair of simulated eye units mounted in said sockets, said units having eye members mounted for movement between open and closed positions, means contained entirely within said head and body for automatically moving said eye members towards said closed position merely in response to lateral tilting of said doll's body and head, said tilting being in at least one lateral direction, and separate means for moving said eye members towards said closed position, independently of said lateral tilting of said doll, when said doll is tilted in a direction generally transverse to the direction of said lateral tilting rearwardly towards a generally horizontal recumbent position.

3,883,987
TOY VEHICLE TURNTABLE
Madhusudan Joshi, Levittown; Edwin A. Nielsen, Oceanside, and Frank D. Ventura, Commack, all of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed May 15, 1974, Ser. No. 469,992
Int. Cl. A63h *19/00*
U.S. Cl. 46—202 **17 Claims**

1. A turntable for a self propelled toy vehicle having at least one drive wheel, said turntable comprising a base along which said toy vehicle may travel and vehicle support means located in the path of travel of said vehicle for supporting the vehicle

with said at least one drive wheel in engagement with said base, said support means being rotatably mounted on said base for rotational movement in a plane parallel to said base whereby engagement of said drive wheel with said base causes said support means to rotate and change the direction of travel of said vehicle; and vehicle barrier means for preventing movement of the vehicle from said support means until said support means has rotated through a predetermined angle of rotation; said barrier means comprising an abutment bar mov-



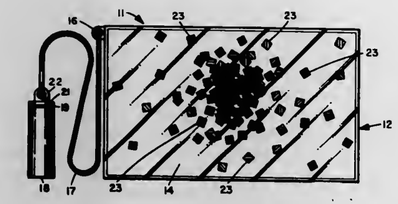
ably mounted on said support means for movement between a first position normally blocking movement of the vehicle off of said support means in its direction of travel and a second position permitting passage of the vehicle off of the support means; and means on said base for moving said abutment bar to its second position when said support means has rotated through said predetermined angle of rotation, whereby said vehicle will continue off of said support means in a new direction along its path of travel.

3,883,988

MAGNETICALLY OPERATED AMUSEMENT DEVICE

John G. Fields, 5309 Princess Anne Rd., Virginia Beach, Va. 23462

Filed Mar. 14, 1974, Ser. No. 451,227
Int. Cl. A63h *33/26*
U.S. Cl. 46—239 **2 Claims**



1. An amusement device, comprising:

an at least partially transparent container formed of a non-magnetic material; and

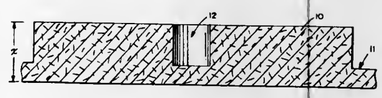
a plurality of substantially small, substantially light, variously colored magnetizable elements operationally enclosed within said container, each of said magnetizable elements being a segment of magnetic recording tape having a surface coated with one of a plurality of coating materials each of a different color, said magnetizable elements being adapted to move about within said container to form various patterns thereof in various color combinations under the influence of the magnetic field of a magnet adapted to be maneuvered exteriorly about said container.

3,883,989

EXPANDABLE SHAPE-RETAINING PEAT MOSS BRIQUETTES AND METHOD OF PRODUCING SAME

Odd S. Melvold, Oslo, Norway, assignor to Jiffy Products International Ltd., Zug, Switzerland

Continuation-in-part of Ser. No. 222,945, Feb. 2, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,799
Int. Cl. A01g *9/10*
U.S. Cl. 47—37 **16 Claims**



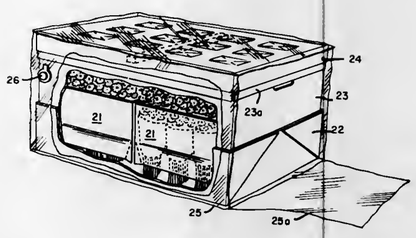
13. An expandable, shape-retaining compressed peat moss briquette which consists essentially of a peat moss bitumen mix with a water content of from 10 to 25 percent by weight and from 15 to 40 percent bitumen by weight, said bitumen having been contacted with said peat moss by intermixing into said peat moss an aqueous bitumen emulsion having a continuous aqueous phase and a dispersed bituminous phase, and the admixture has been formed into a body having the general shape of the briquette and then compressed to reduce the height of the body to at least one-half the uncompressed height thereof while integrating the body into a shape-retaining briquette.

3,883,990

METHOD AND APPARATUS FOR PACKING, SHIPPING AND MARKETING OF PERISHABLE PRODUCTS SUCH AS CUT FLOWERS

David L. Stidolph, P.O. Box 158, Salinas, Calif. 93901

Continuation-in-part of Ser. No. 173,421, Aug. 20, 1971, Pat. No. 3,754,642. This application Mar. 28, 1973, Ser. No. 345,739The portion of the term of this patent subsequent to Aug. 28, 1990, has been disclaimed.
Int. Cl. A01g *5/00;* **B65d** *85/50*
U.S. Cl. 47—58 **6 Claims**



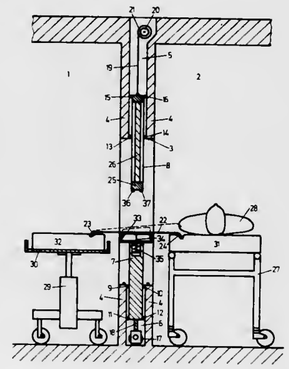
1. In the process of transporting and displaying of cut flowers, the steps comprising providing a box body of substantially waterproof material, providing a cover for the box body, scoring predetermined areas of said cover, placing a plurality of bunches of cut flowers into said box body, placing said cover on said box body, transporting said covered box body, and flowers therein to a selected sales outlet for the flowers, removing the cover from the box body, forming holes in said cover at said predetermined scored areas, removing the flowers from said box body, placing a predetermined amount of water into said box body, placing said cover on said box body, inserting said bunches of cut flowers into said holes, immersing the cut ends of said flowers into the water in said box body and displaying said cut flowers at said sales outlet upright in the holes in said cover.

3,883,991

PASSAGE FOR PATIENTS

Terje Adelhed, Jakobsberg, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 4, 1973, Ser. No. 421,610
Claims priority, application Germany, Dec. 4, 1972, 2259347
Int. Cl. E06b *7/00*
U.S. Cl. 49—70 **1 Claim**



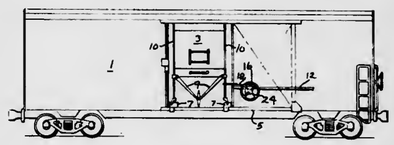
1. A passage for patients formed in a wall separating a sterile room from a non-sterile room, comprising a substantially horizontal table-like plate for transferring the patients from one room to the other one, said plate being adapted to the width of the passage and having longitudinal sides extending on both sides of the wall, the edges of said longitudinal sides being adaptable each one to the bearing surface of the patients on its side of the wall, a lower wall part constructed as a closure member adapted to the width of the passage, means supporting said lower wall part upon the wall for vertical movement and for partially closing the passage, said table-like plate being mounted upon the top of said lower movable wall part for swinging movement relative to its edges, said edges being bent downwardly and having a thickness of a few millimeters, a second wall part situated above said first-mentioned wall part, and means supporting said second wall part upon the wall for vertical movement against said first wall part for closing the passage, the second wall part being optically transparent, the means supporting said second wall part operating it independently from the means supporting said first wall part.

3,883,992

CAR DOOR OPERATING STRUCTURE

Luther L. Bollinger, Sr., Reading, Pa., assignor to Hennessy Products, Incorporated, Chambersburg, Pa.

Continuation of Ser. No. 276,671, July 31, 1972, abandoned. This application Dec. 14, 1973, Ser. No. 425,176
Int. Cl. E05f *11/34*
U.S. Cl. 49—362 **3 Claims**



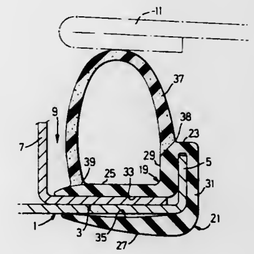
1. In a railway car, a side wall with a door opening, a door movable along said wall to overlie or to expose said opening, an elongated rack extending lengthwise of said wall and secured thereto, said rack having teeth along its lower edge and a smooth upper edge, a housing offset from said door lengthwise of the car and slidable along the upper edge of said rack, link means forming the sole connection between said housing and said door whereby they move together lengthwise of the car, a first pinion journaled in said housing and engaging the toothed lower edge of said rack, means for manually rotating said pinion to move said door along said rack, and a second pinion journaled in said housing and engaging the toothed lower edge of said rack, said second pinion being spaced longitudinally of said rack from said first pinion whereby to oppose tilting of said housing about a transverse axis and its consequent binding on said rack.

3,883,993

EDGE PROTECTOR STRIP AND SEALING STRIP

Ronald Ernest Pullan, Leeds, England, assignor to Schlegel (UK) Limited, Leeds, England

Filed May 18, 1973, Ser. No. 361,399
Claims priority, application United Kingdom, Jan. 15, 1973, 2062/73
Int. Cl. E06b *7/232*
U.S. Cl. 49—490 **13 Claims**

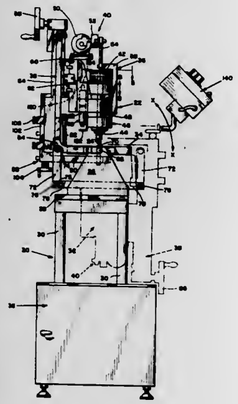


1. An edge protector strip for a flange generally L-shaped in cross section and having an inclined edge portion forming the shorter straight portion of said L shape and a longer straight portion of said L shape extending away from said inclined edge portion as described, said strip being manufactured from a resiliently deformable rubber or plastics material and being of indefinite length, the strip, in cross section being of generally L-shape and having a pair of spaced apart arms defining a channel shaped to receive said L-shaped flange, each of said arms being shaped at least on their facing surfaces to provide a generally straight portion extending inwardly from a free side edge of said strip at one end of said arms to overlie said longer straight portion of the flange and conceal both sides of said flange, and a further portion of said arms inclined at a predetermined angle to said straight portion and connected thereto at an elbow at the other end of said straight portion, to fit around said inclined edge portion of said shorter straight portion of said flange, said straight portions of said arms being substantially longer than said further portions of said arms, and the thickness of said arms being substantially less than the length of said arms, and including a web spacing said arms apart and connecting together the ends of said further portions remote from said elbow to fit over the free end of said flange whereby the flange receiving channel between said two arms has dimensions similar to those of the flange to which the strip is to be applied and substantially completely covers the flange without requiring any additional fastening devices.

3,883,994
PROFILE GRINDING APPARATUS

Charles L. Dellinger, 1110 Alexander St., Statesville, N.C. 28677

Filed Nov. 12, 1973, Ser. No. 414,740
Int. Cl. B24b 17/00
U.S. Cl. 51—34 C 9 Claims

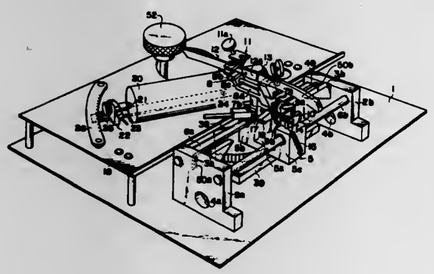


1. A machine for shaping a surface of a work piece comprising; a base structure, a support frame mounted upon said base structure, a head assembly displaceable upon said support frame, a work table for supporting a work piece, a shaping tool having an axial shaft mounted in said head assembly and adapted to be placed in working relation to a work piece, follower means mounted upon said support frame and adapted to engage a template attached to the work piece, said follower means including an axially aligned stylus displaceable with said shaping tool, means mounting said head assembly for rotation between positions above and below a work piece located upon said work table, and means for axially moving said tool independently of said stylus.

3,883,995
AUTOMATIC SHARPENING DEVICE

Taro Ohashi, 2809 Kokubo, Futtsu-shi, Chiba-ken, Japan

Filed Oct. 3, 1973, Ser. No. 403,254
Claims priority, application Japan, July 4, 1973, 48-79548
Int. Cl. B24b 7/02
U.S. Cl. 51—91 BS 6 Claims

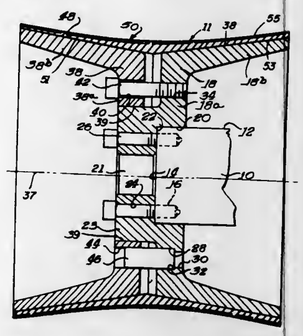


1. An automatic sharpening device for sharpening an edged tool, comprising:
a base plate;
a pair of supporting members mounted on said base plate and having a rod extending between said supporting members;
a cylindrical grinding member whose axis is angularly disposed with respect to said rod;
a movable block which is reciprocally mounted on said rod;
a member for holding said edged tool angularly with respect to the axis of said cylindrical grinding member, said holding member being pivotally mounted on said movable block and having a first inclined position where one side of said edged tool contacts said grinding member and a second inclined position in which the other side of said edged tool contacts said grinding member;
a spring means for biasing said holding member to said first inclined position while said movable block moves in one direction away from one of said supporting members and biasing said holding member to said second inclined position while said movable block moves in the opposite direction away from the other of said supporting members, said spring means being connected at one end to said movable block and operatively connected at the other end to said holding member;
a pair of guide members provided on said supporting members for turning said holding member from one of its inclined positions to its other inclined position against the spring force of said spring means when said movable block comes to said guide member; and
driving means for rotating said grinding member and reciprocating said movable block.

3,883,996
TREAD GRINDING WHEEL

Gustav M. Waller, Geneva, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Jan. 7, 1974, Ser. No. 431,115
Int. Cl. B24b 45/00
U.S. Cl. 51—206 R 7 Claims

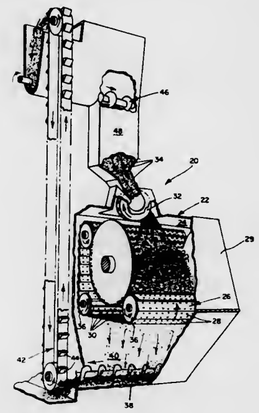


1. A grinding wheel assembly for a tire tread grinding apparatus having a drive shaft, said grinding wheel assembly comprising a first hub section, first fastening means for directly fastening said first hub section to the drive shaft for rotation therewith, a second hub section, second fastening means for fastening said second hub section only to said first hub section, each of said fastening means being exposed and accessible for independent disassembly, complementary aligning and orientating means for axially aligning and angularly orienting said first and second hub sections thereby to maintain said hub sections in the same alignment and orientation upon reassembly of said hub sections after said hub sections are disassembled, said hub sections each having oppositely directed peripheral flanges having taper wedging surfaces, said tapered wedging surfaces being formed to provide a circumference in true round about the axis of rotation of the drive shaft, and sleeve means having a circumferential abrading surface, said sleeve means being secured on said hub sections for rotation therewith with said abrading surface in a true round about the axis of rotation when said fastening means are drawn tight to fasten said first section and second sections.

3,883,997
PROCESS FOR PRODUCING HIGH-GRADE METALLIC PRODUCTS FROM SOLID SLAGS AND HIGH-GRADE METALLIC PRODUCTS

Richard D. Burlingame, Cleveland Heights, Ohio, assignor to Luria Brothers & Co., Inc., Cleveland, Ohio

Filed Nov. 2, 1973, Ser. No. 412,119
Int. Cl. B24c 1/00, 3/30
U.S. Cl. 51—316 10 Claims

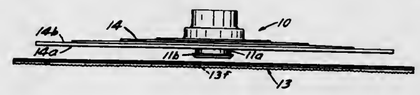


1. A process for recovering a relatively pure metal having a slag content not exceeding 10 percent by weight from a piece of such metal containing a softer slag impurity rigidly adhered thereto and located at least in substantial part within crevices and fissures accessible to the surface of said metal, comprising:
a. Breaking said metal containing impurities into pieces having a substantial amount of such slag impurities exposed at or to the surface of each piece;
b. Continuously tumbling a mass of such pieces against each other in order to achieve a relatively uniform redistribution of such pieces within such mass; and c. While effecting such redistribution, substantially continuously impacting such pieces with a shower of a substantial quantity of small particles having a hardness greater than the hardness of the slag impurities and at a high velocity of at least about 10,000 feet per minute, and for a period of time sufficient to abrade such impurities from the metal to produce a product containing not more than 10 percent by weight of said slag impurities.

3,883,998
FASTENING DEVICE FOR PSA ABRASIVE DISC

Dale M. Dosser, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 11, 1974, Ser. No. 441,262
Int. Cl. B24d 17/00
U.S. Cl. 51—376 9 Claims

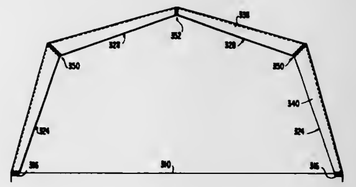


1. In combination, a rotary backup pad and a pressure sensitive adhesive abrasive disc having a centering opening of a regular geometric shape, said backup pad designed for supporting and readily removably retaining said disc, said backup pad comprising
a circular backup plate having a disc supporting surface;
a central fitting adapted to connect to a rotary driving shaft of a power driven tool;
a centering button which protrudes from the disc supporting surface, which button is formed at its protruding end with a shoulder which is slightly larger than the opening of the disc and with a neck which is equal to or slightly smaller than the opening of the disc and has a length equal to or greater than the thickness of the disc at its opening to center the abrasive disc on the support surface and to restrict lateral displacement of the abrasive disc relative to the backup pad during the operation thereof.

3,883,999
BUILDING FORMED OF PRECUT, FOLDABLE SITE ERECTED PAPER BOARD

Frank S. Nicoll, Jr., Dolfield Rd., Owings Mills, Md. 21117

Division of Ser. No. 212,345, Dec. 27, 1971, Pat. No. 3,798,852, which is a continuation-in-part of Ser. No. 195,139, Nov. 3, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,962
Int. Cl. E04b 7/02
U.S. Cl. 52—90 4 Claims



1. In a building structure formed of a plurality of prefabricated fiberglass reinforced, resin treated, abutting, paper board panels with the abutting panel sides fastened together, the improvement wherein:
the sides and roof of the building are formed of a series of end to end connected, identically configured panels,
and each panel is formed of a single paper board sheet and comprises at least one center wall and integral side walls extending the length of the center wall,
contiguous tabs extend from coextensive ends of said center and side walls as defined by fold lines therein, said center wall tabs being rectangular in configuration, said side wall tabs being trapezoidal in configuration with the fold lines inclined inwardly of the center line tab fold lines and said side wall tabs being of a length equal to one-half the width of the center wall tabs such that when the end walls are folded at right angles to the center wall in the same direction and the center wall and side wall tabs are folded at right angles and in the same direction, they lie in mutually overlapped planes to form a four-ply king post or girt connection therebetween, when the series of adjacent panels are fastened in end abutting position.

3,884,000
DEVICE FOR THE FIXATION OF JOINT SEALING STRIPS

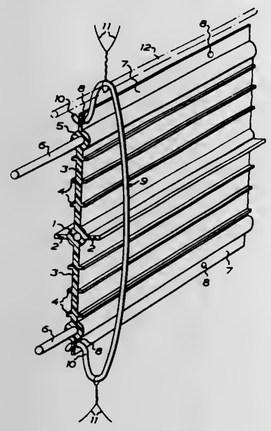
Karl Erik Faleij, Box 4026, 794 00 Orsa, Sweden

Filed Jan. 23, 1973, Ser. No. 325,970
Claims priority, application Sweden, Jan. 24, 1972, 745/72
Int. Cl. E04b 1/68, 1/16
U.S. Cl. 52—127 2 Claims

1. A sealing strip assembly for molding into reinforced concrete to act as a waterstop at the joint of two adjacent concrete elements comprising an elongated relatively wide and substantially flat strip of resilient waterproof material

having a central portion adapted to be positioned

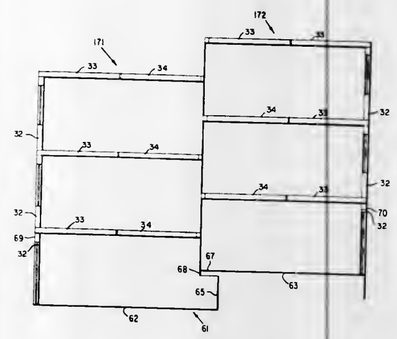
having a central portion adapted to be positioned at the joint between the two concrete elements and a pair of oppositely directed side flanges adapted to be molded one in each of the concrete elements at the time of casting these elements, and a plurality of pairs of holes formed in the strip at spaced intervals along the length thereof with one hole of each pair being located adjacent the outer edge of each of the flange, an elongated bracket formed from a rigid resilient material and including a body portion extending transversely across said strip adjacent a pair of said holes and having a length greater than the width of said strip, a reversely bent arm portion integrally formed on said body portion at each end thereof and



projecting inwardly and laterally therefrom in position to project one through each hole of one pair of the holes in the strip, said arms and body portion cooperating to define an inwardly open generally U-shaped portion positioned outwardly from the holes and spaced from said strip and a hook portion on the end of each said arm in position to releasably retain the strip on the bracket when said arms are positioned in the holes, said hooks being spaced apart a distance at least as great as the holes of the pairs of holes whereby the bracket is adapted to retain the strip in a substantially flat outstretched condition, said U-shaped portion being adapted to embrace a concrete reinforcing element to support the assembly in position during casting of the concrete.

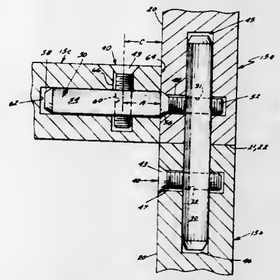
3,884,001
SPLIT-LEVEL TOWNHOUSE
Adolfo Tylius, Washington, D.C., assignor to Alvic Development Corporation, Washington, D.C.
Filed May 17, 1974, Ser. No. 470,743
Int. Cl. E04f *11/14*
U.S. Cl. 52—185 **7 Claims**

1. A split-level townhouse formed of a relatively small number of pre-formed load bearing slabs on a split-level foundation, said slabs comprising: a plurality of first rectangular wall slabs each having a first set of dimensions, a plurality of second rectangular wall slabs having a second set of dimensions, each of said wall slabs having a height of approximately one story, a plurality of third rectangular ceiling slabs having a third set of dimensions, and a plurality of fourth right hexagonal ceiling slabs, each of said ceiling slabs having approximately the same length equal to the breadth of the townhouse between adjacent ones of said first rectangular wall slabs, a plurality of one-half story stair sections, said townhouse comprising: a first section built up from one level of the foundation, a second section built up from a second level of the foundation said first and second sections each including a plurality of ceilings formed from the ceiling slabs, adjacent ceilings of the first and second sections being vertically displaced one-half story from each other, the ceilings of at least all but two of the stories of the first and second sections including only one of the third slabs and only one of the fourth slabs, said third and fourth slabs of each ceiling having abutting first and second interconnected parallel edges extending across the breadth of the section between parallel first wall slabs forming sidewalls of the section, said second wall slabs forming exterior walls of each story of each section at right angles to the sidewalls, each of the fourth slabs having third and fourth edges parallel to each other and each of the first and second edges, each of the third and fourth slabs of both



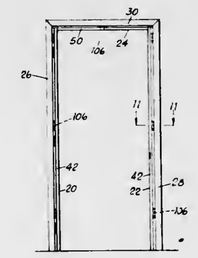
sections having parallel side edges aligned with each other and the first sidewall slabs, said fourth edges being displaced from the second edges by a distance less than the third edges, said fourth edges of the fourth slabs of the two sections being parallel to and displaced from each other by an extent sufficient to form a stairwell running between the two sections, the third edges of the fourth slabs being displaced from each other by a distance sufficient to form a vent shaft running between the two sections, and one of said stair sections being interconnected between the fourth edges of the different fourth slabs of adjacent different stories of the first and second sections.

3,884,002
PARTITION SYSTEM
Charles F. Logie, Spring Lake, Mich., assignor to American Store Equipment Corporation, Muskegon, Mich.
Filed Mar. 15, 1973, Ser. No. 341,360
Int. Cl. E04b *1/48*
U.S. Cl. 52—285 **16 Claims**



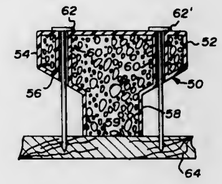
1. A partition system comprising: at least two movable partitions; a connector having a first axis extending from one of said partitions to the other, said connector including at least one pin-receiving aperture extending therethrough generally transverse to said first axis; an aperture in one of said partitions extending into said partition from a first surface generally adjacent the other of said partitions; the other of said partitions and said connector including securing means cooperating to secure said connector thereto with said connector projecting therefrom and into position in said aperture in said one partition; said one partition also including an opening extending generally laterally of said aperture through a second surface of said one partition and communicating with said aperture; a pin having a shank of a predetermined cross-sectional area and an enlarged head, said head tapering outwardly from said shank; said opening having a tapered area receiving said head; said pin being received in said pin-receiving aperture of said connector, through said opening; the center of said tapered area being offset from the center of said pin-receiving aperture in a direction away from said first surface of said one partition such that contact between said head and tapered area of said opening, combined with the fact that said pin is positioned in said pin-receiving aperture of said connector and said connector is secured to said other partition, wedges said one partition tightly against said other partition.

3,884,003
METAL FRAME FOR DOORWAYS
Theodore Z. Herr, Highland Park, Ill., and Daniel J. McClure, Clarksville, Mich., assignors to Leigh Products Inc., Grand Rapids, Mich.
Filed May 29, 1973, Ser. No. 364,930
Int. Cl. E06b *1/20*
U.S. Cl. 52—212 **14 Claims**



1. A sheet metal frame for a door opening in a wall comprising
a pair of front jamb parts,
a front header part,
a pair of rear jamb parts,
a rear header part,
means connecting said header parts in crossing relation over the upper ends of their respective jamb parts,
each of said parts having a wall engaging flange and a transversely turned flanged adapted to project into the door opening,
the transversely turned flanges on said front jamb parts having door stop ribs of U-shaped cross section formed along the rear edges thereof and extending the full length of the jamb parts,
the transversely turned flange on said front header part terminating short of the ends of the wall engaging flange thereof and overlying the transversely extending flanges of the front jamb parts and having a further shortened U-shaped door stop rib on its rear edge which abuts the transverse sides of the stop ribs on the front jamb parts, the transverse flanges on said rear jamb and rear header parts projecting forwardly in lapped relation over the outer sides of said door stop ribs,
the wall engaging flanges of said parts having holes formed inwardly of their off-set edges to receive fasteners to be driven into the wall,
outwardly off-set tongues extending downwardly from the overhanging ends of the wall engaging flanges on said header parts,
outwardly off-set ribs extending as continuations of said tongues into the wall engaging flanges of the header parts and curved laterally inwardly across the tops of the transverse flanges on the jamb parts,
and outwardly off-set straps along the ends of the wall engaging flanges of the jamb parts forming slots retainingly receiving said tongues.

3,884,004
FASTENING INSERT FOR CONCRETE STRUCTURES
William L. Douma, P.O. 53 Whippany Ave., West Paterson, N.J. 07424, and Herman N. Douma, 488 Berkshire Rd., Ridgewood, N.J. 07450
Filed July 27, 1973, Ser. No. 383,463
Int. Cl. E04b *1/41*; **E04g** *17/00*
U.S. Cl. 52—309 **10 Claims**

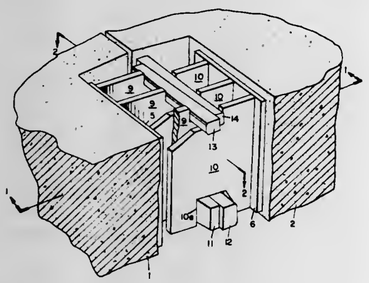


1. A fastening device adapted to be embedded in concrete comprising: an integral body member of generally uniform composition and formed of high density foam molded cellular plastic material, said body member having an upper portion and a lower portion, said upper portion being larger than said lower portion and having an undersurface tapering convergingly towards and overhanging said lower portion, said upper portion having at least one elongate aperture extending generally longitudinally along an axis located outside the perimeter of said lower portion, said aperture being arranged to accept a fastener for attaching said fastening device to a concrete mold form, said lower portion of said body member terminating in a generally contiguous planar bottom surface arranged to seat intimately against a concrete mold form and be totally exposed upon removal of the mold form to permit the attachment of an external member to said fastening device at any desired location within said bottom surface.

3,884,005
STRUCTURE FORMED OF FINISHED COMPONENTS
Josef Alfons Wey, Farngut Wohlerstrasse, Villmergen, Switzerland
Filed Mar. 29, 1973, Ser. No. 346,057
Claims priority, application Sweden, Apr. 6, 1972, 5029/72
Int. Cl. EO4c *5/16, 1/30*
U.S. Cl. 52—585 **2 Claims**

1. A joint structure including a pair of preformed structural elements to be joined, said elements having adjoining recesses open at the top and bottom, a base plate anchored in each of said recesses, a plurality of vertical spaced, parallel plates extending from each of said base plates, said parallel plates extending beyond the outer edges of said recesses with the edges of the plates of one element overlapping the plates of the adjoining element, the upper horizontal edge of said parallel plates of at least one of said elements being shaped to form part of a wedge-receiving recess, the free edge of the parallel plates of the other adjoining element being shaped to cooperate with said part to complete said wedge-receiving recess, wedge means in said last mentioned recess, the bottom edge of said parallel plates being shaped to form a second wedge-receiving recess and wedge means in said recess, the upper

recess and wedge means being designed to take up compression force between the two adjoining structural elements and



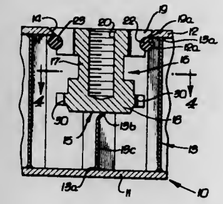
the bottom recess and wedge means being designed to take up tension force between the adjoining structural elements.

3,884,006

SANDWICH PANEL INSERT

Robert W. Dietlein, 2904 Harmony Pl., La Crescenta, Calif. 91214

Continuation of Ser. No. 321,245, Jan. 5, 1973, abandoned. This application May 24, 1974, Ser. No. 473,284
Int. Cl. B23p *3/00*; **F16b** *39/00*
U.S. Cl. 52—617 **6 Claims**



1. For combination with a panel sandwich assembly that includes a pair of spaced parallel panels interconnected by cellular structure, one of the panels containing a through opening, an insert partially receivable into said panel sandwich assembly through said through opening for retention, said insert comprising

a. a shank and a pair of spaced heads integral therewith, the shank having an axis, one head being generally circular and of greater diameter than the one panel opening and the other head and shank being of lesser diameter opening whereby they may be inserted into the space between the panels,

b. the one head defining an aperture to pass hardenable material into the panel sandwich assembly and into the space between the heads to permanently retain the insert to the panel assembly, the insert containing an axially threaded bore to which a threaded fastener may have access via said one head, and

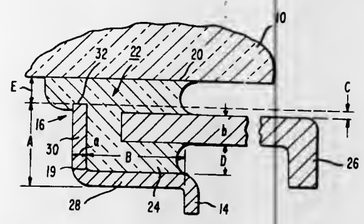
c. a radially inwardly yieldably retainer retained on the insert adjacent and at the side of the one head which faces the other head, the retainer located to be deflected radially inwardly when inserted through the one panel via said opening and to expand radially outwardly immediately adjacent the inner side of said one panel to cooperate with the said one head to temporarily retain the insert against dislodgement from the panel assembly prior to hardening of the material in said assembly, said retainer consisting of a elastomeric O-ring extending at the outer boundary of said aperture, and the aperture communicating the exterior with the space between the heads via the radially inner side of said O-ring, said aperture being locally confined at one side of the shank axis and spaced radially outwardly from said axis and bore, the aperture overlying the O-ring and also extending axially completely through the head more closely to the axis than the O-ring, the head also defining an annular groove seating the radially innermost side of the O-ring, said groove intersecting said aperture.

3,884,007

HERMETIC SEAL AND METHOD

Daniel Laverne Thoman, 42 Ridgeview Dr., Leola, Pa. 17540, assignor to RCA Corporation, New York, N.Y.

Filed June 20, 1974, Ser. No. 481,206
Int. Cl. E04c *2/54*; **G02b** *5/14*; **C03c** *17/30*
U.S. Cl. 52—624 **16 Claims**



1. A hermetic seal between two or more members comprising:

a. a first member having a first sealing surface portion;

b. a second member having a second sealing surface portion including a contoured surface region proximately spaced apart from said first sealing surface portion, said first sealing surface portion in facing cooperating relation with said contoured surface region to form therebetween an accumulation cavity capable of substantially retaining viscous material disposed therein,

c. sealing glass, within said accumulation cavity, hermetically sealing said first and second sealing surface portions,

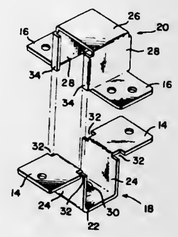
d. means abutting said sealing glass, within said accumulation cavity, capable of applying compressive force against the sealing glass to provide compensation for shrinkage, and to substantially avoid bubble and void formation, in said sealing glass, and the material from which it is formed, during hermetic sealing and formation of said sealing glass in assembly.

3,884,008

CONCRETE INSERT

Herman C. Miller, 2419 John Ave. N.W., Gig Harbor, Wash. 98335

Filed Aug. 24, 1973, Ser. No. 391,351. The portion of the term of this patent subsequent to Sept. 26, 1989, has been disclaimed.
Int. Cl. E04b *1/41*
U.S. Cl. 52—699 **10 Claims**



1. An easily assembled concrete insert formed by the telescopic interlocking of two members comprising:

a first member having a base portion, a pair of sides extending vertically upward therefrom and a pair of ears extending outward from the upper ends of said sides;

said first member including two pair of opposed slots, each pair of slots disposed on a respective one of said pair of ears adjacent said vertical sides, with the slots of each pair extending toward each other along its related vertical side;

a second member having a top portion, a pair of opposed sides extending vertically downward therefrom and a pair of ears extending horizontally outward from the lower ends of said sides;

said second member including two pair of opposed flanges disposed on the vertical edges of each of said sides, with the flanges of each pair extending inward toward each other at a generally right angle to the side on which each flange is disposed;

said first member being sized to telescopically mate with said second member such that said opposed slots slidably receive said flanges, with the flanges engaging the vertical sides of the first member in overlapping relationship, to guide said members into engagement with each other and to lock said members against transverse disengagement forces; and

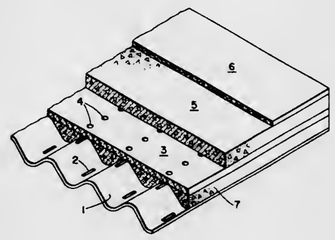
said first member including an opening in its base portion including a connecting means.

3,884,009

METHOD OF VENTILATING A ROOF SYSTEM

Robert T. Frohlich, Bedford; John L. Wright, Duxbury, and Bruce A. Blessington, Bolton, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Oct. 26, 1973, Ser. No. 409,849
Int. Cl. E04b *1/16, 1/20*
U.S. Cl. 52—741 **11 Claims**



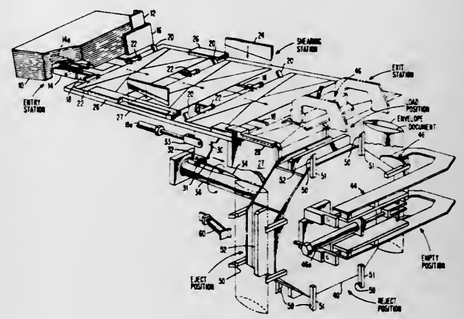
1. The method of constructing a ventilated, insulated roof comprising the steps of providing a subdeck of substantially rigid metal sheeting having a non-planar surface and apertures therethrough for permitting passage of moisture, casting a first layer of fluid lightweight insulating concrete over the metal subdeck, placing a plurality of normally low-permeance insulation boards comprised of cellular plastic material over said first layer of concrete, said boards having a plurality of openings therethrough of such dimension that passage of moisture is permitted yet substantial filling of the openings by fluid concrete placed thereon is prevented, casting a second layer of said fluid concrete directly upon said boards and thereafter placing a layer of waterproofing material over said second layer of concrete, whereby moisture from said second layer of concrete can be directly vented through the vacant openings maintained in said board, through said first layer of concrete and out said apertures in said corrugated sheeting.

3,884,010

APPARATUS AND METHOD FOR OPENING AND EMPTYING ENVELOPES OF VARIOUS THICKNESSES

Gerald Blaine Bardo, Nichols, and Leonard John Zalepa, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1974, Ser. No. 484,362
Int. Cl. B65b *9/00*
U.S. Cl. 53—3 **12 Claims**



11. A method of opening and emptying envelopes of various thicknesses wherein a completely emptied envelope and the documents contained therein are sorted from an envelope with a high probability of not being completely emptied comprising the steps of:

extracting a bottom envelope with documents contained therein from a hopper by means of a hopper vacuum head located at an entry station;

transporting said envelope by means of a reciprocating feed trolley to a shearing station;

shearing the ends of said envelope while said envelope is in a stationary position at said shearing station;

transporting said envelope by means of said reciprocating feed trolley to a loading platform situated over a rotatable drum having a plurality of vee pocket arms with vee pockets thereon integral therewith, said loading platform and said rotatable drum being located at an exit station;

forcing said envelope into said rotatable drum vee pocket by means of a retracting pockets flexible vacuum head, with vacuum applied, while said drum is in a load position;

rotating said envelope, said drum and said concave flexible vacuum head to an empty position;

extending said concave flexible vacuum head buckling open said envelope whereby said documents contained therein fall by gravity into a document chute;

sensing the presence or absence of said documents by sensing means integral with said document chute;

rejecting said envelope by means of a reject kicker into a reject receptacle after said rotatable drum has rotated to a reject position only if said sensing means detected the absence of said documents in said document chute; and ejecting said envelope by means of an eject kicker into a scrap receptacle after said drum has been rotated to an eject position only if said sensing means detected the presence of documents in said document chute.

3,884,011

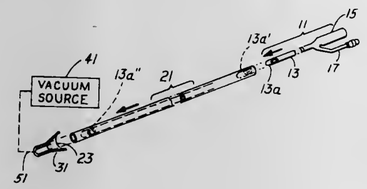
METHOD OF ASSEMBLY OF CATHETER PACKAGE

William L. Patton, North Canton, Ohio, assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.

Continuation of Ser. No. 349,788, April 10, 1973, abandoned, which is a continuation of Ser. No. 150,067, June 4, 1971, abandoned. This application Nov. 16, 1973, Ser. No. 416,594

Int. Cl.[2] B65B 5/04, 7/14, 1/16

U.S. Cl. 53—21 8 Claims



1. The method of packaging a flexible catheter with a tube sheath therefor which is relatively rigid as compared to such catheter, said catheter having an insertion shaft with an insertion tip end and two divergent fluid passage arms as an integral part thereof and disposed adjacent one end of said insertion shaft, comprising

inserting said shaft into said tube sheath by inserting said insertion tip end of said catheter into one end of a bore of said tube sheath, which bore is of a size to freely accommodate sliding movement therethrough of said catheter shaft, but insufficient at one end thereof to accommodate and permit passage therethrough of said two divergent fluid passage arms,

effecting a suction on the opposite open end of said tube sheath bore, while said tip end is in said one end of said tube sheath bore to draw the shaft of said catheter into said tube sheath bore, and blocking continued suction-induced movement of said shaft into said tube sheath bore through engagement of the divergent zone formed by said two divergent fluid passage arms with said one end of said tube sheath, thereby leaving said two divergent fluid passage arms extending beyond the open said one end of said tube sheath,

and thereupon removing said suction from said tube sheath.

3,884,012

METHOD AND APPARATUS FOR THE PACKING UNDER ASEPTIC CONDITIONS OF STERILE GOODS INTO CONTAINERS

Georg E. Ernstsson, Staffanstorp, and Kjell H. Martensson, Malmo, both of Sweden, assignors to Tetra Pak Developpement SA, Lund, Switzerland

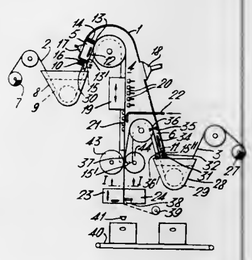
Filed July 19, 1973, Ser. No. 380,573

Claims priority, application Sweden, Aug. 11, 1972, 10419/72

Int. Cl. B65b 9/04, 55/06

U.S. Cl. 53—22 A 8 Claims

1. A method of forming, filling and sealing containers from a first and a second web of substantially impermeable thermoformable material of indeterminate length while under aseptic conditions comprising moving the webs in the direction of their length with one surface facing a sterile chamber, said webs constituting walls of the sterile chamber, forming a plurality of container elements in at least one of said webs, sealing the two webs together along their longitudinal side edges to form a tube, introducing a filling material into the tube to fill the container elements formed in said at least one of said webs, sealing the webs together about the edges of the container elements to close and seal the separate containers, the steps of forming the container elements, sealing the longitudinal edges of said webs to form the tube, and filling the tube with filling material being carried out while the webs constitute walls of the sterile chamber, and finally separating said



filled and sealed containers into separate containers after leaving the sterile chamber.

3,884,013

METHOD OF ASSEMBLING AND FILLING HINGED CONTAINERS

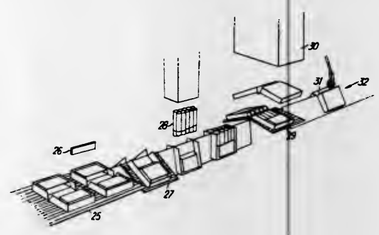
Arieh Solomon, Afeka, Israel, assignor to British and Foreign Tobacco Company, Ltd., London, England

Continuation-in-part of Ser. No. 185,510, Oct. 1, 1971, Pat. No. 3,813,025. This application Jan. 18, 1974, Ser. No. 434,802

Claims priority, application United Kingdom, Oct. 2, 1970, 46937/70

Int. Cl. B65b 5/06, 19/12

U.S. Cl. 53—37 4 Claims



1. A method of assembling and filling a container comprising the steps of:

a. providing an inner structural component of the container in the form of at least two tray-like inner sections, each of which has a base portion lying out of the plane of and offset from a retaining strip for defining a pocket, the base portion and retaining strip being interconnected by a pair of opposite side walls, and the strip of one inner section being interconnected to the strip of the other inner section by a line of structural weakness defining a hinge line between the inner sections;

b. initially orienting the inner component so that the retaining strips face downwardly;

c. bending the inner component along its hinge line until the retaining strips of the two inner sections are substantially juxtaposed and substantially vertically oriented;

d. inserting products in each pocket of the sections by dropping such products substantially vertically in the pockets;

e. providing an outer structural component of the container in the form of two tray-like outer sections each of which has a base portion with a pair of opposite side walls and a pair of opposite end walls, one end wall of one section being connected to one end wall of another section by a line of structural weakness defining a hinge line between the outer sections;

f. placing the outer component in nesting relationship over the inner component so that the base portions, the side walls, and the hinge line of the outer component are juxtaposed to the respective base portions, the respective side walls, and the respective hinge line of the inner component; and

g. securing together the two components at least along their hinge lines.

3,884,014

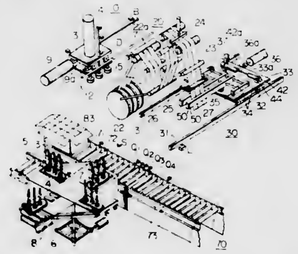
APPARATUS FOR PACKAGING AND PACKING PACKAGES OF YARN

Kinyu Ishida, 2750 Minamiyoshido-cho, and Eiji Minaka, 1362 Yogo-cho, both of Matsuyama, Japan

Filed Jan. 5, 1972, Ser. No. 215,619

Int. Cl. B65b 57/02, 57/10

U.S. Cl. 53—55 8 Claims



1. Apparatus for automatically enclosing in bags and encasing packages of yarn comprising package supply means horizontally and vertically movable, bag-holding means horizontally movable, means of shifting a carton horizontally and vertically and means of controlling the package supply means, the bag-holding means and the means of shifting a carton which detects the package supply means the bag-holding means and the carton each occupy their respective positions, causes the package supply means to descend for a predetermined amount of distance, causes the carton to ascend for a predetermined distance by the means of shifting the carton, and disengages the packages from the package supply means.

3,884,015

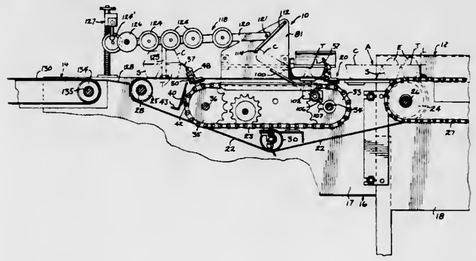
CARTON COVER CLOSING MACHINE

Kenneth W. Melton, Tecumseh, Kans., assignor to Seymour Foods, Inc., Topeka, Kans.

Filed Dec. 28, 1973, Ser. No. 429,080

Int. Cl. B65b 61/02, 7/26

U.S. Cl. 53—131 21 Claims



16. An apparatus for closing the hinged cover members on cartons of the type which have a bottom tray and a cover hinged along one side edge, conveyor means for advancing successive cartons in fully open condition along a generally horizontal path with the hinge axis of the carton extending transversely of the path of advance and with the cover member leading the bottom tray member, means at a predetermined point along said path for engaging the bottom tray of successive cartons so as to restrain the tray against upward movement relative to the conveyor means, means disposed in part below the path of advance of the conveyor means which is operative to engage said cover member so as to cause said cover member to swing on said transversely extending hinge axis toward a partially closed position, and means for progressively applying downward pressure on said cover member as it is advanced by said conveyor means so as to completely close the cover member.

3,884,016

APPARATUS FOR WRAPPING GOODS WITH STRETCHED FOIL

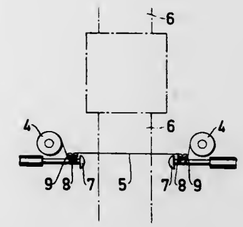
Sigward Boström, Jonkoping, Sweden, assignor to Arenco-JM AB, Jonkoping, Sweden

Filed Dec. 3, 1973, Ser. No. 420,843

Claims priority, application Sweden, Dec. 14, 1972, 16331/72

Int. Cl. B65b 11/16

U.S. Cl. 53—182 1 Claim



1. An apparatus for wrapping and fixing of at least one unit of goods with or without support, the unit being enclosed on at least four sides by a foil whilst the foil is being stretched, said apparatus comprising

two foil rolls disposed one on each side of a conveying web for the unit, which foil rolls are interconnected by a coherent foil portion;

means acting together with each foil roll for braking the foil when the unit of goods is being advanced between the foil rolls to a position in which three sides of the unit are enclosed by the foil;

two opposed clamping and welding jaws capable of being moved toward each other on the fourth side of the unit of goods for joining and welding together the two foil portions separated by the unit, which jaws have a width corresponding to the foil width;

a knife member for cutting off the foil portions longitudinally through the weld or between two welds;

two pairs of brake rollers for the foil, one pair on each side of the conveying web of the unit of goods, each pair of brake rollers comprising a rotary rubber roller which is adjustably braked,

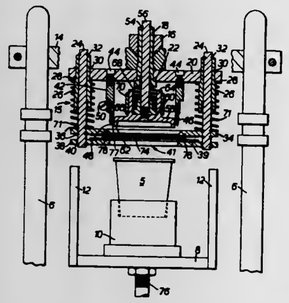
said each pair of rollers being supported by the clamping and welding jaws for performing a reciprocatory movement in correspondence with the movement of the clamping and welding jaws,

at least one roller of each pair being braked, and the foil being supported between said two brake rollers of each pair.

3,884,017
MACHINE FOR CLOSURING CONTAINERS

Peter E. Butcher, Pinner, England, assignor to Metal Box Limited, Reading, England

Filed Sept. 6, 1973, Ser. No. 394,619
Claims priority, application United Kingdom, Sept. 7, 1972, 41669/72
Int. Cl. B65b 7/28; B67b 3/04
U.S. Cl. 53—296
3 Claims



1. Apparatus for heat-sealing thin flexible closure material to the periphery of one end of the container, comprising

a base,

means on the base for guiding an indexable web of the closure material and leaving free of access on one surface thereof an area greater than the area of the said one end of the container,

means on the base for locating a container with its said one end facing towards the said area of the material,

means operative to move the locating means and the web guiding means towards each other so as to bring the said one end of the container on the locating means into contact with the said area of the closure material,

the web guiding means including first and second clamping plates which have aligned apertures greater in area than the area of the said one end of the container, the said plates being mounted on the base to be movable relatively towards each other and to define a gap between them for receiving and guiding the said web, and means for arresting movement of one said plate as the container locating means and the web guiding means move towards each other, whereby the other plate clamps the web to the said one plate along a line outside the said area as the container locating means and the web guiding means move towards each other,

a heatable cylindrically shaped sealing tool mounted on the base on the opposite side of the web guiding means to the container locating means with its cylindrical axis substantially perpendicular to and centrally of the said apertures, means for causing relative movement, in a direction perpendicular to the direction of web movement, between the web guiding means and the locating means on the one hand and the tool on the other hand so as to bring the tool into contact with the opposite surface of the closure material with a controlled pressure, after the closure material is supported by the end of the container, the tool having an end sized to match the periphery of the said end of the container whereby the tool applies heat to seal the closure material to the periphery of the said end of the container,

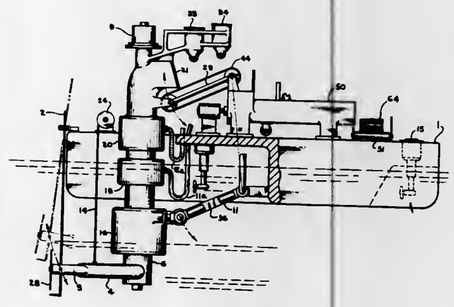
a tubular shaped knife blade mounted on the said base around the outside of the said tool for limited reciprocable movement relative thereto to contact the closure material through the said apertures and around the outside of the periphery of the container as the said relative movement continues in the said perpendicular direction, whereby the knife blade is operative to sever the closure material on the end of the container from the remainder of the web, and

tubular wipe-down means mounted between and to space apart the said tool and the knife blade and fixed to the latter to move therewith, the wipe-down means having an end surface which forms down around the container the annular region of the said closure material between the outer periphery of the container and the knife blade.

3,884,018
HARVESTING MARINE GROWTHS AND PACKAGING THE TREATED PRODUCT

Merle P. Chaplin, 609 Driver Ave., Winter Park, Fla. 32789

Continuation-in-part of Ser. No. 119,555, March 1, 1971, abandoned. This application Jan. 8, 1973, Ser. No. 321,704
Int. Cl. A01d 45/08
U.S. Cl. 56—9
19 Claims



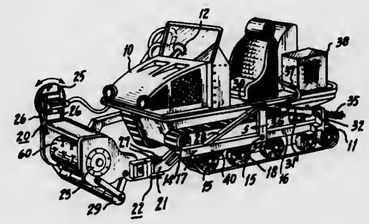
1. An apparatus for removing marine growths from a body of water, comprising, in combination: a generally tubular member having at least one inlet and being positionable beneath the surface of a body of water substantially parallel to this surface, means coupled to said tubular member for applying suction thereto to cause encountered marine growths to enter each said inlet, rotatable cutter bar means mounted on a frame means forming part of the apparatus to rotate in a plane substantially at a right angle to the longitudinal axis of said tubular member in close vicinity to each said inlet and serving to cut growths which enter said tubular member into substantially uniform lengths, means coupled to said tubular member for conducting said cut growths to a close-by location for further processing, and means for driving each cutter bar, said means for driving each cutter bar being mounted on said frame means.

3,884,019
FLOATATIONAL FRONT MOUNTED MOWER ASSEMBLY FOR POWER VEHICLES

Michael Gerzanich, Hopelawn, N.J., assignor to Lehara Equipment Co., Inc., East Brunswick, N.J.

Filed Jan. 9, 1974, Ser. No. 431,673
Int. Cl. A01d 49/00
U.S. Cl. 56—12.7
15 Claims

1. A propelled mower apparatus of the type employing a power vehicle including a frame, said vehicle having a front end and a back end, mower head support brackets pivotally mounted on said frame at each side thereof and pivotable both vertically and transversely, with respect to said frame at a pivot point substantially removed from said front end of said vehicle, force absorbing means coupling said brackets at said pivot point to said frame, said brackets extending beyond said front end of said frame, and a cylindrical mowing assembly rotatably secured at each front end of said brackets and

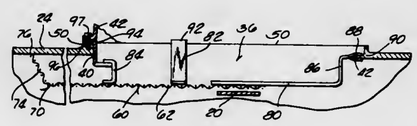


adapted to cut vegetation in an undulating surface due to the pivoting of said support brackets with respect to said frame.

3,884,020
LEAF SHREDDING MEANS FOR ROTARY MOWERS

Einar S. Dahl, and Earl H. Kidd, both of Galesburg, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 11, 1973, Ser. No. 405,447
Int. Cl. A01d 67/00
U.S. Cl. 56—320.2
10 Claims

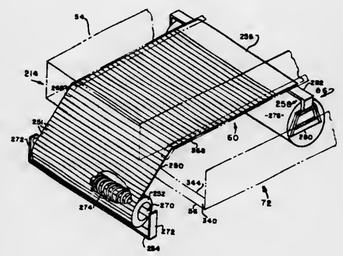


1. A rotary mower including a blade housing having a top deck and an annular wall depending from said top deck, a horizontal, arcuately-extending discharge outlet located in said top deck, a cutter blade mounted for rotary movement inside said blade housing and in a direction to impell material toward said discharge outlet, and a screen mounted on said housing and located below and in transverse relation to said discharge outlet and including a horizontal portion extending horizontally above and in close proximity to the rotational path of said cutter blade.

3,884,021
MACHINE FOR FORMING A COMPACT STACK OF CROP MATERIAL

Gene R. Butler, and Lee D. Butler, both of Kingsburg, Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Apr. 5, 1974, Ser. No. 458,260
Int. Cl. A01d 87/02
U.S. Cl. 56—346
4 Claims



1. In a machine for forming a compact stack of crop material such as hay or the like, the combination comprising:

a mobile chassis adapted to move across a field:

a generally rectangular stack forming chamber mounted on said chassis;

means for picking up crop material from the field and progressively forming said crop material into a stack in said chamber;

a packing roll extending across said chamber between opposite sides thereof;

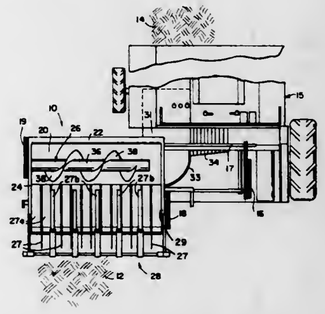
carriage means coupled to opposite ends of said packing roll and mounted to said opposite sides of said chamber for movement between opposite ends of said chamber;

means for moving said carriage means between said ends of said chamber such that said packing roll progressively compacts said crop material as said stack thereof is progressively formed in said chamber.

3,884,022
MEANS FOR WINDROW MAINTENANCE

Joseph G. Landolt, Rt. 2, Box 1075, Yerington, Nev. 89447

Filed Feb. 26, 1973, Ser. No. 335,837
Int. Cl. A01d 84/00
U.S. Cl. 56—364
4 Claims



1. A machine for use in harvesting forage crops comprising:

a. an elongated mobile main platform;

b. an upstanding back wall along one side of said platform;

c. an upstanding wall member along one end of said platform;

d. a pick up means along the side of said platform opposite said back wall and adapted to pick up a windrow of said crop and deposit it on said platform;

e. means for moving said crop along the length of said platform from said one end to the other end thereof; and

f. discharge means at said other end of said platform for discharging said crop in a direction normal to the length of said platform, said discharge means comprising a second elongated platform extending rearwardly from said main platform at said other end thereof and a curved deflector wall extending along said other end of said main platform for directing said crop onto said second elongated platform.

3,884,023
SELF-CLEANING RAKE

Melvin P. Robinson, P.O. Box 152, Benton, Ark. 72015

Filed Mar. 1, 1974, Ser. No. 447,393
Int. Cl. A01d 7/10
U.S. Cl. 56—400.1
8 Claims

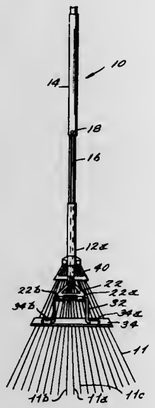
1. A lawn broom having a handle connected to a plurality of tines having downwardly depending front ends, comprising:

a. rod means disposed longitudinally and adjacent to said handle;

b. actuator means linked to said rod means and slidably engaged with said handle for displacing said rod means longitudinally along said handle;

c. cleaning means substantially surrounding said tines and disposed substantially transverse thereto for moving over

said tines and said downwardly depending front ends; and
d. means for pivotally connecting said rod means to said cleaning means comprising a hinge bracket and an arm means, said hinge bracket having a first end thereof secured to said rod means and a second end thereof pivotally connected to said arm means, said arm means also being pivotally connected to said cleaning means so that

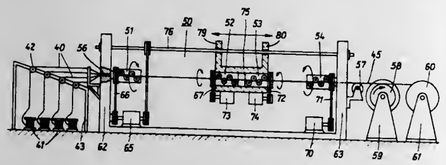


when said actuator means is disposed downwardly along said handle said cleaning means is correspondingly displaced downwardly over said tines and pivotally moved over said downwardly depending front ends to thereby remove material lodged on said tines, said cleaning means also being movable away from said downwardly depending front ends by displacing said actuator means upwardly along said handle.

3,884,024
TWISTING DEVICE FOR THE SZ TWISTING OF ELECTRICAL CABLES

Ulrich Oestreich, Berlin, and Wolfgang Katzschner, Neustadt, Coburg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed June 21, 1973, Ser. No. 372,341
Claims priority, application Germany, June 28, 1972, 2232329
Int. Cl. H01b *13/04*
U.S. Cl. 57—34 AT **6 Claims**

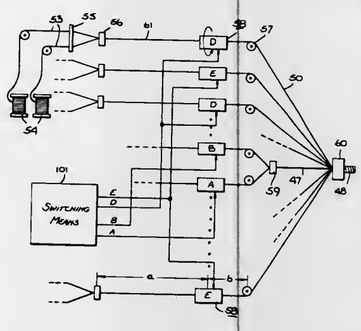


1. An SZ twisting device for twisting the stranding elements of a cable so as to form a stranded unit which has a twist direction which changes from section to section comprising:
a. an unwinding device for the stranding elements;
b. a drawing and take up device;
c. between said unwinding device and said drawing and take up device, an accumulator which has a storage content which may be increased and decreased comprising:
1. a first stationary rotating twisting head;
2. a second rotating twisting head movable with respect to said first twisting head in the direction of the twisting axis;
3. means for moving said second twisting head back and forth with respect to said first twisting head; and
4. each of said first and second twisting heads having rollers therein, and each of said first and second twisting heads gripping the stranding elements which are being combined into a stranded unit frictionally in the direction of the circumference of the rollers within said twisting heads so as to permit ease of pulling through of the stranded unit and holding the stranded unit in a stretched condition between the twisting heads.

3,884,025
METHOD AND APPARATUS FOR MAKING SZ-TWISTED COMMUNICATIONS CABLE

Heinz Oberender, Neustadt, Coburg, and Dieter Vogelsberg, Berlin, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 10, 1973, Ser. No. 387,248
Claims priority, application Germany, Aug. 11, 1972, 2240199
Int. Cl. H01b *13/04*; D07b *3/00*
U.S. Cl. 57—34 AT **15 Claims**



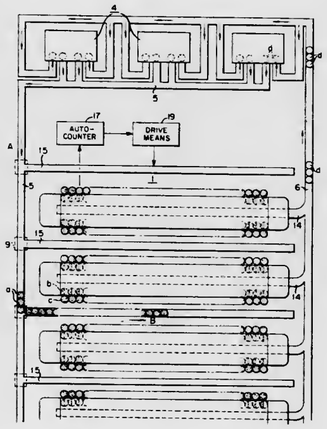
1. A method for manufacturing communication cable which is made up of at least two layers of twisted cable units comprising the steps of:
a. twisting a plurality of stranding elements to form a plurality of cable units, each having an SZ twist in essentially identical separate twisting devices in which the stranding elements are formed into a strand which is held in a stretched condition between a fixed entrance point and a fixed exit point, said twist-device having a twisting head which grasps the strand perpendicular to its axis between said entrance and exit points with said twisting head arranged so that the distance between the exit point and the point of attack of the twisting head is smaller than the distance between the point of attack of the twisting head and the entrance point;
b. twisting the units so formed in series therewith to form a twisted group; and
c. switching the process parameters affecting the twisting of the strand of every other twisting device forming said units at the same time at intervals which are smaller than three times the time required for a length element of strand to move from the first fixed point to the twisting head at one of a rate and a phase which is different from the switching of the remaining twisting devices.

2. Apparatus for forming a twisted communication cable comprising:
a. a plurality of SZ twisting devices each having a first fixed entrance point wherein a plurality of elements are formed into a strand and held in a stretched manner between said first fixed point and a second fixed exit point with a twisting head between said first and second fixed points with the distance between the point of attack of said twisting device and said exit point smaller than the distance between said point of attack and the entrance point, said twisting head being such as to surround its respective strand gripping said strand in a circumferential direction;
b. first means to twist a first plurality of the units formed by said twisting devices into a first group;
c. second means having a twisting axis coincident with the first means to twist a second plurality of said units in a second layer over said first group; and
d. wherein the twisting devices associated with each of said first and second means for twisting are arranged in planes perpendicular to the axes thereof.

3,884,026
METHOD AND APPARATUS FOR EFFECTING REPLACEMENT OF CANS IN SPINNING FRAME

Toshio Yoshizawa, Chiryu; Yasuo Yamada, and Toshinori Taniguchi, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Oct. 12, 1973, Ser. No. 406,177
Claims priority, application Japan, Oct. 19, 1972, 47-104734
Int. Cl. D01h *9/00*
U.S. Cl. 57—34 R **8 Claims**

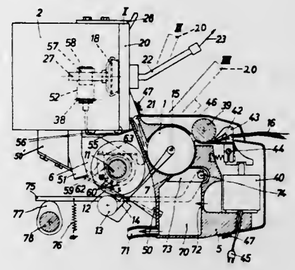


4. An apparatus for replacement of cans in a spinning frame of the type in which slivers contained in the cans are directly supplied to lined up spinning units of the spinning frame, said apparatus comprising at least one first space for allowing the cans to be disposed in paired inside and outside rows along the length of the spinning frame, the cans in the inside row containing about half as much slivers as the cans in the outside row, a second space for allowing a row of cans full of slivers to be disposed backwardly of the outside cans therealong, the number of the full cans corresponding to that of the cans in one of the inside and outside rows, a third space provided in the lower part of the spinning frame for allowing the cans in the inside row to be received therein, said third space including a movable carrying out means arranged inside the inside row of the cans to extend along and out of the spinning frame, whereby the replacement of the cans is carried out by moving the inside cans in said first space onto said movable carrying out path of said third space after piecing the slivers in the full cans of said second space with the slivers in the cans in the inside row of said first space as the inside cans are ready to empty, moving the outside cans inwardly into the inside row within said first space, and moving the full cans of said second space inwardly into the outside row of said first space.

3,884,027
CLEANING ACCESS AND BRAKING MECHANISM FOR OPEN END SPINNING MACHINES

Fritz Schumann, Ingolstadt; Hans Landwehrkamp, Gerolfing, and Kurt Veit, Ingolstadt, all of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Jan. 2, 1973, Ser. No. 320,198
Claims priority, application Germany, Jan. 7, 1972, 2200686
Int. Cl. D01h *11/00, 1/12*
U.S. Cl. 57—56 **7 Claims**

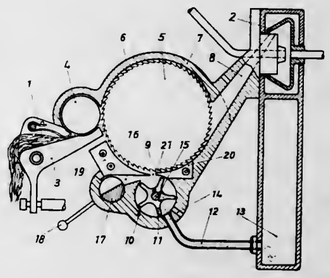


1. An open end spinning machine having a spinning station including a spinning chamber, comprising a sliver intake device having a supply roller and a cooperating pressure member, means mounting said supply roller in a fixed position, a fiber resolving device, a housing for mounting said pressure member and said fiber resolving device, and means for moving said housing toward and away from said supply roller.

3,884,028
APPARATUS FOR REMOVING IMPURITIES FROM FIBERS

Fritz Stahlecker, Josef-Neidhart Str. 18, D-7341 Bad Ueberkingen, and Hans Stahlecker, Haldenstr., D-7334 Sussen, both of Germany

Filed June 11, 1973, Ser. No. 368,908
Claims priority, application Germany, June 28, 1972, 2231578
Int. Cl. D01h *11/00, 1/12*
U.S. Cl. 57—56 **23 Claims**



1. An apparatus for removing impurities from fibres, said fibres being advanced to a spinning turbine of an open-end spinning unit in a disentangled state, the apparatus comprising: means for transporting the disentangled fibres, an opening for removing the impurities provided in said means for transporting the disentangled fibres, mechanical conveying means for removing the impurities including at least one movably mounted conveying element located directly next to said opening for receiving the impurities and conveying the same away from said opening, and a pneumatic conveying means

connected to said at least one mechanical conveying element for removing and conveying the impurities away therefrom.

3,884,029
APPARATUS FOR RINGLESS SPINNING OF FIBRES

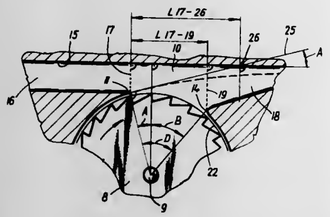
Josef Ripka; Jan Junek, both of Usti nad Orlici; Vaclav Vobornik, Letohrad; Ludmila Lihtarova, Usti nad Orlici; Frantisek Hortlik, Usti nad Orlici; Vaclav Brynda, Usti nad Orlici; Vladimir Ohlidal, Usti nad Orlici; Zdenek Korbar, Usti nad Orlici, and Milos Vecera, Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkumny ustav Bavlinarsky, Usti nad Orlici, Czechoslovakia

Filed June 6, 1973, Ser. No. 367,419

Claims priority, application Czechoslovakia, June 8, 1972, 3963; June 8, 1972, 3965

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.91 **13 Claims**



1. In a ringless spinning machine, a combination comprising a housing having a hollow; a combing roller mounted in said hollow for rotation and having a covering which defines with a wall bounding said hollow a fiber channel and a doffing zone having an outlet and a separating edge at said outlet adjacent said roller; a spinning chamber having an inlet; admitting means including an inlet channel for admitting fibers to be combed into contact with said covering for combing by said roller during travel with the same in said channel; and means for effecting doffing of said fibers from said roller in said doffing zone in such a manner that said fibers travel in a centrifugal trajectory through said doffing zone toward said inlet, the magnitude of an angle A included between an imaginary tangent to said covering at the point where the fibers are doffed from said roller and the wall bounding said hollow opposite the covering being in the range of 0° – 20°, and an angle B being included between an imaginary line that passes through the axis of rotation of said roller and through said separating edge and another line normal to the axis of said inlet channel and passing through the axis of rotation of said roller, the sum of said angles A and B being at least equal to 50°.

3,884,030
FIBRILLATED FOAMED TEXTILE PRODUCTS AND METHOD OF MAKING SAME

Samuel Baxter, Penhow, and John Harold Gilbert, Chepstow, both of England, assignors to Monsanto Chemicals Limited, London, England

Continuation-in-part of Ser. No. 468,269, June 30, 1965, abandoned. This application Oct. 15, 1965, Ser. No. 496,377

Claims priority, application United Kingdom, July 17, 1964, 29324/64; Nov. 30, 1964, 48527/64; Oct. 28, 1964, 43936/64; Dec. 1, 1964, 48726/64

Int. Cl. D02g *3/06;* **B29d** *27/00;* **B32b** *5/18*

U.S. Cl. 57—140 R **16 Claims**

1. An extruded thermoplastic yarn comprising a network of randomly interconnected fibre elements generally residing longitudinally with respect to the direction of extrusion, said fibre elements being branched and being interconnected by having common branches and at least portions of said fibre elements having a trilobate construction in cross-section with respect to the direction of extrusion said branched fibre elements and said trilobate construction being formed by the breaking down of an extruded and drawn cellular foam rod-shaped material, said rod shaped material being drawn in the direction of extrusion.

16. A process for manufacturing a fibrous product comprising the steps of:

a. forming a cellular thermoplastic structure with the cells having been formed by the expansion of a blowing agent;

b. drawing said cellular thermoplastic structure at a ratio



of at least about 3:1 to orient said structure and increase its longitudinal strength relative its transverse strength; and

c. forming a network of spaced apart and interconnected fiber elements generally being aligned in the direction of drawing, said fiber elements being branched and being interconnected by having common branches, by subjecting said structure to fibrillating forces such that the walls defining said cells are broken down and are converted into said network of interconnected fiber elements.

3,884,031
METHOD OF DRIVING SPINDLES OF TEXTILE MACHINES

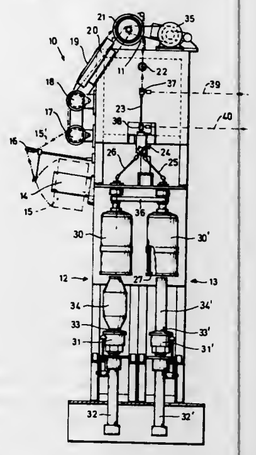
Horst Wolf, Albershausen, Germany, assignor to Zinser-Textilmaschinen Gesellschaft, Ebersbach, Germany

Continuation-in-part of Ser. No. 266,478, June 26, 1972, abandoned, which is a continuation of Ser. No. 82,774, Oct. 21, 1970, abandoned. This application Oct. 23, 1973, Ser. No. 408,999

Claims priority, application Germany, Oct. 21, 1969, 1952909

Int. Cl. D01h *1/26*

U.S. Cl. 57—156 **1 Claim**



1. In a method of driving spindles of a textile machine being of the type which has a plurality of yarn delivery stations and a winding station spindle pair associated with each yarn delivery station, each spindle being provided with its own variable rpm drive motor, during any operational period one spindle of said spindle pair being the winding spindle on which a yarn package is being formed, while simultaneously the other spindle of the same spindle pair being the idling spindle, the role of these two spindles being exchanged upon redirecting the yarn from one spindle to the other, the improvement comprising the steps of:

A. driving the idling spindle at a maximum given standby rpm during all operating periods for the purpose of allowing the idling spindle to take over the winding function upon the occurrence of yarn breakage during winding on the winding spindle; and

B. driving the winding spindle with a decreasing rpm as a function of winding parameters;

whereby the idling spindle is ready to take over the winding function without delay at all operating times including times of yarn breakage.

3,884,032
DRIVING CIRCUITS FOR ELECTRONIC CLOCKS AND WATCHES

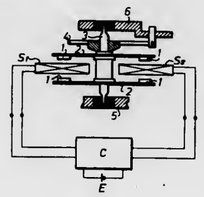
Toyoji Kanazawa, Tachikawa, and Makoto Yoshida, Tokorozawa, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed July 31, 1973, Ser. No. 384,388

Claims priority, application Japan, Aug. 10, 1972, 47-79519

Int. Cl. G04c *3/04;* **H01h** *47/24;* **H03b** *5/36*

U.S. Cl. 58—23 A **8 Claims**



1. An electromechanical driving circuit for use in electronic clocks and watches comprising an oscillatory moving body, a plurality of permanent magnets secured to said oscillatory moving body at its diametrically opposite parts, two coils S_1 and S_2 each arranged between said permanent magnets and adapted to be moved relative to said permanent magnets, which comprises first transistors with emitters earthed and collectors connected to said coils S_1 and S_2, respectively, and a condenser Ca operatively connected through second transistors to junction points between the collectors of said first transistors and said coils S_1 and S_2, respectively, and adapted to be supplied with an electric current relating to induced voltages produced in said coils S_1 and S_2, whereby said first transistors are made alternately conductive in response to said electric current.

3,884,033
SWITCH FOR ELECTRONIC WATCH

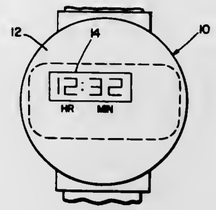
John R. Wood, San Jose, Calif., assignor to American Micro-Systems, Inc., Santa Clara, Calif.

Filed Oct. 17, 1973, Ser. No. 407,147

Int. Cl. G04c *3/00;* **G04b** *19/30, 27/00*

U.S. Cl. 58—23 R **13 Claims**

1. An electrically operated timepiece comprising a plurality of components including a mounting board, an electrical circuit means fixed to said board, an oscillator means and a battery connected to said circuit means, and a housing means for supporting said components therein including front and rear wall members with a display means displaying at least hours and minutes mounted in said front wall member and connected to said circuit means, switch means situated in said rear wall member and connected therethrough to said circuit means for setting the hours and minutes on said display means, said switch means comprising a thin disk-like body forming a relatively shallow recess and extending inwardly from one of said wall members, said body having a planar bottom portion with a plurality of spaced apart terminals thereon



each connected by conductors through said bottom portion to said circuit means, a rotatable actuator disk supported within said shallow recess with contact means on its underside for contacting individual terminals and interconnecting preselected pairs of terminals in different combinations when the disk is placed in various rotational positions for thereby controlling said display means.

3,884,034
QUARTZ SYNCHRONISED CLOCKWORK

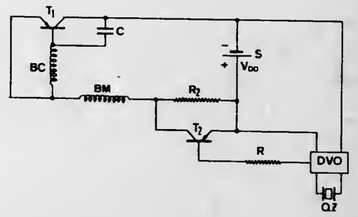
Jacques J. G. Dietsch, Paris, France, assignor to Societe Anonyme des Establissements Leon Hatot, Paris, France

Filed Oct. 10, 1973, Ser. No. 404,916

Claims priority, application France, Oct. 11, 1972, 72.35957

Int. Cl. G04c *3/04;* **H03b** *5/36*

U.S. Cl. 58—28 A **7 Claims**



1. Apparatus for controlling a clockwork movement incorporating a balance and a driving winding receiving electric maintenance impulses to co-operate with a magnetic element of the balance to maintain oscillation of the balance with a normal amplitude at a predetermined maintenance frequency, said apparatus comprising a quartz oscillator operatively associated with a frequency dividing circuit having an output supplying electric reference impulses at a reference frequency differing slightly from the predetermined maintenance frequency, and gating means operatively connected to said output to modify the amplitude of each maintenance impulse if and so long as it overlaps with a reference impulse, and thereby adjust the actual frequency of oscillation of the balance to make it equal to the reference frequency.

3,884,035
CHRONOGRAPH WATCH

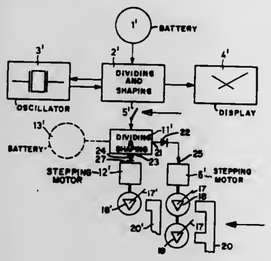
Pierre Maurice Jeannet, Chambrelien, and Michel Girardin, La Chaux-de-Fonds, both of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services, S.A., Bienne, Switzerland

Filed Oct. 15, 1973, Ser. No. 406,204

Claims priority, application Switzerland, Oct. 13, 1972, 15051/72

Int. Cl. G04f *3/06, 7/04*

U.S. Cl. 58—39.5 **9 Claims**



1. A chronograph watch, comprising:
a quartz oscillator;
a first electronic circuit coupled to said oscillator for dividing and shaping output pulses generated by said oscillator;
display means connected to a first output of said first electronic circuit for displaying a time signal;
a second electronic circuit comprising a frequency divider and an output pulse shaper;
switch means connected between an input of said second electronic circuit and a second, independent output of said first electronic circuit;
a stepping motor connected to an output of said second electronic circuit and driven at a predetermined frequency by pulses produced by said second electronic circuit;
a gear train comprising a motor pinion driven by said motor and counter wheels comprising at least a second counter wheel and a minute counter wheel;
cam means mounted on said counter wheels; and
hammer means mounted adjacent said cam means for resetting said counter wheels to zero upon engagement of said cam means by said hammer means;
the frequency produced at said second output being at least eight times greater than the frequency produced at said output of said second electronic circuit for driving said stepping motor.

3,884,036
STEAM PLANT WITH PRESSURE-FIRED BOILER

Hans Pfenninger, Baden, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

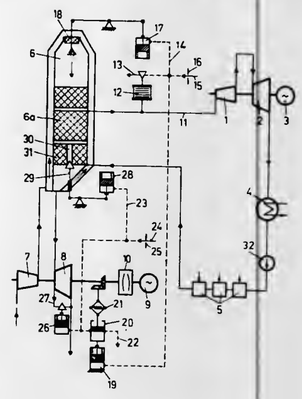
Filed Nov. 27, 1973, Ser. No. 419,276

Claims priority, application Switzerland, Dec. 1, 1972, 17481/72

Int. Cl. F02c *9/02;* **F01k** *23/00*

U.S. Cl. 60—39.18 B **3 Claims**

1. A combined steam and gas turbine plant comprising a pressure-fired boiler providing steam for driving a steam turbine coupled to a power consumer such as an electrical generator, means including a condenser at the discharge side of said steam turbine for converting the discharged steam into feed water and a return line for the feed water to the inlet side of said boiler for re-cycling, a heat exchanger for pre-heating the returned feed water by heat exchange with combustion gas at the gas discharge side of said boiler, a by-pass for the combustion gas passing through said heat exchanger, valve means for controlling said by-pass, the respective portions of the combustion gas put through said by-pass and through said heat exchanger being combined at the outlet thereof and delivered to the inlet of a gas turbine at a temperature variable in accordance with the portion of the gas put through said by-pass and constituting the sole motive fluid for driving said gas turbine, a live-steam regulator responsive to a change in load on the power plant for correspondingly regulating the fuel supply to



said boiler and for regulating said valve means which controls the by-pass to said feed water heat exchanger thereby to increase or decrease, respectively the temperature of the discharged combustion gas and thereby increase or decrease, respectively the speed of the gas turbine and air compressor coupled thereto in dependence upon the sense of the change in load on the power plant so as to maintain a match between the required power input to said gas turbine and the required pressurized air output from said compressor.

3,884,037
INTERNAL COMBUSTION ENGINE SYSTEM FOR EXHAUST EMISSIONS CONTROL UTILIZING AN ACOUSTIC CATALYTIC MUFFLER

Everett M. Barber; John T. Brandenburg, both of Wappingers Falls, and Richard A. Frost, Holmes, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 817,599, Feb. 17, 1969, abandoned, which is a division of Ser. No. 368,951, May 20, 1964, Pat. No. 3,495,950. This application May 13, 1971, Ser. No. 143,236

Int. Cl. F01n *3/14*

U.S. Cl. 60—292 **9 Claims**

1. In combination, an internal combustion engine having a cylinder, means for reducing the amount of pollutants including residual combustibles among the exhaust emissions from said cylinder comprising an exhaust system leading from an exhaust port of said cylinder, means for providing air in at least stoichiometric ratio adjacent and downstream of said exhaust port for combustion of said residual combustibles among said exhaust emissions in said exhaust system, means for controlling the back pressure in said exhaust system comprising valve means positioned therein downstream from said exhaust port functioning to restrict mass flow at the lower engine speeds above idle thereby to maintain a back pressure higher than the normal back pressure of said exhaust system without said valve means and opening at the higher speeds and mass flow rates when said normal back pressure without said valve means is above the imposed back pressure, and the improvement comprising an acoustic catalytic muffler construction located upstream and adjacent said valve means, said acoustic catalytic muffler construction comprising a casing having an inlet and an outlet and an annular mass of material within said casing, said mass of material supporting a catalyst compound for reducing the amount of pollutants among said exhaust emissions from said cylinder, said inlet of said catalytic muffler construction and said outlet thereof each having a diameter substantially equal to the inner diameter of said annular mass of material and all being located for throughflow of said exhaust emissions through said muffler construction, said annular mass of material being comprised of a plurality of fibrous sections having a general helical configuration, adjoining sections having contrasting helix angles.

3,884,038
CONTROL SYSTEM FOR A PRIME MOVER CONNECTED TO A STEPLESS TRANSMISSION

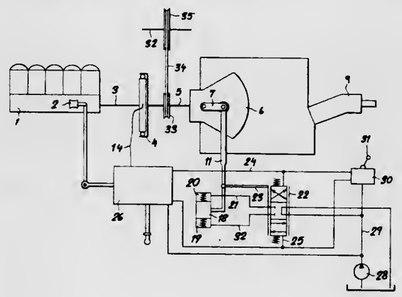
Franz Forster, Haibach, and Hans-Waldemar Stuhr, Aschaffenburg, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Jan. 30, 1974, Ser. No. 437,885

Claims priority, application United Kingdom, Feb. 2, 1973, 5287/73

Int. Cl. F16h *39/46*

U.S. Cl. 60—431 **25 Claims**



1. A system comprising a prime mover having an output shaft; a steplessly adjustable transmission having an input shaft operatively connected to said output shaft of said prime mover, and an output shaft operatively connectible to a load, and control means for varying the speed ratio between the input and output shafts of said transmission; torque-measuring means between said prime mover and said transmission for directly detecting the torque at the output shaft of said prime mover; and means responsive to the torque-measuring means for operating said control means upon the measured torque attaining a predetermined limiting value to reduce the speed of the output shaft of said transmission.

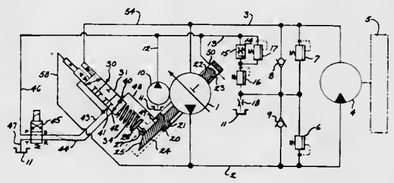
3,884,039
HYDRAULIC PUMP WITH HORSEPOWER LIMITER

Reza Pourian, Wauwatosa, Wis., assignor to The Oilgear Company, Milwaukee, Wis.

Filed May 20, 1974, Ser. No. 471,606

Int. Cl. F16h *39/46*

U.S. Cl. 60—445 **9 Claims**



1. A hydraulic transmission comprising a variable displacement pump hydraulically connected to a hydraulic motor, an auxiliary pump to provide control pressure fluid;
said variable displacement pump having a displacement control member, opposed cylinder and pistons subject to control pressure fluid for positioning said displacement member;
said opposed cylinders and pistons comprising a bias cylinder connected to the auxiliary pump, a control cylinder having a larger area piston than said bias cylinder;
a pilot operated valve assembly comprising:
a pilot operated valve having a control port connected to said control cylinder, a first port connected by a reversing valve to a delivery port of the auxiliary pump and a second port connected by said reversing valve to a return for said auxiliary pump for effecting a deceleration mode of operation of the transmission, said control port normally being slightly open to said second port, means for shifting said reversing valve to reverse its connections to the first and second ports for effecting an acceleration mode of operation of the transmission, a movable valve member normally operable to control the opening of the control port with said second port, a follow-up spring acting between said valve member and one of said pistons positioning the displacement member whereby the bias force of said spring on said valve member is decreased with increase in pump displacement above a predetermined value,
a tandem arrangement of pilot cylinders and plungers in line with said valve member for acting on one another and for urging said valve member against said spring, said arrangement comprising an acceleration control plunger, a release plunger, a two-part deceleration control plunger, and said valve member, a port at the end of said acceleration control plunger connected to a delivery port of said pump, a port between said two-part deceleration control plunger connected to an inlet port of said pump, a port between said release plunger and said deceleration control plunger and a port between said deceleration control plunger and said valve member each connected to said first port of said pilot valve.

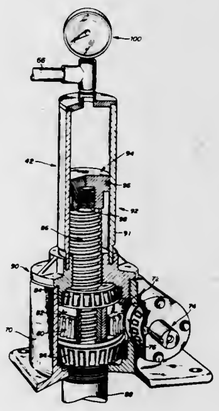
3,884,040
HYDRAULIC ACTUATOR

Lane A. Green, Shreveport, La., assignor to Superior Iron Works & Supply Company, Inc., Shreveport, La.

Filed Feb. 26, 1973, Ser. No. 335,544

Int. Cl. F15b *7/08*

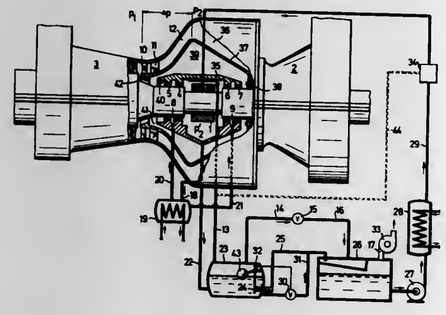
U.S. Cl. 60—593 **6 Claims**



1. A hydraulic actuator for facilitating precise control over an apparatus to perform a function by means of the action of pressurized hydraulic fluid outside said actuator which comprises:

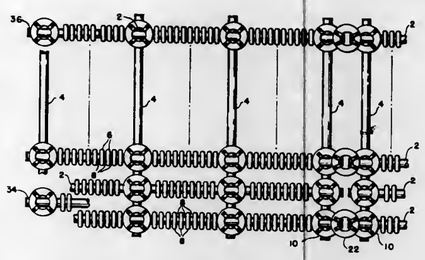
a housing with a hydraulic cylinder rigidly attached thereto, said hydraulic cylinder including a piston mounted for relative reciprocation to selectively cause hydraulic fluid flow to and from the apparatus;
operator means; and
a mechanism having a relatively high mechanical advantage for effecting relative reciprocation of the piston in response to actuation of the operator means so that a relatively substantial actuation of the operator means is required in order to effect a relatively small change in the performance in the function by the apparatus.

3,884,041
GAS TURBINE
Ferdinand Zerlauth, Andelfingen, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland
Filed Nov. 6, 1973, Ser. No. 413,312
Claims priority, application Switzerland, Nov. 8, 1972, 16247/72
Int. Cl. F02g *7/06, 7/28*
U.S. Cl. 60—657 **4 Claims**



1. A gas turbine comprising
a compressor having a flow duct for a gaseous working medium, a terminal rotor blading ring in said flow duct and an adjacent exit stator blading ring in said flow duct;
a turbine downstream of said compressor;
a diffuser between said compressor and said turbine for conducting the working medium and air between said compressor and said turbine;
a rotor bearing for said compressor and said turbine mounted between said compressor and said turbine;
a casing housing said rotor bearing;
contactless seals in said casing sealing said bearing from the ambient zone outside said housing;
a tapping duct connected between an exit end of said diffuser and said seals to deliver a flow of barrier medium to said seals at a first pressure higher than in said ambient zone; and
means defining a return flow path between said casing and said compressor flow duct to conduct the barrier medium from said seals into said flow duct at a pressure lower than said first pressure and at a point between said blading rings.

3,884,042
FLOATING BREAKWATER
Thomas R. Anderson, Stanwood, and Edwin E. Fortner, Everett, both of Wash., assignors to Cascade Pacific Rim Co., Inc., Arlington, Va.
Filed Jan. 2, 1974, Ser. No. 429,707
Int. Cl. E02b *3/06*
U.S. Cl. 61—5 **13 Claims**



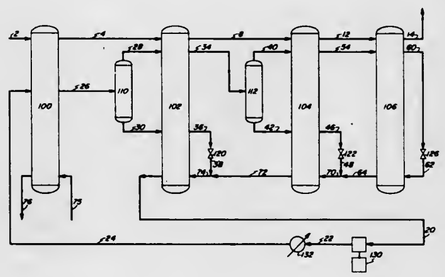
1. A floating breakwater to attenuate damaging wave action, comprising:
a first floatable elongated member,
a second floatable enlongated member,
a plurality of outwardly extending resilient elements spacedly mounted along the length of the floatable elongated members,
hinge means interconnecting the two floatable elongated members in an end-to-end relationship, including
first and second sets of flexible elements of a frictional material, such that a high friction force is generated between the floatable elongated member and each flexible member, secured to the respective adjacent ends of two confronting floatable elongated members with the flexible elements of each set lying on the opposite sides of the floatable elongated member,
means extending through the flexible elements of each set clamping them about the respective floatable elongated member, said means being spaced out of contact with the floatable elongated members,
means flexibly interconnecting the adjacent first and second sets of flexible members and secured thereto, and
means anchoring the end of the interconnected floatable elongated members whereby waves contacting the breakwater sections will be attenuated and the sections are capable of relative movement and yet are rugged.

3,884,043
ARTIFICIAL ISLAND
Wilhelmus Jan Timmermans, Hellevoetsluis, Netherlands, assignor to R. J. Brown & Associates Corporation, Fribourg, Switzerland
Filed Jan. 16, 1974, Ser. No. 433,761
Claims priority, application Netherlands, Jan. 19, 1973, 7300821
Int. Cl. F16l *1/00;* **B63b** *35/04*
U.S. Cl. 61—72.3 **3 Claims**



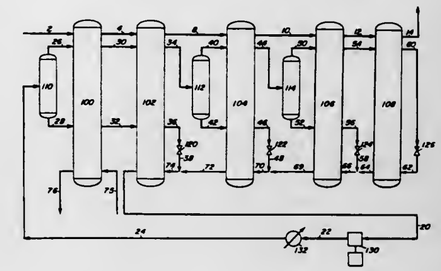
1. An artificial island with carriers intersecting the water line and a platform on said carriers, an elongated stinger for lowering a pipeline, one end of the stinger being connected to a guide member, means mounting said guide member for movement over the platform in the direction of the length of the stinger, a support connected to the stinger intermediate the ends of the stinger, the support being pivotally mounted on the island below the water line.

3,884,044
MIXED REFRIGERANT CYCLE
Sheldon Bodnick, Rockaway, and Thomas M. Stark, Morristown, both of N.J., assignors to Exxon Research & Engineering Company, Linden, N.J.
Continuation-in-part of Ser. No. 9,499, Feb. 9, 1970, abandoned. This application Nov. 6, 1972, Ser. No. 304,276
Int. Cl. F25j *3/00*
U.S. Cl. 62—9 **8 Claims**



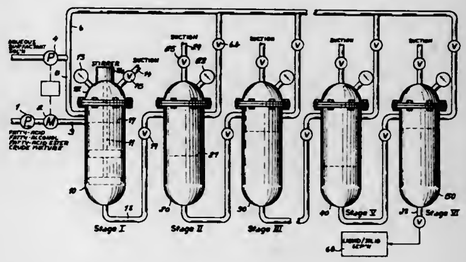
1. A method of cooling and liquefying natural gas in a warm stage by a first refrigeration system employing a first refrigerant and thereafter further cooling and liquefying said natural gas in a cold second stage by a second refrigeration system employing a multicomponent second refrigerant, each of said first and second refrigeration systems discharging heat received from said cooling and liquefying of natural gas in said associated first and second stages by compressing said refrigerants and condensing them by indirect heat exchange against environmental cooling streams comprising the steps of:
a. precooling said natural gas to essentially ambient temperature by indirect heat exchange against at least one of the group of environmental cooling streams consisting of air and water and thereafter;
b. cooling below ambient temperature in said warm first stage by indirect heat exchange said natural gas and independent therefrom said multicomponent second refrigerant by said first refrigerant which exits said first stage after being warmed therein and after being compressed is cooled by one of the group of environmental streams consisting of air and water, thereby rejecting heat received from the natural gas and the second refrigerant in said first stage to the environment and is expanded and returns to said warm first stage as refrigerant;
c. further cooling and liquefying said natural gas in said cold second stage by indirect heat exchange with said multicomponent second refrigerant which thereafter exits said cold second stage after absorbing heat therein at a temperature below that of said natural gas entering said cold stage and enters the second refrigeration system compressor suction at substantially its exit temperature and pressure and thereafter is compressed and cooled to near ambient temperature; thereby rejecting heat absorbed in said second stage by indirect heat exchange against at least one of the group of environmental streams consisting of air and water and thereafter is cooled below ambient temperature in said warm first stage of (b) and thereafter separated into liquid and vapor phases and is returned to said cold second stage wherein said liquid phase is cooled and thereafter reduced in pressure, and returned through said second stage as a portion of said second refrigerant and said vapor phase is cooled.

3,884,045
MIXED REFRIGERANT CYCLE
Thomas M. Stark, Morris Township, and Sheldon Bodnick, Rockaway, both of N.J., assignors to Exxon Research & Engineering Company, Linden, N.J.
Continuation-in-part of Ser. No. 9,500, Feb. 9, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,341
Int. Cl. F25j *3/00*
U.S. Cl. 62—9 **8 Claims**



7. The method of claim 6 wherein said first refrigerant substantially comprises propane.

3,884,046
CRYSTALLIZATION OF A FATTY COMPONENT FROM A FEED BY THE STEPS OF EMULSIFICATION WITH A SURFACTANT, COOLING BY VACUUM EVAPORATION AND SUBSEQUENT CONVENTIONAL SEPARATION
Hans Joachim Schmidt, and Albert Hartmann, both of Frankfurt am Main, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany
Filed Mar. 26, 1970, Ser. No. 38,606
Claims priority, application Germany, Mar. 26, 1969, 1915298
Int. Cl. E01d *9/04*
U.S. Cl. 62—58 **9 Claims**

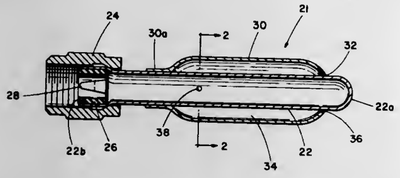


1. A method of separating and recovering at least one crystallizable component of an organic phase containing at least one fatty acid, fatty alcohol or fatty-acid ester which comprises the steps of emulsifying said organic phase in a molten state in a surfactant-containing liquid aqueous phase to form an emulsion in which said component is at least in part a disperse phase; cooling said emulsion after the interaction of said organic phase with the surfactant-containing liquid phase by subjecting same to suction to evaporate water from said emulsion, thereby crystallizing said component from said emulsion and forming a dispersion of the crystallized component in the liquid; and recovering said crystallized component in the form of crystals from said dispersion.

3,884,047
REFRIGERANT CHARGING METHOD AND APPARATUS

Wendell E. Maudlin, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 28, 1973, Ser. No. 429,429
Int. Cl. F25b *45/00*
U.S. Cl. 62—77 2 Claims

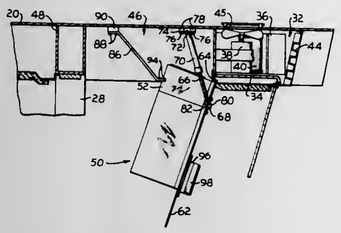


1. A method of charging a refrigeration system of the type including a compressor, a condenser, a fixed restriction expansion device and an evaporator all connected to provide a closed circuit, vapor cycle refrigeration system and including a suction gas line between said evaporator and said compressor comprising the steps of: initially charging said refrigeration system by adding refrigerant thereto until a slightly overcharged condition exists; providing a target into which bleed-off liquid refrigerant may be conducted from said suction gas line to said target, thereby indicating the overcharged condition; continuing to bleed-off liquid refrigerant until the frost on said target is completely melted, thereby indicating a superheated condition of suction gas; discontinuing the bleed-off of refrigerant when a predetermined time has elapsed after all frost has been melted, said predetermined time being sufficient to insure 5°–10°F of superheat.

3,884,048
AIR CONDITIONING EVAPORATOR MODULAR SUPPORT AND LOWERING MEANS

Marvin L. Schneider, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 15, 1974, Ser. No. 488,742
Int. Cl. F25d *19/00*
U.S. Cl. 62—298 8 Claims

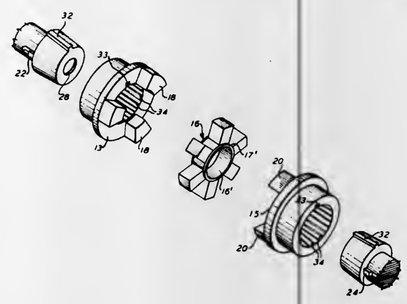


1. A pivotal mounting assembly for mounting an air conditioner unit in the operator compartment of a vehicle for supporting said unit in a first position for normal use and swinging said unit to a second position for servicing, comprising in combination:
an enclosed vehicle operator compartment having a generally horizontally extending roof and a plurality of downwardly depending side walls;
a stationary mounting member secured to said compartment;
a pivotal mounting member pivotally secured to said stationary member and supporting an air conditioning unit mounted thereon;
extensible jack means pivotally secured at one end to said operator compartment and pivotally secured at the other end to said pivotal mounting member, said jack being operative to move said air conditioner unit between said first and said second positions; and
means for securing said pivotal bracket and said air conditioning unit in said first position.

3,884,049
DRIVE COUPLING

Ernest H. Pauli, Watchnung, N.J., assignor to The Hilliard Corporation, Elmira, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,346
Int. Cl. F16d *3/64*
U.S. Cl. 64—14 7 Claims

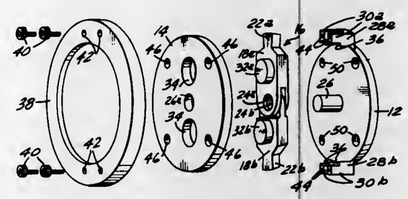


1. A flexible coupling device forming a drive coupling between two shafts in adjacent substantially axially aligned relation comprising a removable bushing member on the adjacent end(s) of each of said shafts, each bushing member having a uniform diameter, inner shaft receiving bore and means fixing its relative axial movement (thereon) on its shaft and an outer cylindrical surface tapered outwardly from the end(s) of said shaft(s), and coupling head members mounted on each of said bushings having longitudinally projecting portions extending toward one another and in overlapping relation to provide a torque transmitting drive connection, said coupling heads having inner tapered cylindrical bores substantially mating with and received respectively on said tapered bushing surfaces.

3,884,050
FORCE TRANSMITTING COUPLING

Louis J. Borcuk, Riverside, Calif., assignor to Louis J. Borcuk and Joseph J. Borcuk, both of Riverside, Calif.

Filed Dec. 17, 1973, Ser. No. 425,510
Int. Cl. F16d *3/54*
U.S. Cl. 64—19 10 Claims

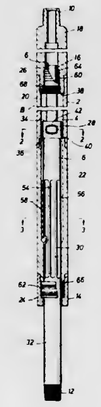


1. A force transmitting coupling comprising:
a rotatable plate having a central part and distal force transmitting means;
linkage means including a link pivotally connected to said part and engaged by said force transmitting means;
a force transmitting member carried by said link and located intermediate said central part and associated distal force transmitting means; and
an apertured plate having an opening in which the force transmitting member is received.

3,884,051
BEARING STRUCTURE FOR TELESCOPING WELL TOOL

Clifford C. Bottoms, 12644 Cathy St., Sylmar, Calif. 91342

Filed Mar. 12, 1973, Ser. No. 340,280
Int. Cl. F16d *3/06*
U.S. Cl. 64—23.7 6 Claims

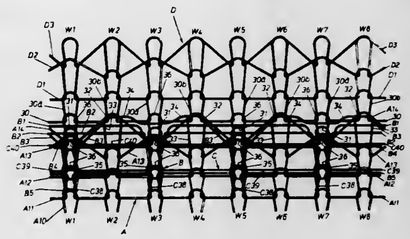


1. A well tool for use within a hole, said tool comprising:
an elongated outer member having a longitudinal bore therethrough, and having a first end and a second end;
an elongated inner member telescopically mounted in the bore of said outer member, said outer member being axially movable relative to said inner member, said inner member having a first end located within the bore of said outer member axially inwardly of the first end of said outer member, and a second end located free of the bore of said outer member and axially outboard of the second end of said outer member;
means limiting axial movement of said outer member relative to said inner member in either direction;
a radial bearing for maintaining axial alignment of said inner and outer members, said bearing comprising a plurality of rotating bearing elements circumferentially disposed between and engageable with said inner and outer members, each of said bearing elements having an axis of rotation disposed in a plane normal to a longitudinal axis of said inner member and located in part between said axis and the inner wall of said outer member, the axes of said bearing elements being fixed with respect to one of said members; and
longitudinally extending spline means cooperative between said inner and outer members to permit relative axial movement between said members within the limits of said limiting means and prevent relative rotation between said members.

3,884,052
TUBULAR KNITTED FABRICS

Peter Michael Findlay; William Ewart Alan Shelton, and John Michael Klee, all of Leicester, England, assignors to The Bentley Engineering Co., Ltd., England

Continuation of Ser. No. 111,208, Feb. 1, 1971, abandoned, which is a division of Ser. No. 776,943, Nov. 19, 1968, Pat. No. 3,626,726. This application Apr. 2, 1973, Ser. No. 346,799
Int. Cl. D04b *9/54*, *9/56*
U.S. Cl. 66—187 7 Claims

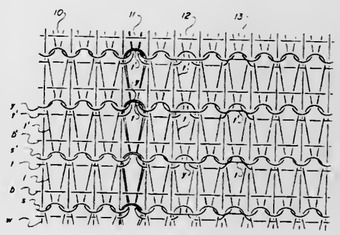


1. A closed knitted fabric tube comprising a first piece of tubular weft knit fabric having at one end a terminal course comprising needle loops, a second separately knit piece of tubular weft knit fabric having at one end a selvage including dial point loops and at the other end a terminal course comprising needle loops, said second piece of tubular fabric being constricted inwardly of its central part to a substantially complete closure, a separately knit course of joining loops interlooping with rows of loops at three different end parts of fabric, namely (1) with needle loops of said terminal course of said first piece of fabric, (2) with dial point loops of said selvage end of said second piece of fabric and (3) with needle loops of said terminal course at said other end of said second piece of fabric so as to join said one end of said first piece of fabric to both ends of said second piece of fabric, said separately knit course of joining loops being the sole connection between said first piece of fabric and said second separate piece of fabric, and a plurality of courses forming a band of anti-ravel fabric extending as a continuation from said source of joining loops, said course of joining loops further interlooping with a first course of said band of anti-ravel fabric.

3,884,053
KNIT FABRIC INCORPORATING A WEFT STITCH WEAVE

Kurt W. Niederer, Charlotte, N.C., assignor to Schlafhorst & Co., Monchen-Gladbach, Germany

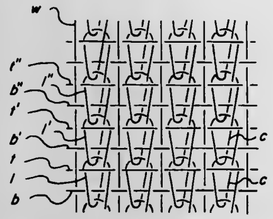
Filed Dec. 10, 1973, Ser. No. 423,487
Int. Cl. D04b *23/08*, *23/10*
U.S. Cl. 66—192 8 Claims



1. In knit fabric incorporating an inlay of spaced warp ends with filling ends laid at opposite sides of the warp ends, the improvement which comprises weft stitch courses having

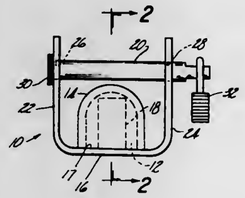
needle loops knit in wales running in the spaces between said warp ends and interlaced with filling ends at both sides of said warp ends together with connecting sinker loop portions passing to one side of said warp ends without any necessary knitting-in of any of said warp or filling ends.

3,884,054
KNIT FABRIC INCORPORATING A WARP STITCH WEAVE
Kurt W. Niederer, Charlotte, N.C., assignor to W. Schlafhorst & Co., Monchen-Gladbach, Germany
Filed Dec. 10, 1973, Ser. No. 423,484
Int. Cl. D04b *23/08, 23/10*
U.S. Cl. 66—193 **7 Claims**



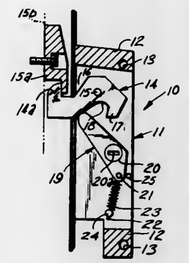
1. In knit fabric incorporating an inlay of spaced warp ends with filling ends laid at opposite sides of said warp ends across the full fabric width and warp knit stitch chains formed in the spaces between said warp ends, an improved woven fabric simulation comprising a sinuous interlacing of loops of said stitch chains with filling ends at both sides of said warp ends by which said filling ends are held against said warp ends and are forced inwardly therebetween so that both warp and filling ends are caused to undulate as a result of mutual interaction in a manner producing an appearance approaching that of a woven structure.

3,884,055
TRAILER HITCH LOCK
Dale F. Vuillemot, 11513 Lewis Rd., Clio, Mich. 48420
Filed Sept. 27, 1973, Ser. No. 401,387
Int. Cl. E05b *73/00*
U.S. Cl. 70—58 **10 Claims**



1. A theft deterrent device to lockably obstruct the socket of a trailer hitch, comprising:
an elongated plate to traverse the opening into said socket;
a plug member disposed to one side of the vertical centerline of said plate and affixed thereto, said plug member fitting within said socket;
a bar mounted to said device in parallel spaced relationship to said elongated plate and being disposed to the opposite side of the vertical centerline of said plate from that side thereof to which said plug is disposed so that when said theft deterrent device is installed on said trailer hitch said bar is located generally over said trailer hitch, said elongated plate is located under said trailer hitch closing the opening into said socket and said plug member is inserted in said socket, the orientation of said plug and said bar on opposite sides of the vertical centerline of said plate preventing removal of said device by merely rotating said theft deterrent device relative to said hitch; and
means to lock said theft deterrent device to said trailer hitch.

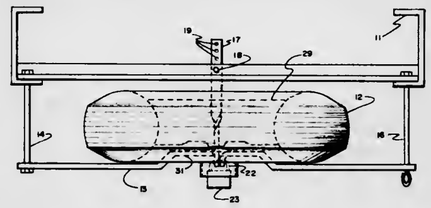
3,884,056
LOCK FOR SLIDING DOORS
Vern A. East, and Ora V. East, both of 920 N. 82nd St. H102, Scottsdale, Ariz. 85257
Filed Oct. 5, 1973, Ser. No. 403,930
Int. Cl. E05b *65/08*
U.S. Cl. 70—100 **6 Claims**



1. A latch mechanism for a slidable door comprising: a hollow body, a latch plate having lip means adapted to releasably grasp a keeper, first pivot means pivotally supporting said latch plate within said body, a lever arm, second pivot means pivotally supporting said lever arm within said body, the axes of the two pivot means being spaced and substantially parallel, said latch plate being defined in part by a peripheral recess generally facing toward said second pivot means and receiving the distal end of said lever arm, said peripheral recess being shaped in such a manner as to form a cam and follower relationship with said distal end of the lever arm so that pivotal movement of said lever arm will cause pivotal movement of said latch plate between a keeper grasping, or latching, position and an unlatching position, said peripheral recess also being shaped such that when the latch plate is in its latching position the lever arm will be in contact with a planar portion thereof, the planar portion lying in a plane containing the axis of said first pivot means and being perpendicular to a second plane containing the axis of said second pivot means and the point of contact of the lever arm with said planar portion, so that all external pressure applied directly to said latch plate in an attempt to pivot it toward its unlatching position will be applied through said lever arm directly to said second pivot means, manually accessible means for pivoting said lever arm, and stop means fixedly carried within said body and limiting pivotal movement of said lever arm in one direction to that position wherein the distal end thereof abuts said planar portion of said peripheral recess of said latch plate.

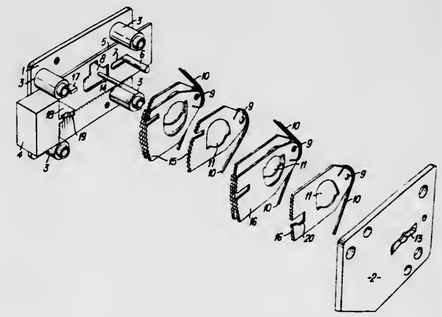
3,884,057
LOCK PROTECTION APPARATUS
Donald L. Maurer, 2125 Petersburg Dr., Milpitas, Calif. 95035
Filed Oct. 29, 1973, Ser. No. 410,439
Int. Cl. E05b *65/12*
U.S. Cl. 70—259 **6 Claims**

1. A protective apparatus for the bolt of a lock which secures two members together comprising a hasp attached to one member, a base plate attached to the other member, means attached to said base plate formed to mate with said hasp for being secured thereto by the bolt, and a continuous protective wall attached to said base plate and surrounding said means attached to said base plate, whereby when said hasp is mated with said means attached to said base plate and



secured thereto by the bolt, the bolt is protected from cutting by said protective bulkhead.

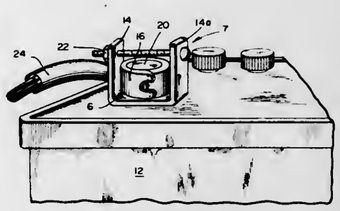
3,884,058
KEY-ACTUATED LOCKS
Peter Alfred Terry, 35 Halcyon Way, Hornchurch, and Ronald Reynolds, 113 Long Green, Chigwell, both of England
Filed Aug. 7, 1973, Ser. No. 386,385
Claims priority, application United Kingdom, July 26, 1973, 37376/72
Int. Cl. E05b *21/00*
U.S. Cl. 70—355 **9 Claims**



1. In a key-actuated lock including: a front plate having a keyhole; a bolt; two stumps spaced apart on said bolt; a first set of pivoted levers, each of the same length and provided with a stump-receiving slot; and a second set of pivoted levers, each of the same length, which is shorter than the length of the first set of levers, and provided with a stumpreceiving slot, the sets of levers being rockable by a correct key located through the said keyhole to align the said slots of the first set of levers to receive one of the said stumps and simultaneously to align the said slots of the second set of levers to receive the other of the stumps whereby the bolt can be withdrawn to release the lock, the improvement consisting in that the stump received in the slots of the second set of levers is masked by the first set of levers when viewed from the front plate.

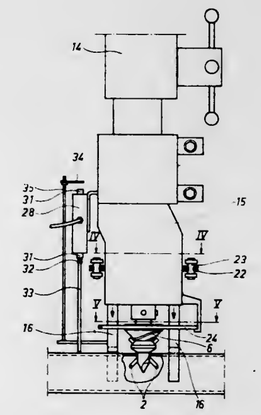
3,884,059
TWIN LOCK KEY TAG
Raymond J. McKee, Box 246, Little Falls, N.J. 07470
Filed Oct. 4, 1973, Ser. No. 403,667
Int. Cl. A44b *15/00*
U.S. Cl. 70—456 R **1 Claim**

1. A key ring comprising a length of rod-like spring material forming a generally annular central portion with opposed end portions coiled against each other, such end portions terminating in spaced free ends and a pair of radially outwardly extending loop projections formed therein in close circumferentially spaced relation to each other, and a member closely receiveable on said ring between said projections for retention by said projections to preclude movement of a mounted key therepast, said member comprising a flat strip of material



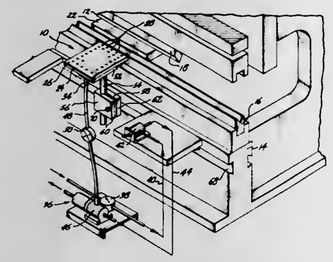
incorporating a ring received aperture at one end thereof of a diameter less than the height of the projections for selective forced movement over at least one of said projections.

3,884,060
AUTOMATIC FLANGING DRILL APPARATUS
Leo Larikka, 01670 Vantaa, Vantaa, Finland
Filed May 30, 1974, Ser. No. 474,659
Claims priority, application Finland, May 30, 1973, 1749/73
Int. Cl. B21d *51/40*
U.S. Cl. 72—23 **8 Claims**



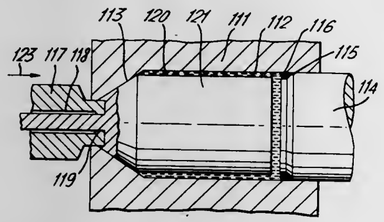
1. Automatic flanging drill apparatus for drilling a hole in the side of a tube and raising a flange (3) encircling the hole, said apparatus comprising a drill bit (1) and flanging means (2) connected with same, which can be made, with the aid of an adjustment means (6), to protrude from the drill bit, after the hole has been drilled, under the edges of the hole, and means (16,17,18) for withdrawing the drill bit and the flanging means (2) from the hole while they are rotating, characterized in that the apparatus comprises a sensing means (33), which observes the position of the drill bit (1) when the flanging means can be pushed in under the edges of the hole, that said sensing means (33) actuates a control valve (28), which on the one hand controls the said adjustment means (24) for causing the flanging means (2) to protrude from the drill bit (1) and which on the other hand engages the action of the said means (16,17,18) for withdrawing the drill bit and the flanging means (2) from the hole.

3,884,061
VACUUM PARTS HOLDER
Marlyn A. Westby, Edmonds, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Nov. 2, 1973, Ser. No. 412,366
Int. Cl. B21b 9/00
U.S. Cl. 72—38 **17 Claims**



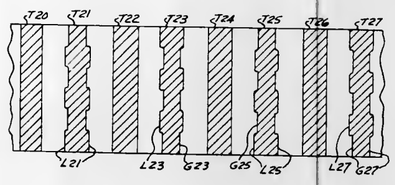
1. A holder of parts to permit forming of the parts in a machine with an operator's hands removed from the vicinity of the forming dies comprising: a flat surfaced holding member having a plurality of openings through the surface that communicate through the member to a vacuum source, means for adjustably positioning the holding member with the flap side up adjacent the stationary dies of the machine, and means for controlling vacuum to the holding member.

3,884,062
FORMING OF MATERIALS
Derek Green, Lytham St. Anne's, England, assignor to United Kingdom Atomic Energy Authority, London, England
Division of Ser. No. 880,127, Nov. 26, 1969, abandoned. This application May 7, 1973, Ser. No. 357,531
Claims priority, application United Kingdom, Sept. 3, 1969, 43716/69; Feb. 11, 1969, 7409/69; Dec. 9, 1968, 58493/68; Jan. 21, 1969, 3489/69; Jan. 29, 1969, 4996/69; Feb. 19, 1969, 9096/69
Int. Cl. B21c 23/08
U.S. Cl. 72—60 **16 Claims**



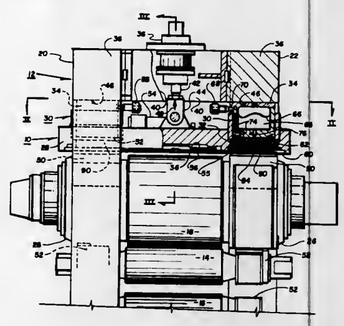
1. A method of producing from a workpiece a product of reduced cross section by extruding through an orifice defining the reduced product cross-section, comprising applying an initial bulk compressive stress to the whole of the workpiece to influence the workpiece to extrude through the orifice and applying a tool having a working face of smaller cross section than the workpiece to a localized region of the workpiece adjacent the orifice, and moving the tool in a repetitive closed cyclic path with the working face of the tool maintained in pressure contact with the localized region of the bulk-stressed workpiece during at least part of the cyclic path to apply an additional compressive stress at said localized region to influence the localized region to extrude through said orifice, so that the material of the workpiece in the localized region forward of the working face of the tool is subjected to an additional compressive stress and is thereby formed through the orifice defining the product cross section under the influence of the bulk compressive stress acting in combination with the additional compressive stress in the material of the workpiece in the region forward of the working face of the tool.

3,884,063
GEAR ROLLING
Richard W. Tersch, Grosse Pointe Woods, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Feb. 28, 1974, Ser. No. 446,625
Int. Cl. B21h 5/00
U.S. Cl. 72—102 **26 Claims**



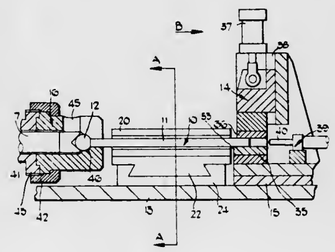
1. A gear rolling die for roll finishing gears comprising a gear-like body having teeth generally conjugate to the form required on a work gear, a substantial number of the side surfaces of the die teeth facing in each direction with respect to a given direction of rotation being provided with grooves extending in planes perpendicular to the axis of the die and defining therebetween lands also extending in planes perpendicular to the axis of the die, a further substantial number of the side surfaces of the die teeth facing in each direction with respect to the given direction of rotation being smooth continuous surfaces, all of the die tooth surfaces being either grooved or being smooth continuous surfaces.

3,884,064
ROLL POSITIONING MECHANISM FOR ROLLING MILLS
Andrew J. Petros, Oakdale, and Ronald D. Pizzedaz, Springdale, both of Pa., assignors to Mesta Machine Company, Pittsburgh, Pa.
Filed Jan. 28, 1974, Ser. No. 437,180
Int. Cl. B21b 31/32
U.S. Cl. 72—245 **19 Claims**



1. In a rolling mill, the combination comprising a mill stand housing construction, at least two mill rolls slidably mounted in window means of said housing construction, said mill rolls having bearing chocks mounted adjacent each end thereof, a pair of roll positioning cylinder and plunger arrangements respectively spanning gaps between the roll chocks of an adjacent one of said mill rolls and juxtaposed end portions of said mill housing construction, hydraulic circuits for extending said cylinder and plunger arrangements for bearing engagement with said bearing chocks and said juxtaposed housing portions to position said rolls, and a counterbalancing piston and cylinder arrangement coupled to both of said plunger and cylinder arrangements for retracting said plungers in termination of said bearing engagement.

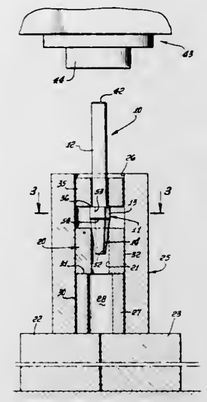
3,884,065
STRAIGHTENING ELONGATED ARTICLES
Gordon Howard Townend, Wolverhampton, England, assignor to GKN Group Services Ltd., Worcestershire, England
Filed Aug. 8, 1973, Ser. No. 386,799
Claims priority, application United Kingdom, Aug. 8, 1972, 36878/72
Int. Cl. B21d 11/14
U.S. Cl. 72—299 **3 Claims**



1. A method of straightening an elongated article having a bent portion of substantially constant cross-section comprising the steps of clamping the article at each end so as to hold one end stationary while the other end is clamped so as to permit the end to be twisted about the longitudinal axis of the article, bringing a die into engagement with said portion of the article so as to constrain said portion of the article to take up a straight configuration without preventing twisting thereof about said axis, and twisting said other end of the article about said axis while said portion is so constrained to plastically strain sufficient of the material of said portion in torsion whereby when said portion is released from constraint said portion retains its straight configuration.

3,884,066
INTERNAL EXTRUSION DEVICE AND METHOD OF INTERNAL FORMING
LD Willmon, 226 36-A Nadine Cir., Torrance, Calif. 90505
Filed Jan. 30, 1974, Ser. No. 437,799
Int. Cl. B21k 21/16
U.S. Cl. 72—343 **5 Claims**

1. An extrusion mandrel assembly for converting in a single operation a bore of circular cross section of a workpiece into a bore of non-circular cross section uniform throughout its length comprising a mandrel element embodying a forming section of the cross sectional configuration and dimensions of the finished non-circular cross sectional bore, a tapered entry section extending from the forming section, and a shank extending from the forming section in the direction opposite the entry section, and of a diameter no greater than the minimum diameter of the forming section, a support sleeve for said workpiece underlying said workpiece and of an exterior cross sectional dimension generally complementary with the exterior cross sectional dimension of said workpiece, guide means independent of and overlying said mandrel element centering the shank of the mandrel element within the circular cross sectional bore of said workpiece, said assembly further including a cylindrical hobbing pot circumferentially confining the support sleeve, workpiece and guide means, separable blocks supporting the hobbing pot and support sleeve, and power means for advancing the mandrel element to extrude said non-circular cross sectional bore.



3,884,067
TENSIOMETER
Yaacov Mottes, 35B Dizengoff Str., Natanya, Israel
Filed June 19, 1972, Ser. No. 264,370
Claims priority, application Israel, June 23, 1971, 37125
Int. Cl. G01h 33/24
U.S. Cl. 73—73 **1 Claim**

1. An improved soil moisture tensiometer comprising a tubular housing having a porous cup attached to the bottom thereof and a U-shaped narrow tube mercury barometer disposed within said housing, wherein the housing is provided with a removable closure for the upper end thereof and is adapted to be filled with water and closed by said closure and the barometer has a shorter leg open to the interior of said housing and a longer leg associated with a calibrated scale and sealed at its top, which leg is characterized by the existence of a vacuum between said sealed end and the mercury contained therein; said tensiometer further comprising means enabling said barometer and calibrated scale to be in moveable relationship to each other, whereby said barometer is adapted to indicate the moisture content of the soil surrounding said cup

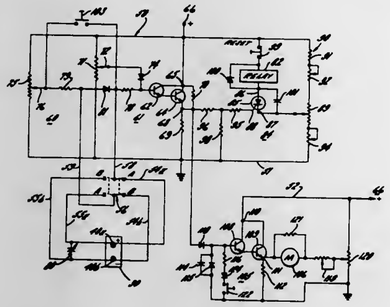
after said barometer and said scale have been adjusted relative to each other in accordance with the atmospheric conditions prevelant at the location at which the tensiometer reading is to be effected.

3,884,068

LOAD SENSING DEVICE

Frank R. Dybel, Olympia Fields, Ill., assignor to International Measurement & Control Co., Park Forest South, Ill.

Filed Mar. 12, 1974, Ser. No. 450,443
Int. Cl. G01b *7/16*
U.S. Cl. 73—88.5 R **9 Claims**



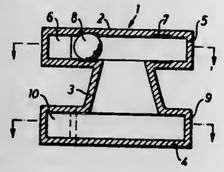
1. An improved sensing device for monitoring stresses which are intermittently applied to and removed from a deformable body, comprising, a transducer fixed to said body and having a pair of output terminals, said transducer being adapted to produce electrical output signals upon compressive loading and unloading of said transducer, said output signals being proportional to the change in loading on said transducer and having a polarity during compressive loading that is opposite that during unloading, detector means having a pair of input leads for connection with said transducer output terminals, and switch means for selectively reversing the connection between said input leads and tranducer terminals.

3,884,069

TRANSDUCER FOR A FLOW GAUGE

Per Ingemar Arnold Lind, Sollentuna, Sweden, assignor to Svenska Utvecklings AB (SUAB), Swedish National Development Co., Sweden

Filed Apr. 17, 1973, Ser. No. 351,826
Claims priority, application Sweden, Apr. 21, 1972, 5321/72; Apr. 21, 1972, 5322/72
Int. Cl. G01f *1/02, 1/06*
U.S. Cl. 73—194 C **28 Claims**



1. Transducer for a flow gauge comprising a housing, said housing comprising an inlet part having a central axis, all means connected to said inlet part spaced radially outwardly from the central axis for introducing fluid tangentially into said inlet part so that a swirling action is commenced therein, said inlet part arranged to maintain the swirling action of the fluid introduced through said wall means, an outlet part in fluid communication with said inlet part, said outlet part having a central axis disposed in axial alignment with the central axis of said inlet part, said outlet part arranged to maintain the swirling action of the fluid commenced and maintained in said inlet part, a rotary body positioned in said housing in the path of the swirling movement of the fluid and arranged so that its rotation represents the flow volume through said housing, said wall means forming a closed inlet channel into said inlet part, characterized in that the distance R_i from the center line of said inlet channel to the axis of said outlet part is defined by the formula:

$$0.75(w/2 + 2r_b + r_d) < R_i < 1.25(w/2 + 2r_b + r_d)$$

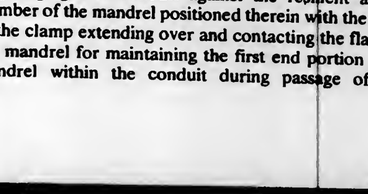
where w is the width of said inlet channel, r_d is the smallest radius of said outlet part, and r_b is the radius of said rotary body when said rotary body is in the form of a ball.

3,884,070

APPARATUS FOR TESTING CONDUIT

Tom J. Windle, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 133,166, April 12, 1971, Pat. No. 3,709,260. This application Sept. 11, 1972, Ser. No. 287,737
Int. Cl. G01m *3/02*
U.S. Cl. 73—49.8 **3 Claims**



1. An apparatus for passing fluid into a plastic conduit for pressure testing said conduit, comprising:

a mandrel having a first end, first and second end portions, a chamber extending therethrough, and an annular flange of at least greater diameter than the inside diameter of the conduit and being spaced a distance along the mandrel from said first end, said first end portion extending from the flange to the first end of the mandrel being of smaller diameter than the inside diameter of the conduit and having at least one resilient annular member having an outer diameter substantially equal to the inside diameter of the conduit for insertion of the first end portion and associated annular member into the conduit with said annular flange in contact with said conduit; and

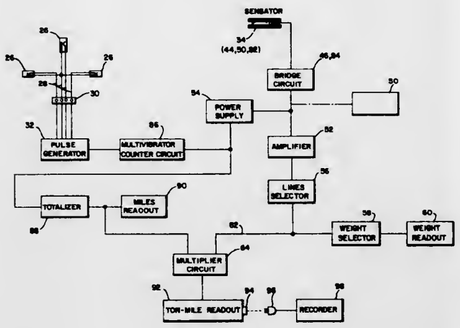
a removable clamp having separate, opposed first and second portions with each portion having an inner surface with first and second end portions and a middle portion, said first end portion of the inner surface of each clamp portion being of an arcuate configuration in the range of greater than 120° to less than 180° and having a length at least greater than the distance from the resilient annular member to the flange of the mandrel, said middle portion of each clamp portion being of a length at least equal to the width of the flange of the mandrel and said second end portion of each clamp portion having an inwardly extending flange of dimensions sufficient for extending over the flange of the mandrel in the installed position thereof, said first and second clamp portions being pivotally attached and pivotally movable between a first position at which the inner surfaces of the clamp portion are spaced from the conduit and the mandrel for inserting into and removing the mandrel from the conduit and a second position at which the first end portions of the clamp portions are in contact with the conduit and forcefully urging said conduit against the resilient annular member of the mandrel positioned therein with the flange of the clamp extending over and contacting the flange of the mandrel for maintaining the first end portion of the mandrel within the conduit during passage of fluid through the mandrel and into the conduit for pressure testing said conduit.

3,884,071

ELECTRONIC TON-MILE INDICATOR

Calvin Richard Howeth, Cleveland, and Frank Angelo Dickey, Oklahoma City, both of Okla., assignors to Calvin Richard Howeth, Moore, Okla.

Filed Dec. 11, 1973, Ser. No. 423,703
Int. Cl. E21b *47/00*
U.S. Cl. 73—151 **21 Claims**



1. An electronic ton-mile indicator in an oil well drilling rig or the like for sensing and indicating work done by the line in the rig, comprising; electronic distance measuring means for producing an output signal pulse for a predetermined linear increment of movement of the line past a given point, said electronic distance measuring means comprising rotatable switch actuation means responsive to movement of said line and stationary switch means located adjacent to and periodically closed by rotation of said switch actuation means for producing said output signal pulse upon closing of said switch means, said rotatable switch actuation means comprising a pair of magnets spaced apart 180° on a sheave in said oil well drilling rig or the like producing an interpretable output signal in response to a load applied to the line; and multiplier circuit means for receiving distance measuring output signal pulses and load responsive interpretable output signals and for multiplying said signals to produce an intelligible readout indicating ton-miles of work performed by the line.

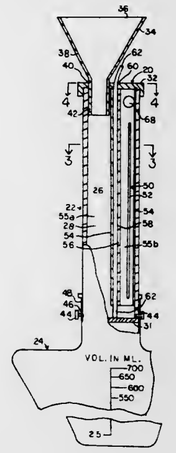
3,884,072

FLOW MEASURING APPARATUS HAVING A COLORIMETRIC URINE INDICATOR

Shu-Sing Cheng, Hanover Park, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed May 14, 1973, Ser. No. 360,235
Int. Cl. G01f *1/00;* **G01n** *33/16*
U.S. Cl. 73—215 **8 Claims**

1. A device for measuring the approximate peak flow rate of a urine discharge, comprising: a receptacle having a cavity and an inlet port adjacent an upper end of the receptacle for passage of the urine discharge into the cavity, and a weir having opening means for passage of urine from the cavity through the opening means, said device including an indicating strip for measuring the approximate maximum height of urine collected in said cavity, said strip comprising an absorbent carrier bearing an indicating chemical which undergoes



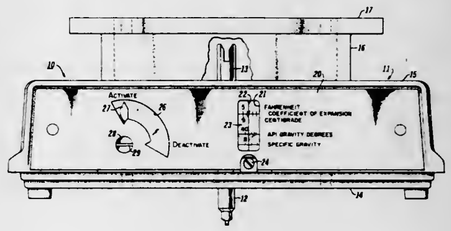
an irreversible color change upon exposure to the chloride ions present in urine.

3,884,073

DEACTIVATOR MECHANISM FOR AUTOMATIC TEMPERATURE COMPENSATOR

Howard E. Siebold, Libertyville, Ill., assignor to Liquid Controls Corporation, North Chicago, Ill.

Filed June 9, 1971, Ser. No. 151,459. The portion of the term of this patent subsequent to Dec. 20, 1991, has been disclaimed.
Int. Cl. G01f *1/08*
U.S. Cl. 73—233 **7 Claims**



1. An automatic temperature compensator comprising

a meter,

a counter,

an input shaft adapted to be driven by said meter,

an output shaft adapted to drive said counter,

compensating means driven by said input shaft and responsive to the temperature of the product being metered for driving said output shaft, and

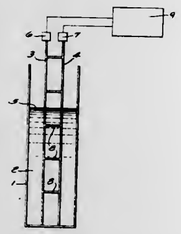
deactivating means for disconnecting said compensating means from said output shaft and connecting said input shaft directly to said output shaft while said compensating means remains connected to said input shaft.

3,884,074

SONIC LIQUID LEVEL MEASURING APPARATUS

Hans R. Robertsson, Molndal, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed May 8, 1974, Ser. No. 468,164
Int. Cl. G01f *23/38*
U.S. Cl. 73—290 V **12 Claims**



1. Apparatus for measuring the level of the top surface of liquid in a tank, of the type comprising a first elongated vibration propagating body that extends downwardly in the tank from near its top, exciter means coupled to said body for recurrently imparting an excitation impulse to it that produces sonic vibration in it, at least one other elongated vibration propagating body extending down into the tank from near its top, detector means coupled to said other body for producing electrical signals in response to vibrations propagated through said other body from the exciter means and by way of the first body, and calculating means connected with said exciter means and said detector means for calculating liquid level in the tank as a function of time required for propagation of vibrations from the exciter means to the detector means, said apparatus being characterized by:

A. a plurality of elongated bridging members extending transversely to said bodies and each connected to both of said bodies, said bridging members being fixed to said bodies at lengthwise spaced intervals along them and being of substantially rigid material that propagates vibration so that as a result of each excitation of the first body, the detector means, during a time thereafter, receives successive periods of vibration, one transmitted through each of said bridging members and a final one transmitted through the liquid; and

B. the calculating means comprising

1. means for counting the number of periods of vibration received by the detector means following each excitation impulse,
2. means for recording the time elapsed between receipt by the receiver of the last and the second-last of such periods of vibration, and
3. means for presenting an output representing a distance which corresponds to said number minus one plus a function of said elapsed time, and which output denotes said level.

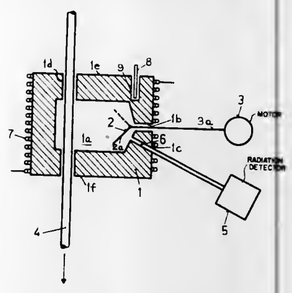
3,884,075

APPARATUS FOR MEASURING SURFACE TEMPERATURES OF THIN ELONGATED OBJECTS BY INFRARED RADIATION THEREFROM

Gerold Brandli, Windisch, and Pierre Keller, Baden, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Mar. 11, 1974, Ser. No. 450,045
Claims priority, application Switzerland, Apr. 30, 1973, 6095/73
Int. Cl. G01j *5/54, 5/62;* **G01k** *13/06*
U.S. Cl. 73—355 EM **3 Claims**

1. Apparatus for measuring the temperature at the surface of a relatively thin elongated object by measurement of the infrared radiation emitted from the surface thereof which comprises a compensating radiator constituted by a thermally conductive metallic body having a cavity therein, said metallic body including a bore therein communicating with said cavity and through which the elongated object is inserted into said cavity, a rotatable chopper wheel mounted for rotation within said cavity, an infrared radiation detector positioned to receive in alternation the infrared radiation emitted from the surface of the elongated object within said cavity and which passes intermittently through said rotating chopper wheel and infrared radiation emitted from the wall of said cavity and



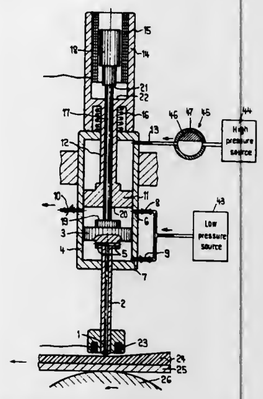
which is reflected intermittently into said detector by the side of said chopper wheel which faces away from the object within said cavity, said detector producing at its output a signal determined in accordance with the temperature differential existing between the portion of the elongated object within said cavity and said metallic body, and means for heating said metallic body in accordance with said signal in such sense as to reduce said signal to zero whereby the temperature of said metallic body then equals the temperature of the elongated object.

3,884,076

MEASURING DEVICE

Urs Peter Studer, Orpund, Switzerland, assignor to Zumbach Electronic-Automatic, Orpund, Switzerland

Filed Dec. 4, 1972, Ser. No. 312,047
Claims priority, application Switzerland, Dec. 7, 1971, 17780/71
Int. Cl. G01b *13/04*
U.S. Cl. 73—37.6 **8 Claims**



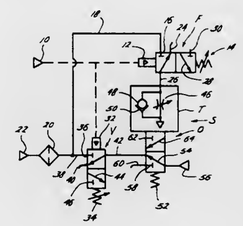
1. A measuring device incorporating a measuring nozzle through which a pressure medium is conveyed against the surface of an object to be measured, and another non-pneumatic measuring feeler displaceable together with said nozzle, said nozzle and measuring feeler being kept at a predetermined distance from the surface of the object to be measured by means of a control piston which is urged on the measurement nozzle side by the pressure medium feeding said nozzle and, on the opposite side by a reference pressure, wherein the control piston is located in a cylinder the length of which is such as to enable the control piston to transfer the measuring nozzle to a resting position and conversely, valve means being provided for control of the pressure condition within said cylinder and for thereby transferring the measuring device by the control piston.

3,884,077

RATE OF PRESSURE CHANGE SENSING SYSTEM

Lawrence F. Athy, Jr., Houston, Tex., assignor to Southwestern Manufacturing Co., Houston, Tex.

Filed June 1, 1973, Ser. No. 366,098
Int. Cl. G01l *7/00*
U.S. Cl. 73—388 R **9 Claims**



1. A system for sensing an abnormal change in pressure in a fluid handling system within a reference time interval, comprising:

a. means for establishing a first fixed pressure threshold level;
b. first sensor means for sensing a first change in the fluid pressure in the system with respect to the first fixed pressure threshold level;
c. means for establishing a second fluid pressure threshold level;
d. second sensor means for sensing a second change in the fluid pressure in the system with respect to the second fixed pressure threshold level;
e. timing means for establishing a reference time interval for occurrence of an abnormal pressure change in the form of said first change and said second change; and
f. output means for forming an output signal in response to occurrence of said first change and said second change within the reference time interval established by said timing means to thereby indicate the abnormal pressure change.

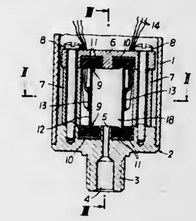
3,884,078

LOW-PRESSURE MEASURING TRANSFORMER

Rudolf Zelringer, Graz, Austria, assignor to Hans List, Graz, Austria

Filed June 15, 1973, Ser. No. 370,449
Claims priority, application Austria, June 16, 1972, 5221/72
Int. Cl. G01l *9/04*
U.S. Cl. 73—398 AR **6 Claims**

1. A low-pressure measuring transformer, in particular for explosion-prevention devices, comprising a housing having an open extremity, a bottom portion terminating the housing at said open extremity and having a central through bore, an abutment arranged in the housing in spaced relation to said bottom portion, said bottom portion and said abutment being designed as rigidly interconnected plates having an annular groove on each of the front ends opposing each other, a flexible flat ring and two O-shaped rings each adjoining same being arranged in concentric relation to each other and being inserted in each of the annular grooves, an expansion joint designed as a thin-walled tube open at both ends extending from said bottom-portion as far as said abutment, each of the open tube ends protruding into one of the annular grooves of the bottom portion and of the abutments and clamped between the concentrically arranged O-shaped rings so as to form a flexible seal, at least two strain gauges located in opposite outer surfaces of said expansion joint, the expansion joint being impinged upon internally by the pressure to be measured through the bore of the bottom portion.

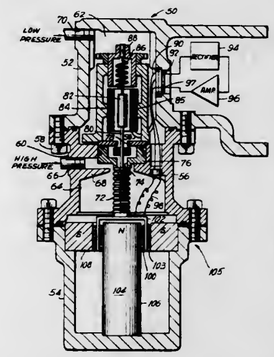


3,884,079

FORCE BALANCE DIFFERENTIAL PRESSURE TRANSMITTER

Quentin C. Turtle, Cranston; Pasco A. Coia, Providence, both of R.I., and John R. Silva, Rehoboth, Mass., assignors to General Signal Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 323,446, Jan. 15, 1973, abandoned. This application Nov. 5, 1973, Ser. No. 413,062
Int. Cl. G01l *9/10*
U.S. Cl. 73—398 R **5 Claims**

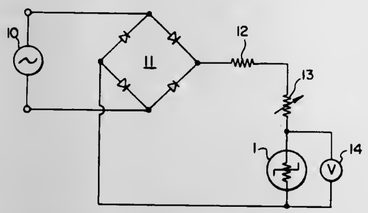


1. A force-balance differential pressure transmitter, comprising:

a casing having first and second pressure chambers therein;
a pressure sensing device for measuring the difference in pressure between the two chambers, said device having an initial position;
a linear variable differential transformer including a core movable in response to movement of said pressure sensing device;
feedback means, including a feedback coil for receiving current derived from said transformer, said coil being operable to restore said pressure sensing device substantially to its initial position;
a common direct current power supply and a two-wire transmission line or loop connected to said power supply, including means for both transmitting signal current over the transmission line to a central station and for deriving

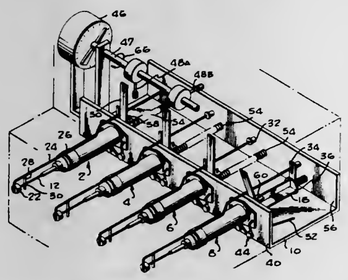
bi-polar voltages serving as local power supplies at the location for said differential pressure transmitter.

3,884,080
VACUUM GAGE
Ronald Chapman, Orleans, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Sept. 24, 1973, Ser. No. 400,567
Int. Cl. G01l *21/12*
U.S. Cl. 73—399 **9 Claims**



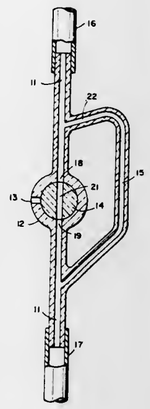
1. A vacuum gage comprising:
a sensing element having a thin film of polyconductor material of predetermined transition temperature between low and high conductivity states, said film adapted to be exposed to the gas in the vacuum to be measured;
current means for providing a cyclically varying current through the thin film, to cyclically heat said film above said transition temperature so that the thin film will cyclically switch between its low conductivity state and its high conductivity state;
means for determining the average resistance of the thin film over at least a predetermined portion of the current cycle, said average resistance indicating the pressure of said gas due to heat transfer from said thin film to the gas.

3,884,081
AUTOMATED SEQUENTIAL AIR SAMPLER
George A. Griffith, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed June 24, 1974, Ser. No. 482,140
Int. Cl. G01n *1/24*
U.S. Cl. 73—421.5 R **37 Claims**



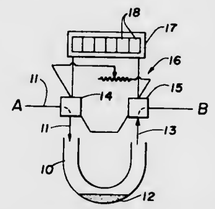
1. An air sampling device for obtaining a plurality of air samples at scheduled time intervals, said air sampling device comprising:
a plurality of piston pumps each having a housing forming an interior chamber, an inlet port member communicating with said chamber, and a plunger which is partially retracted from within said chamber of said housing to draw air into said chamber through said inlet port member when a said piston pump is actuated;
a plurality of sealer means respectively connected to a different one of said pumps for sealing off said inlet port member thereof in response to the plunger thereof being partially retracted from within the chamber thereof by a predetermined distance; and
actuator means for actuating each of said plurality of pumps at scheduled time intervals.

3,884,082
VACUUM DISTILLATION SAMPLING APPARATUS
Gregory C. Merciadis, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.
Filed Apr. 16, 1973, Ser. No. 351,216
Int. Cl. G01n *1/10*
U.S. Cl. 73—422 TC **2 Claims**



1. A sampling device for sampling liquid distillate during distillation comprising a fixed assembly designed to be fitted onto the off-take portion of a distillation apparatus from which samples are to be taken and having
a. a primary fluid passage fitted with
b. a sampling valve comprising a body portion having walls and a hollow interior, said walls containing an inlet port, an outlet port, and a sampling port, each extending from the exterior of said wall to the hollow interior thereof, said inlet and outlet ports being positioned on diametrically opposite sides of the walls and said sampling port being between said inlet and outlet ports, and including a rotatable valve member adjustably positioned within said hollow interior and provided with a flow channel therethrough, said flow channel having a diameter less than the distance between the inlet port and the sampling port and less than the distance between the sampling port and the outlet port, and said valve member being movable between a substantially vertical flow position wherein said channel connects said inlet and outlets ports so that fluid flowing through the primary fluid passage flows through said channel, and a substantially horizontal sampling position wherein said channel communicates with the discharge port and
c. a secondary fluid passage opening into the primary fluid passage at a point above and a point below said sampling valve and by-passing said sampling valve thereby permitting uninterrupted distillation while the sampling valve is in the sampling position.

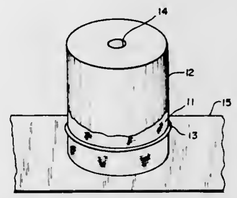
3,884,083
SURFACE AREA DETERMINATION BY DIRECT READ-UT
Seymour Lowell, 42 Wood Hollow Rd., Albertson, N.Y. 11507
Continuation-in-part of Ser. No. 294,342, Oct. 2, 1972, abandoned. This application May 17, 1974, Ser. No. 470,733
Int. Cl. G01n *15/08*
U.S. Cl. 73—432 PS **2 Claims**



1. A method of determining the surface area of a solid material comprising the steps of forming a gaseous mixture of an adsorbate and a relatively nonadsorbable carrier gas in the ratio of 30 percent of the former to 70 percent of the latter, calibrating a digital counter having a digital display so as to display a selected numerical value for each unit volume of said adsorbate which corresponds to the surface area to which a monolayer of said adsorbate will adsorb at specified conditions of pressure and temperature, establishing pressure conditions to produce a continuous flow at a selected rate of flow of said gaseous mixture to measuring means controlling the display of said digital counter, flowing and continuously flowing gas mixture prior to encountering said measuring means over the surface of a sample of solid material at a selected reduced temperature at which adsorption of the adsorbate takes place to thereby cause adsorption of said adsorbate to said surface, while maintaining said continuous flow at said selected flow rate of said gaseous mixture raising the temperature of said sample of solid material to cause desorption of said adsorbate from said surface into said continuously flowing gaseous mixture to provide an additional volume of adsorbate for intermixture therewith, directing said gaseous mixture with said additional volume through a flow chamber of a correspondingly increased volume so that said previously noted selected rate of flow is substantially maintained therein by virtue of said increased volume flowing at a slower rate through said flow chamber, and causing the measurement of said continuously flowing gaseoud mixture with said additional volume of said adsorbate by operating said calibrated digital counter therewith and having said digital display of said digital counter display multiples of said selected numerical value for each unit volume of said adsorbate.

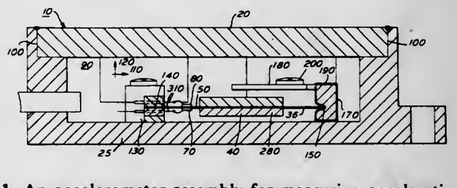
3,884,084
METHOD FOR DETERMINATION OF OIL COATING WEIGHTS ON NON-OIL ABSORBING SURFACES
Ralph M. Raybeck, and Charles R. Hines, both of Pittsburgh, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Filed June 20, 1974, Ser. No. 481,097
Int. Cl. G01n *33/28*
U.S. Cl. 73—432 R **11 Claims**

1. A method for determining the weight of oil coatings on a non-oil absorbing material surface, comprising:
a. placing a permeable material covered end of a substantially circular hollow container in contact with an oil coated surface which is composed of a non-oil absorbing material;
b. adding an oil solvent into the interior of said hollow container in a manner which causes said solvent to pass through said permeable material and to dissolve oil contained on said oil coated surface;
c. permitting said solvent to evaporate so as to leave a substantially circular oil stain on said permeable material;
d. measuring physical characteristics of said oil stain which correlate with oil coating weight of said oil coated surface; and



e. determining the weight of oil contained on said oil coated surface by comparing the measured oil stain physical characteristics with oil stain physical characteristics of oil coated surfaces of a known oil weight.

3,884,085
ACCELEROMETER ASSEMBLY
Paul Beckman, Huntington Valley; Benjamin F. Gerding, Chalfont, and Prabhat Kumar Jain, Norristown, all of Pa., assignors to Robinson-Halpern Company, Plymouth Meeting, Pa.
Filed Apr. 5, 1972, Ser. No. 241,318
Int. Cl.[2] G01D *15/12*
U.S. Cl. 73—517 R **22 Claims**



1. An accelerometer assembly for measuring acceleration forces in a predetermined direction adapted for use in a high temperature environment, comprising:
a. a housing defining an internal chamber;
b. a longitudinally extended ceramic beam within said chamber, said beam rigidly secured at one longitudinal end thereof to said chamber and partially constrained on the opposing longitudinal end thereof, said beam being movable in said predetermined direction responsive to said acceleration forces applied to said housing;
c. means for respectively rigidly securing and partially constraining said ceramic beam on opposing longitudinal ends thereof within said internal chamber of said housing, said securing means including:
1. Cantilever restraining means rigidly secured to a first end of said longitudinally extended ceramic beam, said cantilever restraining means including a frame member fastened to an internal wall of said housing, said ceramic beam being rigidly fastened to said frame member on said first end for maintaining said longitudinally extended beam in spaced relation to said internal wall to said housing; and,
2. Stop means for movably interfacing with a second end of said ceramic beam, said second end of said beam being longitudinally opposed to said beam first end, said stop means including a base frame member rigidly secured to an internal wall of said housing adjacent said second end of said beam, said base frame member having a recess formed within a wall facing said beam second end for insertion of said ceramic beam second end in said longitudinally extended direction, said stop means including a flexible cushion assembly secured to

and contiguous with said wall for resiliently contacting said ceramic beam when said ceramic beam moves in said predetermined direction; and

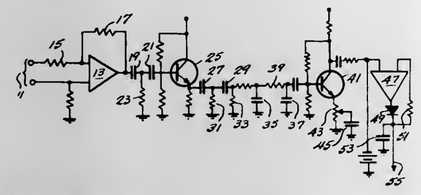
d. Elastic displacement measurement means rigidly secured to said ceramic beam for measuring said beam elastic displacement when said beam is movably actuated in said predetermined direction.

3,884,086

AUDIO DOSIMETER

James O. Steger, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed July 27, 1973, Ser. No. 383,292
Int. Cl. G01h *5/00*
U.S. Cl. 73—558 **3 Claims**



1. An audio dosimeter

means for sensing and converting sound to an electrical signal representing said sound,

weighted filter means for filtering said signal, said filter having a frequency response which approximates the human ear frequency response,

means for generating a DC voltage having a magnitude that is proportional to the filtered output of said weighted filter,

voltage divider means including a plurality of output terminals for dividing said DC voltage,

a plurality of comparator means each being connected to one of said output terminals of said voltage divider, each succeeding comparator generating an output when said DC voltage raises by a predetermined magnitude,

a source of clock pulses, a divider means having multiple outputs for providing sequentially decreasing discrete frequency outputs,

a plurality of gating means one each connected to an output of said divider, each being enabled by the output of an associated comparator to gate said pulses from said divider to said counter, and

means for reading out the count of said counter.

3,884,087

DRIVE ASSEMBLY FOR ROTARY HEAT REGENERATOR

Yoshihiro Sakaki, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Dec. 19, 1973, Ser. No. 426,019
Claims priority, application Japan, Dec. 21, 1972, 47-128414
Int. Cl. F16h *21/12*
U.S. Cl. 74—63 **3 Claims**

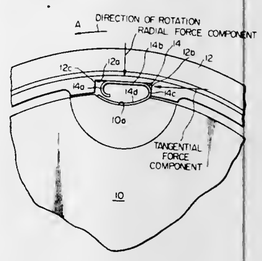
1. A rotary heat regenerator comprising:

a cylindrical heat accumulator having a plurality of recesses formed in its circumference equidistant from eahc other; an annular drive member having a plurality of recesses, corresponding in numbers to the recesses of said heat accumulator, said annular drive member being outwardly concentric with said cylindrical heat accumulator such that each of the recesses of said annular drive member being in substantial radial alignment with each of the recesses of said cylindrical heat accumulator to form adjacent pairs of recesses;

a plurality of plate springs, corresponding in numbers to said pairs of recesses, disposed in corresponding spaces, each defined by one of said pairs of recesses, each of said plate springs, in its free state having a generally parabolic profile with an end portion of of one of the legs of the parabolic curved inwardly toward the vertex;

said plurality of plate springs being disposed in the corresponding spaces and compressed therebetween and spacing said annular drive member radially apart from said heat accumulator;

each of said plate springs being disposed in the corresponding pairs of recesses such that the vertex of the parabolic profile abuts with an end face of each of said recess of said annular drive member which is oriented forward in a direction of rotation of said annular drive member and the other of the legs of the parabolic profile bears against said heat accumulator to provide a driving connection between said drive member and said heat accumulator;



said end portion of said one leg of the parabolic profile of each of said plate springs being radially spaced from the other leg of the parabolic profile and tangentially spaced from an opposite end face of each of said recesses of said drive member which is opposed to said end face and is oriented rearward in the direction of rotation of said drive member to permit deformations of said other leg and said leg of the parabolic profile to absorb a portion of a shock when said heat accumulator encounters temporary resistance to rotation upon being driven by said annular drive member; and

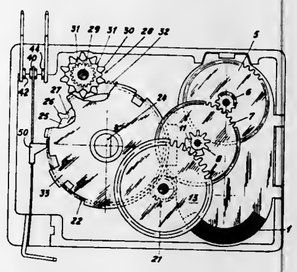
said end portion being constructed and arranged such that it deforms to absorb remaining portion of said shock.

3,884,088

TIMER HAVING TWO SEPARATE CAM MEANS AND MEANS ADVANCING THE CAM MEANS AT DIFFERENT SPEEDS

Marcello Bertozzi, and Mario Chioffi, both of Forsinone, Italy, assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Dec. 3, 1973, Ser. No. 420,887
Claims priority, application Italy, Jan. 23, 1973, 47857/73
Int. Cl. F16h *27/04, 55/04*
U.S. Cl. 74—84 **6 Claims**



1. A timer comprising:

a. motor drive means

b. a first cam means

c. a first speed reduction gear system coupling said first cam means to said motor drive means,

d. a second cam means, and

e. a second speed reduction gear system coupling said second cam means to said first cam means,

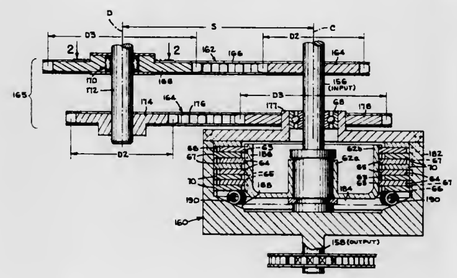
f. each of said speed reduction gear systems including means providing a speed reduction greater than the ratio of the number of teeth of two gears of said gear systems.

3,884,089

MULTI-SPEED MOTION TRANSMITTING MECHANISM

Stellios Antony Avramidis, Greenfield, Ind., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 294,410, Oct. 2, 1972, Pat. No. 3,845,666.
This application Apr. 19, 1974, Ser. No. 462,284
Int. Cl. F16h *9/04*
U.S. Cl. 74—217 C **4 Claims**



1. A multi-speed motion transmitting mechanism comprising an input member and an output member mounted on a common axis, a centrifugal clutch having two rotatable members, one of said members connected to said output member for rotation therewith and the other of said members connected to said input member for rotation therewith, an auxiliary member spaced from said axis having an overrunning clutch thereon, means connecting said input member to said auxiliary member through said overrunning clutch, means connecting said auxiliary member to said one of said centrifugal clutch members to drive said output member through said overrunning clutch and said auxiliary member when the centrifugal clutch is disengaged, said centrifugal clutch operable to connect the output member directly to the input member for rotation at the same speed as the input member when said centrifugal clutch is engaged.

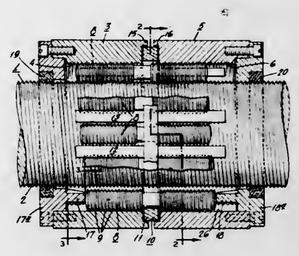
3,884,090

ROLLER SCREW MECHANISM

Lars Ingmar Dock, Lutry, Switzerland, assignor to SKF Industrial Trading and Development Company B.V., Jutphaas, Netherlands

Filed Apr. 19, 1973, Ser. No. 352,737
Int. Cl. F16h *1/18, 55/18*
U.S. Cl. 74—424.8 C **5 Claims**

1. Roller screw mechanism comprising a screw member having an external thread, a nut circumscribing the screw member having an internal thread, a plurality of rollers in the annular space between said members having a groove configuration adapted to interengage with threads on the nut and screw members, and a cage for guiding said rollers, said nut comprising at least one pair of members having means adjacent their confronting axial ends defining a circumferentially extending pocket and said cage consisting of an annular portion centrated in said pocket and a plurality of circumferentially spaced fingers projecting from said central annular portion axially in each direction to define a plurality of aperatures on either side of the central annular portion for the rollers, each of said rollers having a web portion and said central annular portion being provided with circumferentially spaced recesses at least partly enclosing the web portion of said rollers.



3,884,091

PITMAN SHAFT AXIAL SELF-ADJUSTING DEVICE

Charles N. Hay, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

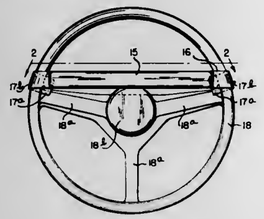
Filed Apr. 12, 1974, Ser. No. 460,335
Int. Cl. B62d *1/20*; **F16h** *35/06*
U.S. Cl. 74—499 **7 Claims**

1. A self-adjuster for axial alignment of the pitman shaft rotatably journalled in the housing of a manual steering gear assembly, said self-adjuster including a shouldered shaft extension fixed to and extending from the inner end of the pitman shaft, said shaft extension having a radial flange adjacent to the free end thereof, a pair of annular cams rotatably supported on said shaft extension and fixed axially between said flange and the inner end of the pitman shaft, said cams each having spaced apart axial extending cam ramps thereon and being rotatively locked together to provide cam slots between said cam ramps, a support cam axially and non-rotatively fixed to the housing and having extension cams thereon extending into said cam slots whereby rotational movement of said cams relative to said extension cams of said support cam will vary the axial position of the pitman shaft, torsion spring means operatively fixed at one end of said support cam and operatively connected at its other end of said cams to normally rotatively bias said cams in an up-ramp axial take-up direction relative to said support cam, and a releasable locking means operatively connected to said cams to lock said cams against rotation by said torsion spring except during the centered steering position of the pitman shaft.

3,884,092
STEERING WHEEL ARM REST ATTACHMENT

Stanley E. Raudebaugh, 9937 N.W. 65th Ct., Tamarac, Fla. 33321

Filed Nov. 21, 1973, Ser. No. 418,083
Int. Cl. B62d 1/06
U.S. Cl. 74—558 4 Claims

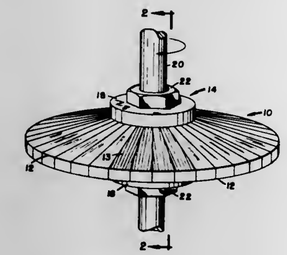


1. An armrest for use upon an automobile steering wheel having a rim, comprising a narrow cushion strip which is continuous and extends substantially the full width of said wheel at a zone near a diameter thereof, a stiffener member secured to the under side of said cushion strip and extending the entire width of said wheel at said zone, and means for detachably securing said stiffener member to the rim of said steering wheel including said stiffener member terminating in a deformable portion at each end, and each said deformable portion being bent to provide a hook there, said hooks so spaced and shaped as to hold said stiffener member wedged on said wheel at one side of said wheel diameter.

3,884,093
SPOKED DISC FLYWHEEL

David W. Rabenhorst, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Mar. 15, 1974, Ser. No. 451,415
Int. Cl. F16c 15/00
U.S. Cl. 74—572 10 Claims



1. An energy storage structure rotatable about an axis of rotation extending transversely therethrough, the structure comprising a plurality of anisotropic filamentary elements,

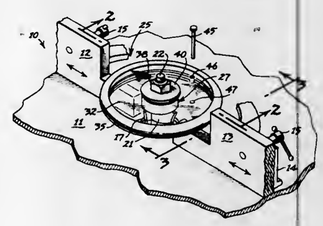
a multiplicity of the elements being bonded together into individual spoke-like members which are arranged into a disc-like configuration, inner ends of the members being thicker axially than the outer ends of the members and outer ends of the members being thicker peripherally than the inner ends of the members; and ,

hub means holding the spoke-like members, the members extending radially from the hub means about the periphery thereof.

3,884,094
ROTARY TOOL GUARD

Jamie F. Ulmer, Rt. 1, Hwy. 70, Mt. Juliet, Tenn.

Filed May 23, 1974, Ser. No. 472,835
Int. Cl. F16p 1/00
U.S. Cl. 74—609 11 Claims



1. A guard for a rotary tool apparatus having a platform, a vertical spindle projecting above said platform and rotatably driven about its vertical axis, and a rotary tool fixed to the portion of the spindle adjacent and above said platform for operating upon work upon said platform in engagement with said tool, comprising:

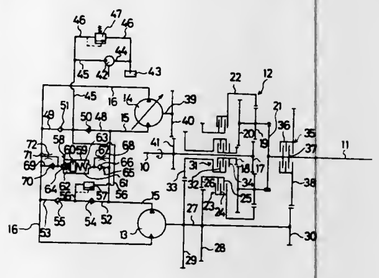
a. a disc-shaped guard member having a diameter greater than the maximum diameter of the swath of said rotary tool, and

b. bearing means rotatably mounting said guard member coaxially upon said spindle above said rotary tool, whereby said guard member may rotate independently of said spindle.

3,884,095
DAMPER MECHANISM FOR HYDROSTATIC TRANSMISSION

Takayuki Miyao; Hiroaki Maeda, both of Toyota, and Masanori Sato, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Toyota, Japan

Filed July 17, 1973, Ser. No. 379,947
Claims priority, application Japan, July 31, 1972, 47-76738
Int. Cl. F16h 47/04; F16l 55/04; F15b 13/16
U.S. Cl. 74—687 7 Claims

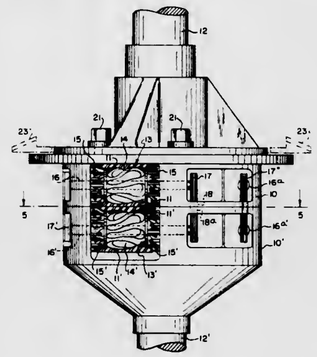


1. In a hydrostatic transmission comprising an input shaft, an output shaft, a differential gear set between said shafts, and two pump-motors hydraulically connected to each other by first and second hydraulic circuits, said pump-motors being adapted for selectively associating with said input shaft, said output shaft and said differential gear set to provide a plurality of speed range drives, the improvement comprising a damper mechanism arranged between said first and second hydraulic circuits for interrupting hydraulic communication therebetween and for absorbing any vibrations of hydraulic pressure when a sudden change of hydraulic pressure occurs in at least one of said first and second circuits.

3,884,096
FLOATING JOURNAL PIN IN MULTIPLE GEAR DIFFERENTIAL

Vernon E. Gleasman, 3808 Kirkwood Rd., Cleveland Heights, Ohio 44121

Filed July 18, 1972, Ser. No. 272,800
Int. Cl. F16h 1/38
U.S. Cl. 74—715 5 Claims



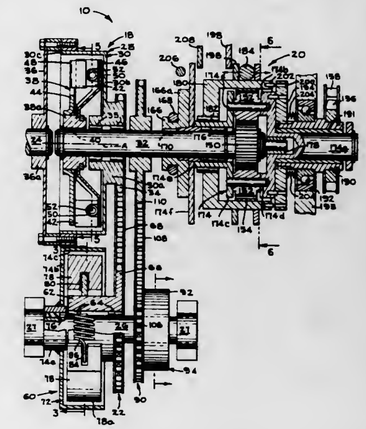
1. In a differential mechanism, a differential gear case adapted to be driven by a source of power, two substantially identical gear sets assembled in said case, a central worm traction gear in each gear set, a set of transfer gear complexes operatively associated with each of said traction gears, each complex comprising in longitudinal alignment a worm wheel with a reversible balancing gear at each end thereof rotatable with the associated worm wheel, each of said worm wheels in meshing engagement with its associated traction gear, each of said gear complexes having a through opening axially thereof, a shaft extending through each of said through openings and extending endwise therebeyond at each end, all of said shafts being the same length, said traction gears in axial alignment with each other and mounted for rotation in said case independently of the rotation of the case and of each other, said gear sets being assembled in said case with the transfer gear complexes of one gear set in registering pairs with the similar transfer gear complexes of the other gear set and with the said balancing gears in one gear set meshing with the balancing gears of the registering complex in the other gear set; the combination therewith of pin means in said case engaging at least one end of said shafts in each registering pair at the same ends of said shafts and permitting only slight endwise movement of said shafts in at least one direction.

3,884,097
TWO STAGE TRANSMISSION

Stellios Antony Avramidis, Greenfield, and John L. Craig, Mooresville, both of Ind., assignors to FMC Corporation, San Jose, Calif.

Filed Mar. 21, 1973, Ser. No. 343,329
Int. Cl. F16h 37/00
U.S. Cl. 74—740 3 Claims

1. A transmission having an automatic stage and a manual stage, said transmission having a connecting shaft between the automatic stage and the manual stage, said automatic stage comprising an input shaft rotatable at varying speeds, a first centrifugal clutch mounted on said connecting shaft, an auxiliary shaft, a second centrifugal clutch and an overrunning clutch mounted on said auxiliary shaft, a first drive train connected between said first centrifugal clutch and said second centrifugal clutch, a second drive train connected between said overrunning clutch and said connecting shaft, said input shaft connected to said second centrifugal clutch through said first drive train to operate said second centrifugal clutch and drive said connecting shaft through said two driving trains and said auxiliary shaft after a predetermined speed of the input shaft is attained, said first centrifugal clutch operated after a predetermined speed of said connecting shaft is attained to drive said connecting shaft directly from said input shaft, and said manual stage consisting of an epicyclic train comprising a sun gear unit mounted on said connecting shaft, a ring gear

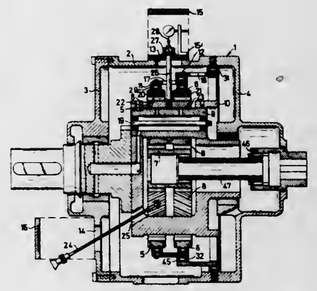


unit, and a planet gear unit between said sun gear unit and said ring gear unit for continuously meshing engagement therewith, an output shaft selectively connected to one or the other of the ring gear unit and the planet gear unit, and means manually to couple selected ones of said epicyclic gear units together to drive the output shaft at a selected speed ratio to the speed of said connecting shaft.

3,884,098
PLANETARY GEAR

August Gumpoltsberger, Sonthofen, Germany, assignor to BHS-Bayerische Berg Hutten-und Salzwerke Aktiengesellschaft, Munich, Germany

Filed Mar. 13, 1973, Ser. No. 340,850
Claims priority, application Germany, Mar. 20, 1972, 2213487
Int. Cl. F16h 1/28, 3/44, 57/02
U.S. Cl. 74—801 2 Claims



1. In an improved planetary gear, particularly for use on boats comprising

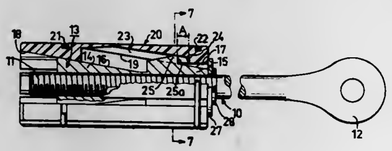
A. an outer solar wheel having two parts,

B. an inner solar wheel, the solar wheels arranged in a housing,

C. planetary wheels and support means therefor,

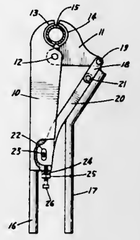
D. inner and outer coupling sleeves at the planetary wheels,
E. the improvement comprising access openings in
1. the housing
2. the wheels support means,
3. the coupling sleeves
said openings extending to the outer solar wheel, the planetary wheels, and the inner solar wheels,
F. means for engaging assembly members said last means comprising recesses at
1. the outer solar wheel
2. the planetary wheels, and the planetary wheel support means
the recesses at the solar wheels and the planetary wheels comprising circumferential grooves at the frontal surfaces, and
G. each planetary wheel support means including a hollow planetary wheel bolt,
said bolt being adapted to slidably receive a tubular support for a mounting flange for a traction device,
1. the planetary wheel bolt including first thread bores therein for engaging members connected with the mounting flange,
2. the planetary wheel support means including second thread bores therein outward of the wheel bolt bores for securing hydraulic cylinders supported by the mounting flange.

3,884,099
EXPANSION BOLT
Karl Birger Sikström, Lilla Gransgatan 2, S-971 00 Malmberget, Sweden
Filed Apr. 11, 1973, Ser. No. 349,925
Claims priority, application Sweden, Apr. 13, 1972, 4767/72
Int. Cl. F16b *13/06*
U.S. Cl. 85—75 **3 Claims**



1. An expansion bolt comprising a threaded claimping screw, a tapered expansion member having a tapped bore threadedly engaging the screw and having at least one outer wedge surface and a number of clamping jaws having each of its inner wedge surfaces cooperating with an outer wedge surface of the tapered expansion member, the jaws being retained in engagement with the tapered expansion member by means of an elastic member and in abutment at one of their ends with an axial stop member on the screw when the jaws are held against rotation and the screw is rotated for axial displacement of the expansion member in a direction towards the axial stop member at the same time as the jaws by cooperation between the outer and inner wedge surfaces will be moved radially outwardly, characterized in that one of the wedge surfaces of at least a pair of cooperating outer and inner wedge surfaces is provided with a radial projection which is guided in a corresponding longitudinal groove in the outer wedge surface, that the projection is formed with a substantially radial end surface adapted to form an abutment surface, and that the groove has a corresponding abutment surface at one of its ends, there being provided a predetermined free axial space or distance between said abutment surfaces when the tapered expansion member has been screwed relative to the claimping screw so far that the conical member abuts the axial stop member on the screw and prevented from further screwing relative to the expansion member, whereby subsequent simultaneous axial movement of the screw and the expansion member relative to the jaws until the abutment surfaces engage one another expands the jaws still further.

3,884,100
PIPE TONGS
William C. Fideldy, Rt. No. 1, Bovey, Minn. 55709
Filed July 12, 1973, Ser. No. 378,685
Int. Cl. B25b *7/12*
U.S. Cl. 81—367 **2 Claims**

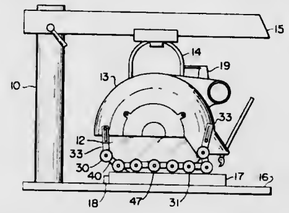


1. A pipe clamping device comprising a pair of jaw members, each of said jaw members having a concavely curved pipe engaging face,
handle means for opening and closing said jaw members for enclosing and gripping a pipe of predetermined diameter therebetween,
each of said faces having a transverse opening formed therein and extending completely through its respective jaw member,
an adaptor for each of said faces,
each of said adaptors being arcuate in cross section and having inner and outer walls of corresponding curvature, both of said walls having a curvature corresponding to the curvature of the faces of said jaw members,
the inner wall being adapted to engage the face of its respective jaw member, the outer face being adapted to engage and hold a pipe having a diameter smaller than said predetermined diameter,
each adaptor having a mounting pin integrally formed therewith and extending transversely from the inner wall, said mounting pin being insertable in said opening of said jaw member and extendable completely through said jaw member so as to extend outwardly from said jaw member, a portion of said mounting pin which extends outwardly from said jaw member being adapted to be engaged by a retaining element,
and a retaining element engageable with said portion of said mounting pin for removably holding said adaptor on said jaw member,
each of said adaptors being interchangeably mountable on either of said jaw members.

3,884,101
RADIAL ARM SAW GUARD
Howard Silkin, c/o Home & Industry Tool Distributors, Inc., 2867 Long Beach Rd., Oceanside, N.Y. 11572
Filed Aug. 19, 1974, Ser. No. 498,528
Int. Cl. B27b *5/28*; **B27g** *19/04*
U.S. Cl. 83—544 **3 Claims**

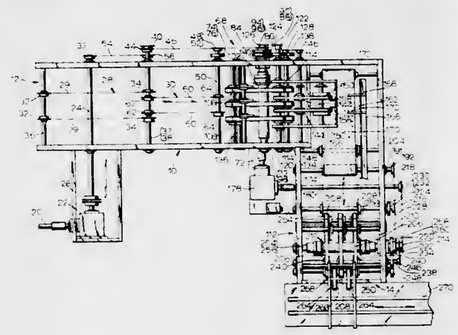
1. A guard for use with a radial arm saw having a motor, a blade driven by and mounted on said motor, and a housing mounted on said motor from which said blade projects downward, said housing having a front and a back and a motor side and an outer side, said guard comprising, in combination, endmost links each containing an elongated longitudinal slot at one end and an aperture at the other end, fastening means projecting from the front and back of said housing on the motor and the outer side, each of said fastening means slidably

extending through the longitudinal slot of one of said endmost links slidably securing said endmost links to said housing, intermediate links each containing longitudinal slots at the ends thereof and each having a center containing a lateral offset equal to the thickness of said intermediate links, plastic disks having a diameter at least fifty per cent greater than the



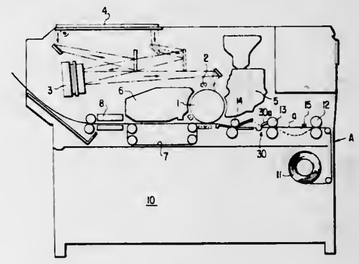
vertical thickness of said intermediate links, and pins connecting at least five intermediate links between each pair of said endmost links forming a length of articulated links on each side of said housing, said lengths hanging on each side of said blade and articulating in the plane of said blade, each of said pins mounting one of said plastic disks thereon on the sides of the lengths disposed away from said blade.

3,884,102
THREE KNIFE TRIMMING MACHINE
Hans G. Faltin, York, Pa., assignor to Advance Enterprises, Inc., York, Pa.
Filed Jan. 9, 1974, Ser. No. 432,033
Int. Cl. B26d *11/00*
U.S. Cl. 83—155 **9 Claims**



1. A machine for trimming the top and bottom sides and the side opposite the folded side of multi-sheet folded paper booklets at high speeds comprising in combination, a frame, feed conveyor means supported by said frame and having an inlet end adapted to be mounted adjacent the delivery end of a printing press upon which said booklets are printed and discharged therefrom in folded condition at a predetermined high press speed in a first direction, a first trimming unit on said frame adjacent the delivery end of said feed conveyor and having circular knife means provided with a toothed periphery coacting with a circular rotary anvil and adapted to edge-trim said booklets, means to drive said trimming unit, stop means positioned to be engaged by partially trimmed booklets discharged from said first trimming unit to stop movement thereof in said first direction, transfer conveyor means on said frame operable in a second direction transverse to said first direction of said feed conveyor and having one edge thereof aligned longitudinally in parallelism with said stop means, a second trimming unit on said frame aligned with said transfer conveyor to receive said partially trimmed booklets therefrom and trim the same sequentially and having knife and circular anvil means similar to those on said first trimming unit, means to drive said second trimming unit, discharge means for fully trimmed booklets adjacent the exit end of said second trimming unit, one of said trimming units having a single knife means and anvil to trim one side of booklets and the other trimming unit having a pair of cooperating knife means and anvils axially spaced to trim simultaneously the top and bottom sides of said booklets, said feed conveyor means and transfer conveyor means each comprising first and second sections respectively in longitudinally alignment with each other, means to drive the first section of each of said conveyors considered in the direction of movement of booklets thereby at a slower surface speed than the speed of the booklets as delivered thereto and thereby cause said booklets to become arranged in shingle fashion upon said first sections, and means to drive the second section of each of said conveyors at a speed substantially as high as press speed, thereby to space the successive leading booklets from the shingle arrangement thereof for delivery thereof respectively from said feed conveyor means to said first trimming unit and from said transfer conveyor means to said second trimming unit, at least the upper surface of the receiving end of said first section of said transfer conveyor means being at a lower level than the level at which partially trimmed booklets are discharged from said first trimming unit to facilitate positioning of the partially trimmed booklets in shingle arrangement upon the first section of said transfer conveyor means.

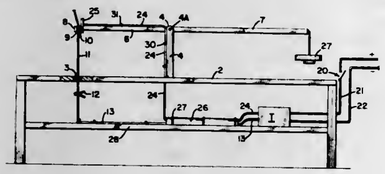
3,884,103
PAPER FEEDING DEVICE FOR A DUPLICATING MACHINE
Yoshiharu Namba, Webster, N.Y., assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Oct. 5, 1973, Ser. No. 403,885
Claims priority, application Japan, Oct. 5, 1972, 47-99417
Int. Cl. B26d *5/20*
U.S. Cl. 83—156 **3 Claims**



3. A paper feeding device for use in a duplicating machine or the like, said feeding device comprising
first feed rollers for feeding a continuous roll of copy paper;
second feed rollers for receiving said copy paper from said first rollers;
means for intermittently increasing the speed of said first feed rollers with respect to said second feed rollers to form a first loop of said copy paper therebetween to lessen slippage between said second feed follers and said copy paper;
means for delivering a predetermined length of copy paper from said second feed rollers;
third feed rollers for receiving the copy paper from the second feed rollers, said third feed rollers continuously rotating at a speed less than that of said second feed rollers to form a second loop of said copy paper between said second and third roller pairs;
cutting means disposed between said second and third feed rollers for cutting said copy paper to said predetermined length; and

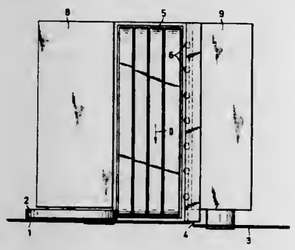
means for stopping said second roller pair after said predetermined length of copy paper has been delivered thereby and for actuating said cutting means to cut said predetermined length of copy paper before the third roller pair removes said second loop so that said second loop absorbs the impact of said cutting means on the copy paper to thereby lessen the affect of the cutting step on the operation of the duplicating machine or the like.

3,884,104
APPARATUS FOR PRODUCING PATTERNED OBJECTS OUT OF PLASTIC MATERIAL
Alva G. Carman, 4907 River Rd. North, Salem, Oreg. 97303
Filed Oct. 23, 1973, Ser. No. 408,631
Int. Cl. B26f *3/12*
U.S. Cl. 83—171 **2 Claims**



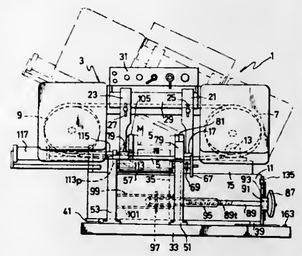
1. Apparatus for producing patterned objects out of plastic material, comprising in combination,
a horizontal work surface having an opening therethrough,
a beam superimposed upon said work surface rockably mounted relative thereto and divided into a lever arm and a load arm,
a cutting element extending upwardly through said opening in said work surface and attached at its upper end to the beam end constituting the end of the load arm,
electrical conductors extending from a source of controlled electrical current and connected one each to the top and bottom ends of said cutting element to selectively energize said cutting element to various degrees of temperature, and
whereby gravitational forces applied to said lever arm will transmit lifting forces to said load arm to maintain said element in tension at all times.

3,884,105
HIGH-DUTY CHEESE-SLICING MACHINE
Andreas Fessler, and Ewald Fessler, both of Heimenkirch, Allgau, Germany, assignors to Hochland, Reich, Summer & Co., Heimenkirch, Allgau, Germany
Filed Oct. 18, 1973, Ser. No. 407,671
Claims priority, application Germany, Oct. 20, 1972, 2251567
Int. Cl. B23d *19/100*
U.S. Cl. 83—419 **6 Claims**



1. A cheese-slicing machine comprising first and second housing portions defining a gap therebetween, means for supporting a block of cheese and feeding it at an inclination to the horizontal through said gap, an eccentric rotatably mounted on said first housing portion, a circular slicing knife rotatably mounted on said eccentric in a cutting plane normal to the feeding direction of said block of cheese and adapted to be rotated at a faster speed than the rotary speed of said eccentric, said knife being reciprocated across said gap by the rotation of said eccentric so that said knife is alternately projected into and retracted from the feeding path of said block of cheese, and an abutment disc for said block of cheese mounted on said second housing portion opposite said knife and adapted to be reciprocated across said gap with a motion complementary to the reciprocating motion of said knife whereby the block of cheese abuts against an abutment face of said abutment disc when said blade is retracted, said abutment face of said abutment disc being spaced downstream of said cutting plane by a distance equal to the desired thickness of each cheese slice.

3,884,106
ADJUSTABLE SAW
Tsuneo Aizawa, Isehara, Japan, assignor to Amada Company, Ltd., Isehara, Japan
Filed Nov. 30, 1973, Ser. No. 420,438
Claims priority, application Japan, Oct. 9, 1973, 48-112864
Int. Cl. B23d *55/02, 55/04*
U.S. Cl. 83—453 **8 Claims**

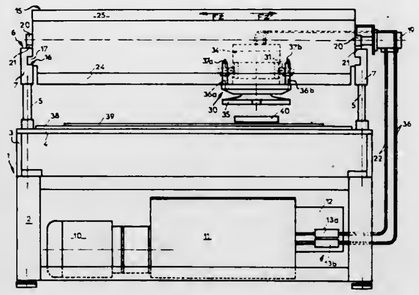


1. A saw comprising in combination: a fixed base; platform means mounted on said base for rotation about an axis extending vertically therefrom, said platform means having a material support surface for receiving and supporting the material to be cut; a cutting head carrying a saw blade, said cutting head being mounted on said platform means for movement relative to said material support surface when performing a cut through material positioned thereon; and clamping means for holding the material to be cut during a cutting operation, said clamping means including first jaw means having an elongated clamping surface fixed relative to said base, and second jaw means pivotally carried by said platform means and movable relative to said first jaw means to releasably hold the said material against said first jaw means during a cutting operation; the said axis being arranged coaxially with the line of intersection between said elongated clamping surface and the cutting plane of said saw blade.

3,884,107
PRESS PROVIDED WITH A PRESS-PLATE WITH THREE DEGREES OF FREEDOM
Vittorio Luigi Achille Bianchi, 37, Ave. Paul Doumer, 75016 Paris, France
Filed Mar. 21, 1973, Ser. No. 343,247
Claims priority, application France, June 30, 1972, 72.23815
Int. Cl. B26d *5/12*
U.S. Cl. 83—534 **7 Claims**

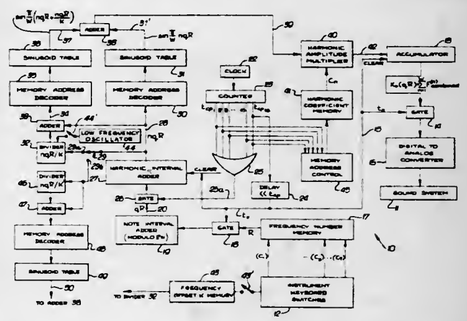
1. Press for cutting a material in the form of a sheet or web, comprising a base structure, a stationary horizontal work-

table fixedly supported by said base structure adapted to receive a material to be cut as well as a cutting tool placed on said material, said work-table having a predetermined length between opposed lateral ends thereof and a predetermined width extending forwardly and rearwardly between front and rear edges of said table, stationary longitudinal beams extending forwardly and rearwardly and arranged horizontally, in parallel relationship to one another, on either side of said work-table and above the latter over said lateral ends of said work-table at a distance from each other substantially equal to the length of said work-table, said longitudinal beams having front ends respectively situated substantially over said front edge of said work-table and extending from said front ends rearwardly beyond the rear edge of said table where said beams terminate in rear ends situated at an elevation higher than said table at a substantial distance to the rear thereof, a moving bridge extending substantially over the whole length of said work-table and having front and rear edges parallel to the front and rear edges of said work-table and situated from each other by a given distance, said beams extending rearwardly beyond said rear edge of said work-table by a distance which is at least substantially as great as the distance between said front and rear edges of said bridge, said bridge being supported at its ends by said longitudinal beams by means of a system of guide-ways and counter-guides so that said bridge



is capable of sliding horizontally along said beams across said table forwardly and rearwardly so as to either overhang said table to a predetermined extent or be situated substantially entirely to the rear of said table to provide unobstructed access thereto, a carriage mounted on said bridge at a lower portion thereof and movable in horizontal translation along said bridge toward one or the other of said beams in a direction perpendicular to the directions of displacement of the bridge itself so as to have two degrees of freedom over the work-table in a horizontal plane, namely freedom of movement forwardly and rearwardly and freedom of movement in opposed lateral directions, a press-plate supported by said carriage, said press-plate being movable in vertical translation with respect to said carriage so as to apply a vertical pressure on the cutting tool and cause it to penetrate into the material to be cut, when said press-plate is situated over the cutting tool, said press-plate having from front to rear a dimension substantially smaller than the distance between the front and rear edges of the table and from side to side a dimension substantially smaller than the length of said table, and said beams cooperating with said bridge for situating said press-plate in the region of the front and rear edges of said work-table or at any location between the latter front and rear edges while said carriage cooperates with said bridge for situating said press-plate at the region of the lateral ends of said work-table or at any location between said lateral ends.

3,884,108
PRODUCTION OF ENSEMBLE IN A COMPUTOR ORGAN
Ralph Deutsch, Sherman Oaks, Calif., assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Jan. 11, 1974, Ser. No. 432,684
Int. Cl. G10h *1/02, 5/02*
U.S. Cl. 84—1.24 **12 Claims**



1. In an electronic musical instrument wherein the amplitudes of a waveshape are computed at regular time intervals t_x from stored harmonic coefficients, musical notes being produced from said computed amplitudes as said computations are carried out in real time, the improvement for producing an ensemble effect comprising:
first means for evaluating a set of "combined" Fourier components during subintervals within each time interval t_x, each combined Fourier component being the sum of a first constituent Fourier component at the nominal true-pitch of the selected note and a second constituent Fourier component offset in frequency from the corresponding true-pitch first constituent Fourier component, the first and second constituent Fourier components of corresponding order having an equal amplitude established by said stored harmonic components,
an accumulator, connected to receive said combined Fourier components from said first means, for accumulating all the the combined Fourier components evaluated during each interval t_x to obtain a waveshape amplitude for a certain sample point,
sample point means operative at the end of each interval t_x for incrementing the effective sample point (qR) for which said resultant waveshape amplitude is established and for supplying the effective sample point (qR) value to said first means, and
means, connected to receive said waveshape amplitudes from said accumulator, for converting said resultant waveshape amplitudes to sounds, said converting being carried out, in real time as said waveshape amplitudes are computed, the sounds so produced exhibiting an ensemble effect.

3,884,109
METHOD FOR IMPROVING THE RESONANCES OF STRINGED INSTRUMENTS
Charles S. Johnson, 5208 S. 12th St., Arlington, Va. 22204
Filed Apr. 26, 1974, Ser. No. 464,346
Int. Cl. G10d *1/02*
U.S. Cl. 84—275 **5 Claims**

1. A process for improving the resonances of stringed instruments after assembly thereof comprising the steps of:
temporarily securing the tail piece of said instrument by external means so as to permit said instrument to be strung and concert tuned without the use of the end pin hole of said instrument;
adjusting the air resonance tone of said instrument to a desired pitch by changing the size and shape of the *f*-holes of said instrument;

adjusting the prime wood tone of said instrument to a desired musical interval from said air resonance tone by the steps of:

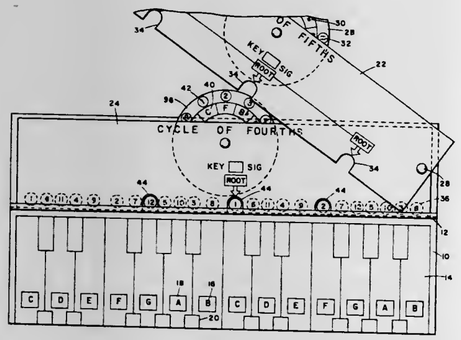
inserting a piece of sandpaper into the air chamber of said instrument through an *f* hole thereof;

introducing a piece of stiff wire through said end pin hole into said air chamber to permit manipulation of said sandpaper by said stiff wire; and

alternately sanding the inside of the back of said instrument and testing said prime wood tone location, until said prime wood tone reaches the desired pitch;

and, bringing said prime wood tone and said air resonance tone into phase by sanding the bass bar of said instrument with said piece of sandpaper manipulated by said piece of stiff wire inserted into said air chamber through said end pin hole.

3,884,110
MUSICAL CYCLE DIFFERENTIATION AID
Verna M. Leonard, 8701 Highway 41, Fresno, Calif. 93710
Filed July 24, 1974, Ser. No. 491,251
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **4 Claims**



1. A device for teaching the relationship between the cycle of fourths and the cycle of fifths in music comprising:

a. first panel and a second panel, each having:

1. a front face and a rear face; and

2. a disc rotatably mounted on the rear face and extending partially beyond the respective panel;

b. said discs each having displayed consecutively in twelve peripheral sectors the scale tone names of a musical cycle;

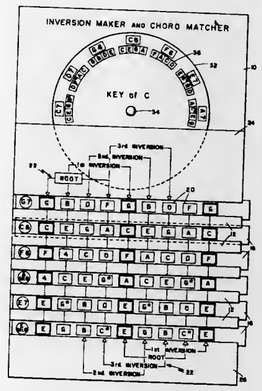
c. said first panel having means to indicate the position on a piano keyboard of a root tone and the two tones which are a fifth interval removed from said root tone on the opposite sides thereof;

d. the cycle displayed on the disc mounted on said first panel being a cycle of fifths and the cycle displayed on the disc mounted on said second panel being a cycle of fourths;

e. said second panel having means to indicate the position on a piano keyboard of a root tone and the two tones which are a fourth interval removed from said root tone on opposite sides thereof; and

f. said panels being mounted together for alternate visibility and use by the student.

3,884,111
INVERSION MAKER AND CHORD MATCHER
Verna M. Leonard, 8701 Highway 41, Fresno, Calif. 93710
Filed July 24, 1974, Ser. No. 491,253
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **2 Claims**



1. A chord inversion mixer comprising:

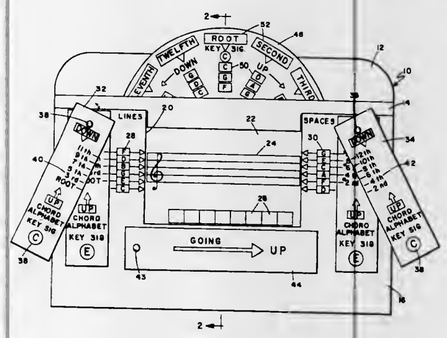
a. A generally planar backing member defining a plurality of parallel laterally extended forwardly open channels;

b. a plurality of elongated panels dimensioned to be individually slideably received in any selected one of said channels;

c. each of said panels being identified with a particular musical chord symbol and having thereon an array of spaced indicia naming the scale tones of the particular chord in more than one octave;

d. indicia on said backing selectively registering with certain ones of the scale tone names and identifying same as components of the root chord and at least one inversion.

3,884,112
KEY SIGNATURE STRUCTURE TEACHING AID
Verna M. Leonard, 8701 Hwy. 41, Fresno, Calif. 93710
Filed July 24, 1974, Ser. No. 491,254
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **5 Claims**



1. A device for teaching key signature structure comprising:

A base having an upwardly extending rear panel and defining a forwardly disposed upwardly open pocket;

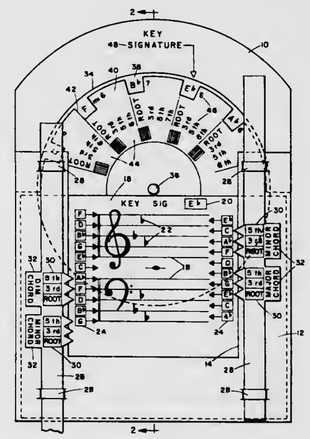
said pocket having a planar front member with a portion thereof cut away to define an aperture with a parallel-sides;

an insert panel having displayed thereon a musical staff and being insertable in said pocket such that said musical staff is revealed through said aperture;

said planar front member having indicia adjacent the parallel sides of said aperture registering with and naming the scale tones of the lines and spaces of the musical staff when said insert panel is inserted; and

a plurality of selectively exposable panel pairs mounted on said planar front member, the panels of each pair being identified with a particular key signature and the first panel in each pair being disposed on one side of said aperture and having indicia thereon to register with the lines of said staff to identify same as the scale degrees of the particular key signature, and the second panel of each pair being disposed on the side of said aperture opposite said one side and having indicia thereon to register with the spaces of the staff to identify same as the scale degrees of the particular key signature.

3,884,113
SLIDE RULE CHORD INDICATOR
Verna M. Leonard, 8701 Highway 41, Fresno, Calif. 93710
Filed July 24, 1974, Ser. No. 491,256
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **4 Claims**



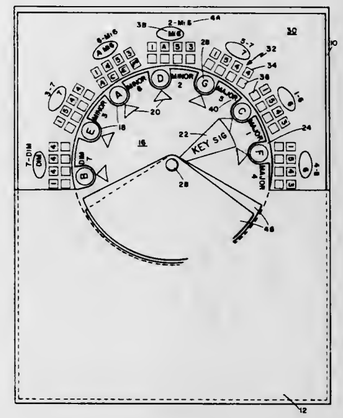
1. A musical teaching aid comprising:

a. an insert sheet identified with a particular key signature and displaying a musical staff having the lines and spaces thereof named according to the scale tones comprising said particular key signature, said named scale tones being displayed in a pair of evenly spaced vertical arrays disposed laterally of said staff;

b. an overlay sheet disposed on said insert sheet and having an opening with parallel side edges to expose said staff and scale tone arrays;

c. a pair of panels vertically slideably mounted on said overlay sheet adjacent the left and right side edges thereof respectively, each of said panels having at least one group of indicators to indicate by juxtaposition with one of said vertical arrays the particular ones of said named scale tones on said insert sheet which define a particular type of chord and naming said particular type of chord.

3,884,114
MAJOR AND MINOR CHORD ORGANIZOR
Verna M. Leonard, 8701 Highway 41, Fresno, Calif. 93710
Filed July 24, 1974, Ser. No. 491,260
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **6 Claims**



1. An aid for teaching the various major and minor chords related to a particular key signature comprising:

a. a rear panel and a forward panel joined along at least their lower edges to define an envelope therebetween;

b. a dial rotatably mounted to said forward panel and having thereon an evenly spaced angular array of scale tone names arranged according to the cycle of fourths;

c. at least one insert sheet dimensioned to fit within said envelope and having thereon an arcuate array of indicia groups, siad groups being individually alignable radially of said dial with individual ones of said named scale tones upon rotative adjustment of said dial when said sheet is inserted in said envelope;

d. each of said groups of indicia including a representation of a particular chord type such that by using the radially aligned named scale tones as the root tones of the particular chord types particular chords representing the related major and minor chords of a particular key signature are defined;

e. each of said groups of indicia further including spaced writing blanks for the user to inscribe the names of the scale tones of the particular chord defined therein.

3,884,115
INTERVAL TEACHING AID
Verna M. Leonard, 8701 Highway 41, Fresno, Calif.
Filed July 24, 1974, Ser. No. 491,518
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **4 Claims**

1. A muscial teaching aid comprising:

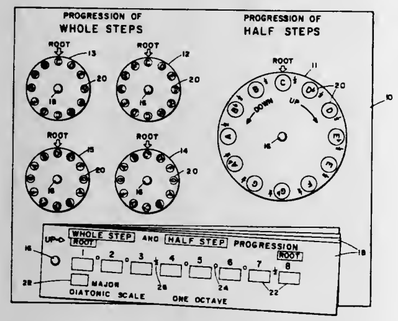
a. a substantially rigid planar base;

b. a first disc rotationally mounted at the center thereof to said base and having on the side thereof remote from the base an angularly spaced peripheral array of indicia indicating in order the scale tone names of the notes of one octave of the chromatic musical scale;

c. a second disc rotationally mounted at the center thereof to said base and having on the side thereof remote from the base an angularly spaced peripheral array of indicia indicating in order the scale tone names of notes of a progression of whole step intervals.

d. a plurality of selectively exposable panels mounted on

said base, each of said panels having thereon ordered spaces for the inscription of scale tone names and indicia



indicating the structure of the scale tones to be named in the spaces.

3,884,116
SCREW THREADED FASTENING MEANS AND LIKE PRODUCTS

Jacob M. Hage, Farmington, Mich., assignor to Midwest Chrome Process Company, Detroit, Mich.

Continuation-in-part of Ser. No. 208,080, Dec. 15, 1971, abandoned. This application May 3, 1972, Ser. No. 249,850
Int. Cl. F16b *25/00*; B32b *15/18*
U.S. Cl. 85—1 C **12 Claims**



1. A plated carbon steel threaded fastener means for fastening objects in exterior as well as interior applications, such as in the automotive field and the like, and operative to provide good corrosion resistance properties, and being of a satin-like or shiny appearance, comprising:

a head portion at one end of the fastener means, and

a shank portion,

said fastener means having a structural makeup of separate layers including,

a. structural base metal means of carbon steel,

b. layer means of copper having a thickness between about 0.00001 and about 0.0001 inches,

c. layer means of cadmium having a thickness between about 0.00005 and about 0.0009 inches,

d. layer means of copper having a thickness between about 0.00001 and about 0.0005 inches,

e. layer means of nickel having a thickness between about 0.0001 and about 0.0007 inches,

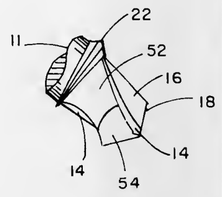
f. layer means of at least one material selected from the group consisting of a tin/nickel alloy, a tin/cobalt-nickel alloy, or a tin/cobalt alloy, said layer means having a thickness between about 0.000005 and about 0.00020 inches,

said layer means being for the most part applied by electrolytic coating process and being operative to enable good corrosion resistance properties and good adhesion properties.

3,884,117
DRILLING AND TAPPING SCREW FORMATION

William A. Eager, Cornwall, N.Y., assignor to Star Expansion Industries Corporation, Mountainville, N.Y.

Continuation-in-part of Ser. No. 132,119, April 7, 1971, abandoned. This application Aug. 15, 1973, Ser. No. 388,596
Int. Cl.² F16B *25/00*
U.S. Cl. 85—47 **10 Claims**

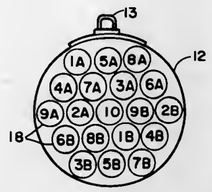


1. A drilling screw comprising an elongate shank including a trailing end portion at one end of said shank and a leading end portion at an opposite end of said shank, an intermediate portion of said shank being threaded for rotation in a predetermined direction and for advancement into a material, said trailing end portion being provided with a manipulating head, said leading end portion including cutting surfaces and relief surfaces each associated with another cutting surface, each cutting surface being angularly advanced about the axis of said shaft with respect to an associated relief surface relative to said predetermined direction of rotation to define a flute, each cutting surface including a substantially smooth leading cutting edge portion of generally lateral extent relative to the longitudinal axis of said shank, each cutting edge portion projecting into a respective flute from the lowermost edge of an associated cutting surface, each cutting portion having dimensions substantially smaller than those defining said flutes and having a maximum height along the direction of said shank of approximately 0.0025 inches, each cutting edge portion projecting into a respective flute from the lowermost edge of an associated cutting surface along a direction normal to the latter a distance in the range of 0.001 to 0.003 inches, and each cutting edge portion defining a rake angle relative to the axis of said shank of at least approximately 45°.

3,884,118
SAFE AND ARM DEVICE

Vincent J. Taylor, deceased, late of China Lake, Calif.; by Wayne G. Zellmer, executor, China Lake, and Earl E. Beasey, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1973, Ser. No. 418,623
Int. Cl. F41f *3/06*
U.S. Cl. 89—1.814 **6 Claims**



1. In a weapons firing control system wherein a plurality of weapons may be sequentially or serially fired by electrical current through a plurality of individual circuits, the combination comprising:

A. a source of current;

B. a firing switch;

C. an arming switch;

D. said firing switch and said arming switch being each connected to said source;

E. a plurality of firing circuits;

F. safety switching means connected to said firing switch and having a plurality of two position switches each in one position being connected to respective ones of said firing circuits;

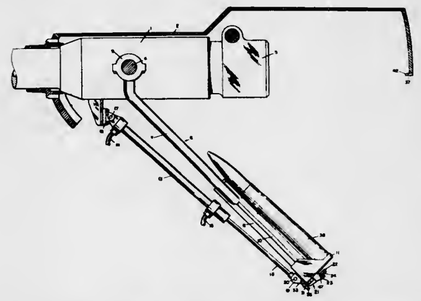
G. said two position switches being biased to the other one of said two positions and said other position connected each of said circuits to ground potential, said switching means being operable for simultaneous movement of said two position switches to said one position thereby connecting said firing circuits to receive current from said firing switch; and

H. electrically operable means responsive to current from said arming switch activating said switching means and thereby moving said two position switches from said other position to said one position.

3,884,119
LOADING DEVICE FOR GUNS

Robert L. Zouck, Pikesville, Md., assignor to AAI Corporation, Cockeysville, Md.

Filed May 2, 1955, Ser. No. 505,311
Int. Cl. F41d *11/14*; F41f *9/00*
U.S. Cl. 89—45 **6 Claims**



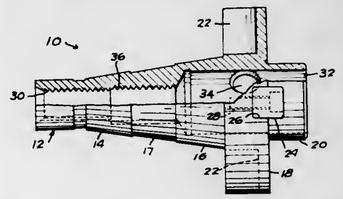
1. A loader for a gun, comprising an arm pivoted at one end for swinging motion with respect to said gun, a carriage supported by said arm for reciprocating motion thereon, a telescoping member pivoted at one end for swinging motion with respect to said gun, said telescoping member being pivotally connected at its other end to said carriage, said telescoping member being operable to be retracted and extended, latching means carried by said carriage for latching said carriage to said arm for preventing motion of said carriage with respect to said arm, and latching means carried by said arm for unlatching the first said latching means and simultaneously latching said arm against swinging motion with respect to said gun.

3,884,120
MILLING MACHINE CUTTER ADAPTOR

Frank L. Diferdinando, Malvern, Pa., assignor to Gorham Tool Company, Detroit, Mich.

Filed Nov. 12, 1973, Ser. No. 414,868
Int. Cl. B23b *31/02*
U.S. Cl. 90—11 A **1 Claim**

1. In combination a machine tool spindle adaptor for mounting a plurality of different milling cutters on the spindle, said adaptor comprising an annular body having a rear portion adapted to be telescopically engaged in the forward end of the machine tool spindle, said body having a central bore extending therethrough, the forward end portion of said bore comprising a smooth circular cylindrical surface and the rear end portion of said bore being threaded and of smaller diameter than the forward end portion of the bore, said body having intermediate its ends an enlarged radially outwardly extending circular flange, said flange having a flat front face portion with a pair of radially extending abutment means thereon, said body having an integral circumferentially continuous circular pilot boss extending forwardly from said front face concentric with said bore, the outer diameter of said boss being smaller than the outer diameter of said circular flange, a milling cutter having a central bore telescopically engaged over said pilot boss with a close fit, said cutter having a flat rear face portion positioned against the front face of said flange and having means thereon engaging said abutment means on said flange to establish a rotating driving connection between said adaptor and said cutter, the central bore in said cutter being enlarged adjacent the forward end of the cutter, the smaller diameter portion of the central bore in the cutter having an axial dimension greater than the axial dimension of said pilot boss and said enlarged bore defining a radially outwardly



extending shoulder at the end thereof adjacent the smaller portion of the bore in the cutter, a screw extending axially through the bores in said cutter and adaptor, said screw having its rear end in threaded engagement with the threaded rear end portion of the central bore in said adaptor, the shank of said screw being of smaller diameter than the smooth cylindrical bore in said adaptor, said screw having an enlarged head at the forward end thereof seated against said shoulder to removably retain said cutter on said adaptor, said screw being adapted to be retracted out of said bore to enable removal of said cutter from said adaptor to thereby enable a second milling cutter having a circular cylindrical shank of a diameter corresponding to the central bore of the adaptor to be inserted in the bore of the adaptor, said flange having a radially extending threaded opening therein communicating at its inner end with said smooth diameter bore and a locking screw in said last-mentioned threaded opening adapted when advanced radially inwardly to engage the shank of a milling cutter in said smooth diameter bore for locking the last-mentioned cutter on the adaptor.

3,884,121
KEY CUTTER

Frank P. Agius, 1027 Meyers Road, Alpena, Mich.

Filed June 1, 1971, Ser. No. 148,785
Int. Cl. B23c *3/35*
U.S. Cl. 90—13.05 **12 Claims**

1. Key cutting apparatus for cutting longitudinally spaced notches in the bit of a key blank, said apparatus comprising:

a frame;

a main carriage movably mounted on said frame;

a sub-carriage movably mounted on said carriage;

a key blank supporting carriage movably mounted on said sub-carriage;

a movable cutter on said frame;

means for transversely moving a key blank into and out of engagement with said cutter comprising:

means mounting one of said carriages for longitudinal movement and the other two of said carriages for transverse movement toward and away from said cutter; and

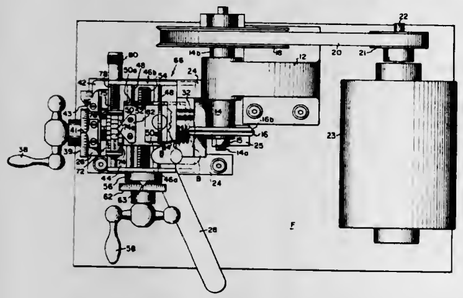
means for presetting, before the key blank is moved

into engagement with said cutter, the relative longitudinal and transverse positions of said carriages and said cutter comprising:

indexible means for longitudinally indexing said one carriage a predetermined distance before cutting commences;

additional indexible means for transversely indexing a first carriage of said two carriages before cutting commences; and

means, including micrometer means on said carriages and said indexible means, for gauging the relative



linear movement of said one and said first carriages for presetting before the cutting operation commences, the longitudinal position of said key blank and cutter and the depth of cut to be made when said key blank engages said cutter;

means for transversely moving the other of said two transversely movable carriages to operative cutting position; and

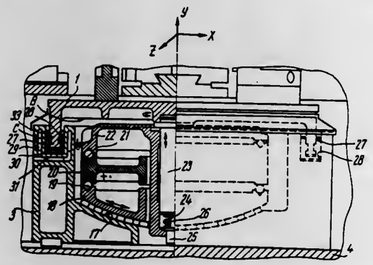
stop means for interrupting the transverse movement of said other of said two transversely movable carriages in the same operative position regardless of the depth of cut to be made in said key blank.

3,884,122

METAL-CUTTING MACHINE FOR MACHINING LOCATING SURFACES

Evgeny Alexandrovich Chernov, Lesnoi prospekt, 75, kv. 15, Leningrad; Arkady Nikolaevich Poletaev, ulitsa Kozlova, 35/1, kv. 112, Minsk; Saul Vulfovich Golod, ulitsa Bronnitskaya, 22, kv. 2; Evgeny Vasilievich Petrov, Prospekt Bolshevikov, 35/1, kv. 7, both of Leningrad; Dmitry Timofeevich Vasiliev, Zubovsky bulvar, 15, kv. 6, Moscow, and Vitold Antonovich Tofpenets, ulitsa Klary Tsetkin, 24, kv. 3, Minsk, all of U.S.S.R.

Filed Nov. 8, 1972, Ser. No. 304,825
Int. Cl. B23q *3/00*
U.S. Cl. 90—58 C **3 Claims**



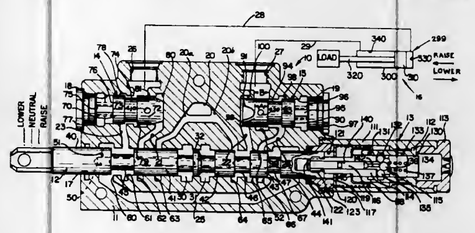
1. A metal-cutting machine for machining locating surfaces, comprising: a bed; a base mounted on said bed; a table for accommodating the workpiece under machining, said table being mounted on said base and having at least two degrees of freedom with respect thereto for an optimum positioning of said workpiece with respect to the cutting tool; a means carrying said cutting tool, mounted on said bed of the machine; at least two table orientation mechanisms whose number depends upon the number of the degrees of freedom of the table, said mechanisms being arranged one upon the other to form a common kinematic chain having the terminal link interconnected with said table carrying the workpiece being machined; a device for a positive locking of said table in a predetermined position with respect to said cutting tool, including an intermediate link "floating" in said base and adapted for a continuous sliding contact with the surface of said table facing said base in the course of the table orienting with respect to said cutting tool; said intermediate link being made as a pair of T-shaped beams, the vertical portion of each of said beams being, during the orientation of said table, in a continuous sliding contact with the butt surface of the base by means of a spring-loaded plate mounted on said base, and being positively forced against said surface in the course of cutting, whereas on the horizontal portion of each of said beams there is located an insert having a cylindrical recess, said insert being so arranged that said recess faces the table surface, said table having cylindrical pins located on its opposite sides respectively to said beams and parallel to said base, said pins with their bottom portions being accommodated in said recesses so as to be in a continuous sliding contact therewith during the table orienting, while the top portions of said pins mount rockers carrying spring-loaded plates which are adapted to positively force the flanges of said beams through said inserts against the respective of the said table pins in the course of cutting; and means for positively locking said intermediate link simultaneously with said table and said base during the course of cutting.

3,884,123

FLOW SENSITIVE HYDRAULIC CONTROL VALVE

Fosco L. DeVita, Chicago, and Frank J. Simak, Hickory Hills, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 61,959, Aug. 7, 1970. This application May 21, 1973, Ser. No. 361,922
Int. Cl. F15b *13/01*
U.S. Cl. 91—447 **4 Claims**



1. In combination, a hydraulic control valve, a source, and a work cylinder having a work piston therein, said valve comprising:

a housing having first and second bores;

a selectively movable control valve member slidable in said first bore;

means for latching said control valve member in a selected position;

a fluid pressure actuated unlatching mechanism capable of releasing said latching means;

a flow sensitive valve piston formed with a fluid sealing land slidably disposed within said second bore;

said housing having a fluid inlet conduit connected with said first bore, a fluid outlet conduit connected with said work cylinder and a fluid return conduit, means in said return conduit connectable to said unlatching mechanism, and all of said conduits opening into said second bore;

said inlet and return conduits at their juncture with said second bore being spaced apart a distance greater than the axial width of said land;

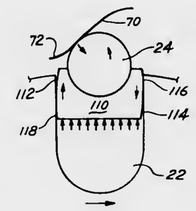
whereby said land allows fluid to flow from said inlet conduit to said outlet conduit and blocks the passage of fluid to said return conduit and said unlatching mechanism while fluid is flowing from said inlet to said outlet conduits, but permits the same when flow ceases.

3,884,124

HYDRAULIC DEVICE

Robert T. Eddy, South Bend, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.

Filed Apr. 19, 1973, Ser. No. 352,424
Int. Cl. F01b *13/06*
U.S. Cl. 91—487 **13 Claims**



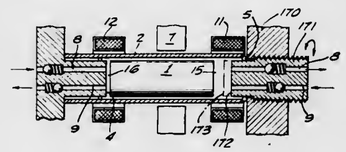
1. A hydraulic device comprising a stator means, a rotor means, one of said means having a plurality of alternate outwardly and inwardly, radially extending reaction surfaces and the other of said means having a plurality of fluid chambers with an opening facing said reaction surfaces, a slipper disposed in each of said chambers for reciprocating movement therein and having a recess in the surface facing said reaction surfaces, a rolling element disposed in said recess and contacting said reaction surfaces, each of said slippers being tiltable to both sides of the radial center line of the respective roller by the motion between the stator and rotor means to form a contact seal with both side walls of its chamber, the side walls of said slippers having a curvature which increases the sealing contact pressure as the slipper tips further from the radial center line of the respective chamber, and fluid inlet and outlet ports being alternately connected with said chambers.

3,884,125

VARIABLE DISPLACEMENT SEALED PUMP

Philip E. Massie, 4220 Irving Pl., Culver City, Calif. 90203

Continuation-in-part of Ser. No. 113,321, Feb. 8, 1971, Pat. No. 3,754,154. This application Nov. 20, 1972, Ser. No. 308,043
Int. Cl. F01b *31/14;* **F15b** *15/24*
U.S. Cl. 92—13.5 **4 Claims**



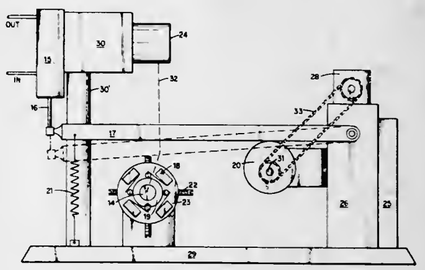
1. A sealed pump comprising: a cylinder having a magnetically actuatable piston therein, the ends of the cylinder being closed and the piston being free from mechanical connections to the exterior of the cylinder; magnetic core means associated with the piston and cylinder; means for magnetically coupling the piston with said magnetic core means, and electrical winding means disposed to produce a magnetic field for reciprocating the piston, said pump having means forming a head in one end of the cylinder, said head means being longitudinally adjustable relative to the cylinder to vary the volume thereof, and means in which the head is mounted, said last means and head having threads comprising helical grooves positioned opposite each other forming a helical channel and means comprising a helical flexible sealing element positioned in the oppositely facing grooves forming the channel.

3,884,126

PROGRAMMABLE POSITIVE DISPLACEMENT PUMP

Wayne F. Johnson, Loudon, and William A. Walker, Knoxville, both of Tenn., assignors to The United States Energy Research and Development Administration, Washington, D.C.

Filed May 23, 1974, Ser. No. 472,930
Int. Cl. F01b *31/14*
U.S. Cl. 92—13.7 **3 Claims**



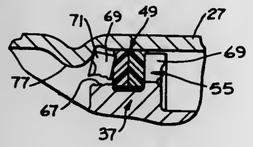
1. A positive displacement pump for the loading of microliter quantities of chemical reagents or samples into receiving cavities, comprising a base, a closed pump cylinder provided with an inlet tube for supplying a desired liquid thereto and an outlet tube for dispensing a desired volume of said liquid therefrom, said cylinder further provided with a piston and a piston rod extending downwardly from said cylinder, a first support member extending above said base and affixed thereto, said pump cylinder being mounted on said support in spaced relation to said base, a second support member extending above said base and affixed thereto, said support members being widely spaced apart from each other, an actuating arm being affixed at one end thereof to the lower end of said piston rod and pivotally affixed at its other end to said second support member, a spring positioned between and affixed to said base and to said actuating arm adjacent to said one end for exerting a downward force to said one end of said arm, a first rotatable shaft provided with a cam affixed thereto, said shaft being rotatably supported by and above said base in such a position that said affixed cam bears against the underside of said actuating arm intermediate the ends thereof to effect a desired upper limit of travel of said arm as a function of the largest radius of rotation of said cam, a first motor mounted on the upper portion of said second support member, means for coupling said motor to said first shaft for effecting continuous rotation of said cam for thus driving said piston rod into and out of said pump cylinder; and means for selectively limiting the down stroke of said actuating arm by action of said spring comprising a second rotatable shaft provided with an attached wheel, said second shaft being rotatably supported by and above said base between said first shaft and said first support member, said wheel being provided with a plurality of stroke-limiting screws extending radially outward different distances from the wheel circumference, wherein a selected one of said screws functions as a stop for said pump-actuating arm during its downward stroke, a plurality of microswitches mounted on one side face of said wheel and each switch having a spring-operating arm provided with a roller on its end, said second shaft having a slotted ring affixed thereto wherein the slot of said ring is adapted to sequentially actuate each of said microswitches when the associated spring arm

roller is urged into said slot, a second motor mounted on said first support member, a mechanical coupling for coupling said second motor to said second shaft, and means for energizing said second motor including means for selecting one of said microswitches such that said second motor rotates said second shaft until said selected microswitch is actuated to stop rotation of said second shaft by said second motor and the desired one of said stroke-limiting screws is directly beneath said pump-actuating arm whereby a desired volume of said liquid is pumped out of said cylinder outlet tube for each stroke of said pump.

3,884,127
FRANGIBLE CONSTRUCTION AND ACTUATOR UTILIZING SAME

William D. Simmons, Costa Mesa, Calif., assignor to Bertea Corporation, Irvine, Calif.

Filed Jan. 29, 1973, Ser. No. 327,747
Int. Cl. F01b 7/00
U.S. Cl. 92—151 **30 Claims**



1. An actuator comprising:
a housing including a transverse member, said transverse member having an opening therein, said housing having a chamber therein;
a piston member movable in said chamber, said chamber being adapted to receive fluid under pressure to move said piston member in said chamber;
a connecting rod joined to said piston member and extending through said opening of said transverse member;
at least one of said members having a frangible peripheral region; and
said frangible peripheral region including at least one weakened region defining a plurality of segments which can be broken off of said one member.

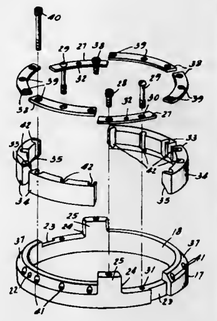
29. A system for moving an element comprising:
a first control apparatus including inner and outer relatively movable members;
means for causing the relative movement between said member to cause movement of said element;
second means for causing movement of said element;
at least one of said members being deformable in response to a blow to define an abutment tending to inhibit said relative movement between said members; and
the other of said members including a peripheral region which is frangible so that said peripheral region breaks in response to forcible engagement between said abutment and said peripheral region whereby the formation of said abutment will not prevent relative movement between said members beyond said abutment and said second means is not prevented from causing movement of said element.

3,884,128
COMBINATION CENTERING BEARING AND STOP FOR CAR LIFT PISTONS

Frederick A. Schick, and Milton H. Brown, both of Springfield, Ill., assignors to Dura Corporation, Springfield, Ill.

Filed July 6, 1972, Ser. No. 269,390
Int. Cl. F16j 15/18
U.S. Cl. 92—168 **12 Claims**

1. In combination, a piston and a cylinder, said piston centered in and being of a smaller diameter than the cylinder:
a bearing member having a complete ring shaped bearing surface sized to the diameter of the piston and guidingly slidably engaged therewith;
means connecting said bearing member in fixed axial position in the cylinder;

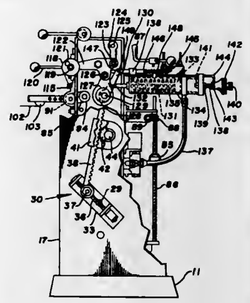


centering take-up wedging means; and
means attached to said bearing member and adjustably securing said wedging means in centering take-up relation to and between said bearing member and said cylinder.

3,884,129
INTERMITTENT WEB DRIVE MECHANISM EMPLOYING UNIDIRECTIONAL CLUTCHES

Thomas J. Monahan, Swansea, Mass., assignor to G. T. Schjeldahl Company, Northfield, Minn.

Filed Apr. 10, 1973, Ser. No. 349,778
Int. Cl. B31b 1/10; 74 125.5;120;121
U.S. Cl. 93—8 R **9 Claims**

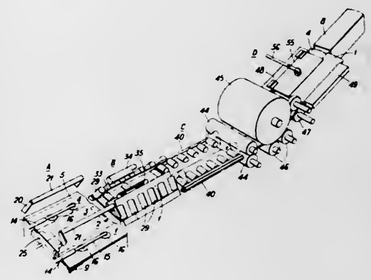


1. Means for intermittently advancing a web of flexible film comprising:
a. drive means for imparting repeating cycles of intermittent motion and dwell to said web with the motion normally being along a certain predetermined web direction, said drive means including output shaft means having first and second input driver means operatively coupled thereto;
b. input shaft means and means for drivably rotating said input shaft in one rotational direction;
c. unitary output shaft means adapted to be operatively coupled to said web for imparting motion thereto;
d. first and second driver means arranged in phased relationship one-to-another and being responsive to the rotation of said input shaft means and operatively coupled to said output shaft for drivably rotating said output shaft in one rotational direction, each driver means being effective for the rotation of said output shaft for a driving cycle of said output shaft, with continuously varying rates of rotational velocity having acceleration from dwell to maximum velocity and deceleration from maximum velocity to dwell, and further being effective only during one-half of each rotational cycle imparted to each of said driver means by said input shaft;
e. means including first unidirectional clutch means inter-coupling said first driver means to said input and output shafts for initiating rotation of said output shaft and for continuing said rotation for a first motion segment not exceeding one-half cycle of rotation of said input shaft and for de-coupling said first driver means at the end of said first motion segment;
f. means including second unidirectional clutch means for intermittently inter-coupling said second driver means to said input and output shafts in phased relationship to said first driver means and for achieving over-riding de-coupling of said first driver means from said output shaft for continuing rotation of said output shaft for a second motion segment not exceeding one-half cycle of rotation of said input shaft and for de-coupling said second driver means upon completion of said second motion segment; and
g. means for maintaining said output shaft means in locked disposition while said first driver means and said second driver means are simultaneously de-coupled from said output shaft to impart a dwell cycle to said web.

3,884,131
METHOD OF, AND MEANS FOR FOLDING A CONTAINER BLANK INTO A TUBULAR BODY

Jan F. Palsson, Lund, Sweden, assignor to Tetra Pak Developement S.A., Lausanne, Switzerland

Filed July 16, 1973, Ser. No. 379,401
Claims priority, application Sweden, Aug. 25, 1972, 12632/72
Int. Cl. B31b 5/26
U.S. Cl. 93—49 M **25 Claims**

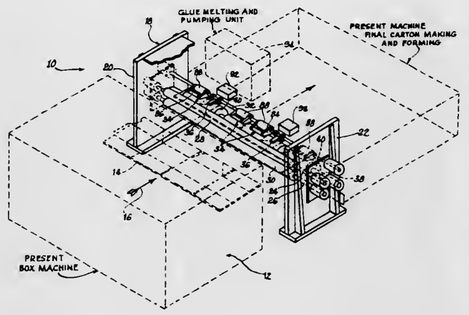


1. A method of forming a tubular container body from a flat blank of package-forming material having a heat-sealable surface, said blank having four side-by-side panels, one of said outer panels including an outer sealing flap therealong, said panels and flap being separated by parallel fold lines therebetween comprising the steps of simultaneously folding up the two outer panels about their fold lines to positions upstanding from the plane of the inner panels, heating the outer edge zones of the upstanding panels, folding the upstanding panels down toward the inner panels so that the heated edge zones overlap, applying pressure to the overlapping edge zones to seal said edge zones together, flexing said folded and sealed blank to break the fold lines and squaring said flexed blank to form the tubular container body.

3,884,130
APPARATUS FOR PRODUCING CARTONS

Walter J. Stolkin, Chicago; William A. Riley, Woodridge, both of Ill., and Henry J. Sejda, Munster, Ind., assignors to Stolmar Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 350,936, April 13, 1973, abandoned. This application Mar. 25, 1974, Ser. No. 454,256
Int. Cl. B31b 1/36
U.S. Cl. 93—49 R **23 Claims**

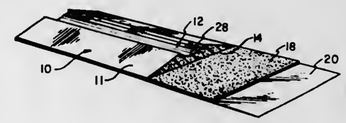


1. An apparatus for producing a folded carton comprising a bed for supporting a carton blank, said blank including side panels and bottom panels connected to the side panels, means defined by said bottom panels for holding the bottom panels together when the carton is unfolded, said bottom panels being situated in side-by-side relationship in said blank, flaps defined by at least one of said bottom panels, first folding means for folding the bottom panels in over-lying relationship relative to adjacent side panels, second folding means for engaging said flaps to thereby fold said flaps over onto the bottom panels carrying the flaps, means for applying adhesive to selected surface portions of said bottom panels, third folding means for folding each end of the blank over onto inside portions of the blank, each blank end comprising a side and bottom panel, the adhesive on said blank being positioned for contact with said flaps to secure said ends in the folded position, and means for securing said ends together.

3,884,132
MAGNETICALLY LOCATED SCORING DIE MATRIX

Frank M. Snodgrass, Martinsburg, W. Va., assignor to Channel Creasing Matrix, Inc., Martinsburg, W. Va.

Filed Jan. 11, 1974, Ser. No. 432,500
Int. Cl. B32b 3/00; B31b 1/44
U.S. Cl. 93—59 MT **7 Claims**

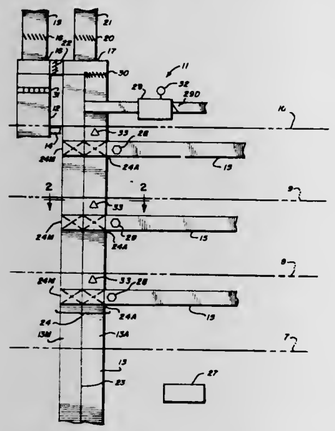


1. A creasing matrix for use in cooperation with a creasing rule to form a crease in a blank of card-like material comprising an elongate element having an upwardly facing side and a downwardly facing side, said upwardly facing side defining a longitudinal channel along said element and said downwardly facing side comprising a substantially planar surface, a pressure-sensitive adhesive layer contiguous with said planar surface, and a magnetic assembly integrally associated with said elongate element along the length thereof.

3,884,133
FIRE CONTROL SYSTEM FOR MULTI-ZONE BUILDINGS

Edward J. Miller, 6702 Church St., Morton Grove, Ill. 60053

Filed Aug. 21, 1974, Ser. No. 499,129
Int. Cl. A62b *15/00*; A62c *3/14*
U.S. Cl. 98—33 R 14 Claims



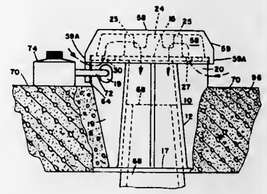
1. In a multi-zone building having a ventilation system that includes a central station serving a plurality of ventilation zones, common supply air duct means connecting the central station to the ventilation zones, common return air duct means connecting the ventilation zones to the central station, each zone having branch supply duct means connected to the common supply air duct means and branch return duct means connected to the common return air duct means, and the central station including central supply fan means, central exhaust/return fan means and main damper means for controlling flow of fresh air into the common supply air duct means and recycling of return air from the common return air duct means to the common supply air duct means, the improvement comprising partition means for dividing the common return air duct means lengthwise into a main return air duct section and an auxiliary return air duct section, separate branch damper means for each zone for controlling communication of the branch return duct means of such zone with each of the return air duct sections, standby means for effecting isolation and exhaust of all return air from the auxiliary return air duct section, and control means including separate detection means for each zone operable upon the occurrence of fire conditions therein for actuating the standby means and the corresponding one of said separate damper means for directing all of the return air from any fire zone to exhaust through the auxiliary return air duct section and for directing all of the return air from any non-fire zone into the main return air duct section.

3,884,134
AIR VENT

Edward J. Jordan, Mentor, Ohio, assignor to Jet Aeration Company, Cleveland, Ohio

Filed Jan. 25, 1974, Ser. No. 436,655
Int. Cl. F24f *7/02*
U.S. Cl. 98—64 11 Claims

1. An air vent, comprising in combination:
a vent body including a substantially vertical vent duct,
a top member extending outwardly from said vent duct,
rib means extending from the outside surface of said vent duct for supporting said top member;
a cover including a top portion and a side portion established to cover said top member when said cover is located on said vent body;
vent aperture means in one of said top member and said side portion and shielded by at least a portion of said cover when said cover is on said vent body,
a plurality of cover projections extending from said vent body in a generally vertical direction for supporting said cover;

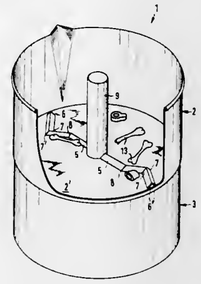


means for securing said cover on said vent body to form an air passage between said vent aperture means and said vent duct;
and a screen assembly mounted in said vent duct to provide a screen in said air passage of said air vent.

3,884,135
COOKING APPLIANCE

Alfred Löhr, Bochum; Wolfgang Tschek, Westerholt; Heinz Förster, Gelsenkirchen-Buer; Bernhard Klauk, Gelsenkirchen, and Wolfgang Schwan, Gelsenkirchen-Erle, all of Germany, assignors to F. Kuppersbusch & Söhne Aktiengesellschaft, Gelsenkirchen, Germany

Filed June 9, 1972, Ser. No. 261,338
Claims priority, application Germany, June 9, 1971, 2128686; Oct. 16, 1971, 2151576; Jan. 12, 1972, 2201200
Int. Cl. B01f *7/18*, *15/06*
U.S. Cl. 99—348 10 Claims

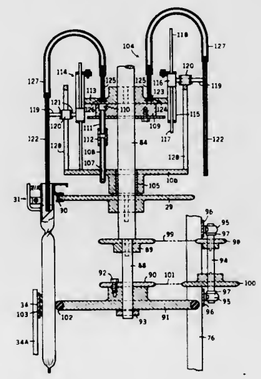


1. In a cooking appliance including a cooker for holding the ingredients to be cooked, the cooker having a bottom surface, means for heating the cooker, a stirring element for stirring the ingredients to be cooked, and means for driving the stirring element about a substantially vertical axis of the cooker, the improvement comprising in combination:
a. a post member disposed coextensively with said axis and extending to said bottom, said post member forming part of said means driving said stirring element, said post member being arranged for rotation about said axis;
b. two arms affixed to said post member and extending therefrom in opposite direction adjacent and parallel to said bottom, said arms forming part of said stirring element, each of said arms including, over its length, a first arm portion, a second arm portion adjoining end-to-end said first arm portion at a first angle and a third arm portion adjoining end-to-end said second arm portion at a second angle, in each arm one of said angles is an acute angle and the other of said angles is an obtuse angle, one of said angles in each arm being oriented in the direction of rotation of said post member, the other angle in each arm being oriented opposite the direction of rotation of said post member; and
c. a scraper attached to and extending along each arm, said scraper forming part of said stirring element and cooperating with said bottom for scraping the same upon rotation of said post member.

3,884,136
EGG ROLL ASSEMBLY MACHINE

Jack R. Towry, Clayton, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Aug. 24, 1972, Ser. No. 283,346
Int. Cl. B32b *31/04*
U.S. Cl. 99—450.4 23 Claims



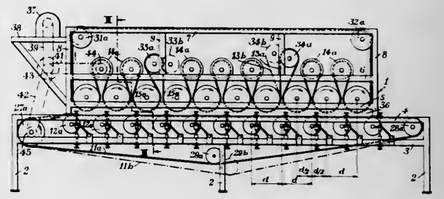
1. Apparatus for automatically and continuously assembling an egg roll product comprising a frame, conveyor means on said frame defining a predetermined path of travel, drive means on said frame for continuously driving said conveyor means without interruption, said conveyor means including means for grippingly engaging and retaining thereon an egg roll casing having one end thereof open, first metering means on said frame positioned above a portion of the path of travel of said conveyor means for discharging a predetermined quantity of liquid albumen into said continuously moving casing, second means positioned above another position of the path of travel of said conveyor means for inserting a yolk body into said casing, other means on said frame for sealing the open end of said casing and for discharging said casing from said conveyor means, and rotating means on said frame adjacent to said sealing means for rotating the casing to close the open end thereof prior to the sealing thereof.

3,884,137
KERNEL FRUIT SHELLING MACHINE

Lucien Breton, Route de Chalais, 16300 Barbezieux, France

Filed Dec. 6, 1973, Ser. No. 422,541
Claims priority, application France, Dec. 14, 1972, 72.44510
Int. Cl. A23n *5/10*
U.S. Cl. 99—625 9 Claims

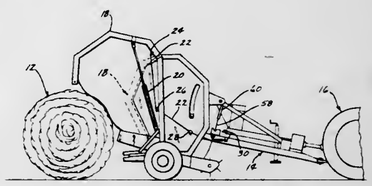
1. A machine for shelling kernel fruits, which comprises a pair of endless belts driven at different linear speads and providing between operative runs thereof a space through which the kernel fruits to be shelled are caused to travel in order to shell them by frictional action after a preliminary suitable treatment has been applied to their skin or hull, a first set of rollers having parallel axes, which are spaced from each other and disposed substantially in the same horizontal plane in order to guide the operative run of the first belt along a substantially rectilinear horizontal path bounding the lower side of said space, and a second set of rollers having parallel axes also parallel to the axes of the rollers of said first set, wherein the rollers of said second set are so disposed as to cause the operative run of said second belt to follow a sinuous path bounding the upper side of said space and to move by turns towards and away from said rectilinear path, said sinuous path of the operative run of said second belt having points which are nearest to said rectilinear path of said first belt to provide respective friction areas through which said kernel fruits pass and are engaged by both belts, each of said friction areas being transversely spaced substantially equally between points where two adjacent rollers of said first set support said first belt, said belts providing substantially triangular gaps between said friction areas of a size to permit said kernel fruits to overturn on said first belt.



3,884,138
TWINE CUTTING APPARATUS FOR A HAY BALER

Jerry M. Rice, Route 2, Hedrick, Iowa 52563

Filed Apr. 3, 1974, Ser. No. 457,568
Int. Cl. B65b *63/04*
U.S. Cl. 100—5 6 Claims



1. In combination with a baler having a twine tying means and a movable tail gate which is adapted to open to eject the bale therefrom, comprising, a support means secured to the baler,
a blade means operatively pivotally secured to said support means for cutting the twine,
and means connecting the baler tail gate and said blade means so that said blade means automatically cuts the twine as the tail gate moves to its open position.

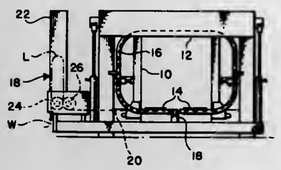
3,884,139
WIRE FEEDING AND TENSIONING APPARATUS

James A. Pasic, Aberdeen, Wash., assignor to Ovalstrapping, Inc., Hoquiam, Wash.

Filed June 12, 1973, Ser. No. 369,168
Int. Cl. B65b *13/04*
U.S. Cl. 100—26 5 Claims

1. In a tying machine having a supply of wire or like binding material fed to guiding means surrounding the object to be bound and having a twisting mechanism to lock the ends of the wire together, the improvement comprising combined accumulating and feeding and tensioning means for feeding the wire to the guiding means in one direction and tensioning the wire in the opposite direction, including first and second rolls

having peripheral surfaces engaging the binding material therebetween and rotating in a first direction for feeding and in an opposite, second direction for tensioning, and a storage compartment having an opening therein adjacent said second roll, said binding material being entrained on a substantial portion of the circumference of said peripheral surface of said



second roll, said substantial portion facing directly into said storage compartment, whereby a loop of said binding material preformed by engaging the substantial portion of said peripheral surface of said second roll will expand into said storage compartment when said rollers are rotating in said second direction.

3,884,140

CALENDAR HAVING ADJUSTABLE BRAKE MEANS

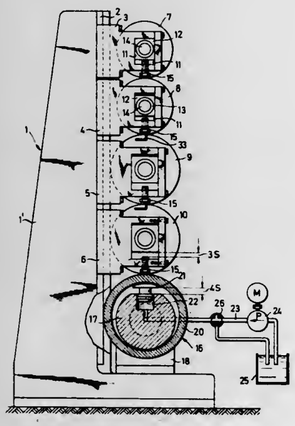
Alfred Christ, Zurich, and Rolf Lehmann, Mutschellen, both of Switzerland, assignors to Escher Wyss Limited, Zurich, Switzerland

Filed Mar. 27, 1974, Ser. No. 455,302

Claims priority, application Switzerland, Apr. 17, 1973, 5454/73

Int. Cl. B30b *3/04*

U.S. Cl. 100—163 R **10 Claims**



1. In combination with a calendar having a plurality of superjacent rolls, at least some of said rolls being movably mounted to descend upon opening of the calendar; a plurality of individually adjustable brake means associated with each movable roll for adjusting the velocity of each said roll during descent whereby the lowermost rolls move at a greater descending velocity than the uppermost rolls.

3,884,141

CALENDAR HAVING A DISPLACEABLE SUPPORT CYLINDER

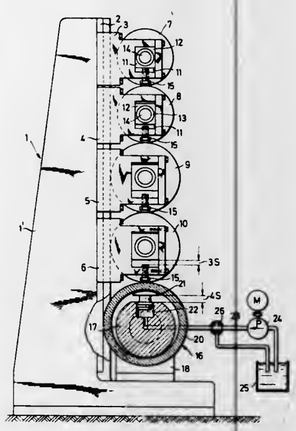
Rolf Lehmann, Mutschellen, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Mar. 27, 1974, Ser. No. 455,357

Claims priority, application Switzerland, Apr. 17, 1973, 5452/73

Int. Cl. B30b *3/04*

U.S. Cl. 100—163 R **3 Claims**



1. A calendar comprising

a plurality of superjacent rolls, said rolls being mounted for movement away from each other to form gaps therebetween upon opening of the calendar; and

a pressure cylinder disposed under said rolls, said cylinder including a stationary support member, a roll barrel rotatably mounted about said support member to support said rolls and at least one hydrostatic support element supporting said roll barrel on said support member, said hydrostatic support element being displaceable to permit movement of said roll barrel away from said rolls over a distance equal to an amount at least equal to the sum of the maximum gaps between said superjacent rolls upon opening of the calendar.

3,884,142

MACHINE FRAME, HAVING A BIASED WIRE GIRDLE, AND A METHOD FOR BIASING SUCH A GIRDLE

Finn Lennart Jonsson, Ystad, Sweden, assignor to AB Carbox, Ystad, Sweden

Filed Jan. 9, 1974, Ser. No. 431,874

Claims priority, application Sweden, Jan. 19, 1973, 7300775

Int. Cl. B30b *15/28*

U.S. Cl. 100—214 **8 Claims**

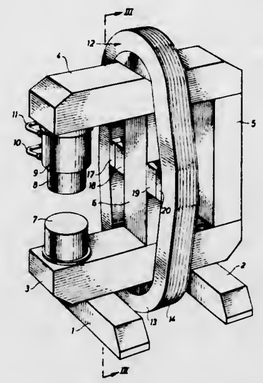
2. A machine frame, particularly for heavy presses, comprising:

a frame member,

a girdle including bias elements surrounding said frame member for applying compressional forces to said frame member to counteract outwardly directed reactional forces to which said frame member is exposed in the operation of the machine, and

girdle expansion means mounted between said girdle and said frame member for expanding said girdle subsequent

to said girdle being mounted on said frame member, the biasing of said bias elements being generated by expan-



sion of said girdle under the influence of said girdle expansion means.

3,884,143

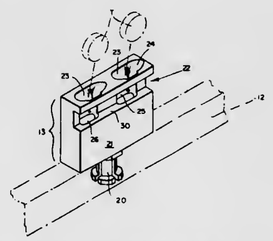
CONVEYOR LINK FOR TABLET PRINTING APPARATUS

Edward M. Ackley, Stone Harbor, N.J., assignor to R. W. Hartnett Company, Philadelphia, Pa.

Filed Sept. 4, 1973, Ser. No. 393,963

Int. Cl. B41f *17/36*

U.S. Cl. 101—37 **5 Claims**



1. In an apparatus for printing indicia on objects of substantially uniform size and shape, which apparatus includes continuously operable conveyor means and printing means adjacent said conveyor means for applying such indicia while said objects are moving along on said conveyor means, a carrier for at least one of said objects, said carrier comprising a supporting base connectable to said conveyor and a body portion supported by said base, said body portion having a recess extending along the direction of movement of said conveyor and shaped to accommodate and receive said printing means therein while said carrier is moving relative to said printing means, and said body portion also having a passageway which is open at an upper portion of said body portion, said passageway extending downwardly within said body portion forming a cavity having an object-supporting floor located below at least a part of said recess, said cavity opening into said recess for communication therebetween, and said body portion having retainer means spaced apart from one another at a distance less than a predetermined dimension of said object in a manner to limit movement of said object out of said passageway in the direction of said recess, said retainer means being provided with an indentation shaped to provide spacing between said retainer means and printed portions of said object, thereby providing for passage of said object out of said passageway without smearing the printed surface of said object against said retaining means.

3,884,144

COMPACT PRINTER

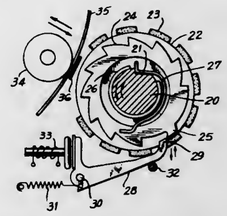
Tadayoshi Shimodaira, Matsumoto, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed June 22, 1973, Ser. No. 372,563

Claims priority, application Japan, June 22, 1972, 47-61795; Nov. 2, 1972, 47-109941

Int. Cl. B41j *1/22*

U.S. Cl. 101—99 **6 Claims**



1. A compact printer comprising a rotary drive shaft having an axially extending notch therein, said drive shaft being rotatable in first and second directions, at least one print carrier carrying at least one print character on the periphery thereof rotatably mounted on said drive shaft, said at least one print carrier being rotatable in first and second directions corresponding to said rotary drive shaft, a resilient spring for rotating said at least one print carrier through print selection and reset sequences, respectively, corresponding to said first and second directions thereof, said spring being driven by said notched drive shaft, said spring having a fixed end and a free end, said fixed end of said spring being fixedly connected to said at least one print carrier, said free end of said spring having an elbow releasably engageable in said drive shaft notch, said notch in said drive shaft providing a drive seat for said free end of said spring for said drive shaft to thereby drive said spring, displaceable print means for imprinting a selected character carried on said at least one print carrier on an imprint receiver, and means for selectively releasably locking the position of said print carrier against the driving action of said drive shaft for thereby aligning a selected character carried on said at least one print carrier in said print means path.

3,884,145

DOCTOR BLADE FOR PHOTOGRAVURE PRINTING MACHINE

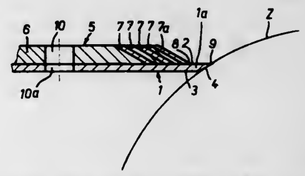
Max Dätwyler, Bleienbach, Switzerland, assignor to Max Dätwyler & Co., Bleienbach, Switzerland

Filed Sept. 17, 1973, Ser. No. 397,877

Claims priority, application Switzerland, Sept. 19, 1972, 13706/72

Int. Cl. B41f *35/00*

U.S. Cl. 101—169 **14 Claims**



1. A doctor blade assembly for photogravure printing machines for the removal of excess printing ink from a printing surface comprising an elongated doctor blade having opposite longitudinal edge portions one of which has a contact surface adapted to contact a printing surface, a strengthening element secured to said doctor blade therealong and having a longitudinal edge terminating short of said contact surface, a plurality

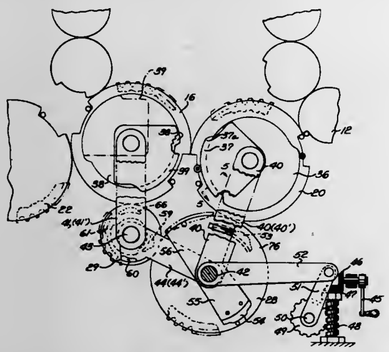
of individually connected though sequentially removable means between said longitudinal edge and said contact surface for supportive back-up of said one edge portion and for sequentially reducing the length of said removable means in a direction away from said contact surface whereby the distance between the last of said removable means and said contact surface is maintained essentially constant during the progressive wear of said doctor blade one edge portion.

3,884,146

PRINTING PRESS WITH SHEET TURNOVER MECHANISM

Rudolph H. Ruetschle, Solon, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Jan. 20, 1972, Ser. No. 219,273
Int. Cl. B41f *5/02*
U.S. Cl. 101—183 **35 Claims**



19. In a sheet handling apparatus, a first cylinder having first means for gripping a sheet by a first edge of the sheet with the first edge leading, a downstream cylinder having second grippers to which said sheet is to be conveyeed turned over and with said first edge trailing and a second edge opposite said first edge leading, sheet turnover means for turning a sheet over intermediate said first cylinder and said downstream cylinder comprising a second cylinder defining a first sheet transfer nip with said first cylinder and a third cylinder defining a second sheet transfer nip with said downstream cylinder and a sheet transfer nip with said second cylinder, said sheet turnover means having sheet gripping means for receiving a sheet at said first transfer nip and transferring it to said downstream cylinder at said second sheet transfer nip including turnover additional gripping means on one of said second and third cylinders for gripping the trailing edge of a sheet on an adjacent one of said cylinders to take the sheet from the adjacent cylinder and to convey the sheet to an adjacent cylinder downstream with said second edge leading, and adjusting means for adjusting said second and third cylinders about the axis of said first and downstream cylinders while maintaining the sheet transfer nip therebetween to adjust the location of said first and second transfer nips to adjust the timing of of said sheet turnover means with the sheet grippers on said downstream cylinder for different length sheets.

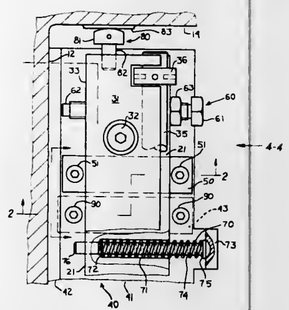
3,884,147

DEVICE FOR FASTENING FLEXIBLE PRINTING PLATES

Paul Abendroth, Offenbach, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany

Filed May 21, 1973, Ser. No. 362,182
Claims priority, application Germany, May 26, 1972, 2225333
Int. Cl. B41f *27/12*
U.S. Cl. 101—415.1 **1 Claim**

1. In a plate lock-up mechanism for securing and adjusting a flexible printing plate upon a plate cylinder which has a longitudinal groove formed therein defined by side walls, end walls and generally flat bottom wall, the combination comprising a supporting plate member of L cross section made up of horizontal and vertical portions at right angles to one another respectively seated against the bottom and side wall of the groove and extending substantially the length thereof, the supporting plate member having bracket means along one edge in spaced opposition to the vertical portion, a plurality of mounting bars spaced end to end in the groove above the supporting plate member, means including guide bars interposed between the mounting bars and the supporting plate member for holding the mounting bars individually captive thereon while permitting limited shifting movement both circumferentially and axially, each of the mounting bars having a coextensive rail for tightly holding the edge of a printing plate, circumferentially oriented springs interposingly compressed between the bracket means and the individual mounting bars for biasing the mounting bars circumferentially in the direction of the vertical portion of the supporting plate member, first screw means in each bar extending circumferentially



bearing against the vertical portion of the supporting plate member for adjusting each bar and its printing plate circumferentially with respect to the cylinder, second screw means in each bar for adjusting each bar and plate axially with respect to the cylinder, and a set of supporting screws for clamping the supporting plate member securely against the bottom of the groove, the supporting plate screws being positioned such that the axes of the screws, when extended past the head ends of the screws, are substantially free of any obstruction by any other part of the plate lock-up mechanism so that the screws are readily accessible for easy and unobstructed application of an unscrewing tool notwithstanding the presence of the plate mounting bars whereby, upon removal of the screws, the supporting plate member and the mounting bars and associated biasing springs which are captive thereon may be removed as a unit from the cylinder while preserving the adjusted positions of the bars relative to the supporting plate member and while preserving the compressed condition of the biasing springs for substitution in the groove of a single plate mounting bar extending the length thereof.

3,884,148

METHODS OF IMPROVING PRINTING RESOLUTION IN CHAIN TYPE PRINTERS

Louis Bergeron, Ballainvilliers, France, assignor to Centre National d'Etudes Spatiales, Paris, France

Filed Dec. 14, 1972, Ser. No. 315,193
Claims priority, application France, Dec. 15, 1971, 71.45081
Int. Cl. B41j *3/00*
U.S. Cl. 101—426 **2 Claims**

1. The method of printing patterns of variable resolution with a printer having a font of characters to be printed out in at least one print position of known dimensions, said printer being equipped with a memory and controllable by a printing program, comprising the steps of

1. replacing the font of characters with a set of printing elements each located in a discrete one of a number N of matrix positions within said dimensions,
2. providing for each of said N matrix positions a plurality of elements of different size,
3. identifying each matrix element including those elements of different size with a separate coded representation to be stored in said memory,



4. controlling the printer to print out N times at each print position to form a print out pattern at said N matrix positions, and
5. identifying a print pattern of said elements to be printed out at each said print position by a corresponding set of said coded representations stored in said memory designating the size of the element to be printed out in each of said N matrix positions.

3,884,149

PRINTING PROCESS INCLUDING PHYSICAL DEVELOPMENT OF THE PRINTING PLATE IMAGE

Roger W. Shores, Weymouth, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 2, 1974, Ser. No. 430,109
Int. Cl. B41m *1/00;* **B04n** *1/00;* **G03c** *5/24*
U.S. Cl. 101—450 **4 Claims**

1. Printing process comprising:
   a. forming a catalytic nuclei image on a copy medium comprising a superficially roughened substrate and which image is capable of causing metal deposition from a physical developer comprising a solution of reducible metal ions;
   b. uniformly and rapidly wetting said imaged copy medium with a thin layer of said physical developer;
   c. subjecting the imaged plate and the thin layer of physical developer to a rocking motion to cause the physical developer to flow back and forth across the catalytic nuclei image in predominantly laminar flow, said rocking motion being between about 2° and about 6° pitch at a rate of between about 2 and about 12 cycles per minute to provide a substantially uniform source of metal ions in all portions of the catalytic nuclei image areas to form metal images adherently and intimately bonded to the substrate of the copy medium;
   d. contacting the surface of the imaged medium with a lithographic printing ink which selectively adheres to the image or non-image areas; and
   e. contacting the inked medium with a receptor sheet for said ink to thereby form a print of the original.

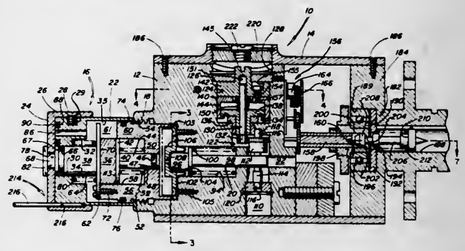
3,884,150

HYDROSTATIC DELAY ACTION FUSE

John A. Brennan, Hyattsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 29, 1970, Ser. No. 64,914
Int. Cl. F42c *5/00, 9/14*
U.S. Cl. 102—16 **4 Claims**

1. A hydrostatic delay action fuse comprising:
   a substantially cylindrical fuse housing;
   means positioned within said housing for sensing changes in hydrostatic pressure;
   means connected to an end of said housing for preventing said pressure sensing means from being exposed to ambient pressure for a predetermined time;
   sprocket means, including a female sprocket geared to said pressure sensing means and a male sprocket adapted to mesh with said female sprocket in one of a plurality of positions and a compression spring normally biasing said male sprocket into meshed contact with said female sprocket, for converting changes in the ambient pressure into rotary motion;



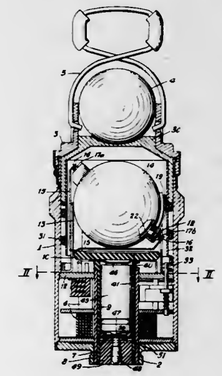
   a firing pin slideably held within said housing;
   release means operably connected to said firing pin for controlling the operation thereof;
   time delay means cooperatively associated with said firing pin release means for delayably actuating said release means a predetermined time interval after the initiation of the timing sequence of said time delay means; and
   means connected to said sprocket means and rotatable therewith for initiating said time delay means in response to a predetermined rotation of said sprocket means.

3,884,151

DETONATOR FOR LAND MINES

Paul Madlener, Karlsruhe-Durlach, and Otto Pecksen, Herrenalb near Karlsruhe, both of Germany, assignors to Industrie-Werke Karlsruhe Augsburg Akt., Karlsruhe, Germany

Filed June 15, 1966, Ser. No. 559,043
Int. Cl. F42b *23/26*
U.S. Cl. 102—19.2 **7 Claims**



1. In a detonator for a land mine, a detonator housing having mounted therein an electrically ignitable detonator pellet, electric circuit means for controlling the ignition of said pellet, a drive mechanism controlled by a switch member (33) in said circuit means for delaying the ignition of said pellet for a predetermined period of time, a movable contact device subject to a change of position of said housing with respect to an initial position for closing a portion of said electric circuit means when a change of the position of said housing from its initial position takes place, gravity controlled means for mov-

ing said movable contact device into said initial position in

3,884,154

of the articulated vehicle with a support structure mounted

3,884,157

ing said movable contact device into said initial position in which said portion of said circuit means is open, a slidable member (32) in said housing, said electrical circuit means also including two spaced fixed contact members (36, 37) and a movable contact member (35) therebetween, said slidable member when moved in one direction actuating said switch member (33) to start the operation of said driving mechanism and at the same time moving said movable contact member (35) into a position midway between and out of engagement with said two spaced fixed contact members.

3,884,152

ELEMENT FOR A TRANSPORTER HAVING A VARIABLE SPEED

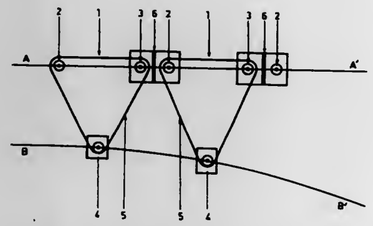
Raymond Emeriat, Nimes, France, assignor to Regie Autonome des Transports Parisiens, Paris, France

Filed Nov. 21, 1973, Ser. No. 417,721

Claims priority, application France, Nov. 22, 1972, 72.41562

Int. Cl. B66b *9/12*

U.S. Cl. 104—25 **6 Claims**



1. A transporter having a variable speed comprising variable units providing said variable speed and formed by displacement members adapted to move along a guide path, control members adapted to follow a cam and non-elastic linkages connecting the displacement members and the control members belonging to the same variable unit, the various variable units being connected by assembly elements, each linkage being formed by at least one chain only able to bend in a half-plane and formed of chain-links, and carrying on its face turned towards the half-plane, a lining cooperating with a corresponding lining on each assembly element.

3,884,153

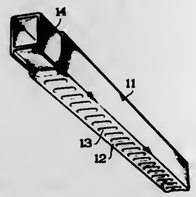
MONORAIL STRUCTURE

Minoru Sugimoto, 141-1 Minamikoto, Jodo-cho, Jodo-gun, Okayama, Japan

Division of Ser. No. 211,312, Dec. 23, 1971, abandoned. This application Nov. 8, 1973, Ser. No. 414,167

Int. Cl. E01b *25/22*

U.S. Cl. 104—93 **7 Claims**



1. A monorail structure, comprising:
a rail body comprising a pipe member having a rectangular cross-section, and
a rack portion on an outer surface of said pipe member integrally formed with teeth by deformation of the material of said pipe member.

3,884,154

PROPULSION ARRANGEMENT EQUIPPED WITH A LINEAR MOTOR

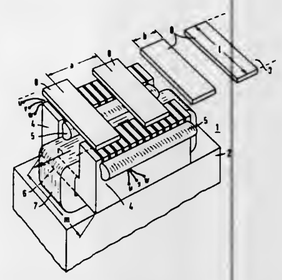
Fritz Marten, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 18, 1972, Ser. No. 315,933

Claims priority, application Germany, Dec. 23, 1971, 2164078

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 MS **9 Claims**



1. A propulsion arrangement for a body movable along a track defining a direction of motion, the body being subjected to outer forces such as centrifugal forces, comprising a winding carrier assembly including two ferromagnetic winding carriers disposed next to each other transversely to the direction of motion, said carriers having respective outermost outside surfaces extending in the direction of motion and facing away from each other, said surfaces being spaced a distance m from each other, a common direct-current excitation winding mounted on said carriers, additional windings mounted on said winding carriers for developing a travelling wave, said additional windings being displaced one from the other by one pole pitch τ_p; and ferromagnetic return means for coacting with said winding carrier assembly for developing a propulsion force for moving the body, said ferromagnetic return means comprising a plurality of ferromagnetic bars arranged in a row transverse to the direction of motion, each of said bars having a length corresponding to said distance m and being a width b having a value defined by the relation: $b \leq \tau_p$, and each two mutually adjacent ones of said bars having a center-to-center spacing corresponding to twice said pole pitch $2\tau_p$, said ferromagnetic winding carriers being positioned relative to said ferromagnetic return means so that the attraction forces developed between said winding carriers and said return means are opposed to the outer forces, and an electrodynamic guidance system having a support and guidance arrangement equipped with conductor loops for generating a flux having a low loss zone of zero flux value, said support and guidance arrangement also having a stabilization arrangement, said electrodynamic guidance system and said winding carrier assembly together with said return means being arranged relative to each other so as to cause the lift component of the forces developed between said carrier assembly and said return means to act to maintain said stabilization arrangement in said zone.

3,884,155

ARTICULATE RAILWAY VEHICLE STABILIZING LINKAGE APPARATUS

Max Maroshick, Glen Mills, Pa., assignor to The Boeing Company, Seattle, Wash.

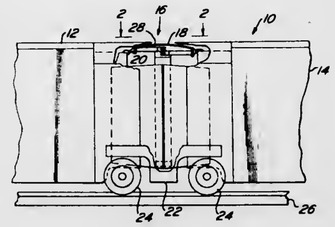
Filed June 17, 1974, Ser. No. 479,954

Int. Cl. B61d *17/14, 17/20;* **B61f** *3/12*

U.S. Cl. 105—4 R **10 Claims**

1. Linkage apparatus for stabilizing an articulated wheeled vehicle provided with a joint between a first and a second car

of the articulated vehicle with a support structure mounted between said cars, said linkage apparatus comprising:
a first linkage member pivotally connected to said support structure;
first and second laterally rigid arm means attached to said first and second cars, respectively;
a second linkage member being pivotally connected to said first linkage member at a first pivot point and to said first laterally rigid arm means at a second pivot point and



means connecting said second linkage member to said support structure for lateral movement with respect to said support structure; and
a third linkage member pivotally connected to said first linkage member at a third pivot point and to said laterally rigid arm means at a fourth pivot point and means connecting said third linkage member to said support structure for lateral movement with respect to said support structure.

3,884,156

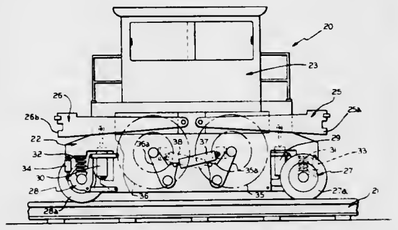
AUTOMATICALLY TRACTION EFFORT CONTROLLED CONVERTIBLE RAIL-HIGHWAY TRACTOR

Victor H. Ames, and Marshall V. Hartelius, both of Midlothian, Ill., assignors to Whiting Corporation, Harvey, Ill.

Filed Jan. 28, 1974, Ser. No. 437,283

Int. Cl. B61c *13/00, 15/00;* **B61g** *5/00*

U.S. Cl. 105—75 **31 Claims**



1. In a tractor having rail wheels for traveling on rails and for transporting rail cars, said tractor including a coupler for coupling the tractor to a rail car, and means for applying a weight transfer force between the coupler and the rail wheels to transfer a portion of the weight of a rail car connected to the tractor to the rail wheels thereof to increase the traction between the rail wheels and the rails, the improvement comprising: means controlling the weight transfer force applying means to automatically vary the value of the weight transfer force in response to the pulling or pushing traction needs of the tractor when the tractor is moving.

3,884,157

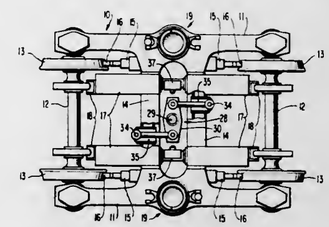
RAILWAY CAR BOGIE

André E. Pelabon, Paris, France, assignor to ANF-Frangeco S.A., Courbevoie, France

Filed Apr. 13, 1973, Ser. No. 350,804

Int. Cl. B61f *3/08, 5/20, 5/24*

U.S. Cl. 105—199 R **6 Claims**



1. In a system for transmitting forces between a railway car and a bogie which supports said car, the combination including a rigid bogie frame means including a pair of side members and including means to rotatably support at least two pairs of track-engaging wheels, a vertical pivot element fixedly attached to and projecting downwardly from the underside of the car and located along the longitudinal centerline thereof, a horizontal transverse crossbar pivotally joined to said vertical pivot element at the midpoint of the crossbar to constrain longitudinal displacement of the bogie with respect to the car while permitting lateral and rotational displacement, the extremities of said crossbar being respectively pivotally connected to one end of each of a pair of force transmitting links disposed generally horizontally in the direction of movement of the bogie, the other ends of said links being respectively pivotally connected to said bogie frame means, and resilient means connected between said side members of the bogie frame means and said car to support the weight of the car and to limit said lateral and rotational displacement of the bogie with respect to the car, said crossbar and said force transmitting links being disposed generally in the horizontal plane of the rotational axes of said wheels.

3,884,158

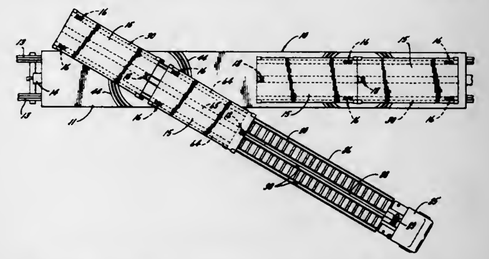
RAILROAD CAR WITH HYDRAULICALLY ACTUATED TURNTABLE

James A. Rumell, 1955 Vermont, Blue Island, Ill. 61485

Filed Oct. 29, 1973, Ser. No. 410,345

Int. Cl. B65j *1/22*

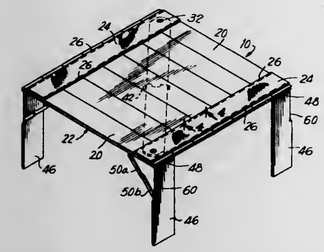
U.S. Cl. 105—368 B **20 Claims**



1. A railroad transport vehicle comprising a flatbed, wheel means supporting said flatbed for movement on railroad tracks, a turntable mounted on said flatbed for relative pivotable movement about a pivot point, a container having support wheels and being longitudinally moveable on said turntable, said turntable having longitudinal guide tracks for receiving the wheels of said container and guiding movement of said container with respect to said turntable, selectively operable fluid cylinder means for rotating said turntable from a travel

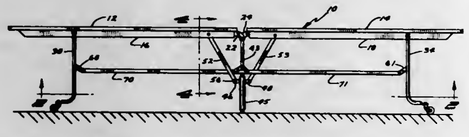
position in overlying relation with said flatbed to an unloading position at a sufficient angle with respect to said flatbed to permit said container to be moved off said turntable at the side of said flatbed, said fluid cylinder means including a cylinder mounted on said flatbed and a reciprocal cylinder rod associated with said cylinder, means connecting said cylinder rod to said turntable at a point radially spaced from said pivot point so that actuation of said cylinder causes said rod to exert a force on said turntable that is substantially tangential with respect to said pivot point, means for releasably locking opposite ends of said turntable to said flatbed when in said travel position, and means for releasably locking said container to said turntable.

3,884,159
FOLDING TABLE
Carmen V. Faria, 353 E. 83rd St., New York, N.Y. 10028
Filed Nov. 19, 1973, Ser. No. 416,988
Int. Cl. A47b *3/04*
U.S. Cl. 108—112 **3 Claims**



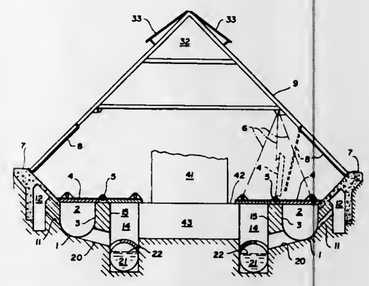
1. A folding table comprising an even-number of parallel slats adapted to collapse onto each other when the table is folded, said slats connected together by two transverse pieces of flexible material secured to the slats at the ends thereof by stitching, at least one diagonal cross-support for supporting the slats in a common plane to form a table top when the table is open, said diagonal cross-support including two connecting members of widths no greater than the width of one of the slats independently pivotally extending from two diagonal corners of the table top, means for coupling the connecting members together at substantially the center of the table top, foldable legs hingedly connected to the slats at the four corners of the table top, each of said legs of a width no greater than the width of one of the slats and of a length substantially equal to one-half the length of one of the slats, latch means for connecting the ends of the legs together when the table is folded, and hinge means connected between said slats and said legs for maintaining said legs substantially perpendicular to said slats when the table is open.

3,884,160
FOLDING TABLE CENTER LEG STRUCTURE
Julian Gutierrez, 6233 Brookview Ave., Minneapolis, Minn. 55424
Filed Nov. 23, 1973, Ser. No. 418,298
Int. Cl. A47b *3/091*
U.S. Cl. 108—113 **1 Claim**



1. A vertically foldable table having in combination a pair of top plate members,
hinge means connecting the adjacent end portions of said plate members,
a single supporting leg extending from said hinge means centrally transversely of said table,
a pair of transversely spaced leg members adjacent each remote end portion of said plate members, said pairs of leg members each have a cross member therebetween,
rods respectively pivotally connecting said supporting leg with said last mentioned pairs of leg members rigidly holding said supporting leg member in operating position,
a sleeve slidably disposed onto the lower portion of said suporting leg, and
links extending from said sleeve member to adjacent portions of said plate members, holding said supporting leg in rigid operating position.

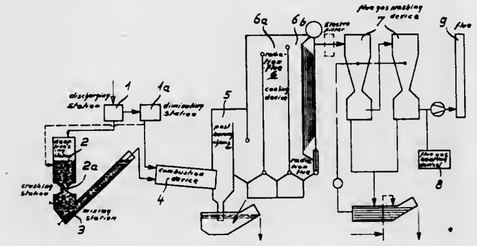
3,884,161
WASTE DISPOSAL AND ENERGY RECOVERY REACTOR APPARATUS AND METHOD
Borge Richard Ankersen, Pontiac, Mich., assignor to Ankersen Resource Systems, Inc., Pontiac, Mich.
Filed Sept. 17, 1973, Ser. No. 397,829
Int. Cl. F23g *3/00*
U.S. Cl. 110—8 A **9 Claims**



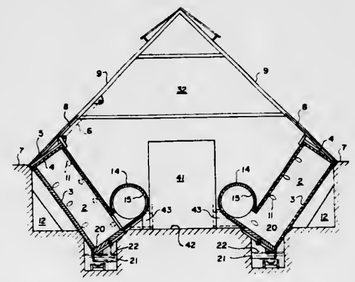
1. A waste disposal unit comprising an elongated generally horizontal reactor chamber, an exhaust stack connected to one end of said chamber, a plurality of openings into the top of said chamber, closure means on said openings selectively openable for charging said reactor, a multiplicity of tangential air injector nozzles at the bottom of said chamber for injecting high velocity air into said chamber and spaced fuel nozzle means in said chamber for introducing fluid fuel therein and means selectively operating said air and fuel nozzles to maintain a pilot combustion area at the end remote from the stack, an intermediate nonoxidizing pyrolysis area between the pilot combustion area and stack and a final combustion area adjacent the stack thereby providing a preselected atmosphere in selected segments of said chamber.

3,884,162
INCINERATOR PLANT FOR PRE-TREATED INDUSTRIAL WASTES
Ernst Schuster, Gummersbach, Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Germany
Filed Jan. 21, 1974, Ser. No. 435,090
Claims priority, application Germany, Jan. 23, 1973, 2303117; Dec. 17, 1973, 2362691; Dec. 17, 1973, 2362690; Dec. 17, 1973, 2362689
Int. Cl. F23g *7/00*
U.S. Cl. 110—8 R **4 Claims**

1. An incinerator plant for burning industrial wastes delivered in containers, which includes a pre-treating section comprising: discharging means for discharging waste containing containers and their contents, comminuting means for comminuting the waste contents of said containers, deep-freezing means adapted to receive and deep freeze wastes from said discharging and comminuting means; and a burning section which includes: a combustion device for receiving and burning the comminuted wastes, a post-burning device communicating with said combustion device for receiving therefrom wastes and further burning incompletely burned wastes, a flue gas cooling device following said post-burning device for receiving and cooling flue gas received from said post-burning device, a flue gas washing device following said flue gas cooling device for receiving flue gas from said flue gas cooling device and washing the thus obtained flue gas, and heating means with flue means for heating up the flue gas received from said flue gas washing device and releasing the washed flue gas through said flue means into the atmosphere.

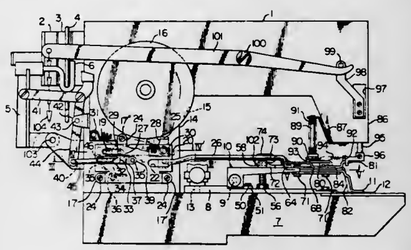


3,884,163
WASTE DISPOSAL AND ENERGY RECOVERY REACTOR APPARATUS AND METHOD
Borge Richard Ankersen, Pontiac, Mich., assignor to Ankersen Resource Systems, Inc., Pontiac, Mich.
Filed Sept. 17, 1973, Ser. No. 397,830
Int. Cl. F23g *5/12*
U.S. Cl. 110—10 **14 Claims**



1. A waste disposal unit comprising a plurality of generally vertical reactor chambers, connected at their bottom to a generally horizontal flue, a top opening in each chamber, closure means on said opening selectively openable for charging said reactors, a multiplicity of air injector nozzles adjacent the bottom of each said chamber for injecting high velocity air into each said chamber and spaced fuel nozzle means in each said chamber for introducing fluid fuel therein and means selectively operating said air and fuel nozzles to maintain first a drying atmosphere in said chamber until moisture is removed from waste charged into the chamber, then a high temperature, non-oxidizing atmosphere until the waste is substantially entirely pyrolized and then a high temperature tangentially non-oxidizing atmosphere to consume the pyrolized waste in said chamber.

3,884,164
CLOTH-PRESSER MECHANISM IN A SEWING MACHINE
Shirozi Nakamura, Tokyo, Japan, assignor to Tokyo Juki Kobyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 22, 1967, Ser. No. 662,495
Claims priority, application Japan, Sept. 10, 1966, 41-59715
Int. Cl. D05b *3/06*
U.S. Cl. 112—70 **1 Claim**

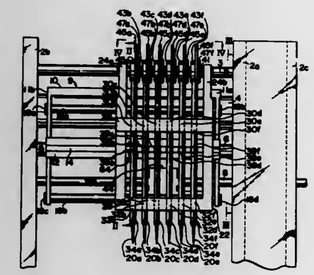


1. A work clamp mechanism for use in a sewing machine having a bed for bar stitching a button-hole at an end thereof, comprising:
a vibrating plate (**8**) positioned on the bed (**7**) of the sewing machine and adapted to vibrate as required for bar stitching;
a work holder (**10**) pivotally mounted on said vibrating plate (**8**) by a horizontally disposed pivot axis (**9**);
a pair of work clamps (**11, 11'**) having clamp portions at the ends thereof and base portions pivotally supported on said work holder (**10**), the clamp portions adapted to reciprocatively move and being symmetrically positioned with respect to a button hole slit line;
a cam plate (**70**) adapted to control the movement of said work clamps and movably mounted on said work holder for movement between a first position for opening said clamp portions, and a second position for closing said clamp portions;
a first release member (**74**) operatively positioned to normally anchor said cam plate (**70**) in its second position and to release the cam plate from its second position when said work holder pivots upwardly from said vibrating plate;
a first spring (**94**) operatively disposed to accumulate energy produced by the movement of said cam plate towards its second position and to cause said cam plate to shift from its second position to its first position by means of the accumulated energy, in connection with the release of said cam plate (**70**) by said first release-member (**74**);
a rotary cam (**16**) interlocked with a main drive shaft of the sewing machine;
a control member (**28**) disposed on a side of an arm (**1**) of the sewing machine and adapted to move forwardly in assoication with the rotation of said rotary cam (**16**) and to move rearwardly independently of said rotary cam;
a second release member (**34**) operatively positioned to anchor said control member (**28**) in its forward position and to release the anchored control member as the sewing machine is started;
a second spring (**31**) operatively disposed to accumulate energy due to the forward movement of said control member and to permit said control member (**28**) to move rearwardly due to the accumulated energy developed in connection with the release of said second release member (**34**); and
means (**26**) connecting said control member (**28**) to said cam plate (**70**) for moving said cam plate towards its second position in accordance with the rearward movement of said control member (**28**).

3,884,165
NEEDLE-BAR AND TAKE-UP LEVER SELECTION APPARATUS FOR EMBROIDERY MACHINE

Ikuo Tajima, No. 44-10 Chokyuji-machi, Higashi-ku, Nagoya, Japan

Filed Nov. 13, 1973, Ser. No. 415,401
Claims priority, application Japan, May 18, 1973, 48-54556; May 18, 1973, 48-54557
Int. Cl. D05c *3/04*
U.S. Cl. 112—83 **3 Claims**



1. In a multiple needle-bar and take-up lever embroidery machine supported by a support bar and frame stands,

an apparatus comprising:

a needle-bar case (22) positioned on a needle-bar case frame (9), comprising the following members;

a. a frame structure consisting of two vertical frames (24*a*, 24*b*) and two lateral frames (26, 28),

b. two pairs of projected arms (40*a*, 40*b*) (40*c*, 40*d*) through which lateral bars (16*a*, 16*b*) extend respectively, said projected arms being slidable in relation to said lateral bars respectively,

c. a plurality of projections series (36) of needle-bar clamps series (38) which are respectively attached to needle-bars series (34) which can slide upward and downward respectively through holes series (30) positioned in said lateral frame (26) and holes series (32) positioned in the lateral frame (28), said projection series being slidable within a groove (14) positioned in a central frame (12),

d. a needle-bar case slide bar (8) attached to a projection (44) by the media of a bracket (48) with a bolt (52) and fasteners (46*a*, 46*b*),

e. a plurality of needles series (20) attached to the needle-bar series (34);

a structure of take-up levers, comprising a take-up lever guide bar (41) which are arranged between two projection arms (39*a*, 39*b*) and which are extending through equally spaced take-up lever guides series (43) which comprises take-up lever gears series (47), take-up levers series (45) provided with projected portions series (49) which are slidable within either a lateral groove (51) or a groove (55) positioned in a base (56) respectively;

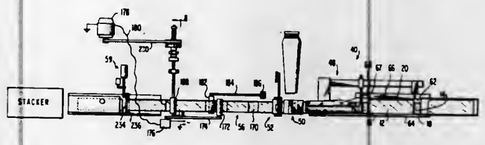
a motor and cam driving means, comprising a motor (88) having a motor gear (90) which starts operation in connection with electrical contact devices including microswitches series (82) and silver paper contacts series (86) positioned on a punched Jacquard card (84), the motor gear (90) being in mesh with a cam gear (92) mounted on a cam shaft (72), and a slide cam (76) which is also mounted on the cam shaft (72) and has a cam groove (74) within which a roller (80) of a cam driver (78) mounted on the needle-bar case slide bar (8) is slidably positioned;

a needle-bar driving means, comprising a needle-bar driver (54) extending through and in fixed relationship to a clamp (62) provided with a groove (60) and being arranged movable upward and downward through bushings (58*a*, 58*b*) by means of a needle-bar driver crank (68) in operation with the rotation of a needle-bar driver shaft (6), and a groove (64) positioned in the central frame (12) behind of which the needle-bar driver (54) is positioned with its groove (60) being in a position ready to be engaged with one of the projections series (36) of the needle-bar clamps series (38), whenever a preselected needle-bar is positioned at the groove (64); and a take-up lever driving means, comprising a take-up lever driving gear (53) through which a take-up lever driving shaft (3) extends and to which the shaft (3) is in a fixed relationship, the driving gear (53) not only being arranged to be engagable with one of the take-up lever gears series (47) which is selected by means of this invention but also being arranged to be rotatable with the rotation of said shaft (3), whereby one of the take-up levers series (45) attahced to one of the take-up lever guides series (43) being arranged to move upward and downward with one of the projected portions series (49) sliding within the groove (55).

3,884,166
METHOD FOR MAKING SHIRT CUFFS

Elwood Rinehimer, Wapwallopen; Donald M. Walters, Lehighton, and Kenneth L. Jarrett, Sr., Mertztown, all of Pa., assignors to Eagle Shirtmakers, Inc., Quakertown, Pa.

Filed May 7, 1973, Ser. No. 357,827
Int. Cl. D05b *19/00*
U.S. Cl. 112—121.29 **34 Claims**



1. A method of stitching fabric to an unbroken strip of material comprising, the steps of continuously feeding an unbroken strip of material to a continuously operating stitching head;

placing a plurality of pieces of precut fabric onto the continuous strip in spaced longitudinal relation with each other;

successively folding on edge of each piece of fabric around a side edge of the strip as said strip advances;

longitudinally stitching said pieces of fabric to the strip along said folded edge with the stitching head; and

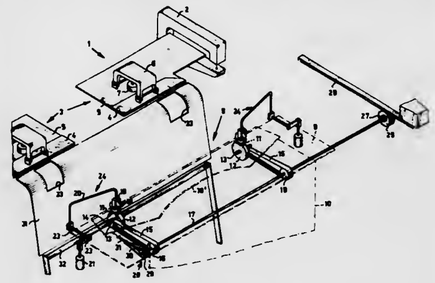
severing the strip along the space between the stitched fabric pieces.

3,884,167
DEVICE FOR FEEDING, REMOVING AND STACKING WORKPIECES

Horst Bernewasser, Steinhagen, and Hans Scholl, Lipperreihe, both of Germany, assignors to Kochs Adler AG, Bielefield, Germany

Filed Nov. 28, 1973, Ser. No. 419,690
Claims priority, application Germany, Nov. 29, 1972, 2258430
Int. Cl.² D05B *33/00*
U.S. Cl. 112—121.29 **4 Claims**

1. In combination with a sewing device having a sewing machine and workpiece clamping means, means for feeding flexible workpieces into said workpiece clamping means and removing the same after sewing, comprising a workpiece supporting plate means for moving said workpiece support plate in the direction to and from said workpiece supporting plate, said swingable holding means for clamping a workpiece during moving to said workpiece clamping means and releasing and displacing of said workpiece from said workpiece support plate during the removing of the same in an opposite direction, and stacking means including an oscilatable stacking rod for stacking means for oscillating said stacking rod in timed relationship to the releasing of said workpiece clamping means and said workpiece holding means, and said workpiece wherein said workpiece supporting plate is provided with recesses and said workpiece holding means comprises feed rollers pivoted below said workpiece supporting plate and penetrating said recesses, rotary pressure rollers arranged

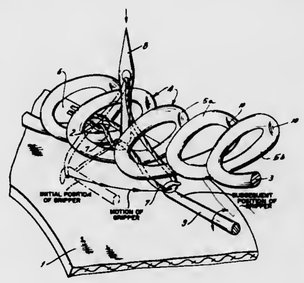


above said workpiece holding means and cooperating with said feed rollers, lifting and pressing means attached to said workpiece supporting plate for pressing said rotary presser roller against said feed rollers, and driving means for said feed rollers, said feed rollers being non-rotatable when moving said workpiece supporting plate in a direction to said workpiece clamping means of said sewing device and being rotatable when moved in a contrary direction.

3,884,168
METHOD OF MAKING SLIDE-FASTENER HALVES

Helmut Helmberger, Grenzach, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

Filed July 23, 1973, Ser. No. 381,441
Claims priority, application Germany, July 21, 1972, 2235828
Int. Cl. A44b *19/12, 19/34*
U.S. Cl. 112—265 **4 Claims**



1. A method of making a slide-fastener stringer half comprising the steps of:

a. feeding a support tape and a continuous synthetic-resin monofilament preformed with a succession of turns each having a pair of shanks joined together at a coupling head to a sewing station so that shanks of successive turns come to lie on said tape;

b. passing a first thread loop through said tape between a pair of shanks of successive turns at said sewing station;

c. drawing said loop over one of the latter shanks;

d. thereafter swinging said loop laterally under a shank of the next turn between said shank of the next turn and said tape;

e. passing a second loop of thread through said tape between said one of said shanks and said next shank and through the first loop;

f. passing said second loop over said next shank and thereafter swinging said second loop laterally and under a third shank of a further turn; and

g. repeating steps (b) - (f) for the succeeding turns of said filament while advancing same and said tape through said station.

3,884,169
MARGINAL ZONE REINFORCING SYSTEM FOR THE PRODUCTION OF HEAVY DUTY FOAM RESIN CONSTRUCTIONS

Peter Hoppe, Troisdorf; Gustav Drouven, Bensberg; Helmut Leyer, Opladen, and Johann Müller, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed July 13, 1972, Ser. No. 271,222
Claims priority, application Germany, July 13, 1971, 21348538
Int. Cl. B32b *7/08;* **B29d** *3/02*
U.S. Cl. 112—420 **9 Claims**



1. In a construction comprising a foam layer having an outer skin and a marginal zone reinforcing system bonded to the foam layer and disposed inwardly of said outer skin; the improvement which comprises, as the reinforcing system, a single multi-layer carpet consisting of

a. a layer consisting of at least one material selected from the group consisting of mats and webs, positioned adjacent said outer skin;

b. a layer consisting of a fiber fleece of fine fibers, positioned adjacent layer (a); and

c. a layer consisting of a fiber fleece of coarse fibers positioned adjacent layer (b) and said foam core;

said layers (a), (b), and (c) being secured together by threads, the density of said layers (a), (b), and (c) decreasing from layer (a) to layer (b) to layer (c) of said carpet whereby improved strength characteristics are imparted to said construction.

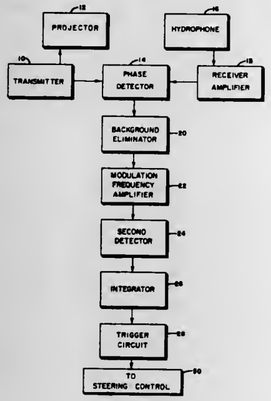
3,884,170
CONTROL SYSTEM FOR TORPEDOES

Harvey M. Jensen, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 26, 1960, Ser. No. 11,384
Int. Cl. F42b *19/10, 19/01, 19/06*
U.S. Cl. 114—20 R **6 Claims**

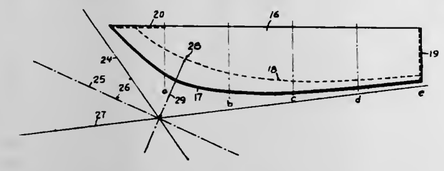
1. In a detection system, the combination comprising: transmitter means capable of driving a projector with a continuous-acoustic signal, receiver means adapted to receive said signal transmitted by said transmitter; phase detection means capable of detecting the phase difference between said continuous

transmitted signal and said received signal, and trigger means adapted to respond to phase differences produced by the



characteristics of medium between said transmitter means and said receiver means.

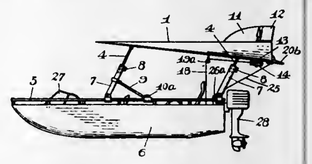
3,884,171
BOAT HULL WITH A BOTTOM OF A PORTION OF THE SURFACE OF A HYPERBOLOID
John P. Kline, P.O. Box 100, East Hampton, N.Y. 11937
Filed June 1, 1973, Ser. No. 365,828
Int. Cl. B63b *1/04*
U.S. Cl. 114—62 **22 Claims**



1. A boat hull comprising at least a bow, spaced sides, a bottom secured at least to the sides, a transom, and a keel line extending longitudinally and centrally of the bottom; each side having a bottom edge forming chines which are parallel or essentially parallel to each other, the bottom extending between the chines and between the bow and the transom, the bottom for at least a substantial portion of the length thereof from the bow being a double ruled surface having a gorge or saddle with a dimension and an axis, the double ruled surface being of crossed straight lines having a control angle between about 20 to 60 degrees, the chines being spaced apart a distance within the dimension of the gorge or saddle, and the axis of the gorge or saddle being located at or forwardly of the longitudinal center of the hull, and each chine and the keel line being a bola curve for the length of the double ruled surface.

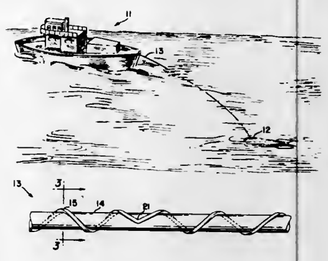
3,884,172
HYDROPLANE BOAT
Kenryu Takahashi, 3-go, 22-ban, 1-chome, Higashitateishi, Tokyo, Japan
Filed Jan. 2, 1974, Ser. No. 429,592
Int. Cl. B63b *1/18*
U.S. Cl. 114—66.5 R **4 Claims**

1. An improved hydroplane boat comprising a triangular swelling plane above the hull, the plane sloping gently first upwardly from a center chord, symmetrically to a right and left span, and then downwardly at each span, and said plane having an apex angle directed toward the bow of the boat, a center rod being situated along the center chord beneath the plane, two branch rods projecting from the center rod, a handrail mounted on a qunwale, four rods connected with the branch rods and the handrail to slide therealong and be set at



a predetermined location, a fin mounted upright on the rear center of the plane, an auxiliary rudder pivotally joined to the fin, ailerons pivotally joined to the rear side of the plane, a control lever operatively connecting with the auxiliary rudder, and footpedals on a hull-bottom operatively connecting with the ailerons.

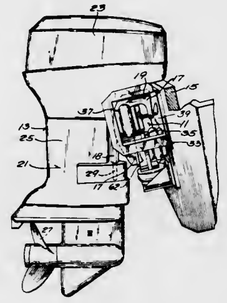
3,884,173
SUPPRESSION OF CABLE STRUMMING VIBRATION BY A RIDGED CABLE JACKET
Andrew G. Fabula, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 12, 1974, Ser. No. 487,832
Int. Cl. B63b *21/56;* **H01b** *7/04;* **H02g** *7/14*
U.S. Cl. 114—235 F **20 Claims**



1. In an oceanographic system for deployment in an ocean environment which includes:
a surface station for operation at the surface of the ocean environment,
winch means mounted on said surface station,
an oceanographic transducer configured for remote location with respect to said surface station and for towing beneath the surface of said ocean environment,
the improvement comprising:
a flexible, antistrumming, oceanographic cable connected between said winch means and said oceanographic transducer for controlling the relative position therebetween, said flexible antistrumming, oceanographic cable including;
a central, strain-carrying means for transmission of tensional loads along the longitudinal axis of said flexible, antistrumming, oceanographic cable,
an essentially smooth, external covering means surrounding said central strain-carrying means and effectively joined thereto for protecting said central strain-carrying means and for facilitating reeving and handling of the oceanographic cable by said winch means, and
a spoiler means effectively attached to said essentially smooth, external covering means and extending radially outward therefrom between 15 and 35 percent of the diameter of the oceanographic cable and spirally

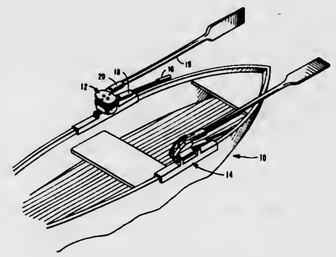
disposed with a pitch which reverses itself in direction at predetermined intervals along the length thereof for modifying the cross-flow of fluids about the external surface of said flexible, antistrumming oceanographic cable.

3,884,174
MARINE NOISE AND VIBRATION ISOLATION SYSTEM
Robert T. Larsen, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Aug. 15, 1973, Ser. No. 388,374
Int. Cl. B63h *21/26, 21/30*
U.S. Cl. 115—17 **19 Claims**



1. An outboard motor mounting arrangement comprising a mounting bracket adapted to be secured to the transom of a boat and including a lower surface and an upper surface located in rearwardly spaced relation from and above said lower surface, an intermediate bracket located between said upper and lower surfaces of said mounting bracket and including an upper surface located in spaced facing relation to said upper surface of said mounting bracket and a lower surface in spaced facing relation to said lower surface of said mounting bracket, first and second discrete and laterally spaced noise and vibration isolating means extending between said spaced upper surfaces, and a third discrete noise and vibration isolating means extending between said spaced lower surfaces.

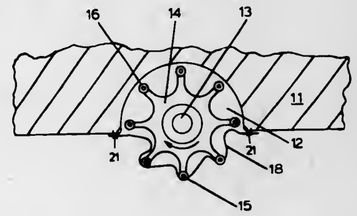
3,884,175
OAR REVERSING DEVICE
George D. Bellis, 2431 E. Taft, Orange, Calif. 92665
Filed May 31, 1973, Ser. No. 365,770
Int. Cl. B63h *16/00*
U.S. Cl. 115—24.3 **7 Claims**



1. A novel oar reversing arrangement comprising:
a handle portion,
a paddle portion,
an oar reversing device connecting said portions and including a housing and a pair of meshing gears received in said housing which are in a different plane from the movement of said portions, one portion and one gear rigidly fixed to one another for rotating about a first stationary common shaft, the end of said portion and said gear being superposed along the axis of said first stationary common shaft and the shaft passing through said end of said portion and said gear, and the other portion and other gear rotate rigidly fixed to one another for rotating axially about a second stationary common shaft, the end of said other portion and said other gear being superposed along the axis of said second stationary common shaft and said second shaft passing through said end of said other portion and said other gear, said pair of gears being essentially enclosed in said housing to prevent contact thereby by exterior objects, and a pair of rigid, spaced-apart posts which maintain the distance between the plane of the gears and the plane of movement of said portions.

7. A novel oar lock assembly comprising: an oar reversing arrangement having an underside, said arrangement including a pair of meshing gears, a channel member having a top side, and lengthwise sides, a length of the gunwhale of a boat being adapted to be snuggly and slidably received within said channel member between said lengthwise sides,
fixed and rigid means on the underside of said oar reversing arrangement and complementary fixed and rigid means on the top of said channel member,
said means rigidly attached to the underside of said oar reversing arrangement comprising two projections having key-shaped slots, and the complementary means rigidly attached to the top of said channel member comprises a cross-bar having flattened sides and held by two uprights at each of its ends, said cross-bar being slidable into and out of said projections when said oar reversing arrangement is rotated to the said channel member but not otherwise, whereby said means may be interlocked by the relative rotation of the oar reversing arrangement around an axis represented by the lengthwise dimension of the channel member so that the two fixed and rigid means may be separated when the oar reversing arrangement mechanism including said pair of gears is rotated to the side of the channel member, but said two means are interlocked when said oar reversing arrangement mechanism is rotated to a position above said channel member.

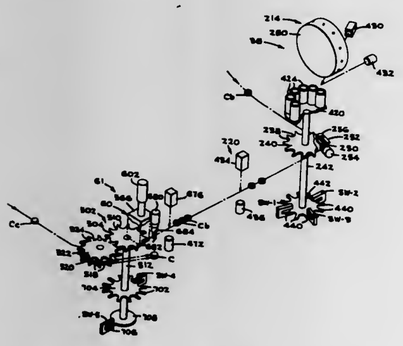
3,884,176
PROPULSIVE FORCE GENERATING MEANS FOR MARINE VEHICLES
Lavis Albert Henry Riddle, East Cowes, England, assignor to British Hovercraft Corporation Limited, Yeovil, England
Filed June 25, 1974, Ser. No. 483,079
Claims priority, application United Kingdom, June 25, 1973, 30017/73
Int. Cl. B63h *1/04*
U.S. Cl. 115—49 **5 Claims**



1. In or for a marine vehicle, propulsive force generating means including a plurality of longitudinally extending parallel rollers evenly spaced from and around a common axis and in operation of the device being arranged to rotate around the common axis so as to prescribe a path of movement which is partly within a space formed in the underside of a vehicle to which the device is attached, a sheet of flexible impermeable

material arranged for attachment on the underside of the vehicle so as to extend across the space and having a longer length between lines of attachment on the underside of the vehicle than the length of that part of the path of movement of the rollers which is external of the space in the underside of the vehicle, and means arranged for co-operation with each end of the device and with the vehicle for preventing entry of water to the interior of the device.

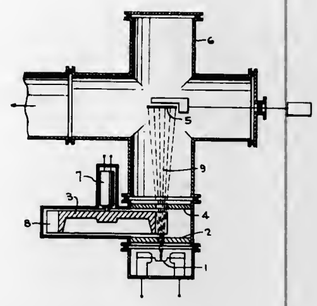
3,884,177
CAPSULE ASSEMBLY MACHINE
Edwin H. Brink, 1748 Marlyn Way, San Jose, Calif. 95125, and Robert K. Houston, 3396 Mauricia Ave., Santa Clara, Calif. 95051
Division of Ser. No. 244,484, April 17, 1972, Pat. No. 3,797,195. This application Nov. 5, 1973, Ser. No. 413,088
Int. Cl. B05c *11/00*
U.S. Cl. 118—2 **5 Claims**



1. Apparatus for applying adhesive to capsule discs comprising a conveyor for a row of the discs, a rotating star wheel having pockets for receiving the discs from said row, an adhesive dispenser above one of said star wheel pockets and timed to deposit adhesive on each underlying disc, a movable stop positioned at said conveyor for leaving a predetermined number of the discs between the stop and said adhesive dispenser, a capsule disc detector just upstream of said stop, and control means connected between said detector and said adhesive dispenser, said control means including count-producing means activated when said disc detector determines that an empty space rather than a disc is positioned just upstream of said stop, the activated count-producing means then counting off said predetermined number of discs between said stop and said dispenser position, said control means interposing said stop when no capsule disc is present just upstream of said stop, said control means thereafter interrupting dispenser operation after said predetermined number of capsule discs between said stop and said dispenser have been advanced under the dispenser.

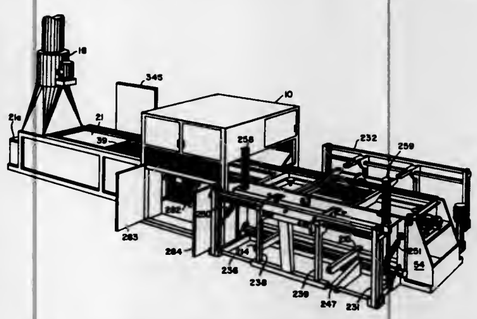
3,884,178
APPARATUS FOR THERMAL VAPOR COATING AN ARTICLE
Herwig Reinholder Horn, and Adolf Florian Aldrian, both of Steyrergasse 17, Graz, Austria
Filed Nov. 19, 1973, Ser. No. 417,408
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 **4 Claims**

1. Apparatus for thermal vapor coating an article, comprising:
- a vaporization source for generating jets of steam including the coating substance;
- a vacuum chamber for mounting said article; and
- means mounted between said vacuum chamber and said source for directing said vapor to said article, said means including a rotating disc having a number of channels along its periphery, said channels being inclined with respect to the longitudinal axis of said disc and said disc



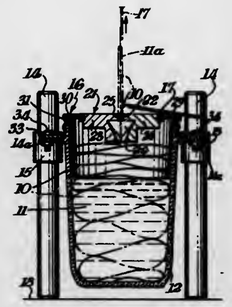
being mounted to rotate so that said channels are positioned in the jet stream between said source and said article and inclined at an angle to block the direct path of said jet stream from said source to said article.

3,884,179
AUTOMATIC SPRAY-PAINTING MACHINE
Harry Szczepanski, 960 Clancy, N.E., Grand Rapids, Mich. 49503
Division of Ser. No. 79,012, Oct. 8, 1970, Pat. No. 3,716,022. This application Feb. 7, 1973, Ser. No. 330,198
Int. Cl. B05c *5/00, 11/16*
U.S. Cl. 118—70 **3 Claims**



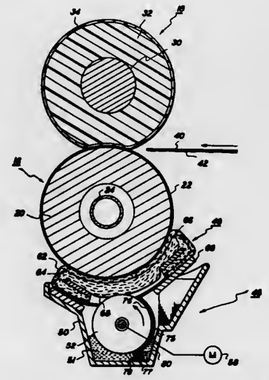
1. A spray-painting machine including a housing structure, ventilation means adapted to induce a flow of air through said housing, and spray means mounted to project spray within said housing, said housing having at least one side opening into the space normally containing spray from said spray means, wherein the improvement comprises:
- conveyor means traversing said side opening, and extending to a position laterally displaced from said side opening;
- work-supporting means engageable and disengageable from said conveyor means;
- transfer means, said transfer means being operative to transfer said work-supporting means selectively in opposite directions to and from said conveyor means in a direction transverse thereto; and
- solvent washing means disposed below said conveyor means, and also including elevator means operative to raise and lower said work-supporting means from said transfer means, said transfer means additionally including a lower portion adapted to move said work-supporting means to and from said solvent washing means.

3,884,180
COATING APPARATUS
Ford H. McBerty, R.D. 3, Box 243, Oxford, Pa. 19363
Filed Oct. 16, 1972, Ser. No. 297,669
Int. Cl. B05c *11/02*
U.S. Cl. 118—122 **5 Claims**



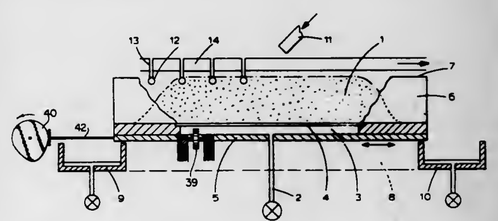
1. A device for use in coating a liquid material on a film or tape which device comprises a container for said liquid; disposed within the upper section of said container and above the level of any liquid therein a means for temporarily accumulating any liquid as it is being passed through said means, said means having a configuration and depth defined by at least two coacting plates spaced apart and forming two orifices in conduit relationship with each other, one orifice being an outlet from said device for said film or tape and liquid thereon and the other orifice being adapted to receive liquid and said film and tape first but having a slot width larger than that of said outlet orifice, the differential in said orifice sizes thereby effecting said accumulation and effecting turbulence of the accumulated liquid to thereby enhance said coating; and in combination with said device, an invertible support for said container affording inversion of said container.

3,884,181
CAPILLARY BAFFLE-CONSTANT OIL HEIGHT INDEPENDENT OF OIL LEVEL
Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 26, 1973, Ser. No. 427,750
Int. Cl. B05c *11/105*
U.S. Cl. 118—261 **8 Claims**



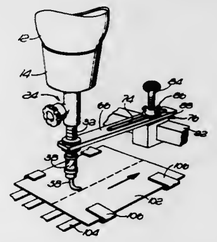
1. Apparatus for fusing toner images to a substrate by heat and pressure, said apparatus comprising:
- a heated fuser member for softening said toner images;
- a backup member forming a nip with said heated member through which said substrate moves with said toner images contacting said heated fuser member;
- a sump containing a quantity of offset-preventing liquid;
- means contacting said heated fuser member for metering a thin coating of offset-preventing liquid thereto;
- applicator means adapted to contact said offset-preventing liquid and conveying it to said means contacting said heated fuser member; and
- means for conveying offset-preventing liquid from said sump to the surface of said applicator means at points remote from said sump of offset-preventing liquid, said conveying means comprising means cooperating with said applicator means to form a capillary therewith, said liquid being conveyed to said applicator at points intermediate said means contacting said fuser member and said sump, said conveying means being impervious to said offset preventing liquid.

3,884,182
FLUIDISED BED APPARATUS
Peter Charles Jones, 66 Pinewood Ave., Weybridge, England
Filed June 7, 1974, Ser. No. 477,349
Claims priority, application United Kingdom, Apr. 23, 1974, 17668/74
Int. Cl. B05c *7/14*
U.S. Cl. 118—308 **11 Claims**



1. An apparatus for forming a fluidised bed, which comprises a base arranged to receive powder; a filter extending across part of the base but not across at least two base portions at opposite ends of the base, thereby to define a plenum chamber; a gas inlet leading into the plenum chamber; and means for supplying powder on to the base whereby a fluidised bed is formed over the filter and unfluidised powder accumulates above the said at least two base portions thereby to retain the fluidised powder against movement out of the fluidised bed.

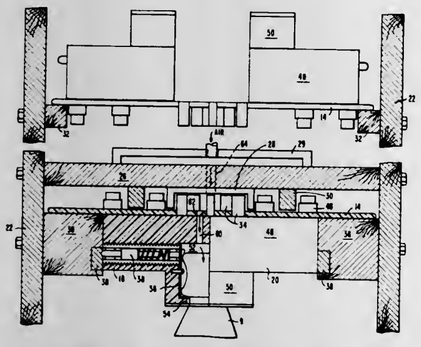
3,884,183
LIQUID DISPENSING SYSTEM
Ralph D. Sprung, Jr., 707 N. Coolan Ave., West Covina, Calif. 91790
Filed Nov. 26, 1973, Ser. No. 419,016
Int. Cl. B05c *11/02*
U.S. Cl. 118—324 **4 Claims**



1. A liquid dispensing system for depsoiting liquid along the line of a paper transported by a conveyor means for subsequent ease in folding said paper along said line comprising:

conduit means having an outlet orifice positioned adjacent and spaced from said paper for depositing a fine line of said liquid on said paper;
a liquid reservoir for holding a supply of said liquid;
valve means for controlling the flow of said liquid to said outlet orifice;
means for adjusting the vertical and longitudinal position of said orifice with respect to said paper, wherein said conduit is secured to a mounting bracket said bracket being fixed to a mounting member, said mounting member supporting said longitudinal adjusting means and said bracket supporting said vertical adjusting means.

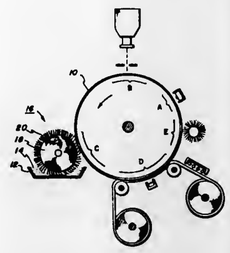
3,884,184
GLASSWARE TRANSFER AND COATING APPARATUS
Roy S. Arrandale, Elmira; James H. Cady, Horseheads, and Leroy C. Hartman, Elmira, all of N.Y., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed July 24, 1972, Ser. No. 274,705
Int. Cl. B05b *5/02*
U.S. Cl. 118—630 **12 Claims**



1. A high-speed conveyor and chucking arrangement adapted to releasably hold and transfer articles from a first to a second location and comprising:
a movably mounted conveyor flight extending between said first and second locations and including a plurality of interconnected links;
a plurality of spaced-apart chuck assemblies positioned along said conveyor flight for movement therewith,
each said assembly including a pair of mating elements mounted on selected ones of said links;
said mating elements defining therebetween a cavity adapted to receive and grasp a said article;
each of said elements being mounted for movement relative to said selected one of the links for article engagement and disengagement;
means to effect said movement; and
means, including channel means within each said chuck assembly, to fluid purge each said cavity during article transfer.

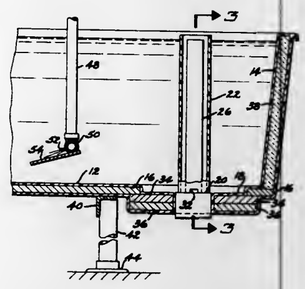
3,884,185
COATED WIRE DEVELOPER BRUSH
Alan J. Liebman, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Sept. 6, 1973, Ser. No. 394,951
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **10 Claims**

1. A developer brush for applying toner particles to electrostatic latent images carried by a photoconductively coated member of an electrostatic processor, said brush comprising: a support member, and a plurality of conductive flexible metal threads extending outwardly from said support member to form bristles; each of said threads having a coating of insulating material extending along its length to at least the outer tip thereof; said insulating material being triboelectrically displaced from said toner particles, whereby toner particles tend



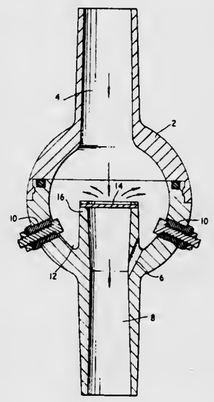
to be attracted to and held on said bristles by a triboelectric charging process; and means for connecting said threads to a source of electrical potential, thereby enabling said bristles to function as development electrodes.

3,884,186
TANK, FILTER AND DEPROTEINATOR FOR MARINE LIFE
William P. Hickey, 7585 Nottingham Dr., Lambertville, Mich. 48144
Continuation of Ser. No. 162,855, July 15, 1971, Pat. No. 3,760,767. This application May 18, 1973, Ser. No. 361,470
Int. Cl. A01k *63/00*
U.S. Cl. 119—3 **7 Claims**



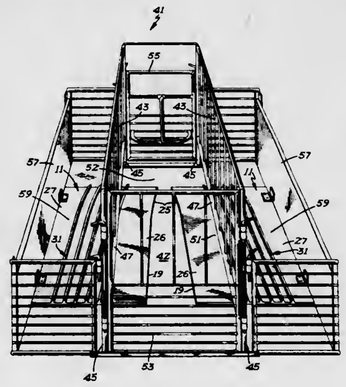
1. A tank having an internal water recirulation path that is uninterrupted by walls, and which path fish can traverse continuously, said tank at the same time providing for continuous water purification and comprising: a generally flat bottom and a generally cylindrical side wall; said side walls being slightly conically tapered with the small diameter portion being adjacent the bottom, said bottom being stiffened with plywood, and the bottom and side walls having a smooth inside layer of glass fiber reinforced plastic; a sump in said bottom adjacent said generally cylindrical side wall, a conduit means for taking suction on the water in said tank and having an inlet positioned in said tank spaced circumferentially to one side of said sump and adjacent said bottom; said conduit means being constructed and arranged to have an inlet facing said sump to induce a circulatory flow of water over said sump but permitting the main recirculation path in said tank to pass thereby; and means introducing a layer of water into said tank in the direction of said recirculation path for adding energy to said recirculation path to keep the water in said tank recirculating; said means including structure for spreading said water into a layer having sufficient cross section that its velocity when united with said recirculation path does not produce turbulence which holds fesces suspended off of said bottom.

3,884,187
MASTITIS DETECTOR
Kenneth Herbert Massie, and Gordon Alfred Chalton, both of Bromborough, England, assignors to Chalton Electronic Services Limited, Flintshires, North Wales, Great Britain
Filed Sept. 21, 1973, Ser. No. 399,613
Int. Cl. A01j *7/00*
U.S. Cl. 119—14.14 **17 Claims**



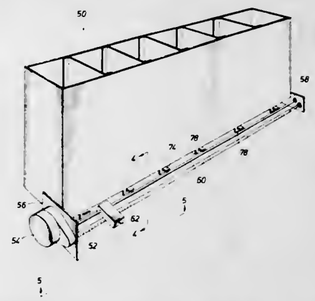
1. Milk conductivity indicating apparatus comprising a conductivity cell having two electrodes between which the milk is adapted to be passed during milking, means for supplying electric current to said cell, said current being attenuated in said cell to a greater or lesser extent according to the lesser or greater conductivity of the milk between said electrodes, trigger means responsive to the attenuation of said current so as to fire when the milk conductivity exceeds a predetermined value, indicating means for indicating response of said trigger means, and a curcuit for preventing activation of the trigger means in response to signals indicative of the conductivity of the fore milk passing through the cell.

3,884,188
PIGLET KNEE PROTECTOR
David J. Arends, R.R. No. 3, Luverne, Minn. 56156
Filed Mar. 17, 1972, Ser. No. 235,499
Int. Cl. A01k *1/02*
U.S. Cl. 119—20 **4 Claims**



1. In a farrowing crate having a sow containing portion, a piglet containing portion on a side of said sow containing portion, and an open space between said piglet containing portion and said sow containing portion for piglets to reach the udder of a sow, an improved floor for said farrowing crate, comprising:
a. a first portion having a smooth surface located primarily within said sow containing portion of said farrowing crate, said portion having a predetermined length sufficient to extend longitudinally along the udder of said sow and extending transversely a predetermined distance;
b. a second portion having a rough surface located primarily within said piglet containing portion, said second portion extending longitudinally along said first portion and extending transversely a predetermined distance; and
c. said second portion extending transversely a predetermined distance for allowing piglets to brace their hind feet thereon and said first portion extending transversely a predetermined distance such that when said piglets have braced their hind feet on said second portion, said piglet's front knees will slip upon said smooth surface of said first portion when said piglets are nursing.

3,884,189
MULTIPLE COMPARTMENT ANIMAL FEEDER
Arthur P. Ruth, P.O. Box 11037, Houston, Tex.
Filed July 13, 1973, Ser. No. 378,955
Int. Cl. A01k *05/02*
U.S. Cl. 119—51.13 **8 Claims**

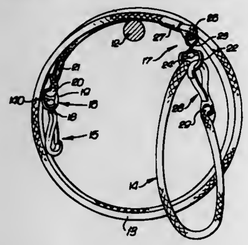


1. An animal feeder having a multiplicity of compartments for dispensing animal feed to an animal over a series of timed intervals which comprises:
a storage container divided into at least two compartments by partitions, said storage container being adapted to receive and store food placed therein and further including a hinged door at the bottom of each compartment;
latch means for holding the door at each compartment in a closed position;
a lead screw operatively arranged adjacent to said storage container;
a travelling nut threadedly engaged with said lead screw;
a projecting means associated with each door and operatively arranged relative to said latch means for opening said door; and,
motive means for operating said lead screw.

3,884,190
RESILIENTLY EXTENSIBLE, COILED LEASH
Richard B. Gurrey, Long Beach, Calif., assignor to Richard B. Gurrey and Hartley B. Gurrey, both of Palm Desert, Calif.
Filed Mar. 25, 1974, Ser. No. 454,404
Int. Cl. A01k *27/00*
U.S. Cl. 119—109 **7 Claims**

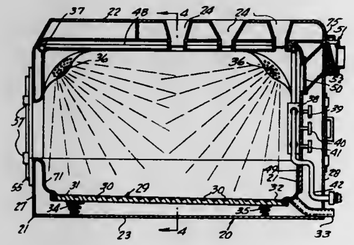
1. In an extensible leash assembly,
a. a metallic wire which normally in untensioned state and throughout its length forms side-by-side coils at least about 5 inches in diameter, the wire also having an uncoiled, extended state when subjected to tensioning force application, the leash in fully extended state being less than about 60 inches in length,

b. a sheath on the wire and characterized as sufficiently flexible so as not to inhibit formation of said coils, and



c. a handle at one end of the leash, and a catch at the opposite end of the leash, a swivel connection between said catch and the wire at said opposite end of the leash, and another swivel connection between said handle and the wire at said one end of the leash.

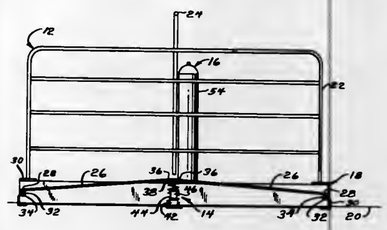
3,884,191
ANIMAL BATHING AND DRYING APPARATUS
Pansy M. Stout, 206 Christine Dr., Sacramento, Calif. 95815
Filed Feb. 21, 1974, Ser. No. 444,369
Int. Cl. A01k *13/00*
U.S. Cl. 119—158 **3 Claims**



1. In an animal bathing and drying apparatus, an outer housing including a top section, a horizontally disposed bottom wall and spaced parallel vertically disposed side walls, an inclined floor in the bottom of said housing, a drain pipe connected to the lower rear portion of the housing, spray heads in the upper corners of said housing, pipes connected to said spray heads, a control box having said pipes connected thereto, means for selectively delivering water and drying air to said spray heads, an access door in one side of the housing and said access door having a window therein, animal restraining means for said animal bath, access openings in the top section of the housing, an anti-slip surface on said floor, flexible sealing stripping operatively connected to said floor, large springs interposed between the front portion of the floor and the bottom of the housing, and smaller springs interposed between the rear of the floor and the bottom of the housing whereby the weight of the animal being washed and dried will cause said floor to slope to drain water therefrom.

3,884,192
ANIMAL-OPERATED SPRAYER
Frank Knapp, Rt. 3, Mineral Point, Wis. 53565
Filed Oct. 15, 1973, Ser. No. 406,550
Int. Cl. A01k *29/00*
U.S. Cl. 119—159 **4 Claims**

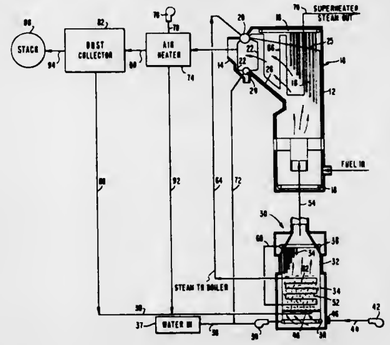
1. An automatic animal sprayer comprising a frame having a pair of longitudinal sides in spaced relation which define a passageway therebetween having entrances at its opposite ends through either of which animals such as cattle may optionally enter and exit, first and second platforms disposed at ground level between said sides of the frame in end to end relation over which the entering animals walk to exit through the opposite entrance, each said platforms having their outer end pivotally connected to said frame adjacent a respective one of said entrances so as to be at proximate ground level, resilient means supporting the adjacent inner ends of said platforms for limited conjoint vertical movement of the platforms on the pivotal connections of their outer ends such that the platforms remain nearly horizontal in both their raised and lowered positions to facilitate the animals easily entering and exiting on walking through the passageway, spray nozzle means mounted on said frame above said platforms and directed to spray fluid on an animal in said passageway, a tank for containing fluid to be sprayed and a pump for dispensing of fluid from said tank to the spray nozzle means, said pump including an operating piston and a receiving cylinder positioned below said adjacent inner ends of the platforms, the cylinder having an inlet communicating with said tank and an outlet communicating through fluid lines to the spray nozzle means, the operating piston being supportingly engaged with the inner ends of said platforms such that the pump will dispense fluid through the fluid lines to the spray nozzle means in response to lowering of said platforms under the weight of an animal walking across the platforms, first check valve means at the intake of the cylinder which permit fluid to flow only from the tank to the pump cylinder, and further check valve means at said spray nozzle means and at the pump cylinder outlet which permits fluid to flow in a direction only away from the pump cylinder to the spray nozzle means such that the fluid lines remain fluid-loaded and the spray nozzle means are immediately responsive to operation of the pump with lowering of either platform under the weight of an animal entering the sprayer.



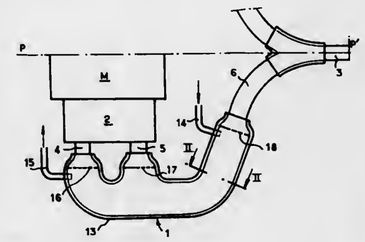
3,884,193
VAPOR GENERATING SYSTEM AND METHOD
Richard W. Bryers, Cranford, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Mar. 22, 1974, Ser. No. 453,899
Int. Cl. F22b *33/00*
U.S. Cl. 122—4 D **12 Claims**

1. A vapor generating system comprising a primary boiler including a furnace, tube means for containing a heat exchange fluid and for selectively exposing said fluid to the heat from said furnace, and collection means for collecting the heated fluid from said tube means; means for continuously combusting a fluidized bed of fuel of a lower grade than that used in said furnace; additional tube means for containing a heat exchange fluid and for exposing said fluid to the heat from said bed; means for connecting said additional tube means to said collection means for transferring the heated fluid from said additional tube means to said collecting means; means for passing the combustion gases from said fluidized bed into said furnace where they combine with the combustion gases from said furnace, whereby heat recovery is provided from the fluidized bed combustion gases directly to the primary boiler; means for separating the solid particles from the combustion gases leaving said primary boiler; and means for passing said particles into said fluidized bed.

5. A method for generating vapor comprising the steps of passing a heat exchange fluid through a plurality of tubes in a heat exchange relation to a furnace, collecting the heated fluid from said tubes in a drum, continuously combusting a fluidized bed of fuel of a lower grade than that used in said furnace, passing heat exchange fluid through additional tubes in a heat exchange relation to said fluidized bed; transferring the heated fluid from said additional tubes to said drum; passing the combustion gases from said fluidized bed into said furnace where they combine with the combustion gases from said furnace; separating the solid particles from the combustion gases leaving said furnace; and passing said particles into said fluidized bed.

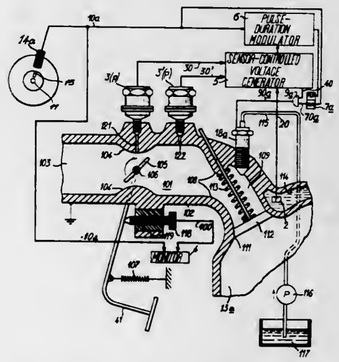


3,884,194
RECOVERY OF THERMAL ENERGY FROM THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE
Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Dec. 17, 1973, Ser. No. 425,223
Claims priority, application France, Dec. 27, 1972, 72.47130
Int. Cl. F22b *1/18*
U.S. Cl. 122—7 R **7 Claims**



1. A steam generator operated by exhaust gases of an internal combustion engine, said generator comprising,
an exhaust pipe arranged to receive exhaust gases from an internal combustion engine, and
a vapourising duct located within the exhaust pipe, said vapourising duct being arranged to receive fluid to be heated, said vapourising duct having a wall which defines a heat exchange surface between the exhaust gases and the fluid, the exhaust pipe and the vapourising duct each being defined by two half-shells, the half-shells of the exhaust pipe, and the half-shells of the vapourising duct having a coincident joint surface, each said half-shell comprising,
parallel flanges, said flanges permitting alignment and assembly of the generator by welding, and
wherein at right angles to the joint surface of the half-shells, the vapourising duct has a small mean thickness with respect to its size in a direction parallel to the joint surface and in a plane at right angles to the direction of flow of the exhaust gases, and
wherein the vapourising duct has the shape of a flattened tube, the flat surfaces of which are parallel to the joint surface and said flat surfaces extending substantially throughout the width of the exhaust pipe.

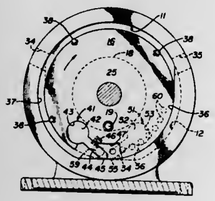
3,884,195
ELECTRONIC CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE
Fernand R. C. Murtin, and Loic Mercier, both of Paris, France, assignors to Societe Industrielle d'Electronique et d'Informatique, Paris, France
Continuation-in-part of Ser. No. 7,781, Feb. 2, 1970, abandoned. This application Mar. 16, 1972, Ser. No. 235,289
Claims priority, application France, Jan. 31, 1969, 69.02057; Feb. 12, 1969, 69.03225; Mar. 7, 1969, 69.06443
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **11 Claims**



1. A fuel-injection-control system for an internal-combustion engine having a plurality of piston cylinders provided with intakes for combustion air, respective fuel injectors feeding said cylinders, and a shaft driven by the thrust of an exploding air-fuel mixture ignited in each cylinder, comprising:
electric actuating means for each of said fuel injectors;
a generator of synchronizing pulses having a cadence proportional to engine speed;
electric sensing means in said engine responsive to different combustion-determining parameters, said sensing means including a first pressure gauge positioned at a constriction of a common intake manifold for said cylinders, a second pressure gauge positioned at a location in said manifold downstream of said constriction, and a temperature-responsive resistor in close proximity to at least one of said cylinders;
voltage-generating means connected to said generator and to said sensing means for synthesizing from their outputs an analog voltage as a function of said parameters and said engine speed; and
timing means controlled by said voltage-generating means for energizing said actuating means for a recurrent period proportional to said analog voltage, said timing means including an analog/digital converter and electronic switch means responsive to binary output signals from said converter, said switch means being connected to said generator for establishing recurrent operating cycles for said injectors under the control of said synchronizing pulses;

said voltage-generating means comprising a first operational amplifier having an input circuit including said first pressure gauge, a second operational amplifier in cascade with said first amplifier having an input circuit including said second pressure gauge, and a third operational amplifier in cascade with said second amplifier having an input circuit including said temperature-responsive resistor.

3,884,196
ROTARY ENGINE
Theodore Grob, 1549 Ulao Rd., Grafton, Wis. 53024, and Donald H. Tesker, 272 Shady Lane Rd., Saukville, Wis. 53080
Filed May 25, 1973, Ser. No. 364,020
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.41 **7 Claims**



1. An internal combustion engine of the rotary type comprising

axially aligned combustion and compression chambers,

a rotor having a first portion in said compression chamber and a second portion in said combustion chamber,

a fuel inlet port to said compression chamber and an exhaust port from said combustion chamber,

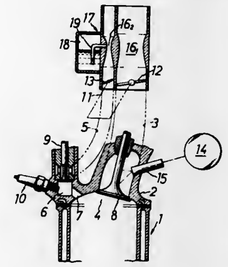
a wall mutually separating said combustion and compression chambers,

transfer passageway means extending through said wall and opening onto said chambers at locations whereby to be closed during a portion of each revolution of said rotor, said transfer passageway means comprising a plurality of openings through said wall and extending over a substantial arcuate distance to transfer compressed gas from said compression chamber to said combustion chamber at a gradually increasing pressure throughout a substantial portion of each revolution of said rotor, and

means for igniting the compressed gas in said combustion chamber while said transfer passageway means is closed by said rotor.

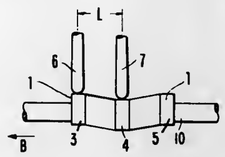
3,884,197
INTERNAL COMBUSTION ENGINE
Kiyoshi Miyaki, Asaka; Akira Okubo, and Sakuji Arai, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed July 2, 1973, Ser. No. 375,497
Claims priority, application Japan, July 5, 1972, 47-67262
Int. Cl. F02b *19/10*
U.S. Cl. 123—75 B **4 Claims**

1. An internal combustion piston engine comprising: a relatively large main combustion chamber for receiving a lean air-fuel mixture; a relatively small auxiliary combustion chamber for receiving a rich air-fuel mixture; a torch nozzle connecting the chambers; means for igniting the rich mixture in the auxiliary combustion chamber to project a flame through the torch nozzle into the main combustion chamber; a main inlet passage communicating with the main combustion chamber and including a main venturi and a main throttle valve; an auxiliary inlet passage communicating with the auxiliary combustion chamber and including an auxiliary venturi and an auxiliary throttle valve; inlet valves at the chambers for controlling the inlet passages; the effective area of the auxiliary venturi being smaller than the effective area of the torch



nozzle and the auxiliary inlet passage whereby maximum inlet flow through the torch nozzle is determined by the auxiliary venturi.

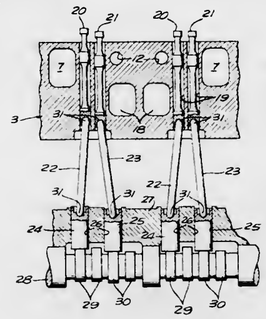
3,884,198
CAM SHAFTS FOR FOUR CYCLE REVERSIBLE INTERNAL COMBUSTION ENGINES
Takashi Ito, Tokyo, Japan, assignor to Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, Japan
Filed Oct. 10, 1972, Ser. No. 295,905
Claims priority, application Japan, Oct. 9, 1971, 46-92966
Int. Cl. F01l *1/34*
U.S. Cl. 123—90.18 **1 Claim**



1. In a four cycle reversible internal combustion engine having spaced valve operating rods, a cam shaft for actuating suction and exhaust valves, said cam shaft comprising three spaced apart cams, an intermediate cam of which is disposed eccentrically with respect to the cams on opposite sides thereof and inclined surfaces are formed between said intermediate cam and the other two cams, said intermediate cam actuating the suction valve upon forward rotation and actuating the exhaust valve upon reverse rotation, the spacing between adjacent pairs of cams being equal to the spacing between said operating rods for adjacent suction and exhaust valves of said engine for reducing the inclination angle of said inclined surfaces between said adjacent pairs of cams.

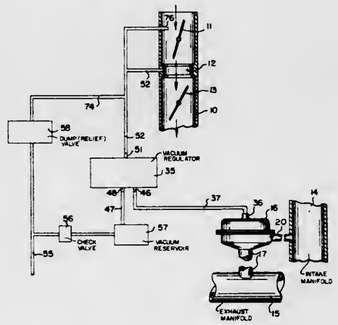
3,884,199
ENGINE VALVE OPERATING SYSTEM
Shoichiro Irimajiri, Kawagoe, and Masayuki Kumada, Hanno, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 29, 1973, Ser. No. 420,228
Claims priority, application Japan, Dec. 11, 1972, 47-141214
Int. Cl. F01l *1/14*
U.S. Cl. 123—90.61 **5 Claims**

1. An engine having an engine head, a main combustion chamber and an auxiliary combustion chamber connected to the main combustion chamber through a torch nozzle; the chambers having respectively, a main and an auxiliary intake valve and the main chamber also having an exhaust valve; said engine comprising: intake and exhaust passages extending into one side of the engine head to communicate with the intake and exhaust valves; intake valve and exhaust valve actuating tappets slidably disposed in immediately adjacent parallel relation passing between said intake and exhaust passages in the engine head; actuating means operatively connecting the



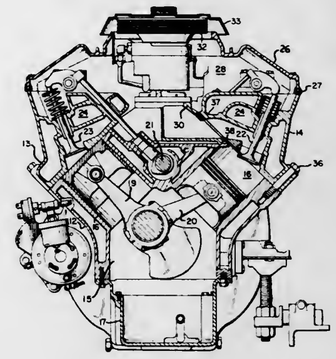
intake valve tappet to both of the intake valves; a cam shaft; a corresponding pair of cam actuated slidable tappets disposed in parallel relation adjacent the cam shaft; and means connecting the valve actuating tappets and cam actuated tappets.

3,884,200
EXHAUST GAS RECIRCULATION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Roland B. Caldwell, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio
Filed Aug. 3, 1971, Ser. No. 168,595
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **29 Claims**



1. In an internal combustion engine including a carburetor having a venturi throat, an intake manifold, an exhaust gas manifold and structure defining a passageway between said intake and exhaust manifolds: exhaust gas recirculating valve means effective to control the flow of exhaust gas through said passageway, said valve means comprising structure defining a vacuum chamber and a valving member operative in response to changes in vacuum pressure in said chamber to vary the rate of flow of exhaust gas through said passageway, vacuum control means for controllably communicating said vacuum chamber to said intake manifold said vacuum control means comprising a vacuum regulator having a vacuum inlet communicating with said intake manifold, a regulated vacuum outlet communicating with said vacuum chamber and a pressure signal inlet, and a pressure signal passage between said venturi throat and said pressure signal inlet, said regulator means controllably communicating said intake manifold and said vacuum chamber in relation to the pressure signal level communicated from said venturi throat to said pressure signal inlet.

3,884,201
MARINE ENGINE
James D. Cregan, Baldwinsville, N.Y., assignor to American Challenger Corporation, Fulton, N.Y.
Filed Mar. 27, 1973, Ser. No. 345,275
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 B **2 Claims**



1. In an internal-combustion engine of the type including:

a cylinder block,

first and second banks of cylinders is said block, said banks being upwardly and outwardly inclined,

a pair of cylinder heads secured to said block,

a cover extending across and sealed to said cylinder heads and cylinder block, whereby a compartment is formed between said cylinder heads by the cylinder heads, cylinder block, and cover,

a crank case at the lower portion of said cylinder block, and passage means between said compartment and said crank case, the improvement comprising:

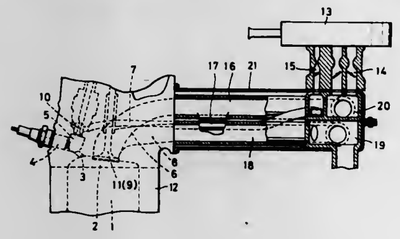
a centrally feeding manifold mounted in said compartment centrally of said cylinders and having an entrance in the top thereof,

a downdraft carburetor mounted on top of said manifold and connected to the entrance of said intake manifold, said downdraft carburetor having a vertical passageway for flow of air through a top opening downwardly into said entrance of said intake manifold, said separately feeding manifold being separate from said cylinder block, said cylinder heads being secured to said cylinder block over said manifold to hold said separate manifold on said cylinder block solely by the clamping of said heads to said block,

an annular extension surrounding an opening on said cover above said carburetor, said annular extension and said carburetor forming an annular passageway, and

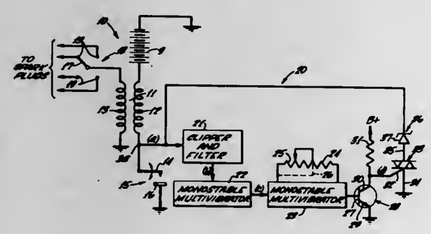
a cover for said carburetor positioned above said annular extension to provide an opening between said annular extension and said cover for flow of air inwardly to and downwardly through said carburetor, said flow of air applying by eductive effect a negative pressure to said annular passageway which acts through said passage means to provide positive crank case ventilation.

3,884,202
ENGINE INTAKE AND EXHAUST APPARATUS
Yoshitoshi Sakurai, Kawasaki, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed June 22, 1973, Ser. No. 372,658
Claims priority, application Japan, June 28, 1972, 47-76218
Int. Cl. F02b *19/10, 19/16*
U.S. Cl. 123—122 AB 2 Claims



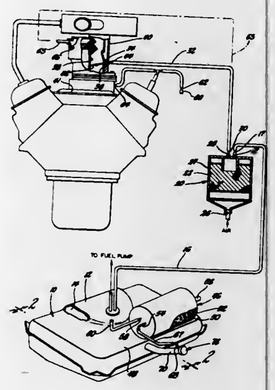
1. In an internal combustion engine having a main and an auxiliary combustion chamber communicating through a torch nozzle, the improvement comprising, in combination: a main and an auxiliary carburetor means, a riser device communicating with the main and auxiliary carburetor means, an intake passage means connecting the riser device with the main combustion chamber, an auxiliary intake passage means connecting the riser device and the auxiliary combustion chamber, an exhaust passage means connecting the main combustion chamber with the riser device, the auxiliary intake passage means being formed integrally with the exhaust passage means, a casing disposed about the main intake passage means, the auxiliary intake passage means, the exhaust passage means and the riser device, said casing extending from around the riser device to the engine.

3,884,203
ENGINE RPM CONTROL SYSTEM
Arnie L. Cliffgard, 9268 Daisy Ave., Fountain Valley, Calif. 92708
Filed Apr. 23, 1973, Ser. No. 353,404
Int. Cl. F02p *9/00*; F02b *77/00*
U.S. Cl. 123—118 19 Claims



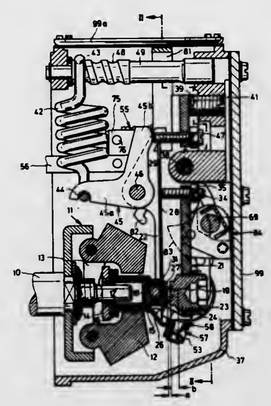
1. In an internal combustion engine of the type including an ignition system comprising an ignition coil having primary and secondary windings, the primary winding being connected in circuit with a battery and a set of points and the secondary winding being connected in circuit with one or more spark plugs, the improvement comprising means for limiting the revolutions per minute of said engine, said means comprising:
means operatively coupled to said ignition system for generating a gating pulse which starts a fixed time interval after opening of said points and has a time duration which is a function of the desired speed of said engine;
gating means having a gating terminal and first and second main terminals, said gating terminal being operatively coupled to receive said gating pulse, said gating means permitting conduction between said main terminals during said gating pulse; and
threshold switching means connected between one of said main terminals of said gating means and one side of said primary winding of said coil for preventing conduction between said main terminals unless the voltage across said threshold switching means and said main terminals exceeds a predetermined threshold voltage whereby said gating means shorts said primary winding during said gating pulse when the voltage thereacross exceeds said predetermined threshold voltage.

3,884,204
TANK FILL VAPOR CONTROL
Homer V. Krautwurst, and Cristian F. Schulitz, both of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 15, 1974, Ser. No. 461,010
Int. Cl. F02m *25/08*
U.S. Cl. 123—136 3 Claims



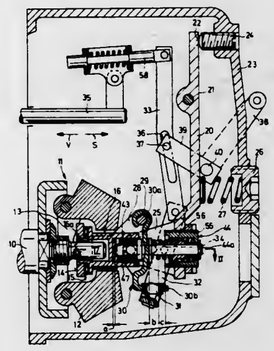
1. In an internal combustion engine, an evaporation control system for limiting vapor loss from a fuel supply including a fuel tank having a vapor space and an air-fuel supply carburetor for directing a predetermined fuel charge into the intake manifold of an internal combustion engine comprising: means for adsorbing vapor generated from the tank during normal vehicle operation including a first canister means having a first predetermined volume, means for communicating the interior of said first canister means with an engine carburetor for purging vapor from said first canister means during engine operation for consumption in the engine, second vapor adsorbing means for adsorbing vapors produced within said tank during a fill phase of operation including second canister means having a second predetermined volume greater than said first predetermined volume to adsorb increased volume of vapors produced during tank fill operation, and means for purging vapors from said second canister means for consumption with the engine during engine operation at a lesser rate than the rate of withdrawal of vapors from said first canister means thereby to avoid excessive enrichment of the air-fuel mixture to the intake manifold of the internal combustion engine so as to prevent excessive exhaust emissions therefrom.

3,884,205
CENTRIFUGAL RPM GOVERNOR FOR FUEL INJECTED INTERNAL COMBUSTION ENGINES
Heinrich Staudt, Markgroningen-Talhausen; Ernst Ritter, Stuttgart; Hans-Jurgen Jaenke, Ditzingen, and Rolf Muller, Stuttgart-Freiberg, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Aug. 10, 1973, Ser. No. 387,501
Claims priority, application Germany, Aug. 10, 1972, 2239372
Int. Cl. F02d *1/04*
U.S. Cl. 123—140 R 16 Claims



1. In a centrifugal rpm regulator for fuel injected internal combustion engines, especially diesel engines, including a housing mounting; centrifugal weight means, an adaptor sleeve slidably displaceable under the influence of the centrifugal weight means and as a function of engine rpm, at least one two-armed intermediate lever, an operating lever, a fuel quantity control rod, the adaptor sleeve transmitting the forces associated with its controlled motions resulting from its slidable displacement through the intermediate lever to the fuel quantity control rod for adjusting the fuel quantity delivered by an injection pump used in conjunction with the regulator, the intermediate lever having a pivot point which is changeable in dependence on the pivotal position of the operating lever, the movement of the control rod being limited in the direction of increasing fuel supply by an abutment structure including a cam plate, and at least one control arm through which the abutment structure is connected to the adaptor sleeve, the abutment structure being fixedly connected to the regulator housing and being pivotable as a function of engine rpm to thereby determine the maximum fuel quantity, the improvement comprising:
a. an abutment lever having a cam follower member at one end thereof;
b. means connecting said abutment lever to said control rod;
c. a control lever having a lever arm;
d. means mounting said abutment lever to said lever arm for free pivotal movement relative to said lever arm; and
e. means mounting said control lever to the housing for pivotal movement relative thereto, said abutment lever being pivotable due to its connecting and mounting means thereby causing said cam follower member to abut said cam plate and limit the maximum fuel quantity delivered by the injection pump for a given engine rpm.

3,884,206
CENTRIFUGAL RPM REGULATOR FOR INTERNAL COMBUSTION ENGINES
Ernst Ritter, Hattenbuhl, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Jan. 31, 1974, Ser. No. 438,416
Claims priority, application Germany, Feb. 20, 1973, 2308260
Int. Cl. F02d *1/04*
U.S. Cl. 123—140 R 4 Claims



1. In a centrifugal rpm regulator for fuel injected internal combustion engines including a housing mounting, centrifugal weight means, an adapter sleeve slidably displaceable under the influence of the centrifugal weight means and as a function of engine rpm, a two-armed intermediate lever, a fuel quantity control rod, the adapter sleeve transmitting the forces associated with its controlled motions resulting from its slidable displacement through the intermediate lever to the fuel quantity control rod for adjusting the fuel quantity delivered by an injection pump used in conjunction with the regulator, a force-transmitting lever, stop means mounted to the housing against which one end of the force-transmitting lever is supported, and at least one regulating spring supported in the housing and exerting a force against the force-transmitting lever, the adapter sleeve being mounted so as to also act against the force-transmitting lever, the improvement comprising:
A. an adjustment device having:
a. a pivotable lever connecting the adapter sleeve with the intermediate lever, said pivotable lever being pivoted at one of its ends at least mediately to the intermediate lever and eccentrically with respect to the adapter sleeve and including two stop surfaces;
b. a first elastically yieldable stop means having a first adjustment spring;
c. a second elastically yieldable stop means having a second adjustment spring, said first and second stop means engaging respective ones of said stop surfaces; and
d. an idle control spring;
B. an operating lever; and
C. a guide lever, and wherein the adapter sleeve defines a central bore and axis;
the intermediate lever has a slot in one of its arms;
said guide lver has a pin at one end thereof which serves as the pivot pin for the intermediate lever, said pin being engageable within said slot;
said operating lever being pivotably mounted to the housing and engageable with said guide lever so that the position of the intermediate lever is changeable in dependence on the pivotal position of said operating lever;
said stop surfaces being arranged at the level of the adapter axis between said first and second stop means and facing away from each other;

said first stop means being pretensioned by said first adjustment spring and being mounted within the control bore of the adapter sleeve;

said second stop means being pretensioned by said second adjustment spring and said idle control spring and being mounted to an extension of the force-transmitting member; and

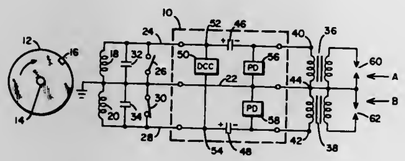
said regulating spring serves as a maximum rpm spring which is at least mediately supported within the housing.

3,884,207

MAGNETO-GENERATOR IGNITION SYSTEM

Andrew Kuehn, III, St. Paul, Minn., assignor to Systematics, Inc., St. Paul, Minn.

Filed Sept. 6, 1973, Ser. No. 394,636
Int. Cl. F02p 1/00
U.S. Cl. 123—148 R **2 Claims**



1. In an ignition system for a two-cylinder internal combustion engine of the type having for each cylinder an ignition coil cooperating with a magneto-generator for producing a current in said coils, a set of cam operated breaker points for periodically coupling the current flow from said magneto-generator to said ignition coils and thereby producing a high voltage pulse for delivery to the spark plugs, the improvement comprising;

a. first and second energy storage devices having two terminals connected in series between said magneto-generators and said ignition coils;

b. first and second unidirectional current conducting devices connected in series with said first and second energy storage devices and said magneto-generators for causing said first and second energy storage devices to be charged with a predetermined polarity;

c. a discharge control circuit adapted to be alternately connected between said first energy storage device and one of said ignition coils and the second energy storage device and the other of said ignition coils by means of said breaker points, for alternately controlling the discharge of said first and second energy storage devices through its associated ignition coil; and

d. said discharge control circuit comprising:

1. a voltage divider connected in parallel with the magneto-generators associated with said two cylinders;

2. a semiconductor switching device having an input electrode, and output electrode and a control electrode;

3. means connecting said input and output electrodes to one terminal of said first and second energy storage devices respectively; and

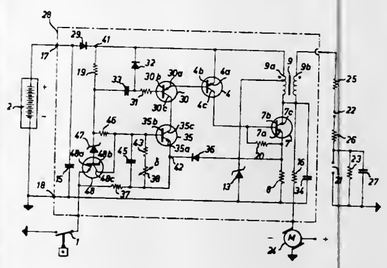
4. means connecting said control electrode to said voltage divider such that when the voltage applied to said control electrode exceeds a predetermined threshold, one of said energy storage devices is discharged through a path including said semiconductor switching device, one of said ignition coils and the breaker points associated with the other of said ignition coils.

3,884,208

TRANSISTORIZED IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Richard Beuter, Plettenberg, Germany, assignor to Brown, Boveri and Cie A.G., Mannheim, Germany

Filed June 3, 1974, Ser. No. 480,542
Claims priority, application Germany, June 12, 1973, 2329920
Int. Cl. F02p 3/02
U.S. Cl. 123—148 E **4 Claims**



1. An ignition system energized by a d-c power source for internal combustion engines including

a. an ignition coil (**9**) having a primary winding (**9***a*) and a secondary winding (**9***b*);

b. an interrupter (**1**) for interrupting the current flow in said ignition coil (**9**);

c. a main transistor (**7**) controlling the current flow in said primary winding (**9***a*) of said ignition coil (**9**), said primary winding (**9***a*) of said ignition coil (**9**) being arranged in series with the collector-emitter circuit (**7***a*, **7***c*) of said main transistor (**7**) and in series with a negative feed-back resistor (**8**) connected to the negative terminal of a d-c power supply;

d. a first auxiliary control transistor (**4**) having a collector (**4***c*) connected to the base (**4***b*) of said main control transistor and an emitter (**4***a*) connected to a d-c power supply;

e. a pre-transistor (**30**), a second auxiliary control transistor (**35**) and a regulating transistor (**48**), the collector (**48***c*) of said regulating transistor (**48**) being connected to the base (**35***b*) of said second auxiliary control transistor (35), the collector (**35***c*) of said second auxiliary control transistor (**35**) being connected to collector (**30***c*) of said pre-transistor, the emitter (**35***a*) of said second auxiliary control transistor (**35**) being connected by the intermediary of a resistor (**37**) to one contact of said interrupter (**1**) and to the emitter (**48***a*) of said regulating transistor (**48**), the emitter (**35***a*) of said secondary auxiliary control transistor (**35**) being further connected by the intermediary of a diode (**36**) to the emitter (**7***a*) of said main transistor (**7**) and to said negative feed-back resistor (**8**), the cathode of said diode being arranged adjacent the emitter (**35***a*) of said second auxiliary control transistor (**35**) and the anode of said diode (**36**) being arranged adjacent the emitter (**7***a*) of said main transistor (**7**), said collector (**48***c*) of said regulating transistor being further connected to the base (**48***b*) thereof by the intermediary of a resistor (**46**) and a Zener diode (**47**), said base (**35***b*) of said second auxiliary control transistor (**35**) being connected to the positive terminal of a d-C power supply by the intermediary of resistor means (**46, 19**) and

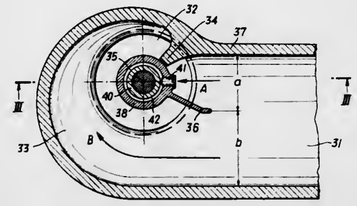
f. a network including a resistor (**43**), a temperature sensitive resistor (**38**), a damping capacitor (**45**) and additional resistor means (**37**) interconnecting said base (**35***b*) of said second auxiliary control transistor (**35**) with the emitter (**48***a*) of said regulating transistor (**48**) and with one contact of said interrupter (**1**).

3,884,209

INLET PORT FOR INTERNAL COMBUSTION ENGINES

Hans List; Josef Affenzeller, and Karl Kirchweger, all of Graz, Austria, assignors to Hans List, Graz, Austria

Division of Ser. No. 271,234, July 13, 1972, abandoned. This application July 18, 1973, Ser. No. 380,240
Claims priority, application Austria, May 30, 1972, 2827/72
Int. Cl. F02f 1/42
U.S. Cl. 123—188 M **6 Claims**



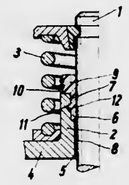
1. A cylinder head structure for internal combustion engines, especially diesel engines, comprising at least one inlet valve having a valve stem, a valve seat for said inlet valve, an inlet duct having an elongated feed portion extending from an inlet aperture of the cylinder head to a chamber formed by said inlet duct above and in proximity to said inlet valve, said chamber forming a spiral-shaped inlet duct portion wound around said valve stem and extending downward to said valve seat, a valve guide bearing extending into the chamber and encompassing said valve stem, a rib located in said spiral-shaped duct portion and comprising a stationary and a rotatable portion, the stationary portion of said rib extending from a point of the wall of said spiral-shaped duct portion located close to the axis of the associated cylinder as far as said valve stem and said valve guide bearing in a plane including the valve stem axis, a sleeve rotatably arranged on said valve guide bearing and secured against axial displacement, said sleeve carrying the rotatable portion of the rib, protruding into the feed portion of the inlet duct in a plane including the valve stem axis and dividing the cross-section of the inlet duct in two.

3,884,210

VALVE STEM GUIDE FOR INTERNAL COMBUSTION ENGINES

Alois Ferch, Fischerstrasse 9, 404 Neuss/Rhine, Germany

Filed July 19, 1973, Ser. No. 380,531
Claims priority, application Germany, July 21, 1972, 2235895
Int. Cl. F01l 3/08; F16k 41/00
U.S. Cl. 123—188 GC **13 Claims**



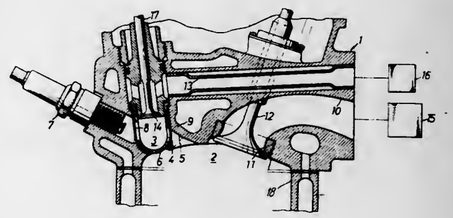
1. Valve stem guide for internal combustion engines comprising a cylinder head wall, a valve stem guide connecting piece connected to said cylinder head wall, said guide connecting piece forming a guide bore extending therethrough and communicating with the interior of said cylinder head wall and having an end face at its end opposite the interior of said cylinder head wall, and a sleeve-type oil scraper formed of an elastic material disposed within and in positive engagement with said guide connecting piece, wherein the improvement comprises that said guide connecting piece has an enlarged bore section coaxial with and extending radially outwardly from said guide bore and extending axially from the end face of said guide connecting piece toward but spaced from the interior of said cylinder head wall, said enlarged bore section having a depression formed therein extending radially outwardly from the surface thereof relative to the axis of said enlarged bore section, an outwardly extending projection formed integrally on the outer surface of said sleeve-type oil scraper extending into said depression in matching and positive engagement therewith, and said oil scraper extending axially outwardly from the end face of said guide connecting piece at the end of said enlarged bore section and including an integral annularly-shaped collar extending radially outwardly over and in contact with the end face of said guide connecting piece.

3,884,211

COMBUSTION CHAMBER DEVICE FOR AN INTERNAL COMBUSTION ENGINE

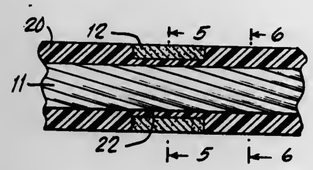
Shizuo Yagi, Asaka; Yoshitoshi Sakural, Kawasaki, and Isamu Minowa, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 29, 1973, Ser. No. 375,060
Claims priority, application Japan, June 30, 1972, 47-77413
Int. Cl. F02b 23/00, 75/02
U.S. Cl. 123—191 S **3 Claims**



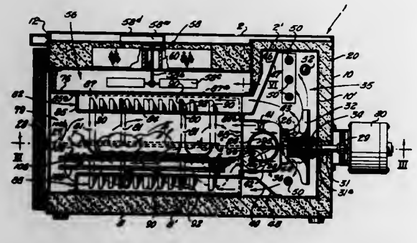
1. A combustion chamber system for a reciprocating internal combustion engine, comprising a main combustion chamber including a piston defining one wall thereof and a cylinder head defining a second wall thereof, an auxiliary combustion chamber positioned within said cylinder head, said auxiliary combustion chamber including a thin walled cup lining said auxiliary combustion chamber and spaced from said cylinder head, said cylinder head including a first opening through which said thin walled cup is exposed to said main combustion chamber and a second opening through said cylinder head and said thin walled cup defining a passageway between said auxiliary combustion chamber and said main combustion chamber, said second opening being displaced from said first opening.

3,884,212
WIRE SAW
Leonard O. Armstrong, and Donald D. Fish, both of Bedford, Ind., assignors to W. F. Meyers Company, Inc., Bedford, Ind.
Filed Nov. 1, 1973, Ser. No. 411,644
Int. Cl. B28d 1/08
U.S. Cl. 125—21 2 Claims



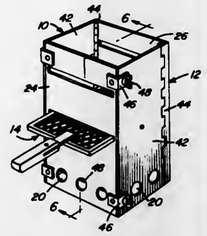
1. A saw comprising:
a. an endless flexible wire cable,
b. a plurality of abrasive cutting element sleeves surrounding said cable and spaced at intervals along the length thereof, each of said sleeves having on one end face a key integral therewith and extending axially therefrom, and
c. a resilient material surrounding said cable between abrasive cutting elements and providing an uninterrupted continuous surface of substantially uniform diameter for said saw, said resilient material having a portion mating with each said axially extending key and restraining said abrasive bearing sleeves from relative rotation around said wire cable and also preventing physical contact between said sleeves and cable.

3,884,213
COOKING APPARATUS
Donald P. Smith, P.O. Box 34568, Dallas, Tex. 75234
Filed Mar. 30, 1973, Ser. No. 346,416
Int. Cl. F24c 15/16
U.S. Cl. 126—21 A 10 Claims



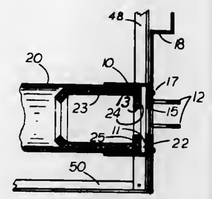
1. Apparatus to transfer heat to a product comprising: a cabinet; a jet plate in said cabinet, said jet plate having a plurality of passages formed therein arranged to form disctete jets of fluid; a plenum associated with one side of said jet plate arranged to force pressurized fluid through said passages; impeller means having a discharge passage communicating with said plenum and having an intake passage communicating with the inside of the cabinet on the other side of said jet plate; means to control temperature of fluid forced through said passages in said jet plate; product support means in said cabinet, said product support means being spaced from said jet plate; and means to move said jet plate relative to said product support means such that the discrete jets of fluid sweep across the surface of the product on said product support means, said passages in said jet plate being spaced such that fluid drawn to the intake opening of said impeller means flows between said discrete jets of fluid.

3,884,214
CHARCOAL STARTER AND GRILL
John A. Duncan, 843 Central, Coos Bay, Oreg. 97420
Filed June 14, 1973, Ser. No. 369,932
Int. Cl. F24c 1/16
U.S. Cl. 126—25 B 1 Claim



1. A combined charcoal starter and grill comprising a vertically elongated rectangular sleeve, said sleeve having a constant cross-sectional area throughout the full height thereof, said sleeve comprising a front wall, a rear wall, and opposed side walls, combustion air intake holes provided through the lower portion of each of the sleeve walls, an elongated charcoal support, said charcoal support comprising a flat panel-like portion including a rigid frame and a flat expanded mesh section supported thereby, and a wooden handle fixed to the frame and projecting outwardly therefrom, first and second pairs of opposed slots formed within said front and rear walls for the selective reception of the charcoal support therethrough and therebetween, said first pair of slots being located at approximately mid-height on the sleeve, said second pair of slots being located between the first pair of slots and the upper end of the sleeve, said sleeve being collapsible, said front wall being removable, said side walls each being hinged, along one edge thereof, to the corresponding side of the rear wall for an orientation of all of the walls into a collapsed position in overlying parallel relation to each other, said front wall including upper and lower pairs of edge mounted rearwardly projecting strap legs positionable in overlying relation to the erected opposed side walls, and upper and lower securing bolts received through the strap legs and adjoining side wall portions for a retention of the front wall to and between the erected side walls.

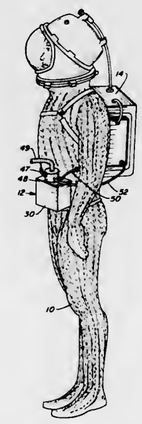
3,884,215
RADIANT SPACE HEATER
Irvin L. Schlosser, 29 E. Broad St., Hatfield, Pa. 19440
Division of Ser. No. 372,076, June 21, 1973, Pat. No. 3,832,991. This application May 13, 1974, Ser. No. 469,412
Int. Cl. F24c 3/00
U.S. Cl. 126—91 A 5 Claims



1. In a space heater, the combination of a plate having an opening therethrough for the passage of a combustion flame and having a collar surrounding said opening, a combustion tube having an end slidably mounted in and supported by said collar, and heat resistant material lining the interior of said tube at said end and movable with the tube end into a gasket

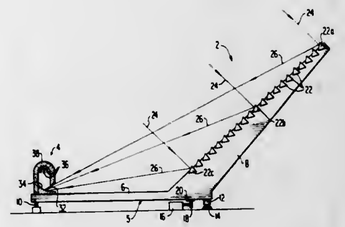
sealing contact with said plate on lengthwise heat expansion of said tube.

3,884,216
ELECTROCHEMICAL ENERGY SOURCE FOR DIVER SUIT HEATING
Joseph F. McCartney, Solana Beach, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 19, 1974, Ser. No. 507,645
Int. Cl. A61f 7/06
U.S. Cl. 126—204 12 Claims



1. Apparatus for heating an undersea diver comprising:
a. a diver's suit having passage means therein for circulation of a heated liquid throughout said suit adjacent to the diver's body;
b. said passage means having an inlet and an outlet thereto;
c. a heating unit on said diver's suit for heating and circulating said liquid;
d. said heating unit including a chamber having a heated fluid outlet communicating with the inlet to said diver's suit circulation passage means and a fluid inlet communicating with the outlet to said diver's suit circulation passage means;
e. pump means for circulating heated fluid from said heating unit through said diver's suit circulation passage means;
f. a seawater electrolyte inlet means to said heating unit chamber;
g. an electrochemical heat source assembly within said heating unit chamber, said heat source assembly comprising:
1. a plurality of magnesium anodes and metal cathode plates alternately positioned in equally spaced apart relationship to allow free passage of seawater electrolyte and reaction products;
2. means for short-circuiting said anode plates to said cathode plates, where upon admission and circulation of seawater electrolyte into said heating unit heat is generated by the reaction of said magnesium anodes with said seawater;
3. said heat of reaction being imparted to said liquid which is circulated throughout said diver's suit;
g. spacing control means for varying the electrode gap between said anode and cathode plates to thereby control the rate of reaction and heat output

3,884,217
METHOD AND APPARATUS FOR COLLECTING SOLAR ENERGY
Lloyd Lore Wartes, Denver, Colo., assignor to Ecothermia, Inc., Denver, Colo.
Filed Sept. 20, 1972, Ser. No. 290,663
Int. Cl. F24v 3/02
U.S. Cl. 126—270 12 Claims



1. Apparatus for collecting radiant solar energy comprising a horizontally elongated energy receiving means, a reflector assembly located in the path of radiant solar energy for reflecting said energy upon the energy receiving means, said reflector assembly having a plurality of reflector units each of which includes a reflector body with a flat horizontally elongated reflective surface which is rotatable about a vertically immovable substantially horizontal axis of rotation which is spaced from the horizontal axes of rotation of other said reflector units, and means for rotatably positioning said reflector bodies about their respective axes of rotation to produce a convergence of radiant solar energy reflected therefrom along the length of the horizontally elongated energy receiving means, said reflector bodies being geometrical prismatic elements with the reflective surfaces thereof constituting one face of the prismatic structure, said prismatic elements having three faces of substantially similar dimensions.

3,884,218
METHOD OF INDUCING AND MAINTAINING VARIOUS STAGES OF SLEEP IN THE HUMAN BEING
Robert A. Monroe, Charlottesville, Va., assignor to Monroe Industries, Inc., Charlottesville, Va.
Filed Sept. 30, 1970, Ser. No. 76,923
Int. Cl. A61b 19/00
U.S. Cl. 128—1 C 6 Claims

1. A method of inducing sleep in a human being, comprising the steps of:
a. generating an audio signal representing a familiar, repetitive, pleasing sound;
b. generating a signal approximating a human EEG signal waveshape characteristic of a state of sleep;
c. amplitude modulating the audio signal with the EEG signal to produce an output signal; and
d. producing an audible sound signal from the output signal for listening by a human being.

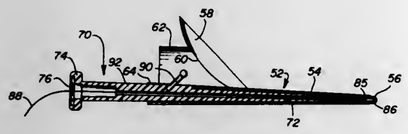
3,884,219
SYSTEM FOR DETERMINING TEMPERATURE AND RESPIRATION RATE
Philip C. Richardson; Emmett L. Hudspeth; Allen D. Boger, Jr., and Jerald P. Dykstra, all of Austin, Tex., assignors to Medical Monitor Systems, Inc., Austin, Tex.
Filed Apr. 2, 1973, Ser. No. 346,952
Int. Cl. A61b 5/00
U.S. Cl. 128—2 R 23 Claims

1. Apparatus for determining the temperature and respiration rate of a patient which comprises:

an elongate probe including one end adapted to be positioned in the mouth of a patient;

a temperature responsive member supported at the tip of the one end of said probe for positioning in the mouth of the patient;

said temperature responsive member being adapted to provide a signal indicative of the temperature of the patient; and



a respiration responsive member supported on the probe at a point substantially displaced from the tip and in an angular upwardly extending relationship to said probe;

said respiration responsive member being adapted for actuation by air exhaled through the nose of the patient to provide a signal indicative of the respiration rate of the patient.

3,884,220

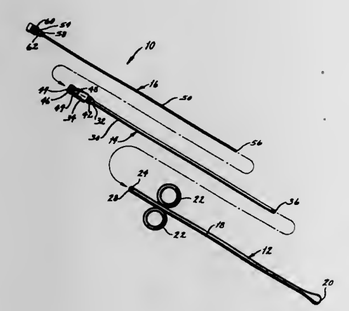
METHOD FOR INJECTING X-RAY CONTRAST MEDIA FOR VENOGRAPHY OF THE FEMALE PELVIS

Leo J. Hartnett, 6744 Clayton Rd., St. Louis, Mo. 63117

Continuation of Ser. No. 269,038, July 5, 1972, abandoned. This application Sept. 21, 1973, Ser. No. 399,424

Int. Cl. A61b *6/00*

U.S. Cl. 128—2 A **6 Claims**



1. The method of making a record of the venous plexus system of a uterus which comprises inserting into the uterus a tubular shaped instrument having a hollow core and a rounded probing end, probing with the instrument to locate the fundus with the rounded end, inserting a hollow needle having a piercing point and an opening through the center of said needle into the hollow core of the tubular instrument to penetrate the surface of the fundus, restraining the needle so that said penetration occurs only to a predetermined depth into but not through the wall of the uterus, injecting x-ray opaque material into the opening in the needle so that it passes through the needle into the spongy layer of said uterus and then exposing an x-ray film to record the passage of said x-ray opaque material through the venous plexus system of the uterus on the x-ray film.

3,884,221

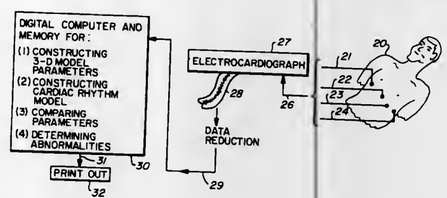
METHOD FOR THE CONSTRUCTION AND DIAGNOSIS OF THREE DIMENSIONAL ELECTROCARDIOGRAMS

George Eastman, 102 Old Clairton Rd., Pittsburgh, Pa. 15236

Filed June 10, 1969, Ser. No. 831,954The portion of the term of this patent subsequent to Aug. 20, 1990, has been disclaimed.

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 V **10 Claims**



1. A method for determining the existence, nature and degree of cardiac abnormalities in a subject comprising,

obtaining frm the subject a plurality of electrocardiographic tracings, each of which tracings comprises a plurality of sets of deflections with each such set representative of one cardiac cycle of the subject,

measuring and recording from said tracing the values for each deflection in a selected number of sets,

constructing from said deflection values a plurality of parameters defining a three dimensional model of the subject's cardiac cycle,

constructing a three dimensional model of the cardiac cycle of said subject from said plurality of parameters constructed from said deflection values,

constructing from said deflection values a model expressing the inter and intra deflection occurrence times thereby defining the subject's cardiac rhythm and conduction,

comparing the values of said parameters and said three dimensional cardiac cycle model for said subject to the values of previously determined similar parameters and three dimensional cardiac cycle models for normal and abnormal cardiac conditions,

determining from said comparison the existence in the subject of various types of cardiac abnormalities.

3,884,222

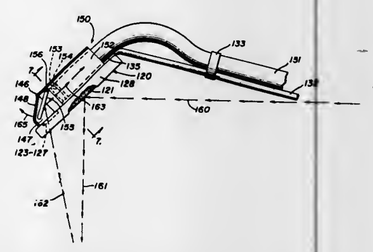
LARYNGOSCOPE

George Paul Moore, 2234 N.W. Sixth Pl., Gainesville, Fla. 32603

Filed Mar. 11, 1974, Ser. No. 449,821

Int. Cl. A61b *1/26*

U.S. Cl. 128—11 **28 Claims**



1. A laryngoscope and the like comprising a light-reflecting mirror shaped and arranged for insertion in a relatively inaccessible cavity such as the pharynx and the like of a subject for reflecting light originating outside of the subject against a part in the cavity to be viewed, a handle connected to said mirror for holding said mirror in the selected position for directing

light onto the part to be examined while the handle is held exteriorly of the subject, said mirror having a light-transmitting opening therein for transmission of light reflected from said mirror onto the part to be viewed and back through said opening, a light collecting and directing system mounted adjacent to said opening for receiving therethrough light transmitted from the part, and a coherent light-transmitting fiber optic bundle extending along said handle and having a light-receiving end disposed adjacent to said light collecting and directing system and having an exit end disposed outside of the subject for viewing by a user.

3,884,223

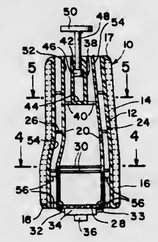
NASAL FILTER

John Keindl, Union, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed June 26, 1974, Ser. No. 483,089

Int. Cl. A61m *15/08*

U.S. Cl. 128—140 N **4 Claims**



1. A nasal filter comprising a pair of insertable members shaped to conform to the shape of nasal passages; each member including: a central air intake passage extending longitudinally of each member; a filtering element at one end of said passage positioned transversely thereof; a closure at the other end of said passage slidably mounted therein for closing said passage upon the application of exhaling pressure on said closure, electrostatic precipitator means in said passage; an annular exhaust air canal around said central passage spaced therefrom having a one way valve therein for allowing egress of exhaled air only; a battery and electrical connectors connecting said battery to said precipitator means and serving also to hold said insertable members together.

3,884,224

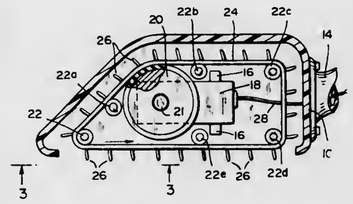
ELECTRICAL BACK SCRATCHER

Adey M. Garcia, 64-20 Saunders St., Rego Park, N.Y. 11374

Filed Aug. 31, 1973, Ser. No. 393,684

Int. Cl. A61h *7/00*

U.S. Cl. 128—63 **5 Claims**



1. An electrical back scratcher comprising a housing having a top wall, a pair of side walls, a rear wall and an open bottom portion, an endless belt movable in said housing in parallel relationship to said top and rear walls, said endless belt being provided with teeth having an arcuate cross-section and rounded ends of flexible material and simulating human fingernails, said teeth being arranged in spaced rows about said belt's periphery, and extending through said open portion and means for driving said endless belt, said means for driving said endless belt being a hollow drum, an electrical motor secured to one of said side walls, said electrical motor having a drive shaft arranged parallel to said rear wall, said hollow drum being secured to said drive shaft, a plurality of idler rollers secured to one of said side walls for guiding said endless belt, a hollow handle having one end secured to said rear wall, an electrical cord extending through the other end of said handle and through said hollow handle into said housing and connected to said electrical motor, for connecting said device to an electrical power source.

3,884,225

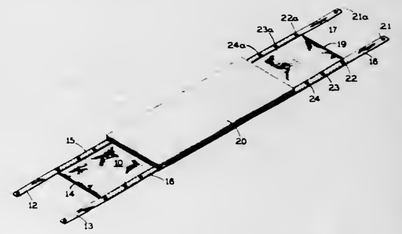
BED PATIENT TURN AND HOLD DEVICE

Evelyn Ruth Witter, 1924 N.E. 7th Ct., Fort Lauderdale, Fla. 33304

Continuation-in-part of Ser. No. 355,972, June 1, 1973, abandoned. This application Apr. 8, 1974, Ser. No. 458,758

Int. Cl. A61g *7/10*

U.S. Cl. 128—133 **3 Claims**



1. In a device for turning a person lying on a bed having a rail and comprising a flexible sheet means to be wrapped around the person, and a cushion means on said sheet means at the middle for cushioning the person, said sheet means having side edges extending beyond said cushion means, the improvement which comprises:

first fastener means at a side edge of the sheet means for fastening the same to the rail;

and second fastener means releasably engageable with said first fastener means at the rail for releasably holding the sheet means at the rail and wrapped around the person on the bed;

said first fastener means comprising flexible straps extending from the sheet means at said one side edge, and a snap fastener element on the free end of each strap;

and said second fastener means comprising a plurality of snap fastener elements on the sheet means extending from said one side edge and spaced apart across its width in alignment with the snap fastener elements on the free ends of the straps for selective locking engagement individually by the latter.

3,884,226

APPARATUS FOR CORRECTING TONGUE THRUST

Harry W. Tepper, 535 Ocean Ave., Santa Monica, Calif. 90402

Filed Sept. 13, 1973, Ser. No. 397,172

Int. Cl. A61f *5/58*

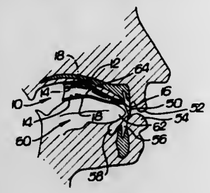
U.S. Cl. 128—136 **2 Claims**

1. An apparatus for correcting tongue movements and positions comprising:

a first element means having front and rear ends adapted to be positioned adjacent the palate of a user for supporting said apparatus in the mouth of said user;

a second element means having front and rear ends pivotally connected at said front end to said front end of said

first element means, said second element means being pivotable between a first extended, at-rest position where said second element means is generally parallel to the dorsum of said tongue, and a second contracted, operative position where said second element means bears against the dorsum of the tongue; and



resilient band means connected laterally across said first element means and positioned between said first element means and said second element means for biasing said second element means rear end away from said first element means rear end and toward said first position.

3,884,227

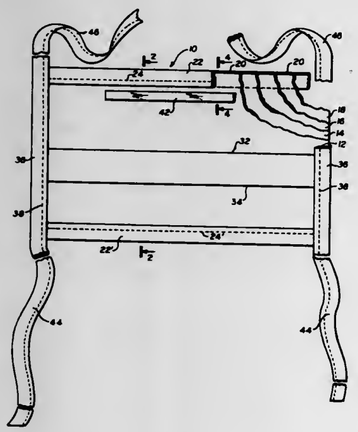
DISPOSABLE SURGICAL MASK

William A. Lutz, and Frederick W. Zipf, III, both of Rumson, N.J., assignors to Blessings Products, Incorporated, Bound Brook, N.J.

Filed Jan. 29, 1973, Ser. No. 327,311

Int. Cl.[2] A61M *15/00*

U.S. Cl. 128—146.2 **7 Claims**



1. A disposable surgical mask comprising pleated plies of sheet material with the pleats extending across the face of the mask, binding covering the pleats at their ends, stitching through the binding and pleated material securing the pleats closed at the ends of the mask, the plies including inner and outer facings for the mask, a ply of filter material behind the front facing, the filter being made of material from which spicules of the filter become loosened during use of the mask, and a ply of barrier material between the filter and the inner facing of a porosity that stops spiclues of the filter from reaching the inner facing during use of the mask, and the barrier ply being made of tissue paper having a porosity of from 200 to 800 cu. ft./min (Gurley Permometer), a basis weight between 7 and 10 lbs./2880 sq. ft. and comprising at least 50% long fiber, and a wet strength of about 580 (machine direction) and 200 (cross direction) gms./inch.

3,884,228

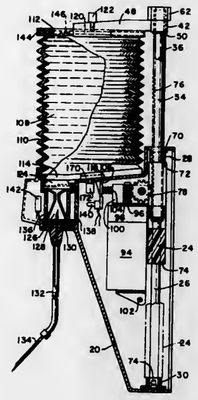
INTRAVENOUS FEEDING SYSTEM

Steven Hahn, East Hampton, N.Y., assignor to The Lynkeus Corporation, East Hampton, N.Y.

Filed Feb. 26, 1974, Ser. No. 445,845

Int. Cl. A61m *05/14*

U.S. Cl. 128—214 F **12 Claims**



1. A closed intravenous feeding system comprising a feed container of collapsible fluid-tight construction adapted to be completely filled with fluid to be intravenously administered to a patient, an administration set detachably connected to said container, means for mechanically compressing said container and thereby forcing fluid out of the container into said administration set, means for controlling the rate of compression of said container and thereby controlling the rate of feed of fluid to the administration set, means for disabling said compression means and stopping compression of said container when the pressure of the fluid therein rises above a predetermined value, means for disabling said compressing means when said container has been emptied to a predetermined extent, means for producing an alarm signal when said compressing means becomes disabled, a drop chamber between said administration set and the lower end of said container, means for detecting the presence of fluid drops in said drop chamber, means for producing an alarm signal when drops fail to appear within said chamber during a predetermined period of time, said container being of accordian construction having upper and lower flanges, and said compressing means including a pair of vertically extending rods offset from said container, means for detachably connecting the upper ends of said rods to the upper flange of said container, and means including an electric motor and a solenoid operated clutch for positively moving said rods downwardly at a predetermined speed.

3,884,229

HYPODERMIC SYRINGE AND NEEDLE ASSEMBLY

Kenneth Raines, and George K. Burke, both of Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.

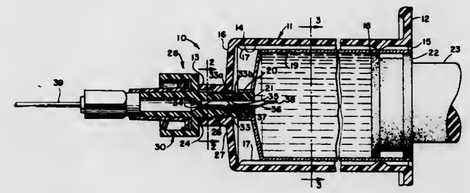
Filed Nov. 29, 1973, Ser. No. 420,199

Int. Cl. A61m *5/32, 5/24*

U.S. Cl. 128—218 N **2 Claims**

1. Hypodermic syringe and transfer needle assembly, comprising a cylindrical hypodermic syringe barrel for receiving and holding a vial having a puncturable stopper sealing one end thereof and containing a medicament and the like therein, said barrel having an open end and a closed end, an annular, radially inwardly projecting sealing rib in the barrel adjacent the open end thereof, a plurality of axially extending, circumferentially spaced apart guide ribs on an inner surface portion of the barrel extending from the closed end thereof to the sealing rib, said barrel having a reduced diameter, axially

outwardly extending hub on the closed end thereof, said hub having an axial bore therethrough with an enlarged diameter outer end portion, a plurality of axially extending splines in the enlarged diameter outer end portion, said transfer needle assembly having a reduced diameter, axially extending boss thereon adapted to be received in the bore through the hub, said boss having an inner end portion and an enlarged diameter outer end portion defining a shoulder with said inner end portion, a plurality of circumferentially spaced, axially extending splines on the enlarged diameter portion of the boss cooperably engageable with the splines in the bore of the hub to prevent turning of the needle assembly, said shoulder on the boss cooperably engaged with a shoulder in the bore of the hub to limit inward movement of the boss in the hub bore, cooperating snap locking means on the boss and in the bore



through the hub to lock the needle assembly to the barrel, said snap locking means including an annular, radially inwardly projecting locking flange in the inner end of the bore through the hub, an annular, radially outwardly projecting flange on the end of said boss adapted to be snapped behind the locking flange in the hub to lock the needle assembly to the barrel, said boss having an axial bore therethrough, a transfer needle fixed in the bore through the boss and including a sharpened end projecting beyond the end of the boss, and a Luer lock needle adapter on the other end of the needle assembly for attachment thereto of a piercing means, said transfer needle extending axially inwardly into the barrel and adapted to pierce the stopper in the vial for withdrawal of the medicament and the like from the vial and through the transfer needle assembly.

3,884,230

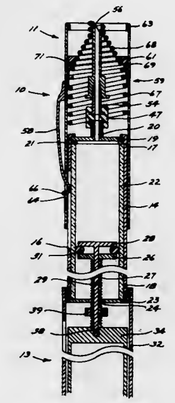
FLEXIBLE NEEDLE AND GUARD DEVICE FOR A HYPODERMIC SYRINGE

Goldwyn L. Wulff, 680 Nebraska S.W., Huron, S. Dak. 57350

Filed Sept. 27, 1973, Ser. No. 401,548

Int. Cl. A61m *5/32*

U.S. Cl. 128—221 **10 Claims**



1. A flexible needle and guard device for a hypodermic syringe having a barrel for holding an innoculant, a nozzle connected to said barrel through which said innoculant is ejected, and a plunger slidably disposed in said barrel for ejecting said innoculant; said flexible needle and guard device comprising:

an elongated hollow connector secured on one end to said nozzle and having the other end thereof projecting axially of said nozzle;

a flexible tube having one end secured to said other end of said connector and having a second end projecting axially of said connector;

an elongated hollow needle retainer secured on one end to said second end of said tube and having the other end projecting axially of said tube, said retainer spaced from said connector;

a hollow needle detachably secured to said other end of said retainer and coaxially aligned in one position with said connector wherein said needle is pivotable from said one position to another position angularly inclined to said connector; and

a first biasing means operably connected between said barrel and said needle for biasing said needle to said one position.

3,884,231

SYRINGE HAVING PIVOTABLE NOZZLE PORTION

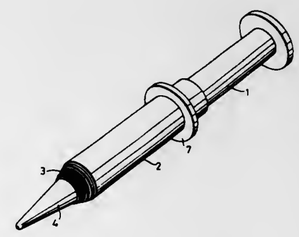
Clas Peters, Bryggargatan 25, Helsingborg, Sweden

Filed Feb. 11, 1974, Ser. No. 441,577

Claims priority, application Sweden, Feb. 22, 1973, 73024663

Int. Cl. A61m *1/00*

U.S. Cl. 128—235 **1 Claim**



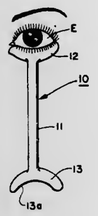
1. A disposable applicator syringe of plastics for dispensing pastes, comprising a tubular body member, a plunger fitted in said body member and axially slidable therein, a pivotable tubular nozzle of a smaller cross sectional area than the body member and having a neutral position with its axis substantially in axial alignment with the common axis of the plunger and the body member, a frustoconical junction member connecting the inner end of the nozzle with the body member, said junction member having a number of folds of progressively reduced diameter from the body member to said inner end and mutually concentric and concentric with the plunger, with the body member and with the nozzle in the neutral position thereof, the mutual spacing and the dimensions of said folds being chosen to enable the manual tilting of the nozzle to any stable inclined position relative to the body member, and said nozzle remaining in any selected inclined position without any manual force acting thereupon, and said junction member permitting the repeated manual transfer of said nozzle from any inclined position to another inclined position and to its neutral position, thus enabling the use of the syringe for dispensing paste with its nozzle located in any number of selected angular positions relative to the body member.

3,884,232

INSTRUMENT FOR ADMINISTERING TO THE HUMAN EYE

Ruth Braun, 27060 Cedar Rd., Beachwood, Ohio 44122

Filed June 5, 1974, Ser. No. 476,588
Int. Cl. A61m *7/00*
U.S. Cl. 128—260 **7 Claims**



1. An instrument for administering to a human eye including a body of substantially sterile, resinous, organic material having two contact sections, each being provided with an outwardly directed concave contour adapted to be placed in close proximity to and in substantially matching curvature in contact with a side of a human eye to steady the eye and facilitate application to or removal from the eye of adjunctive material, one contact section having a greater outwardly directed concavity than the other and being adapted for use in contact with the upper side of a human eye.

3,884,233

TAMPON AND SUPPOSITORY COMBINATION

Betty Louise Summey, 5595 Severin Dr., La Mesa, Calif. 92041

Filed Sept. 4, 1973, Ser. No. 393,744
Int. Cl. A61f *13/20*
U.S. Cl. 128—263 **1 Claim**



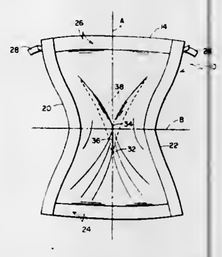
1. A tampon and suppository combination comprising:
an elongated hollow cylindrical cartridge container dimensioned for receiving a tampon therein, said cartridge container having walls defining first and second end openings;
a hollow cylindrical plunger slidably received in an end portion adjacent said first end opening of said cartridge container;
a tampon centrally and slidably received by said cartridge container;
a means for inserting a suppository and selectively closing the end portion of said second cartridge opening comprising a walled container of the same shape as the cartridge and having an open and closed end and having mounted therein a suppository loosely fitting but substantially filling the container, an inner portion of said wall of said container and the outer wall of said suppository being sized to snugly receive between them the walls of the second opening of the cartridge, so that when the container is placed upon said cartridge second opening a means is defined for frictionally inserting and retaining said suppository in said cartridge second end abutting the tampon but leaving an end portion of said suppository extending outwardly from the cartridge second end.

3,884,234

DISPOSABLE DIAPER

Glenn N. Taylor, Cary, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,531
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 **7 Claims**



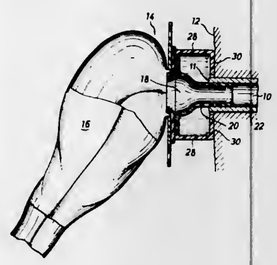
1. In a diaper having front and back waistline portions, a crotch portion therebetween, lateral margins extending between said waistline portions, and a surface for contact with the wearer, the improvement wherein, with respect to a fold line extending between said waistline portions approximately equidistant from said lateral margins, a portion of said surface on one side of said fold line, and along a line extending toward the diaper lateral margin, is secured to a similarly disposed surface portion on the other side of said fold line thereby forming a pocket in the rear portion of the diaper.

3,884,235

URINARY COLLECTION DEVICE

Mohammad Ajaz Sami, 3620 Barham Blvd., Los Angeles, Calif. 90068

Filed Apr. 16, 1974, Ser. No. 461,411
Int. Cl. A61f *5/44*
U.S. Cl. 128—295 **9 Claims**



1. A urinary collection device for use with the ileal conduit comprising bag means adapted to receive the urine, conduit means connected between said ileal conduit and said bag means for directly carrying said urine to said bag, said conduit means comprising a projection member insertable in said ileal conduit, said projection member having an outer wall, said ileal conduit having an inner wall, said outer wall of said projection member conforming to and fitting against said inner wall of said ileal conduit, wherein the outer wall of said projection member forms a seal with the inner wall of said ileal conduit, said projection member comprising a soft distensible enlarged distal end, said soft distensible enlarged distal end returning to its enlarged configuration when said projection member is fully inserted in said ileal conduit for self-retaining the projection member therein.

3,884,236

METHOD OF GLAUCOMA TREATMENT

Mikhail M. Krasnov, ulitsa Usievicha 11, kv. 83, Moscow, U.S.S.R.

Continuation of Ser. No. 295,468, Oct. 6, 1973, abandoned. This application Nov. 12, 1973, Ser. No. 414,774
Claims priority, application U.S.S.R., Oct. 28, 1971, 1712090
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.1 **2 Claims**

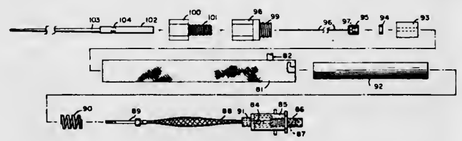
2. A method of glucoma treatment using a pulsed Q-switched laser means, said means producing bursts of a coherent light beam containing wavelengths from about 6,943 A. to 10,600 A., said pulse duration being from about 10^{-7} sec. to 10^{-8} sec. the power output of said laser means being from about 10^6 W to 10^7 W, and said beam being focused into a spot about 0.1mm to 0.7mm in diameter, wherein the number of said bursts per single session of said treatment is not less than five.

3,884,237

APPARATUS FOR INTRAOCULAR SURGERY

Conor C. O'Malley, 1323 Gleneyrie Dr., San Jose, Calif. 95125, and Ralph M. Heintz, Sr., 14734 Blossom Hill Rd., Los Gatos, Calif. 95030

Division of Ser. No. 264,166, June 19, 1972, Pat. No. 3,815,604. This application Dec. 5, 1973, Ser. No. 422,097
Int. Cl. A61n *3/02*
U.S. Cl. 128—303.14 **11 Claims**



1. In an apparatus for intraocular surgery such as cutting or severing of undesired material within the eyeball of a patient, the combination comprising a cutting electrode of very small diameter, an insulated tubular member having an open outer end in communication with an electrode-receiving bore extending longitudinally of said member for slidably and snugly receiving said cutting electrode, a source of electric current, means connecting said source to said cutting electrode and means reciprocating said cutting electrode in said tubular member so that the outer end of said cutting electrode intermittently projects from and recedes within said outer end of said tubular member during the cutting whereby coagulated material adhering to said electrode is removed therefrom by a scraping action of said outer end of said tubular member.

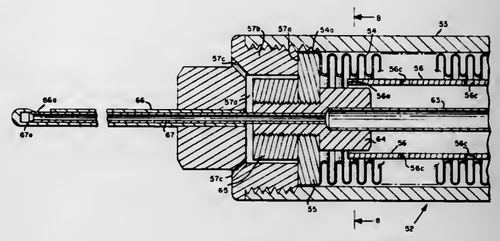
3,884,238

APPARATUS FOR INTRAOCULAR SURGERY

Conor C. O'Malley, 1323 Gleneyrie Dr., San Jose, Calif. 95125, and Ralph M. Heintz, Sr., 14734 Blossom Hill Rd., Los Gatos, Calif. 95030

Continuation-in-part of Ser. No. 264,166, June 19, 1972, Pat. No. 3,815,604. This application Apr. 3, 1974, Ser. No. 457,497
Int. Cl. A61b *17/32*
U.S. Cl. 128—305 **8 Claims**

2. In apparatus for intraocular surgery for cutting or severing and removal of vitreous or other material from the eyeball of a patient, the combination comprising a first tube of very small diameter having a port near one end thereof, a second tube concentric with said first tube, said tubes fitting snugly together and one of said tubes being slidable with respect to the other, the end of said second tube adjacent the port of the first tube being honed and polished to provide a sharp cutting edge, a source of vacuum, means for connecting said source of vacuum to the inner one of said tubes for drawing vitreous



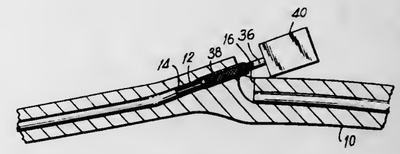
into the first tube through said port, means reciprocating one of said tubes with respect to the other so that sharp end of the second tube crosses said port of the first tube and shears off said vitreous sucked into said port, a bleeder valve attached to said vacuum connecting means, said bleeder valve abolishing residual vacuum from said tubes and preventing vitreous from being drawn into said port when said reciprocating means is interrupted.

3,884,239

VIBRATORY MUCOSA-REMOVING TOOL

Louis Bucalo, Holbrook, N.Y., assignor to Investors In Ventures Inc., New York, N.Y.

Continuation-in-part of Ser. No. 359,429, May 11, 1973. This application Oct. 19, 1973, Ser. No. 407,990
Int. Cl. A61a *17/22*
U.S. Cl. 128—304 **11 Claims**

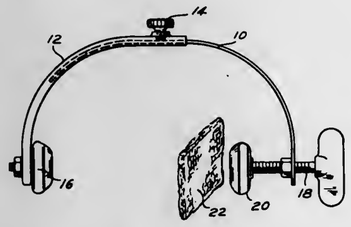


1. For use in connection with introduction of an implant into a mucosa-lined body cavity in the form of a tubular vessel, mucosa-engaging means having an elongated portion of a substantially uniform cross-sectional dimension small enough for insertion into the tubular vessel into engagement with the mucosa lining, said elongated portion of said mucosa-engaging means having at its exterior surface which is adapted to engage the mucosa lining a means for removing the mucosa lining in response to movement of said means at said exterior surface of said elongated portion with respect to the mucosa lining, and vibrating means operatively connected with said mucosa-engaging means for vibrating the latter to provide at said means at said exterior surface of said elongated portion of said mucosa-engaging means a vibratory movement derived from said vibrating means to remove with said means at said exterior surface of said elongated portion of said mucosa-engaging means a mucosa lining engaged by said means at said exterior surface of said elongated portion of said mucosa-engaging means.

3,884,240
TOURNIQUET

C. Malcolm B. Gilman, Rt. 1, Box 102, Hougbridge Rd., Colts Neck, N.J. 07722

Filed Aug. 3, 1973, Ser. No. 216,017
Int. Cl. A61b 17/12
U.S. Cl. 128—325 3 Claims



1. A tourniquet comprising:
a first curved open ended loop member of spring steel having an internal bore extending therein from one end to a point intermediate the ends, the first member having a convex outer surface and a concave inner surface;
a second curved open ended loop member of spring steel also having a convex outer surface and a concave inner surface, one end of the second member being slidable in the bore of the first member to vary the overall length of a composite loop defined by the two interconnected members, the other ends of the members being disposed opposite each other regardless of the overall length;
manually adjustable securing means attached to the first member adjacent said one end and extending radially outward from the convex surface of the first member, said means securing the two members together to establish a selected overall length;
a manually operable pressure screw extending rotatably through the other end of a selected one of the members; a first rubber pad secured to one end of said screw and disposed between the other ends of said members; and
a second rubber pad secured to the concave surface of the other member adjacent the said other end of said other member.

3,884,241
POSTERIOR PACK AND METHOD FOR TREATING SEVERE EPISTAXIS

Adrienne A. Walker, 6412 Nicklas Ave., Oklahoma City, Okla. 73132

Filed June 24, 1974, Ser. No. 482,723
Int. Cl. A61b 17/12
U.S. Cl. 128—325 4 Claims



1. A posterior pack for treatment of severe epistaxis, comprising:
a resilient body adapted to occlude the choanae of a patient; and,
a pair of sutures secured, at one end portion, respectively, to said body and projecting, at their other end portions, through the nasal passages of the patient,
whereby the end portions of said sutures projecting beyond the nasal septum are tied together for maintaining said body in choanae occluded position.

3,884,242
CATHETER ASSEMBLY

Seymour Bazell, Skokie; Ralph G. Ostensen, Morton Grove; Edward M. Goldberg, Glencoe, all of Ill., and Robert D. Walker, Racine, Wis., assignors to MPC/Kurgisil, Skokie, Ill.

Continuation-in-part of Ser. No. 128,898, March 29, 1971, Pat. No. 3,734,100. This application Oct. 26, 1972, Ser. No. 301,172The portion of the term of this patent subsequent to May 22, 1990, has been disclaimed.
Int. Cl. A61m 25/00
U.S. Cl. 128—351 15 Claims

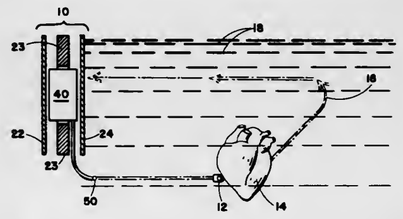


1. An improved catheter comprising:
a. a tubular, non silicone body portion having an outer surface and a central passage therein extending axially therein from a proximal to a distal end,
b. said distal end being shaped to provide a smooth gently pointed tip for ease of insertion into contact with tissues,
c. said central passage of the tubular body portion communicating with an opening in the distal end,
d. an inflation lumen disposed in association with said tube body portion,
e. a cuff assembly mounted on said tube body portion comprising:
i. a seal member to provide for sealingly engaging the cuff assembly with the outer surface of said body portion,
ii. an expansible silicone tissue-engaging cuff member defining an intracuff inflation space between said cuff and said tube outer surface,
iii. said expansible cuff portion being substantially cylindrical in its initial deflated condition and secured to said body portion by said seal member, and conforming generally to the outer surface shape of said non silicone tubular body portion in its initial deflated condition,
iv. said expansible cuff portion being composed of a low modulus silicone rubber having properties of a Shore A hardness of less than about 30, a tensile strength of below about 700 psi, an elongation of above about 1,000 percent, and a stress value upon sealing inflation of less than about 30 percent of the breaking stress of said cuff material, said properties of the silicone rubber cuff thereby resulting in pressures, at substantially complete seal, of less than vascular compressive pressures inducive of significant tissue pressure necrosis,
v. whereby said cuff upon expansion conforms to irregularities in contacted tissue surfaces and provides lateral sealing while reducing lesions.

3,884,243
IMPLANTABLE HEART PACER OR THE LIKE WITH INTERNAL CELL ELECTRODE

Jozef Cywinski, Duxbury, Mass., assignor to Corsan Engineering, Inc., Duxbury, Mass.

Filed June 15, 1973, Ser. No. 370,215
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 6 Claims

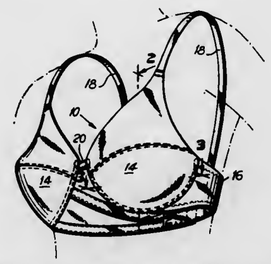


1. For use in combination with a single remote unipolar implantable heart electrode, an implantable electronic pulse heart pacer device comprising
at least two electrode means of dissimilar materials spaced from one another to provide an electrolyte-containing space therebetween for cooperating with electrolyte therein to produce a cell voltage
insulation means mounting at least one of said electrode means so that its surface is exposed only to said electrolyte-containing space within the outer periphery thereof and is free from exposure on an external surface of said device to prevent direct contact of said one electrode with body tissues
said electrolyte-containing space being in communication with the exterior of said device
a sealed electronic pulse unit electrically insulated from said electrodes, said unit having input terminals connected to said electrode means and a single output pulse terminal for connection to said heart electrode
said electrode means providing a power source for said unit and providing an indifferent electrode for return current flow from said single remote implantable heart electrode connected to said output pulse terminal.

3,884,244
BRASSIERE FRAME

Ross F. Rowell, 5361 Belmore Ave., Montreal, Quebec, Canada

Filed Jan. 4, 1974, Ser. No. 430,678
Int. Cl. A41c 1/14, 1/20
U.S. Cl. 128—476 3 Claims



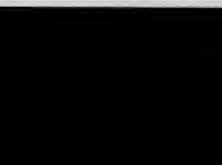
1. A frame adapted for use in a breast supporting cup of a brassiere-like garment comprising a substantially U-shape wire-like frame of generally flat rectangular cross-section throughout substantially the entire length of said frame and having inner and outer peripheral edges and inner and outer flat surface portions; said frame having a central portion and a pair of leg portions extending upwardly of the side portions of said breast supporting cup; said inner and outer flat surface portions being of tapering conical formation in that said inner peripheral edge is generally angularly offset from said outer peripheral edge and provides a dished-out overall contour which conforms to the body contours of a breast and extends for the entire length of said frame; and said leg portions being easily opened and deformable outwardly from each other by normal body movement, during breathing and articulation, and being stiffened from further separation movement by the general flattening out of the tapered conical surface portions.

3,884,245
SMOKING MIXTURES

Robert Craig Anderson, and Alan Calder, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 22, 1972, Ser. No. 308,743
Claims priority, application United Kingdom, Dec. 15, 1971, 58230/71
Int. Cl. A24b 15/00, 15/04
U.S. Cl. 131—2 6 Claims

1. A smoking mixture comprising a thermally degraded carbohydrate tobacco substitute and, as a flavourant, a compound of the formula

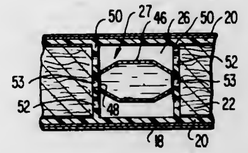


wherein X^1 represents the atoms necessary to complete a carbocyclic or heterocyclic ring of 5 or 6 carbon atoms and X^2 represents an alkyl radical preferably of 1 to 4 carbon atoms said thermally degraded carbohydrate being obtained by subjecting a carbohydrate material to a catalysed degradation process at a temperature of at least 100°C until the weight of the degraded material is approximately 90 percent or less of the dry weight of the original carbohydrate.

3,884,246
OPTIONAL DRY OR LIQUID FILTER

Eric E. Walker, 1108 N.E. 16th St., Ft. Lauderdale, Fla. 33304

Filed Jan. 16, 1973, Ser. No. 324,123
Int. Cl. A24b 15/02
U.S. Cl. 131—10.1 17 Claims



1. A tobacco smoke filter element comprising:
a resilient, water impervious elongated tubular casing having a porous plug of filtering material disposed in each end of said casing;
opposed, mutually spaced, disc-like walls disposed within said casing between said plugs one wall abutting the inner surface of each plug, said walls defining a chamber within the central portion of said casing and having at least one port in each wall;
at least one liquid containing module disposed within said chamber and extending between said walls, said module configured to define with the ports in said walls at least one passage for smoke through said filter element;

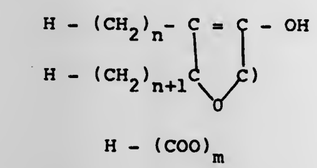
means carried by said element and cooperating between said module and at least one port in each of said walls for directing liquid from said module through the ports into said plugs responsive to compression of the external walls of said chamber so that said plugs may act selectively as a dry filter or, when said casing is compressed, as a filter moistened by said liquid.

3,884,247
TOBACCO COMPOSITIONS EMPLOYING FLAVORING AGENTS COMPRISING UNSATURATED BUTYROLACTONE DERIVATIVES AND PRECURSORS THEREOF

Paul Dietrich, and Erling Sundt, both of Geneva, Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Division of Ser. No. 115,122, Feb. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 768,896, Oct. 18, 1968, abandoned. This application Dec. 4, 1972, Ser. No. 312,031
Claims priority, application Switzerland, Oct. 18, 1967, 14559/67; Oct. 12, 1968, 15181/68
Int. Cl. A24b *15/04*
U.S. Cl. 131—17 R **5 Claims**

1. A tobacco product having added thereto a small but effective amount of at least one flavoring compound of the formula

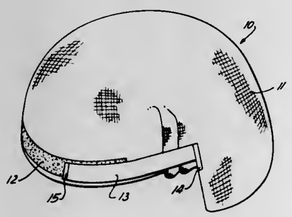


where *n* and *m* can be 0 or 1.

3,884,248
ADJUSTABLE WIGS

George R. Mendelson, Miami Beach, and Isaura A. Garcia, Miami, both of Fla., assignors to Revlon, Inc., New York, N.Y.

Filed Nov. 19, 1971, Ser. No. 200,427
Int. Cl. A45d *3/00*
U.S. Cl. 132—53 **2 Claims**



1. Means for reducing the size of a wig cap in combination with a stretch foundation fitting on the head, said means comprising a pair of fastener bands which are attached in linear relationship to the stretch foundation, one of said fastener bands being in a fixed position and the second being attached only at its end furthest from the fastener band that is in the fixed position, said second band being constructed of elastic material and so positioned that its free end may be pulled over the fixed fastener band, the exposed surface of the fixed band and the surface of the free end of the second fastener band being provided with mating strips of woven tape fasteners, one of said strips having stiff hooks and the other soft loops.

3,884,249
PROCESS FOR CLEANING HALOPHOSPHATE FURNACES

John L. Kelly, Jr., Towanda, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

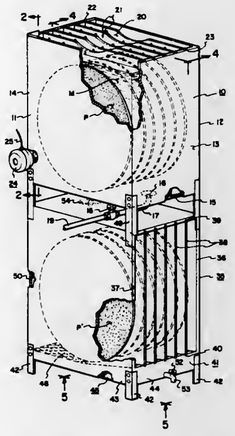
Continuation of Ser. No. 299,301, Oct. 20, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,548
Int. Cl. B08b *5/00*
U.S. Cl. 134—2 **3 Claims**

1. A process for cleaning deposits from atmospheric-tight halosphosphate phosphor furnaces comprising:
   a. heating each of various zones within said furnace to a temperature of from about 1,450° F to about 2,300° F;
   b. passing a nitrogen-hydrogen gas mixture through each of said zones while at said temperature, said mixture consisting essentially of from about 10 to about 60% by volume of hydrogen, balance nitrogen and
   c. maintaining the flow of said gas mixture and said temperature for from at least about 4 hours to about 72 hours.

3,884,250
CLEANING STRUCTURE FOR REVOLVABLE PADS OF FLOOR MAINTENANCE EQUIPMENT

Merrill P. Beesley, 50 East 300 North, Salt Lake City, Utah 84054

Filed Aug. 2, 1973, Ser. No. 384,967
Int. Cl. B08b *3/04*
U.S. Cl. 134—88 **1 Claim**

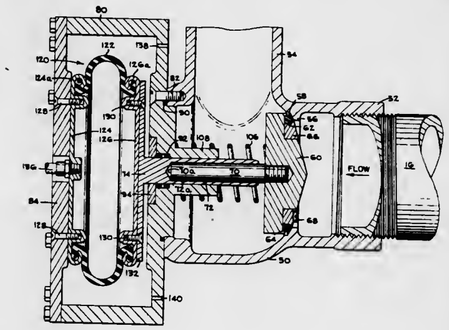


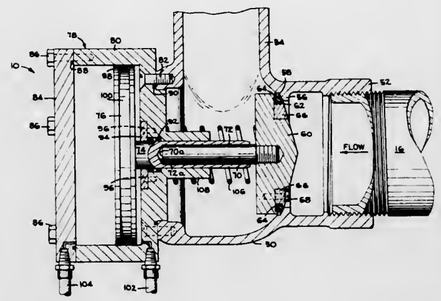
1. Apparatus for washing the pads of floor maintenance equipment, said apparatus including, in combination, a rectangular tank having an enclosure provided with a bottom, four vertical corners, and constructed to receive a cleaning liquid, a selected corner of said tank having a diagonal corner partition and a cross partition essentially normal thereto and defining an inverted U air passageway terminating in a bottom air outlet orifice, and a plate sealed over said corner partition and spaced from said cross partition to complete medially such inverted U air passageway, said passageway including upward initial and downward final legs, a plurality of horizontally spaced, vertical partitions disposed within said enclosure and defining pad-receiving spaces, aerator means, coupled to a side of said tank proximate said selected corner and communicating with said passageway at said initial leg, to introduce pressured air proximate the bottom of said tank at said downward leg, for producing air-bubble turbulence within said tank at said pad-receiving spaces to thereby maintain in solution and suspension any cleaning agent and particulate matter in said liquid, and means for draining liquid from said tank coupled thereto.

3,884,251
CYLINDER-OPERATED VALVE

Houston W. Knight, Whittier, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed May 2, 1974, Ser. No. 466,443
Int. Cl. B67c *3/00;* **B67d** *5/00*
U.S. Cl. 137—615 **9 Claims**





1. In a fluid loading arm including at least one fluid product conduit connected to at least one pipe swivel joint for pivotal movement about the axis through said swivel joint, and a fluid pressure operated valve interconnected with the fluid product conduit in a position to control product flow therethrough, said valve including a valve body and a valve closure element secured to a valve stem for controlling flow through said valve body, the improvement comprising
   a. a fluid pressure responsive force means for operating said valve closure element, said force means comprising
      1. a housing forming a portion of said valve body,
      2. a piston rod slidably mounted in a wall of said housing and extending into said valve body towards said valve closure element, said piston rod having a longitudinal bore into which said valve stem slidably extends,
      3. spring means surrounding said piston rod and said valve stem, said spring means extending between said valve closure element and said housing, said spring means biasing said element towards a position precluding flow through said valve, and
      4. means for transmitting fluid pressure to said piston rod to cause said rod to move toward said valve closure element, and
   b. fluid pressure means to operate said fluid pressure responsive force means and cause movement of said valve closure element into a bubble-tight seal with said valve body regardless of the pressure existent in said fluid product conduit.

3,884,252
FRICTION REDUCTION

Vitold R. Kruka, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

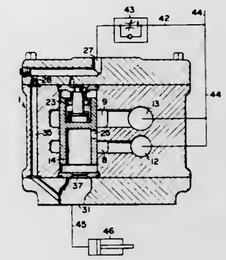
Filed June 20, 1973, Ser. No. 371,781
Int. Cl. F16d *1/16*
U.S. Cl. 137—13 **8 Claims**

1. A process for continuously providing a source of dissolved polymer in a pipeline containing a flowing hydrocarbon comprising preparing polymer crumb by stripping solvent from a polymer cement and injecting said polymer crumb into the flowing hydrocarbon.

3,884,253
HYDRAULIC CONTROL VALVE

Hikaru Murata; Yasuji Umeda; Yasusada Sakurai, and Yasuo Doi, all of Kamo, Japan, assignors to Kayabakogyokabushikikaisha, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,306
Claims priority, application Japan, Dec. 29, 1971, 46-32331; Feb. 18, 1972, 47-16452; Feb. 26, 1972, 47-20021
Int. Cl. G05d *7/01*
U.S. Cl. 137—110 **13 Claims**



13. A hydraulic control valve, comprising
a valve body having a cylindrical valve chamber;
port means communicating with said valve chamber and defining a path for a main fluid flow which passes through said valve chamber and through one end thereof;
a hollow valve spool received in said valve chamber and slidable therein between positions in which it completes and interrupts said main fluid flow path;
a passage defining a pilot fluid flow path which bypasses said valve chamber;
restricted orifice means interposed in said pilot fluid flow path;
restricted orifice means in said main fluid flow path located at said one end of said valve chamber; and
conduit means for joining the fluid flow of said pilot fluid flow and the fluid flow of said main fluid flow adjacent said restricted orifice means for said main fluid flow path, for controlling the displacement of said valve spool and the volumetric flow of fluid in the main fluid flow path as a function of the difference between the pressure drops which occur in the fluid flows across said restricted orifice means.

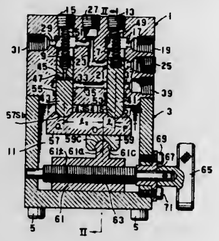
3,884,254
REDUCING VALVE

Tsuneo Kogure, Kawasaki, Japan, assignor to Amada Company, Ltd., Isehara-shi, Japan

Filed Nov. 28, 1973, Ser. No. 419,810
Claims priority, application Japan, Nov. 30, 1972, 47-119379
Int. Cl. G05d *11/02*
U.S. Cl. 137—102 **5 Claims**

1. A proportional reducing valve comprising: a housing having first and second parallel bores, each being closed at

one end and in communication at the opposite end with a housing chamber, said first bore also being in communication with an inlet in the housing wall for receiving hydraulic fluid at a primary pressure; first intermediate passageway means connecting said first bore to said second bore, said second bore also being in communication with an outlet in the housing wall through which hydraulic fluid at a secondary pressure may exit; second intermediate passageway means for connecting said second bore to a drain outlet in the housing wall; valve means for controlling fluid flow through said first and second passageway means; said valve means including first and sec-



ond valve members reciprocally contained respectively in said first and second bores; a lever member mounted in said chamber for pivotal movement about a pivot point which lies on a reference line located between and parallel to the axes of said parallel bores; and resilient means in said bores for urging said valve members into contact with said lever member, whereupon pivotal movement of said lever member in response to axial movement of said first valve member as a result of force exerted thereon by the primary fluid pressure will produce opposite axial movement of said second valve member and a proportional adjustment of the secondary fluid pressure.

3,884,255

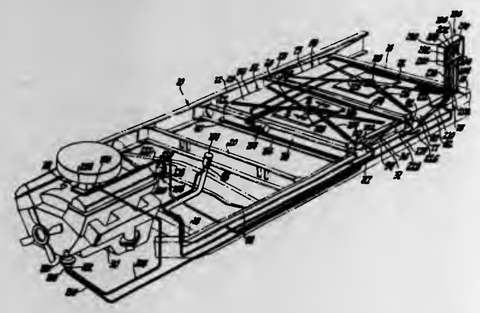
DUAL TANK FUEL SYSTEM

Ralph H. Merkle, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 30, 1973, Ser. No. 355,578

Int. Cl. B60r *27/00*

U.S. Cl. 137—265 **5 Claims**



1. A vehicle fuel supply system comprising: separate first and second tanks each having a bottom and side walls, a fuel opening in one side wall of each tank, a single fuel filler neck for receiving fuel to be supplied to the said first and second tanks, a fuel filler pipe connected to said neck having first and second branches thereon connected by a crossover segment, said branches connected to said fuel openings in said first and second tanks for filling said tanks concurrently from said single fuel filler neck; first and second fuel suction lines located respectively within said first and second tanks each of said suction lines having an inlet opening at the tank bottom for directing fuel therefrom, a fuel pump for supplying fuel to a vehicle carburetor system including an inlet and an outlet, control means for selectively communicating one of said first and second suction lines in one of the tanks to said pump during a first pump-down phase, said crossover segment directing fuel from the other of the tanks to the one tank during the first pump-down phase whereby fuel level in each of said first and second tanks is lowered equally until the fuel level in said first and second tanks is lower than the bottom edge of said fuel openings, said crossover segment serving to disconnect the one tank from the other tank when the fuel level reaches a minimum level during the pump-down phase to retain a reserve of fuel in the other tank, said control means being operable to communicate the other tank to supply the reserve fuel to said pump during a second pump-down phase.

3,884,256

PORTABLE APPARATUS USING GAS UNDER PRESSURE

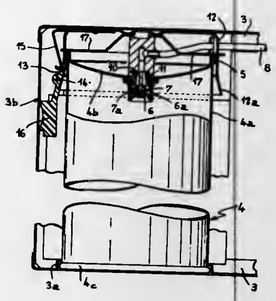
Gabriel Corlet, Genis Laval, France, assignor to Application des Gaz, Paris, France

Filed Nov. 16, 1973, Ser. No. 416,436

Claims priority, application France, Nov. 24, 1972, 72.42501

Int. Cl. F23q *3/00*

U.S. Cl. 137—322 **7 Claims**



1. Portable apparatus including a casing having a blind ended recess shaped to receive a cartridge, said cartridge having a cylindrical wall closed at each of its two ends by a cover secured to the wall by an annular radially saliant rim and containing pressurized gas, and the cartridge having in one of said covers a central gas outlet closed by a check valve member openable by displacement of the valve member in the cartridge, the apparatus further having in the blind end of said recess a gas take-off head including an annular packing and a central finger coaxially surrounded by this packing, the head being located to register with the cartridge when the latter is tightly applied so as to press said gas outlet against said packing and insert said central finger through said outlet to displace said check valve member incident to the gas-tight connection of the cartridge with the apparatus, the invention comprising the following further improvements:

a radially movable latch and spring means urging the latch inwardly, the latch being located so as to be radially pushed away by said rim when the cartridge is axially inserted into said recess, but being returned by the spring means to lock the cartridge automatically and positively behind said rim when the cartridge reaches its position of gas-tight connection with the gas take-off head;

guiding and axial positioning means coacting with the cartridge when introduced in said recess to guide it automatically into locking relation with said latch and to retain it against retreat in a direction diametrically opposed to the location of said latch means; and

manual release means operatively coupled with said latch and spring means and actuatable to unlatch the cartridge from its gas-tight connection in the apparatus.

3,884,257

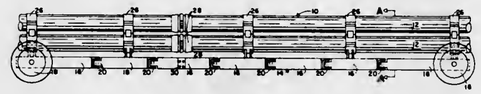
LINKAGE CONNECTION FOR A HOSE HAULING VEHICLE

William T. Sweeney, and Gary R. Harris, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Apr. 15, 1974, Ser. No. 460,851

Int. Cl. F16l *25/00, 11/04*

U.S. Cl. 137—355.16 **2 Claims**



1. In a system comprising a flexible tubular means for conveying a slurry, a plurality of moveable support means to support said tubular means, a linkage means interconnecting said moveable support means, said linkage means comprising a plurality of link members having connecting means at each end and pivotally connected together and to said support members and means for securing said tubular means to said linkage means, an improvement comprising positioning in said linkage means at least one link member having a union means for breaking and rejoining said linkage means positioned between a first and a second end of said link member.

3,884,258

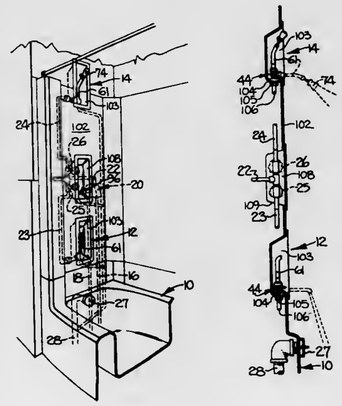
RETRACTABLE BATHROOM FIXTURE

Leonard E. Mull, Rt. 3, Clover, S.C. 29710

Continuation-in-part of Ser. No. 279,663, Aug. 10, 1972, abandoned. This application Dec. 6, 1973, Ser. No. 422,274

Int. Cl. F16k *11/10*

U.S. Cl. 137—360 **8 Claims**



1. A bathroom fixture assembly having provision for selectively delivering water to a bathtub, shower, or the like at two separate spaced locations and at a predetermined temperature, and comprising

a shower head comprising

a. a tubular member comprising a peripheral wall defining an internal passageway and an outer cylindrical surface, and an outlet opening extending radially through said peripheral wall and communicating with said internal passageway,

b. delivery spout means carried by said tubular member and comprising a tubular sleeve surrounding said tubular member and including a peripheral wall defining an inner cylindrical surface coaxially disposed about and closely overlying said outer cylindrical surface of said tubular member, an outlet opening extending radially through said sleeve wall, and a radially directed delivery spout fixedly connected to said tubular sleeve and communicating with said sleeve outlet opening, whereby said delivery spout means may be selectively rotated about said tubular member between a first position wherein said sleeve outlet opening is aligned with said tubular member outlet opening to permit passage of water therethrough and a second position wherein said sleeve inner surface overlies said tubular member outlet opening to preclude passage of water therethrough, and

a tub faucet comprising

a. a tubular member comprising a peripheral wall defining an internal passageway and an outer cylindrical surface, and an outlet opening extending radially through said peripheral wall and communicating with said internal passageway,

b. delivery spout means carried by said tubular member and comprising a tubular sleeve surrounding said tubular member and including a peripheral wall defining an inner cylindrical surface coaxially disposed about and closely overlying said outer cylindrical surface of said tubular member, an outlet opening extending radially through said sleeve wall, and a radially directed delivery spout fixedly connected to said tubular sleeve and communicating with said sleeve outlet opening, whereby said delivery spout means may be selectively rotated about said tubular member between a first position wherein said sleeve outlet opening is aligned with said tubular member outlet opening to permit passage of water therethrough and a second position wherein said sleeve inner surface overlies said tubular member outlet opening to preclude passage of water therethrough,

temperature control means for receiving predetermined relative quantities of water from a hot and cold water line and for delivering such water into said internal passageway of each of said shower head and tub faucet, said temperature control means including means for manually adjusting the relative quantities of water received from said hot and cold water lines to thereby permit the user to adjust the temperature of the water delivered from said delivery spout means of either said shower head or tub faucet, and temperature responsive means for automatically adjusting the relative quantities of water received from the hot and cold water lines so as to maintain a preselected temperature for the water delivered from said delivery spout means regardless of a change in pressure in one of the hot and cold water lines, and

receptacle means for mounting each of said shower head and tub faucet within a wall such that said delivery spout of said shower and tub faucet does not protrude beyond the front surface of the wall when such delivery spout means is in said second position.

3,884,259

THREE-WAY VALVE FOR CONTROLLING THE FLOW OF FLUIDS AT CRYOGENIC TEMPERATURE AND AT WIDELY DIFFERENT PRESSURES

Thomas P. Hosmer, Concord, and Robert W. Johnson, Holbrook, both of Mass., assignors to Cryogenic Technology Inc., Waltham, Mass.

Filed Jan. 21, 1974, Ser. No. 434,984

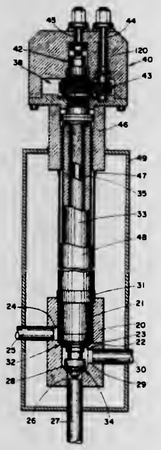
Int. Cl. F16k *1/04, 11/20*

U.S. Cl. 137—375 **17 Claims**

1. A three-way fluid-flow control valve adapted to provide controllable fluid communication between zones of different fluid pressures, comprising in combination

a. a valve body having defined therein a first chamber and a second chamber, said first chamber having a diameter larger than that of said second chamber and being joined thereto by a frustoconically-configured shoulder defining a first sealing surface;

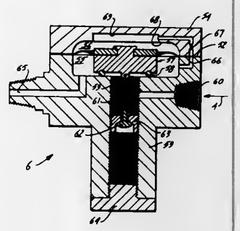
b. a first fluid port opening into said first chamber of said valve body;
c. a second fluid port communicating with said second chamber of said valve body through a frustoconically-configured shoulder defining a second sealing surface;
d. a third fluid port opening into said second chamber of said valve body;
e. outer valve stem means terminating within said valve body in a first sealing member configured to make an essentially line sealing contact with said first sealing surface thereby to controllably isolate said first chamber from said second chamber;
f. inner valve stem means extending through and coaxial with said outer valve steam means and defining therewith an annular fluid passage continuously in fluid communi-



cation with said third fluid port, said inner valve stem means terminating within said valve body in a second sealing member configured to make an essentially line sealing contact with said second sealing surface thereby to controllably isolate said second chamber from said second fluid port;
g. first drive means including first screw means adapted to impart axial motion to said outer valve stem means;
h. second drive means including second screw means adapted to impart axial motion to said inner valve stem means independent of said first drive means;
i. housing means defining fluid-tight screw chamber means around said first and second screw means; and
j. fluid passage means providing fluid communication between said first chamber in said valve body and said screw chamber means.

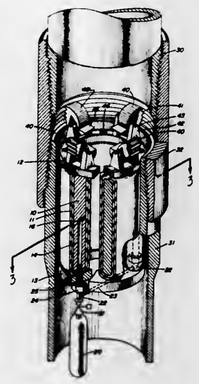
3,884,260
DIAPHRAGM VALVE APPARATUS AND CONTROL SYSTEMS EMPLOYING SUCH VALVE APPARATUS
Adolph J. Hilgert, Mequon, Wis., assignor to Johnson Service Company, Milwaukee, Wis.
Division of Ser. No. 222,603, Feb. 1, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,646
Int. Cl. G05d *16/02;* **F16k** *17/06*
U.S. Cl. 137—469 **6 Claims**

1. A diaphragm valve apparatus for establishing a regulated pressure in a pressure line comprising a valve body having a pair of chambers separated by a common flexible diaphragm member, an inlet passageway means terminating in a first of said pair of chambers and having means adapted to be connected to the pressure line, a control passageway means connecting said first chamber to said second chamber, said diaphragm member having a valve means associated with said inlet passageway means and adapted to open and close said inlet passageway means, said diaphragm member resiliently holding the valve means to close said inlet passageway means and responsive to a preselected inlet pressure in said inlet passageway means to move said diaphragm member and said valve means to transmit pressure through said control passageway means between the first and the second of said pair of chambers, said valve means includes a seal valve element coaxially encircling the inlet passageway and adapted to be



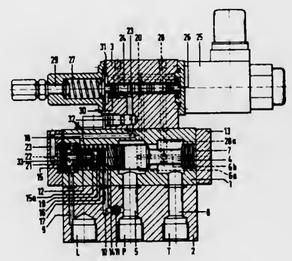
moved between sealing engagement with the adjacent surface of the inlet passageway and spaced therefrom, said valve means being held partially open to produce a pressure drop across said valve means and thereby establishing a regulated pressure in said line, an exhaust passageway connected to said first chamber, said control passageway providing direct connection between said first chamber and said second chamber and including a flow restriction means to prevent chatter movement of the valve element.

3,884,261
REMOTELY ACTIVATED VALVE
Frank Clynch, 14010 Taylorcrest, Houston, Tex. 77024
Filed Nov. 26, 1973, Ser. No. 418,971
Int. Cl. E21b *33/10;* **F16l** *55/12*
U.S. Cl. 137—488 **12 Claims**



1. A valve for a pipe comprising:
a. first and second semicylindrical portions;
b. first and second flexible envelopes enclosing said first and second semicylindrical portions;
c. means for rigidly mounting said semicylindrical portions in a generally cylindrical configuration defining first and second ends;
d. means attached to one end for retaining said cylindrical configuration in a fixed position in said pipe; and
e. means for filling the space between said first and second semicylindrical portions and associated rubber envelope with a compressed fluid to expand said envelopes into a pipe closing position.

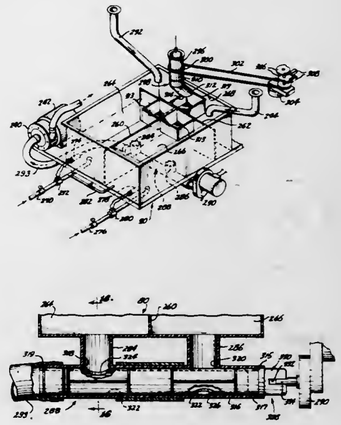
3,884,262
PRESSURE CONTROL DEVICE FOR A HYDRAULIC CIRCUIT
Carl J. Assembergs, Alzano Lombardo, Italy, assignor to Koppen & Lethem Trading Co. A.G., Zug, Switzerland
Continuation of Ser. No. 178,200, Sept. 7, 1971, abandoned. This application July 11, 1973, Ser. No. 378,078
Claims priority, application Netherlands, Sept. 11, 1970, 7013477
Int. Cl. F16k *17/06*
U.S. Cl. 137—489 **11 Claims**



11. In a pressure-control device for selectively setting a maximum operating pressure in a hydraulic circuit in which said device includes:
a pressure balance valve, having a pressure-balance slide controlling a throttle passage interconnecting a pump channel and a return channel to the reservoir for said pump, said slide being moved to open said passage by balance pressure at one end thereof, and a pressure-limiting valve assembly, having a control plunger pressurized at one end thereof by an electrically reduced pressure fed through a control bore, said plunger being moved to open an auxilliary bore for lowering said balance pressure when said electrically reduced pressure is insufficient,
the improvement comprising the formation of said electrically reduced pressure in said control bore by movement of a two-way control slide which:
A. operates between a feed bore, said control bore, and a return bore to said reservoir by means of an electric magnet moving an armature in response to a selected electrical current, said control bore having no other outlet than said return bore;
B. is loaded at one end thereof by said electrically reduced pressure; and
C. is attached at the other end thereof to said armature.

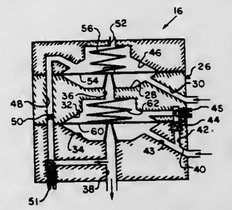
3,884,263
DISHWASHING MACHINE
Kenneth F. A. Wright, 1030 W. 49th, Vancouver, British Columbia, Canada
Filed Sept. 14, 1973, Ser. No. 397,289
Int. Cl. B08b *3/00;* **F16k** *11/02*
U.S. Cl. 137—571 **14 Claims**

1. In a dishwashing machine having a washing zone, a loading zone and an unloading zone, water holding and supply apparatus comprising:
a first tank means for holding wash water located below said washing zone,
a second tank means for holding rinse water located below said washing zone,
drain means associated with said tank means and located below said washing zone,
first conduit means for supplying water from said first and second tank means to said washing zone and valve means in said conduit means selectively operable to place said conduit means in fluid communication with one of said tank means,



second conduit means operatively coupled to said washing zone for draining said washing zone of water supplied thereto, and
means operatively coupled to said second conduit means for selectively directing said water from said washing zone to one of said first tank means, said second tank means, and said drain means.

3,884,264
CONDITION SENSING APPARATUS AND VALVE THEREFOR
Bryan J. Hunter, Boulder, Colo., assignor to E. F. Industries, Inc., Louisville, Colo.
Division of Ser. No. 217,777, Jan. 14, 1972, Pat. No. 3,777,698. This application Sept. 19, 1973, Ser. No. 398,640
Int. Cl. G01f *23/00*
U.S. Cl. 137—624.14 **14 Claims**



1. A fluid operated valve assembly, comprising:
a. a housing including
1. a first chamber having first input means adapted to receive a fluid input signal and direct said fluid input signal into said first chamber,
2. a second chamber constructed to be disposed in fluid commmunication with said first chamber and having second input means adapted to receive a supply of pressurized fluid and direct said pressurized fluid into said second chamber,
3. a third chamber having third input means adapted to receive a supply of pressurized fluid and direct said pressurized fluid into said third chamber, and
4. a passage constructed to be disposed in fluid communication with and leading away from said third chamber;

b. first closure means mounted within said housing and movable between a first biased position for fluid sealing said first chamber from said second chamber and a second position for allowing fluid communication between said first and second chambers, said first closure means being adapted to move from its first position to its second position in response to and during the presence of said fluid input signal within said first chamber;

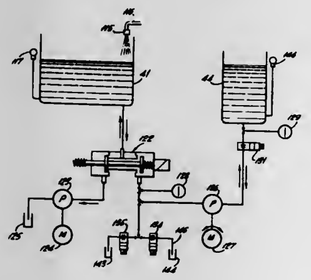
c. a second closure means mounted within said housing and movable between a first biased position for fluid sealing said passage from said third chamber and a second position for allowing fluid communication between said passage and said third chamber, said second closure member being adapated to move from its first position to its second position in response to the movement of said first closure member from its first position to its second position whereby to allow pressurized fluid within said third chamber to escape therefrom through said passage; and

d. a fourth chamber separated from said first chamber by said first closure means, said valve assembly also including means adapted to directly supply pressurized fluid into said fourth chamber in response to escaping pressurized fluid from said passage for moving said first closure means from its second position to its first position regardless of the presence of said input signal within said first chamber whereby to cause said second closure means to move back to its first position from its second position for fluid sealing between said passage and said third chamber.

3,884,265
DECONTAMINATION APPARATUS

Jack E. Fry, Dallas; Joseph C. Gerard, Arlington; Chester C. Hickman, and John E. Hummel, both of Dallas, all of Tex., assignors to Arbrook, Inc., Arlington, Tex.

Division of Ser. No. 49,407, June 24, 1970, Pat. No. 3,739,791.
This application Oct. 20, 1972, Ser. No. 299,528
Int. Cl. B08b *3/06*
U.S. Cl. 137—565 **1 Claim**

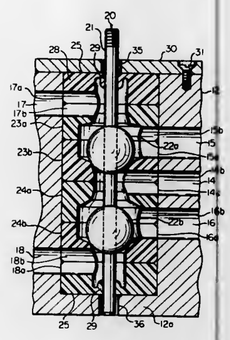


1. Washing and disinfecting apparatus comprising a washing and disinfecting tub, a storage tank for liquid disinfectant, a diverter valve connecting said tub either to a drainage system having means for removing washing and rinsing liquids or to said storage tank through a disinfectant piping system, said piping system having a reversible pump for transferring said disinfectant liquid back and forth between said storage tank and said tub, and first and second fluid level responsive means for rendering said pump inoperative as soon as the level of the disinfectant liquid drops below a predetermined point relative to said tank with respect to said first means and relative to said diverter valve with respect to said second means, and for again rendering said pump operative when even a small amount of said disinfectant brings the disinfectant level above the predetermined point with respect to said first means when the disinfectant is being transferred from said tub to said tank and above the predetermined point with respect to said second means when the fluid is being transferred from said tank to said tub.

3,884,266
DIRECTIONAL-CONTROL VALVE

Shigeji Kondo, 5-1 Sakuma Takeya-cho, Gamagori-shi, Aichi-ken, Japan

Filed Apr. 12, 1973, Ser. No. 350,374
Claims priority, application Japan, Apr. 17, 1972, 47-37748
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.27 **9 Claims**



1. A directional-control valve for fluid-power systems, comprising:

a valve-body having a cylindrical valve chamber and a plurality of flow-passages connected to said chamber, said flow-passages having ports at said chamber which are arranged at different axial positions with respect to the axis of said chamber;

a plurality of pairs of valve-seat members disposed in said chamber, coaxial therewith, said valve-seat members being made of resilient material and each having an annular wall portion and a seat portion formed at the inner side of said wall portion, said wall portion being in close contact at its outer peripheral surface with the inner surface of the valve-body;

a poppet-spool positioned in said chamber and coaxial with said pairs of valve-seat members and including a rod and a plurality of poppets secured to said rod, each of said poppets being arranged between the seat portions of a separate pair of valve-seat members, and

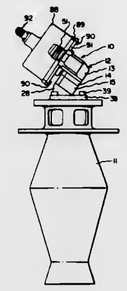
a pair of members disposed in said chamber at the opposite ends thereof for slidably supporting said poppet spool for axial movement, said support members being made of resilient material and each having an outer annular wall portion and an annular supporting portion formed inwardly of said outer wall portion, said outer wall portion being in close contact at its outer peripheral surface with the inner surface of the valve-body and said supporting portion being in close contact at its inner peripheral surface with the peripheral surface of said rod of the poppet-spool;

said valve-seat members and support members being supported in their positions in contact with each other at the end surfaces of their wall portions and being formed on the end surfaces of their wall portions with radially extending grooves forming flow-ports aligned with said flow-passages of the valve-body for connecting said flow-passages to the chamber.

3,884,267
DIRECT-ACTING TWO-WAY CONTROL VALVE

George F. Grouwinkel, Manhatten Beach, and James W. Hager, San Marino, both of Calif., assignors to Moog Inc., East Aurora, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,517
Int. Cl. F16k *11/32*
U.S. Cl. 137—625.33 **5 Claims**



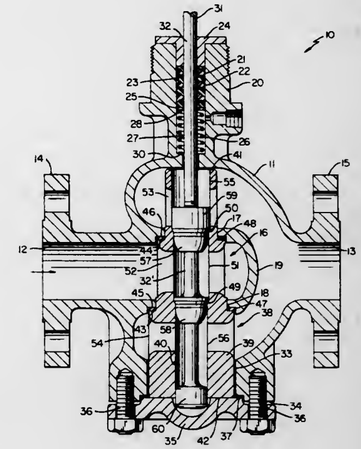
1. In a direct-acting two-way control valve, the combination comprising valve body means having first and second seats and fluid inlet and outlet chambers, poppet-type valve closure means including a first part engaging said first seat and a second part engaging said second seat, and electromagnetic actuation means for unseating said closure means, relative movement between said first part and first seat providing a first variable annular orifice having an upstream outer side and a downstream inner side, relative movement between said second part and second seat providing a second variable annular orifice having an upstream inner side and a downstream outer side, said inlet chamber communicating with said upstream outer side of said first orifice, said closure means having an internal passage establishing communication between said inlet chamber and said upstream inner side of said second orifice, said outlet chamber communicating with said downstream side of each said orifice, said body means including first, second and third body sections, said first and second sections having opposing contacting flat surfaces coplanar with the plane of sealing between said first part and first seat, and said second and third sections having opposing contacting flat surfaces coplanar with the plane of sealing between said second part and second seat.

3,884,268
VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME

Joseph P. Wagner, Knoxville, and Ronnie C. Jenkins, Sevierville, both of Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 25, 1974, Ser. No. 436,517
Int. Cl. F16k *27/04, 3/316*
U.S. Cl. 137—625.36 **12 Claims**

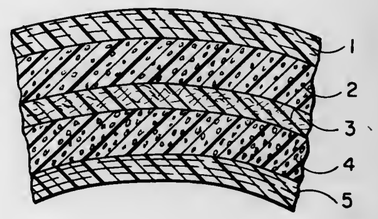
1. A valve construction comprising a valve body having an inlet and an outlet interconnected together by a chamber of said valve body, a one-piece valve seat cage disposed in said chamber and having valve seat means disposed between said inlet and said outlet, said cage having integral guides disposed on opposite sides of said valve seat means, a valve stem means movably guided by said guides and having valve member means for cooperating with said valve seat means to open and close the same, said valve body having an opening therein leading to said chamber, said valve seat cage being insertable through said opening into said chamber and being removable from said chamber out through said opening, and a cover member detachably secured to said valve body to close said opening, said valve body being one-piece and having a bonnet formed integrally therewith in aligned relation to said opening and on the opposed side of said valve body from said opening.



3,884,269
FIBER-REINFORCED FLEXIBLE PLASTIC PIPE

Rudolf Schetty, Riehen, and Borge Ingmar Carlstrom, Nitorp, Hoganas, both of Sweden, assignors to Basler Stuckfarbere AG, Switzerland

Continuation of Ser. No. 70,693, Sept. 10, 1970, abandoned.
This application Sept. 14, 1972, Ser. No. 291,691
Claims priority, application Switzerland, Sept. 12, 1969, 13869/69; Sweden, Nov. 28, 1969, 16452/69
Int. Cl. F16l *11/08*
U.S. Cl. 138—137 **15 Claims**



1. A fiber reinforced cylindrical flexible plastic pipe, comprising a wall formed of a plurality of layers bonded together, at least one of all layers comprising a plastic-bound granulated material layer, and at least one outer and one inner fiber-reinforced layer having fibers of approximately 40 mm in length, all of which are disposed in a curved circumferentially extending orientation throughout the layer thickness.

3,884,270

3,884,270
METHOD FOR PRODUCING FLEXIBLE REGENERATED CELLULOSIC TUBING AND THE TUBING OBTAINED THEREFROM

Jerome Jordan Michael Rasmussen, South Stickney Twp., and David Vou, Park Forest, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 337,109, March 1, 1973, which is a continuation of Ser. No. 197,158, Nov. 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 789,350, Jan. 6, 1969, abandoned. This application Mar. 14, 1974, Ser. No. 451,114

Int. Cl. C08b *21/20*; **F16l** *11/02*

U.S. Cl. 138—177 **3 Claims**

1. In a method for producing an improved regenerated cellulosic tubing the improvement which comprises the step of homogeneously incorporating into a viscose solution from which the regenerated cellulosic tubing is to be formed, an amount of from about 0.5 percent to 2.5 percent by weight based upon the dry weight of cellulose in the viscose solution of a softening anti-block additive said additive being castor oil that is added to said viscose solution in an aqueous emulsion thereof.

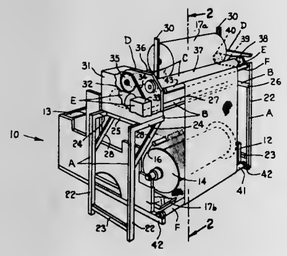
3,884,271
LOOM CLOTH ROLL TAKE UP

Robert W. Bond, Greenville, and William J. Alexander, III, Mauldin, both of S.C., assignors to Bond Transmission & Controls, Inc., Greenville, S.C.

Filed Apr. 23, 1973, Ser. No. 353,237

Int. Cl. D03d *49/00, 49/20*

U.S. Cl. 139—1 R **7 Claims**



1. In a cloth roll take up for a loom having a loom warp beam adjacent the rear of the loom and a cloth delivery roll mounted to receive woven cloth carried between loom side frame members adjacent the front of the loom, said take up having means for guiding the cloth from said delivery roll and thence beneath toward the rear of the loom, the improvement comprising:

A. a pair of transversely spaced vertical frame members, each including a pair of longitudinally spaced standards, carried laterally outboard independently of said loom frame members adjacent the rear of the loom;

B. a mounting platform carried by said frame members above the loom;

C. a pair of spaced horizontal transverse friction take up rolls;

D. a pair of spaced roll supports carried by said platform in transverse alignment therewith for supporting said pair of take up rolls for rotation above and in substantial vertical alignment with said loom beam;

E. means for driving said pair of take up rolls carried by said platform; and

F. means for guiding the cloth from beneath the loom substantially vertically behind the loom warp beam to the take up rolls.

3,884,272
DOUBLE-LIFT OPEN-SHED JACQUARD MACHINE

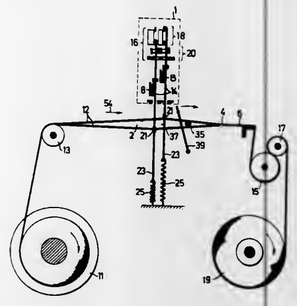
Wolfgang Brenner; Gunter Feier, and Antonius Vinnemann, all of Stuttgart, Germany, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed May 17, 1973, Ser. No. 361,035

Claims priority, application Switzerland, May 19, 1972, 7467/72

Int. Cl. D03c *3/06*

U.S. Cl. 139—59 **5 Claims**



1. In a double-lift open-shed jacquard machine having a pair of vertically movable draw knives for reciprocating between two reversal positions, a plurality of lifting hooks for coupling with a respective draw knife in each of the two reversal positions of said draw knives, and a stationary part having a retaining claw; a vertically disposed single lifting hook having a pair of hooks located on opposite sides for selective engagement with a respective draw knife for movement of said retaining hook vertically between a top position and a bottom position, each said hook having a depending stem, and a retaining hook for selectively engaging said claw, one of said pair of hooks being located on the same side as said retaining hook and having said stem thereof of longer length than said stem of the other of said pair of hooks.

3,884,273
DOBBY

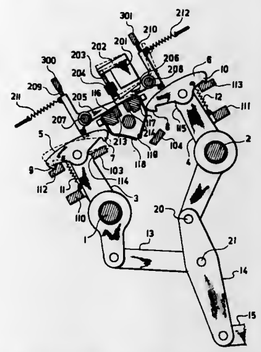
Zdenek Pavlica, Jicin, Czechoslovakia, assignor to Elitex, Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed Dec. 29, 1972, Ser. No. 319,307

Claims priority, application Czechoslovakia, Jan. 4, 1972, 3372-72

Int. Cl. D03c *1/06*

U.S. Cl. 139—71 **11 Claims**



1. A dobby for reversibly controlling the shed wires and the associated heald during the shedding operation of a loom

comprising a pair of lifting knives, each lifting knife being respectively supported on a carrier, a pair of fixed shafts, each of said carriers being rotatably mounted on one of said shafts, means for oscillating each of said carriers in an arcuate path about its associated shaft, a crank associated with each lifting knife, said crank being mounted freely on the associated shaft to be rotatable about a common axis and in an arcuate path in proximity to its associated carrier, means connecting each crank to the associated heald, a latch pivotally mounted at its center at the end of each crank, said latch having a hook at one end engageable with the associated lifting knife when in proximity thereto, means for normally maintaining said latch out of engagement with the associated lifting knife, and means for selectively moving one or both of said latches to engage the associated lifting knife to cause said crank to move conjointly with said carrier thereby to move said heald simultaneously with one or both of said lifting knives.

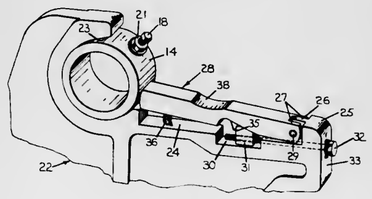
3,884,274
LOOM WARP BEAM DEVICE

Thomas Sujdak, Webster, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 9, 1974, Ser. No. 432,077

Int. Cl. D03d *49/06*

U.S. Cl. 139—97 **2 Claims**



1. For a loom having juxtaposed and axially aligned warp yarn beams from which warp yarn is drawn during weaving, an apparatus for positioning and maintaining adjacent yarn beams in axial alignment comprising:

a. a supporting shaft for each yarn beam with a coupling member for interconnecting the ends of said supporting shafts;

b. a bracket member having an integrally formed pocket for reception of said coupling member and for positioning the yarn beams in axial alignment;

c. means defining a locking lever pivotally connected to said bracket member; and

d. Cam means carried by said bracket member and operatively associated with said locking lever having manual means for selectively moving said cam means between positions for supporting and guiding said coupling member into and out of said pocket and for locking said coupling within said pocket.

3,884,275
DEVICES FOR THE ACTUATION OF LANCES IN LOOMS WITHOUT SHUTTLES

Anselmo Bolea Camprubi, 55 Tavern St., Barcelona, Spain

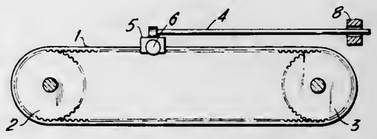
Filed Nov. 9, 1973, Ser. No. 414,188

Claims priority, application Spain, Nov. 13, 1972, 185601

Int. Cl. D03d *47/00*

U.S. Cl. 139—123 **5 Claims**

1. Device for actuating lances in looms without shuttles comprising a loom frame having at least one support therein, a movement transmitting element, means for driving said movement transmitting element, a carriage attached to said movement transmitting element, said carriage includes sliding means in engagement with at least one support in said loom frame for guiding said carriage, a lance attached to said carriage so that the movement of said movement transmitting element is transferred to said lance without direct contact between said movement transmitting element and said lance, said movement transmitting element is a flexible endless belt, said means for driving said movement transmitting element comprises a pair of spaced driving wheels in engagement with the inner surface of said belt, said driving wheels are arranged



so that said flexible belt travels in a curvilinear path between said driving wheels, auxiliary support members located between said driving wheels for supporting said flexible belt in its curvilinear path, and said lance attached to said carriage is flexible so that it travels in a curvilinear path comparable to the curvilinear path of said flexible belt.

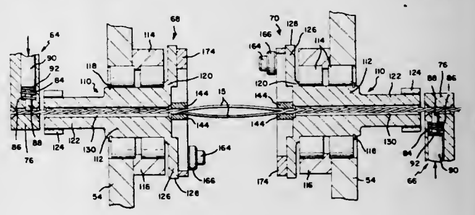
3,884,276
METHOD AND APPARATUS FOR FORMING PAIRED LEADS HAVING AN INTERMEDIATE TWISTED PORTION AND UNTWISTED END PORTIONS AND FOR APPLYING TERMINALS OR THE LIKE TO THE END PORTIONS

Daniel Eugene Poplaski, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 29, 1974, Ser. No. 474,275

Int. Cl. B21f *7/00*

U.S. Cl. 140—115 **22 Claims**



1. A method of forming a terminated pair of twisted leads from a source of twisted leads comprising the steps of:

providing a source of supply of twisted pairs of leads having a free end;

holding two spaced apart portions of the twisted paired leads between the free end and the source of supply and engaging two intermediate portions between the two held portions;

rotating the two intermediate portions in opposed directions to untwist the leads between the two intermediate portions;

feeding the untwisted leads to a cutting zone;

cutting the untwisted leads at the cutting zone to form cut trailing and leading ends, the leading ends still being interconnected with the source of supply;

transferring the leading ends to an applicator station for the application of terminals thereto and then repositioning the leading ends in alignment with the cutting zone;

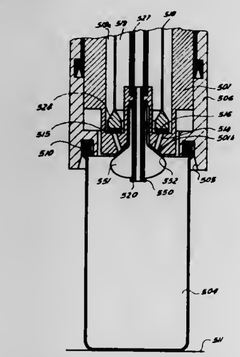
holding two spaced apart portions of the twisted paired leads between the untwisted portion and the source of supply and engaging two intermediate portions between the two held portions;

rotating the two intermediate portions in opposed directions to form an additional untwisted portion;

feeding an additional untwisted portion into the cutting zone while advancing the untwisted portion which has the

terminals affixed to the leading ends through and past the cutting zone;
severing the additional untwisted portion; and
applying terminals or the like to the trailing ends of the severed additional untwisted portion.

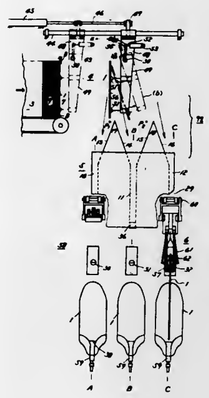
3,884,277
APPARATUS FOR FILLING BEER CANS OR THE LIKE
Friedrich Rademacher, Kamen; Karl Quest, Dortmund; Uwe Knabe, Dortmund-Hombruch; Dieter Unger, Waltrop; Heinz Jordan, Dortmund-Korne; Werner Heckmann, Dortmund, and Karl Plock, Dortmund-Lucklemberg, all of Germany, assignors to Holstein & Kappert Maschinenfabrik Phoenix GmbH, Dortmund, Germany
Division of Ser. No. 175,673, Aug. 27, 1971, Pat. No. 3,807,463. This application Jan. 8, 1974, Ser. No. 431,725
Claims priority, application Germany, Aug. 29, 1970, 2042990
Int. Cl. B65b *31/00*
U.S. Cl. 141—59 **4 Claims**



1. In an apparatus for filling cans or analogous containers with a liquid, a filling device comprising an upright housing; an annular sealing member mounted for up-and-down movement along said housing and having in the region of its lower end annular gasket means movable into sealing engagement with the mouth of a container therebelow, said housing having a surface at the underside thereof and liquid-admitting channel means having a discharge end in said surface; an upright holder supported by and extending downwardly from said housing; and a float mounted for lengthwise movement along said holder and having an external surface which engages said surface of said housing to seal said channel means from the interior of a sealingly engaged can when said channel means has admitted such quantities of liquid that the float rises by buoyancy and moves said external surface into engagement with the surface of said housing.

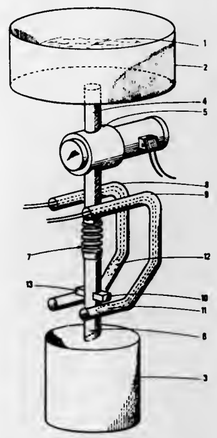
3,884,278
AUTOMATIC BAG FEEDING DEVICE EQUIPPED WITH AN AUTOMATIC CHARGING DEVICE
Shigeo Nakashima, 7-7, Koaza Tenjinmori, Oaza Morimoto, Mukomachi, Kyoto, Japan
Filed Feb. 15, 1973, Ser. No. 332,731
Claims priority, application Japan, Feb. 19, 1972, 47-017326; Mar. 27, 1972, 47-030460
Int. Cl. B65b *43/18, 43/30*
U.S. Cl. 141—67 **3 Claims**

1. In an apparatus for automatically feeding bags and for charging the bags by bag charging means with a predetermined amount of material, which comprises a magazine for the bags, a bag conducting mechanism for taking successive ones of the bags from the magazine and including a plurality of bag receiving ducts for receiving the bags preparatory to charging the improvement which comprises in combination: (1) stroke means associated with said bag conducting mechanism, said stroke means disposed for reciprocal horizontal movement; (2) swing means pivotally mounted on said stroke means, said swing means having bag engaging means for selectively removing a bag from the magazine or for releasing a bag



above the bag receiving ducts, means for moving said swing means to selectively alter the bag position over the bag receiving ducts, and (3) said ducts having means for conducting a freely falling bag upon release from the swing means to one of the plurality of bag receiving ducts.

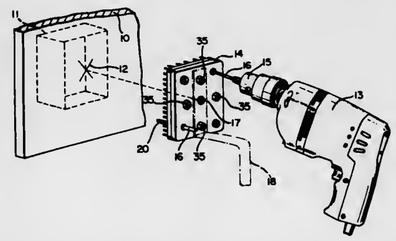
3,884,279
AUTOMATIC SAFETY DISPENSING MECHANISM FOR FLUID OR PULVERULENT MATERIAL
Paul Genoud, Saint Genis-Laval, and Eugene Bresson, Lyon, both of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, France
Filed Apr. 11, 1973, Ser. No. 350,206
Claims priority, application France, Apr. 14, 1972, 72.13343
Int. Cl. B65b *43/42*
U.S. Cl. 141—156 **14 Claims**



1. A safety device for transferring a fluid or pulverulent material between a first container and at least one second

container, said safety device comprising a discharge pipe for discharging material from a first container, said discharge pipe connected to said first container, obturating means for obturating said discharge pipe and for controlling the flow of material therethrough, a distributing duct for distributing said material to at least a second container when said first and second containers are in a substantially preselected relative location with respect to one another, connecting means for movably connecting said distributing duct to said discharge pipe, said connecting means enabling a relative displacement of said distributing duct with respect to said discharge pipe, detecting means for detecting the position of said distributing duct to automatically control the opening of said obturating means exclusively when said distributing duct is substantially at a predetermined reference position corresponding to said preselected relative locations of said first and second containers, said detecting means effecting control of said obturating means to transfer said material between said first and second containers when said distributing duct is substantially at said reference position and, said detecting means effecting closure of said obturating means when said distributing duct is substantially moved from said reference position.

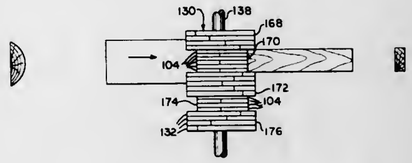
3,884,280
WALL OUTLET AND SWITCH BOX HOLE CUTTER
John D. Chailer, 2115 Weatherbee Ave., Fort Worth, Tex. 76110
Division of Ser. No. 291,726, Sept. 25, 1972, Pat. No. 3,833,311, which is a continuation-in-part of Ser. No. 258,081, Aug. 23, 1972, abandoned. This application Apr. 18, 1974, Ser. No. 462,093
Int. Cl. B27f *5/12*
U.S. Cl. 144—73 **15 Claims**



1. A cutting device adapted for use with a source of rotary power for cutting shaped openings in sheet material comprising a housing; an endless driven member mounted for movement within said housing, said member being provided with cutting means extending forwardly of said housing; rotatable drive means for causing movement of said member; a sight opening formed through said housing at a location corresponding to the center of the shaped opening to be cut by said device; and a plurality of idler means mounted within said housing and positioned so that said member is constrained to move along a desired closed path.

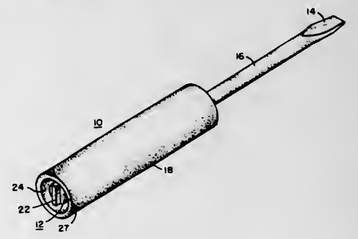
3,884,281
SALVAGE MACHINE AND HARVESTER
Lionel Pease, 2333 N.W. 98th, Seattle, Wash. 98107
Filed Aug. 11, 1969, Ser. No. 848,994
Int. Cl. B27c *1/00;* **B27l** *1/02*
U.S. Cl. 144—218 **20 Claims**

1. A chipper head assembly for rotary milling and climb cutting a piece of wood, said assembly comprising:
a. a first chipping knife;
b. a second chipping knife;
c. said first chipping knife having a radial cutting edge and an annular cutting edge for cutting on the face of the piece of wood;
d. said second chipping knife having an annular cutting edge for cutting on the face of the wood; and,



e. the annular cutting edge of the first chipping knife being on a larger radius than the annular cutting edge of the second chipping knife.

3,884,282
SCREWDRIVER WITH INTEGRAL MAGNETIC SCREW STARTER
Stephen Stanley Dobrosielski, 429 E. End Ave., Beaver, Pa. 15009
Filed Apr. 29, 1974, Ser. No. 464,943
Int. Cl. B25b *15/00*
U.S. Cl. 145—50 DA **7 Claims**



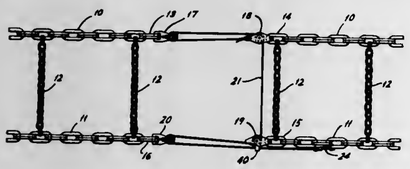
1. A screwdriver with integral, magnetic screw starter comprising:
an elongated handle;
a shank formed of a first material attached to and extending from one end of said elongated handle;
a first driver head formed at the free end of said shank;
an elongated magnetic screw starter, longitudinally aligned with said shank, formed of a second material having superior magnetizable properties and attached to the other end of said elongated handle opposite said shank; and,
a second driver head formed at the exposed end of said magnetic screw starter and being constructed for use in cooperation with said first driver by only accommodating the same size and type of screw as said first driver.

3,884,283
TIRE CHAIN
Stewart L. Engel, 305 S. Warminster Rd., Hatboro, Pa. 19040
Filed Dec. 5, 1973, Ser. No. 422,120
Int. Cl. B60c *27/00*
U.S. Cl. 152—213 A **5 Claims**

1. A tire chain, comprising two side chains adapted to be positioned in circular form at opposite sides of a tire and tread chains connecting said side chains and adapted to extend over the tread of the tire,
permanently closed-link retaining elements connected to corresponding ends of each of said side chains,
open-link retaining elements connected to the opposite ends of each of said side chains,
and a flexible cable having one end secured to the end of a first one of said side chains to which one of said closed-

link retaining elements is connected and having

link retaining elements is connected and having a snap hook connected to its other end, said cable passing through said closed-link retaining element connected to the end of said first side chain to which the end of said cable is connected to form a loop therein whereby the loop formed in said flexible cable is placed over the open-link retaining element at the end of said first side chain and then said flexible cable is passed across the tread of



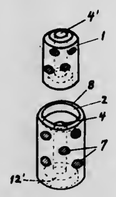
said tire and thence passing through the closed-link retaining element at the end of the second of said side chains, and the portion of said flexible cable between said second closed-link retaining element and said snap hook is passed over the open-link retaining element at the end of said second side chain, said cable is then pulled tight to position the tire chain in contact with the tire, and the free end thereof is secured by fastening said snap hook to a link of said second side chain.

3,884,284

DEVICE FOR PREVENTING THE SKIDDING OF WHEELS AND SIMILAR OBJECTS

Martti Salakari, 21500 Piikkio, Finland

Filed Mar. 16, 1973, Ser. No. 342,251
Claims priority, application Finland, Mar. 22, 1972, 780/72
Int. Cl. B60c *11/16*
U.S. Cl. 152—210 **6 Claims**



1. A stud for installation in the wearing surface of a tire made of resilient material comprising:
   a stem formed with a control bore;
   a concentric sleeve fitting at least partly over said stem; and a central shank having a wear-resistant head-part projecting from said central bore, and adapted to engage a roadway, said stem and said shank being formed with a plurality of holes extending from respective outer surfaces thereof substantially in a direction towards the central axis of said stem for receiving at least portions of said resilient material.

3,884,285

ABRASION-RESISTANT RUBBER COMPOSITIONS

David B. Russell, Westfield, N.J., and Thomas J. Doran, Jr., Norton, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 187,838, Oct. 8, 1971, abandoned. This application Oct. 11, 1973, Ser. No. 405,725
Int. Cl. B60c *5/00;* **C08c** *11/10, 11/12*
U.S. Cl. 152—330 R **23 Claims**

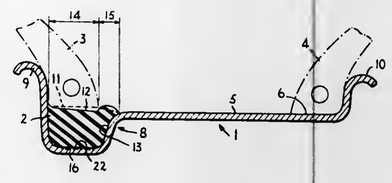
1. A vulcanized rubber composition comprising the vulcanizate of a vulcanizable rubber polymer, from 5 to 100 parts, per 100 parts of rubber polymer, of finely-divided reinforcing siliceous pigment, and between 0.1 and 15 parts, per 100 parts of rubber polymer of an organic coupling agent the functional groups of which consist essentially of at least one sulfur functional group capable of bonding to the rubber polymer and at least one nitrogen functional group capable of bonding to the siliceous pigment provided that when the nitrogen functional group is amino the coupling agent has at least two such groups.

3,884,286

WHEEL RIMS

Henri Verdier, Beauregard-l'Eveque, France, assignor to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie, France

Filed July 17, 1974, Ser. No. 489,106
Claims priority, application France, July 30, 1973, 73.27921
Int. Cl. B60c *5/00*
U.S. Cl. 152—375 **9 Claims**



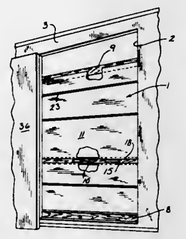
1. A wheel rim having a base and two seats for tire beads, each seat being extended by a flange, and provided with a mounting well adjacent one flange and a removable annular device filling the well, characterized by the fact that:
   a. the mounting well is contiguous one of the flanges and forms an extension thereof,
   b. the annular filling device is a stretchable flexible lining having a radial profile such that the lining applies itself against the walls of the mounting well and forms the seat for a tire bead and an extension of this seat to the rim base, and that at least the bead seat and its extension which are formed by the lining are compressible without variation in the total volume of the lining.

3,884,287

TEMPORARY LOAD RETAINING BARRICADE FOR THE DOORWAY OF A FREIGHT CARRIER

Donald L. Riviere, and Paul M. Thomsen, both of Neenah, Wis., assignors to Menasha Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 250,526, May 5, 1972, abandoned. This application Apr. 6, 1973, Ser. No. 348,663
Int. Cl. E06b *5/00*
U.S. Cl. 160—368 G **18 Claims**



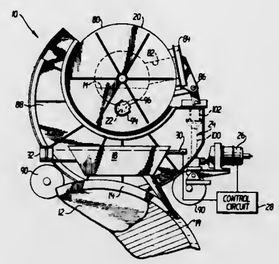
1. In a temporary load retaining barricade for the doorway of a freight carrier, a pry board at the lower end of the barricade, a top board at the upper end of the barricade, at least one reinforcing member intermediate the pry board and the top board, and a generally planar paperboard panel extending between the pry board and the top board and having an inwardly offset portion forming a trapezoidal cavity enveloping the intermediate reinforcing member, said trapezoidal cavity formed by the inwardly offset portion of the paperboard panel includes a lower wall generally normal to the doorway for seating the reinforcing member and an opposed upper wall disposed angularly relative to the doorway.

3,884,288

METHOD AND APPARATUS FOR TUNDISH LEVEL CONTROL

Milton E. Berry, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Feb. 22, 1973, Ser. No. 334,578
Int. Cl. B22d *11/06, 11/10*
U.S. Cl. 164—4 **13 Claims**



1. A method of maintaining a predetermined level of molten metal in the tundish of a continuous casting machine by controlling the continuous pouring of molten metal therein from a rotatably mounted holding furnace, comprising:
   monitoring the level of molten metal in the tundish,
   generating a signal in response to said monitoring indicative of said level,
   comparing said signal with a reference signal and generating a control signal through a control circuit in response thereto if said comparison indicates that said level has deviated from said predetermined level,
   rotating said holding furnace in response to said control signal for a predetermined selected interval of time to vary the rate of pouring of molten metal therefrom into said tundish,
   preventing the rotating of said holding furnace subsequent to said selected interval for a given interval of time independently of the casting rate, and
   thereafter again rotating said holding furnace in response to said control signal if the level of molten metal in said tundish still deviates from said predetermined level,
   said steps of rotating and preventing continuing successively until said level reaches said predetermined level.

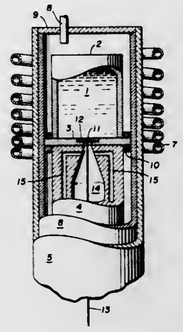
7. In a continuous wheel-band type casting machine for the continuous casting of molten metal having an arcuate mold defined by a groove formed in the periphery of the wheel which is partially closed by an endless band, a tundish disposed in juxtaposed relation to the wheel for supplying molten metal to the mold, a rotatably mounted holding furnace for supplying molten metal to the tundish, means for monitoring the level of molten metal in the tundish, and means responsive to said monitoring means for rotating said holding furnace in either direction to control the pouring of molten metal from said holding furnace into said tundish during the casting operation; the improvement comprising control circuit means operatively connected with said monitoring means and said rotating means for activating said rotating means for at least one predetermined selected interval when the level of molten metal in said tundish varies from a predetermined level, said control circuit means further including means independent of the casting rate for preventing the activating of said rotating means for a given interval after each of said at least one predetermined selected interval of activation said preventing means including timer means for resetting said control circuit means after elapse of said given interval.

3,884,289

INVISCID SPINNING OF SILICON STEEL

Lawrence F. Rakestraw, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 29, 1973, Ser. No. 392,829
Int. Cl. B22d *11/12*
U.S. Cl. 164—66 **8 Claims**



1. In a method for producing fine diameter wire from the melt of a steel-silicon alloy wherein said melt is extruded through an orifice as a continuous molten stream and into an oxygen-containing atmosphere where a solid film of silica is caused to form about the surface of the stream to preserve its continuity until solidified, the improvement which comprises:
   a. heating to the melt an alloy comprised of steel and at least 0.5 percent by weight of silicon;
   b. maintaining a pressurized gas mixture over the melt consisting of an inert gas and an oxygen-containing gas;
   c. controlling the oxygen potential of the melt by means of said oxygen-containing gas to a level wherein the activity of silica within the melt is maintained at from 0.3 to unity;
   d. causing said melt to extrude through an orifice as a continuous molten stream and into an oxygen-containing gaseous atmosphere having the capacity for increasing the oxygen potential of said stream to a level wherein silica is caused to precipitate and form a stabilizing film about the periphery of said stream;
   e. cooling said film-stabilized molten stream to the solid state.

3,884,290

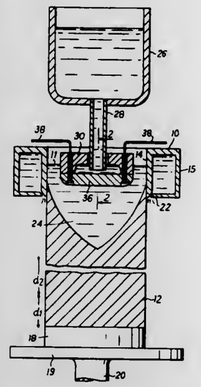
METHOD OF DIRECT CHILL CONTINUOUS CASTING

John Gordon McCubbin, Kingston, Ontario, Canada, assignor to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Jan. 21, 1974, Ser. No. 434,784
Claims priority, application United Kingdom, Jan. 24, 1973, 3699/73
Int. Cl. B22d *11/12*
U.S. Cl. 164—82 **11 Claims**

1. A method of producing light metal ingots by the direct chill casting process in which molten metal is introduced into one end of an open-ended mould and a solidified ingot is withdrawn from the opposite end of the mould, fluid coolant being applied directly to the solidified surface of the ingot emerging from the mould, in which, in the course of forming the ingot, at one stage the ingot is withdrawn from the mould at a speed below the crack propagating speed for a sufficient

distance to develop a crack-free centre in the emerging ingot, the speed of ingot withdrawal then being increased to a speed

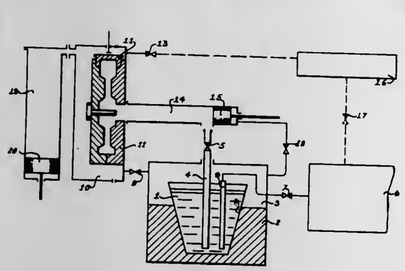


above the crack propagating speed and below the crack initiating speed.

3,884,291
APPARATUS FOR PRODUCTION OF CASTINGS FROM ALLOYS OF METALS AND GASES

Angel Tontchev Balevski, and Ivan Dimov Nikolov, both of Sofia, Bulgaria, assignors to Institut po Metaloznanie i Technologia na Metalite, Sofia, Bulgaria

Filed Oct. 2, 1969, Ser. No. 863,308
Claims priority, application Bulgaria, Oct. 10, 1968, 10793
Int. Cl. B22d *25/06, 17/10*
U.S. Cl. 164—312 **3 Claims**



1. Apparatus for the production of alloys of metals and gases, comprising a first, hermetically closed chamber, a reservoir for molten metal disposed in said first chamber, means for creating in said first chamber an atmosphere under pressure of the gas to be dissolved in the metal, a second chamber, a mould to be charged with molten metal from said reservoir disposed in the second chamber, means for injecting the molten metal into the mould, and conduit means for selectively connecting the second chamber to the first chamber and to the means for creating gas under pressure.

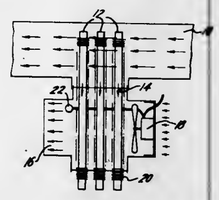
3,884,292
AIR-O-SPACE HEATER MEANS FOR RECOVERING HEAT FROM A FLUID STEAM

Richard L. Pessolano, Sparta, and Robin B. Rhodes, Parsippany, both of N.J., assignors to Isothermics, Inc., Augusta, N.J.

Filed June 22, 1973, Ser. No. 372,525
Int. Cl. F28d *15/00*
U.S. Cl. 165—39 **1 Claim**

1. A means for recovering heat from a first fluid stream, said fluid stream having a defined heat content, comprising:

a. a heat pipe having a first portion and a second portion, said first portion extending into said fluid stream;
b. a wall proximately disposed to said stream, said wall adapted to confine said stream in order to prevent heat and fluid leakage from said stream, said wall defining the division between said first and second portions of said pipe;
c. means for proving a second fluid stream, said second stream having a different temperature than said first stream, said second stream disposed in thermal contact with said second portion of said heat pipe, wherein heat transfer is effectuated from the fluid stream of higher temperature to the fluid stream of lower temperature;



d. exteriorly accessible means for mutually adjusting the relative lengths of said first and second portions of said heat pipe, wherein the total length of said heat pipe remains constant,

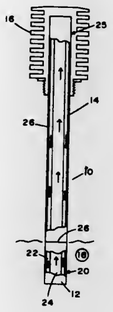
whereby the adjustment of the length of said first portion effectuates a regulation of the quantity of heat transferred between said first and second fluid streams; and

e. a blower control for said second flow stream said blower control serving to maintaining a desired rate of flow of said second flow stream with respect to said second portion of said heat pipe.

3,884,293
COOLING MEANS

Richard L. Pessolano, Sparta, and Robin B. Rhodes, Parsippany, both of N.J., assignors to Isothermics, Inc., Augusta, N.J.

Filed July 23, 1973, Ser. No. 382,024
Int. Cl. F01p *3/12*
U.S. Cl. 165—51 **5 Claims**



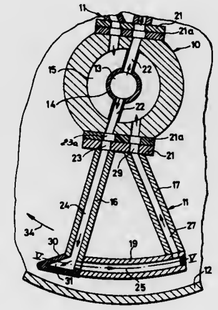
1. A means for cooling an oil lubrication subsystem of an automotive vehicle, comprising:

a. a heat pipe having a condensor end and an evaporator end, said evaporator end removably insertable into the dip stick hole of the oil lubrication subsystem, said heat pipe including an oil level indicator placed near said evaporator end; and
b. a heat sink joined to the condensor end, whereby heat from said subsystem is vaporously transported within said heat pipe from the evaporator end to the condensor end, and transported therefrom into a medium of lower temperature than that of said subsystem.

3,884,294
LIQUID COOLED MIXING TOOL FOR MACHINES FOR APPLYING GLUE TO SHAVINGS

Wilhelm Lodige, Elsener Str. 9c; Fritz Lodige, Leuschner Str. 12, and Josef Lucke, Im Lohfeld 13, all of 479 Paderborn, Germany

Filed Mar. 19, 1973, Ser. No. 342,680
Claims priority, application Germany, Mar. 22, 1972, 2213778
Int. Cl. F28d *11/02*
U.S. Cl. 165—92 **14 Claims**

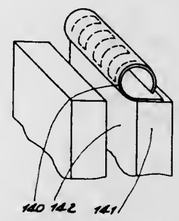


1. In a device for mixing materials, especially for mixing glue or the like with particles, in a horizontal drum shaped container; a horizontal shaft rotatable on the axis of the container and having first and second axial passages therein for cooling fluid, and mixing tools carried by the shaft and extending radially therefrom, each tool having a radially outer head portion adjacent the peripheral wall of the container, each head portion comprising at least two tubular legs extending in the peripheral direction and converging toward the leading side of the tool, said legs being interconnected at the leading ends and forming a pointed leading end on the tool, and means for conducting cooling fluid from one of said first and second passages in said shaft through said tubular legs and back to the other of said passages, said tool having angularly related support struts connected at the radially inner ends to said shaft and at the radially outer ends to the leading and trailing ends of said legs, said struts being tubular and converging cooling fluid between said first and second passages in said shaft and said tubular legs, said legs and struts being fixedly interconnected, said struts converging in the radially inward direction toward the shaft, a threaded substantially radial nipple member fixed to the radially inner ends of said struts, said shaft having a threaded hole for adjustably receiving said nipple member, and clamp means for clamping the nipple member to said shaft in adjusted positions in said threaded hole, said shaft having an axial bore, a pipe on the axis of the shaft smaller than said bore, said first passage being formed by the inside of said pipe and said second passage being formed by the region inside said bore and surrounding said pipe, a supply conduit connected at one end to said pipe and extending with radial clearance along the axis of said nipple member and connected at the other end to the strut which is connected to the leading ends of said legs and converging fluid between said first passage and the strut, the struts connected to the trailing ends of said legs communicating with the space in said nipple member which surrounds said conduit, said space communicating with the inside of the bore in said shaft whereby the last mentioned struts communicate with said second passage.

3,884,295
ELECTRIC STORAGE AIR HEATER

Nikolaus Laing, and Ingeborg Laing, both of Hofener Weg 35-37, 7141 Aldingen near Stuttgart, Germany

Continuation of Ser. No. 13,747, Feb. 24, 1970, abandoned. This application June 5, 1972, Ser. No. 260,012
Int. Cl. F28f *27/00*
U.S. Cl. 165—961 **2 Claims**

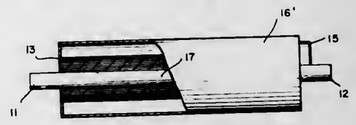


1. A heat storage device having an air duct therein and a closure for said duct, said closure comprising a flexible composite laminated strip member normally wound in a roll form and made up of at least two laminae of polymeric material having different coefficients of thermal expansion, said strip being secured at one end thereof adjacent said air duct, an electrical resistance heating means associated with one of said lamina whereby said one lamina may be heated to cause said one lamina to expand relative to said other lamina and to unwind said strip to mask said air duct in order to regulate passage of air therethrough.

3,884,296
STORABLE CRYOGENIC HEAT PIPE

Algerd Basiulis, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 24, 1973, Ser. No. 400,443
Int. Cl. F28d *15/00*
U.S. Cl. 165—96 **4 Claims**



1. A cryogenic heat transfer device comprising:

an hermetically sealed, evacuated elongated housing;
a capillary wick longitudinally disposed within said housing;
an expansion reservoir in fluid communication with said elongated housing;
an insulation shell, longitudinally disposed about a substantial portion of the outer lateral surface of said elongated housing; said reservoir is a shell-like structure enclosing said insulation shell; and
a quantity of cryogenic working fluid disposed within said capillary wick and said expansion reservoir.

3,884,297
ANNULAR FLOW HEAT EXCHANGER

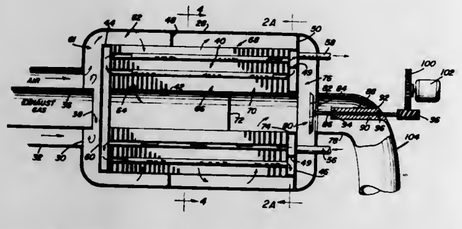
Clark E. Fegraus, and Jimmy G. Sundahl, both of San Bernardino, Calif., assignors to Automotive Environmental Systems, Inc., San Bernardino, Calif.

Filed Feb. 12, 1973, Ser. No. 331,514
Int. Cl. F28s *9/22*
U.S. Cl. 165—145 **6 Claims**

1. A heat exchanger having a housing and comprising:

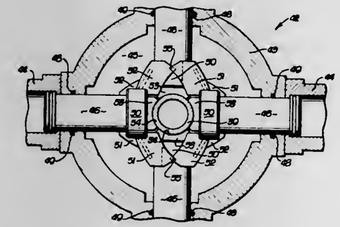
a heat exchanger fin assembly symmetrically mounted in the housing, the fin assembly including an annular cylindrical

body comprised of axially spaced fin members, the assembly being radially spaced from the housing;
inlet means having a plurality of concentric inlet tubes connected to the exchanger for delivering respective fluids to the exchanger, simultaneous entry of the fluids causing turbulent mixing of the fluids to occur;
a first axial passageway formed between the fin assembly and the housing to alternately direct the flow of mixed fluids radially and axially between the inlet means and an outlet means;
a second axial passageway being formed along the axis of the fin assembly; the fluid mixture alternately flowing between the first axial passageway, the annular space between the individual fin members, and the second axial passageway;



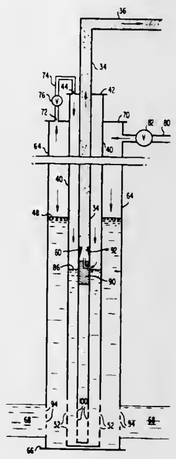
coolant means connected to the fin assembly for effecting desired heat transfer between the fin assembly and the fluid mixture, resulting in temperature conditioning of the fluid mixture which is homogeneous when delivered to the outlet means;
at least one annular baffle to block the first axial passageway at a preselected point therealong; and
at least one baffle disposed at a preselected point along the second axial passageway;
the presence of the annular and axial baffles forcing the fluid flow to make several passes through the fin assembly between the inlet and outlet means thereby increasing the temperature conditioning of the fluids and the homogeneity thereof.

3,884,298
APPARATUS AND METHOD FOR PREVENTING WEAR ON SUBSEA WELLHEAD ASSEMBLY OR THE LIKE
Bruce J. Watkins, Palos Verdes Estates, Calif., assignor to Regan Offshore International, Inc., San Pedro, Calif.
Filed June 21, 1973, Ser. No. 372,169
Int. Cl. E21b *7/12*
U.S. Cl. 166—.5 **7 Claims**



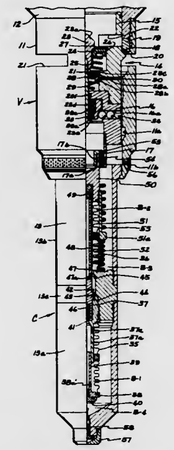
1. In apparatus for carrying out subsea operations wherein a wellhead assembly is in fluid communication with a well borehole extending down into a subterranean formation, said assembly having a string of pipe extending therethrough from the water surface generally coaxially aligned with said wellhead assembly and down into said well borehole, said apparatus comprising:
B.O.P. stack means operatively engaging said wellhead assembly and having said string of pipe passing generally coaxially therethrough, said stack means having wear preventing means associated therewith for preventing wear by said string of pipe passing therethrough, said wear preventing means including a plurality of spaced rams selectively movable from a first position in contact with said string of pipe to a second position in a direction generally transverse to the longitudinal axis of said string of pipe, each of said rams having a replaceable wear pad at the forward ends of each of said rams adapted to contact and bear against said string of pipe when said rams are in said first position, said rams being spaced from one another a distance sufficient to pass oil well tools therethrough.

3,884,299
WELL PUMP FOR FLUIDS AND VAPORS
Arol B. McCarter, and Seymour Van Os, Jr., both of Longview, Tex., assignors to R. E. Blount, Longview, Tex., a part interest
Continuation of Ser. No. 313,620, Dec. 11, 1972, abandoned.
This application June 24, 1974, Ser. No. 482,655
Int. Cl. E21b *43/00*
U.S. Cl. 166—68 **7 Claims**



1. An improved well pump for fluids and vapors comprising a set of at least two concentrically disposed pipes for stringing down into a well below fluid level, said set consisting of an inner pipe and an adjacent annulus each having an upper and a lower terminal thereof, an external supply of gas coupled to the upper terminal of the adjacent annulus for feeding gas under pressure down therein, aerator means disposed at the lower terminal of the inner pipe for coupling the gas of the adjacent annulus into the inner pipe including emulsifying means for causing the gas to comingle with the well fluids, and venturi means within the flow path downstream of said aerator means and said emulsifying means for causing a slight suction in an upward direction in the inner pipe of the well fluids, so that the foamed and emulsified well fluids are forced upward and discharged at the upper terminal of the inner pipe at the earth's surface with very low applied pressure.

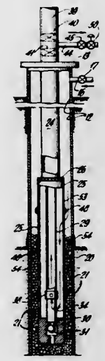
3,884,300
AUTOMATIC SAFETY VALVE
Henry U. Garrett, Longview, Tex., assignor to Macco Oil Tool Co., Inc., Houston, Tex.
Division of Ser. No. 153,617, June 16, 1971, Pat. No. 3,802,504. This application Nov. 28, 1973, Ser. No. 419,513
Int. Cl. E21b *43/12*
U.S. Cl. 166—133 **13 Claims**



9. An automatic safety valve for use in a well conduit comprising:
a. valve body means having a flow passage means extending through at least a portion of said valve body means, said passage means including inlet and outlet means;
b. movable valve closure means connected with said valve body means for opening or closing said passage means to respectively permit or terminate the flow of fluids through said passage means;
c. pressure responsive means connected by a linking means with said closure means, said pressure responsive means being movable from a first position to a second position for automatically moving said closure means from open position into closed position in response to pressure conditions present within said well conduit;
d. valve seat means included in said closure means;
e. valve stem means included in said closure means, said stem means including sealing means for sealingly engaging and disengaging said seat means to respectively terminate or permit flow through said passage means; and
f. means included in said linking means for permitting said pressure responsive means to return from said second to said first position without unseating said sealing and seat means.

3,884,301
METHOD OF GRAVEL-PACKING A HIGH-PRESSURE WELL
Eric B. Turner, Pointe-a-Pierre, Trinidad And Tobago, and John A. Schell, Morgan City, La., assignors to Texaco Trinidad, Inc., Pointe-a-Pierre, Trinidad And Tobago
Filed Nov. 23, 1973, Ser. No. 418,791
Int. Cl. E21b *43/04*
U.S. Cl. 166—278 **7 Claims**

1. Method of gravel-packing a well that penetrates a high-pressure formation, wherein said well contains weighted drilling mud to control said high pressure, and wherein said well has a tubing string suspended within a casing, which comprises:
positioning a screen and washpipe with valve means for permitting only downward flow from said tubing through said washpipe and for controlling reverse flow upward into said tubing only near the lower end of said washpipe inside said screen adjacent to said formation,
displacing said mud from said well adjacent to said formation while holding enough pressure to contain said high-pressure formation by circulating a wash fluid down said tubing string, and



placing gravel to pack said well opposite said formation by reversing said wash fluid circulation to flow said gravel down the well annulus while continuing to hold said containment pressure,
whereby an uncontaminated gravel pack of a high-pressure formation is obtained.

3,884,302
WELL CEMENTING PROCESS
Joseph U. Messenger, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed May 29, 1974, Ser. No. 474,290
Int. Cl. E21b *33/16*
U.S. Cl. 166—291 **6 Claims**

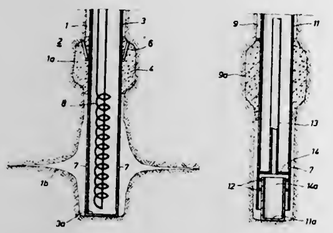
5. In a method of cementing casing in a well penetrating a subterranean formation wherein a cement slurry is flowed into the annulus formed intermediate the casing and the wall of the well and is allowed to set and bond the casing to the wall of the well, said well having a drilling mud therein, the improvement comprising:
a. flowing in turbulent flow into said annulus an aqueous alkaline wash having a pH of at least 10;
b. flowing in plug flow into said annulus and in contact with said aqueous alkaline wash an aqueous preflush that has a characteristic of forming a viscous film upon contact with a fluid having a pH of at least 10; and
c. flowing in plug flow into said annulus and in contact with said aqueous preflush and cement slurry.

3,884,303
VERTICALLY EXPANDED STRUCTURE-BIASED HORIZONTAL FRACTURING
Philip J. Closmann, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Mar. 27, 1974, Ser. No. 455,170
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 **3 Claims**

1. A process for horizontally fracturing a subterranean earth formation, which process comprises:

connecting a vertically expandable structure to said formation at locations above and below a selected depth within the earth formation;

applying a vertical expanding force to the structure so that the applied force causes a vertical expansion substantially free of horizontal expansion and reduces the vertical



compressive stress within the earth formation until it becomes the least of the mutually perpendicular compressive stresses within the earth formation at the selected depth; and

concurrently, pressurizing fluid in contact with the so-treated earth formation to induce a fracture at or near the selected depth.

3,884,304

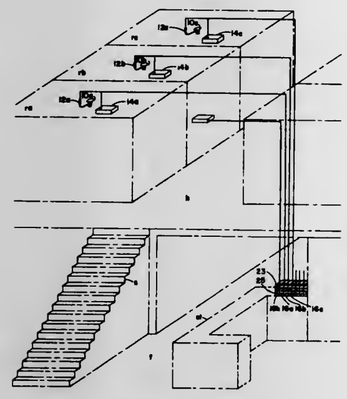
FIRE SAFETY SYSTEMS

Robert P. Messerschmidt, 9390 Union Cemetary Rd., Loveland, Ohio 45140, and Lloyd D. Montag, 39 Millie Ave., Milford, Ohio 45150

Filed July 24, 1972, Ser. No. 274,817

Int. Cl. G08b *13/22*

U.S. Cl. 169—16 **29 Claims**



1. A fire safety system comprising:

a water sprinkler head connected to a source of pressurized water, and including a valve and means, restrained by a fusible element, for holding said valve in a closed position preventing discharge of water from said sprinkler,

a smoke detector including means for producing an output signal in response to a given rise in smoke density,

means responsive to said output signal for generating heat sufficient to melt said fusible element, thereby releasing said valve and discharging water from said sprinkler.

3,884,305

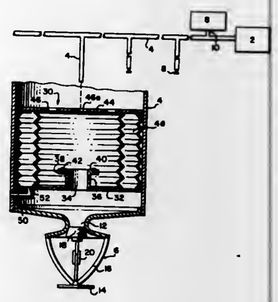
FIRE EXTINGUISHING SYSTEM HAVING A VARIABLE EXTINGUISHANT DISCHARGE RATE

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Division of Ser. No. 288,373, Sept. 12, 1972, which is a division of Ser. No. 61,801, Aug. 6, 1970, Pat. No. 3,714,964, which is a division of Ser. No. 770,248, Oct. 24, 1968, Pat. No. 3,592,270. This application Oct. 12, 1973, Ser. No. 405,894The portion of the term of this patent subsequent to July 13, 1988, has been disclaimed.

Int. Cl. A62c *37/06*

U.S. Cl. 169—37 **7 Claims**



1. A fire extinguishing system comprising a source of fluid, at least one discharge head mounted in proximity to an area to be protected from fire, conduit means connecting said source of fluid to said head, means responsive to a predetermined fire condition in said area for permitting fluid flow from said source, through said conduit means, and to said head for discharge from said head, and fluid flow control means disposed in said conduit means for regulating the rate of fluid discharge from said head, said control means being automatically responsive to fluid pressure conditions in said system for permitting fluid flow at a predetermined relatively high rate and thereafter at a predetermined relatively low rate.

3,884,306

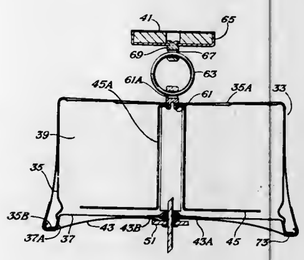
FIRE EXTINGUISHER

Robert A. Williams, 55 Bounty Rd. East, Forth Worth, Tex. 76116

Filed Nov. 12, 1973, Ser. No. 414,627

Int. Cl. A62c *35/02*

U.S. Cl. 169—59 **12 Claims**



1. A fire extinguisher comprising:

a closed container,

a fire extinguisher substance located in said container,

spring means biased normally to apply force to at least one selected wall portion of said container to form an opening in said container when its force is released,

a meltable holding member for normally holding said spring means in its normally biased position and for releasing said spring means when said holding member melts, and a heat sensitive fuse or firetrain adapted to ignite in the presence of temperature of a given intensity to apply heat to said holding member to allow said member to melt and release said spring means to form an opening in said container to allow said fire extinguishing substance to pass out of said container through said opening.

3,884,307

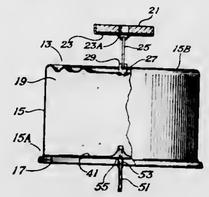
FIRE EXTINGUISHER

Robert A. Williams, 55 Bounty Rd., East, Fort Worth, Tex. 76116

Filed Nov. 12, 1973, Ser. No. 414,660

Int. Cl. A62c *13/26*

U.S. Cl. 169—59 **26 Claims**



1. A fire extinguisher comprising:

a closed container,

a fire extinguishing substance located in said container,

force producing means located in close proximity to a given portion of the wall of said container for use primarily for opening only said given portion of said container wall when actuated, and

heat sensitive means for actuating said force producing means in the presence of heat above an undesired level to form said opening to allow said fire extinguishing substance to pass out of said container,

said heat sensitive means comprising:

a metallic wire having a high thermal conductivity,

a fast burning substance located around said wire,

cover means wrapped around said substance to provide strength for said heat sensitive means and to hold said substance in place, and

a water-proof layer of highly flammable material deposited on said cover means.

3,884,308

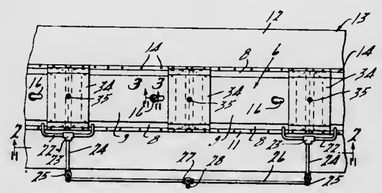
FIRE EXTINGUISHER MECHANISM FOR A TRAILER

William M. Green, 11278 Ford Rd., Brighton, Mich. 48116

Filed Mar. 11, 1974, Ser. No. 449,610

Int. Cl. A62c *35/12*

U.S. Cl. 169—62 **6 Claims**



1. In a fire extinguishing system for a trailer, tank means for holding water, overhead supporting means for said tank means, said tank means being mounted in adjacent relation with the adjacent walls sloping downwardly to form a V-shaped recess, fill means for introducing water into said tank means, and vent means on said tank means for permitting the flow of air therethrough as water flows into and out of the tank means until filled therewith when the water closes the vent means.

3,884,309

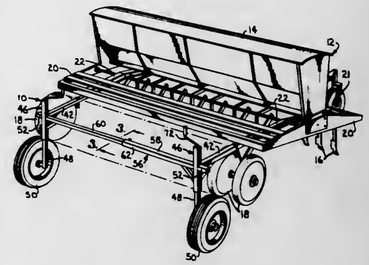
BIDIRECTIONAL DRILL TRANSPORT

Emanuel Schneider, 104 Eighth St., Wakeeney, Kans. 67672

Filed Nov. 23, 1973, Ser. No. 418,450

Int. Cl. A01b *63/16, 73/00*

U.S. Cl. 172—240 **4 Claims**



1. A bidirectional transport for agricultural equipment comprising:

a carrier frame adapted to be connected to said equipment;

a wheel adapted to run in engagement with the ground;

an upright wheel support mounting said wheel for rotation about a fixed axis; and

selectively operable structure on said frame securing said wheel support thereto in either of a pair of fixed positions corresponding to two different directions of movement of the equipment extending front to rear and transversely of the equipment respectively, said axis of the wheel when said support is in one of said positions being at an angle of approximately 90° relative to the location of the axis when said support is in the other of said positions,

said structure and said support presenting upper and lower, mating coaxial members having an upright common axis, said members being of polygonal configuration transversely of said common axis to present interengaging corner shoulders preventing relative rotation thereof about said common axis,

said structure including jacking means coupled with said lower member presented by the wheel support for raising and lowering said carrier frame relative to said wheel and for extending said lower member to a disposition clearing said upper member to permit remating thereof in either of said positions.

3,884,310

WORKING AGGREGATE, MORE PARTICULARLY FOR SOIL CULTIVATION

Josef Soucek; Zdenek Brazda, and Alexandr Grecenko, all of Prague, Czechoslovakia, assignors to Vyzkumny ustav zemedelskych stroju, Prague, Czechoslovakia

Filed June 12, 1973, Ser. No. 369,220

Claims priority, application Czechoslovakia, June 30, 1972, 4688-72

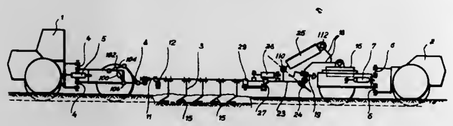
Int. Cl. A01b *51/00*

U.S. Cl. 172—292 **9 Claims**

1. A working aggregate for soil cultivation comprising in combination:

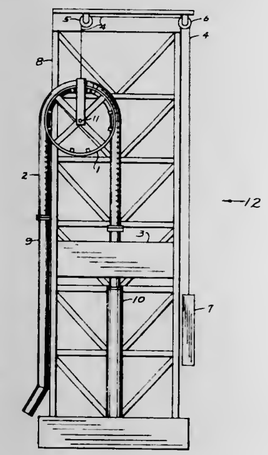
a working unit for supporting tools vertically, and horizontally pivoted between two power units comprising:

a. a front power unit,
b. a rear power unit,
c. said working unit supporting working tools,
d. means for swingably mounting said working unit at one end thereof on the front power unit and means for swingably mounting said working unit at the other end thereof on the rear power unit so that the said working unit is suspended between the front and rear power units,
e. first lifting means attached to the working unit and to the front power unit and second lifting means attached to the working unit and the rear power unit for lifting



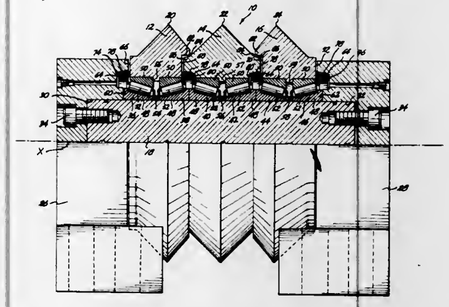
the working unit in relation to the front and rear power units into transport position and to lower the working unit into operative position, said second working means comprising a turntable mounted on the rear power unit, a rear lifting arm journalled to said turntable, a rear transverse rod mounted in said rear lifting arm and an implement holder attached to the said rear transverse rod and rotatably connected to the working unit,
f. deflecting means attached to the working unit and to the rear power unit for positively deflecting the working unit in relation to the front and rear power units into axial alignment for transport purposes and out of alignment for operation.

3,884,311
VERTICAL CONNECTING HOSE SUPPORT
Kenneth Harmon Eddy, Beaumont, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Mar. 27, 1974, Ser. No. 455,103
Int. Cl.[2] E21B *17/00, 41/00*
U.S. Cl. 173—57 **2 Claims**



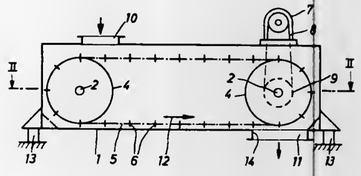
1. An earth boring machine that operates to circulate drilling fluid through an earth borehole thereby picking up materials such as borehole fluids and debris from the borehole and transfers the drilling fluid and materials through a rotating drill pipe, comprising:
a fixed support frame;
a traveling frame mounted for travel along said fixed support frame;
means connecting said traveling frame and said rotating drill pipe;
a flexible rotary hose with one end connected to said rotating drill pipe;
means for moving said drilling fluid and materials through said rotary hose;
a rotatable wheel supporting said flexible rotary hose;
a weight;
a cable connected between said rotatable wheel and said weight; and
a sheave connected to said fixed support frame for supporting said cable.

3,884,312
ROCK CUTTER ASSEMBLIES
William C. Williams, Seattle, Wash., assignor to The Robbins Company, Seattle, Wash.
Filed Sept. 12, 1973, Ser. No. 396,542
Int. Cl. F16c *35/00;* **E21b** *9/08*
U.S. Cl. 175—372 **13 Claims**



1. A rock cutter assembly comprising, first and second rock cutter wheels mounted axially adjacent each other for independent free rotation about a common axis, a hard material seal ring between said cutter wheels, means mounting said seal ring onto said first cutter wheel for rotation therewith and in sliding sealing contact with said second cutter wheel.

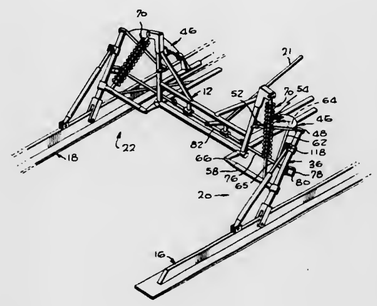
3,884,313
CONTINUOUSLY OPERATING MEASURING DEVICE FOR POURABLE MATERIALS
Kaspar Engels, Mannheim, Germany, assignor to Draiswerke GmbH, Mannheim, Germany
Filed Mar. 11, 1974, Ser. No. 450,176
Claims priority, application Germany, Mar. 10, 1973, 2312129
Int. Cl. G01g *13/02*
U.S. Cl. 177—119 **10 Claims**



1. In a continuously operating measuring device for pourable materials, comprising: a closed housing having a material inlet and a material outlet; a circulating, driven feed device

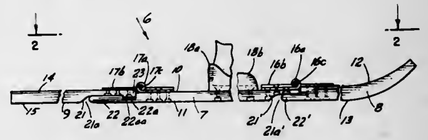
located within said housing for transporting material through said housing, from said material inlet opening to said material outlet opening; and a weighing device which supports the housing, the improvement wherein:
said driven feed device comprises a plurality of chain wheels, endless chains supported by said chain wheels, and entrainment means to push the material across the bottom of the housing, said entrainment means being supported by said chains and driven thereby and said entrainment means extend from said chains and slidably engage said bottom of said housing.

3,884,314
SNOWMOBILE SKI SUSPENSION SYSTEM
Mel Callaway, Riverside, Calif., assignor to Yamaha International Corporation, Buena Park, Calif.
Filed Apr. 12, 1974, Ser. No. 460,352
Int. Cl. B62m *27/02*
U.S. Cl. 180—9.54 **3 Claims**



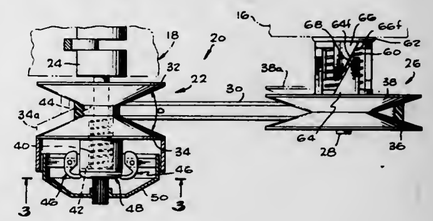
1. A snowmobile comprising:
a chassis having front and rear ends;
a track drive coupled to the rear end of the chassis for propelling it along the ground;
a pair of laterally spaced skis positioned at the front end of the chassis for supporting and steering the chassis, each ski including a strip-shaped runner in contact with the ground and an upwardly extending beam extending along the length of the runner;
a pair of spindles, each having a lower end pivotally mounted about a transverse axis on the upwardly extending beam of one of said skis and extending with a rearward and upward incline therefrom to an upper spindle end;
a pair of lower suspension members, each having an inner end pivotally mounted on the chassis and an outer end universally connected to a middle portion of a spindle between the ends thereof;
a pair of upper suspension members, each having an inner end pivotally mounted on the chassis and an outer end universally connected to the upper end of a spindle;
two pairs of drag means, each drag means connecting one of said suspension members to a chassis location which is positioned behind the inner end of the corresponding suspension member;
a pair of shock absorbers, each extending between the chassis and one of the suspension members to transfer part of the chassis weight to the suspension member; and a pair of dampeners, each extending from a position on a corresponding spindle which is above the lower spindle end, to a location on an upwardly-extending beam of a corresponding ski which is forward of the lower spindle end.

3,884,315
SAFETY SKI
Leonard J. Fox, 43 Stratton Rd., Scarsdale, N.Y. 10583
Filed Apr. 26, 1973, Ser. No. 354,894
Int. Cl. A63c *5/02*
U.S. Cl. 280—11.13 K **6 Claims**



1. A safety ski device comprising in combination: a substantially flat-bottomed ski strip elongated along its forward-to-rearward axis and divided into a least a main portion and a rearward trailing portion, the main portion including boot-mount means for mounting on a top face of the ski strip a boot element by which a skier may foot-mount the ski strip, hinge means pivotably mounting the rearward trailing portion, and biasing leaf-spring means including (a) mounting-structure projections projecting a predetermined distance from upper faces of each of the main portion and the rearward trailing portion to points located spaced-above said upper faces and (b) at least one leaf spring fixedly mounted at one end of its elongated axis and slidably mounted at an opposite end of its elongated axis onto and extending between said projections of the main portion and of the rearward trailing portions respectively, said main portion and said rearwardly trailing portion being axially aligned with one-another, the rearward trailing portion being pivotable upwardly from the hinge means, the leaf-spring means exerting a predetermined degree of biasing pressure and being mounted such that biasing stress is applied to each of the main portion and the rearward trailing portion respectively, biasing the rearward trailing portion into a normally about axially aligned position, said pivotable and biased rearwardly trailing portion being responsively pivotable to predetermined degrees in number dependent upon the amount of excessive upwardly directed pressure applied to a bottom face of the rearwardly trailing portion.

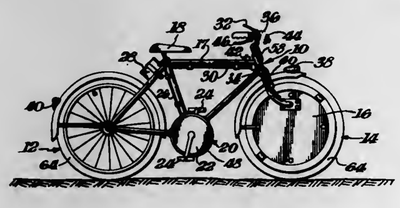
3,884,316
MOTORCYCLE TRANSMISSION
Michael R. Bowers, Westminster, Calif., assignor to Yamaha International Corporation, Buena Park, Calif.
Filed Mar. 29, 1973, Ser. No. 345,905
Int. Cl. B62d *61/02;* **F16n** *55/52*
U.S. Cl. 180—33 B **1 Claim**



1. A motorcycle comprising:
a motorcycle frame;
front and rear wheels rotatably mounted on the frame;
an engine mounted on the frame;
first and second shafts respectively coupled to the engine and rear wheel;
a first pulley means including first and second pulley sheaves rotatably fixed to said first shaft, said first pulley sheave axially slideable on the first shaft, said pulley sheaves having cone-shaped faces;

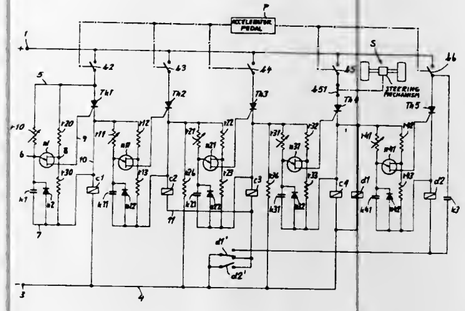
a second pulley means mounted on said second shaft;
a belt extending around said first and second pulley means to transmit power therebetween;
a cam member fixed to the moveable pulley sheave on said first shaft;
a second assembly including a support fixed to said first shaft and a plurality of centrifugal weights pivotally mounted on the support and having first end portions engaged with said cam member, said centrifugal weights being urged to pivot by centrifugal forces, when the support rotates, so that said end portions press against the cam member with a force that increases with rotational speed of the first shaft, said force urging said first pulley sheave towards said second pulley sheave; and
a spring preloaded to urge said second pulley sheave away from said first pulley sheave;
said cam member formed with predetermined engagement and top speed cam regions that sequentially engage the centrifugal weights as the moveable pulley sheave moves sequentially from an engagement position wherein the force of the centrifugal weights thereon first exceeds the preload of said spring so that the cam member and moveable pulley sheave begin to axially slide, and a top speed position wherein said pulley sheaves are closest together; the face angle of said cam member, as measured between the radial direction to the axis of the first shaft and imaginary lines normal to the cam face, increasing from less than 45° at said engagement position to an angle of 45° at an intermediate position, and a predetermined high angle of more than 45° at said top speed position, the axial distance K_2 between said intermediate position and said top speed position being less than one-half the axial distance K_1 between said engagement position and said top speed position;
said cam member being formed so the face angle changes from 30° to 60° along an axial distance K_3 which is less than one-third said axial distance K_1.

3,884,317
ELECTRICALLY POWERED CYCLE
Augustus B. Kinzel, 1738 Castellana Rd., La Jolla, Calif. 92037
Filed Mar. 5, 1974, Ser. No. 445,826
Int. Cl. B60l *11/12*
U.S. Cl. 180—34 **10 Claims**



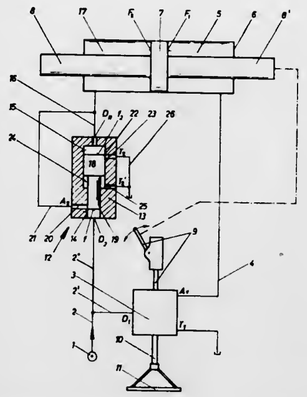
1. A power operated multiple wheel cycle comprising, a frame, front wheel means connected to said frame, rear wheel means connected to said frame, a user's station on said frame between said front wheel means and said rear wheel means for accommodating the user, pedal means at said user's station for being rotated by the force imparted by the user, a generator mounted to said frame driven by said pedal means, said generator having its generator field provided by permanent magnets, motor means associated with one of said wheel means for causing its wheel means to rotate for imparting motion to the cycle, and transmission means between said generator and said motor means whereby said generator drives said motor means to cause the cycle to move in accordance with energy imparted by the user to said pedal means.

3,884,318
ELECTRIC-POWERED VEHICLE WITH TIME-DELAY SWITCH CIRCUITRY, ESPECIALLY FOR ELECTRICAL VEHICLES
Theodor Abels, Breunsberg, and Siegfried Puschel, Aschaffenburg, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed Apr. 3, 1972, Ser. No. 240,475
Claims priority, application Germany, Apr. 8, 1971, 2117357
Int. Cl. B60l *15/12*
U.S. Cl. 180—65 R **8 Claims**



1. A vehicle comprising driven wheels, a direct-current source, an electric motor connected to said source and operating said wheels, a plurality of sequentially operable current-control devices for said motor energizable to establish respective states of operation of said motor, and a time-delay switching circuit interposed between said direct-current source and said motor, said circuit including a plurality of stages for the sequential control of said current-control devices each stage comprising:
a thyristor having its main electrodes connected in circuit with a respective one of said current-control devices across said source;
an R-C network having a series-connected resistor and capacitor connectable to said source for charging of said capacitor through said resistor from said source, each R-C network except that of the first stage being connected between the output side of the thyristor of its stage and the output side of the thyristor of the next stage;
a voltage-divider network connected to said source, each voltage-divider network except for that of the first stage being connected between the output side of the thyristor of its stage and the output side of the thyristor of the next stage; and
a unijunction transistor having its emitter connected to said R-C network between the resistor and capacitor thereof, a first base connected to said voltage-divider network for establishing the threshold voltage of said unijunction transistor, and a second base connected to the gate of said thyristor said networks of said first stage each having one terminal connected to the output side of the thyristor of the respective stage and another terminal connected to the input side of the latter thyristor, said voltage-divider networks each consisting of two resistors between which the said first base of the respective unijunction transistor is connected.

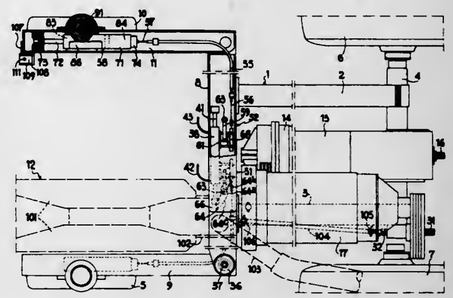
3,884,319
HYDRAULIC SERVO-STEERING SYSTEM
Gunter Strauff, Hanauerwag, Germany, assignor to Langen & Co., Dusseldorf, Germany
Filed Dec. 18, 1972, Ser. No. 316,398
Claims priority, application Germany, Dec. 16, 1971, 2162385
Int. Cl. B62d *5/08*
U.S. Cl. 180—79.2 R **11 Claims**



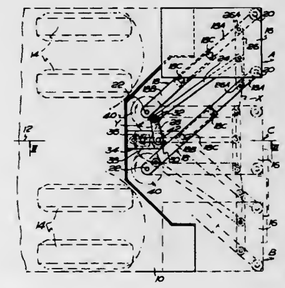
1. A hydraulic servo-assisted steering system for vehicles having steerable road wheels and a steering wheel comprising: a pressure source; a reservoir; a transmission including at least two parts interposed between the steering wheel and the steerable road wheels; a servo-motor which assists steering and acts on any convenient point of that part of the transmission which is remote from the steering wheel,; and a control valve which responds to small relative movements between said two parts of the transmission; the control valve according to the hand of said relative movement connecting a working space of the servo-motor either with the pressure source or with the reservoir; the improvement including a pressure changing means located in a connection between the pressure source and that working space of the servo-motor which is not controlled by the control valve.

3,884,320
SELF-DRIVEN MACHINE, WITH DIFFERENTIAL STEERING
Raymond Louis Auguste Leveau, 175 Boulevard Murat, 75016 Paris, France
Filed July 30, 1973, Ser. No. 383,608
Claims priority, application France, July 31, 1972, 72.27519
Int. Cl. B62d *49/00*
U.S. Cl. 180—79.2 C **18 Claims**

1. A self-driven machine, in particular for agricultural use, comprising: a chassis, a rear set of wheels, a differential for the rear set of wheels, an engine unit in the vicinity of of the rear set of wheels and differential, a pair of front steering wheels, a chassis element secured to the chassis and defining at the front end of the machine a yoke having a cross-member extending substantially throughout the width of the machine and two branches extending forwardly from and pivotably mounted on the cross-member, the branches respectively supporting the two steering wheels, means for angularly setting the branches relative to the cross-member, and a steering mechanism operatively connected to the steering wheels for orienting the steering wheels in the desired direction and mainly disposed within the cross-member and the branches whereby the yoke defines a space completely free in the front of the machine for receiving working equipment, said steering mechanism comprising a steering control means, a drive element responsive to the control means, an orienting device combined with each of the two steering wheels for changing the orientation of the corresponding wheel relative to a longitudinal axis of the machine transmission means, and a differential system, the drive element being operatively connected to each of the two orienting devices through the transmission means and to at least one of the orienting devices through the differential system, the differential system being operative to render the orientations imparted to the two steering wheels by the drive element through the transmission means and orienting devices different in that, in respect of orientations of the steering wheels other than those in which they are parallel to the longitudinal axis of the machine when the control means for steering the machine is in a neutral position, each wheel is oriented in a direction which is, in plan, tangent to an arc of a circle whose centre coincides with the centre of the turning circle of the machine said differential system including means for modifying the effect of the differential system in accordance with different locations of the wheels resulting from different angular settings of the branches of the yoke.



3,884,321
LOAD HANDLING VEHICLES HAVING ADJUSTABLE CAB
Ronald Drake, and Kenneth Smith, both of Wakefield, England, assignors to Joshua Shaw & Sons Limited, Batley, Yorkshire, England
Filed Jan. 25, 1974, Ser. No. 436,496
Claims priority, application United Kingdom, Nov. 10, 1973, 52278/73
Int. Cl. B60k *35/00*
U.S. Cl. 180—89 R **5 Claims**



1. In a vehicle of the type having an adjustable cab movable on the vehicle between two extreme laterally spaced positions, the improvement comprising
1. a pair of parallel links, each link being extensible and contractible in length, each link being pivotally anchored on the vehicle and being pivotally attached to the cab to

form a parallelogram whereby the cab can be swung laterally on the parallel links,

2. drive means adapted to turn the parallel links about the pivots anchored on the vehicle,

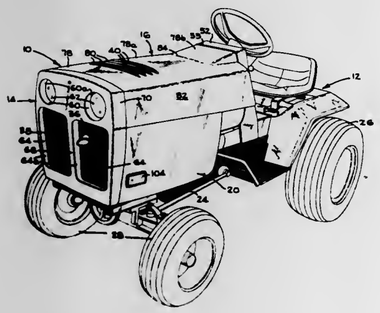
3. and restraining means connected to the parallel links and to the vehicle, the restraining means causing the length of the parallel links to be altered as the cab moves whereby lateral motion of the cab is confined to a substantially straight path.

3,884,322

NOISE CONTROLLING HOUSING

Mark S. Nemschoff, Mequon, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 27, 1973, Ser. No. 355,105
Int. Cl. G10k *11/00*
U.S. Cl. 181—33 K **4 Claims**



1. In a garden tractor or the like having an engine and a muffler together defining a noise source supported on a wheeled chassis and having grille and curved hood means on said tractor adjacent said engine, the improvement comprising:

a noise-controlling housing including front, side, and top portions fully enclosing said engine and said muffler on the front, top and sides,

said housing front portion including said grille,

said housing top portion including said curved hood,

said housing side portions constituting side panels extending rearwardly from said grille and beneath the side edges of said hood,

the major area of said housing front portion defining a compound curved surface bowed about two axes lying in different planes substantially normal to each other,

the major area of said housing side panels each defining like opposed compound curved surfaces each bowed about two axes lying in different planes substantially normal to each other,

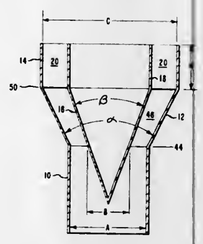
said compound curved surfaces of said housing front, side and top portions thereby together defining substantially non-resonating curved sheet metal walls whereby said housing is effective to reduce externally thereof the sound emitted from said sound source to a level substantially below that of a tractor having a comparable noise source but without said enclosing housing having said compound curved surfaces.

3,884,323

DEVICE FOR GAS-EXIT DUCTS TO CONVERT VORTICAL GAS FLOW TO SOUND-ATTENUATED AXIAL GAS FLOW

Walter George Kunz, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed July 11, 1974, Ser. No. 487,782
Int. Cl. F01n *1/00*
U.S. Cl. 181—41 **7 Claims**



1. The device for attenuating sound that results from releasing a vortical gas flow from the opening of a gas exit duct, the device comprising

i. a frustum-shaped tube open at both ends one of which is narrower than the other, the narrow end being adapted to sealably and smoothly engage the opening of the gas exit duct in axial alignment with the duct,

ii. a cone-shaped inner core having one end wider than the other, positioned withinn tube (i) to form a first annulus between the tube and the core, the wide end of the core being in the direction of the wide end of the tube,

iii. an outer body open at both ends having one end axially united to the wide end of tube (i), the outer body extending along the tube axis to provide a gas flow defining wall, the open end away from the end that is united to tube (i) having an inside diameter at least equal to the diameter of the end that is united to the tube,

iv. an inner body coaxial with and united to core (ii) having an outer diameter at least equal to the diameter of the core at the place of union, said inner body extending along the tube axis to provide a gas flow defining a second annulus in communication with the first annulus, said inner body and core (ii) combination being closed to gas flow therethrough,

v. a multiplicity of vanes axially disposed across the annulus defined by the inner and outer bodies having lengths effective to convert vortical gas flow to axial gas flow.

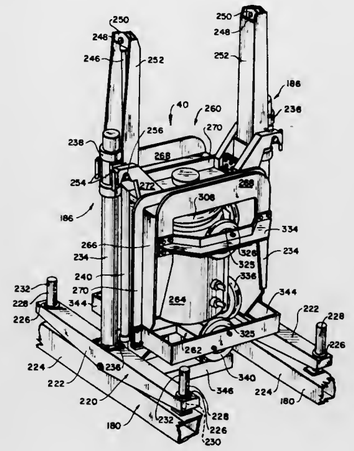
3,884,324

MOUNTING FOR SEISMIC VIBRATOR

Ferris F. Hamilton, Denver, and James S. Johnson, Evergreen, both of Colo., assignors to Hamilton Brothers Oil Company, Denver, Colo.

Filed Aug. 11, 1972, Ser. No. 279,880
Int. Cl. G01v *1/14*
U.S. Cl. 181—114 **9 Claims**

1. In a seismic vibrator assembly carried by a support structure, said vibrator assembly having a vibrator mass mounted for reciprocal movement in a vertical direction, the improvement comprising an inner frame having means for retaining the mass so that vibrations of the mass will be imparted directly into the inner frame, a base plate secured to the inner frame and adapted to be placed in engagement with the earth whereby vibrations of the mass will be transmitted into the earth, an outer frame anchored to the support structure and having at least a portion thereof surrounding the upper end and sides of said inner frame, and a plurality of vibration damping units interconnecting the inner and outer frames to separate said frames, said damping units including first vibration damping means separating the upper ends of said inner and outer frames whereby to confine the application of vibrational forces generated by the mass to a downward vertical direction of movement and second vibration damping means disposed between the frames in a direction normal to said vertical direction whereby vibrations of the mass will be concentrated along said vertical direction of movement while isolating the vibrations from the outer frame so that the energy transmitted by the mass into the earth is maximized.

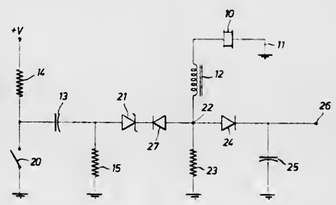


3,884,325

CIRCUIT FOR ENERGIZING PIEZOELECTRIC CRYSTAL AND DETECTING PEAK AMPLITUDE OF A REFLECTED SIGNAL

Christopher S. Cowles, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 14, 1974, Ser. No. 433,339
Int. Cl. G01v *1/14, 1/16*
U.S. Cl. 181—139 **4 Claims**



1. A circuit for exciting a piezoelectric transducer and detecting the peak amplitude of a reflected signal, said circuit comprising:

a resonance circuit, said transducer being coupled to said resonance circuit;

a signal source having a voltage of predetermined polarity;

a diode circuit having a breakdown voltage in one direction that exceeds the peak amplitude of the reflected signal to be detected, said voltage drop being less than the amplitude of the signal source, said diode circuit coupling said signal source to said resonant circuit; and

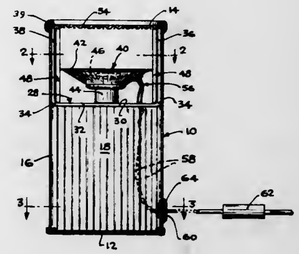
a capacitor, said capacitor being coupled to said resonant circuit by a blocking diode disposed to pass to said capacitor only signals having a polarity opposite that of said signal source.

3,884,326

LOUDSPEAKER AND ENCLOSURE ASSEMBLY

Timothy R. Orisek, 108 Stirrup Lane, Burr Ridge, Ill. 60008

Filed Mar. 6, 1974, Ser. No. 448,672
Int. Cl. G10k *13/00*; **H04r** *1/28*
U.S. Cl. 181—155 **5 Claims**



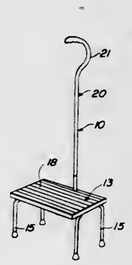
1. A loudspeaker and enclosure assembly comprising, in combination, a cylindrical container having one closed end and an open end, an elongated sheet of fibrous material coiled into a loosely wound cylinder disposed in the container abutting the closed end and partially filling the container, a flat elongated strip having two normal bends forming a central portion disposed in abutment with the wound sheet of fibrous material and a pair of legs of equal length extending from the central portion of the strip toward the open end of the container in abutment with the side of the container, a loudspeaker having a frame and vibratile cone, the frame being mounted on the strip and the cone being disposed coaxially of the container and diverging toward the open end of the container, and a cylinder of fibrous material disposed within the container and extending from the central portion of the strip to the open end of the container, said cylinder of fibrous material being disposed between the container and the frame of the loudspeaker and abutting said frame.

3,884,327

INVALID'S PORTABLE STEP UNIT AND ATTACHED CARRYING HANDLE MEMBER THEREFOR

Cary Wayne Zigman, 1239 Conell, Highland Park, Ill. 60035

Filed May 9, 1974, Ser. No. 468,402
Int. Cl. A47c *9/12*
U.S. Cl. 182—113 **1 Claim**



1. An invalid's portable step unit and carrying handle member therefor, comprising

a. a step unit including

1. a supporting frame;

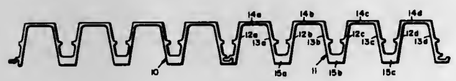
2. a horizontally extending platform unit carried by the said supporting frame at the top thereof;

b. a carrying handle member including

1. a lower end portion attached to and extending vertically upwardly from the said platform unit; the said carrying handle member including

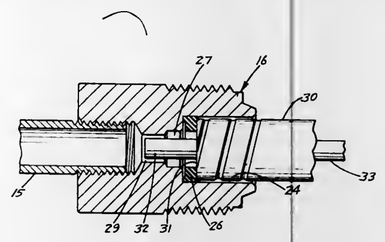
2. an upper end portion having
   a. a handle attached thereto;
c. the said carrying handle member including
   1. outer and inner telescopically interconnected and vertically adjustable tubular members;
d. the said handle member being attached to one of the said telescopically interconnected tubular members;
e. manually operable latching means attached to and carried by one of said telescopically interconnected tubular members for releasably latching the said telescopically interconnected tubular members in a selected position vertically relative to each other;
f. the said platform unit having front and rear surfaces and side surfaces;
g. the said carrying handle member being attached to the said platform unit adjacent the said rear surface thereof and centrally between the said side surfaces of said platform unit; and
h. the said carrying handle member including a handle which is disposed generally parallel to and in coplanar relationship with the said rear surface of the said platform unit.

3,884,328
SCAFFOLD PLANK
Chester I. Williams, 1501 Madison St., Grand Rapids, Mich. 49507
Filed Oct. 1, 1973, Ser. No. 402,614
Int. Cl. E04g *5/08, 1/16*
U.S. Cl. 182—222 **2 Claims**



1. A stackable scaffolding plank having a cross-section adapted for extrusion, said scaffold plank having a plurality of inclined first and second web portions and a plurality of upper and lower sections interconnecting adjacent web portions at the points of closest proximity therebetween, said sections and web portions being disposed to define an undulated configuration, wherein the improvement comprises:
a first interlock portion extending along one edge of said plank and including an outer flange coplanar with said lower sections, the free edge of said outer flange having an edge offset, and an inner flange spaced from, extending parallel to, and shorter than, said outer flange;
a second interlock portion, extending along the opposite edge of said plank from said first interlock portion, adapted to mate with the first interlock portion of an adjacent scaffold plank, and including a flange having a part thereof extending parallel to and receivable between said inner and outer flanges of the first interlock portion of said adjacent similar plank, said part of said flange being spaced from the plane of said lower sections by a distance substantially equal to the thickness of said outer flange, and also having a recess normally receiving the edge offset of said similar plank; and
abutment means disposed at intermediate positions on said first and second web portions to engage said lower sections of a similar plank with said undulated configurations interengaged, said abutment means extending laterally to limit the depth of interengagement of said configurations.

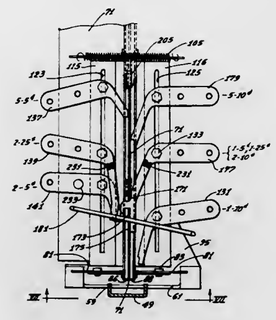
3,884,329
SPEEDOMETER CABLE LUBRICATING DEVICE
Henry W. Steffen, P.O. Box 246, Morton, Minn. 56270
Filed Sept. 10, 1973, Ser. No. 395,737
Int. Cl. F16n *1/00, 21/00*
U.S. Cl. 184—1 R **8 Claims**



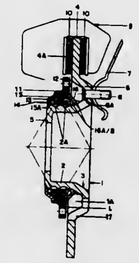
1. A nozzle fitting for a pressure lubricating device adapting said device to the lubrication of automotive vehicle speedometer cables, said fitting comprising:
A. a generally cylindrical body;
B. a central longitudinal passage through said body;
C. the upstream end of said passage being internally threaded, whereby said fitting is adapted for attachment to a lubricating device;
D. the opposite downstream end of said passage being a first recess of circular cross section, whereby the nozzle fitting is adapted to receive therein with a slide fit the bottom end fitting of one form of speedometer cable housing;
E. an annular shoulder at the upstream end of said first recess;
F. a sealing gasket having a central opening therein and seated on said shoulder;
G. a further recess of circular cross section disposed immediately upstream from said first named recess and in direct fluid communication therewith, the diameter of said further recess corresponding generally to the diameter of the opening in said sealing gasket;
H. an annular ring surrounding said first recess and projecting from the downstream end of said body; and
I. the end of said cylindrical body adjacent to said annular ring being externally threaded, whereby the nozzle fitting is adapted to engage the internally threaded bottom end fitting of another form of speedometer cable housing.

3,884,330
COIN OPERATED VENDING APPARATUS WITH DOOR OPERATED COIN RETURN & PAWLS THEREFORE
Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Filed Nov. 10, 1972, Ser. No. 305,514
Int. Cl. G07f *5/08*
U.S. Cl. 194—59 **36 Claims**

1. A vending machine comprising
a housing having
means for supporting a product to be sold,
a door for selectively providing access to the product from the exterior of said display case, and
means for releasably locking said door comprising
a coin selecting and receiving apparatus including
a coin receiving and transfer chute,
pawl means extending into said chute at a predetermined position relative thereto,
a locking bar hingedly connected to said door and extending across the bottom of said chute and having engaging means thereon for locking said door against being opened and coin seating means thereon, and
means for opening said chute throughout the length thereof to reject the coins therein when said opening means is actuated by said engaging means as a consumer attempts to open said door, unless the proper coinage is positioned between said coin seating and said pawl means.

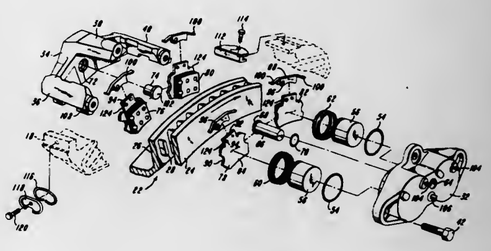


3,884,331
BEARING UNIT
Sture L. Asberg, Partille, Sweden, assignor to SKF Industrial Trading and Development Company B.V., Overtoom, Amsterdam-W, Netherlands
Filed Nov. 1, 1973, Ser. No. 411,855
Claims priority, application Netherlands, Nov. 9, 1972, 7215139; Nov. 28, 1972, 7216088
Int. Cl. B60t *1/06*
U.S. Cl. 188—18 A **7 Claims**



1. A bearing unit and braking device for a rotary element comprising an inner ring having as an integral one piece structure a two row bearing surface and a radially outwardly extending flange forming a braking means, said radially extending flange having an upwardly extending portion forming said braking means axially displaced from said two row bearing surface by an intermediate portion of said radially extending flange spacing said two row bearing surface from said upwardly extending portion such that the boundary plane of said braking means is axially displaced from the entire area defining said two row bearing surface, a plurality of roller elements, and an outer ring having a two row bearing surface positioned about said inner ring bearing surface with two rows of said roller elements therebetween.

3,884,332
DISC BRAKE WITH CANTILEVERED TORQUE RECEIVING MEMBERS
William D. Walther, Kettering, and Chester N. Fannin, Troy, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio
Filed Mar. 14, 1974, Ser. No. 451,035
Int. Cl. F16d *65/02*
U.S. Cl. 188—73.4 **5 Claims**

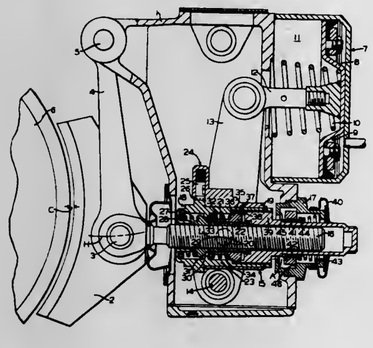


1. A disc brake assembly comprising:
a. a rotatable braking disc adapted to rotate with a vehicle wheel,
b. a brake housing support including opposed brake rails disposed at spaced positions about the periphery of said disc,
c. a brake housing having rail engaging surfaces mounted on said brake rails,
d. retaining means for locking one of said rail engaging surfaces of said brake housing to one of said brake rails,
e. spring means associated with the other of said rails, engaging the other of said rail engaging surfaces of said brake housing and urging said brake housing toward said one rail and said retaining means associated therewith,
f. said brake housing including arcuately shaped piston and reaction portions disposed on opposite sides of said disc,
g. bridging means extending across a periphery of said disc from said piston to said reaction portion of said brake housing adjacent said rail engaging surfaces thereof and at the center thereof,
h. said bridging means defining a pair of openings through said housing to said disc,
i. opposed pairs of brake pads received in each of said openings on opposite sides of said disc,
j. means resiliently suspending said brake pads from said bridging means,
k. fixed pin means mounted in said reaction portion of said brake housing beneath said bridging means, extending inwardly and terminating spaced from an outer face of said disc,
l. movable pin means slidably mounted for movement axially thereof in said piston portion of said brake housing, extending axially outwardly and terminating spaced from an inner face of said disc,
m. said fixed and movable pins being disposed radially inwardly of said periphery of said disc,
n. first abutment means on each of said brake pads adapted to engage said bridging means positioned adjacent said rail engaging surfaces,
o. second abutment means on each of said brake pads adapted to engage said fixed and movable pins, and
p. piston means slidably received within said piston portion of said brake housing and adapted to effect frictional engagement of said brake pads with said inner and outer surfaces of said disc.

3,884,333
TREAD BRAKE UNIT FOR RAILWAY VEHICLES

Claude Dubois, Gagny, and Georges Dalibout, Paris, both of France, assignors to WABCO Westinghouse GmbH, Freinville-Sevran, France

Filed July 15, 1974, Ser. No. 488,822
Claims priority, application France, July 16, 1973, 73.26011
Int. Cl. B60t *11/14*
U.S. Cl. 188—153 R **9 Claims**



1. In a tread brake unit for braking the wheel of a railway vehicle, said unit comprising:

a. a brake shoe having a release position, in which a predetermined normal amount of clearance is provided between the wheel and the brake shoe, and being operable to an application position for applying braking force to the wheel;

b. a housing;

c. a brake hanger having one end pivotally fixed on said housing with the other end thereof movable through a first arcuate path and having said brake shoe pivotally mounted thereon at a point between the ends of the brake shoe;

d. power means supported on said housing for providing braking force for the brake shoe;

e. a brake lever having one end pivotally fixed on said housing with the opposite end pivotally connected to the power means and movable through a second arcuate path disposed radially opposite to said first arcuate path; and

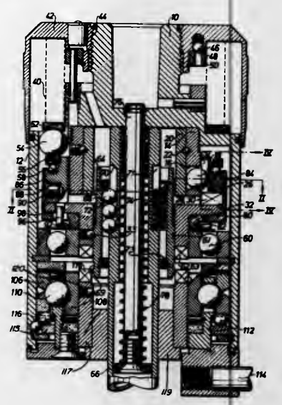
f. a push rod assembly including a push rod having one end pivotally connected to said other end of said brake hanger concentrically relative to the pivotal mounting of said brake shoe and being pivotally connected, at a point of the push rod between the ends thereof, to a point of the brake lever between said one end and said opposite end thereof, said push rod having the other end thereof supported by said housing and being axially movable in a curvilinear path by said brake lever for transmitting braking force to the brake shoe; wherein the improvement comprises:

g. flexible support means disposed between said housing and the other end of said push rod for providing universal movement of said other end of the push rod relative to the housing to compensate for the curvilinear axial movement of the push rod.

3,884,334
SCREW THREAD CUTTING APPARATUS

Alf A. A. Eriksson, Nacka, Sweden, assignor to Aktiebolaget Svenska Precisionsvertyg, Nacka, Sweden

Filed Oct. 17, 1973, Ser. No. 407,095
Claims priority, application Sweden, Oct. 26, 1972, 13880/72
Int. Cl. F16d *43/20*
U.S. Cl. 192—56 R **2 Claims**



1. Screw thread cutting apparatus, comprising a driving part, a driven part and clutch elements provided therebetween and having drivers which when transferring torque between said parts are in engagement with one another, but on excess of a predetermined value of said torque become disengaged by axial displacement of one of said elements against the action of spring members, torque transferring locking members being provided in recesses formed firstly in said one element and secondly in one of said parts, said recesses in said one element having portions extending in a peripheral direction and presenting guide surfaces for the locking members during axial movement thereof, said one element being under the action of friction members which upon disengagement brake said one element and transfer the locking members from the torque transferring positions into the guide surfaces for complete disengagement of the drivers, and wherein for the purpose of application of this device to a reversible screw thread cutting apparatus where the driving part always has the same direction of rotation, the other clutch element comprises two concentrically arranged element parts, which within limits are rotatable relative to one another, of which element parts one is disposed for cooperation with the friction members and the other is formed with drivers so as upon reversal of the apparatus to cause the last-mentioned element part to be accelerated to higher speed by the friction members assisted by the friction moment exerted on the first-mentioned element part thereby to ensure that the drivers of the two clutch elements always return to the clutch engagement position.

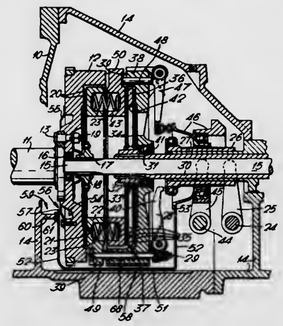
3,884,335
DUAL CLUTCHES WITH SPLASH & GRAVITY COOLING CIRCUITS

Herbert Edward Ashfield, and Thomas Eastwood, both of Huddersfield, England, assignors to David Brown Tractors Limited, Huddersfield, England

Filed Mar. 11, 1974, Ser. No. 449,682
Int. Cl. F16d *13/72*
U.S. Cl. 192—113 B **5 Claims**

1. An engine/clutch combination comprising an engine flywheel, a shaft co-axial with the flywheel, a sleeve surrounding the shaft, a clutch mechanism including at least one clutch plate mounted on the shaft and frictionally engageable between an axially moveable pressure plate and the flywheel and

at least one clutch plate mounted on the sleeve and frictionally engageable by axial movement of another pressure plate, a stationary clutch housing enveloping the flywheel and the clutch mechanism and acting at its base as a sump, a trough within the housing forming a well accommodating the lower portions of the flywheel and the clutch mechanism and surrounded by oil in the sump, means defining a space separate from the sump between the trough and the clutch housing for collecting oil flung from the rotating flywheel and clutch

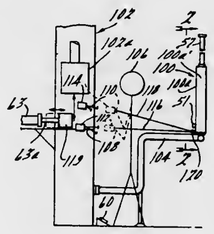


mechanism and impeding its direct return to the trough, means defining an aperture in the trough adjacent that face of the flywheel remote from the clutch mechanism, an annular groove in said face of the flywheel for receiving oil flowing through the aperture from the space, at least one passage in the flywheel for delivering oil from the groove to the clutch plate on the shaft, and at least one further passage in the flywheel for delivering oil from the groove to the clutch plate on the sleeve.

3,884,336
SAFETY MECHANISM FOR PRESSES, MACHINES AND FIXTURES

Robert W. Williamson, 77 Cedar Acres, Brunswick, Ga. 37520

Continuation-in-part of Ser. No. 351,516, April 16, 1973, Pat. No. 3,847,259. This application Jan. 23, 1974, Ser. No. 435,900
Int. Cl. F16p *3/06*
U.S. Cl. 192—131 R **53 Claims**

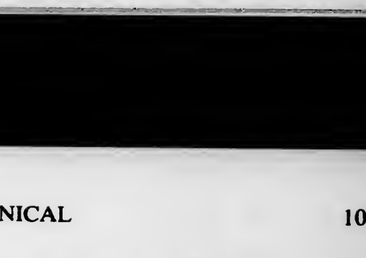


1. Safety mechanism for use by an operator of a machine having at least one machine elment which moves during each machine operating cycle: said safety mechanism including hand restraint apparatus comprising hand restraint means for the hands of the operator and hand restraint moving means operatively coupled with said hand restraint means for controlling the movement of said hand restraint means between a released position which permits at least one of the operator's hands to be disposed in the path of travel of said at least one machine element and a restraining position which prevents both of the operator's hands from being disposed in the path of travel of said at least one machine element; a mechanical safety interlock means controllably operable to a safety position wherein the same is disposed in the path of travel of said at least one machine element for bodily stopping travel thereof and to a retracted position wherein said mechanical safety interlock means clears the path of travel of said at least one machine element; a mechanical safety interlock moving means for moving said mechanical safety interlock means between said two operative positions thereof; and control means for interlocking said hand restraint moving means, said mechanical safety interlock moving means and the machine such that a machine operating cycle can begin only when both said hand restraint means is in its restraining position and said mechanical safety interlock means is in its retracted position.

3,884,337
COIN-OPERATED LATCH MECHANISM

Henry Carl Voegeli, 918 Gibbs Road, Venice, Fla. 33595

Filed June 5, 1974, Ser. No. 476,423
Int. Cl. G07f *11/04*
U.S. Cl. 194—59 **9 Claims**



1. A latch mechanism for use in a coin-operated dispensing device including a cabinet having a cooperative opening to provide access to said cabinet, closure means selectively to close said opening, and a coin-operated mechanism actuated upon receipt of at least one coin of selected value, comprising:

a. latch means adapted selectively to engage said closure means when said closure means is in a first selected position relative to said opening of said cabinet;

b. bias means normally to urge said latch means out of engagement with said closure means;

c. first linkage means to be disposed in a first linkage position to set said latch means in engagement with said closure means and to be disposed in a second linkage position, such that said bias means releases said latch means from engagement with said closure means;

d. release means actuated by said coin-operated mechanism to actuate said first linkage means from said first linkage position to said second linkage position, when at least one coin of selected value is received by said coin-operated mechanism; and

e. reset linkage means connected to said closure means to be actuated by movement of said closure means, and adapted selectively to engage said first linkage means to move said first linkage means from said second linkage position and into said first linkage position when said closure means is moved to said first selected position relative to said cabinet.

3,884,338

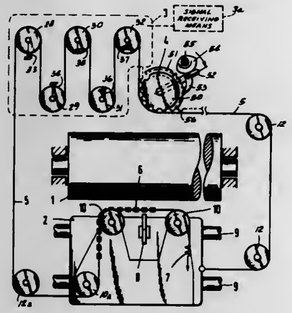
coded signals with a code representing a character required to

for taking up the paper strip; feeding means for feeding for- capable of being supported on the arm of the user while at the

3,884,338
DEVICE FOR ADJUSTMENT AND LINE-BY-LINE MOVEMENT OF A TYPE BODY IN A TYPE PRINTING DEVICE

Rudolf Koller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 2, 1969, Ser. No. 854,409
Claims priority, application Germany, Sept. 5, 1968, 6753614
Int. Cl. B41j *19/18*
U.S. Cl. 197—49 **7 Claims**



1. In a type printing device having a type body of a plurality of type carriers shiftably supported in a carriage to present different type carriers for striking by a hammer means carried by the carriage as the carriage is being moved along a platen member of the device, the improvements comprising;

a pull cable having one end rigidly connected to the carriage and the other end connected by a flexible connection to the carriage to form a continuous loop, said pull cable being rigidly coupled to the type body adjacent said other end;

feed means directly engaging the pull cable to move the carriage a predetermined distance along the platen in response to a feed signal; and

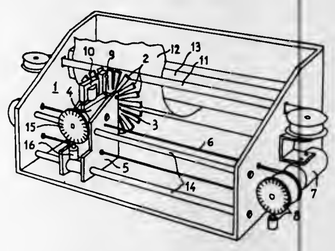
character selection means directly engaging the pull cable between the feed means and the other end to move the other end of the pull cable relatively to the flexible connection in response to a character selection signal so that the type body is shifted in the carriage to position the desired type carrier for the hammer means.

3,884,339
ASYNCHRONOUS SERIAL PRINTER

Fabrizio Castoldi, Milan; Serrio Cattaneo, Voghera, and Adriano Niccolai, Cornaredo, all of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Continuation of Ser. No. 108,787, Jan. 22, 1971, abandoned. This application Mar. 6, 1973, Ser. No. 338,499
Int. Cl. B41j *1/32*
U.S. Cl. 197—53 **7 Claims**

1. In a serial on-the-fly printer for serially printing characters at a plurality of printing positions to form a print line, wherein a type-carrying member is maintained in continuous motion to present in sequence different characters at a printing position with the direction of motion of said characters proximate to the printing position being substantially parallel to the print line, and wherein said type-carrying member is mounted on a printing carriage which is moved between adjacent printing positions with a movement independent of the motion of said type-carrying member, the improvement comprising: detecting means for detecting the position of said type-carrying member relative to said detecting means and for delivering coded signals representing said position of the type-carrying member, comparing means for comparing said coded signals with a code representing a character required to be printed to generate signals representing the results of said comparison, and means for timing at a variable rate responsive

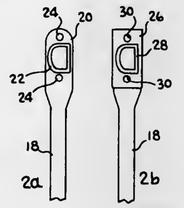


to the movement of said carriage and coupled to said comparing means, said timing means being effective for controlling printing at suitable moments in said printing positions, independently of the actual position of said printing carriage.

3,884,340
TYPE DISC AND METHOD OF MAKING SAME

Herbert Tramposch, Riverside, and David W. Hubbard, Stamford, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Oct. 10, 1973, Ser. No. 405,126
Int. Cl. B41j *1/32*
U.S. Cl. 197—53 **1 Claim**



1. A printing disc assembly constructed of a composite of structural members, said assembly comprising:

A. a disc shaped member having a plurality of flexible plastic arms radially extending outwardly from a hub portion of said disc member, said arms each having a head section at an outer portion thereof, each of said head sections having a character disposed thereon; and

B. a plurality of metal print character members annularly arranged with respect to each other and each having a character and securing means, each of said character members being respectively secured to an end portion of a corresponding arm by means of said securing means, thus forming a composite printing disc assembly, each character of said metal print members correspondingly disposed over and upon a matching character of the head sections, so as to form integral character composites.

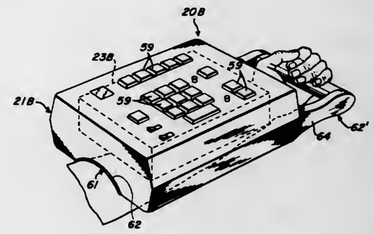
3,884,341
PAPER STRIP TRANSPORT AND PRINTING MECHANISM HAVING A COMMON DRIVE

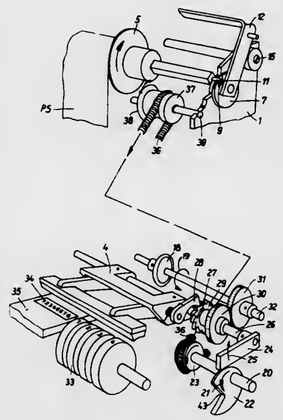
Heinz-Gunter Wagner, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 29, 1972, Ser. No. 319,734
Claims priority, application Germany, Dec. 30, 1971, 2165941
Int. Cl. B41j *15/00*
U.S. Cl. 197—133 R **9 Claims**

1. A paper strip transport and printing mechanism comprising: a supply source for supplying paper strip; take-up means for taking up the paper strip; feeding means for feeding forwardly the paper strip taken from said supply source, said feeding means including a feed-roller engaging the paper strip, and a feed-roller gear rigidly connected to said feed-roller; printing means positioned in front of said feeding means for printing on said paper strip; and, actuating means for actuating said feeding means, said printing means and said take-up means, said actuating means including: a single drive means, first transmission means for operatively connecting said drive means to said printing means to actuate said printing means, said first transmission means including ancillary transmission means for actuating said feeding means in a predetermined time relation to the actuation of said printing means, and, second transmission means for connecting said drive means

capable of being supported on the arm of the user while at the same time the handle is capable of being gripped by his one





hand and the user is able to operate the keyboard with his other hand.

with said take-up means to actuate said take-up means to take up the paper strip moved forward by said feeding means, said first transmission means including a first shaft keyed to said printing means, and cam-follower means operatively connecting said drive means to said first shaft for imparting thereto a reciprocative motion in response to a movement of said drive means; and, said ancillary transmission means comprising a ratchet wheel rotatively mounted on said first shaft so as to be freely rotative with respect thereto, said ratchet wheel being equipped with a gear wheel for engaging said feed-roller gear, and a pawl for coacting with said ratchet wheel, said pawl being operatively connected to said first shaft so as to be actuated by the reciprocative motion of said first shaft to turn said ratchet wheel in a direction for turning said feed-roller in a direction to feed the paper strip forward.

3,884,342
PORTABLE DATA SET

Robert P. Mulholland, Centerville, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Oct. 22, 1970, Ser. No. 83,051
Int. Cl. B41j *29/02*
U.S. Cl. 197—186 R **2 Claims**

1. A portable data set comprising an assembly having a housing, a keyboard mounted by said housing, and a handle connected to said housing, said housing having an elongated recess in its lower surface extending toward said handle, said recess being shaped to receive the user's arm, the set being

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3,884,343
TRANSFER APPARATUS

Derek James Stephens, Solihull; Eseni Gogo MacFarlane, Northfield, and Owen James Turner, Bournville, all of England, assignors to Cadbury Limited, Birmingham, England

Filed Mar. 12, 1973, Ser. No. 340,036
Claims priority, application United Kingdom, Mar. 10, 1972, 11297
Int. Cl. B65g *47/52*
U.S. Cl. 198—23 **15 Claims**

1. Apparatus for transferring transversely arranged rows of units from a continuously moving substantially horizontal main conveyor in a single file to a second conveyor, said second conveyor extending transversely of the main conveyor and at the same height said apparatus comprising a mobile frame movable to a position adjacent the main conveyor, a beam pivotally mounted on said frame and movable so as to extend transversely across and above the main conveyor in cantilever fashion, a stop mounted on said beam and extending transversely across the main conveyor in a position to arrest a row of units on the main conveyor, a pusher mounted on said beam and transversely movable relative to the main conveyor for transferring rows of units bearing against the stop from the main conveyor to the second conveyor, an aligning member extending parallel to, and in advance of the stop, said aligning member being arranged to arrest a row of units until individual units of a row are aligned transversely of the main conveyor and means for moving the aligning member to an inoperative position in which units can pass thereunder to the stop.

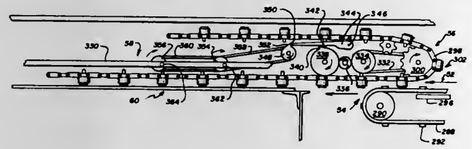
3,884,344
ARTICLE CONVEYING SYSTEM

Robert L. Hurst, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Division of Ser. No. 99,405, Dec. 18, 1970, Pat. No. 3,712,453, which is a division of Ser. No. 784,845, Dec. 18, 1968, Pat. No. 3,641,959. This application Dec. 20, 1972, Ser. No. 316,951

Int. Cl. B65g *47/26*

U.S. Cl. 198—31 AA **2 Claims**



1. Apparatus for moving articles from a predetermined location comprising: a first conveyor extending from said location to a first transfer zone and being provided with an endless loop type belt, the upper pass of which is adapted to carry articles and deliver them to the first transfer zone; a second conveyor extending from the first transfer zone to a second transfer zone and being provided with an endless loop type belt, the lower pass of which is adapted to receive articles at the first transfer zone and deliver them to the second transfer zone; and magnetic pick up means associated with the second conveyor to sequentially raise the articles delivered to the first transfer zone into contact with the belt of the second conveyor and retain them in contact therewith during delivery to the second transfer zone, said magnetic pick up means comprising a body attached to the conveyor belt; a magnet carried by said body and having an outer face; a plunger carried by said body and having an inner free end and an outer end; and a spacer head at the outer end of the plunger normally closely overlying the outer face of the manget and movable away from said face on occasion to push an article out of the field of the magnet to release the article.

3,884,345
APPARATUS FOR PILING BOARDS

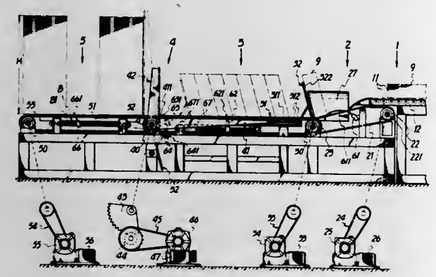
Masateru Tokuno, Nishinomiya, Japan, assignor to Rengo Co., Ltd, Osaka, Japan

Filed Feb. 8, 1973, Ser. No. 330,715

Claims priority, application Japan, Mar. 15, 1972, 47-26772

Int. Cl. B65g *57/00*

U.S. Cl. 198—35 **8 Claims**



1. An apparatus for stacking boards to a predetermined height which comprises, in combination, a feeding conveyor for successively introducing boards lying flat on said conveyor to the apparatus, vertically erecting conveyor means on which the boards are excitecd, extending downwardly from the feeding conveyor, a transporting conveyor for receiving and transporting the erected boards to the discharge end thereof, said transporting conveyor being provided with a board reclining support associated therewith near the end portion of the erecting conveyor for receiving and holding the boards while they are being conveyed on the transporting conveyor, a discharge conveyor for removing the boards from the transporting conveyor, a reversing gear comprising an L-shaped member rotatably disposed about the discharge end portion of the transporting conveyor, said L-shaped member containing a board erecting base and a board piling up base disposed at substantially right angles with respect to each other and adapted to be operatively cooperative with each other, said board erecting base being rotatable from a recessed position below the transporting conveyor to a substantially vertical position and said board piling up base being simultaneously rotatable from a substantially vertical position to a recessed position below the discharge conveyor, and means for rotating the board erecting base and the board piling up base.

3,884,346
CONVEYOR UNIT

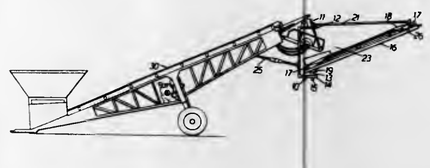
Patrick O'Neill, and Patrick Joseph Douglas, both of Dungannon, Northern Ireland, assignors to Powerscreen International Limited, Dungannon, Northern Ireland

Filed June 21, 1973, Ser. No. 372,293

Claims priority, application United Kingdom, June 22, 1972, 29399/72; Aug. 26, 1972, 39925/72

Int. Cl. B65g *37/00*

U.S. Cl. 198—99 **1 Claim**



1. A conveyor assembly comprising a main conveyor; an extension conveyor unit comprising an upright C-frame, a framework mounted on said C-frame and a conveyor mounted on said framework, said framework being pivotally mounted along an upright axis on the lower arm of the C-frame and connected to the upper arm by a brace, also pivotally mounted along said axis; attachment means mounting said C-frame to the off-loading end of said main conveyor, comprising a pivotal connection for pivotal movement of the C-frame relative to the main conveyor in a vertical plane and a length adjustable rod which is adjustable to pivot the C-frame relative to the main conveyor in said vertical plane.

3,884,347
APPARATUS FOR ORIENTING ARTICLES HAVING MAGNETIC PROJECTIONS

Ronald V. Gallagher, Lexington, and Robert R. Swanson, Clemmons, both of N.C., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 14, 1973, Ser. No. 425,029

Int. Cl. B65g *47/24*

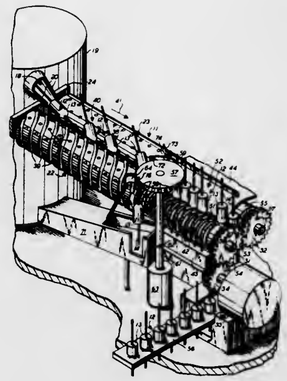
U.S. Cl. 198—254 **11 Claims**

1. An apparatus for orienting an article having a body portion with magnetizable and nonmagnetizable poles, comprising:

a rotatable cylinder;

a surface extending adjacent to the rotatable cylinder and spaced from the rotatable cylinder to define a gap therebetween which is narrower than the body portion so that the article is supported between the cylinder and the surface;

means for creating a magnetic field in the gap to attract the magnetizable pole into the gap to thereby orient the article; and



means for moving the oriented article in the gap upon rotating the cylinder to clear the gap to receive and orient a subsequent article.

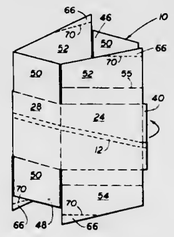
3,884,348
COMBINATION CARDBOARD SHIPPING AND DISPLAY CARTON

Donald R. Ross, 34 Ocean Ave., Amityville, N.Y. 11701

Filed May 22, 1974, Ser. No. 472,487

Int. Cl. B65d *5/48, 5/54, 81/00*

U.S. Cl. 206—45.12 **4 Claims**



1. A combination cardboard shipping and display carton comprising plural body panels in a medial location in said carton cooperating to define a shipping compartment for products, said body panels bounding opposing rectangular openings into said shipping compartment, a continuous tear strip disposed at an angular orientation and in encircling relation in said body panels so as to cause a division of said carton upon removal of said strip preparatory to display exposure of the products in said shipping compartment, and along the edges of each said rectangular opening a pair of opposing closure flaps sized to form a closure for said opening and a pair of opposing product-positioning flaps, each said product-positioning flap having a fold line spaced from said edge to delineate two portions therein, one said portion being adapted to fold in overlying relation to products positioned adjacent the body panel and the other portion having an operative position during shipping service of said carton projected at a right angle to said one portion along the sides of said products to minimize any shifting movements in said products within said shipping compartment, said last-named portion of said product-positioning flap terminating in an edge which is angularly oriented similar to said tear strip and sized to extend only into said shipping compartment to a location coincident with the location of said tear strip in said body panels, whereby the carton is separable along said tear strip with half the products in each separated carton portion and at least some part of said products in display position above the low side of the angularly oriented edges of the separated carton portion.

3,884,349
CONVERTIBLE DISPLAY DEVICE AND PACKING-BOX FOR ARTICLES

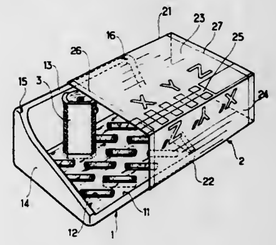
Hickel Charles, St Nom La Breteche, France, assignor to Compagnie Industrielle des Piles Electroniques "CIPEL", Levallois Perret, France

Filed Aug. 20, 1973, Ser. No. 389,442

Claims priority, application France, Aug. 21, 1972, 72.29822

Int. Cl. B65d *5/04, 5/52*

U.S. Cl. 206—44 R **7 Claims**



1. Article display package comprising an article-carrying support, a parallelepiped removable protective sleeve mountable on the support to enclose articles carried on said support, said sleeve having on at least two consecutive outer surfaces a separate publicity message, the said sleeve being scored along two of its longitudinal edges so that on removable from the support said sleeve may be flattened by folding solely along said scored longitudinal edges, so as to form a flat publicity panel one side of which comprises the said two publicity messages, said support comprising a base on which said articles are carried and an upstanding lateral wall, said wall having vertical slots, each for accommodating at least one portion of each of the lateral edges of the panel resulting from folding of said sleeve, said edges serving thus for fastening the said panel on the said wall so that only a single message at one time will be visible opposite the articles carried by the support and oriented so that such message can be interpreted directly by a viewer.

3,884,350
PACKAGING CARTON

Sten Gunnar Johansson, Vimmerby, Sweden, assignor to Aktiebolaget Ifoverken, Bromolla, Sweden

Filed Nov. 17, 1972, Ser. No. 307,496

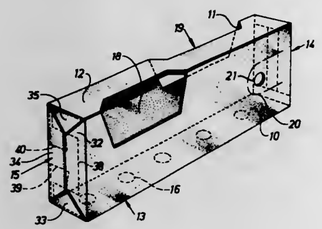
Claims priority, application Sweden, Nov. 15, 1971, 14599/71

Int. Cl. B65d *5/10, 75/58, 85/42*

U.S. Cl. 206—44.12 **4 Claims**

1. A parallelepipedic packaging carton having at one side four flaps extending, from respective ones of four edges which together define a rectangle, obliquely into the interior of the container leaving a substantial opening at the center of said one side, each of first and second of the flaps which extend from opposite ones of said edges having, proceeding from the root of the flap towards its tip, a sudden reduction in width whereby two shoulders are formed at opposite extremities of said width and each of the other flaps, proceeding from the root of the flap towards its tip, having a progressive reduction in width followed by a sudden increase in width where there are two ears extending away from one another, said flaps

interlocking with one another to prevent any flap swinging out of the carton, said first and second flaps being displaceable inwardly by an article wider than said opening, passing through the opening into the carton, after which the opening automatically narrows by reverse movement of the first and



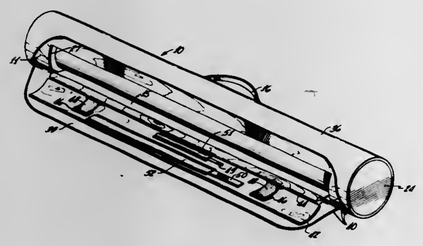
second flaps to prevent the article coming out of the carton through the opening, the carton being further distinguished in that that side thereof opposite the aforesaid one side is formed by four interlocking flaps which are substantially parallel to one another and together form an end wall perpendicular to four of the other sides of the carton.

3,884,351

DRAWING CASE FOR ARCHITECTS AND THE LIKE

Joseph W. James, 501 W. Whiting, Fullerton, Calif. 92632

Filed June 17, 1974, Ser. No. 480,209
Int. Cl. A45c *11/24*; **B65h** *15/48*; **G09f** *11/00*
U.S. Cl. 206—225 **7 Claims**



1. In a drawing case of the type including a rigid tubular body having a longitudinal slot therein, a self-winding spring-roller having an elongate sheet mounted therearound, bracket means connected to the inside of said tubular body, at the opposite ends thereof, for supporting the ends of said roller to permit said sheet to reciprocate through said slot in said body, and first and second plugs mounted in the ends of said body for sealing same, the improvement comprising:

a heavy, waterproof, sheet-like cover surrounding said body, said cover having a longitudinal slit therein adjacent one side and the ends of said slot in said body thereby forming a flap in said cover providing access to said slot;

means for releasably attaching said flap to said cover to enclose said slot in said body; and

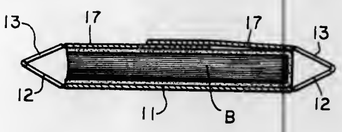
an elongate, arcuate panel having approximately the same thickness as said tubular body and having the same dimensions as said slot therein, said panel being mounted on the inside surface of said flap so as to extend into said slot, coplanar with said body, thereby sealing said slot when said flap is attached to said cover.

3,884,352

BOOK MAILER

William M. Pilz, III., Carol Stream, and Jeffrey M. Gardner, Wheaton, both of Ill., assignors to Container Corporation of America, Chicago, Ill.

Filed June 10, 1974, Ser. No. 477,652
Int. Cl. B65d *5/02*, *85/54*
U.S. Cl. 206—424 **3 Claims**



1. A mailer for a flat object such as a book or the like, said mailer being formed from a cut and scored blank of paperboard or the like and comprising:

a. a base panel;

b. first and second pairs of cell forming panels foldably connected to each other and to opposed edges of said base panel;

c. closure panels foldably connected to said second cell forming panels and being folded and secured together to define a flattened tube with said base panel and said cell forming panels;

d. end closure flaps foldably connected to said base panel and having converging side elements at their ends;

e. additional end closure flaps foldably connected to said closure panels and having converging side elements at one of the ends of each;

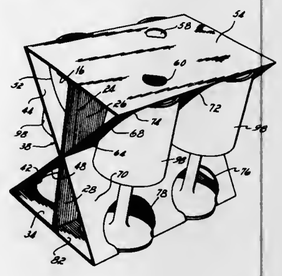
f. said first and second cell forming panels a transverse sectional configuration corresponding to the convergence of the side elements of said end closure flaps.

3,884,353

X-SHAPED CARTON

Robert L. Forte, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Mar. 20, 1974, Ser. No. 452,722
Int. Cl. B65d *85/44*
U.S. Cl. 206—426 **7 Claims**



1. A carton for glassware or the like, comprising:

a central divider wall having upper and lower edges and a score line parallel to and midway between said upper and lower edges,

a top wall and a bottom wall each medially attached to said divider wall at the respective edges thereof, said top wall and said bottom wall being parallel to each other and generally perpendicular to said divider wall, and

a pair of side walls on opposite sides of said divider wall, each having upper and lower margins which are foldably attached to said top wall and said bottom wall respectively, each said side wall including an upper portion and a lower portion flexibly joined together along a central fold line parallel to said score line, each said side wall having a dimension between said upper and lower margins which is greater than the height of said divider wall, each said side wall being bent at said fold line to form a V, the V formed by each side wall being invertable between a collapsible position in which it opens inwardly toward said central divider wall, across a center position to an erected position in which it opens outwardly,

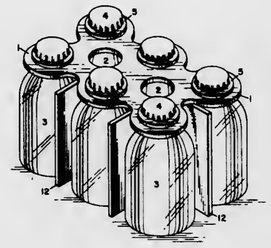
said divider wall being foldable along said score line by bringing said upper and lower edges toward one another when said side walls are in the said collapsible position, said upper portions and said lower portions including openings to hold glassware therebetween when said side walls are in said erected position.

3,884,354

PACKAGE FOR BOTTLES

Karl R. Guenther, Middleton, and Elmer G. Paquette, Madison, both of Wis., assignors to Bjorksten Research Laboratories, Inc., Madison, Wis.

Continuation of Ser. No. 89,646, Nov. 16, 1970, abandoned.
This application May 26, 1972, Ser. No. 257,463
Int. Cl. B65d *71/00*
U.S. Cl. 206—427 **14 Claims**



1. In a package comprising a plurality of crowncapped necked bottles and carrying means therefor, the combination of

flat plate carrying means,

said flat plate provided with circular apertures which receive said bottle necks,

each of said apertures having a diameter greater than the diameter of said necks and crown-caps,

retaining members,

said retaining members being altogether independent of said flat plate carrying means,

each of said retaining members received on one of said bottle necks,

each of said retaining members being freely disengageable upwardly from contact with said flat plate carrying means,

each retaining member being at least slightly elastomeric,

each of said retaining members being a flat annular member having an outer peripheral edge which is round or circular and smooth, being substantially devoid of projections, and which is greater in diameter than the diameter of the apertures in said flat plate carrying means, and

having an inner peripheral edge which is round or circular and smooth, being substantially devoid of projections, and which is lesser in diameter than said crown-cap and lesser in diameter than the neck portion immediately below said crown-cap and which is stretched to the diameter of neck portion below said crown-cap by said neck portions on which it is received.

3,884,355

PROTECTIVE SEAT COVER OF THIN PLASTICS FILM OR SHEET, A PACKAGE FOR THE PROTECTIVE SEAT COVER AND LIKE THIN PLASTICS ARTICLES, AND A PROCESS OF MAKING THE PACKAGE

Bengt Herman Eriksson, Bromma, Sweden, assignor to AB R. W. Nissen, Stockholm, Sweden

Filed Jan. 27, 1972, Ser. No. 221,208
Claims priority, application Sweden, Feb. 12, 1971, 1777/71
Int. Cl. B65d *71/00*, *83/08*, *85/62*
U.S. Cl. 206—494 **4 Claims**



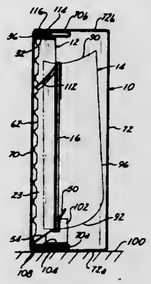
1. A package containing a great many protective seat covers or similar at least substantially rectangular articles of thin plastics or like material, wherein the package comprises a rectangular container suitably of cardboard, corrugated board or like material and containing a number of bundles of the thin plastics articles, a plurality of plates fitted in said container, each bundle is doubled about said plate, the doubled bundles placed in juxtaposition with the folds facing upwardly in the container, and others of said plates are interleaved with the doubled bundles.

3,884,356

PACKAGING METHOD AND CONSTRUCTION

Edward J. Lidgard, 1103 Kingston Rd., Perry, Ga. 31069

Filed Aug. 14, 1972, Ser. No. 280,647
Int. Cl. B65d *85/48*, *5/50*
U.S. Cl. 206—521 **9 Claims**



1. A packaging assembly for containment and protection of an article comprising

a carton having side walls and at least one open end operable to be closed by flaps formed integrally with at least some of the walls,

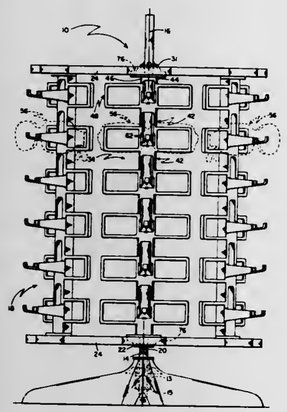
a support structure inserted in said carton, said structure having means securing an article thereto and at least one locking element extending therefrom, and

one carton flap being folded upon itself to embrace said locking element in reverse fold relationship thereby retaining said support structure against movement in said carton.

3,884,357
SUNGLASS DISPLAY STAND

Jack Bloch, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.

Filed Jan. 11, 1971, Ser. No. 105,445
Int. Cl. A47f *5/02, 7/02*
U.S. Cl. 211—13 **4 Claims**

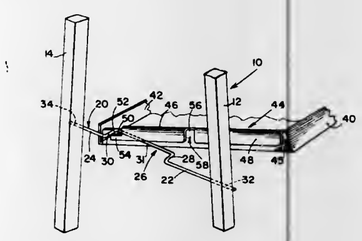


1. A rotary display stand for sunglasses or spectacles having temples comprising:
   a. a pedestal;
   b. an axial shaft extending substantially vertically upwardly from said pedestal;
   c. a rotatable sunglass display rack for supporting a plurality of sunglasses and being mounted upon said axial shaft for rotation thereon;
   d. said rack comprising a pair of end members, each having an opening for said axial shaft to pass through, and portions extending outwardly from said opening;
   e. said end members having a plurality of slots therein spaced about the periphery thereof each at a predetermined minimum distance from said opening, each of said slots formed by interior walls of said end members and having a wide entrance portion which progressively narrows for a distance and then widens abruptly from its narrowest portion to form lip means which include a pair of substantially horizontal lips on said interior walls on either side of said slots;
   f. a plurality of display rack segments each having an attachment portion at each end thereof, each attachment portion being shaped for manual insertion in one of said slots opposing each other in a pair of aligned end members, each of said attachment portions comprising a narrow outermost portion which progressively widens for a distance and then narrows abruptly from its widest portion to form locking ledge means which include a pair of substantially horizontal locking ledges, said attachment portion being a unitary solid element so that a section taken through any part thereof will show a continuous solid cross-section of material, the pair of substantially horizontal locking ledges being engaged by the pair of substantially horizontal lip means formed in the walls of said slots for permanently attaching said rack segments to said end members;
   g. said rack segments each having portions for supporting a plurality of sunglasses thereon for display comprising;
   h. an elongated vertically oriented stem member;
   i. a plurality of sunglass temple engaging supporting members extending outwardly from opposite sides of said stem member, each of said temple engaging support members including a pair of spaced substantially horizontal members including an upper and lower member extending from each side of said stem member and a substantially vertically extending member connecting the pairs of substantially horizontal members, a substantially large four-sided opening enclosed by said substantially horizontal and vertical members and a portion of said stem members, the opening being of considerably greater area than the ends of the temple portions to be inserted therethrough, said lower substantially horizontal members on each side of said stem member supporting the sunglass temples and the substantially vertical members serving as cam means to cam the sunglass temples into their substantially, space saving, at least partially closed position as the sunglasses are inserted into said temple engaging support members for display on said stand;
   j. a plurality of sunglass front frame supporting members extending forwardly from said stem member, each of said front frame supporting members comprising an elongated forward extending ledge and abutment means comprising a pair of spaced side members extending upwardly on either side of said ledge and extending only a portion of the length thereof and forming a shoulder at each end of said spaced side members which engage spaced portions of the sunglass front frame portions on either side of a bridge portion of said front frame portions for limiting the inward motion of said sunglasses on said display stand.

3,884,358
SHELVING AND/OR DISPLAY UNIT

Howard J. Marschak, 865 W. North Ave., Chicago, Ill. 60622

Filed Mar. 18, 1974, Ser. No. 451,891
Int. Cl. A47f *5/00*
U.S. Cl. 211—148 **8 Claims**



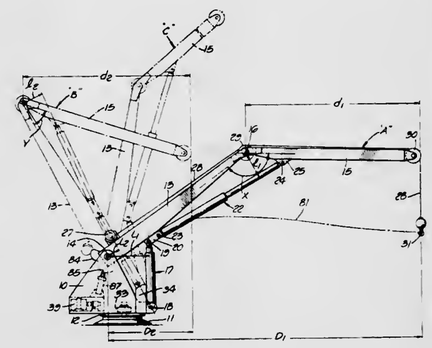
1. A display or shelving unit comprising a pair of spaced uprights, each of said uprights having spaced front and rear legs, a shelf support member extending between said front and rear legs of each said upright, each said shelf support member having an offset portion which is of generally U-shaped configuration and is intermediate said front and rear legs, a shelf having a downwardly extending flange on each of its opposite sides which extends laterally of the shelf, said flange having a pair of spaced hooking members which interlock with the front and rear ends of said offset portion of said shelf support member to detachably lock said shelf to said shelf support member to prevent the forward and rearward movement of said shelf with respect to said shelf support members.

3,884,359
LEVEL LUFFING CRANE

Don Suverkrop, Bakersfield, Calif., assignor to Hopper, Inc., Bakersfield, Calif.

Continuation-in-part of Ser. No. 779,403, Nov. 27, 1968. This application Aug. 26, 1970, Ser. No. 66,969
Int. Cl. B66c *23/54*
U.S. Cl. 212—35 **15 Claims**

1. An articulated crane, comprising in combination: a base member, an inner boom, pivot means mounting said inner boom on the base member, an outer boom pivotally mounted on the inner boom, means including a first extensible hydraulic cylinder assembly for independently swinging said inner boom with respect to said base member in an arc on both sides of the vertical position, said assembly defining a first effective lever arm with respect to said pivot means, means including a second extensible hydraulic cylinder assembly for independently swinging said outer boom with respect to said inner boom, said second assembly defining a second effective lever arm with respect to the pivotal mounting of the outer boom, said booms being movable in a traverse from an extended position in which the inner boom inclines upward on one side of the vertical and the outer boom extends further to the same side thereof and the angle between the booms being less than 180 degrees, to a retracted position in which the inner boom inclines upward on the other side of the vertical and the outer boom extends to the first mentioned side thereof, the positions of the booms, hydraulic cylinder assemblies, and pivotal connections being such that



$$\frac{D_1}{D_2} \cong \frac{L_1}{L_2} \times \frac{l_2}{l_1}$$

where:
- D_1 = horizontal reach of the booms when extended
- D_2 = horizontal reach of the booms when retracted
- L_1 = effective lever arm of said first hydraulic cylinder assembly extended
- L_2 = effective lever arm of said first hydraulic cylinder assembly retracted
- l_1 = effective lever arm of said second hydraulic cylinder assembly extended
- l_2 = effective lever arm of said second hydraulic cylinder assembly retracted

the cylinder assemblies being sized according to the relation

$$P_1V_1 \cong P_2V_2$$

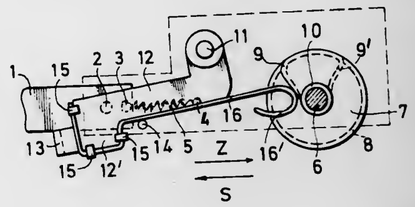
where:
- P_1 = unit pressure in first hydraulic cylinder assembly at a given instant
- P_2 = unit pressure in second hydraulic cylinder assembly at the same instant
- V_1 = displacement volume of the first hydraulic cylinder assembly during said traverse
- V_2 = displacement volume of the second hydraulic cylinder assembly during said traverse

and hydraulic means interconnecting said hydraulic cylinder assemblies to coordinate their simultaneous action to cause the outer end of the outer boom to move substantially horizontally and above the level of said pivot means.

3,884,360
COUPLING-UNCOUPLING MEANS USING A LEVER OPERATED BY AN AXLE-MOUNTED DISC

Max Ernst, Lahengrinstr. 14, Nuremberg, Germany

Filed Jan. 31, 1974, Ser. No. 438,477
Claims priority, application Germany, Feb. 1, 1973, 2304861
Int. Cl. A63h *19/18*
U.S. Cl. 213—75 TC **6 Claims**



1. In combination with a toy rail vehicle, a coupling system for coupling and uncoupling toy railroad vehicles, said system including a control disc fixedly connected to a wheel axle of said rail vehicle, said control disc having oppositely facing end wall portions, a coupling including a shank having a rear portion pivotally supported by said rail vehicle, control lever means including a lever pivotally supported by said rail vehicle and operatively connected to said rear portion and operable to move said rear portion into a first position in which said coupling is in engaged position and into a second position in which said coupling is in its disengaged position, said control lever means including spring arm means fixed to said lever, said spring arm means having a rounded head portion adapted to be slightly pressed against either one of the end wall portions of said control disc, and said control disc being provided with peripheral guiding means leading from one end wall portion to the other end wall portion of said control disc and slidingly engaging said rounded head, said control disc, through said peripheral guiding means, being operable in response to a change in the direction of rotation of said axle and thereby of said control disc to pivot said control lever means and shank and to shift said head from one of said end wall portions to the other one of said end wall portions.

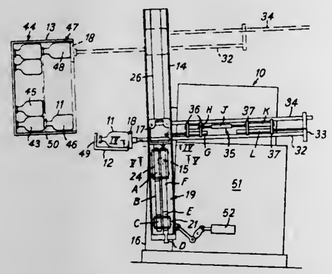
3,884,361
ARTICLE TRANSFER APPARATUS

Elbert Edward Botterill, St. Albans, England, assignor to The Metal Box Company Limited, London, England

Filed Jan. 15, 1973, Ser. No. 323,717
Claims priority, application United Kingdom, Jan. 19, 1972, 2513/72
Int. Cl. B65b *35/30*
U.S. Cl. 214—1 BT **12 Claims**

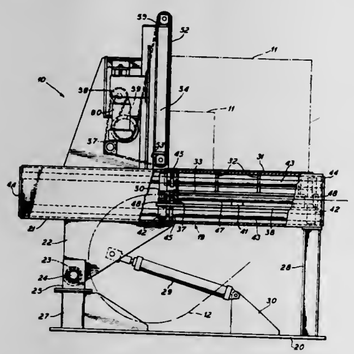
1. Transfer apparatus for selectively transferring each of a succession of articles or batches of articles from a first location to selected ones of second locations or vice versa, said apparatus comprising a support, an article engaging member, and a plurality of actuating means in excess of two connected to one another and between said support and said article engaging member, each of said actuating means being of the type having a positive stroke for moving said article engaging member a predetermined linear distance relative to said support, the individual and cummulative strokes of selected ones of said actuating means corresponding to the spacing of said second locations from said first location, and control means for selectively actuating said actuating means for moving said article engaging member between selected ones of said second locations and said first location, said article engaging member and said plurality of actuating means defining a first actuating system and said support being carried by a second actuating system movable in a direction generally transverse to the

general direction of movement of said first actuating system, and said second actuating system including a further plurality



of actuating means connected to one another and to said support for moving said support in said generally transverse direction.

3,884,362
UPENDER FOR VARIABLE SIZES OF PRESSURE-SENSITIVE PAPER ROLLS
Lawrence A. Brenner, Brookfield, Wis., and Elmer Bryant, Downingtown, Pa., assignors to Beloit Corporation, Beloit, Wis.
Filed Sept. 17, 1973, Ser. No. 397,943
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 Q **10 Claims**

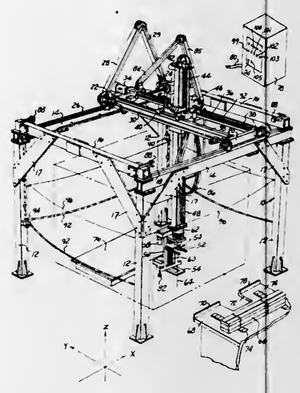


1. Apparatus for upending rolls of pressure-sensitive sheet material, comprising:

a pivotal carriage having thereon a normally inactive upwardly extending discharge conveyor and means supporting a plurality of roll-engaging and supporting arms below the lower end of the conveyor, whereby a roll to be upended is adapted to be delivered on a generally horizontal axis and with its leading end contiguous to the discharge conveyor and its perimeter in position to be engaged by said arms; and

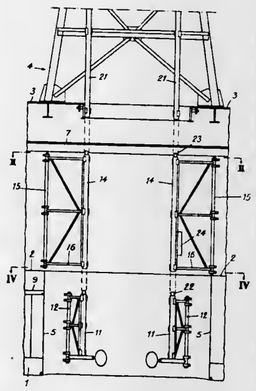
means mounting said arms on said carriage for movement relative to said discharge conveyor and the carriage into selective extended position relative to said discharge conveyor in correlation to the length of the roll to be upended without interfering with a next succeeding roll relatively closely spaced from the trailing end of the roll to be upended, and for selectively adjusting the arms in correlation to the diameter of the roll to be upended to effect uniform lifting engagement with the perimeter of the roll, so that the roll can be upended onto the discharge conveyor by pivoting the carriage to swing said arms upwardly and said discharge conveyor downwardly in unison.

3,884,363
PROGRAMMABLE UNIVERSAL TRANSFER DEVICE
Nadim S. Ajlouny, West Bloomfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Sept. 13, 1973, Ser. No. 397,036
Int. Cl. B65g *57/20*
U.S. Cl. 214—1 BB **25 Claims**



24. Apparatus as defined in claim 23 including third bidirectional motive power means for providing limited angular displacement of the gripper assembly relative to the support arm about a vertical axis.

3,884,364
APPARATUS FOR CONNECTING UNDERWATER INSTALLATIONS
Bernard Mercier, Saint Maur, and Francisco Serrano, Paris, both of France, assignors to Subsea Equipment Associates Limited (SEAL), Hamilton, Bermuda
Division of Ser. No. 299,551, Oct. 20, 1972, Pat. No. 3,817,412. This application Dec. 3, 1973, Ser. No. 420,801
Claims priority, application France, Oct. 21, 1971, 71.37808
Int. Cl. E21b *3/00*
U.S. Cl. 214—1 R **15 Claims**



1. An apparatus for unloading underwater devices from an installation on the water surface subjected to the action of ground swells and waves comprising;

a. a storage area within said installation, for storing said underwater devices,

b. a well extending vertically through said installation in the storage area,

c. a deck above the storage area, having an opening therethrough in alignment with said well,

d. a derrick located on said deck coaxially above said well,

e. a linearly reciprocating platform located below said deck capable of adopting at least a first position within said storage area and a second position within said well such that said underwater device may be placed on the upper surface of said platform,

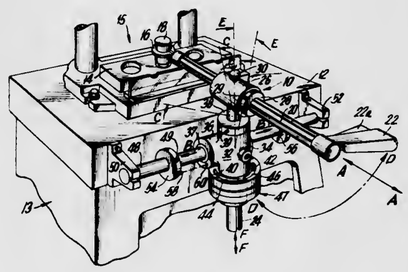
f. means to attach said underwater device to said platform,

g. means to transport said underwater devices from said storage area to said platform, when said platform is in its second position, said means being movable from a position within said storage area to a position within said well,

h. lower vertical guides in said well below the level of the platform, and

i. upper vertical guides in said well in alignment with the lower guides above the level of the platform.

3,884,365
WORKPIECE MANIPULATOR
John B. Thomson, Manhasset, N.Y., assignor to Thomson Industries, Inc., Manhasset, N.Y.
Filed Mar. 19, 1974, Ser. No. 452,655
Int. Cl. B25j *1/12*
U.S. Cl. 214—1 CM **14 Claims**



1. A workpiece manipulator for manipulating a tool to grip a workpiece, comprising:

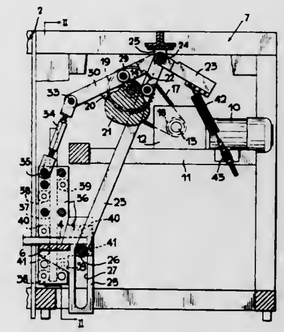
an arm for receiving said tool including means for actuating said tool to grip said workpiece;

a vertical member, said vertical member including means mounting said arm for reciprocatory movement laterally relative to the axis of said vertical member;

a transverse member; and

means connecting said vertical member and said transverse member, said connecting means being movable both horizontally reciprocally along and rotationally about said transverse member and also being movable vertically reciprocally along said vertical member while permitting said vertical member to rotate about its longitudinal axis, whereby said manipulator arm may be independently moved in any one or more of vertical, horizontally lateral, and horizontally in and out directions, as well as rotatably about its own longitudinal axis and pivotally about each of said vertical and transverse members.

3,884,366
PALLETISING OR DEPALLETISING MAGAZINE
Antoine Joseph Leenaards, Lausanne, Switzerland, assignor to Crown Cork & Seal Co. Inc., Philadelphia, Pa.
Filed Jan. 2, 1973, Ser. No. 320,498
Claims priority, application Belgium, Jan. 11, 1972, 777899
Int. Cl. B65g *59/06*
U.S. Cl. 214—6 BA **13 Claims**



1. A palletising or depalletising magazine serving to contain a stack of superimposed pallets whereof the lower pallet is carried by retractable co-planar substantially horizontally disposed support means and can be placed on a conveyor so as to be individually removable; a displaceable carriage having first guide means to confine the displacement thereof to a first direction, and having second guide means for receiving said retractable support means;

said retractable support means having extending therefrom a plurality of elongate forks adapted to extend under the final lower pallet a distance greater than half the dimension of the pallets as measured in a direction parallel to the elongate dimension of the forks;

a first rigid member coupled to said carriage to periodically effect the displacement thereof in said first direction;

a second rigid member coupled to said support means for periodically effecting the displacement thereof in a second direction; and

common drive means coupled to said first and said second members for operating said members in a predetermined sequential relationship whereby said forks are successively;

lowered into the palletising or depalletising magazine to bring the stack of pallets onto the conveyor which is then stationary;

removed from the final lower pallet resting on the conveyor at only one side of the stacks; and

reintroduced into the palletising or depalletising magazine at the one side of the stack at the level of the penultimate lower pallet and raised in the palletising or depalletising magazine to then carry the penultimate lower pallet and to raise it as well as the remaining pallets;

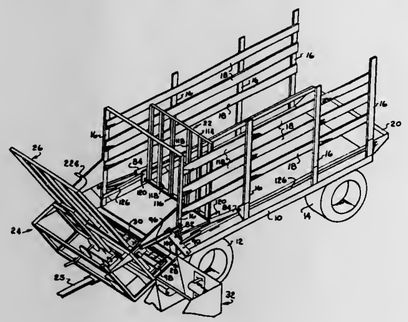
the said final lower pallet remaining alone on the conveyor which can then be operated, whereby the forks can again be displaced in the same manner to perform identical cycles.

3,884,367

MECHANICAL DRIVE FOR A RECEIVING TABLE ON A BALE WAGON

Lee D. Butler, Kingsburg; Raymond E. Fisher, Reedley, both of Calif., and Albert D. Fontrier, Rhode St., Genese, Belgium, assignors to Sperry Rand Corporation, New Holland, Pa.

Division of Ser. No. 139,802, May 3, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 393,867
Int. Cl. B65g 57/32
U.S. Cl. 214—6 B 5 Claims



1. In a bale wagon of the type which includes a frame, a receiving table mounted on said frame and capable of receiving a predetermined number of bales thereon and capable of being moved between a lower, bale-receiving position and an upper, bale-discharge position, and a transfer table mounted on said frame and capable of receiving said bales from said receiving table when said receiving table is at its bale-discharge position, the improvement which comprises:

a mechanical drive assembly mounted on said frame for moving said receiving table between its said positions and capable of being coupled to an external source of power and continuously driven thereby, said drive assembly being normally inoperatively uncoupled from said receiving table prior to each time when said bales have been received on said receiving table at its bale-receiving position, said drive assembly being operatively mechanically coupled to said receiving table each time after said bales have been received on said receiving table at its bale-receiving position and causing movement of said receiving table through only one complete cycle from its bale-receiving position, to its bale-discharge position and back to its bale-receiving position.

3,884,368

PANEL DESTACKER

Robert L. Ballard, 2205 Heather Street S.E., Grand Rapids, Mich. 49506

Filed Apr. 23, 1973, Ser. No. 353,245
Int. Cl. B65g 59/04
U.S. Cl. 214—8.5 D 9 Claims

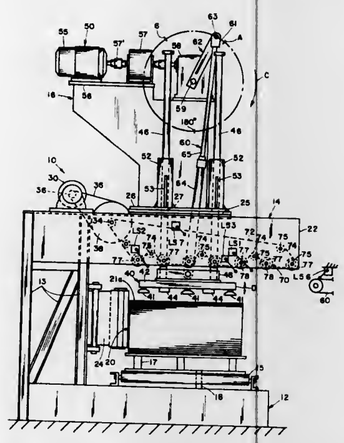
1. A panel destacking machine comprising:

means for supporting a stack of panels;

a destacker head including means for gripping the outermost panel of said stack of panels;

means guidably supporting said destacker head for reciprocating movement toward and away from said stack of panels; and

drive means for reciprocating said destacker head toward and away from said stack of panels, said drive means including a drive motor, an output drive shaft coupled to said drive motor, a crank arm coupled to said drive shaft to be rotated thereby, and a compressible link rotatably coupled to an end of said crank arm remote from its coupling to said drive shaft, and an opposite end of said linkage is pivotally coupled to said destacker head such that as the thickness of the stack of panels varies, the length of travel of said destacker head varies to compensate for the varying thickness of said stack.

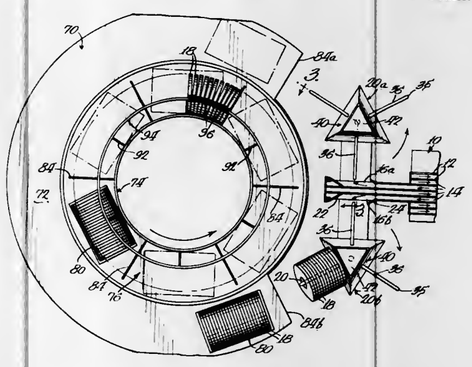


3,884,369

METHOD AND APPARATUS FOR UNLOADING AND STORING REELS AND THE LIKE

Charles W. Tomlinson, Orange, Va., assignor to Acme Visible Records, Inc., Crozet, Va.

Filed Nov. 2, 1973, Ser. No. 412,491
Int. Cl. B65g 57/16
U.S. Cl. 214—8 5 Claims



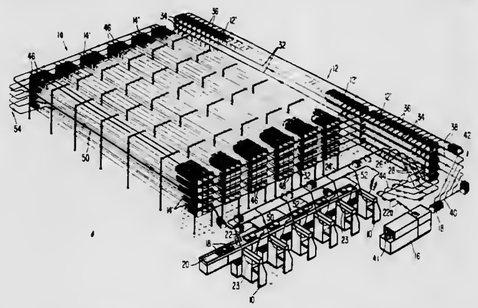
1. Apparatus for collection and storage of a plurality of objects having an aperture therein in a fixed location comprising conveyor means for moving said objects in an upright position along a given path to an unloading location, collection means spaced on one side of said unloading location, said collection means having at least two sloping arms adapted to engage through the aperture of each object at said unloading location, support means for supporting the lower ends of said arms in a spaced radial relationship, said support means being rotatable to move either of said arms into a position adjacent said unloading location, with the other arm being spaced away from said location, means for tilting each object over laterally toward said collection means at said unloading location, whereby to engage said object on said collection means, and storage means adjacent said collection means for storing a plurality of said objects, said storage means comprising a plurality of storage tiers mounted for rotation about a common axis and being located adjacent to the other of said arms to facilitate the unloading of objects therefrom.

3,884,370

SYSTEM FOR SORTING AND PROCESSING ARTICLES INCLUDING FLAT MAIL PIECES

Robert S. Bradshaw; Alfred A. Greene, both of Broomall; James R. Hunter, Chadds Ford; S. James Lazzarotti, Broomall; Abe Mann, Bala Cynwyd, and Herbert L. Rosenblatt, Broomall, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 28, 1973, Ser. No. 401,954
Int. Cl. B65g 43/00
U.S. Cl. 214—11 R 12 Claims



1. A system for sorting articles comprising in combination: carrier means coupled to said articles for providing support therefor and remaining therewith throughout the complete sorting process, each of said carrier means being comprised of a T-shaped upper section and a lower section for clamping at least one of said articles, said upper section having a spring-loaded clamp release lever protruding therefrom and being operatively connected to the clamping means in said lower section,

transport means for transporting said carrier means to predetermined sort destinations and providing storage therefor at said destinations,

escort memory means affixed to each of said carrier means and possessing information as to the sort destination therefor,

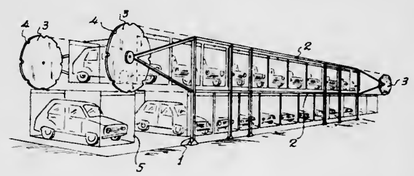
gating means operatively positioned with respect to said transport means and responsive to the information contained in said escort memory means for switching said carrier means among a plurality of transport paths to achieve said predetermined sort destinations.

3,884,371

MECHANISM FOR VARYING THE DISTANCE BETWEEN CAGES MOVABLE IN AN ENDLESS PATH

Patricio Coira Castro, Avda. Pio XII, 35, Pamplona, Spain

Filed Jan. 21, 1974, Ser. No. 434,901
Int. Cl. E04h 6/06
U.S. Cl. 214—16.1 BB 3 Claims



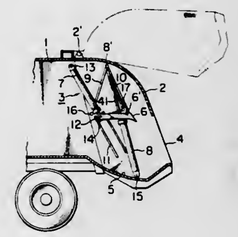
1. Improvements introduced into wheel transporting cages, with a mechanism for varying the distance between cages, of the type that consists of a supporting structure for a plurality of cages arranged in two super-imposed horizontal rows, very close together in the straight stretches, each cage being joined to a mechanism for varying distances between them, which mechanism produces an increase or a reduction of the separation between the said cages before or after their passage over the end pulleys of the wheel in either of the cases in which a cage begins its ascent towards the upper level, or its descent towards the lower level, following a curved line determined by the rim of the said pulleys, to avoid a cage being contacted by the cage immediately it in a straight line, the cages being hauled by branches of cable that link the respective distance-varying mechanisms constituted in the hangers of the cages, the said improvements are characterized because the distance-varying mechanism of each cage is integrated into a hanger of the cage in question, which hanger consists of a resistant profile arranged at right angles with respect to the direction of forward travel of the cages, and is fitted on the exterior with two cylindrical elements near the ends, designed to be joined to notches made in the rims of the driving pulleys; in the said hanger, provision has been made for two facing longitudinal grooves on the upper and lower zones, which grooves serve as guides for sliding elements constituted by two plates external to the hanger, each pair of plates being linked by two vertical bushing shafts passing through the grooves in such a way that the said plates can slide being perfectly guided by the facing grooves; one of these shafts of each sliding element is extended at both ends, each of which carries a sheave, while in the middle zone there is a pulley over which there passes the end of a branch of traction cable coming from another hanger immediate to it, which cable has previously passed through another pulley fitted on a fixed vertical shaft near the end of the hanger, to which hanger the end of the cable is anchored, so that a movement towards the centre of the sliding element will produce shortening of the branch of the cable fixed to a hanger that is immediate to it, while if the sliding element moves towards the end, the said branch will be lengthened, thus producing a greater distance between hangers.

3,884,372

REFUSE LOADER

Takehiko Kunii, c/o Kyokuto Kaihatsu Kogyo Kabushiki Kaisha, 1-45, 6-chome, Koshienguchi, Nishinomiya-shi, Hyogo-ken, Japan

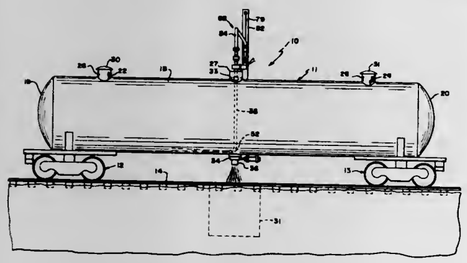
Filed Oct. 30, 1972, Ser. No. 302,564
Claims priority, application Japan, May 8, 1972, 47-45199
Int. Cl. B65f 3/00
U.S. Cl. 214—83.3 3 Claims



1. A refuse loader comprising, in combination, a storage compartment; a hollow tailgate structure adjacent to the rear end of said storage compartment; apparatus substantially mounted in said hollow tailgate structure for compressing and transferring refuse from an opening at the rear end portion of said tailgate structure to said storage compartment; a pair of rail members fixed to the side wall of said tailgate structure and substantially vertically elongated near the bottom of said tailgate structure; a sweep panel mounted in said tailgate structure with root end portion movable upwardly and downwardly along said rail members; a first hydraulic cylinder with free end portion pivotally connected to the root portion of

said sweep panel; a second hydraulic cylinder having one end pivotally supported by said tailgate structure at a bottom portion thereof; a first link member having one end pivotally connected to the free end portion of said second hydraulic cylinder and having the other end pivotally connected to a side wall portion of said tailgate structure; a second link member having one end pivotally connected to the tip side portion of said sweep panel and having the other end pivotally connected to the free end of said second hydraulic cylinder, the refuse loaded onto the bottom of said tailgate structure being compressed and transferred into said storage compartment by said sweep panel which is initially moved downwardly and vertically in horizontal attitude along said rail members by means of co-operation of said first and second hydraulic cylinders, said sweep panel being swung about a horizontal axis thereof by means of retracting movement of said first cylinder.

3,884,373
APPARATUS AND SYSTEM FOR UNLOADING RAILROAD TANK CAR
William R. Archibald, San Anselmo, Calif., assignor to Marcona Corporation, San Francisco, Calif.
Filed Mar. 22, 1974, Ser. No. 453,769
Int. Cl. B65g *53/30*
U.S. Cl. 214—83.28 **19 Claims**

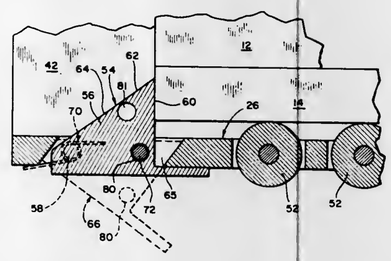


1. Apparatus for unloading flowable solids material from a railroad car, the material characterized in being dispersible with a liquid to form a slurry, comprising the combination of a vessel mounted on the car, the vessel having a hollow interior together with an inlet opening and a discharge opening nozzle means carried within the vessel, supply conduit means carried within the vessel for supplying liquid to the nozzle means, said conduit means having an inlet end adapted to be connected with a source of liquid under pressure, actuating means for moving the nozzle means to direct the stream of liquid jetting therefrom through a path within the vessel to disperse and suspend the solids impacted by said stream to form a slurry, said inlet opening disposed on a top portion of the vessel and said discharge opening disposed on a lower portion of the vessel in vertical register with the inlet opening, said supply conduit extending within said vessel between said inlet and discharge openings and detachably supported in said inlet and outlet openings so as to be removably mounted from said vessel, and valve means for closing said discharge opening whereby the load of material can be transported within the vessel and for opening said discharge opening whereby said slurry can be discharged therethrough.

3,884,374
TRUCK LOADING SYSTEM
Albert J. Swallow, Jr., 1428 E. Lycoming St., Philadelphia, Pa. 19124
Filed Oct. 23, 1973, Ser. No. 408,792
Int. Cl. B60p *1/52, 7/06*
U.S. Cl. 214—84 **3 Claims**

1. In a truck loading system for use within a truck body having a floor and a ceiling, the combination of

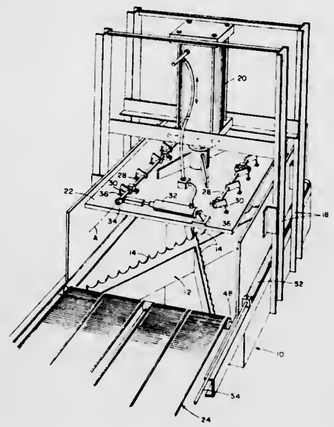
A. a right roller conveyor and a left roller conveyor secured within the truck body,
1. said right and left roller conveyors being transversely spaced,
2. said right and left roller conveyors extending longitudinally within the truck body,
3 . the said roller conveyors each having a base and a plurality of longitudinally spaced rollers,
4. at least one said conveyor base including a well; and
B. an automatic pallet stop assembly associated with said one base,
1. said pallet stop assembly including a detent which is movable from a loading position to a locking position,
2. said detent being movable within the well,
3. said detent having pivotal movement within the well about a pin,



4. the said detent having an inclined surface which inclines upwardly from a plane drawn through the conveyor base, and a stop surface, said stop surface positioning at right angles to and extending above a plane drawn through the conveyor base,
5. the pallet stop assembly including a spring associated with the pin, the spring normally biasing the pallet stop assembly to the locking position,
6. the pallet stop assembly including a detent lock, said detent lock including a locking pin,
7. the detent being provided with an opening and the conveyor base being provided with a channel, the said opening aligning with the channel when the pallet stop assembly is in the locking position, the said locking pin inserting into the channel and opening to lock the pallet stop assembly in the said locking position.

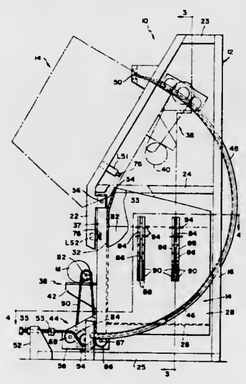
3,884,375
BAG OPENING AND EMPTYING WITH TRAVELING CONVEYOR
Charles Mandeville Schott, Jr., and Charles Mandeville Schott, Sr., both of Califon, N.J., assignors to Charles M. Schott, Jr.
Filed July 16, 1973, Ser. No. 379,484
Int. Cl. B65g *65/04*
U.S. Cl. 214—305 **4 Claims**

1. In a bag emptying machine comprising a fixed blade array disposed to engage a broad face of a bag, a presser having a bag-engaging surface generally opposed to the cutting edges of said blade array, a reciprocal presser drive constructed to press said presser facewise upon an opposite broad face of said bag and thereby urge the bag and contents against said blade array to cut the first mentioned face of the bag to release its contents and to retract, a receiver for receiving the contents of the bag and means operable to carry a bag between said blade array and presser and deliver said bag facewise to said blade array the improvement wherein said conveyor means comprises a conveyor belt and a conveyor belt guide member movable bodily carrying said conveyor belt from a first position spaced from said blade array to a second position overlying said blade array, said conveyor belt in the latter position being movable about said guide to convey a bag to said blade array, said conveyor belt guide thereupon being operable to return toward said first position while progressively depositing said bag facewise directly upon the cutting edges of said blade array in position to be cut, and said bag emptying machine including means to lift an empty bag from the cutting edges of



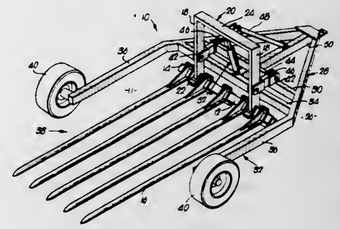
said blade array while said guide is in said first position and to deposit said empty bag upon said conveyor belt when said guide is in said second position, said conveyor belt thereupon being operable to convey away said empty bag.

3,884,376
DUMPER
Charles F. Rivers, 15318 Warwick Rd., Detroit, Mich. 48223
Filed Mar. 4, 1974, Ser. No. 447,947
Int. Cl. B65g *65/04*
U.S. Cl. 214—314 **10 Claims**



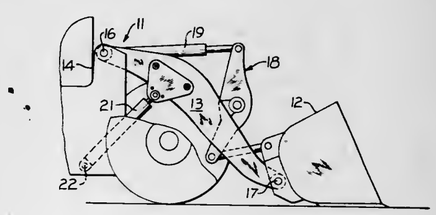
1. A dumper comprising a supporting frame, a cradle, pivot means mounting said cradle on said frame for swinging movement from a loading position to an unloading position, and means for swinging said cradle from said loading position to said unloading position comprising a rack extending in an arc centered on the axis of swinging movement of said cradle, a pinion carried by said cradle in engagement with said rack, and power means on said cradle for rotating said pinion.

3,884,377
STACK MOVING IMPLEMENT
Adin F. Holdeman, Hesston, and Melvin V. Gaeddert, Newton, both of Kans., assignors to Hesston Corporation, Hesston, Kans.
Filed Apr. 30, 1973, Ser. No. 355,932The portion of the term of this patent subsequent to May 20, 1992, has been disclaimed.
Int. Cl. E02f *3/00*
U.S. Cl. 214—767 **18 Claims**



1. A stack moving implement comprising:
an L-shaped stack carrying unit having a front transverse beam, a mast rigid to said beam and extending upwardly therefrom, and a plurality of spaced tines rigid to the beam and extending rearwardly therefrom;
a support carrying said unit including an arm at each side respectively thereof and a ground wheel for each arm respectively,
said tines normally resting on the ground between said wheels; and
an assembly for raising and lowering said unit with respect to the wheels including mechanism for tilting the unit to a position disposing the tines on an incline extending upwardly and rearwardly from the beam.

3,884,378
LIFT ARM ASSEMBLY FOR LOADER VEHICLES
Donald R. Muellner, Aurora, and Richard J. Piercy, Geneva, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 23, 1973, Ser. No. 408,667
Int. Cl. E02f *3/80*
U.S. Cl. 214—769 **3 Claims**



1. Lift arm mechanism for a loader vehicle which has an elevatable bucket for receiving and lifting material comprising:
a lift arm having first and second ends and having an intermediate section between said ends,
first pivot means for coupling said first end of said lift arm to said vehicle and providing for raising and lowering of said second end thereof,
means for attaching said bucket to said second end of said lift arm,
a pair of plates disposed adjacent said intermediate section of said lift arm each being at a separate side thereof and each having a lower portion extending below said lift arm,
a linear fluid motor having one end pivotally connected

to said vehicle and having an opposite end extending between said lower portions of said plates,

second pivot means coupling said opposite end of said fluid motor to said lower portions of said plates,

a pair of removable cross pins each being transpierced through said plates and said intermediate section of said lift arm at spaced apart positions along said intermediate section of said arm with one of said cross pins being situated closer to said first end of arm than said second pivot means and the other of said cross pins being closer to said second end of said arm than said second pivot means whereby stress forces are divided between spaced apart regions of said lift arm, and a pair of spaced apart supplementary cross pins extending between said lower portions of said plates below said lift arm.

3,884,379

BOTTLE SAFETY CLOSURE

William James Landen, Cheshire, Conn., assignor to Eyelet Specialty Co., Incorporated, Wallingford, Conn.

Continuation-in-part of Ser. No. 313,801, Dec. 11, 1972, abandoned. This application Apr. 16, 1973, Ser. No. 351,266

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

U.S. Cl. 215—221 **3 Claims**



1. In combination, a bottle including an externally threaded neck, an internally threaded cap having a skirt removably engageable to the threaded neck, a plurality of axially resilient locking projections non-rotatably carried on the outside of said neck beneath the threaded region and spaced from the base of said neck, said projections being in radial overlap with said skirt and being at angularly spaced locations about the axis of said neck, the open end of said skirt having a circumferentially extending downwardly directed series of teeth in one-way engageable relation with said locking projections near the closed relation of said cap and neck, the direction of one-way co-action being that of escapement in the thread-on direction and engagement in the thread-off direction, and said projections extending sufficiently radially outward of said cap in the closed position to enable finger-actuated disengagement of said locking projections from said teeth, whereby the cap may then be unthreaded, the effective separation of said locking projections being substantially a multiple χ of the pitch angle characterizing said series of teeth, divided by the number of said projections, where χ is an integer other than said number or a multiple thereof.

3,884,380

CONTAINER FOR HIGH POWER GENERATORS OF ELECTRONIC PHOTOFLASH APPARATUS

Claus Prochnow, Braunschweig, and Hans-Jürgen Berger, Wolfenbuttel, both of Germany, assignors to Rollei-Werke Franke & Heidecke, Germany

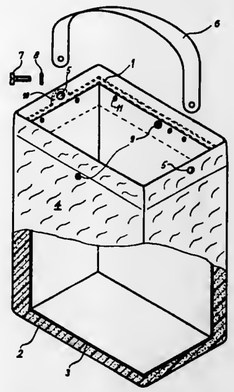
Filed Sept. 26, 1973, Ser. No. 402,533

Claims priority, application Germany, Sept. 28, 1972, 7235606

Int. Cl. B65d *25/10, 25/18, 25/32*

U.S. Cl. 220—9 F **8 Claims**

1. A container for a portable high voltage electronic flash power unit comprising a hollow body having side walls of foamed plastic material, a metallic bearing ring extending along said side walls embedded in the thickness thereof near the top edges thereof, means for attaching a carrying strap to said metallic bearing ring, and means for attaching a flash



power unit within the container to said metallic bearing ring so that the weight of said power unit is transferred to the carrying strap mainly through said metallic bearing ring rather than through said foamed plastic material.

3,884,381

NESTABLE COMPARTMENTALIZED TRAYS

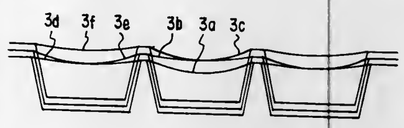
Gunther Kaupert, Thuringer Str. 1, D-5927 Erndtebruck, Westphalia, Germany

Filed Aug. 3, 1973, Ser. No. 385,240

Claims priority, application Germany, Aug. 4, 1972, 2238393

Int. Cl. B65d *21/02, 1/34*

U.S. Cl. 220—23.6 **3 Claims**



1. In a nestable compartmentalized tray having a plurality of cup-shaped depressions each having a base or lowermost wall portion and side walls sloping inwardly towards said base, two side-by-side extending side walls of two adjoining depressions being convergent in a direction away from the bases and terminating in a common connecting edge, whereby the tray has a plurality of common connecting edges; the improvement comprising the arrangement wherein said connecting edges are curved in the direction of the height dimension of said tray and wherein end-to-end adjoining curved connecting edges have alternatingly a relatively small and a relatively large radius of curvature.

3,884,382

CONTAINER CLOSURES

Martin Frank Ball, Welwyn Garden, England, assignor to The Metal Box Company Limited, London, England

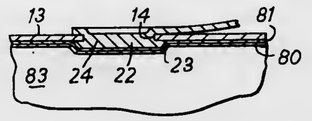
Filed Jan. 4, 1973, Ser. No. 320,897

Claims priority, application United Kingdom, Feb. 9, 1973, 696/73

Int. Cl. B65d *31/00, 33/00*

U.S. Cl. 220—272 **9 Claims**

1. An easy opening container member comprising a wall having a dispensing opening therein, a closure of plastics material including a plug portion of an outline corresponding to the outline of said dispensing opening and an integral elongated tab portion, said plug portion extending through said dispensing opening with said tab portion overlying an outer surface of said wall and tightly engaging said wall around said dispensing opening, said plug portion terminating in a rivet head in the form of a radially extending integral flange in molded engagement with an inner surface of said wall and retaining said plug portion in place, a layer of heat sealable



adhesive over said rivet head and surrounding adjacent portions of said wall inner surface, and a layer of metal foil underlying said rivet head and said surrounding adjacent portions of said wall and bonded thereto by said adhesive, said adhesive layer and said metal foil layer being molded in the area of said rivet head to define a receptacle for said rivet head, and said rivet head being molded in accordance with the molding of said layers.

3,884,383

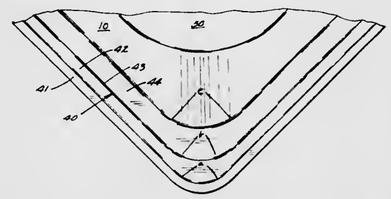
NESTING CONTAINER

Charles H. Burch, and Roger L. Medendorp, both of Grand Rapids, Mich., assignors to Kirkhof Manufacturing Corporation, Grand Rapids, Mich.

Continuation of Ser. No. 76,395, Sept. 29, 1970, abandoned. This application Jan. 17, 1973, Ser. No. 324,346

Int. Cl. B65d *1/46, 1/26*

U.S. Cl. 220—72 **5 Claims**



1. A polygonal, polymeric container having a plurality of sides and a bottom forming a polyhedron, the improvement in said container comprising: a stepped rim at the top thereof formed by first and second generally vertical surfaces joined by a first generally horizontal surface, and a third generally vertical surface joined to said second generally vertical surface by a second generally horizontal surface; said first surface being the outermost, said third surface being innermost and said second surface being intermediate, relative to said container; said first, second and third generally vertical surfaces being curved at the corners of said container, with the radius of curvature for each surface being different whereby collapsing of the container at these corners is resisted.

3,884,384

CONTAINER

Harold S. Cloyd, Erie, Pa., assignor to Nosco Plastics, Incorporated, Erie, Pa.

Filed Dec. 26, 1972, Ser. No. 318,669

Int. Cl. B65d *25/28*

U.S. Cl. 220—94 A **2 Claims**

1. A container having an upwardly extending peripheral side wall terminating at its upper edge in a rim, rigid handles on opposite sides of the container, each handle having a rigid frame spaced from and extending outward from a portion of the rim, said frame having a first member closer to said portion of the rim and a second member farther from the said portion of the rim and providing a hand hold, said portion of the rim having outwardly and downwardly extending flanges with the downwardly extending flange outermost, a flexible hinge member bridging the space between and joined to said downwardly extending flange and to said first member, said first member and said downwardly extending flange being straight and parallel to each other in plan view, said side wall, rim, handles and hinge sections comprising a single piece of plastic, each handle and its associated hinge member and portion of the rim having a parting line substantially in a common plane and vertical ribs extending between and joined to said side wall and said flanges.

3,884,385

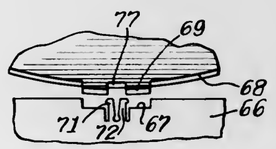
APPARATUS FOR LOCKING END BELLS TO A SHELL OF AN ELECTRIC MOTOR

Edward J. Schaefer, Bluffton, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Filed July 9, 1973, Ser. No. 377,215

Int. Cl. B65d *41/12*

U.S. Cl. 220—309 **2 Claims**



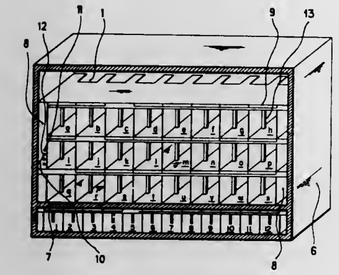
1. A housing for an electric motor, comprising a cylindrical shell, a plurality of axially extending notches formed in at least one end of said shell, an end bell having a plurality of radially extending locating tabs formed thereon, said end bell being positioned over said one end of said shell with each of said locating tabs being positioned in one of said notches, and said shell further having at least two deformable preformed holding tabs formed thereon adjacent said locating tabs, said holding tabs extending in opposite circumferential directions over said locating tabs and thereby locking said shell and said end bell in assembled relation and holding said end bell against circumferential movement relative to said shell, said holding tabs being formed at approximately the center of said notches, and said locating tabs having slots for receiving said holding tabs.

3,884,386

DEVICE FOR AUTOMATICALLY SUPPLYING DRINKS AND FOODSTUFF

Francisco Arin Urcola, Zumalacarregui 10, Tolosa, Spain

Filed July 27, 1973, Ser. No. 383,149
Claims priority, application Spain, July 29, 1972, 405376
Int. Cl. G07f *11/00*
U.S. Cl. 221—7 **11 Claims**



1. A device for storing and dispensing a plurality of different foodstuffs, such as bottled drinks and the like, said device comprising:
   a cabinet;
   said cabinet having therein a foodstuffs storage zone, said foodstuffs storage zone being divided into a plurality of separate receptacle means parallelly arranged in horizontal rows, each for storing therein an individual foodstuffs unit;
   said cabinet having therein an electric energy zone adapted to be connected to a source of electric energy;
   selectively operable and adjustable mechanical blocking means movably mounted at the front of each of said receptacle means for selectively blocking the removal from each of said receptacle means of the foodstuffs unit stored therein, said mechanical blocking means comprising a plurality of members mounted to slide horizontally along each of said horizontal rows of receptacle means, the number of said members in each of said rows being equal to the number of receptacle means in said each row, less one;
   selectively controllable electric blocking means separate from said mechanical blocking means and connected to said electric energy zone for selectively blocking the removal from any of said receptacle means of the foodstuffs unit stored therein and for blocking such removal upon the failure of said source of electric energy;
   detection means associated with each of said receptacle means for detecting the removal therefrom of the respective foodstuffs unit and generating a signal representative thereof; and
   said cabinet having therein a registering zone operatively connected to said electric energy zone and to said detection means for receiving therefrom said signal representative of the removal of any of said foodstuffs units.

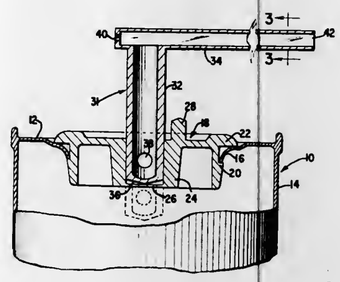
3,884,387

POURING SPOUT FOR LIQUID CONTAINERS

Osvaldo Vannucci, Sao Paulo, Brazil, assignor to American Home Products Corporation, New York, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,489
Int. Cl. B67b *7/26*
U.S. Cl. 222—83 **4 Claims**

1. A dispensing container for liquids comprising:
   A. A container having an orifice defined in it;
   B. A closure sealably connected to said orifice;
      1. A conduit defined in said closure adapted to receive a pouring spout;
      2. A frangible sealing member defined in said closure conduit;
      3. A post defined on the outer surface of said closure; and
   C. A demountable pouring spout further comprising
      1. At least one conduit adapted to frictionally engage said closure conduit;



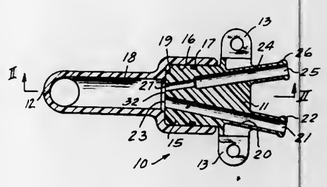
      2. A piercing device formed at one end of said spout conduit; and
      3. At least one orifice defined in said spout conduit adjacent said piercing device, said orifice being adapted to frictionally engage said closure post.

3,884,388

MIXING DEVICE FOR A BEVERAGE DISPENSER

Donald E. Holcomb, Brooklyn Center, Minn., assignor to The Cornelius Company, Golden Valley, Minn.

Filed Apr. 26, 1973, Ser. No. 354,689
Int. Cl. B67d *5/60*
U.S. Cl. 222—132 **6 Claims**



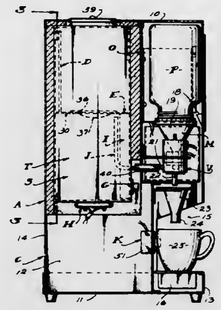
1. A mixing device for beverage dispenser, comprising:
   a. a body having a beverage concentrate passage with an inlet for pressure concentrate, and a water passage with an inlet for pressurized water, said passages having spaced outlets, the axes of said passages converging at a point beyond said outlets; and
   b. a separate spout detachably secured to said body, said spout having a mixing portion in which said point is located, the axis of the mixing portion being horizontal, and a discharge portion of circular cross-section extending transversely to the axis of the mixing portion, the axis of said water passage being substantially tangent to said circular cross-section for swirling the mixture about the axis of said discharge portion, the cross-sectional flow area of said spout being at all points larger than the combined flow areas of said passage outlets.

3,884,389

WATER SUPPLY FOR VENDING MACHINES

Ernest Newell Martin, Escondido, Calif., assignor to Arrowhead Puritas Water, Inc., Los Angeles, Calif.

Filed June 28, 1974, Ser. No. 484,241
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 HE **10 Claims**



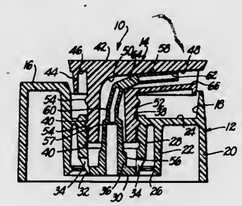
1. A water supply means for a beverage dispensing machine comprising an elongate vertical tank, a partition within the tank defining upper and lower chambers, a water inlet opening in the top of the tank, a flow beaning aperture in the partition communicating with the chambers, a vent pipe communicating with the top of the lower chamber and with atmosphere above the high water level in the upper chamber, water dispensing means to intermittently dispense a predetermined volume of water comprising an elongate vertical open ended stand pipe, the volumetric extent of which is substantially equal to the volume of water to be dispensed and arranged with its upper end in close proximity to the bottom surface of the partition and communicating with the lower chamber and a normally closed valve with inlet means connected with the lower end of the stand pipe and outlet means to dispense water in the stand pipe, the rate of flow through the aperture being less than the rate of flow through the valve when the valve is open.

3,884,390

PUSH-PULL CLOSURE WITH PROBE TO PREVENT CLOGGING

Robert E. Hazard, North Kingston, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Filed Nov. 2, 1973, Ser. No. 412,157
Int. Cl. B65d *47/28*
U.S. Cl. 222—149 **3 Claims**



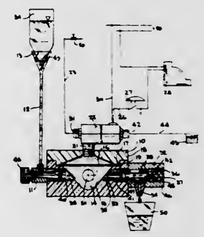
1. A dispensing closure having a closure base and a spout member, said closure base being adapted to be attached to a container and having passage means extending therethrough, said spout member having a discharge passage extending therethrough and being mounted on said base so as to be movable between an opened position in which said spout member is spaced from said passage means and in which said discharge passage is in communication with said passage means and a closed position in which said spout member acts as a valve member and fits against said base adjacent said passage means so as to close off said passage means from said discharge passage in which the improvement comprises:
   one portion of said discharge passage being at an angle to another portion of said discharge passage,
   an elongated, flexible probe means located on said base so as to extend into said discharge passage in said spout member for displacing material from within the interior of said discharge passage when said spout member is moved from said open position to said closed position, said probe means being sufficiently long so as to extend nearly through said discharge passage in said spout member when said spout member is in said closed position, and being sufficiently flexible so as to bend intermediate its ends to accommodate changes in position of said spout member and said discharge passage relative to said closure base said spout member terminating in an end remote from said passage means, said end fitting against a portion of said closure base when said spout member is in said closed position.

3,884,391

AUTOMATIC BAR

Richard S. Pauliukonis, 6660 Greenbriar Dr., Cleveland, Ohio 44130

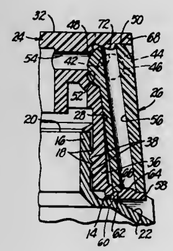
Filed May 9, 1973, Ser. No. 358,532
Int. Cl. B67d *5/10*
U.S. Cl. 222—129.4 **4 Claims**



1. In a system for automatic dispensing of liquid from a supply to a receiver means in precise volumetric displacement upon each actuation, a metering pump for displacing exact amounts of liquid per stroke when actuated by pressurized fluid, a liquid supply means including means for automatic level control of liquid supplied, a pressurized fluid supply means for pump actuation, a fluid network including lines and valves for control of liquid supply from said supply means to receiver means, a fluid conduit means including controls interconnecting said liquid supply means with said pump, said fluid network further including lines and valves for supply and control of said pressurized fluid supply means, a computerized counter means including a network of electric leads interconnecting said counter with said controls in said fluid network including electric switching means, means for initiating system operation by said counter including means for accounting and inventorization means and means for totalling, including means for controllably supplying liquid from said supply means to said receiver means via said metering pump, said pump including a conically shaped pumping chamber for housing liquid prior to displacement from the pump and a conically shaped actuating chamber for pressurized fluid supply, said chambers separated by a stretchable membrane of elastic material mounted in a flat plane therebetween and retained therein by a pilot cap having a control valve incorporated therein and interconnected with the pressurized fluid supply source in said fluid network and also interconnected electrically with said counter within said network of electric leads, said pumping chamber further including at least a pair of radial ports for liquid inlet at one end provided with control valve also interconnected within said fluid network with fluid

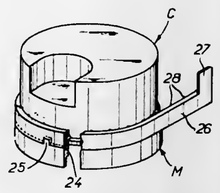
supply means by said fluid conduit and said counter electrically through said leads while at the other end liquid discharge port provided with a check valve including a nozzle allowing liquid displacement from the pumping chamber when actuating chamber receives said pressurized fluid to expand said membrane from said original flat plane to a final stretched position closely conforming to said conical shape of said pump chamber providing liquid displacement of precise volumetric quantity upon each stroke produced by said pressurized fluid entering said actuating chamber, including means for electrical energization of controls and operation of said counter to report totals.

3,884,392
CHILD-RESISTANT CLOSURE
Robert E. Hazard, North Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.
Filed Nov. 17, 1972, Ser. No. 307,516
Int. Cl. B67d *5/32*
U.S. Cl. 222—153 **17 Claims**



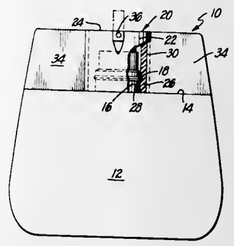
1. A dispensing closure having a cap and a spout, said cap including a skirt for attaching said closure to a container and an opening leading through said cap, said spout being rotatably mounted on said cap and having a passage extending therethrough, said spout being capable of being rotated by direct manual engagement between a closed position in which said opening is sealed off by contact with said spout and an open position in which said passage is in alignment with said opening in which the improvement comprises:
latch means of a resilient material formed integrally with said cap
said latch means including a flat tab covering an end of said spout when said spout is in said closed position, said tab extending from said cap and fitting against said end of said spout to close off said end when said spout is in said closed position, said tab being separate from said skirt,
said latch means also including a holding means extending from said tab which is engaged by said spout when said spout is moved from said open position to said closed position, such movement causing temporary deflection of said latch means until such time as said spout is in said closed position,
said tab being sufficiently resilient so as to engage said spout so that said holding means hold said spout against movement when said spout has been moved to said closed position,
said tab being exposed to the exterior of said spout so as to be capable of being physically engaged and pushed generally away from said spout when said spout is in said closed position so as to release said spout so that it can be rotated to said open position.

3,884,393
ROTATABLE CONTAINER CLOSURE INCLUDING A REMOVABLE LOCKING ELEMENT
Victor Wassilieff, 84, Rue de l'Assomption, 75016 Paris, France
Filed Dec. 29, 1972, Ser. No. 319,661
Claims priority, application France, Dec. 30, 1971, 71.47469
Int. Cl. B67b *5/00*
U.S. Cl. 222—153 **18 Claims**



1. A container closure combination comprising an assembly of a cap component and a container component disposed in coaxial relationship, interengaging means on said components for controlling the axial movement of said cap component relative to said container component towards a dispensing position in accordance with the relative angular positions of said components, said interengaging means including axial projection and recess means alignable in one of said relative angular positions for preventing said relative axial movement and alignable in another of said relative angular positions for facilitating said relative axial movement, said combination including guiding means arranged on said components guiding said components during axial assembly of said components into said one angular position, and stopping means arranged on said components for stopping the cap from rotating from said one angular position to said another of said relative angular positions, said stopping means including a tearable element with the tearing of said element enabling the cap component to rotate from said one angular position to said another angular position.

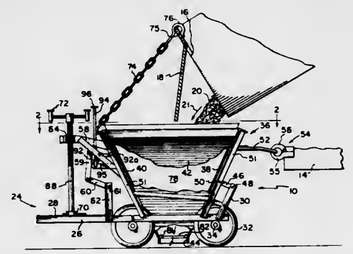
3,884,394
CONTAINER AND CONTAINER CLOSURE COMBINED STRUCTURE
Robert E. Hazard, North Kingston, R.I., assignor to Polytop Corporation, Slatersville, R.I.
Filed Dec. 19, 1973, Ser. No. 426,302
Int. Cl. B67d *5/32*
U.S. Cl. 222—153 **7 Claims**



1. The combination of a container having an extending, hollow neck and a container closure having a cap and a closure member at least one of which is formed of a material capable of temporary deformation, said cap including a dependent skirt located concentrically with said neck, said cap having an opening extending therethrough, said closure member being a spout and being mounted on said cap so as to be capable of being moved between opened and closed positions,

said opening being closed off when said closure member is in said closed position, and being opened when said closure member is in said open position, said neck and said skirt including interengaging mounting means securing said neck to said skirt against linear movement along said neck away from said container, said mounting means permitting said closure to be assembled on said neck through temporary internal deformation and to be rotated on said neck, in which the improvement comprises:
cooperating interlocking means on said cap and said container which fit within one another as said cap is moved in the direction of the vertical axis of said neck for preventing any rotary movement of said skirt relative to said neck,
said interlocking means serving to maintain said cap in one orientation with respect to said container so that said spout will be located on said cap in one orientation with respect to said container.

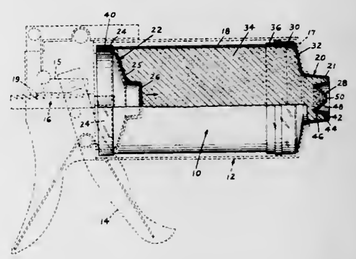
3,884,395
ASPHALT SPREADER
George R. Keenan, Saginaw, Mich., assignor to R. E. Corporation, Saginaw, Mich.
Filed Mar. 14, 1974, Ser. No. 451,220
Int. Cl. A01c *15/00*
U.S. Cl. 222—176 **8 Claims**



1. Apparatus for use in laying a strip of flowable material alongside a road or the like, said apparatus comprising a frame; ground engaging means supporting said frame for movement; an open top hopper carried by said frame for receiving and discharging said material, said hopper comprising confronting, downwardly converging front and rear walls and confronting, downwardly converging end walls, said front and rear walls and said end walls terminating short of convergence to form an opening at the bottom of said hopper through which said material may be discharged; a movable wall member having downwardly tapering sides corresponding to the convergence of said front and rear walls so as to be interposed between said end walls with its lower edge at the bottom of said hopper and with said sides in engagement with the front and rear walls; and means carried by said hopper for supporting the lower edge of said movable wall at any selected one of a number of positions between said end walls, whereby the size of said opening may be varied according to the position of the lower end of said movable wall.

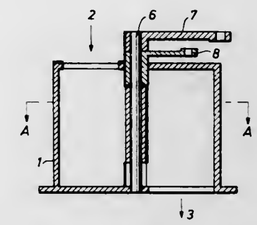
3,884,396
CARTRIDGE TYPE DISPENSER WITH RESILIENT SLITTED OUTLET VALVE
Robert L. Gordon; Keith A. Cooper, both of Monroe, and John C. Siegele, New City, all of N.Y., assignors to International Paper Company, New York, N.Y.
Filed July 29, 1974, Ser. No. 492,472
Int. Cl. G01f *11/00*
U.S. Cl. 222—327 **20 Claims**

1. In a cartridge-type dispensing package comprising a hollow cylindrical container for holding a supply of semisolid extrudable contents, said body being closed at one end by a dispensing head and closed at the other end by a plug adapted to serve as a piston within said body for cooperation with a dispensing gun to extrude increments of the contents of said package through said dispensing head when said dispensing gun is actuated to apply pressure through said plug upon said contents, the improvement which comprises a self-adjusting velocity-limiting extrusion nozzle in said dispensing head, said extrusion nozzle comprising a cone made of flexible and resilient material, said cone having a circular orifice portion lying in a plane transverse the axis of said cone and truncating said cone near the apex thereof, and a plurality of slots formed in said cone and extending in converging relation from points near the base of said cone into said circular orifice portion, the



material of said cone lying between said slots comprising a plurality of flexible resilient fingers which taper in width from base portions near the base of said cone and terminate in tips arranged around and thus defining said circular orifice portion, said circular orifice portion and said slots together constituting a star-shaped orifice having a predetermined total area when no pressure is applied to said contents by actuation of said dispensing gun, and said fingers when said contents are extruded through said nozzle by application of varying amounts of pressure upon said contents by said dispensing gun yielding with progressively increasing resistance from tips to base portions thereof to flare apart and increase the area of said star-shaped orifice in proportion to said varying amounts of pressure applied to said contents.

3,884,397
APPARATUS FOR FEEDING MATERIAL TO A GAS GENERATOR
Karl Erik Gustav Andersson, Motala, Sweden, assignor to AB Motala Verkstad, Motala, Sweden
Filed June 5, 1973, Ser. No. 367,097
Claims priority, application Sweden, June 15, 1972, 7914/72
Int. Cl. G01f *11/10*
U.S. Cl. 222—370 **1 Claim**



1. Apparatus for feeding material to a gas generator comprising a cell feeder for preventing passage of gas through said apparatus, said cell feeder including a cylindrical housing having upper and lower end walls, an inlet opening formed in said upper end wall and an outlet opening formed in said lower

end wall, means for compressing material received within said housing including two segment means independently movable in said housing and adapted to close said openings, each of said segment means being shaped in the form of a cylinder sector and rotatably mounted about a common shaft, and means for driving each of said segment means whereby material received within said housing will be compressed prior to unblocking of said outlet opening thereby preventing the backflow of gas therethrough from the gas generator.

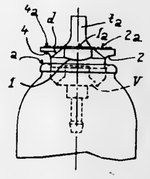
3,884,398
ACTUATION OVERCAP FOR AEROSOL CAN
James Hugh McLaughlin, Ridgefield, N.J., assignor to Center For New Product Development, New York, N.Y.
Filed Jan. 10, 1973, Ser. No. 322,559
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.13 **1 Claim**



1. A combination dispenser and axially displaceable closure cap for use with a pressurized can having a valve item, said cap comprising:
   a. a generally flat, transverse end wall having a dispensing arrangement including a tubular boss integral with and extending inwardly of said end wall and a plug member secured in said boss, said plug member including a nozzle having a discharge orifice, a first bore that defines a transverse interface for engaging the valve stem of the pressurized can and a second bore for receiving said nozzle whereby said discharge orifice and said first bore are in fluid communication with each other;
   b. a peripheral skirt integral with and extending downwardly from said end wall about said boss; and
   c. finger tip receiving means formed integrally with the exterior surface of said cap whereby when an axially directed cap displacing force is applied to said finger tip receiving means by the user's finger tips the contents of the can will be discharged into the user's palm upon initial axial movement of said cap and when the axially directed force is removed said cap will automatically return to a non-dispensing portion.

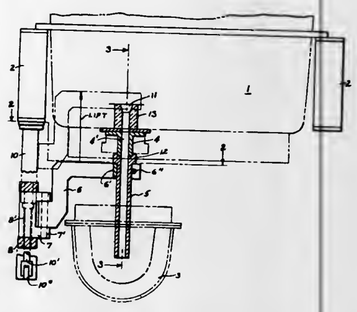
3,884,399
ATTACHMENT FOR VARYING SPRAY FROM PRESSURIZED CONTAINERS
Jean-Jacques Matern, Villa Henri-Leon Chemin Tanit, 06160 Juan Les Pins, France
Filed July 5, 1973, Ser. No. 376,908
Claims priority, application France, July 6, 1972, 72.25774
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.13 **3 Claims**

1. In combination with a pressurized container of material that is discharged from the container by laterally tilting a valve that is disposed axially of the container, a disc carried by the container coaxially with an annular rim on the container, said disc being in the form of an attachment separable from a discharge conduit of the container and having an integral coaxial tube that fits over said discharge conduit of the container, the disc having a discharge conduit coaxial with the disc for the selective discharge of material therethrough from the interior of the container, and means mounting the disc on the discharge conduit of the container for tilting movement of the disc with said valve, the disc having on its underside confronting and spaced from said rim a plurality of portions that



are spaced different distances from the rim measured in a direction parallel to the axis of the container when the valve is closed and the disc is coaxial with the rim, whereby the tilting of different said portions into contact with said rim tilts said valve varying amounts to regulate the nature and quantity of the discharge from the container.

3,884,400
ARTICULATED HOLDER FOR POURING TUBE
George Tuschak, Rego Park, N.Y., and Karl L. Backhaus, West New York, N.J., assignors to Concast Incorporated, New York, N.Y.
Filed Sept. 25, 1973, Ser. No. 400,686
Int. Cl. B22d *37/00*
U.S. Cl. 222—533 **3 Claims**

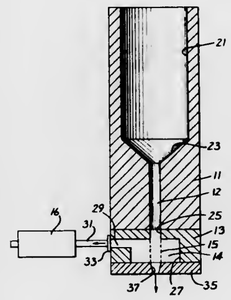


1. In a continuous casting machine comprising a pouring vessel having an outlet passage in the bottom thereof and a receiving vessel, in combination, a tubular device, means for mounting said tubular device for universal movement in all directions in a horizontal plane, comprising a holder arm having said tubular device mounted on one end thereof, a link having one end pivotally connected to the other end of said arm, and means including a vertical guide column and a lifting slide pivotally connected to the other end of said link and mounted on said guide column for raising and lowering said tubular device with respect to said pouring vessel to bring said tubular device and said outlet passage into register.

3,884,401
VALVE
Ernest Orval Winkler, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.
Filed June 22, 1973, Ser. No. 372,675
Int. Cl. B65g *53/40*
U.S. Cl. 222—544 **4 Claims**

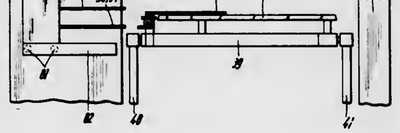
3. A method for controlling the downward flow of particulate material in a fluid medium through a generally vertical flow passage, comprising, diverting the flow of fluid through

said passage at a point intermediate its ends through a porous wall having a porosity such that the fluid can pass therethrough but the particulate material therein can not, said flow diversion being of sufficient magnitude as to suspend the particulate material in the passage at the porous wall to form



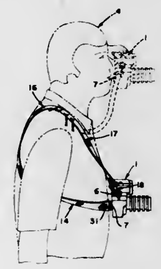
a bridge across said passage, thereby blocking further flow of particulate material through the passage, and wherein the size of said passage is sufficiently large such that the blocked particles are subsequently released by gravitational force when the diversion of fluid flow through the porous wall is stopped.

3,884,402
APPARATUS FOR FOLDING SHIRTS OR SIMILAR ARTICLES OF CLOTHING FOR PACKING
Heinrich Knappe, Eidinghausen; Karl-Heinz Nolte, Vlotho Weser, and Reinhold Kempelmann, Bad Salzuflen, all of Germany, assignors to Herbert Kannegiesser Kommanditgesellschaft, Vlotho Weser, Germany
Filed May 20, 1974, Ser. No. 471,612
Claims priority, application Germany, May 22, 1973, 2325887
Int. Cl. A41h *33/00*
U.S. Cl. 223—37 **5 Claims**



1. An apparatus for folding shirts or similar articles of clothing for packing, wherein a plurality of folding devices (11) receive a shirt or similar article of clothing and are adapted to move to a plurality of folding stations, the apparatus having means for the mechanical folding of shirts or similar articles of clothing comprising:
   a. a first folding means (34–37) for folding the shirt or similar article of clothing in a direction parallel to its lengthwise axis;
   b. means (80–82) to move said first folding means from a starting position away from said folding devices (11) to an operating position adjacent to said folding device (11) and return to said starting position;
   c. a second folding means (51, 52, 55, and 57) for folding the shirt or similar article of clothing in a direction transverse to its lengthwise axis after said shirt has been folded in the lengthwise direction; and
   d. means (84–86) to move said second folding means from a starting position away from said folding device (11) to an operating position adjacent to said folding devices (11) and return to said starting position.

3,884,403
ARTICLE CARRYING STRAP
Robert A. Brewer, 15 Castle Park Way, Oakland, Calif. 94611
Filed Dec. 7, 1973, Ser. No. 422,734
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 V **7 Claims**



1. In combination, an article, and a carrying strap means adapted to releasably hold said article against the chest of the wearer in a carrying position and permitting selective eye level positioning in an operating position comprising:
   a. said article having an apertured coupling element thereon;
   b. releasable strap engaging means consisting of the loop portion of a hook and loop fastener mounted on a substantial lateral rear surface portion of said article at a lower position than said coupling element;
   c. said strap consisting of a single flexible nonelastic elongated member consisting of the following portions and having a length adapted to span the distance from the wearer's chest (first chest portion), over one shoulder (first shoulder portion), under the arm (first under arm portion), across the chest (transverse chest portion), under the second arm (second under arm portion), over the second shoulder (second shoulder portion), and back to the chest (second chest portion);
   d. a releasable coupling member attached to a first end of said strap and dimensioned to releasably couple to said apertured coupling element on said article;
   e. connecting means attaching said second end of said strap to said article; and
   f. fastener means having the hook portion of a hook and loop fastener mounted on a substantial lateral portion of said mid portion of said strap for registered releasable engagement with said releasable strap engaging loops mounted on said article thereby positively restraning side to side, forward, and vertical movement of said article.

3,884,404
VEHICLE FOR CARRIER AND LOADING DEVICE
Granger H. Frost, Box 892, Nantucket, Mass. 02554
Filed Mar. 15, 1974, Ser. No. 451,596
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1 B **5 Claims**

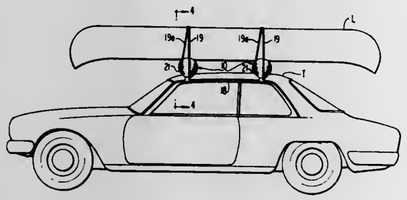
1. A device for loading and carrying an article on a vehicle having rain gutters along opposite sides thereof, comprising: at least one elongated, hollow, elastic roller filled with a flowable material; a flexible net contactingly surrounding said roller; a hook member secured to opposite ends of said roller for engagement with the rain gutters; said net being attached to said hook members; tie-down lines secured to said hook members and being engaged with a portion of said net as said lines extend over the article supported on said roller; the spacing between the gutters being greater than the spacing between said hook members thereby effecting a tight engage-

ment of the gutters by said hook members as said roller is

f. a second driving means comprising a second solenoid

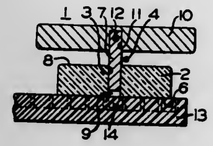
3,884,409

ment of the gutters by said hook members as said roller is stretched lengthwise into place; and wherein any rolling movement of said roller effects an increase in tension of said lines



as they roll up on said roller to thereby secure the article more tightly in place, and to further tighten the engagement of the gutters and hooks as said roller and net are stretched in the direction of such movement.

3,884,405
TOOL FOR NOTCHING THE EDGE OF FRANGIBLE SHEET MATERIAL
Paul E. Olson, Lexington, Ky., assignor to American Standard Incorporated, New York, N.Y.
Filed Mar. 12, 1973, Ser. No. 340,389
Int. Cl. B26f *3/00*
U.S. Cl. 225—102 **4 Claims**



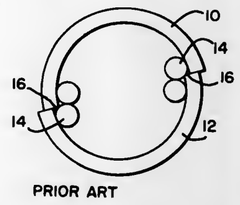
1. A partition removal tool for removing partitions in a fluid circuit plate having moulded therein a plurality of chambers, each separated from each one of a plurality of surrounding adjacent chambers by a partition, said partitions being selectively removable to form passageways extending through said chambers, said partition removal tool comprising:

a. a stem having a slot of a chosen length extending inward from one end thereof and of sufficient width for receiving therein a selected partition separating a pair of adjacent chambers in the fluid circuit plate, wherein the improvement comprises:

b. a transparent member, one end of which constitutes a plane forming a right angle with the axis of said stem, disposed about said stem and so fixedly secured thereto at such a location intermediate the ends thereof that when a partition selected by viewing through said transparent member and separating a pair of adjacent chambers in the fluid circuit plate is disposed in said slot, said one end of said member abuts a plurality of other partitions in said circuit plate disposed in surrounding relation to said selected partition, and

c. a handle secured to the opposite end of said stem whereby a torque applied to said handle, while any selected partition is disposed in said slot, is effective via said stem to sever said partition from the circuit plate.

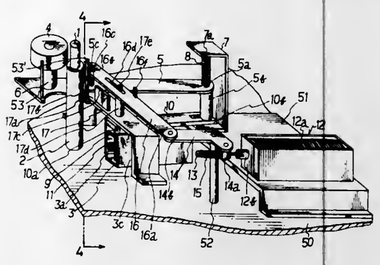
3,884,406
FRACTURED BEARING RACE
Willard L. Bowen, Harwinton, Conn., assignor to The Torrington Company, Torrington, Conn.
Division of Ser. No. 260,838, June 8, 1972, Pat. No. 3,834,722.
This application Feb. 14, 1974, Ser. No. 442,481
Int. Cl. B26f *3/00*
U.S. Cl. 225—103 **9 Claims**



PRIOR ART

1. A system for fracturing a unitary race member comprising: means for holding and supporting the race member; and a plurality of individually adjustable pressure applying means adapted to apply forces at a plurality of spaced apart longitudinal points on the outer surface of the race member whereby the outer surface of the race member may be initially stressed at at least one longitudinal point and thereafter fractured along a predetermined longitudinal direction.

3,884,407
PINCH ROLLER SHIFTING MECHANISM FOR SEQUENTIALLY SHIFTING A PINCH ROLLER IN TWO SUBSTANTIALLY PERPENDICULAR DIRECTIONS TOWARD A CAPSTAN
Masayuki Sugimizu, Kanagawa, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan
Filed Sept. 11, 1973, Ser. No. 396,333
Int. Cl. G03b *1/56;* **G11b** *15/24;* **B65h** *17/20*
U.S. Cl. 226—90 **7 Claims**



1. A pinch roller shifting mechanism for tape recorder or tape player comprising:

a. a capstan for forwarding a magnetic tape,

b. a pinch roller rotatably mounted on a shaft parallel to the axis of said capstan,

c. support means for supporting said pinch roller and for moving said pinch roller in the axial direction of said capstan and for moving said pinch roller in another direction perpendicular to said axial direction to move said pinch roller toward and away from said capstan,

d. a first driving means comprising a first solenoid plunger having a first plunger rod which moves in its axial direction when said first solenoid plunger is energized,

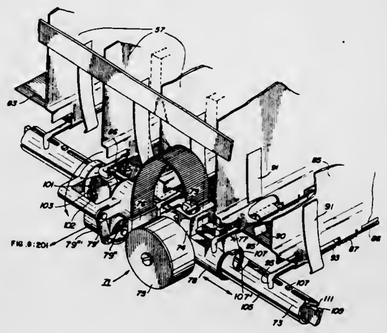
e. first coupling means connecting said first plunger to said support means for moving said support means in the axial direction of said capstan wherein said pinch roller is moved to a position in the same horizontal plane as said capstan in response to the movment of said first plunger rod,

f. a second driving means comprising a second solenoid plunger having a second plunger rod which moves in its axial direction when said second solenoid plunger is energized,

g. second coupling means connecting said second plunger to said support means for moving said support means from a position where said pinch roller opposes said capstan to a position where said pinch roller contacts said capstan whereby said pinch roller contacts said capstan in response to the movement of said second plunger rod, and

h. a unitary guide means comprising a vertical wall means in contact with said support means for guiding the movement of said support means in the axial direction of said capstan until said pinch roller rises to a position opposing said capstan and a horizontal surface means in contact with said support means when it is in its raised position for guiding the horizontal movement of said support means and maintaining the vertical alignment of said pinch roller with said capstan to guide said pinch roller from a position where said pinch roller opposes said capstan to a position where it contacts said capstan.

3,884,408
APPARATUS FOR EJECTING A STAPLED SET OF SHEETS SIDEWISE FROM THE COLLATING BINS
Larry L. Leiter; Gerard C. Wright, both of Fairport, and David G. Bowman, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 27, 1973, Ser. No. 428,977
Int. Cl. B27f *7/10*
U.S. Cl. 227—100 **2 Claims**



1. In a reproduction system including apparatus for reproducing copy sheets and a collating apparatus having a plurality of bins into which the reproduced copy sheets are collated according to a copy program under control of the system logic, means for ejecting completed sets of sheets from the collator bins comprising:

an elongated rail disposed alongside the collator bins;

carriage means adapted for longitudinal movement along said rail and rotary movement about said rail;

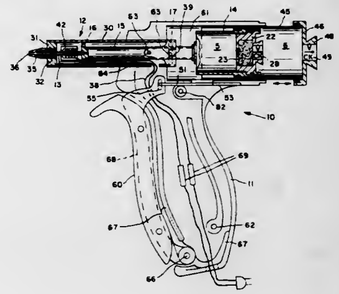
a freely rotatable driven wheel mounted on said carriage;

a drive wheel mounted on said carriage opposite said driven wheel, said drive wheel being movable toward said driven wheel;

means for sequentially moving said carriage longitudinally along said rail to successively locate said carriage opposite each bin of said collator;

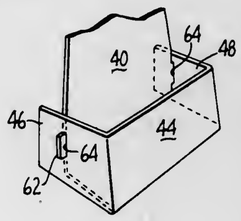
means for rotating said carriage about said rail toward the collator bins to position said driven wheel and said drive wheel on opposite sides of a collated set of copies in each bin, movement of said drive wheel towards said driven wheel causing each set of copies to be pinched therebetween and ejected sideways out of the bin.

3,884,409
HAND OPERATED DESOLDERING DEVICE
Harry Kaufman, 5709 White Hickory Cir., New Rochelle, N.Y. 33319
Filed Nov. 8, 1973, Ser. No. 413,905
Int. Cl. B23k *3/00*
U.S. Cl. 228—20 **16 Claims**



1. A desoldering device comprising a hollow nozzle, means for heating the nozzle, means for establishing reduced pressure at the nozzle and comprising a first chamber and a second chamber, means under operator control for selectively enlarging and reducing the volume of the second chamber, and means for preventing increased air-pressure within the first chamber when the second chamber volume is reduced and comprising first one-way air-flow means pneumatically coupling the first and second chambers so as in an open position to allow air-flow from the first to the second chambers and in a closed position to prevent air-flow from the second to the first chambers, and means for actuating the first one-way air-flow means to the open position upon actuation of the second chamber volume enlarging means.

3,884,410
ANGLE-IN LITERATURE HOLDER
Albert S. Giesecke, 400 Montgomery St., San Francisco, Calif. 94104
Filed May 18, 1973, Ser. No. 361,790
Int. Cl. B65d *5/18*
U.S. Cl. 229—16 D **1 Claim**



1. A literature holder or the like having a back member and a box member at the bottom front thereof, said literature holder being foldable from a single sheet of stiff stock, wherein said sheet comprises the following parts:

a. a flat back member,

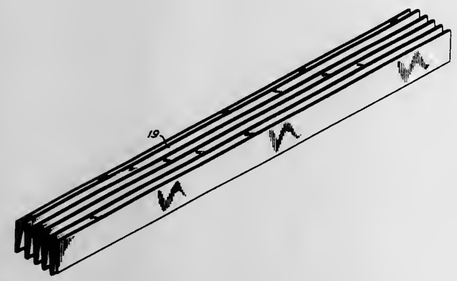
b. a base member extending from adjacent the bottom of said back member, said base member being connected by a foldline to said back member,

c. a front member extending from said base member and being connected to said base member by a foldline,

d. tabs extending rearwardly from each edge of said front member and being connected thereto by means of a foldline,

e. each of said tabs having a perforation at about the center of said tabs,
f. said back member having outstanding side tabs near the bottom thereof, said tabs being of a size to be insertable in said perforations,
g. the width of said front member and said back member being substantially the same,
h. whereby said base member can be folded upwardly with respect to said back member to form a bottom member, said front member can be folded upwardly with respect to said bottom member, and said tabs can be inserted in said perforations to form a boxlike structure.

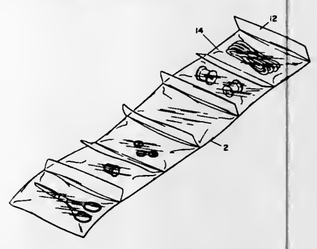
3,884,411
CARTON HANDLE
Richard W. Carlson, Warwick, N.Y., and Glenn A. Nesty, Convent Station, N.J., assignors to International Paper Company, New York, N.Y.
Filed June 14, 1973, Ser. No. 369,854
Int. Cl. B65d 5/74, 5/46, 25/22
U.S. Cl. 229—17 G 4 Claims



1. In combination with a disposable container having a carrying handle secured thereto, the improvement wherein said handle comprises:
a. a sheet of initially flat fabric material which has been folded upon itself a plurality of times to form a narrow rectangular strip, said sheet being useful as a wiping cloth when it is unfolded; and
b. a plastic film surrounding said strip.

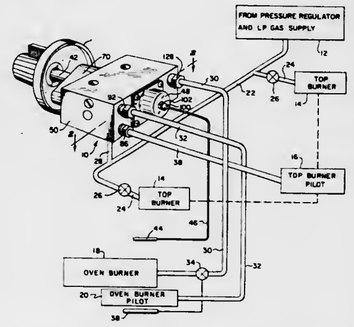
3,884,412
CLEAR VIEW THREAD OR YARN HOLDER
Nellie Peck Price, 10185 W. 25th Ave., No. 29, Denver, Colo. 80215
Filed Apr. 2, 1973, Ser. No. 346,750
Int. Cl. B65d 27/10
U.S. Cl. 229—69 1 Claim

1. A device for the storage of a multitude of small separate items comprising, in combination:
a flat elongated rectangularly shaped base strip of flexible material having a flat top surface, a flat bottom surface, opposed parallel side edges, a bottom end, and a top end;
a bottom member of a flat flexible configuration having a width equal in width to said base strip and having a top edge, a bottom edge, opposed parallel side edges, a top surface, and a bottom surface;
said bottom member disposed in overlying juxtaposition with said top surface of said base strip member adjacent said bottom edge thereof with said bottom member side edges and bottom edge overlying said base strip side edges and bottom edge and with said bottom member top edge disposed inwardly of said base strip bottom end;
means affixing said side edges and bottom edge of said bottom member to said side edges and bottom end of said base strip member to define a pocket therebetween having ingress and egress by way of said bottom member top edge;
a top member of an identical size and configuration to said bottom member and having a top edge, a bottom edge, opposed side edges, a flat top surface, and a flat bottom surface;
said top member bottom surface disposed in overlying juxtaposition with said base strip top surface extending transversely across said base strip and spaced slightly downwardly from said base strip top end;
means affixing said top member side edges to said base strip side edges and affixing said top member bottom edge to said base strip to form therewith a pocket having ingress and egress by way of said top member top edge;
said top end portion of said base strip projecting beyond said top member top edge being folded upwardly and over onto itself to define a flap for covering in an overlying manner said top edge of said top member for closing said compartment therein;
a flap formed integrally with said bottom edge of said top member and projecting outwardly therefrom completely between the side edges thereof;



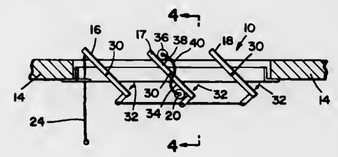
a plurality of intermediate pocket forming members disposed in tandem relationship completely between said bottom edge of said top member and said top edge of said bottom member along said top surface of said base strip, each of said intermediate members consisting of a flat rectangularly shaped configuration having a flat top surface, a flat bottom surface, opposed side edges, a top edge, a bottom edge, and a flap formed integrally with said bottom edge and projecting outwardly therefrom extending the full width of said intermediate member;
said side edges and said bottom edge of each of said intermediate members affixed to said side edges of said base strip and said top surface of said base strip in a manner to define a plurality of independent pockets disposed completely along said base strip between said top and bottom members thereof with ingress and egress of each pocket being by way of said top edge of said intermediate member;
said flap portion of each of said intermediate members overlying said top edge of said lower adjacentmost intermediate member to provide a cover for said pocket and prevent inadvertent opening of the pocket for inadvertent discharge of the contents and items from the pocket;
said base strip, said bottom member, said top member, and said intermediate members each being manufactured of the same flexible type material such that the device may be rolled into a cylindrical coiled configuration from end to end for storage and carrying in a compact and convenient manner.

3,884,413
OVEN CONTROL
Frank H. Berquist, Clarendon Hills, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.
Filed Mar. 14, 1974, Ser. No. 451,216
Int. Cl. F23n 3/06
U.S. Cl. 236—15 A 15 Claims



1. A control valve for use with a gas range having a plurality of pilot burners for igniting main burners, said valve comprising a valve body having an inlet for gas and a plurality of outlets for supplying gas to said pilot burners, a manually operable valve member carried by said valve body for selectively controlling the flow of gas between said inlet and said outlets, said valve including passage means controlled by the position of said valve member relative to said body for selective communication between said inlet and said outlets when said valve member is moved between first, second and third positions, said passage means aligned to communicate between said inlet and said plurality of outlets in said first position, aligned to communicate between said inlet and less than all of said outlets in said second position and aligned to provide no communication between said inlet and said plurality of outlets in said third position, and a thermostatic valve means controlled by the position of said valve member relative to said body for maintaining a selected temperature range at the main burner of one of said pilot burners when said valve member is positioned within a range of automatic temperature controlling positions, said passage means aligned to communicate between said inlet and said outlets and a main outlet for supplying gas for one of said main burners in said temperature controlling range.

3,884,414
SOLAR HEATING DEVICE
Stephen C. Baer, Corrales, N. Mex., assignor to Zomeworks Corporation, Albuquerque, N. Mex.
Filed Apr. 8, 1974, Ser. No. 458,913
Int. Cl. F24f 7/02
U.S. Cl. 236—49 8 Claims



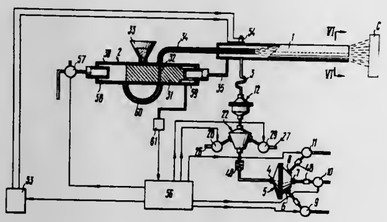
1. Apparatus for maximizing the transfer of solar energy to the interior of a structure and minimizing heat loss therefrom, said apparatus comprising:
a louver panel forming a portion of the exterior of the structure, said louver panel being pivotable in a first direction about an axis substantially passing through the center of gravity of said panel to open the panel;
interior reservoir means fixed to the interior surface of the panel on one side of the pivotal axis of said panel, the weight of said interior reservoir means adapted to bias the panel in said first direction to open the panel;
exterior reservoir means fixed to the exterior surface of the panel on the other side of the pivotal axis of said panel, the weight of said exterior reservoir means adapted to bias the panel in a second opposite direction to close the panel;
a tube providing fluid communication between the interior and exterior reservoir means; and
a partially vaporized fluid occupying the tube and the interior and exterior reservoir means, the relative proportions of liquid and vapor in the respective reservoir means being dependent upon the relative vapor pressure in said reservoir means, said vapor pressure being a function of the internal temperature of the associated reservoir means, a higher temperature on the exterior of the structure relative to the temperature on the interior of the structure or direct exposure of the exterior reservoir means to the sun raising the relative vapor pressure in the exterior reservoir means to force liquid through the tube to the interior reservoir means causing the panel to open to allow transfer of solar energy to the interior of the structure, a higher relative vapor pressure in the interior reservoir means resulting in liquid being forced through the tube to the exterior reservoir means to close the panel and minimize heat loss from the structure.

8. A method for maximizing the transfer of solar energy to the interior of a structure and minimizing heat loss therefrom, said method comprising the steps of:
providing at least one pivotable louver panel forming a portion of the exterior of the structure;
providing interior and exterior reservoir means on the interior and exterior surfaces of the panel respectively, said interior and exterior reservoir means being on opposite sides of the pivotal axis of said panel so that the weight of the interior reservoir means biases the panel in one direction to open said panel, and the weight of the exterior reservoir means biases the panel in a second opposite direction to close said panel;
providing fluid communication between the interior and exterior reservoir means;
providing a partially vaporized fluid occupying the tube and the interior and exterior reservoir means;
opening the louver panel when the temperature on the exterior of the structure is greater than the temperature of the interior of the structure or when the exterior reservoir means is exposed to the sun by heating the exterior reservoir means to force a part of the liquid portion of the fluid through the tube to the interior reservoir means; and
closing the louver panel when the temperature on the interior of the structure is greater than the temperature on the exterior of the structure by heating the interior reservoir means with ambient air to force part of the liquid portion of the fluid through the tube to the exterior reservoir means.

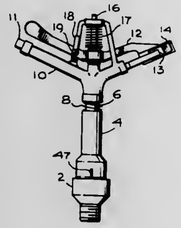
3,884,415
INSTALLATION FOR EXPLOSIVE DEPOSITION OF INORGANIC COATINGS
Anatoly Ivanovich Zverev, ulitsa Bratislavskaya, 26, kv. 22; Mikhail Antonovich Pudzinsky, ulitsa Sverdlova, 13, kv. 21; Viktor Ivanovich Shesternenkov, ulitsa Semashko, 21, kv. 123, and Mikhail Pvalovich Dudnik, ulitsa Serova, 30/1, kv. 7, all of Kiev, U.S.S.R.
Filed July 3, 1974, Ser. No. 485,453
Claims priority, application U.S.S.R., July 9, 1973, 1932402
Int. Cl. B05b 1/24
U.S. Cl. 239—79 5 Claims

1. An installation for explosive deposition of inorganic coatings, comprising: a tubular-shaped combustion chamber

closed at one end; a proportioner for batchwise feeding a powdered coating material into said combustion chamber; a mixing chamber having inlet sleeves and an outlet sleeve; a safety coiler; said mixing chamber communicated through its inlet sleeves with the sources of the components of an explosive mix and of an inactive gas and through its outlet sleeve and said safety coiler, with said combustion chamber so as to feed said mix thereinto, where the latter is made to explode and thus set up a detonation wave which ejects the coating material through the open end of said chamber onto the surface of the workpiece under treatment; a device for extinguishing the backfire resulting from blowbacks from said combustion chamber into said safety coiler, said device being located between said coiler and the outlet sleeve of said mixing chamber; a hollow housing of said device; a partition made of a porous refractory material and adapted to divide the interior space of said housing of said device into two chambers one of which communicates with said safety coiler and the other, with the outlet sleeve of said mixing chamber.

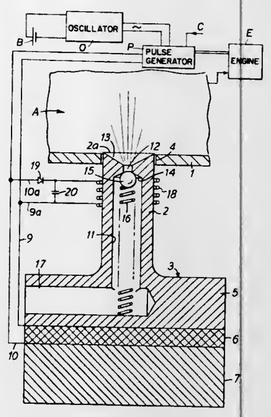


3,884,416
DEVICE FOR DISTRIBUTING IRRIGATION WATER
Michael L. King, Hollywood, Calif., assignor to Paul D. Norton, Alhambra, Calif., a part interest
Filed Aug. 29, 1974, Ser. No. 501,639
Int. Cl. B05b *3/02*
U.S. Cl. 239—97 **6 Claims**



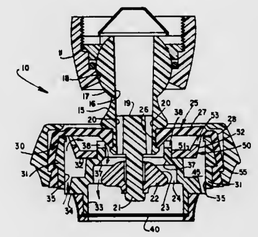
1. A device for distributing irrigation water, comprising:
a body;
a hollow, tubular shaft, rotatably disposed in a vertical bearing passing through said body, and provided with a basal surface orthogonal to the rotational axis thereof;
seal means between said body and said shaft;
a sprinkler head affixed to the upper end of said shaft;
a primary orifice piercing said sprinkler head, in communication with the hollow bore of said shaft and substantially radially aligned with said rotational axis;
a secondary orifice piercing said sprinkler head opposite said primary orifice, in communication with said hollow bore;
vane means, resiliently pivoted in said sprinkler head and adapted to deflect the water jet issuing from said secondary orifice;
stop means, affixed in said sprinkler head, for adjustably limiting angular travel of said vane means under influence of said water jet issuing from the secondary orifice;
port means, piercing said basal surface of said shaft and communicating with the internal bore thereof, including a circular port centered on the rotational axis of the shaft and at least one other port radially disposed from said circular port;
an orifice plate, facing said basal surface, pierced by a central orifice aligned with the rotational axis of said shaft, and at least one other orifice radially spaced from said central orifice, adapted for periodic alignment with said radially disposed port;
spring means, urging said orifice plate into sliding contact with said basal surface; and
key means, for preventing rotational displacement of said orifice plate with respect to said body.

3,884,417
NOZZLES FOR THE INJECTION OF LIQUID FUEL INTO GASEOUS MEDIA
Bernard Raymond Sheffield, Upminster, and Mark Wallinger Goodinge, Hutton, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland
Filed Jan. 30, 1973, Ser. No. 327,905
Claims priority, application United Kingdom, Feb. 1, 1972, 4609/72
Int. Cl. F02m *27/08*
U.S. Cl. 239—102 **8 Claims**



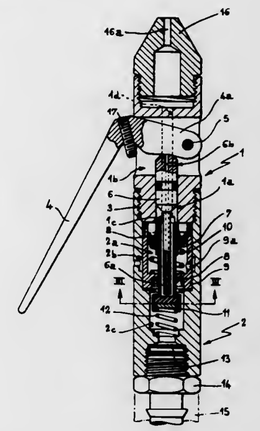
1. An arrangement for injecting liquid fuel into combustion air for an internal combustion engine comprising: a nozzle body having an end face, a nozzle inlet in said body, a fuel passage for feeding liquid fuel to said nozzle inlet, a nozzle outlet in said end face, vibrator means which when energized apply ultrasonic vibrations to said nozzle body, energization control means for said vibrator means responsive to engine operating data to energize said vibrator means during engine operation to produce periods of vibration varying in duration according to the momentary fuel requirement of the engine, and a normally closed valve in said fuel passage which valve is open only when said ultrasonic vibrations are applied to said nozzle body thereby to atomize fuel from said end face.

3,884,418
AERATING AND SPRAYING ATTACHMENT FOR FAUCETS
Richard L. Ritzenthaler, Crystal Lake, Ill., and Thomas J. Wilcox, East Troy, Wis., assignors to Cranda Corp., Alden, Ill.
Filed Aug. 30, 1974, Ser. No. 502,153
Int. Cl. E03c *1/08*
U.S. Cl. 239—428.5 **4 Claims**



1. An aerating and spraying attachment for faucets operable at high water pressures without objectionable spray splash and without requiring excessive force in manually reverting from spraying position to aerating position and operable at low water pressures to maintain spraying position, comprising:
a faucet-attachable stem member having a longitudinal opening for the flow of water;
a splash plate on the end of said stem member for receiving water flow;
a resilient casing member on said stem member above said splash plate, said casing member having a diaphragm portion and a peripheral skirt portion;
an annular spray body member having a peripheral wall secured to said peripheral skirt portion, said spray body member having spray apertures, a central tubular portion for an aerated water stream and an inner wall for sealing with said splash plate;
said resilient casing member and said spray body member enclosing an annular chamber communicating with said spray apertures; and
a restrictive cup on said spray body member, said restrictive cup having a peripheral wall normally engaging said diaphragm portion and dividing said annular chamber into upper and lower chamber portions, said restrictive cup having flow openings of comparatively small total size leading from said upper chamber portion to said lower chamber portion;
said diaphragm portion deformable for spraying position to establish sealing engagement between said splash plate and said inner wall of said body member and water flow into said upper chamber portion and thence to said lower chamber portion and said spray apertures, said flow openings in said restrictive cup providing proper effective back pressures at low line pressures to maintain said diaphragm portion in deformed condition, high line pressures causing said diaphragm portion to separate from said peripheral wall of said restrictive cup, thus increasing the flow area and maintaining the effective back pressures substantially constant so as to permit manual reversion to aerating position without difficulty, the effective area of said spray apertures such as to deliver splashless spray at high line pressures.

3,884,419
BLOW GUNS
Jean-Pierre Geoffray, 42, Rue Jeanne d'Arc, Lyon, France
Filed July 17, 1973, Ser. No. 380,120
Claims priority, application France, July 19, 1972, 72.26781
Int. Cl. B05b *7/02, 1/30*
U.S. Cl. 239—526 **3 Claims**

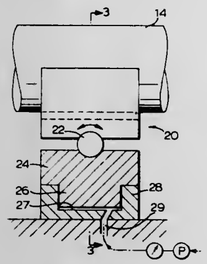


1. A blow gun for delivering a jet of compressed air from an air inlet through a nozzle, comprising:
a body supporting said nozzle at its front end and having at its rear end said compressed air inlet, and the body having a central portion including a first chamber communicating at its forward end through channel means with said nozzle, and the body further including a second chamber behind the first chamber and communicating with said air inlet, the chambers being axially aligned and joined by a passage;
a hollow piston member axially slidable in sealing engagement in the first chamber and extending through said passage into said second chamber, the piston having an opening therethrough and having a rearwardly facing valve seat in the opening;
a valve overlying the rearwardly facing seat;
spring means yieldably urging the valve against the seat;
a calibrated spring in the first chamber and yieldably urging said piston forwardly therein toward the nozzle;
a push rod in the opening of the hollow piston and operative when displaced rearwardly to raise the valve off of the seat; and
manually operated means carried by the body and operative when actuated to displace the push rod rearwardly to displace the valve, whereby air under pressure passes through the hollow piston into the first chamber forward of the piston and displaces the piston rearwardly to modulate the valve opening when the force of the air pressure on the piston exceeds the force of the calibrated spring, thereby to regulate the pressure of the air delivered to the nozzle.

3,884,420
TRUNNION BEARING SUPPORT SYSTEM
Lucian Kops, Montreal, Quebec, Canada, assignor to Dominion Engineering Works Limited, Quebec, Canada
Filed Dec. 3, 1973, Ser. No. 421,227
Int. Cl. B02c *17/18;* **F16c** *17/16*
U.S. Cl. 241—176 **3 Claims**

1. A grinding mill having a drum mounted for rotation about a horizontal axis supported for rotation on a pair of end trunnions, each trunnion having trunnion support means including

a bearing shoe to receive the respective trunnion for rotation therein, a housing to support said shoe, housing pivot bar means having the axis thereof extending horizontally, in a direction transversely of the mill in relation to the trunnion main axis to permit pivoting of said housing with a single degree of freedom about said horizontal axis, and support pad means beneath said pivot means rotatably mounted in a circu-

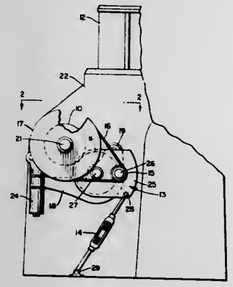


lar recess having the axis thereof extending substantially vertically to permit oscillation of said housing with a single degree of freedom about a substantially vertical axis, whereby eccentricities between a said trunnion and said drum are accommodated by and limited to oscillation of the trunnion about a horizontal axis substantially at right angle to the trunnions and about a vertically extending axis.

3,884,421
ROLLERMILLS

Richard Fullalove, Manchester, and Frederick Spencer, Stockport, both of England, assignors to Henry Simon Limited, Stockport, Cheshire, England

Continuation-in-part of Ser. No. 219,454, Jan. 20, 1972, abandoned. This application Feb. 8, 1974, Ser. No. 440,865
Claims priority, application United Kingdom, Mar. 2, 1971, 5800/71
Int. Cl. B02c *4/32*
U.S. Cl. 241—230 **14 Claims**

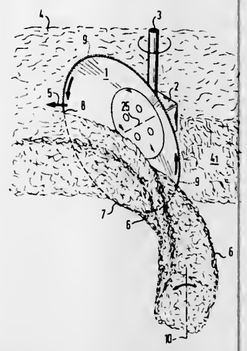


1. A rollermill having a pair of grinding rolls, one of which is driven at a required relatively high speed, and means for driving the other roll from said one high speed roll at a predetermined lower speed, characterized by means providing a desired ratio of speeds between said rolls comprising a reduction gear-box having an input shaft connected through an endless drive transmitting member to be driven from said high speed roll at a speed higher than that of said high speed roll and an output shaft driven at said lower speed connected to drive said lower speed roll at said lower speed.

3,884,422
DEVICE FOR CUTTING LEAF AND STALK MATERIAL

Ernst Weichel, Postfach 30, 7326 Heiningen, Germany

Continuation of Ser. No. 202,614, Jan. 13, 1972, abandoned. This application Aug. 23, 1973, Ser. No. 391,024
Int. Cl. B02c *18/06*; **B26d** *3/28*
U.S. Cl. 241—279 **27 Claims**

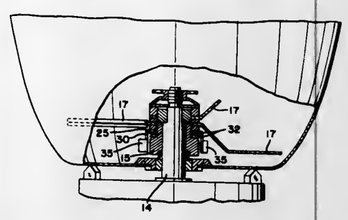


1. A device for cutting an elongated rope-like portion from a mass of agricultural leaf and stalk material comprising a rotatable cutting tool, means for supporting and moving the mass of material along a path of travel, means for supporting and positioning said tool relative to the path of travel of the mass of material, means for rotating said tool about an axis, said means for supporting and positioning said tool relative to the mass of material being arranged to form an acute angle between the direction of movement of the mass of material and the axis of rotation of said tool, said cutting tool having an endless curvilinear cutting edge symmetrically arranged about the axis of rotation of and being located on the radially outer edge of said cutting tool and located in a flat plane, said cutting tool having a surface located radially inwardly from said cutting edge and extending angularly to the plane containing said cutting edge so that said surface trails said cutting edge as its moves into the mass of material and said cutting edge defines a curvilinear arc between its point of contact with and its point of exit from the mass of material.

3,884,423
IMPELLER FOR FOOD PREPARING MACHINE

Jackie N. Wilson, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Mar. 26, 1973, Ser. No. 344,854
Int. Cl. B02c *18/12*
U.S. Cl. 241—282.1 **3 Claims**



1. In an apparatus for comminuting and mixing materials, including a container having a bottom wall surrounded by a side wall, a rotatable drive shaft passing through the bottom wall, a blade structure having at least one blade drivably mounted on the drive shaft for processing material within the container, a motor drivably connected to the rotatable shaft for rotation thereof, and non-bladed impeller means separated from the blade structure and drivably mounted on the shaft between the bottom of the container and the blade structure for rotation with the shaft to impel material adjacent thereto away from the drive shaft, said impeller means comprising:

a. a drive disc mounted on the shaft for rotative driving therefrom,

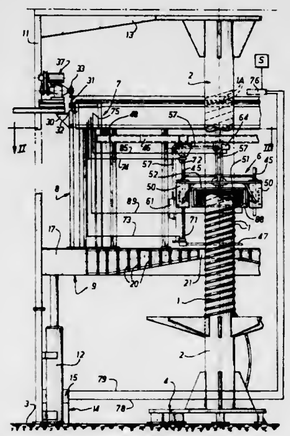
b. a plurality of arms depending from said disc, and

c. impeller portions depending from said arms near the plane of rotation of the lowest blade of the blade structure for impelling material away from the drive shaft into the path of the blade structure to be processed along with the main body of the material within the container.

3,884,424
METHOD AND APPARATUS FOR WINDING VERTICAL CORES

Maurice Bosquain, Paris; Marcel Bourjot, La Varenne Saint Maur, and Maurice Kirsch, Champigny-sur-Marne, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes George Claude, Paris, France

Filed July 27, 1972, Ser. No. 275,746
Claims priority, application France, Nov. 13, 1969, 69.38976; July 9, 1970, 70.23899; Australia, Mar. 14, 1972, 39969/72
Int. Cl. B21f *3/04*, *17/00*; **B65h** *57/28*
U.S. Cl. 242—7.02 **14 Claims**



1. An installation for winding elongated material such as sections of tube about a vertical core, comprising:

a vertical core,

a substantially horizontal and annular platform having a central opening of adjustable dimension, surrounding said vertical core with at least a first layer of said sectional material wound thereon,

at least one winding device carried on said annular platform, comprising a support, means mounting said support for rotation around said central opening, a frame, means mounting said frame on said support for vertical movement with respect thereto, means rotatably supporting a spool of said sectional material on said frame,

first power means for imparting a rotary movement to said support with respect to said annular platform,

control means associated with said winding device, for controlling the vertical movement of said frame together with said spool of sectional material, according to a contour of said vertical core, said control means comprising:

a feeler device mounted on said frame of the winding device, comprising sensing means for detecting the level of said frame in relation to said contour and for delivering a signal translating any deviation in the level of said frame with respect to the level of said contour,

second power means for imparting a vertical movement to said frame together with said spool or said sectional material, with respect to said support, acting in response to said signal to compensate for said deviation in the level of said frame, said sensing means of the feeler device comprising:

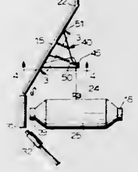
feeling means comprising a finger adapted to engage said contour, a supporting arm on which said finger is secured, a pivot horizontally mounted in said feeler device, on which said supporting arm is perpendicularly secured, said supporting arm being pivotally movable about said pivot, a potentiometer comprising an arm integral with said supporting arm, said potentiometer emitting a voltage-differential signal and translating any deviation in the level of the frame of said winding device with respect to the reference level of said contour and a amplifier for said voltage-differential signal,

said second power means comprising an electrical motor supplied with a current resulting from said voltage-differential signal.

3,884,425
APPARATUS FOR USE IN WINDING PNEUMATICALLY ADVANCED YARNS

Rolland Sartori, Roanne, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Apr. 17, 1974, Ser. No. 461,756
Claims priority, application France, May 11, 1973, 73.17435
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 R **8 Claims**



1. In an apparatus for advancing yarn from an upstream station to a support around which the yarn is wound:

a tube for entraining the yarn in an expanding stream of fluid, said tube having a first portion and a second portion, said second portion being bent to form an angle with respect to said first portion and having a slot therein through which the yarn is extracted from the second portion when the yarn is wound on the support;

reciprocating guide means for distributing the yarn on the support as the guide means reciprocates, said guide means reciprocating the yarn in a plane as the yarn is accumulated;

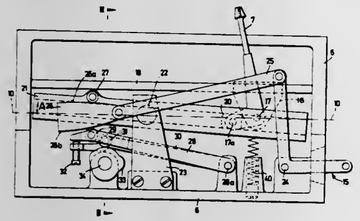
means for cutting the yarn upstream of the second portion of the tube when the support is almost full; and

means disposed between the end of the first portion of the tube and the reciprocating guide for holding the yarn in the guide after the yarn has been cut.

3,884,426
WINDING AND CHANGEOVER DEVICE

Peter Hermanns, Stommeln near Cologne, Germany, assignor to FMN Schuster & Co., Hurth-Efferen, Germany

Filed Oct. 6, 1972, Ser. No. 295,636
Claims priority, application Germany, Oct. 8, 1971, 2150301; Jan. 13, 1972, 2201448
Int. Cl. B65h *54/32, 54/38*
U.S. Cl. 242—43.1 **22 Claims**



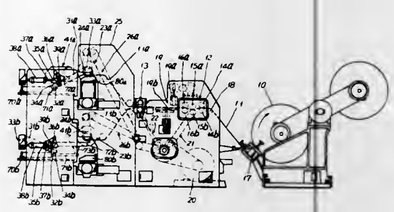
1. An apparatus for winding thread onto a spool to form a thread package comprising:
a. a single reverse-thread roller secured in a casing to a rotatable shaft means,
b. a single thread guide mechanism including a thread guide element mounted for back and forth movement by means of the reverse-thread roller,
c. means for varying the stroke of the thread guide element in response to a variation in the diameter of the yarn package being produced on said spool,
d. said stroke varying means including a pivotally mounted guide rail having a guide slot disposed therealong and a cam mechanism for changing the pivotal position of the guide rail,
e. said thread guide including a slide piece disposed in the guide rail slot to change the path of travel for said slide piece,
f. control means for controlling the overall stroke length of the thread guide element in a predetermined manner to dispose the thread on the thread package at the edge thereof in a predetermined pattern,
g. said control means including a control cam means rotated in response to the rotation of said shaft means,
h. said cam mechanism including a first cam surface working with a first cam follower effective to change the pivotal movement of the guide rail in response to an increase in the diameter of said package being wound and a second cam surface and
i. an adjustment device disposed between said second cam surface and said control cam means for actuating the second cam surface to adjust the overall stroke length of the thread guide.

3,884,427
APPARATUS FOR REWINDING SLITTED FILM STRIPS IN A ROLL SLITTING AND REWINDING MACHINE

Kenzo Hashimoto, and Kimihiro Wada, both of Kyoto, Japan, assignors to Nishimura Seisakusho Co., Ltd., Koyoto, Japan

Filed Sept. 20, 1973, Ser. No. 398,924
Claims priority, application Japan, Sept. 22, 1972, 47-110869
Int. Cl. B65h *35/02, 17/00*
U.S. Cl. 242—56.2 **2 Claims**

1. Apparatus for rewinding slitted film strips in a roll slitting and rewinding machine comprising means for slitting a continuous film to a plurality of strips, a plurality of rewinding cores for rewinding said plurality of strips, respectively, means for driving said cores for rotation, a plurality of endless belt assemblies engagable with said rewinding cores, respectively, to initiate the rewinding of said slitted film strips onto the respective rewinding cores, each of said endless belt assemblies comprising an endless belt stretched between a plurality of pulleys and means for moving each of said endless belt assemblies between a first position in which said endless belt is engaged with its own cooperating rewinding core, said endless belt being pressed at a stretched portion thereof against said

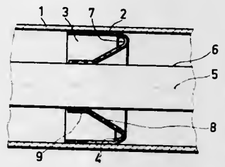


cooperating core along its peripheral direction so that said endless belt is moved along with said rewinding core for initiating the rewinding of said slitted film strips onto said rewinding core, and, a second position in which said endless belt is kept apart from its cooperating core.

3,884,428
SPINDLE GUIDE FOR A DRAWTWISTING TUBE

Albert Gretener, Zug, Switzerland, assignor to Gretener AG, Cham, Switzerland

Filed Jan. 17, 1973, Ser. No. 324,353
Claims priority, application Switzerland, Jan. 18, 1972, 684/72
Int. Cl. B65h *75/10*
U.S. Cl. 242—118.3 **3 Claims**

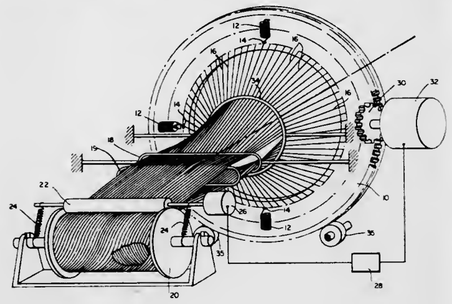


1. A spindle guide of stamped sheet metal for a drawtwisting tube having a cylindrical tube guide portion, an annular ring portion defining a flat annular surface extending perpendicular to and radially inwardly of said tube guide portion at one end thereof for contacting a flat surface of an inserting pin and a funnel portion extending from said ring portion inwardly of said tube guide portion and toward the other end of said tube guide portion, said funnel portion having a smoothly curved portion connected with a radially internal end of said ring portion defining a recess, whereby the forces imposed on the spindle guide during insertion into a tube will be absored by said ring portion and said curved portion.

3,884,429
WARP BEAM FOR TRIAXIAL WEAVING

Norris F. Dow, Radnor, Pa., assignor to N. F. Doweave, Inc., Philadelphia, Pa.

Filed Sept. 10, 1973, Ser. No. 395,529
Int. Cl. B65h *55/00*
U.S. Cl. 242—159 **6 Claims**

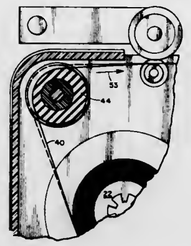


1. A warp beam for triaxial weaving consisting of a plurality of yarn courses forming a flattened sleeve wrapped spirally upon itself, said yarn courses being disposed in paths generally parallel to one another and helical with respect to the longitudinal axis of said sleeve.

3,884,430
TAPE CASSETTE

Peter G. Martin, Arlington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Dec. 20, 1972, Ser. No. 317,100
Int. Cl. B65h *17/20;* **G03b** *1/04;* **G11b** *15/32*
U.S. Cl. 242—199 **4 Claims**

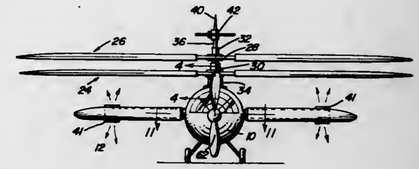


1. A magnetic tape cassette comprising:
a substantially enclosed generally rectangular housing having an open portion along one side thereof;
first and second tape storage reels disposed in said housing for rotation about respective parallel axes thereof;
means associated with at least one of said storage reels and adapted to be coupled to drive means external of said housing and operative to provide rotary motion of the reel serving as a take-up reel;
a supply of magnetic recording tape carried by said storage reels;
means supported by said housing for disposing the portion of said tape between said reels for motion in a predetermined travel path within said housing and along the open portion thereof;
said tape being driven at the open portion of said housing by a capstan drive assembly external of said housing and cooperative with said tape, and a portion of said tape along the open portion of said housing being arranged for operative association with a magnetic head;
said tape disposing means including at least one compressible elastic roller disposed at a fixed position within said housing at a corner portion thereof and along said travel path between said capstan drive assembly and said storage reel from which tape is drawn, said at least one compressible elastic roller always engaging said tape and over which said tape extends in said travel path;
said at least one roller being bidirectionally rotatable and operative to rotate about its axis at said fixed position as said tape moves through said path, and being elastically compressible in response to a predetermined tensile stress in said tape caused by rapid tape acceleration, said elastic compression being operative to reduce the length of said tape travel path between said capstan drive assembly and said storage reel from which tape is drawn by an amount sufficient to at least partially compensate for the effects of tensile stress in said tape caused by acceleration forces;
said at least one roller including:
a cylindrical hub of rigid material supported for rotation about its axis by said housing;
a pair of peripheral circular flanges on said hub and rotatable with said hub in fixed radial relationship therewith and defining an annular channel around said hub and between said flanges; and
a ring of compressive elastic material disposed around said hub within said channel and operative for rotation with said hub and elastically compressible in relation to said fixed flanges and hub.

3,884,431
CONVERTIBLE AIRCRAFT HAVING OPPOSITELY ROTATING ROTORS

Charles E. Burrell, 27 S. Sixth St., Shamokin, Pa. 17872

Filed Jan. 14, 1974, Ser. No. 433,063
Int. Cl. B64C *27/24*
U.S. Cl. 244—7 A **3 Claims**

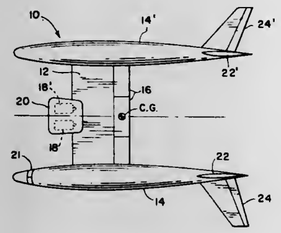


1. A convertible aircraft comprising:
a fuselage;
a wing movably mounted to the fuselage for permitting variations of the angle of incidence of the wing;
at least two rotors mounted in vertically spaced relation for rotating in opposite directions to achieve helicopter operation of the aircraft;
source means for powering the aircraft;
means connected between the fuselage and the rotors for supporting the rotors;
drive train means connected between the power source means and the supporting means for selectively rotating the rotors;
an auxiliary wing assembly having horizontal and vertical components, the assembly being mounted on the supporting means for decreasing the rate of descent of the aircraft during a power interruption;
selective means connected to the drive train means for positioning the rotors in alignment with the wing during normal flight of the aircraft, the selective means comprising:
a wheel fixedly mounted to a shaft portion of the drive train;
means for rotating the wheel to a preselected position corresponding to alignment of the rotors;

a projection extending from the wheel;
b. means for rearwardly directing into the channel a

a projection extending from the wheel;
first means manually actuated for engaging the projection; and
second means manually actuated for engaging a slot in the wheel.

3,884,432
HIGH-LIFT AIRCRAFT
Willard S. Blanchard, Jr., and Joseph L. Johnson, Jr., both of Hampton, Va., assignors to National Aeronautics and Space Administration Office of General Counsel, Washington, D.C.
Filed June 5, 1973, Ser. No. 367,268
Int. Cl. B64c *15/02*; **B64d** *27/00*
U.S. Cl. 244—15 **6 Claims**

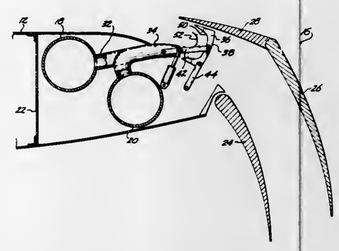


1. A high-lift aircraft having a center-of-gravity comprising:
a wing provided with flaps having a centroid-of-lift;
a plurality of fuselages;
said wing carried by and mounted on the tips thereof by two of said plurality of fuselages;
said centroid-of-lift of said flaps being located substantially at the center-of-gravity of said high-lift aircraft;
a plurality of propulsion means carried by said wing;
at least two of said plurality of propulsion means grouped in a common nacelle located in the vertical plane of symmetry of the said aircraft, and each of said at least two of said plurality of propulsion means being in fluid connection with an exhaust duct,
said exhaust ducts being arranged in a stacked overlapping relationship and located in said common nacelle,
each of said at least two of said plurality of propulsion means exhausting high-energy air in the vertical plane of symmetry of said aircraft such that when any of said propulsion means is inoperative, yawing moments in said aircraft are minimized,
a pair of horizontal tails fixed one each onto the outboard surfaces of the two of said plurality of fuselages mounted at the tips of said wing;
whereby, during high-lift flight said horizontal tails are in an upwash field and contribute a positive increment to trim lift;
nose-down pitching moments generated by said flaps are reduced as said flaps act substantially through said center-of-gravity of said aircraft; and,
said plurality of fuselages serve to shield the noise radiated from said plurality of propulsion means.

3,884,433
WING MOUNTED THRUST REVERSER
John D. Alexander, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Oct. 11, 1973, Ser. No. 405,385
Int. Cl. B64c *21/04*
U.S. Cl. 244—42 CC **8 Claims**

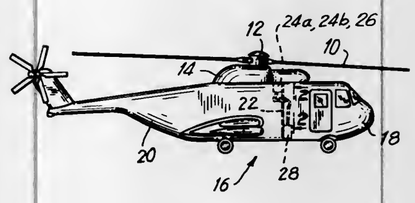
1. A wing mounted thrust reverser for an airplane having a thrust augmentation system comprising:
a. a flap having upper and lower segments which in extended position for take-off or landing provide a channel therebetween,
b. means for rearwardly directing into the channel a spanwise volume of gas under pressure from plenum chambers through wing mounted nozzles,
c. means for turning the rearwardly directed gas for smooth flow within the channel between the flap segments, and
d. means for moving the turning means into the channel to redirect the gas flow forward to spoil the wing lift characteristics and provide a reversing thrust.

7. A method of effecting a wing mounted thrust reverser with an airplane having thrust flaps and augmentation system



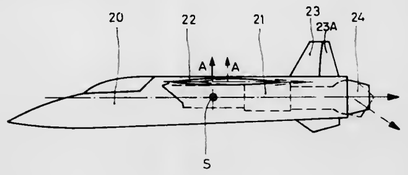
with the steps comprising: utilizing segmented above and below augmentation flaps, directing a stream of gas through plenum chambers and nozzles on each wing into space between the segmented flap, positioning a member with a Coanda surface immediately ahead of the flaps to turn the flow of gas efficiently into the flaps, holding the member in position with a pair of pivotable links extending between the member and the wing structure, and rotating the links to move the back side of the member between the segments and directly into the stream of gas to redirect said gas forward to effect thrust reversal.

3,884,434
HELICOPTER HYDRAULIC OIL SYSTEM
Richard P. Nichols, 5 Main St., Tarrytown, N.Y. 10591
Filed Apr. 22, 1974, Ser. No. 463,051
Int. Cl. B64d *33/00*
U.S. Cl. 244—53 R **9 Claims**



1. A helicopter including hydraulic oil feeding apparatus for attachment to mounting means and for replenishing hydraulic oil containers permanently connected to hydraulic points of said helicopter, said apparatus comprising a supply tank, a single pair of supply conduits connected to said tank and leading to said means, quick disconnect joints at said means for facilitating connection and disconnection of said supply conduits, service and return conduits leading from each of said containers to said joints for establishing flow with said single pair of supply conduits, said single pair of supply conduits being arranged for selective connection of one of said containers to said supply tank.

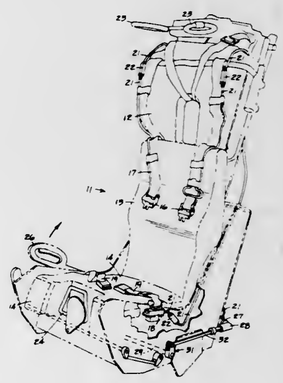
3,884,435
METHOD FOR THE CONTROL OF A JET AIRCRAFT AND APPARATUS FOR PERFORMING THE METHOD
William J. Croy, Vaterstetten, and Andreas Mederer, Marktschwaben, both of Germany, assignors to Messenschmitt-Bolkow-Blohm GmbH, Munich, Germany
Continuation of Ser. No. 88,737, Nov. 12, 1970. This application Feb. 15, 1973, Ser. No. 332,698
Claims priority, application Germany, Dec. 22, 1969, 1964205
Int. Cl. B64c *3/38, 15/02*
U.S. Cl. 244—76 J **5 Claims**



1. A method for maintaining a stabilized flight of an aircraft having propulsion means for propelling a gaseous jet rearwardly of said aircraft for propulsion of said aircraft, a wing with ailerons for aerodynamic support and a vertical tail surface, said aircraft being free of a horizontal tail surface, the steps comprising:
selectively controlling a movable nozzle adjacent the aft end of said aircraft to deflect said gaseous jet to thereby define a primary control for controlling the direction of flight of said aircraft;
selectively controlling trim apparatus mounted forwardly of said aft end to trim the flight of said aircraft independently of said primary control, said vertical tail surface and said ailerons on said wing; and
producing a difference in the time it takes for the movable nozzle to cause a maximum deflection of said gaseous jet and the, time it takes the trim apparatus to reach full trim effectiveness, the time for said trim apparatus to reach full trim effectiveness being greater than the time for the primary control to cause a maximum deflection of the gaseous jet so that said primary control will be able to return quickly to a position providing maximum thrust for said aircraft after said aircraft has been trimmed.

2. An apparatus for maintaining a stabilized flight of an aircraft, comprising:
propulsion means for propelling a gaseous jet rearwardly of said aircraft from a nozzle rearwardly mounted on said aircraft to discharge said gaseous jet along a flow-axis for propulsion of said aircraft;
a wing having ailerons for aerodynamic support and a controllable vertical tail surface, said aircraft being free of a horizontal tail surface;
a movable nozzle rotatably secured to said aircraft aft of said first mentioned nozzle and being selectively operative for deflecting said gaseous jet between a first position wherein said flow axis of said jet is directed along and substantially parallel to the longitudinal axis of the aircraft and a second position wherein said flow-axis of said jet is directed at an angle to said longitudinal axis of said aircraft to thereby define a primary control for controlling the direction of flight of said aircraft and to artificially stabilize said aircraft;
attitude control means mounted forwardly of the aft end of said aircraft for trimming the flight of said aircraft by controlling the attitude of said aircraft independent of the aircraft controls offered by said movable nozzle, said vertical tail surface and said ailerons on said wing by generating a movement about the center of gravity of said aircraft, said attitude control means comprising means for supporting said wing for movement forward and rearward of said aircraft to thereby effect an altering of the lift generated by said wing relative to said center of gravity of said aircraft; and
aerodynamic control circuitry for interrelating the movements of said movable nozzle and said attitude control means to thereby achieve an artificial stability in said aircraft.

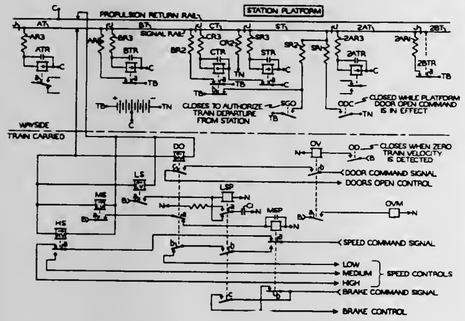
3,884,436
GAS-ACTUATED EMERGENCY PILOT RELEASE SYSTEM
Paul W. Poehlmann, Stinson Beach, Calif., assignor to H. Koch and Sons, Inc.
Filed Nov. 19, 1973, Ser. No. 417,140
Int. Cl. B64d *25/06, 25/10*
U.S. Cl. 244—122 A **18 Claims**



1. In an aircraft equipped with an ejection seat system having an emergency ground egress release mechanism and an ejection escape mechanism, both being adapted to be activated by manual maneuvers of a pilot:
an emergency pilot release system comprising in combination therewith:
a. a plurality of normally closed latching means for connecting a packed parachute canopy and a survival kit to a parachute harness worn by a pilot, said packed parachute canopy and survival kit being releasably secured to said ejection seat system;
b. energizing means mounted on said ejection seat system operatively coupled to said emergency ground egress release mechanism for releasing and opening said latching means, said emergency ground egress release mechanism being adapted to activate said energizing means;
c. fail-safe means operatively coupled to said ejection escape mechanism for disabling said energizing means, the escape mechanism being adapted to activate said fail-safe means;
d. a plurality of connector means, each connecting one of said latching means to said energizing means, said connector means each having connective elements adapted to separate responsive to a tensile stress, whereby said pilot together with said parachute and survival kit connected to his parachute harness will separate from said ejection seat system subsequent to an ejection escape from the aircraft; and
e. means for positively locking said connective elements of said connector means together upon activation of said energizing means, whereby said latching means are positively connected to said energizing means upon

activation of said emergency ground egress release mechanism.

3,884,437
TRAIN CONTROL SYSTEM FOR TRANSIT VEHICLES
William J. Linderman, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Oct. 9, 1973, Ser. No. 404,766
Int. Cl. B61l *23/16*
U.S. Cl. 246—63 C **10 Claims**



1. A train control system for trains traversing a fixed right-of-way, comprising in combination,

a. a signaling channel comprising a first and second conductor extending parallel to said right-of-way,

1. said first conductor being divided into a plurality of separate sections to form corresponding adjacent channel sections,

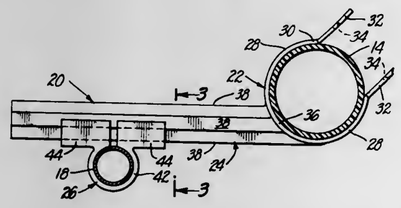
2. said second conductor being electrically continuous and connected to a system common bus,

b. a signal source connected to each first conductor section and to said common bus for transmitting through each channel section a signal having a predetermined distinctive characteristic,

c. control apparatus on each of said trains coupled across said first and second conductors for receiving the signal transmitted by said source through the section then occupied by that train,

d. said control apparatus on each of said trains also coupled for controlling selected train functions in response to the distinctive characteristic of the received signal.

3,884,438
PLUMBING STRUCTURE
Duane D. Logsdon, 1719 Canyon Rd., Fullerton, Calif. 92633
Filed Nov. 3, 1972, Ser. No. 303,591
Int. Cl. F16l *3/08*
U.S. Cl. 248—59 **2 Claims**



2. A connecting structure for use in connecting two different pipes which are located in two different parallel planes to one another which comprises:

a clip means having a base and curved resilient arms extending from said base which are adapted to resiliently engage more than 180° around the exterior of a first pipe in one of said planes,

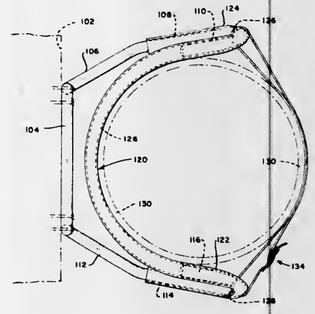
a rigid rod having a symmetrical cruciform shape extending from said base of said clip means,

said clip means and said rod being integrally formed with one another,

hanger means for engaging a second pipe in the other of said planes, said hanger means being capable of being secured to said rigid rod along the length of said rigid rod so as to hold said second pipe in adjacent to said first pipe,

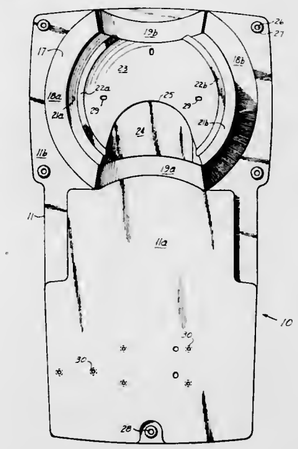
said hanger means including means for engaging the exterior of said rod in a plurality of positions around the exterior of said rod and along the length of said rod so as to stabilize said hanger means upon said rod.

3,884,439
GOLF BAG CRADLE-BRACKET
John Jeninga, Delavan, Wis., assignor to Atlantic Products Corporation, Trenton, N.J.
Filed Nov. 26, 1973, Ser. No. 418,983
Int. Cl. A63b *55/08*
U.S. Cl. 248—96 **6 Claims**



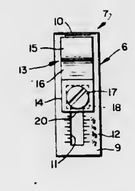
1. A golf bag bracket assembly comprising a support, two laterally spaced support members of circular cross section connected to the support, each of which has a laterally extending side support section for providing side support for a golf bag, said side support sections having an inverted "U" shape with one downwardly extending free end, the side support sections being opposed to and spaced from each other so that the golf bag can be placed between them, said side support section tangentially engaging the bag peripherally at its widest cross section area, downwardly extending and flexible cradling means of thin-walled flexible tubular material disposed between and supported by the side support sections, the cradling means having an unsupported central section which extends downwardly at a sufficient depth to receive substantially half of the peripheral cross section of the golf bag, the cradling means being adapted to engage the periphery of the bag being of sufficient flexibility to provide both a continuous cushioned surface and a movable support which moves with the bag so as to substantially reduce chafing wear at the bag surface in contact with and supported by the cradling means, the cradling means having an inner diameter which is slightly larger than the outer diameter of the support members, the ends of the thin-walled tubular material disposed substantially over the side support section of the corresponding support member.

3,884,440
STRUCTURAL SKID AND PEDESTAL
William N. Rowley, Palos Verdes Estates, and Warand R. Kirish, Arcadia, both of Calif., assignors to Swinfquip Division Weil-McLain Company, Inc., El Monte, Calif.
Filed Aug. 6, 1973, Ser. No. 386,053
Int. Cl. A47g *23/02*
U.S. Cl. 248—146 **9 Claims**



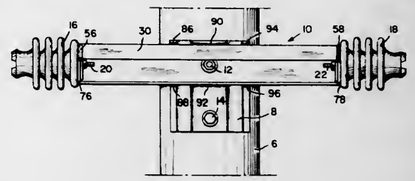
1. A skid for supporting a filter tank and related equipment comprising an integrally formed platform and pedestal, the platform having a flat upper surface and a ribbed under surface, the pedestal being at an end of the platform and comprising an upstanding hollow frusto-conical wall, open at the bottom and having a horizontal base supporting the lower end of said wall, a concave dish-shaped closure supported from the top of said wall, a horizontal ledge at a position intermediate the top and bottom of the wall and extending from a central area of the closure to a position at the exterior of a part of said wall adjacent the platform, a peripheral ledge formed at the top of said wall adapted to support the tank and an indentation extending up said part of said wall adjacent the platform from a position near the bottom of said wall to the top of said wall and meeting said horizontal ledge, to permit access to an underside of an overhang of the tank.

3,884,441
OUTLET BOX MOUNTING DEVICE
Robert L. Barry, 2916 E. Randolph Rd., Silver Spring, Md. 20904
Filed Mar. 22, 1974, Ser. No. 453,995
Int. Cl. H02g *3/08, 3/18, 3/12*
U.S. Cl. 248—205 R **6 Claims**



1. A mounting device for an outlet box comprising a spring clip resiliently gripping an outlet box wall at the open end of the box and having a long leg disposed on the outer side of said wall and extending longitudinally thereof, an elongated finger, means securing said finger adjacent one end thereof to the outer side of said clip leg, said finger extending back along the leg from said end and having an opposite end spaced outwardly from said clip leg for engaging the inner side of a wall in an opening of which the box is mounted for cooperation with wall engaging elements of the box which engage the outer side of the wall for securing the box in the wall opening.

3,884,442
TWO POST INSULATOR SUPPORT FOR UTILITY POLES
John E. Breeden, and Robert E. Lane, both of Royston, Ga., assignors to Hopeman Brothers, Inc., New York, N.Y.
Filed Sept. 30, 1974, Ser. No. 510,599
Int. Cl. F16m *13/02*
U.S. Cl. 248—221 **5 Claims**



1. A two-post insulator support for utility poles comprising an elongated cross-arm formed from a unitary sheet of metal having:

a first elongated rectangular element adapted to be situated with its long dimension extending in the horizontal direction;

a second elongated rectangular element, integral with and perpendicular to the first elongated element, said first and second elements being of nearly equal length and one long edge of the first element being integrally joined with a long edge of the second element so that said elements form an elongated member having an L-shaped cross-section substantially throughout its length;

a first pair of rectangular tabs integral with and perpendicular to the first elongated rectangular element, said tabs extending from the ends of the first elongated rectangular element in the same direction as the second elongated element extends from the first elongated element; and

a second pair of rectangular tabs integral with and perpendicular to the second elongated rectangular element, said tabs of the second pair extending from the ends of the second elongated rectangular element in the same direction as the first elongated element extends from the second elongated element;

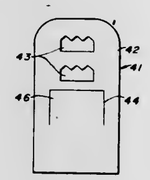
the tabs at each end of the cross-arm overlapping each other and having aligned openings for retaining an insulator post.

3,884,443
PEEL-RESISTANT PRESSURE-SENSITIVE HANGERS
Samuel B. McMaster, Deerfield, Ill., assignor to Do-It Corporation, Wheeling, Ill.
Continuation of Ser. No. 104,420, Jan. 6, 1971, abandoned.
This application May 21, 1974, Ser. No. 472,070
Int. Cl. A47g *29/00;* **C09j** *7/02;* **B32b** *7/06*
U.S. Cl. 248—467 **2 Claims**

1. A peel-resistant pressure-sensitive hanger of flexible material having a pressure-sensitive coating arranged on one of its two faces along a longitudinally extending zone extending less than the full height of the hanger, leaving said hanger with a portion bare on both faces by which it may be manipulated; the bare portion of said hanger having a formation for cooperation with a mating member for hanging one by the other for hanging an object from a fixed support;

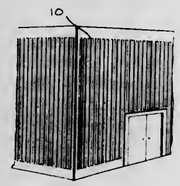
said hanger having slits extending into the coated area from the bare portion to provide a flap including the bare portion and extending out from a point intermediate the height of the coated zone whereby if the flap is sprung

from the plane of the remainder, a tie-down adhesive area will be left behind extending in that plane generally in the



direction the flap extends from its root with a free end relatively unaffected by the springing action to provide peel resistance when applied to a flat surface.

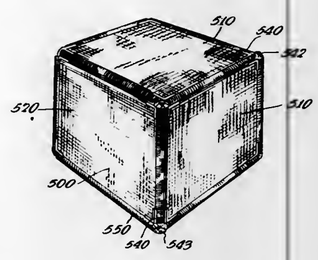
3,884,444
CONCRETE FORM LINER
Stephen S. Dashew, Los Angeles, Calif., assignor to Interform Inc., Compton, Calif.
Division of Ser. No. 206,686, Dec. 10, 1971, Pat. No. 3,780,977. This application Aug. 8, 1973, Ser. No. 386,487
Int. Cl. E04g *11/08*; B28b *7/00*
U.S. Cl. 249—112 **3 Claims**



1. A concrete form liner comprising:
a plurality of trough-shaped elements of substantially constant cross-section each having an inner wall and first and second outwardly extending side walls, said first side wall having a flange extending sidewardly away from said second side wall and having a first hook at its end, and said second side wall having a first hook at its end, and said second side wall having a second hook at its outer end extending towards said first side wall so that said elements can be held together with a first hook on one of said elements engaged with the second hook of another of said elements;
each of said trough-shaped elements including a retainer wall (36) with a portion spaced from said second hook of the same element by a distance sufficient to engage and maintain therebetween the first hook on another element.

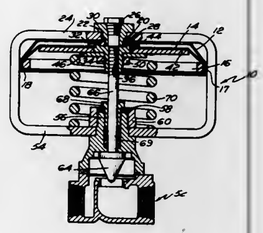
2. A concrete form liner comprising:
a trough-shaped element having an inner wall and first and second outwardly extending side walls, said first side wall having a flange extending sidewardly away from said second side wall and having a first hook at its end, and said second side wall having a second hook at its outer end extending towards said first side wall, said element also having a retainer comprising a wall fixed to said second side wall and lying between the side walls and spaced a predetermined distance from the second hook, so that said element can be held to another similar element with a first hook on one element engaged between the second hook and retainer of the other element.

3,884,445
MACHINE AND METHOD FOR PRODUCING A THREE DIMENSIONAL LATTICE
Homer C. Amos, Palm Springs, Calif., assignor to Brunswick Corporation, Skokie, Ill.
Division of Ser. No. 272,736, July 18, 1972, Pat. No. 3,822,463. This application May 6, 1974, Ser. No. 467,065
Int. Cl. B29c *5/00*
U.S. Cl. 249—205 **5 Claims**



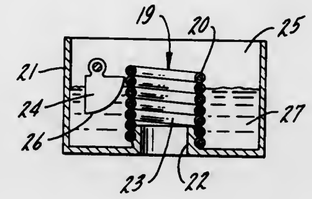
1. A structure for maintaining a three dimensional lattice array of strands comprising:
1 six grid wall surfaces, three of the surfaces substantially of one configuration and the other three surfaces of another specific configuration;
2. means holding the grid surfaces in a hollow shaped configuration; and
3. means for securing a lattice array of strands inbetween the grid wall surfaces.

3,884,446
LOW PROFILE CONTROL VALVE ACTUATOR
Linwood P. Erickson, Warren, R.I., assignor to G. W. Dahl Co., Inc., Bristol, R.I.
Filed Dec. 10, 1973, Ser. No. 423,584
Int. Cl. F16k *31/12*
U.S. Cl. 251—61.4 **3 Claims**



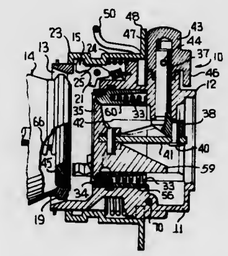
1. A valve actuator comprising a unitary, rigid steel, four-sided tubular frame of generally rectangular cross section, a valve mounted exteriorly on one side of said frame, an actuating rod connected to said valve and extending through said one frame side, said rod being axially movable to open or close said valve, a flexible diaphragm mounted within said frame in a plane substantially normal to the axis of said rod and connected thereto, housing means secured to the inside of said frame cooperating with said diaphragm to define a sealed chamber, means for introducing fluid under pressure into said chamber to flex said diaphragm and hence impart axial movement to said rod, and a coil spring mounted in said frame and normally urging said diaphragm to its non-flexed position.

3,884,447
FLUID VALVE MEANS
Carl J. Alexander, Moore Park, and Robert J. Boudeman, Hickory Corners, both of Mich., assignors to Wells Manufacturing Corporation, Three Rivers, Mich.
Filed June 6, 1973, Ser. No. 367,445
Int. Cl. F16k *15/14*, *31/524*
U.S. Cl. 251—144 **4 Claims**



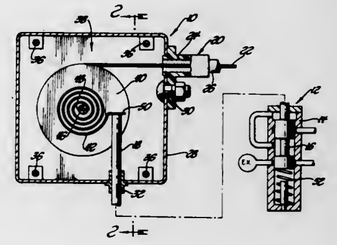
1. A flushing fluid dump valve means comprising
a flushing fluid reservoir having an outlet aperture;
a coil of closely wound metallic spring wire having a plurality of convolutions within said fluid reservoir, defining a fluid passageway in said reservoir, and having one open end thereof secured about said outlet aperture so that the passageway defined by said coil communicates with said outlet aperture through the secured end and with said fluid reservoir through a free open end;
an outer sheath collapsed on said spring wire, made of resilient material having a substantially uniform radial thickness and exerting a radial compressive force along the length of said spring wire; and
flushing fluid dump valve actuating means mounted in said reservior and adapted to deflect said coil;
said coil bearing said outer sheath extending inwardly into said flushing fluid reservoir and providing a flushing fluid retaining portion below the free open end of said coil, and adjacent convolutions of said coil bearing said outer sheath being in fluid-tight relationship relative to each other but permitting the flushing fluid to pass between the convolutions and out through said outlet aperture when said coil is deflected.

3,884,448
COUPLER
James S. Millar, Fountain Valley, and Glenn W. Henderson, Tustin, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Nov. 19, 1973, Ser. No. 417,264
Int. Cl. F16l *37/28*
U.S. Cl. 251—149.9 **16 Claims**



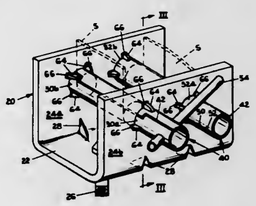
1. A coupler adapted to be connected and disconnected from an adaptor, said coupler comprising a body, a lock pivotally mounted on the body for movement between a latch position and an unlatch position, a sleeve mounted on the body and axially movable between a retracted position and an extended position, means on the sleeve engageable with the lock to hold the latter in its latch position when the sleeve is extended, and a surface on the sleeve facing toward said extended position engageable with a surface on the lock in a manner to hold the lock in its unlatch position when the sleeve is in its retracted position.

3,884,449
TRANSMISSION ASSEMBLY
Paul H. Kehm, Ambler, Pa., assignor to Teleflex Incorporated, North Wales, Pa.
Filed Sept. 4, 1973, Ser. No. 394,358
Int. Cl. F16k *31/44*; B60k *31/00*
U.S. Cl. 251—294 **10 Claims**



1. A transmission assembly comprising; a modulator valve and a flexible motion transmitting remote control including guide means and a flexible motion transmitting core element movably supported by said guide means, said core element need only to be capable of transmitting tension forces, a flat spring operatively interconnecting said core element and said valve for moving said valve in response to movement of said core element from a neutral position when placed in tension and for returning said core element to said neutral position when the tension forces are removed from said core element.

3,884,450
GROUND ANCHOR FOR MOBILE HOMES AND THE LIKE
Robert C. Brammer, 336 W. Seventh St., Traverse City, Mich. 49684
Filed Jan. 2, 1974, Ser. No. 429,814
Int. Cl. A63b *61/04*; B65d *63/00*
U.S. Cl. 254—164 **27 Claims**



1. Apparatus for tensioning straps, cables, and the like comprising a support bracket having upstanding flanges, each flange having opposite side surfaces, aligned apertures in said flanges, and means for anchoring said support bracket to the ground; an elongated, resilient, tubular tensioning member extending between said flanges; means for mounting said tensioning member for rotational and axial movement in said apertures for winding a strap, cable or the like thereon and locking the strap, cable, or the like as wound; slot means extending along the side wall of said member for receiving a strap, cable, or the like, said slot means and the resiliency of said tubular member allowing said tubular member to be

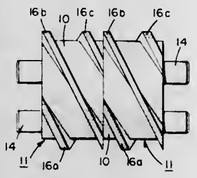
circumferentially compressed; and means for circumferentially compressing said tubular member when said member is moved axially in said apertures including a rounded protrusion at one end of said member for resisting axial movement of said member, said protrusion normally extending into abutment with one of said opposite side surfaces of one of said flanges at the edge of one of said apertures whereby, as said member is moved axially, said protrusion compresses said member to allow said protrusion to pass through said apertures for abutment with another of said opposite side surfaces of one of said flanges.

3,884,451

MIXING APPARATUS AND METHOD

Donald G. Stenmark, Houston, and Raymond L. Heinrich, Baytown, both of Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Jan. 17, 1973, Ser. No. 324,458
Int. Cl. B29b *1/06*
U.S. Cl. 259—191 **14 Claims**



1. A rotatable core means adapted and constructed to be utilized in an extruder barrel means comprising in combination:

a. an extruder screw means having a succession of individual spaced apart, offset, discontinuous, helical flights disposed on said screw means to form channels between said flights;

b. each successive flight being centered in a channel of preceding flights;

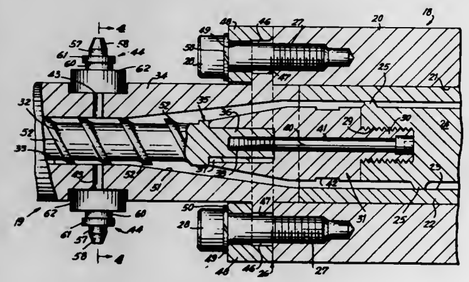
c. said flights having the narrowest-width-channel within the range from about −0.25 to about three diameters of said core means, the diameter of said core means including said flights.

3,884,452

BLOW-MOLDING PLASTICIZING MANIFOLD

George C. Britten, Floral Park, N.Y., and Arion Mancuso, Ashland, Mass., assignors to Manbritt Industries, Inc., Amityville, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,651
Int. Cl. B29b *1/06*
U.S. Cl. 259—192 **22 Claims**



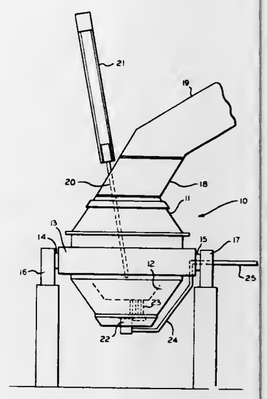
1. A manifold assembly for use in combination with an extruder having first screw means for the plastification of thermoplastic material, the manifold assembly comprising: an elongated distribution manifold having a longitudinally extending internal passageway circular in any cross-section of working area and a plurality of exit ports extending transverse to the axis of the manifold; second screw means mounted for rotation axially and centrally of the passageway in said manifold; and, drive means for rotating said second screw means; whereby the thermoplastic material which is plasticized by said first screw means of said extruder will be continuously masticated while being distributed through said distribution manifold until such time as said material is injected or extruded through one or more of said exit ports.

3,884,453

BOTTOM BLOWN STEEL CONVERTER AND MEANS FOR CONTROLLING INJECTION OF POWDERED MATERIAL WITH PROCESS GASSES THEREIN

Jai K. Pearce, Pittsburgh, Pa., and Frithjof Eichinger, Boxtehude, Germany, assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 207,889, Dec. 14, 1971, abandoned. This application Mar. 14, 1973, Ser. No. 341,105
Int. Cl. C21c *5/34*
U.S. Cl. 266—35 **28 Claims**



1. For use in a system which is adapted to convey finely divided materials from a pressurizable storage vessel through a material flow metering valve and then a nozzle chamber in which pressure is maintained relatively constant over a range of process gas flows and back pressures, and in which the material is entrained by gas from the nozzle and thence conveyed to tuyeres which allow injection of the gas and material beneath the surface of molten metal in a vessel for converting ferrous metal to steel, the improvement comprising:

a. said material flow metering valve means has a rotary element with a flow-through opening therein,

b. pliable valve seat means in sealing engagement with said rotary element and cooperating therewith, said valve seat means having a cavity means that responds to gas pressure therein by increasing the sealing pressure between said seat means and said rotary element, and

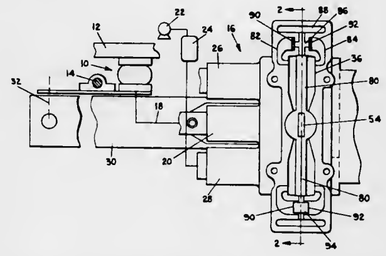
c. a high pressure source, gas conducting means intercommunicating said cavity to said high pressure source means, the pressure of said source being in excess of pressure in said nozzle chamber means whereupon if the pressure in said nozzle chamber exceeds the pressure in said storage vessel said cavity will be pressurized to enhance said sealing engagement.

3,884,454

AIR SPRING SYSTEM AND DAMPED AIR VALVE THEREFOR

David G. Passmore, Sparta, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Oct. 29, 1973, Ser. No. 410,466
Int. Cl. F16f *5/00*
U.S. Cl. 263—65 D **10 Claims**



1. In a system for controlling the height of a vehicle with respect to an axle wherein an air spring supports the vehicle on an axle and an air valve controls the flow of air to the air spring and wherein the air valve comprises:

a valve body having a sealed air chamber, and a sealed fluid filled damping chamber including opposite side walls and an end wall;

valved conduits in said valve body coupling said air spring with a source of air pressure and coupling said air spring with the atmosphere for exhausting air from said air spring;

means for actuating the valves in the valved conduit responsive to changes in the height of the said vehicle with respect to said axle, said control means including a common actuator shaft in said air and damping chambers and means for applying a torque to said shaft;

means in said damping chamber to damp the movement of said shaft, said damping means including at least one vane in said damping cavity, said vane being mounted in the said damping cavity for movement between opposite side walls thereof with the dimensions of said vane approximating that of said damping cavity portion in which said vane moves to permit slow passage of fluid around said vanes upon movement of said vanes within said cavity;

the improvement which comprises:

by-pass conduits extending from said opposite side walls of said damping chamber to a central portion of said end wall; and

check valve means in said by-pass conduits to prevent the flow of fluid through said by-pass conduits from said side walls to said end walls, but to permit the flow of fluid in an opposite direction in said by-pass conduit, whereby said vane is damped in the movement thereof from a central position to either of said side walls, but is undamped in return movement to the central position.

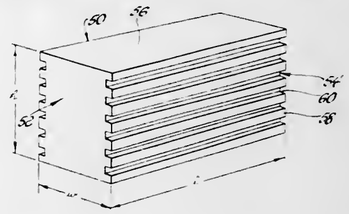
3,884,455

HIGH EFFICIENCY ENERGY ABSORBER

Peter A. Weller, and Cass V. Curtis, both of Durham, N.H., assignors to McCord Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 245,438, April 19, 1972, abandoned. This application Mar. 29, 1973, Ser. No. 345,915
Int. Cl. F16f *1/36*; **B60r** *19/06*
U.S. Cl. 267—140 **6 Claims**

1. An energy absorbing device comprising: a compressible energy-absorbing block having a substantially rectangular cross section; said block having dimensions of width *w*, height *h* and length *l*; said block having integral columnar ribs disposed on two parallel, opposed faces of said block for increasing the compressive strength of said block in the longitudinal *l* direction thereof; said faces being defined by the dimensions *l* and *h* and said ribs extend in parallel relationship to the direction of said *l* dimension; said block including two parallel,



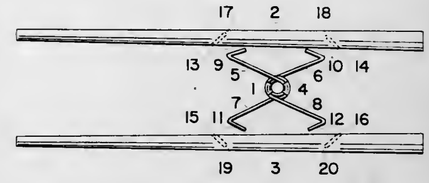
opposed surfaces defined by the dimensions *l* and *w* and which are planar; said columnar ribs having a width *b* and a depth *c* and are spaced from each other by a distance *a*; said width *b* being slightly greater than said distance *a*.

3,884,456

SELF-ATTACHING COUPLING SPRING FOR THE COUPLED CHOPSTICKS

Hyok Sang Lew, 1620 E. Blacklidge Dr., No. 6, Tucson, Ariz. 85719

Filed Dec. 26, 1973, Ser. No. 427,805
Int. Cl. F16e *1/12*
U.S. Cl. 267—156 **6 Claims**



1. A self-attaching coupling spring for coupling a pair of elongated members used for grasping, said coupling spring comprising:

a. a first coil spring having a first pair of arms extending therefrom, the end of each of said first pair of arms is bent in direction generally same as said arm is straightened with respect to the extension of said arm forming said first coil spring,

b. a second coil spring having a second pair of arms extending therefrom, the end of each of said second pair of arms is bent in direction generally same as said arm is straightened with respect to the extension of said arm forming said second coil spring; and

c. means for attaching said first and second coil springs to one another in axial alignment wherein the general direction of said first pair of arms is opposite to the general direction of said second pair of arms.

3,884,457

SPRING IN THE FORM OF STACKED SHEET METAL PLATES

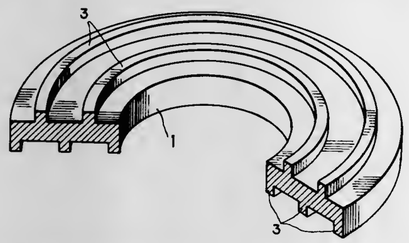
Toma D. Leko, P.O. Box 1569, Boston, Mass. 02104

Filed May 14, 1973, Ser. No. 331,013
Claims priority, application Germany, May 24, 1972, 2225131
Int. Cl. F16f *3/02*
U.S. Cl. 267—162 **1 Claim**

1. A spring in the form of stacked sheet metal plates comprising a number of resilient ribbed metal plates provided with ribs, said ribs extending curvilinearly across both faces of the said ribbed metal plates, said ribs on one face being in stag-

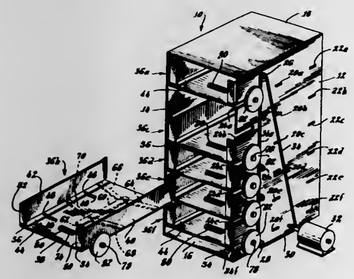
gered relation to the ribs on the opposite face, and flat metal

gered relation to the ribs on the opposite face, and flat metal plates having no ribs on either face thereof, said ribbed metal



plates being stacked with flat metal plates in between them, and means for maintaining said plates in stacked relation.

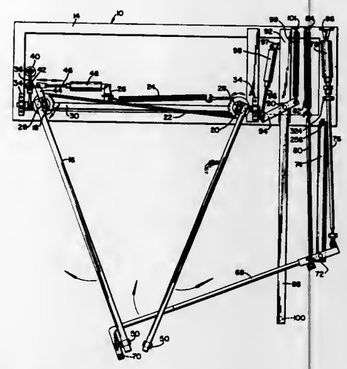
3,884,458
COLLATOR WITH REMOVABLE BINS
Peter M. Ryland, Ridgefield, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed Dec. 14, 1973, Ser. No. 424,845
Int. Cl. B65h *39/02*
U.S. Cl. 270—58 **10 Claims**



10. A collator arrangement: comprising
a frame;
a plurality of individual sheet stack containing bins each having a sheet dispensing means mounted thereon and each being adapted to dispense individual sheets from one end thereof and to be loaded with sheets from the other end thereof;
means for selectively removably mounting said bins on said frame, each bin having an increased sheet capacity when the adjacent bin is removed; and
a common drive means adapted to drive the sheet dispensing means carried by each of said bins.

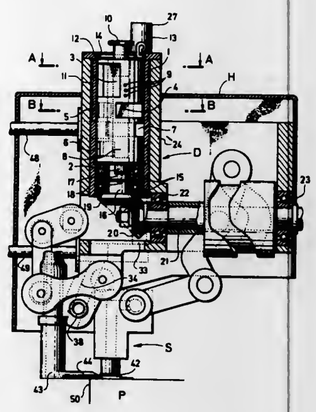
3,884,459
SHEET FOLDING MECHANISM
David P. Gunn, Fort Lauderdale, and Fred May, Boca Raton, both of Fla., assignors to Gunn-May Manufacturing, Inc., Fort Lauderdale, Fla.
Filed Oct. 26, 1973, Ser. No. 410,120
Int. Cl. B65h *45/00*
U.S. Cl. 270—61 R **19 Claims**

1. A sheet folding mechanism, comprising: a supporting structure; a pair of separated work supporting arms; gripping means attached to one end of each of said arms for gripping a work piece; spaced first pivotal means attached to the other end of each of said arms for permitting movement of said arms in a predetermined plane; second pivotal means mounting said first pivotal means for permitting movement of said arms in a second planar direction normal to said first plane; means operating said arms for movement from a first position in which said one ends are lowered and in close proximity to each other for attachment to said gripping means of an elongated work piece to be folded, and for movement to another position in which the said one ends are disposed in spaced, elevated, relation to retain the attached end of the work piece in stretched condition and the lower end of the work piece



spaced from the floor; folding means; means mounting said folding means for movement into engagement with the stretched work piece forming one or more folds therein while the outer ends of the work supporting arms are brought into proximity with each other in an elevated position; and means operable to release said work gripping means.

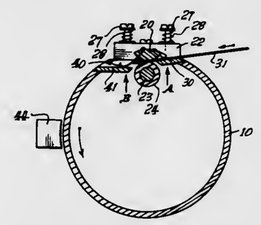
3,884,460
AIR DISTRIBUTING DEVICE FOR A PNEUMATIC SHEET-FEEDING DEVICE
Jaroslav Jiruse, Blansko, Czechoslovakia, assignor to Adamovske strojirny, narodni podnik, Adamov, Czechoslovakia
Filed May 23, 1973, Ser. No. 363,005
Claims priority, application Czechoslovakia, May 26, 1972, 3617/72
Int. Cl. B65h *3/08*
U.S. Cl. 271—98 **7 Claims**



1. Apparatus for the distributing of air in a pneumatic sheet feeding device for printing machines, wherein a plurality of sheets are located in a pile, the sheet feeding device having a housing, a drive shaft mounted in said housing, at least one suction cup linked to said housing and connected to said drive shaft for reciprocating movement with respect to the top of the pile of sheets, and at least one nozzle for the delivery of air under pressure to the edge of the sheets of said pile, said

air distribution apparatus comprising a body having a bore, a valve member rotatably mounted in said bore, said valve member having an axial bore defining a central chamber and a plurality of recesses formed on its circumference being intersected by said central chamber, said recesses defining with said body a plurality of distributing channels, said body having an opening for the inlet of pressurized air and an inlet for the exhaust of air under vacuum communicating with said distribution channels for providing air under pressure to or removing air under vacuum from said chamber, and a plurality of outlet openings communicating with said distribution channels and leading to said suction cups and said nozzles for delivery and withdrawal of air therefrom, a tubular sleeve interposed between said body and said valve, said sleeve having a plurality of openings corresponding to the openings in said body, said sleeve being rotatable relative to said body to selectively align said openings and adjust the passage therethrough, means connecting said valve member to said drive shaft for conjoint rotation therewith, said distributing channels, said inlet openings and said outlet openings being axially and radially arranged with respect to the axis of said chamber so that on rotation of said valve member air is caused to flow between the edges of said sheets to separate said sheets, suction is caused to be applied to said suction cups to lift said sheets and air is thereafter caused to flow into said suction cups to release said sheets in a cyclical sequence.

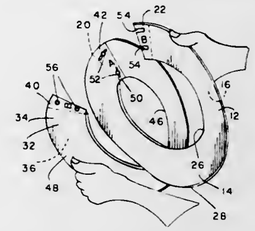
3,884,461
FACSIMILE DRUM FEED
Frank W. Hauser, Santa Monica, Calif., assignor to Telautograph Corporation, Los Angeles, Calif.
Filed Apr. 22, 1974, Ser. No. 462,793
Int. Cl. B41f *21/04*
U.S. Cl. 271—277 **13 Claims**



1. Apparatus for holding an edge of a flexible sheet on the surface of a drum mounted on a shaft for rotation of said drum on an axis parallel to a curved surface thereof, said apparatus comprising:
a slot on the surface of said drum parallel to said axis,
an elongated bar and feed roller combination, said bar being disposed parallel to the axis of said roller and in contact therewith, said combination being mounted flush on said drum in said slot with both the axis of said roller and the center line of said bar being disposed in a plane passing through said drum at approximately a right angle with a plane tangent to said drum surface, and
means for turning said feed roller while said drum is stationary and said sheet is being fed into said slot from one side of said combination with said edge of said sheet moving into contact with both said bar and said roller.

3,884,462
MOBILE GEOMETRICAL FORM
Francis Rebajes, San Miguel, 45, Torremolinos-Malaga, Spain
Filed Dec. 26, 1973, Ser. No. 428,201
Int. Cl. D04d *9/04*
U.S. Cl. 272—8 R **22 Claims**

1. A mobile geometrical form comprising a double-sided continuous strip of material, each side having four points of inflection to thereby result in four surface portions having successive concave and convex contours, opposing surface



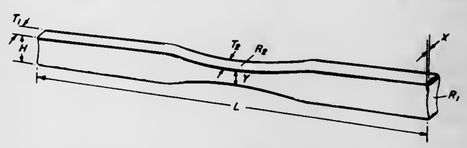
portions of said strip between the same inflection points having opposing concave and convex contours.

3,884,463
PNEUMATIC COLLAPSIBLE EXERCISING DEVICE OF THE ACCORDING TYPE
Roger J. Malatesta, 202 Tyrone Ave., Wilmington, Del. 19804
Filed Mar. 7, 1973, Ser. No. 338,964
Int. Cl. A63b *23/02, 23/04, 21/00*
U.S. Cl. 272—79 C **11 Claims**



1. A pneumatic exercise device of the class described which is comprised of a one piece flexible collapsible body of accordion type two side pieces attached and sealed to the ends thereto, and a variable means in at least one of said pieces for allowing varying amounts of air to exit upon compression of said device for permitting varying amounts of air to enter upon tension of said device by a user during an exercise program, said variable means being adjustable to change the force required to make air exit upon closing and enter upon tensioning the collapsible body during an exercise program by a user.

3,884,464
EXERCISER
George D. Evangelos, 707 85th St., Miami Beach, Fla. 33139
Filed Sept. 12, 1973, Ser. No. 396,363
Int. Cl. A63b *23/00*
U.S. Cl. 272—79 R **9 Claims**



1. An exerciser device comprising a rigid, single, elongated member having no moving parts:
A. a length capable of being grasped at each end thereof by the hands of the outstretched arms of a user and the length being such that the angle formed by the arms of the user with the device being held straight out is between 80° and 15°;
B. a central portion which is capable of being held with the clasp of the user's hand;
C. end portions which are capable of being held within the grasp of partially closed hands of the user;

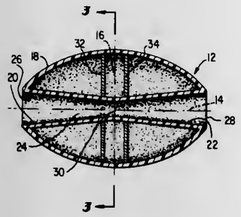
D. a yieldable surface whereby the said member may be firmly but confortably pressed against the body of the user; and
E. a weight per average linear inch of length of from 1.0 to 2.4 oz.

3,884,465
WEIGHT FOR BOWLING BALLS
Leon S. Milsner, 162 Camelia Dr., Daly City, Calif. 94015
Filed June 13, 1974, Ser. No. 478,983
Int. Cl. A63d *5/00;* **A63b** *37/00*
U.S. Cl. 273—54 B **5 Claims**



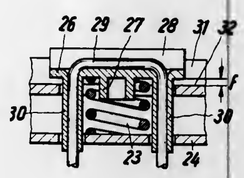
1. A practice weight for a bowling ball comprising,
a body shaped in the form of a segment of a sphere, having a dished bottom complementing a segment of the spherical surface of a bowling ball,
a thumb hole through said weight,
a seat formed by a dent on one side of the periphery of said weight tapering toward said hole, for forming a finger rest in relation to the finger holes of the bowling ball.

3,884,466
GAME BALL
Richard A. MacDonald, Del Haven; James A. MacDonald, Villa, both of N.J., and Joseph J. Andrews, Philadelphia, Pa., assignors to Thingamajig Corporation, Vineland, N.J.
Filed Apr. 27, 1973, Ser. No. 354,935
Int. Cl. A63b *41/00*
U.S. Cl. 273—65 EC **3 Claims**



1. A ball having an oblate spheroid contour being substantially symmetrical about a longitudinal axis and adapted to be manually thrown through the air, having a through passage in said longitudinal direction, said passage forming a cross-sectional air passage which has maximum crosssectional area at opposing longitudinal ends of said ball and continuously decreasing to a minimum cross-sectional area at substantially a mid-point region between said opposing ends.

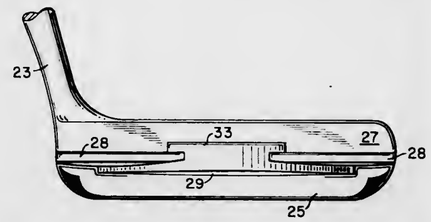
3,884,467
DEVICE FOR HITTING A BALL, SHUTTLECOCK OR THE LIKE
Reinhold Sommer, Helgolandring 68, 4300 Essen, Germany
Filed Mar. 31, 1972, Ser. No. 240,115
Claims priority, application Germany, Apr. 7, 1971, 2116920
Int. Cl. A63b *51/00*
U.S. Cl. 273—73 D **8 Claims**



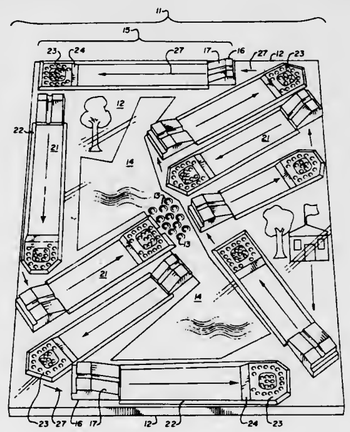
1. A racket comprising an open, peripheral head frame having its ends extended beyond one side at its throat portion and continuing parallel to each other to form a handle for said racket, and a cross-piece extending between the sides of said head frame at said throat portion and complementary to the opposite side of said head frame, thereby forming a closed loop head frame, at least said head frame and throat portion having an external channel formed therein, said head frame and throat portion being formed with string holes therethrough, an array of strings extending in longitudinal and transverse directions across said peripheral head frame to form a striking surface, a plurality of the centrally located strings in at least the longitudinal direction extending from said throat portion to said opposite side of said head frame, said centrally located strings being connected to said head frame by first string connecting means, said first string connecting means connecting said centrally located strings to said frame comprising resiliently cushioned segments having inner surfaces and outer surfaces, coil springs seated in said channel between said frame and the inner surfaces of said segments to cushion movement of said segments and resiliently tension said centrally located strings, tubular string guide means in said channel through which said strings pass and are guided around the outer surfaces of said segments, the centrally located strings on the side adjacent said throat portion passing through said cross-piece and outwardly through said frame and connected to second string connecting means, said second string connecting means comprising spring-pressed segments seated in the channel of said frame at said throat portion and coil springs in said channel between said frame and the inner surfaces of said segments, the remaining strings in the longitudinal direction passing through the string holes in the frame and being connected directly to the frame.

3,884,468
GOLF CLUB
Raymon W. Cook, San Antonio, Tex., assignor to Ray Cook Golf Putters, Inc., San Antonio, Tex. **The portion of the term of this patent subsequent to May 21, 1982, has been disclaimed.**
Continuation-in-part of Ser. No. 672,766, Oct. 4, 1967, abandoned. This application Sept. 10, 1969, Ser. No. 867,107
Int. Cl. A63b *53/04*
U.S. Cl. 273—78 **5 Claims**

1. In a golf club head consisting of an upstanding blade having a front face and a rear face with a flange extending rearwardly of the said blade, said flange having a top and a rear face, a longitudinally and horizontally extending groove in the rear face of said blade extending completely across the rear face thereof, a flange groove extending downwardly into the top of said flange to an approximate uniform depth and terminating rearwardly substantially across the entire rear face of said flange, said flange groove terminating upwardly in said longitudinally and horizontally extending groove.



3,884,469
PORTABLE TABLE-TOP MINIATURE GOLF GAME PROVIDED WITH REARRANGEABLE HOLE MODULES AND SEPARATE GREEN PUTTING BOARD
Hershel D. Morton, P.O. Box 4611 Ave. C, Austin, Tex. 78751
Filed July 3, 1974, Ser. No. 485,358
Int. Cl. A63f *7/06, 7/10*
U.S. Cl. 273—87.2 **6 Claims**

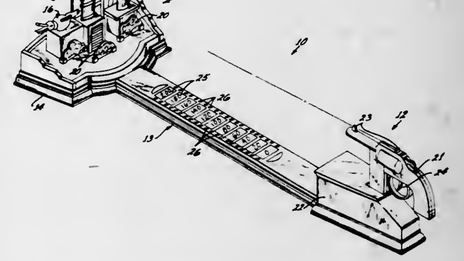


1. A portable indoor table-top miniature golf game with associated movable modules to allow rearrangeable hole combinations in a table-top game simulating miniature golf, said portable indoor table-top miniature golf game comprising:
A. a flat golf course playing field board provided with a plurality of ball hazard penalty entrapments;
B. a plurality of movable rearrangeable and recombinable hole module assemblies each said movable rearrangeable hole module assembly having
1 an elevated tee-off ramp block having a ball directing and propelling ramp surface inclined down one side,
2 a ball conducting fairway board originating at the bottom of said ball directing and propelling ramp surface, and
3 an elevated ball entrapment green of less height than said elevated tee-off ramp block and situated at the end of said ball conducting fairway, said elevated ball entrapment green having
(a) a ball riser incline facing said elevated tee-off ramp block, and
b. an elevated entrapment green top surface provided with a plurality of ball entrapment and primary score determining depressions;
C. a separate portable secondary putting green game board provided with
1. a putting tee-off depression,
2. a ball conducting putting runway originating at said putting tee-off depression, and
3. a plurality of secondary score determining depressions situated at the end of said ball conducting runway;
D. a plurality of L-shaped miniature golf clubs suitably designed to be swung with one hand of a game player to impact and propel a miniature table-top golf ball from the tee-off point of the various movable hole modules of the course and the putting tee-off depression; and
E. a plurality of miniature table-top golf balls of suitable diameter to be entrapped by said ball entrapment and score determining holes.

3,884,470
FRANGIBLE TARGET
Peter O. Paulson, Calgary, 2124 Palisdale Rd. S.W., Alberta, Canada
Continuation-in-part of Ser. No. 199,332, Nov. 16, 1971, abandoned. This application Nov. 6, 1972, Ser. No. 303,999
Int. Cl. F41j *1/00*
U.S. Cl. 273—105.4 **4 Claims**

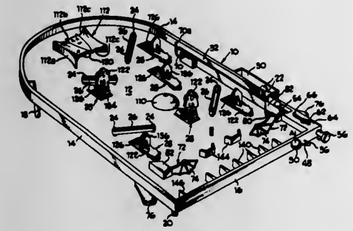
1. A saucer-shaped, thin-walled, frangible target for use as a flying target formed from a sulfur composition selected from the group consisting sulfur with additives having the strength characteristics of n-decane, napthalene, biphenyl, ethane dithiol, lignin sulfonate, sodium sulfide or iron sulfide admixed therewith whereby said target initially has a monoclinic crystalline structure which matures to convert to a rhombic crystalline structure.

3,884,471
PNEUMATIC PROJECTOR AND PNEUMATICALLY RESPONSIVE TARGETS
Donald J. Maurer, Torrance, and Dermot F. Sims, Palos Verdes Peninsula, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 11, 1974, Ser. No. 441,537
Int. Cl. F41j *7/00*
U.S. Cl. 273—101.2 **16 Claims**



1. A toy shooting gallery having a plurality of targets comprising:
shooting means for shooting at a plurality of targets, said shooting means having sighting means and a pneumatic source for actuating a plurality of targets;
target means having a plurality of targets located thereon; and
connecting means remote from said sighting means and coupling said shooting means to said target means for respectively transferring the output of said pneumatic source to said respective plurality of targets and actuating said targets upon proper aiming of said shooting means.

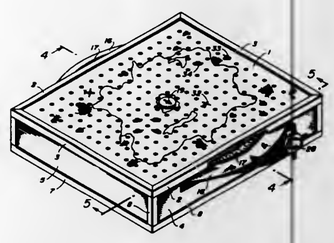
3,884,472
GAME APPARATUS
Burton C. Meyer, Downers Grove, Ill., assignor to Marvin Glass Associates, Chicago, Ill.
Filed Jan. 22, 1973, Ser. No. 325,584
Int. Cl. A63d *3/02*
U.S. Cl. 273—121 R **3 Claims**



1. A pinball type game, comprising:
means defining a playing surface over which a playing object, such as a ball, may be propelled, with an aperture in said playing surface;
a playing object to be propelled upon said playing surface; a playing object propelling device located in proximity to said playing surface so as to be capable of propelling a playing object upon said playing surface; and
target means mounted on said playing surface, including a lever member pivotally mounted intermediate its ends adjacent said aperture for pivotal movement about an axis generally parallel to said playing surface, the lever member comprising a target portion on one side of said axis and an actuating portion on the other side of said axis, said target portion normally resting on said playing surface and said actuating portion substantially covering said aperture in the playing surface, said actuating portion being smaller than said aperture, said aperture being larger than a playing object, with a playing object being of sufficient weight to cause the lever member to pivot when the playing object moves on top of the actuating portion thereof whereby the playing object passes through the aperture and effects movement of said target portion to a generally upright position, and said lever member having a bell crank portion of sufficient size and shape relative to said aperture and a playing object so as to overlie and rest upon portions of the playing surface about the aperture when said target portion is in said generally upright position to define said upright position of the target portion while at the same time blocking the passage of a playing object through said aperture.

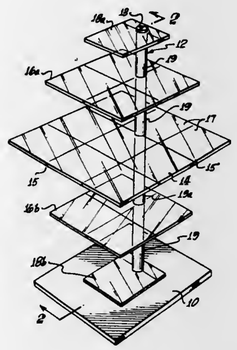
3,884,473
PEG BOARD GAME HAVING PLAYER PIECE DISLODGING MEANS
Leo J. Pritulsky, R.D. 1, Coopersburg, Pa.
Filed Oct. 1, 1973, Ser. No. 402,121
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 D **8 Claims**

3. An amusement game toy comprising:
a base;
a playing surface having at least one hole formed therethrough and being horizontally mounted upon said base; spring means mounted on said base beneath said playing surface;
operator controlled means located beneath said playing surface for activating said spring means;
means beneath said playing surface for striking said playing surface;
means for selectively positioning said striking means at various locations beneath said playing surface, said at least one hole being substantially vertically aligned with at least one of said locations; and



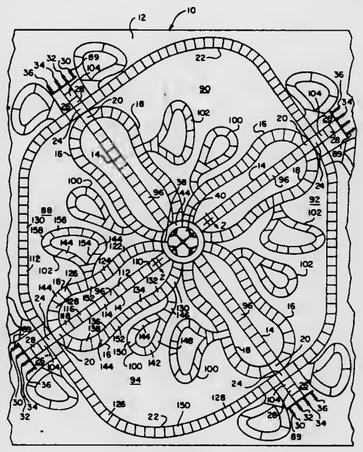
means for transferring the motion of said spring means to said striking means.

3,884,474
MULTI-TIERED GAME BOARD FOR THREE-DIMENSIONAL TIC-TAC-TOE GAMES
James W. Harper, 227 Ave. H, Redondo Beach, Calif. 90277
Filed Aug. 22, 1974, Ser. No. 499,570
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 AC **10 Claims**



1. A multi-tiered game board structure for three-dimensional tic-tac-toe games, comprising:
an odd number of playing surfaces mounted one over the other, with the surfaces located at vertically spaced levels, and including a central surface at the center level and equal numbers of upper and lower surfaces at levels above and below said central surface;
each surface having a playing area defining playing squares arranged in mutually perpendicular rank and file rows containing equal numbers of squares;
said central surface having at least three rank and at least three file rows, and each upper and lower surface having one less rank and file row than the surface immediately adjacent in the direction of the central surface; and
said surface being disposed on a common, substantially vertical, axis passing through the centers of the several playing surfaces and with the rank and file rows of each playing surface in parallel alignment with the rank and file rows of all other playing surfaces.

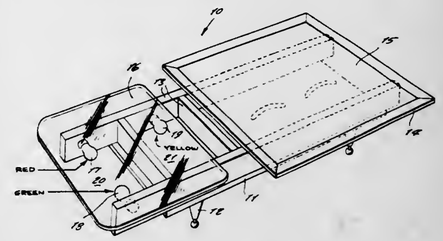
3,884,475
RAILROAD BOARD GAME
James M. Munro, 101 Friendship Rd., and Donald Gill, 161 Friendship Rd., both of Drexel Hill, Pa. 19026
Filed Jan. 10, 1973, Ser. No. 322,487
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 G **11 Claims**



1. In a game, including movable playing pieces, the combination of
A. a flat playing board having a top surface,
1. said board being marked with indicia to generally divide the top surface into distinct, similar playing areas,
2. each playing area being marked with indicia to define a headquarters area and a plurality of segmented tracks;
B. a shop area carried upon the top surface and having a peripheral boundary,
1. said shop area being medially positioned relative to the playing areas,
2. said shop area being in stationary relationship to the playing board,
3. said shop area being of cylindrical configuration,
a. said shop area being positioned on the top surface and rising upwardly therefrom,
4. said shop area being provided with at least one track extension;
C. a roundhouse positioned upon the top surface,
1. said roundhouse surrounding at least a portion of the peripheral boundary of the shop area,
2. said roundhouse being rotatable about the shop area,
3. some of said segmented tracks defining paths to the roundhouse,
4. said roundhouse including means to move playing pieces from one track to another, and
5. said roundhouse including means to permit the passage of playing pieces into the shop area.

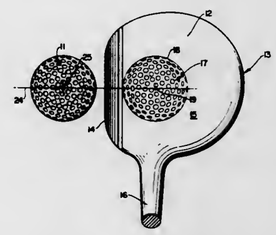
3,884,476
PUZZLE TABLE
Carl D. Sanders, 362 Delta St., Memphis, Tenn. 38109
Filed Apr. 19, 1974, Ser. No. 462,330
Int. Cl. A63f *9/00*
U.S. Cl. 273—157 R **3 Claims**

1. A puzzle table, comprising in combination, a platform in a horizontal plane supported upon a plurality of vertically extending legs, said platform supporting a plurality of longitudinally extending and transversely extending beams, said beams at one end supporting a frame unit where a puzzle may be worked upon, and a glass unit adjacent thereto whereupon puzzle pieces may be shuffled, said frame unit where puzzles may be worked upon comprises a frame member around a central material permitting light to glow therethrough, said



central material having a light therebeneath, said glass unit where puzzle pieces may be shuffled comprising a heavy glass of clear type placed upon said beams, and different colored lamps located below said glass, said lamps being supported by said beams.

3,884,477
AID FOR DRIVING GOLF BALLS
John Bianco, 521 E. Ash, Caldwell, Idaho 83605
Filed Aug. 20, 1973, Ser. No. 389,781
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 D **2 Claims**

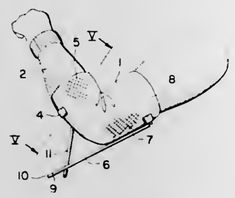


1. A glof ball driving club wherein the head thereof includes a striking face intersecting a generally horizontal upper surface on the club head, marking means in the form of a plain circle devoid of configuratiion marking within the periphery of the circle on the upper surface of the club head, the intersection of said striking face and upper surface being tangent to said plain circle, and the diameter of said plain circle being approximately 1.68 inches whereby when the club head is laid adjacent to a ball of said diameter prior to a swinging stroke the adjacent circular configurations of the circle and golf ball as viewed by the player coact optically to establish a directional axis accurately related to the line of flight of the ball when struck by the club.

3,884,478
GOLFER'S TRAINING DEVICE
Wendell P. Buzan, Pico Rivera, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Sept. 3, 1974, Ser. No. 502,443
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B **2 Claims**

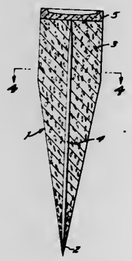
1. A golfer's training device, comprising
a sleeve of pliable material adapted to cover the elbow of one arm of a golfer;
a magnet on the sleeve in the area of the lower end thereof; and

an arm member pivotally affixed at one end to the sleeve in the area of the upper end thereof and having a piece of metal at the other end of the arm member, whereby when



the arm is straight the magnet holds the arm member adjacent the arm and when the elbow is bent the arm member falls away from the arm to indicate to the golfer that he has bent his arm.

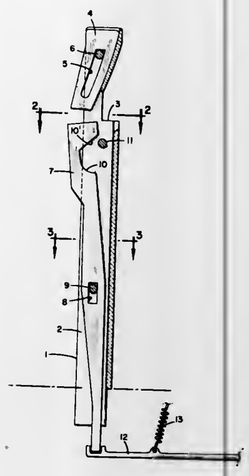
3,884,479
DISINTEGRATING GOLF TEE
Ambrose Gordos, 4301 E. 2nd St., Apt. 1E, Long Beach, Calif.
Filed Mar. 22, 1974, Ser. No. 453,788
Int. Cl. A63b *57/00*
U.S. Cl. 273—212 **1 Claim**



1. A disintegrating golf tee that includes:
a. an elongate rigid tapered shank having a flat first end and a second pointed end, said shank formed from grass seed and a water soluble binder;
b. an elongate longitudinally extending rigid reinforcing member situated within the interior of said shank; and
c. a ball support having first and second oppositely disposed surfaces, said support formed from a plastic material, said first surface being concave and capable of supporting a golf ball in a driving position thereon, said second surface bonded to said first end of said shank, and said ball support serving the dual function of both supporting a ball and preventing injury to the hand of a user due to contact with said reinforcing member in the event said shank should break when being forced into the ground.

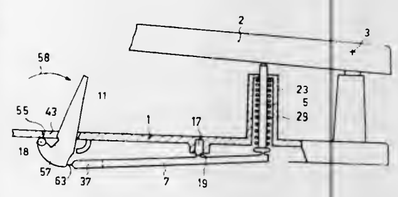
3,884,480
RECORD CHANGER SHAFTS OF AUTOMATIC RECORD PLAYERS
Raul Antonio Vega, Buenos Aires, Argentina, assignor to Winco Sociedad Anonima Industrial, Buenos Aires, Argentina
Filed Jan. 16, 1973, Ser. No. 324,232
Claims priority, application Argentina, Feb. 3, 1972, 240367
Int. Cl. G11b *17/04*
U.S. Cl. 274—10 S **4 Claims**

1. An automatic record player changer mechanism comprising a cylindrical shaft having a grade near its top end, where the record is locked until it is freed by being pushed, said shaft being straight and said grade being shaped through an eccentric rabbet defining a half-moon shaped support; a longitudinal groove having sides and a bottom within said shaft opposite to the said rabbet and running the entire length of the shaft, a tongue of two laminar identical pieces, each being



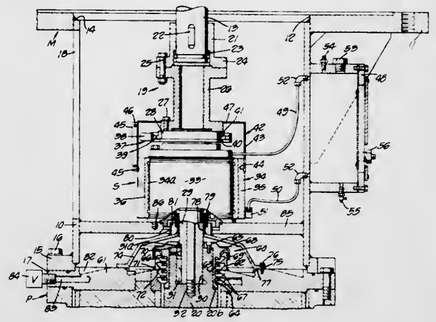
independantly freely disposed and movably controlled by a single transverse shank through a longitudinal opening in said laminar pieces; a lever within the groove having a fulcrum near the midpoint of the lever, said lever widening at its top end near the plane of the grade, and being connected at its lower end to a lever connected to the pick-up mechanism.

3,884,481
DEVICE FOR LIFTING AND LOWERING A PICK-UP ARM OF A RECORD PLAYER
Kurt Eisemann, Berlin, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 18, 1973, Ser. No. 398,485
Claims priority, application Germany, Oct. 6, 1972, 2249178
Int. Cl. G11b *3/00*
U.S. Cl. 274—23 R **1 Claim**



1. A device for lifting and lowering a pick-up arm of a record player of the type comprising a tilting handle means for manually actuating the device and an integral lowering and lifting pin, said device comprising a plastic molding having a two-armed lever portion, a mounting portion connected to said lever portion by a film-type joint, a lifting pin portion connected to said lever portion by a filmtype joint at a first end of the lever, and a tilting handle means portion connected to said lever by a film-type joint at an end of the lever opposite to said first end.

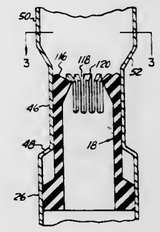
3,884,482
COOLED SEAL CARTRIDGE
Rowland E. Ball, Long Beach, and Winfred J. Wiese, Whittier, both of Calif., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 8, 1973, Ser. No. 338,807
Int. Cl. F16j *15/40*
U.S. Cl. 277—17 **13 Claims**



1. A seal assembly applicable to a rotary shaft to prevent fluid leakage between said rotary shaft and a case comprising: a housing having means for mounting the housing on said case, a stub shaft rotatable in said housing and having means connectable to said rotary shaft, said housing including means defining a seal chamber between said housing and said stub shaft, mechanical said means in said chamber for preventing fluid leakage between said stub shaft and said housing, said mechanical seal means forming with said housing a cooling fluid chamber, said housing having an inlet for said cooling fluid chamber and an outlet for said cooling fluid chamber, a cooling jacket disposed about said housing and having means providing a flow path therein for cooling fluid flow, means connecting one end of said flow path to said inlet and means connecting the other end of said flow path to said outlet, whereby cooling fluid may flow from said outlet through said flow path, through said inlet, and through said cooling fluid chamber from said inlet to said outlet, and cooling fluid impelling means rotatable with said stub shaft for causing cooling fluid flow through said cooling fluid chamber from said inlet to said outlet, wherein said housing has a cylindrical outer surface, said cooling jacket being in the form of a sleeve applicable endwise to said housing, said housing and said sleeve having means forming end seals therebetween, and one of said housing and said cooling jacket having groove means in its surface between said end seals and confronted by the other of said cooling jacket and said sleeve, said groove means providing said flow path for cooling fluid flow.

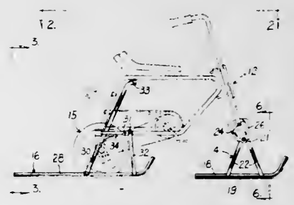
3,884,483
ANNULAR SEAL FOR COAXIAL TUBULAR MEMBERS
Werner H. Fengler, and Richard R. Fengler, both of 23651 Fordson Dr., Dearborn, Mich. 48124
Division of Ser. No. 304,853, Nov. 8, 1972, abandoned. This application July 2, 1973, Ser. No. 375,737
Int. Cl. F16j *15/18*
U.S. Cl. 277—208 **4 Claims**

1. An elongated annular sealing element adapted to be pushed into simultaneous sealing engagement between an elongated cylindrical constriction in the elongated internal cylindrical surface of a hollow outer member and a cylindrical inner member reciprocable relatively thereto, said sealing element comprising
an elongated spool-shaped body of resilient material having therethrough a bore with an elongated internal cylindrical sealing surface adapted to sealingly engage the cylindrical inner member,
said body near its opposite ends having axially-spaced annular enlargements adapted to sealingly engage said internal cylindrical surface externally of the constriction thereof and having a reduced-diameter neck portion extending between said enlargements,
said neck portion having thereon an elongated external cylindrical sealing surface extending circumferentially



therearound and adapted to sealingly engage the elongated cylindrical constriction,
and means associated with one of said enlargements and responsive to the passage thereof into the constriction for enabling temporary contraction of said one enlargement and responsive to the emergence thereof from the constriction for enabling subsequent expansion of said one enlargement.

3,884,484
CONVERSION SYSTEM FOR PEDAL-OPERATED CYCLES
Emanuel J. Uhlyarik, 23309 Westbury Dr., St. Clair Shores, Mich. 48079
Filed May 1, 1973, Ser. No. 356,078
Int. Cl. B62k *13/00*
U.S. Cl. 280—7.12 **1 Claim**



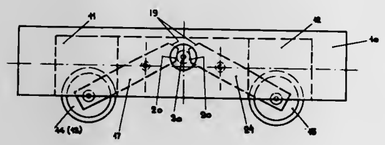
1. An improvement in a conversion system for pedal-operated cycles of the type having a frame and including a front fork, and a rear fork and having a front axle and a rear axle mounted thereon, each of said axles carrying a conventional bicycle wheel, said improvement being for the conversion of said cycle from its traditional summer use to a winter use sled having forward and rear ski mechanisms, with said forward ski mechanism being fixedly but removably mounted on said front fork in place of said front wheel, said rear ski mechanism being fixedly but removably mounted to said frame at the rear fork thereof, and a winter use rear driver wheel mechanism being affixed to the rear fork of said cycle in lieu of the rear wheel thereof, said improvement comprising improved rear ski, rear driver wheel, and front ski mechanisms, and including a rear ski mechanism having two skis mounted on opposite sides of said winter use rear driver wheel mechanism, a frame member joining said two skis together which extends upwardly above and transversly across said rear driver wheel, said transverse portion of said frame member joined to said cycle frame above said rear driver wheel mechanism, said driver wheel mechanism including a pair of brackets fixedly mounted to said cycle frame on opposite sides of the rear fork thereof, said bracket means defining open-ended

downwardly extending circularly arcuate slots with the center of said arc being at the center of the pedal sprocket of said cycle, with the axle of said winter use rear driver wheel movable up and down in said slot means, each of said brackets including a spring mounting means above said slot, a pair of springs each having an upper and lower end with one of said springs mounted on each side of said rear driver wheel and adapted to exert a downward force thereon, with the upper end of each of said springs adjustably attached to said spring mounting means, so that the tension on said springs, and thus the downward force on the driving wheel, can be adjusted depending on ground conditions, and a pair of spring mounting brackets fixedly but rotatably mounted on opposite sides of the axle of said rear driver wheel with the lower end of each of said springs fixedly mounted thereto, and means for mounting said forward ski mechanism on said front fork to allow limited rocking movement thereof, said limiting means including a closed loop member having forward and rearward portions fixedly mounted to said forward ski mechanism, a pin mounted in said front fork above said front axle with said closed loop member being adapted to strike said pin with its forward or rearward portions when the desired limits of movement of such forward ski mechanism are reached.

3,884,485
COLLAPSIBLE ROLLER SKATE

Josua Walle, Zuchwil, Switzerland, assignor to Frespa AG, Herzogenbuchsee, Switzerland

Filed Aug. 20, 1973, Ser. No. 389,536
Claims priority, application Switzerland, Aug. 21, 1972, 12448/72
Int. Cl. A63c *17/20*
U.S. Cl. 280—11.1 R **9 Claims**

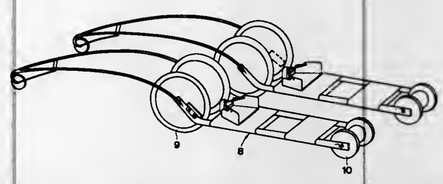


1. In a convertable roller skate comprising a thick platform having recesses in its undersurface at least adjacent its opposite ends, roller means adjacent each of said platform ends, and means supporting such rollers for movement from a retracted position fully within said recess to an operative position at least partially protruding from said recess, the improvement wherein said roller supporting means comprises a rigid lever for each such roller means, said lever carrying at one end thereof said roller means for rotation about the roller axis and being pivoted intermediate its ends to said platform on a fixed horizontal axis intermediate the platform top and bottom, whereby pivotal movement of said lever from a generally horizontal position to an inclined position moves the corresponding roller means from said retracted to said operative position and vice versa, each said lever extending in the direction of said opposite roller means and terminating at its free end in proximate spaced relation to the free end of the other lever, and a common detent means supported by said platform for engaging the mutually adjacent ends of said levers to positively hold said levers in their respective inclined positions and thereby said roller means in their respective operative protruding positions, said detent means being releasable to free said lever ends.

3,884,486
BRAKE DEVICE FOR FOOT ROLLER MEANS, IN PARTICULAR ROLLER SKIS

Sven Oscar Wilje, Sluregatan 44, S-79100 Falun, Sweden

Filed Mar. 14, 1974, Ser. No. 451,276
Claims priority, application Sweden, Mar. 20, 1973, 7312031
Int. Cl. A63c *17/14*
U.S. Cl. 280—11.2 **10 Claims**



1. In a braking device for foot roller means, in particular roller skis, for movement of an object along a substrate, including a frame means, secured to and for supporting a portion of the object being rolled on the roller ski; a shaft slidably extending through a bearing on the frame; at least one wheel rotatably mounted on the shaft; and braking means cooperative with the at least one wheel for effecting braking of the foot roller means when at least one wheel contacts the braking means, the improvement including:

the frame being slidable on the shaft in the axial direction of the shaft;

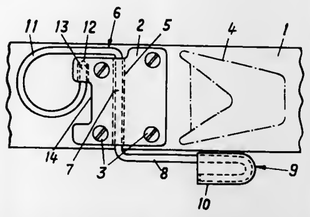
at least one spring means, engaging the wheel and the frame, for resiliently urging the wheel away from the frame; and

the frame being movable against the urging of said spring means to thereby bring the braking means into cooperative contact with the wheel thereby effecting braking.

3,884,487
SKI BRAKE

Hans Wehrli, Zurcherstrasse 81, Rapperswil, Switzerland

Filed Apr. 12, 1974, Ser. No. 460,532
Claims priority, application Switzerland, Apr. 13, 1973, 5387/73
Int. Cl. A63c *7/10*
U.S. Cl. 280—11.13 B **7 Claims**

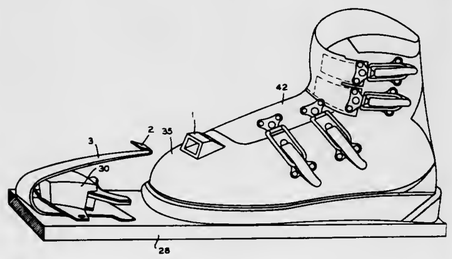


1. In a ski brake securable to the upper surface of a ski and having, laterally of the ski, a brake spur which can pivot about a pivoting axis extending on the upper side of the ski transversly to the longitudinal axis thereof and a holding lever depressible by the ski boot to hold the brake spur in its rest position, the brake spur being pivoted into its braking position by spring action upon removal of the ski boot from the ski binding, the improvement in the brake comprising a wire, bent so that one end part forms the brake spur, a central first shaft portion lying in the pivoting axis and the other end part being shaped into a holding loop forming the holding lever, said holding loop acting as a spring which moves the spur to its braking position and having two alternate positions, one position being against the ski when depressed by the ski boot and the other position extending outwardly from the ski when the ski boot is removed from the ski binding, the free end of said holding loop forming a second shaft portion which can pivot in its location about an axis arranged spaced from and parallel to the pivoting axis on the upper side of the ski.

3,884,488
RUNAWAY GUARD DEVICE FOR SKIS

Tilo Herbert Riedel, Gaisberjotrope 73 b, A 5020 Salzburg, Austria

Filed Apr. 25, 1972, Ser. No. 247,424
Claims priority, application Austria, Apr. 29, 1971, 13712/71; July 22, 1971, 6398/71; Feb. 9, 1972, 1058/72
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 N **20 Claims**



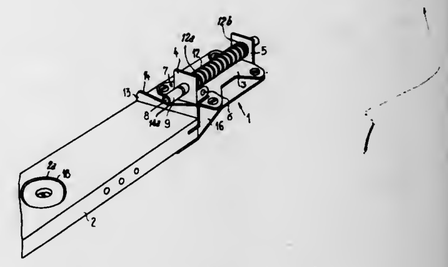
1. A runaway guard device for skis having a releasable binding for a ski boot including a toe binding and heel clamp means, said guard device comprising at least one detachable rigid holding means including a relatively broad base plate for attachment to the ski adjacent the toe binding, a thin upwardly directed arcuate portion, and a rearwardly directed upper portion having a thickness greater than that of said arcuate portion, said rearwardly directed upper portion being of substantially less width than said base portion and being intended to overlie the toe binding and including an engaging element for engagement with a coupling piece mounted on the toe of the boot, the arrangement being such that the connection at the coupling piece is designed to come apart when the ski is taken off, said guard device being inherently flexible and including portions which may deform elastically, said guard being further characterized by resistance to tensile stress and permanent deformation and also being capable of moving about an imaginery transverse axis in the zone of attachment to the ski owing to its having the form of a band presenting substantially lower resistance in respect to a transverse axis than in respect of the other two axes perpendicular to said transverse axis.

3,884,489
RELEASABLE SKI BINDING

Ulrich Gertsch, Matten, and Ernst Gertsch, Wengen, both of Switzerland, assignors to Gertsch AG, Interlaken, Switzerland

Filed Apr. 23, 1973, Ser. No. 353,389
Claims priority, application Switzerland, May 10, 1972, 6998/72
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 K **8 Claims**

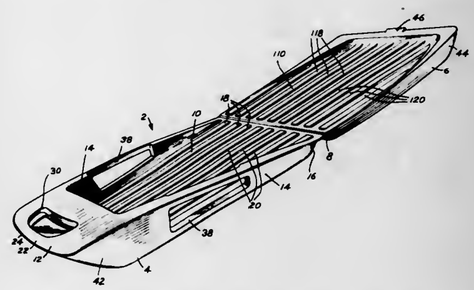
1. A releasable ski binding comprising a release plate capable of being anchored to the ski so as to be releasable to all sides, a spring-loaded locking element for releasably holding at least one end of the release plate against the ski, means for mounting the spring-loaded locking element to pivot about an axis directed transversely with respect to the lengthwise direction of the associated ski, said spring-loaded locking element being provided with a roller, a guide track mounted on the release plate, said guide track being provided with a roller defining at least a central section of the guide track, the spring of said spring-loaded locking element urging said locking element in the normal position of the release plate to bear via its roller against the roller defining the central section of the guide track, said central section of the guide track being bounded to each side by a raised section.



3,884,490
FOLDING SLED

Werner Hellman, Baraboo, Wis., assignor to Flambeau Products Corporation, Baraboo, Wis.

Filed Apr. 3, 1974, Ser. No. 457,483
Int. Cl. B62b *13/16*
U.S. Cl. 280—18 **5 Claims**



1. A unitary, single body collapsible sled, comprising, in combination:

a first sled member having a forwardly and upwardly turned nose portion and a first body-supporting portion, said first body-supporting portion including a first upper wall member and a first lower surface-engaging wall member, said first upper and lower wall members being specially separated by a first hollow region of said first sled member;

a second sled member having an end portion and a second body-supporting portion, said second body-supporting portion including a second upper wall member and a second lower surface-engaging wall member, said second upper and lower wall members being spacially separated by a second hollow region of said second sled member;

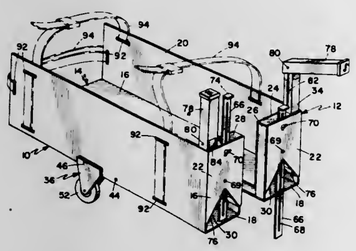
a plastic hinge integrally and hingedly connecting said first and second sled members opposite said nose and end portions, respectively, whereby said collapsible sled is operable in an open and folded state, said first and second body-supporting portions being substantially planar in said open state; and

means for locking said first sled member to said second sled member in said folded state;

said first and second upper wall members, said first and second lower surface-engaging wall members and said first and second hollow regions cooperatively defining cushion means for absorbing shock upon said first and second lower surface-engaging wall members to substan-

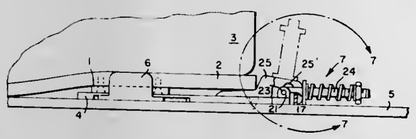
tially avoid transmission of said shock to a user of said collapsible sled.

3,884,491
ADJUSTABLE COLLAPSIBLE CART
Frederick L. Hughart, 4453 Coronado, San Diego, Calif. 92107
Filed Feb. 6, 1974, Ser. No. 440,173
Int. Cl. B62d *21/18*
U.S. Cl. 280—35 **9 Claims**



1. An adjustable collapsible cart, comprising:
an open topped box structure including a pair of opposite handed frames, each having a floor, a side wall and a front wall;
said frames having adjustable interconnecting means for varying the spacing between the side walls;
a wheel unit detachably secured to each frame;
each of said frames having a cavity for storage of the respective wheel unit;
handle means on at least one of said frames,
each of said floors is hollow with an upper panel and a lower panel;
and said interconnecting means including connecting bars slidably attached to said frames within the hollow floors.

3,884,492
OVERCENTER SKI BINDING MECHANISM
Richard G. Spademan, 933 Addison Ave., Palo Alto, Calif. 94301
Filed Mar. 15, 1973, Ser. No. 341,512
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 R **9 Claims**



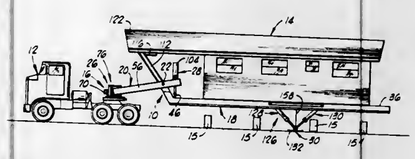
1. In a safety release binding having a first member with a first mating surface and means for fitting said first member to a ski;
a second member with a second mating surface for mating with said first mating surface and means for fitting said second member to a ski boot;
an overcenter mechanism including a spring retaining rod, a spring member connected to said rod and means for coupling said rod to one of said first and said second members such that said rod may translate longitudinally of the ski and rotate about a transverse axis, said rod having a first position parallel to said ski wherein said spring member biases said rod in a first direction for urging said mating surfaces of said first and said second members into releasable engagement and a second position angularly disposed from said first position wherein said spring bias is removed from said rod for separating said mating surfaces and disengaging said first and said second members, the improvement comprising: first means located on said rod and second means positioned adjacent said rod and spaced from said first means for contacting said first means and automatically rotating said rod about said transverse axis from said first position to said second position upon movement of said rod a predetermined distance in a second direction opposite to said first direction in response to the application of a predetermined force on said rod.

3,884,493
CASTER WHEELS FOR A PORTABLE APPLIANCE
Robert M. Weir, St. Joseph; Edward R. Fester, Coloma, and Gerrald K. Farrington, St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Nov. 23, 1973, Ser. No. 418,376
Int. Cl. B62b *1/12*; B60b *33/00*
U.S. Cl. 280—79.1 **6 Claims**



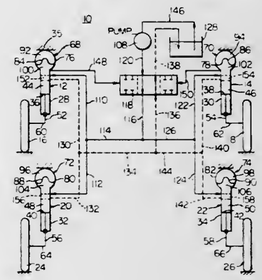
1. A portable appliance for dynamic operation comprising a four-sided frame,
a first pair of casters located at adjacent corners of said frame,
a second pair of casters located at the other corners of said frame,
means supporting said first pair of casters on the frame with their pintles substantially vertically disposed, and
means supporting said second pair of casters on the frame with their pintles at a substantial angle to both the vertical and horizontal directions whereby said first pair of casters is free to swivel about their respective pintles but said second pair of casters is substantially restrained from swiveling movement by the weight of said appliance and limits movement of the appliance during the dynamic operation thereof.

3,884,494
APPARATUS FOR TRANSPORTING HOUSE STRUCTURES OR THE LIKE
Harrell Dean Ashby, and Ivan V. Ashby, both of Rt. 2, Box 20A, Edmond, Okla. 73034
Filed Dec. 13, 1972, Ser. No. 314,806
Int. Cl. B60p *1/02*
U.S. Cl. 280—81 B **28 Claims**



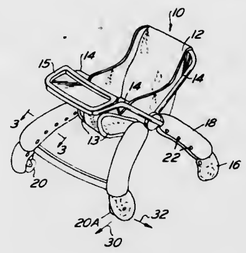
1. Trailer apparatus, comprising:
support beam means having a forward end portion and a rearward end portion;
means connected to the forward end portion of the support beam means raising, lowering and supporting the forward end portion of the support beam means in predetermined positions thereof; and
rearward beam elevation means connected to the support beam means generally between the forward and the rearward end portions thereof and having a portion engageable with the ground raising the rearward end portion of the support beam means in one position, and lowering the rearward end portion of the support beam means toward a ground engaging position in one other position, comprising: a ground engaging plate;
a pivot shaft secured to the ground engaging plate;
first hydraulic cylinder means comprising a pair of hydraulic cylinders, the bodies of said cylinders being rigidly interconnected having one end pivotally connected to the support beam means via a common pivot connection and the opposite end pivotally connected to the pivot shaft the first hydraulic cylinder means extending from the ground engaging plate in one direction; and
second hydraulic cylinder means comprising a second pair of hydraulic cylinders, the bodies of said cylinders being ridigly interconnected, having one end pivotally connected to the support beam means via a common pivot connection and the opposite end pivotally connected to the pivot shaft, the first hydraulic cylinder means and the second hydraulic cylinder means each being connected to the ground engaging plate via a common pivot connection provided via the pivot shaft the second hydraulic cylinder means extending in a generally opposite direction from the ground engaging plate with respect to the first hydraulic cylinder means, the first and the second hydraulic cylinder means moving the ground engaging plate in one direction lowering the rearward end portion of the support beam means in one condition of the first and the second hydraulic cylinder means and moving the ground engaging plate in an opposite direction raising the rearward end portion of the support beam means in an actuated position of the first and the second hydraulic cylinder means.

3,884,496
VEHICLE SUSPENSION SYSTEM
Naganori Ito, and Hiroshi Aikawa, both of Tokyo, Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan
Filed Apr. 8, 1974, Ser. No. 459,177
Claims priority, application Japan, Apr. 9, 1973, 48-39432
Int. Cl. B60g *21/06*
U.S. Cl. 280—124 F **8 Claims**



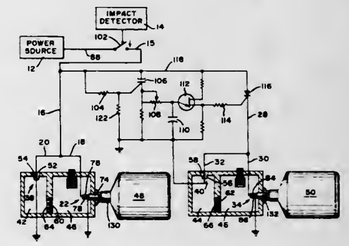
1. A suspension system of wheeled vehicle, comprising; a plurality of retractable and extensible suspension struts each having chamber of variable volume filled with pressurized fluid, said chambers of said plurality of struts being fluidly communicable with a pressurized fluid source to supply pressurized fluid into said chambers for extension of said plurality of struts; a plurality of level regulating means disposed between said chambers of said plurality of struts and said source and fluidly communicable with said source; and a control valve disposed between said plurality of level regulating means and said source to control fluid communication therebetween; said control valve being responsive to the difference between the pressures of the fluids in said chambers of two struts of said plurality of struts to block said fluid communication between said plurality of level regulating means and said source; each of said plurality of level regulating means, when said control valve unblocks said fluid communication between said plurality of level regulating means and said source, being able to control fluid communication between said chamber of the corresponding strut and said source.

3,884,495
WALKER
Michael F. Petock, 420 Littlebrook Rd., Berwyn, Pa. 19312
Filed July 1, 1974, Ser. No. 484,661
Int. Cl. B62b *11/00*
U.S. Cl. 280—87.02 W **14 Claims**



1. An apparatus for assisting a human being in learning to walk, comprising: a flexible seat, a plurality of upwardly extending members for supporting said seat, said plurality of members being supported on wheels for free movement, and a resilient material surrounding at least a part of each of said plurality of members extending at least from a point substantially adjacent said wheels to a point of a height substantially adjacent said flexible seat thereby minimizing the likelihood of damage to objects, in the environment in which the apparatus is used, by said plurality of members.

3,884,497
INFLATION DIFFERENTIAL CONTROL FOR MULTIPLE BAG RESTRAINT SYSTEM
Roy H. Massengill, Brookside, and Ernest D. Buff, Bernardsville, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Oct. 30, 1973, Ser. No. 411,139
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **17 Claims**

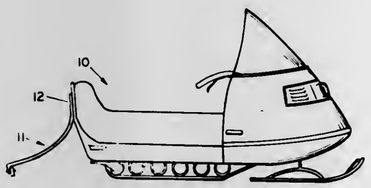


1. Multiple bag inflation apparatus adapted to be disposed in a vehicle subject to impact for inflating a plurality of bags, the time differential between inflation of the bags varying

inversely with the impact velocity of the vehicle, comprising:

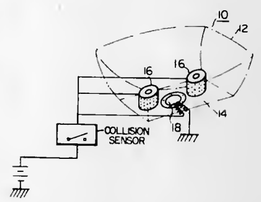
inversely with the impact velocity of the vehicle, comprising:
a. a power source for supplying an electrical current;
b. a first inflatable bag for protecting the legs of an occupant of said vehicle;
c. a second inflatable bag for protecting the torso of the occupant;
d. a first gas source for supplying inflating gas to said first inflatable bag;
e. a second gas source for supplying inflating gas to said second inflatable bag;
f. first gas releasing means connected to said first gas source for permitting inflating gas to flow into said first inflatable bag upon receipt of the electrical current;
g. second gas releasing means connected to said second gas source for permitting inflating gas to flow into said second inflatable bag upon receipt of the electrical current;
h. first circuit means for transmitting the electrical current from said power source to said first gas releasing means during a fixed first time interval;
i. impact detecting means for causing the current to pass to said first circuit means upon impact of the vehicle;
j. second circuit means for transmitting the current from said power source to said second gas releasing means during a second time interval;
k. control means associated with said second circuit means and being responsive to the impact velocity of the vehicle, for varying the second time interval in inverse proportion to the impact velocity.

3,884,498
SNOWMOBILE TRAIL SWEEP
Louis P. Cote, Jr., 13 Horizon Dr., Bedford, N.H. 03102
Filed May 7, 1973, Ser. No. 357,782
Int. Cl. B62m *27/02*
U.S. Cl. 280—150 R **3 Claims**



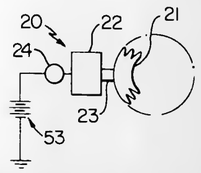
1. A flexible snow sweep for attachment to the rear of snow vehicles consisting of a single flap comprising:
a. a rising portion including means for securing said sweep to the rear of a snow vehicle;
b. a portion curving downwardly and rearwardly;
c. a terminating portion including means for securing a sweep blade;
d. a replaceable sweep blade secured to said terminating portion; and,
e. fastening means for fastening said terminating portion to said rising portion so as to roll up said sweep blade into an inoperative position.

3,884,499
DISCHARGE VALVE FOR VEHICLE SAFETY APPARATUS
Takashi Oka, Tokyo, and Kazuma Sato, Yokosuka, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan
Filed Oct. 16, 1973, Ser. No. 406,841
Claims priority, application Japan, Oct. 18, 1972, 47-104259
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **4 Claims**



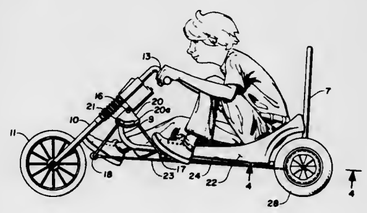
1. A discharge valve for a safety apparatus for a vehicle, the safety apparatus having an inflatable confinement with a hole formed therethrough, a collision sensor operative to generate a collision signal in response to a collision of the vehicle, and a fluid producer operative to produce pressurized fluid to inflate the confinement in response to the collision signal, said discharge valve comprising:
a brittle plate sealing the hole and being strong enough to resist the pressure of the pressurized fluid produced by the fluid producer; and,
a plate breaker comprising a casing mounted adjacent to said brittle plate and an explosive and a projectile disposed inside said casing;
said explosive being ignitable by the collision signal;
said explosive and said projectile being mutually aligned within said casing substantially tangent to said brittle plate so that said explosive, when ignited, propels said projectile against said brittle plate to shatter the same and allow pressurized fluid to escape through the hole from the confinement.

3,884,500
PRESSURE SENSING MEANS AND METHOD OF A PRESSURIZED CONTAINER MEANS AND SYSTEM UTILIZING THE SAME
Joseph P. Wagner, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 322,071, Jan. 8, 1973, Pat. No. 3,818,764.
This application Apr. 17, 1974, Ser. No. 461,515
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **7 Claims**



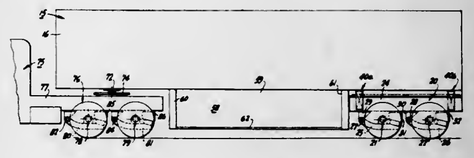
1. In combination, a vehicular air-bag safety means adapted to be inflated upon the detection of vehicular impact, a container means having a pressurized fluid therein for inflating said air-bag safety means when fluidly interconnected thereto, fluid operated sensing means carried by said container means for sensing pressure changes within said container means, and detection means operatively associated with said sensing means to indicate when said sensing means is sensing a loss or a gain of pressure in said container means beyond desired limits thereof, said sensing means and said container means being so constructed and arranged that said sensing means is temperature compensated by being substantially surrounded by a reference pressure of said fluid of said container means so that pressure changes of said fluid in said container means caused by temperature changes thereof are ineffective to cause sensing thereof by said sensing means as said fluid of said sensing means is at the same temperature as said fluid in said container means, said fluid operated sensing means and said container means having been initially charged with their respective pressurized fluids to substantially the same pressure levels.

3,884,501
FOOT-OPERATED JUVENILE VEHICLE
Jack J. Elias, and Joseph C. Tieri, both of Minneapolis, Minn., assignors to Leisure Dynamics, Inc., Minneapolis, Minn.
Filed Jan. 23, 1974, Ser. No. 435,710
Int. Cl. B62m *1/04*
U.S. Cl. 280—251 **4 Claims**



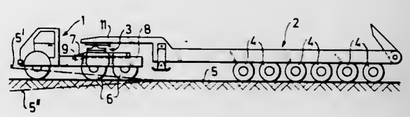
1. A foot-operated vehicle comprising:
a. a wheeled frame,
b. seat means carried by said frame,
c. a pair of rear wheels each rotatably mounted on said frame,
d. a pair of foot levers each pivotally mounted adjacent one of its ends upon said frame ahead of said seat means and constructed and arranged to be moved by the feet of a rider sitting upon said seat means from a rearward to a more forwardly extending position,
e. a pair of foot pedals each carried by the opposite end of one of said levers to facilitate such movement of said foot levers by such a rider,
f. a pair of rotary gear means each connected with one of said rear wheels in driving relation and mounted for rotation therewith upon said frame,
g. a pair of rotary drum means each associated with the gear means of one of said rear wheels and mounted for rotation upon said frame,
h. ratchet means extending in driving relation between each of said drum means and its associated rotary gear means,
i. cable means extending between each of said drum means and one of said foot levers and constructed and arranged to be moved with respect to its associated drum means between extended and retracted drum-encircling relation,
j. resilient means connected to each of said rotary drum means and constantly urging the same to rotate and draw its associated cable means to retracted drum-encircling relation and its associated foot lever to its rearwardmost position,
k. said ratchet means including a plurality of pawls pivotally mounted upon and within said drum means in position to engage said gear means and prevent rotation thereof in more than one direction, and
l. said pawls being of single-piece construction and including a spring arm extending outwardly therefrom and engaging against an interior surface of said drum means to hold said pawl in gear-engaging relation.

3,884,502
SEMITRAILER OR THE LIKE
Ray B. Wagner, 32783 Sumac St., Union City, Calif. 94587
Filed Dec. 17, 1973, Ser. No. 425,538
Int. Cl. B62d *53/06*
U.S. Cl. 280—423 R **11 Claims**



1. A semitrailer or the like, comprising:
a. frame structure defining a chassis equipped with load-carrying apparatus;
b. air suspension wheel assembly removably securable to said frame structure adjacent the rear end of said trailer;
c. fastener mechanism for releasably securing said wheel assembly to said frame structure, said fastener mechanism including a plurality of latch devices having cooperative components respectively provided by said frame structure and wheel assembly each of said latch devices being selectively movable between latch and release conditions, each of said latch devices providing an over-center action in which the device tends to maintain itself selectively in each of the latch and release conditions thereof, and in which each latch device is equipped with a releasable safety to constrain the device in the latch position thereof to prevent inadvertant movement of the device into its release condition;
d. support structure secured to and depending from said frame structure intermediate the ends thereof to support said trailer upon removal of said wheel assembly;
e. means for overpressurizing the air-suspension of said wheel assembly to enable said frame and support structures to be raised to an abnormal elevation for insertion of support blocks under the latter to engage the same and support said trailer upon subsequent reduction of pressure in the air suspension system to underpressurize the same and enable said wheel assembly to be removed from said frame structure upon release of said fastener mechanism;
f. and a king-pin carried by said trailer adjacent the front end portion thereof to enable the same to be releasably interconnected with the fifth-wheel assembly of a tractor.

3,884,503
DEVICE FOR THE INTERCONNECTION OF PULLING VEHICLES AND SEMITRAILER
Sverre Damm, Ant. Tschudisvei 25, Oslo 5, Norway
Filed Jan. 17, 1974, Ser. No. 434,195
Claims priority, application Norway, Jan. 24, 1973, 286/73
Int. Cl. B62d *53/06*
U.S. Cl. 280—440 **7 Claims**

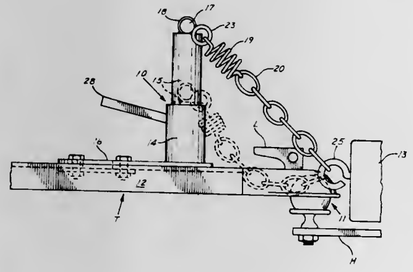


1. An improved hitch for use between a frame section of a semi-trailer and a frame section of a hauling vehicle, the hitch comprising:
a frame pivotally mounted at one end thereof to one of the frame sections;

movable means connected between the frame and the other frame section for coupling the semi-trailer to the hauling vehicle; and

fluid powered means vertically movable and connected between the frame and the first mentioned frame section for maintaining a constant predetermined vertical force between the semi-trailer and the hauling vehicle during traversal of road inclines which results in the exertion, by the wheels of the hauling vehicle, of a relatively constant pressure on a road during such traversals.

3,884,504
SLACK ADJUSTER HITCH FOR MOTOR VEHICLES
Eldo L. Campbell, 540 Fifth St., Bennett, Colo. 80102
Filed Sept. 20, 1973, Ser. No. 398,942
Int. Cl. B60d *1/12*
U.S. Cl. 280—446 R **7 Claims**



1. Stabilizer apparatus adapted for reducing slack between a towed vehicle and a towing vehicle comprising in combination:

a first coupling member extending forwardly from the towed vehicle and a second coupling member extending rearwardly from the towing vehicle for releasable interconnection with said first coupling member,

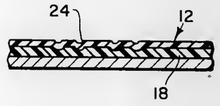
vertically adjustable lift jack means extending vertically from said first coupling member including control means to vertically adjust between a retracted and extended position,

a cross member connected to one end of said lift jack means opposite to its connection to said first coupling member and extending in a direction transversely of the length of said vehicles, said cross member having attaching means at opposite ends thereof; and

a pair of flexible connector means secured at their rearward ends to opposite ends of said cross member and at their forward ends to the towing vehicle in laterally spaced-apart relationship to one another whereby vertical extension of said lift jack means by said control means is operative to remove any slack in said flexible connector means and between said first and second coupling members.

3,884,505
MARKING FILM
James A. Miller, Akron, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio
Filed Apr. 23, 1973, Ser. No. 353,657
Int. Cl. B44f *1/00*
U.S. Cl. 282—27.5 **6 Claims**

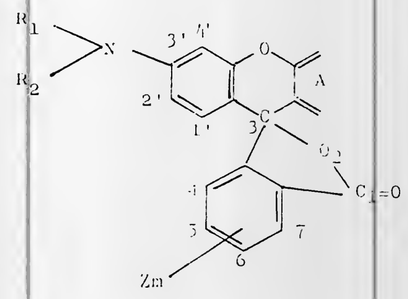
1. A marking film comprising a two-ply flexible laminate layer of high density polyethylene each ply of which is oriented in one direction and where the directions of orientation are not in alignment in the laminated layer, said laminated layer being white and a backing layer on one face of said laminated layer and being of a color other than white whereby when localized forces are applied to said laminated layer it



becomes substantially clear and the backing material color can be seen therethrough.

3,884,506
PRESSURE-SENSITIVE COPYING PAPERS CONTAINING FLUORAN COMPOUNDS
Minoru Ozutsumi; Yoshihide Miyazawa; Katsuichi Motohashi, all of Tokyo; Masatake Kiritani, and Akio Watanabe, both of Fujumiya, all of Japan, assignors to Fuji Photo Film Co., Ltd. and Hodogaya Chemical Co., Ltd., Kanagama, both of Tokyo, Japan
Filed Dec. 26, 1972, Ser. No. 318,048
Claims priority, application Japan, Dec. 24, 1971, 46-104645
Int. Cl. B41c *1/06;* **B41m** *5/00*
U.S. Cl. 282—27.5 **2 Claims**

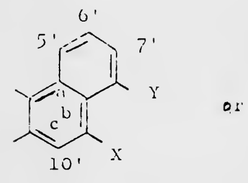
1. A pressure-sensitive copying paper comprising on a support a layer of an encapsulated color former and on the same or a different support a layer of an electron accepting solid, said color former being a fluoran compound represented by the formula;



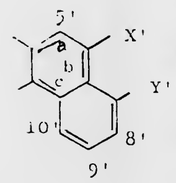
wherein R_1 represents a hydrogen atom or a lower alkyl group containing 1 to 4 carbon atoms; R_2 represents a lower alkyl group containing 1 to 4 carbon atoms; Z represents one or more of a hydrogen atom, chlorine atom or nitro group; *m* represents an integer of from 1 to 4 and



represents a naphthalene ring of the formula;

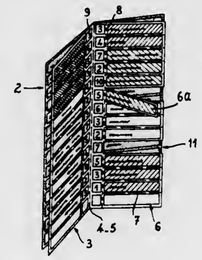


or



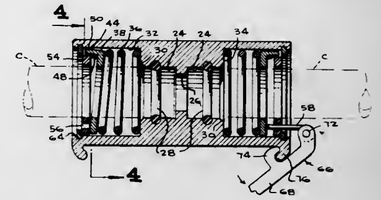
wherein one of X and Y represents a hydrogen atom and the other represents —N=CH—B group; one of X′ and Y′ represents a hydrogen atom and the other represents —N=CH—B group; wherein B represents a lower alkyl group containing 1 to 7 carbon atoms, propenyl, styryl, phenyl or naphthyl group, and where said phenyl or naphthyl group may be substituted with methyl, methoxy, hydroxy, dimethylamino, nitro group or chlorine atom.

3,884,507
MENU
Florence Fumel, Saint-Cyr-Au-Mont-d'Or, Rhone, France, assignor to Anvar Agence Nationale de Valorisation de la Recherche, Courbevoie, Hauts de Seine, France
Filed Dec. 21, 1972, Ser. No. 317,260
Claims priority, application France, Dec. 22, 1971, 71.46909
Int. Cl. B42d *15/02*
U.S. Cl. 283—60 **1 Claim**



1. A menu comprising a pair of mutually attached coextensive sheets including a top sheet overlying a bottom sheet; means subdividing said top sheet into a plurality of rectangular zones in a vertical row, said means facilitating separation of said zones from one another and from the balance of said top sheet by weakening the edges of said zones and permitting tearing along said edges; printed indicia representing items of fare on each of said zones; printed indicia in a column narrower than said row adjacent each of said zones on said top sheet and remaining upon the balance thereof upon removal of the associated zone to indicate a characteristic of the respective item of fare; means subdividing said bottom sheet into at least one row of zones coextensive and registering with respective zones of said top sheet but fixed together against separation whereby a zone of said bottom sheet is exposed upon removal of a zone of said top sheet from the balance thereof; and identical indicia in each of the zones of the bottom sheet to the indicia carried by the respective detachable zone of said top sheet, the indicia remaining on the balance of said top sheet being provided in a row of respective further zones, at least some of the zones of one of the rows being of one color and other zones of said one of said rows being of another color corresponding to a family of items indicated thereby, each of said sheets being folded down the center and said bottom sheet enclosing said top sheet in a closed position of the menu.

3,884,508
PIPE COUPLINGS
Eugene G. Jones, 2637 N. Johnson St., New Orleans, La. 70117
Filed Dec. 10, 1973, Ser. No. 424,347
Int. Cl. F16l *37/08*
U.S. Cl. 285—31 **17 Claims**



1. A releasable connector for pipes, tubes and like conduits comprising:

a. a housing having a central bore sized to receive said conduit,

1. means positioned in said sized central bore for sealing said conduit to effect a watertight seal,

b. an enlarged bore positioned adjacent the mouth of said central bore,

c. a spring sized to fit within said enlarged bore and freely receive said conduit,

d. a locking ring biased against said spring to a canted position for grasping and holding the outer surface of said conduit,

e. canting means on the opposite side of said ring for canting said locking ring to hold said conduit in position,

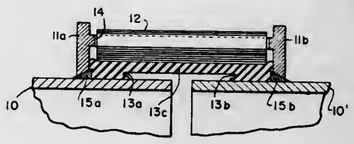
f. abutment means at one end of said enlarged bore to limit movement of said canting means,

g. support means on the exterior of said housing to position a release pin for contact with said locking ring and to permit axial alignment of said locking ring with said conduit for release of said conduit,

h. release pin actuating means pivotally and releasably connectable to said support means, and

i. a release pin pivotally connected to said release pin actuating means to effect release of said conduit by substantially axial movement of said release pin.

3,884,509
PIPE COUPLING DEVICES
Richard O. Marsh, Jr., 701 Standard Life Bldg., Pittsburgh, Pa. 15222
Continuation-in-part of Ser. No. 163,911, July 19, 1971. This application Nov. 16, 1973, Ser. No. 416,583
Int. Cl. F16l *17/00*
U.S. Cl. 285—37 **18 Claims**



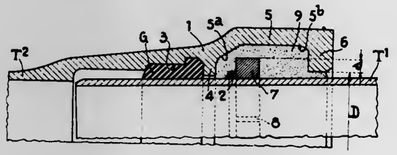
1. A pipe coupling device for coupling two coaxially juxtaposed pipe sections, comprising an annular housing for surrounding the juxtaposed ends of the pipe sections, a pair of coaxially spaced gasket ring seals contained in said housing for respectively surrounding a corresponding one of said pipe sections, and preformed metal spiral band means for exerting a compression force on said gasket ring seals variable according to the number of turns of said band means introduced into said housing in surrounding relation to said seals, and means

associating said band means and said housing whereby rotation of said housing in one direction varies the number of turns of the spiral band means within the housing effective to compress both said ring seals, said pair of coaxially spaced gasket ring seals being joined integrally by a connecting bridge portion and said spiral band means being coextensive with said bridge portion and exerting a compression force on both said ring seals simultaneously.

3,884,510
DEVICE FOR THE TENSILE LOCKING OF PIPE ELEMENTS

Georges Eugène Bram, Pont-a-Mousson, France, assignor to Pont-a-Mousson S. A., Nancy, France

Continuation of Ser. No. 298,749, Oct. 18, 1972, abandoned. This application July 22, 1974, Ser. No. 490,601
Claims priority, application France, Nov. 4, 1971, 71.39488
Int. Cl. F16l *13/10*
U.S. Cl. 285—39 **3 Claims**

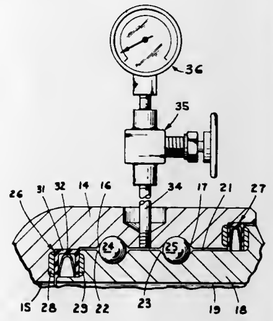


1. A device for axially locking a joint between two pipe elements whose axes may have an angular deviation so as to preclude axial separation of the pipe elements, the device comprising an annular abutment projection integral with an outer surface of an end portion of a first of said pipe elements and spaced from one end thereof, a hollow member of revolution integral with an end portion of a second of said pipe elements and having an inwardly intending annular first shoulder, an inner annular recess and an annular second shoulder, which defines an axially outer end of the inner recess and also defines an entrance to said recess, a ring located axially between the second shoulder and the abutment projection and bearing axially against the abutment projection and defining an annular axial space with the second shoulder said ring having an outer diameter greater than the outer diameter of said abutment projection and the inner diameter of said second shoulder, said inner recess being in radially spaced relation to said outer surface and to the ring and said entrance having a diameter less than the outer diameter of said ring, said inner recess having an axial extent and an inside diameter which are such as to allow up to a given angular deviation between the axes of the two pipe elements without contact of said ring with said inner recess and second shoulder, said ring and said abutment projection being axially spaced from said first and second shoulders, said ring being of a resilient material and has a split which is parallel to the axis of the ring and extends throughout the axial length of the ring for receiving a tool for expanding the ring, the inside diameter of said recess being such as to allow sufficient expansion of the ring disposed inside said recess to permit the ring to pass over the abutment projection when inserting the first pipe element in the hollow member of revolution, and a hardened mass of initially moldable filler material disposed in the whole of said annular space and interposed between said inner recess and the ring and said outer surface, said inner recess, outer surface, first and second shoulders, abutment projection, and ring being in intimate contact with said filler material in the manner of a mold for said filler material, said material having such strength and such resistance to deformation as to be capable of withstanding force normally to be expected to be exerted on said material by said ring and second shoulder in pipe service.

3,884,511
NITROGEN CHARGED SWIVEL JOINT

Dean E. Hermanson, Richardson, Tex., assignor to Youngstown Sheet and Tube Co., Youngstown, Ohio

Filed Aug. 10, 1972, Ser. No. 279,522
Int. Cl. F16l *35/00*
U.S. Cl. 285—93 **5 Claims**

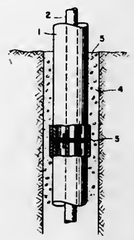


1. A swivel joint comprising,
a body having a flow way therethrough,
bearing race means in the wall of the body providing said flow way,
a nipple having a flow way therethrough,
bearing race means in the outer periphery of said nipple,
bearings in said bearing race means,
seal means straddling said bearing race means,
and an inert gas under positive pressure in the space between said seals,
the seal means exposed to the exterior of said swivel joint preventing loss of said inert gas from between said seal means,
the seal means exposed to the interior of said swivel joint preventing flow in either direction to contain said inert gas and prevent flow of fluid from said flow way into the space between said seals,
said body and nipple in the area between said seal means impervious to prevent flow of fluid to or from said area.

3,884,512
DEEP-WELL DRILLING ARRANGEMENT

Ludwig Wesch, Heidelberg, Germany, assignor to Mancar Trust, Vaduz, Liechtenstein

Continuation of Ser. No. 147,264, May 26, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,557
Int. Cl. F16l *47/00*
U.S. Cl. 285—133 R **19 Claims**

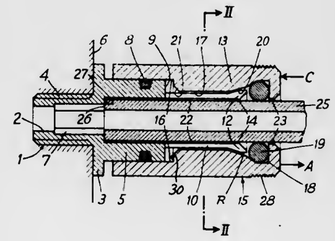


1. A deep-well drilling arrangement, wherein an outer and inner pipe string are coaxially arranged in a bore hole, the improvement comprising,
a first plurality of axially and peripherally fiber glass reinforced pipe sections coaxially positively coupled to each other by first coupling means as to form said outer pipe string,
a second plurality of axially and peripherally fiber glass reinforced pipe section positively coupled to each other by second coupling means forming said inner pipe string, a longitudinal fiber layer extending around the entire periphery of each pipe section and coupling means and connected to the pipe section and coupling means of which each pipe string is constituted, said longitudinal fiber layer acting as axial reinforcements for the respective entire pipe string, the ratio between the axial expansion of each of the pipe strings and the radial expansion thereof being less than 0.95.

3,884,513
COUPLING FOR A PIPE OR TUBE

Willy Gassert, Solothurn, Switzerland, assignor to Societe Legris France, S.A., Ozoir-la-Feffiere, France

Filed Jan. 17, 1974, Ser. No. 434,273
Claims priority, application Switzerland, Jan. 31, 1973, 1350/73
Int. Cl. F16l *21/06*
U.S. Cl. 285—322 **10 Claims**



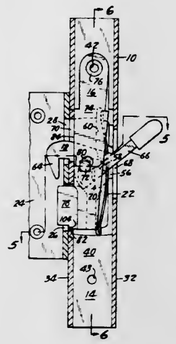
1. A coupling for a pipe or tube comprising a first member having an axial passage therethrough, a second member slidably disposed over the first member and having an axial passage therethrough, circumferentially spaced flexible clamping jaws disposed around the wall of the passage of the second member and secured at one end to said first member and terminating in opposite free ends, said clamping jaws being so disposed that said slidable member presses the free ends thereof radially inwardly when moved to its extreme position over the first member and releases the clamping jaws to permit radial expansion thereof when disposed away from the said extreme position.

3,884,514
DOOR LATCH MECHANISM

George J. Praska, Crystal, Minn., assignor to Wright Products, Inc., St. Paul, Minn.

Filed Nov. 30, 1973, Ser. No. 420,634
Int. Cl. E05c *7/04*
U.S. Cl. 292—11 **10 Claims**

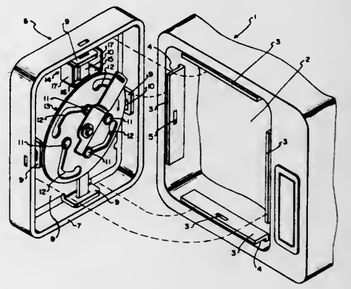
1. In a door latch, the combination comprising:
a housing,
a latch member having a latch hook and a handle, said member being rotatably mounted about a fixed transverse axis for movement of said hook back and forth from an extended position for engaging a keeper to a retracted position within said housing,
a bolt member mounted in said housing for movement back and forth from an extended position within said keeper to a retracted position within said housing,
a cam fixed in relation to said latch member and rotatable therewith, and
a follower carried by said bolt member and engaged by said cam to move said bolt to the retracted and extended position corresponding with that assumed by said latch hook upon movement of said handle.



3,884,515
VAULT DOOR

Ellis Ashkenazi, Rego Park, N.Y., assignor to GET Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 10, 1973, Ser. No. 423,041
Int. Cl. E05c *9/06*
U.S. Cl. 292—34 **4 Claims**



1. An improved door for use with a housing including an opening, a plurality of tongues extending from said housing into said opening forming a groove between said housing and said tongues, said door including a rim around the outer edge thereof, said rim being adapted to fit into said groove, said door further including a plurality of locking bars operatively mounted thereon and selectively engagable with said tongues to lock said door into place on said housing, the improvement comprising an anti-jamming bracket slideably connected to one of said bars, said bracket including an arm extending outward in the direction of the free end of said bar whereby when said door is incorrectly positioned for installation into said opening, said bracket slides down said bar so that upon attempted installation of said door into said opening said bracket strikes the tongue in the area of the opening adjacent thereto and prevents complete installation of said door into said opening.

3,884,516

MOTOR VEHICLE WITH IMPACT-DAMPING BUMPER

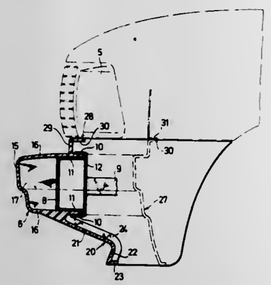
Georg A. Gallion, Wiesbaden; Klaus Weichsler, Florsheim; Horst Hullmann, Wicker, and Horst Munzer, Russelsheim, all of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed May 20, 1974, Ser. No. 471,596

Claims priority, application Germany, June 15, 1973, 2330494

Int. Cl. B60r *19/08*

U.S. Cl. 293—69 6 Claims



1. In a motor vehicle, a bumper comprising a rigid supporting member extending in a direction generally transversely of the vehicle, a resilient member which has a high impact-damping capacity and extends substantially the whole length of the support member, the resilient member forming with the support member a cross-sectional shape approximating to a closed rectangle, means securing the resilient member to the support member along the length thereof, and a spoiler — for increasing the dynamic wheel pressure of the vehicle — integrally connected to the resilient member to form a one-piece construction therewith and extending obliquely downwardly from a location at the under side of the resilient member close to said securing means.

3,884,517

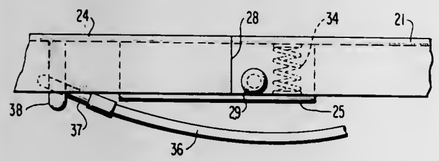
SAFETY BUMPER FOR TRUCKS

Spydell Davidson, P.O. Box 145, Highway 45, Martin, Tenn. 38237

Filed July 25, 1973, Ser. No. 382,357

Int. Cl. B60r *19/04*

U.S. Cl. 293—76 4 Claims



1. In a vehicle having front steering wheels and a front bumper in advance of the front steering wheels including bumper end portions which extend across the wheel treads in spaced relation thereto, the improvement comprising means forming a connection between the bumper end portions and a central body portion of the bumper, said means constructed and arranged to fail mechanically when an end portion of the bumper receives an impact force in excess of a predetermined degree which the bumper end portion can withstand without causing failure of said means, the failure of said means producing separation of the bumper end portion bodily from said central body portion, said means including a shear pin connecting each bumper end portion to the central body portion, and resilient means connected with each bumper end portion whose energy is released on failure of the shear pin to force clean separation of the bumper end portion from said body portion.

3,884,518

CASTING-OFF DEVICE

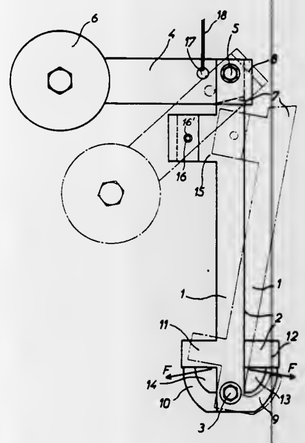
Marcel Lepetit; Christian Charles, both of Brest; Jean Nonnet, Guilers, and Francois LeFoll, Brest, all of France, assignors to Le Nickel and Centre National pour l'Exploitation des Oceans, both of Paris, France

Filed July 17, 1973, Ser. No. 379,939

Claims priority, application France, July 19, 1972, 72.26060

Int. Cl. B66c *1/38*

U.S. Cl. 294—83 R 5 Claims



1. A casting-off device of the kind comprising two arms which are pivoted together to be displaceable between a closed position in which they are disposed substantially one behind the other and an open position, and which arms are so shaped as to form, near their pivot point, at least one casting-off hook or eye which is open when said arms are in the open position and closed when these arms are in the closed position, characterized in that:

a transverse member which is effectively weighted at its one end is pivotally mounted at a point near its other end on one of said arms, the transverse member being displaceable between a locking position in which it is at approximately right-angles to said arms and a release position in which it is inclined from said pivot point; a stop is provided at said other end of said transverse member; a retaining element to coact with said stop is provided at the end of the other of said arms, said retaining element engaging said stop when the transverse member is in the locking position and releasing said stop when the transverse member is in the release position; means for connecting at least one float to said transverse member are located on the transverse member between its weighted end and said pivot point; the pivot point of said arms is disposed near that end of each of said arms that is remote from said transverse member, the arms being so formed as to constitute, near the pivot point, two symmetrical casting-off hooks which are either completely closed or open at the side, depending upon whether the arms are in the closed or open position; and, for the purpose of locking said pivoted arms in the closed position by means of a water-soluble peg, holes are formed in the arms to be in register when the arms are in the closed position.

3,884,519

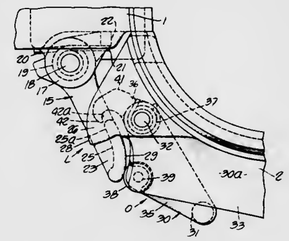
SAFETY LATCH FOR WELL PIPE ELEVATORS

Edward Joseph McFadden, Houston, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.

Filed Aug. 30, 1973, Ser. No. 393,085

Int. Cl. E21b *19/06*; B66c *1/10*

U.S. Cl. 294—90 8 Claims



1. A well pipe elevator comprising: an arcuate body having means engageable by elevator links for supporting the elevator in the hoist apparatus of a derrick, a side door pivotally mounted on said body and forming a circular structure for surrounding a well pipe upon closure of the door, latch means for releasably holding said door closed, said latch means including a latch arm pivoted on said body, spring means biasing said latch arm in a latching direction, and latch arm engaging means on said door, latch operating means on said door for actuating said latch arm to a released position, said latch operating means including a unitary lever pivotally mounted on said door, an operating handle on said lever at one side of the pivotal mounting for said lever, latch locking means on said lever at the other side of the pivotal mounting for said lever, said latch locking means including a hook-like end section on said lever and providing a locking surface disposed within the curve of said hook-like end section adjacent to the free end thereof, said latch arm having a portion adapted to be opposed by said locking surface, and spring means biasing said lever to a position at which said locking surface is opposed to said portion of said latch arm.

3,884,520

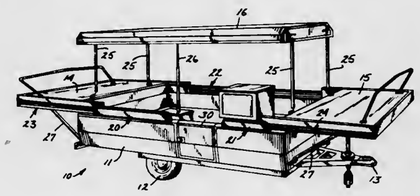
DRIVE MECHANISM FOR COLLAPSIBLE CAMPING VEHICLES

Wilbur E. Peterson, Harmony, Minn., assignor to Harmony Enterprises, Inc., Harmony, Minn.

Filed Sept. 25, 1973, Ser. No. 400,624

Int. Cl. B60p *3/34*

U.S. Cl. 296—27 4 Claims



1. A drive mechanism for erecting the roof of a collapsible structure between collapsed and service positions, comprising:

a. a plurality of elongated rails constructed for mounting in a generally horizontal orientation on a base;

b. oppositely extendable members mated with said rails for allowing limited relative horizontal movement between said rails and said extendable members while preventing relative vertical movement;

c. a roof member;

d. a plurality of elongated rods pivotally connected to said roof member and said oppositely extendable members so as to move said roof member into an elevated service position upon outward movement of said oppositely extendable members;

e. a common drive pinion rotatably positioned within one of said rails and engaging racks on said oppositely extendable members for causing simultaneous movement thereof in opposite directions; and

f. a pair of shafts mounted between said elongated rails generally perpendicular thereto, each of said shafts having a pinion at each end drivably engaging racks attached to said oppositely extendable members, whereby the motion applied by said common drive pinion to said oppositely extendable members along one rail is transferred by said rods to the oppositely extendable members along the other rails.

3,884,521

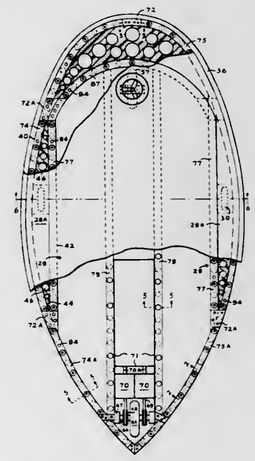
LIGHT-WEIGHT, DURABLE, LAND-TRAVERSING VEHICLE

Alvin Edward Moore, Manini Way, Diamondhead, Rt. 1, Bay, St. Louis, Miss. 39520

Filed Sept. 24, 1973, Ser. No. 399,951

Int. Cl. B62d *21/00*, *29/04*

U.S. Cl. 296—31 P 26 Claims



1. A vehicle adapted to traverse land, including:

floor structure, having load-containing space above it;

sidewall framework, connected to said floor structure, comprising: a plurality of sidewall beams of vehicle-strength-providing material, including pairs of spaced-apart, oppositely-positioned beams, each pair having spaced-apart, opposite surfaces of the two beams and opposite holes that extend into said material from said surfaces, each of said holes at one of the surfaces of the two beams opening toward and aligned with a similar, opposite hole in the other of said two beams;

hollow members of vehicle-strength-providing material, connecting and bracing said opposite beams, each of said hollow members having ends extending into and braced in an aligned pair of said opposite holes; and securing means, holding said ends in said holes and said hollow membes in vehicle-strength-providing assembled relation;

lower land-traversing structure, fixed to said floor structure, comprising: a plurality of lower-structure beams of vehicle-strength-providing material, including pairs of opposite, spaced-apart, lower-structure beams having a plurality of opposite holes that extend into said material

from opposite-beam surfaces of each pair of said lower-

a hollow storage compartment defined within said seat;

base beam means and a central hight portion joining said

from opposite-beam surfaces of each pair of said lower-structure beams, each of said last-named opposite holes at one of said opposite-beam surfaces opening toward and aligned with a hole in the other of said opposite-beam surfaces; lower-structure hollow members of vehicle-strength-providing material, connecting and bracing said opposite lower-structure beams, each of said lower-structure hollow members having ends extending into an aligned pair of said last-named opposite holes; securing means holding said ends of the lower-structure hollow members in said last-named holes and in vehicle-strength-providing assembled relation; and means for facilitating overland travel, supported by some of said beams;

waterproof, vehicle-strength-providing, exterior skin means, connected to outer portions of said sidewall framework and said lower structure; and

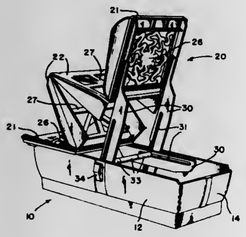
vehicle-strength-providing, interior skin means, connected to inner portions of said sidewall framework.

3,884,522

CONVERTIBLE SLEEPER SEATS FOR PLEASURE BOATS

Juichi Arima, and Delbert L. Brink, both of Seattle, Wash., assignors to Tempress, Inc., Seattle, Wash.

Filed Oct. 29, 1973, Ser. No. 410,347
Int. Cl. B60n *1/10*
U.S. Cl. 297—63 **8 Claims**



1. A seat assembly which is convertible to a bed, comprising:

a seat unit having a pair of seat backs hinged together at their upper edges and a pair of seat bottoms, each hinged at its rear edge to the respective lower edges of the seat backs,

a base having a pair of laterally spaced, upended, parallel, opposed sidewalls and end walls terminating in a common, planar upper edge, the seat unit slidably supported on the upper edge of the laterally spaced sidewalls for movement between a raised position wherein the seat units form back-to-back seats and a lowered position wherein the seat units flatten out to form a bed supported on the upper edge of the laterally spaced walls,

securing means slidably securing the seat unit to the base, and

locking means frictionally clamping the sidewalls of the base to the securing means to retain the seat unit in a predetermined position.

3,884,523

PROTECTIVE COVERING FOR A VEHICLE

Brian S. Allen, P.O. Box 611, Ironton, Ohio 45638

Filed Jan. 21, 1974, Ser. No. 434,971
Int. Cl. B60j *7/20*
U.S. Cl. 296—136 **3 Claims**

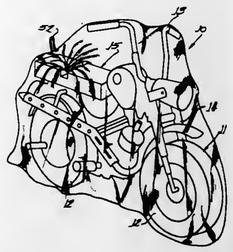
1. A protective covering for a motorcycle vehicle comprising:

a seat adapted to be mounted in the conventional position on the motorcycle;

a hollow storage compartment defined within said seat;

means providing access to said storage compartment for selectively opening and closing the same, said seat being defined by an elongated hollow, box-like rectangular configuration having a top surface, a bottom surface, opposed sidewall and endwall surfaces, said surfaces defining the storage compartment, said means providing access to said storage compartment and comprising a slot extending transversely through said top surface;

a flexible sheet member having a portion of its peripheral edge permanently affixed to said seat inwardly of said compartment, said sheet member adapted to be partially withdrawn from said compartment in a manner to completely cover said motorcycle to protect the motorcycle, said sheet being readily collapsible and adapted to be folded into said storage compartment for storage therein



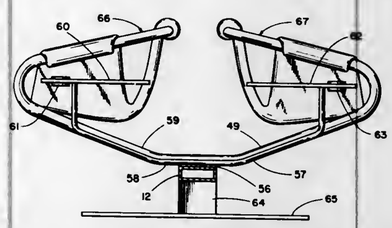
between use, the peripheral edges of said sheet material being permanently affixed to said seat inwardly of said storage compartment about said access slot, said access slot being recessed inwardly of said seat top surface with the means closing said access slot being in the form of an elongated closure member affixed to the opposite sides of said slot and operable in a manner to open and close said slot and wherein said means affixed to said sheet of material for assistance in deploying the same comprises a handle-shaped pull tab affixed to said sheet of material and adapted to be disposed inwardly of said storage compartment once said cover is folded thereinto whereby upon opening said closure member the user may readily grasp the pull tab to withdraw said sheet of material through said slot in a manner to deploy the same over said motorcycle.

3,884,524

CANTILEVERED SEATING MEANS

Gunter F. Eberle, Dallas, Tex., assignor to The Vecta Group, Inc., Dallas, Tex.

Filed Jan. 28, 1974, Ser. No. 437,527
Int. Cl.[2] A47C *1/12*
U.S. Cl. 297—160 **5 Claims**



1. A forwardly cantilevered seating system which comprises a substantially horizontal base beam means;

a plurality of transverse floor runners below said base beam means and connected thereto;

a seat frame on said base beam means and comprising a pair of spaced legs extending upwardly and away from said base beam means and a central bight portion joining said upwardly extending legs, defining seat back and arm supports, and projecting rearwardly from said legs;

attachment means securing said legs to said base beam means; and

seating web means suspended from said central bight portion of said seat frame and together with said seat frame forming a seat;

said floor runners extending transversely from the longitudinal axis of said base beam means for a distance sufficient to prevent tilting of the seating system when the seat is sat in,

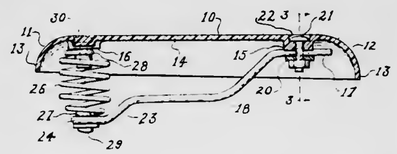
said seating web means being of a generally T-shaped configuration, and wherein extremities of said seating web means are removably secured to said seat frame by means of snap fasteners having mating parts and are wrapped around said seat frame at least about one-and-one-half turns so that the mating parts of said snap fasteners are urged against each other when a weight is carried by said seating web means.

3,884,525

BICYCLE SEAT STRUCTURE

Robert H. Mesinger, Lakecrest Dr., Aunt Hack Ridge, Danbury, Conn.

Filed Nov. 10, 1972, Ser. No. 305,372
Int. Cl. B62j *1/02*
U.S. Cl. 297—212 **11 Claims**



1. A bicycle seat structure comprising:

a longitudinally extending base plate having a wide rearward portion and a narrow forward portion, the distance between the longitudinal ends of said portions defining an unstressed for and aft span;

a longitudinally extending undercarriage having a rear part and a front part;

rear means connecting said rearward portion to said rear part; and

front means connecting said forward portion to said front part;

one of said means enabling free relative longitudinal movement of the base plate and the undercarriage;

said base plate being substantially unstretchable and resiliently deformable to enable limited desired resilient flexing;

one of said means operatively connecting said base plate and undercarriage in a manner enabling free shortening and lengthening of said fore and aft span under loading and unloading forces, respectively, on the base plate produced by the rider of the bicycle, the base plate returning to its full length unstressed fore and aft span when unloaded when the rider dismounts.

3,884,526

UNIT FOR CONVERTING FLAT-BED TRUCKS TO SIDE-UMP TRUCKS

Phillip J. Sweet; Buck C. Hamlet, and David L. Sweet, all of Fresno, Calif., assignors to American Carrier Equipment, Fresno, Calif.

Filed July 2, 1973, Ser. No. 375,765
Int. Cl. B60p *1/16*
U.S. Cl. 298—1 A **1 Claim**

1. A side-dump unit for converting a flat-bed truck to a side-dump truck, comprising:

A. a rectangular frame of substantially planar configuration having a length and a width substantially equal to the length and the width of a flat-bed mounted on the chassis of a selected flat-bed truck and adapted to be received upon the uppermost planar surface of the flat-bed, including,

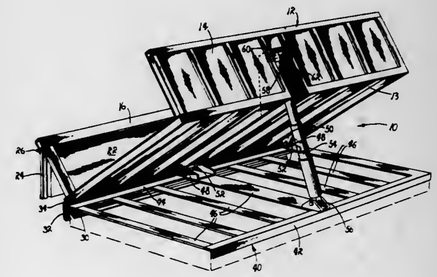
1. a pair of stringers disposed in mutual parallelism having a length substantially equal to the length of said flat-bed and spaced apart a distance substantially equal to the width thereof, and

2. a plurality of transverse members extended in mutual parallelism between said stringers and connected thereto;

B. a side-dump box having a length and a width substantially equal to the length and the width of said frame seated on said frame in a superimposed relationship therewith, including,

1. a pair of side walls having a length substantially equal to the length of said frame and disposed in planes arranged in mutual parallelism and spaced apart a distance substantially equal to the width of said frame, and

2. a pair of transversely oriented end walls extended in mutual parallelism between said side walls and connected thereto;



C. means defining in one side wall of said pair a normally closed, discharge opening for said side-dump box;

D. means including an enclosure member having a substantially U-shaped cross-sectional configuration defining within the other side wall of said pair of side walls a recess extended inwardly and opened outwardly with respect to said side-dump box;

E. hinge means adjacently related to said one side wall and affixed to said frame in juxtaposition with one stringer of said pair for pivotally connecting said side-dump box to said frame for oscillation about an axis extended in substantially juxtaposed parallelism with said one stringer;

F. means including a pressure-responsive ram positioned above the plane of said frame for imparting oscillatory motion to said side-dump box including a base end disposed adjacent to said frame and a distal end disposed within said recess; and

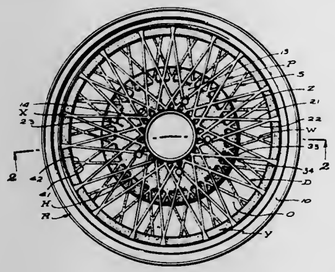
G. mounting means for pivotally interconnecting said ram between said frame and said side-dump box including a bracket pivotally connected to the base end of said ram and affixed to the frame above the plane thereof in juxtaposition with the other stringer of said pair, and coupling means disposed within said recess for pivotally connecting the distal end of said ram to said enclosure member.

3,884,527

CAST SPOKE WHEEL

Henry James Clary, 17825 S. Santa Fe Ave., Compton, Calif. 90221

Filed Feb. 4, 1974, Ser. No. 439,577
Int. Cl. B60b *1/08*
U.S. Cl. 301—65 **10 Claims**



1. A unitary cast metal wheel comprising a central, axially extending cylindrical sleeve with axially disposed front and rear ends and a substantially flat flange with a cylindrical outer edge extending radially from the sleeve and defining a hub portion of the wheel, an annular rim portion with a radially inwardly disposed inner edge concentric with and surrounding the hub portion in radial spaced relationship and an annular, radially extending intermediate portion between the hub and rim portions, said intermediate portion comprising a plurality of circumferentially spaced elongate primary bars extending between the hub and rim portions on chord axes and defining an annular series of air conducting openings, said primary bars being substantially rectangular in cross-section with thin, substantially axially disposed front and rear edges and flat sides, said primary bars being of limited cross-sectional extent and affording limited structural stability and strength between the hub and rim portions and defining substantially axially extending stress rise corners where they join the hub and rim portions, a plurality of elongate, circumferentially spaced secondary bars extending between the hub and rim portions and arranged to extend circumferentially and radially across said openings on chord axes angularly related to the axes of adjacent primary bars and substantially intersecting at least one of the stress rise corners established by related primary bars to gusset said corners and to conduct resolved forces at said corners substantially longitudinally of said secondary bars between the hub and rim portions, said secondary bars being substantially rectangular in cross-section with thin, substantially axially disposed front and rear edges and flat sides, the cross-sectional extent of the secondary bars being limited to impart sufficient added strength to the wheel whereby the cumulative strength afforded by the primary and secondary bars affords desired strength to the intermediate portion and between the hub and rim portions of the wheel.

3,884,528

UNLOADING APPARATUS

Roland E. Shaddock, Streator, Ill., assignor to Myers-Sherman Company, Streator, Ill.

Filed Mar. 8, 1973, Ser. No. 339,060
Int. Cl. B65g *53/54*
U.S. Cl. 302—58 **12 Claims**

1. A pneumatic unloading apparatus for granular material comprising:

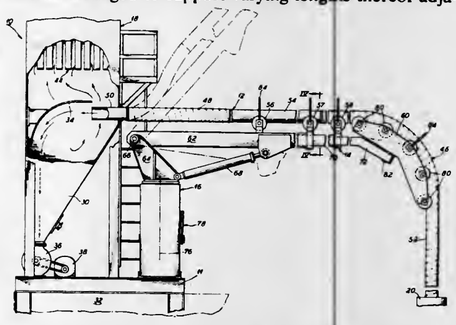
a material receiving compartment having a common air and material inlet and having separate air and material outlets;

a flexible hose means having a first end connected to said common air and material inlet and having a second end in operable communication with a lading of granular material;

means for inducing a suitable air flow into said flexible hose means second end through said hose and into said compartment, whereby granular material is drawn into the hose and conveyed to the material receiving compartment by the air flow;

separating means within said compartment to separate the granular material from the air flow;

a telescoping extensible support means for said flexible hose means arranged to support varying lengths thereof adja-



cent said first end in a generally horizontal position and with varying lengths of said hose means adjacent to said second end depending vertically downward from a free end of said extensible support means, about a supported bend, and terminating in said second end; said hose means supported atop said support means; and

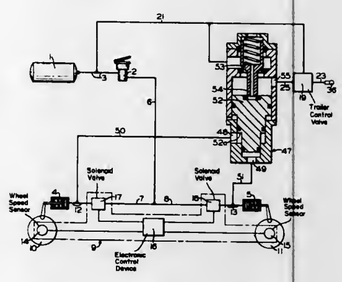
means to extend and retract said extensible support means to position said hose second end in a desired conveying position varying lengths of the flexible hose being supported and said bend changing its location along said flexible hose means as a function of the extension and retraction of the support means.

3,884,529

TRAILER BRAKE CYLINDER PRESSURE VARIED IN ACCORDANCE WITH VARIATIONS OF TRACTOR BRAKE CYLINDER PRESSURE IN RESPONSE TO TRACTOR WHEEL SLIP

Wilhelm Schlamann, Altwarmbuchen, and Herbert Merz, Hannover, both of Germany, assignors to Westinghouse Bremsen-und Apparatebau GmbH, Hannover, Germany

Filed July 30, 1973, Ser. No. 383,995
Claims priority, application Germany, Aug. 24, 1972, 2241704
Int. Cl. B60t *13/10, 13/66*
U.S. Cl. 303—7 **3 Claims**



1. A fluid pressure brake control apparatus for a wheeled tractor and trailer including at least one brake cylinder for the front wheels of the tractor, at least one brake cylinder for the rear wheels of the tractor and at least one brake cylinder for the trailer, said apparatus comprising:

a. a manually operable means mounted on the tractor for controlling the supply and release of fluid under pressure to and from the brake cylinders on the tractor, wherein the improvement comprises:

b. a trailer control valve device operable to control the pressure in said at least one brake cylinder on the trailer,

c. valve means enabling operation of said trailer control valve device in accordance with the sum of the pressure in said at least one tractor front wheel brake cylinder and said at least one tractor rear wheel brake cylinder while said pressures act in the same direction on said valve means,

d. electro-responsive brake cylinder pressure controlling means for each of said tractor brake cylinders, each operable after a brake application has been effected to reduce the degree of pressure in the corresponding tractor brake cylinder, the reduction of pressure in at least one of said tractor brake cylinders being effective to cause said valve means to effect operation of said trailer control valve device to correspondingly reduce the degree of pressure in said at least one trailer brake cylinder, and

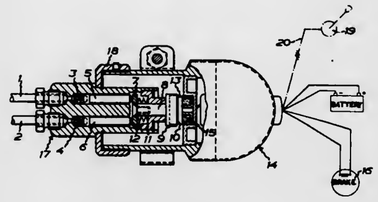
e. electrical means carried by each wheel of the tractor and operatively responsive to the rate of change of rotational speed of the respective tractor wheel to effect operation of the corresponding electro-responsive brake cylinder pressure controlling means whereby the pressure in said at least one trailer brake cylinder is substantially simultaneously controlled in accordance with the sum of the pressures in said tractor brake cylinders.

3,884,530

APPARATUS FOR REGULATING THE CONTROL CURRENT TO THE ELECTRIC BRAKE SYSTEM OF A TRAILER

Rune Nilsson, Lindesberg, Sweden, assignor to AB Linde International, Lindesberg, Sweden

Filed Oct. 10, 1973, Ser. No. 405,181
Claims priority, application Sweden, Oct. 12, 1972, 13142/72
Int. Cl. B60t *7/20*
U.S. Cl. 303—7 **3 Claims**



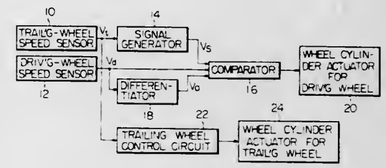
1. An apparatus for regulating the control current from the brake system of a tractor to the electric brake system of a trailer, said apparatus comprising a brake regulator connectible to the brake system of the tractor and having at least one piston, membrane, or similar device operable by the braking medium of the tractor brake system, said piston, membrane, or similar device, when displaced by the braking medium against the action of a spring, being adapted to produce minute incremental variations of the current in an electronic circuit converted into continuous variations of the voltage in the control circuit of the electric brake system of the trailer, so that a substantially continuous voltage is emitted from the control circuit in proportion to the braking of the tractor, wherein the piston, membrane, or similar device is associated with a movable portion which is adapted to actuate, across an air gap, a member which is fixedly attached to the electronic circuit, the variation of the width of said air gap varying the inductance in said electronic circuit.

3,884,531

DEVICE FOR CONTROLLING THE BRAKING FLUID PRESSURE IN THE HYDRAULIC BRAKE SYSTEM OF MOTOR VEHICLES

Yasuhisa Takeuchi, and Haruhiko Iizuka, both of Yokosuka, Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Nov. 15, 1973, Ser. No. 416,065
Claims priority, application Japan, Nov. 20, 1972, 47-115671
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 BE **1 Claim**



1. A device for controlling the brake pressure on a road wheel of a motor vehicle, comprising first sensing means for producing an output voltage substantially proportional to the circumferential speed of rotation of a trailing wheel of the vehicle, second sensing means for producing an output voltage substantially proportional to the circumferential speed of rotation of a driving wheel of the vehicle, a signal generator for producing from an output voltage received from said first sensing means at an input terminal thereof, a signal voltage which is (1) equal to the output voltage of the first sensing means when the output voltage of the first sensing means is decreasing at a rate lower than a predetermined value, (2) decreased at a constant rate when the output voltage from said first sensing means is decreasing at a rate higher than said predetermined value or the output voltage of the first sensing means is increasing and lower than the signal voltage from the signal generator, and (3) increased substantially at the same rate as the output voltage from the first sensing means when the output voltage of the first sensing means is higher than the signal voltage from the signal generator, a differentiator for differentiating with respect to time the output voltage received from the second sensing means, at input terminal thereof, and producing a signal voltage which is representative of the rate of acceleration of the driving wheel, a comparator receiving the signal voltages from said signal generator and said differentiator and the output voltage from said second sensing means at first, second and third input terminals thereof, for producing a reference voltage which is equal to the difference between a predetermined proportion of said signal voltage from the signal generator and a predetermined constant voltage and for comparing the reference voltage with the sum of the output voltage from the second sensing means and a voltage proportional to the signal voltage from the differentiator and producing a first control signal, at an output terminal thereof, when the reference voltage is higher than said sum and a second control signal at the output terminal thereof, when the reference voltage is lower than said sum, and an actuator for the wheel cylinder of the driving wheel, the actuator being operative to cause the wheel cylinder to reduce the braking pressure on the driving wheel when supplied with said first control signal and to increase the braking pressure on the driving wheel when supplied with said second control signal, and wherein said signal generator comprises an operational amplifier, having its input terminal connected through a resistor to said input terminal of said signal generator, a converter having first to fourth diodes, the first and second diodes have respective cathode terminals which are

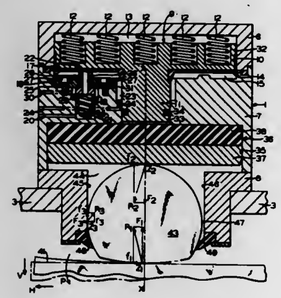
connected to each other while the third and fourth diodes have respective anode terminals which are connected to each other, the anode terminal of the first diode and the cathode terminal of the third diode being connected to the output terminal of said operational amplifier, the cathode terminals of the first and second diodes, respectively, being connected across a resistor to a terminal of a source of negative constant voltage $-e_1$, the anode terminals of the third and fourth diodes, respectively, being connected through a resistor to a terminal of a source of positive constant voltage e_2, and the anode terminal of the second diode and the cathode terminal of the fourth diode being connected to an output terminal of said converter, the output terminal of said converter being connected to an input terminal of an integrator, said integrator consisting of an operational amplifier and a capacitor which are connected in parallel to the output terminal of said converter through a resistor, the output terminal of the operational amplifier and one electrode of said capacitor being connected in parallel to said input terminal of said operational amplifier through a resistor, said output terminal of said operational amplifier being connected to said first input terminal of said comparator, and wherein said differentiator comprises a capacitor which has one electrode connected across a resistor to said input terminal of said differentiator, the other electrode of said capacitor being serially connected to first and second operational amplifiers, respectively, between which is connected a resistor, the first and second operational amplifiers being shunted by first and second resistors respectively, the output terminal of said second operational amplifier being connected to said second input terminal of said comparator, and wherein said comparator comprises a first operational amplifier which has an input terminal connected across third, fourth and fifth resistors to said first, second and third input terminals, respectively, of the comparator, said first operational amplifier being shunted by a resistor and having an output terminal connected across a resistor to an input terminal of a second operational amplifier, and the output terminal of said operational amplifier is connected to said output terminal of said comparator.

3,884,532

VEHICLE LOAD-WEIGHING APPARATUS AND VALVE MEANS OPERABLE RESPONSIVELY THERETO

Roger Deschênes, Montfermeil, France, assignor to WABCO Westinghouse GmbH, Freinville-Sevran, France

Filed July 10, 1974, Ser. No. 487,128
Int. Cl. B60t 8/22
U.S. Cl. 303—22 R **12 Claims**



1. Vehicle load responsive apparatus for use with a leaf type suspension spring supporting the vehicle frame, said apparatus comprising:

a. a leaf type spring supporting the vehicle load and deflectible to a degree corresponding to vehicle load;

b. a regulating valve device fixed on the vehicle frame and including valve means for regulating the pressure of an operating control fluid according to vehicle load;

c. operating means subject to a biasing force of predetermined magnitude acting thereon in a first direction and to a variable force exerted thereon by said leaf spring in a second direction opposite to said first direction and of a magnitude determined by the prevailing vehicle load, said operating means being responsive to a differential force between said biasing force and said variable force for effecting operation of said valve means to establish the pressure of said control fluid at a degree corresponding to said differential force; and

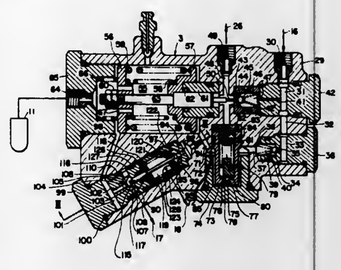
d. a self-centering member accommodated in a guide recess formed in said valve device, interposed between said spring and said operating means, and having a first convex surface in contact with the operating means and a second convex surface in contact with the spring at substantially diametrally opposite contact zones for transmitting said variable force from said spring to said operating means in a direction substantially normal to said spring and said operating means at said contact zones.

3,884,533

FLUID PRESSURE REGULATOR VALVE AND SAFETY VALVE ASSEMBLY

Toshihiro Abe, Kawagoe, and Kiyoshi Tokaiwa, Higashi-Matsuyama, both of Japan, assignors to Jidosha Kiki Kabushiki Kaisha, Tokyo, Japan

Filed July 11, 1973, Ser. No. 378,103
Claims priority, application Japan, July 11, 1972, 47-069481
Int. Cl. B60t 17/22
U.S. Cl. 303—84 A **4 Claims**



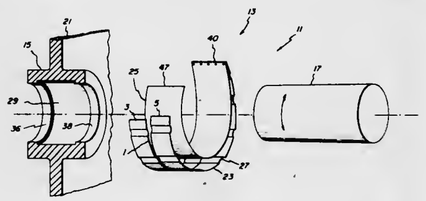
1. A fluid pressure regulating valve assembly for a dual, full pressure hydraulic brake system including independent brake fluid conduits branching from a common supply passage connected to a source of pressurized fluid, said assembly including a valve body, said supply passage and said two brake fluid conduits being coupled to said body, fluid accumulators coupled to said two fluid conduits downstream of said valve body, said valve body including fluid passages (**91, 92** and **98, 102**), for dividing the flow of fluid from said supply passage into two branches feeding said two conduits respectively, said valve body further including a distributing cylinder (**90**) including a wall (**109**) forming two separate pressure chambers (**123, 125**) on respective sides thereof, means connecting said fluid passages (**91, 92**) to one of said chambers and said fluid passages (**98, 102**) to said other chamber, and means fluidly coupling said chambers to said independent brake fluid conduits, a piston rod (**115**) slidably mounted within said partition (**109**), a balance spring mounted within said distributing cylinder and acting on said piston rod to maintain said piston rod in axial neutral position with the opposite ends of the piston rod being in respective pressure chambers (**123,125**), check valves (**94,104**) fluidly connecting said passages (92,102) respectively with pressure chambers (**123** and **125**) for normally permitting fluid flow from said passages into said chambers, and the ends of said piston rods being face to face with said check valves such that shifting of said piston rod in response to loss of pressure within one of said chambers causes said piston rod to maintain the check valve within that chamber closed to prevent loss of pressurized fluid to the brake fluid conduit and the accumulator connected thereto.

3,884,534

INCREASED DAMPING HYDRODYNAMIC FOIL BEARING

Leo W. Winn, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Apr. 9, 1974, Ser. No. 459,018
Int. Cl. F16c 17/16
U.S. Cl. 308—9 **7 Claims**



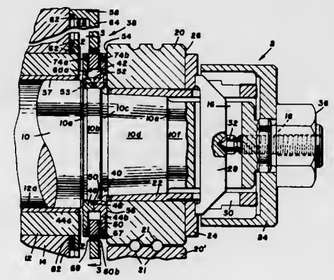
1. A resilient hydrodynamic foil bearing of the type wherein an inner bearing element is resiliently supported by at least one outer bearing element in a cavity between two relatively movable surfaces so that upon relative movement of said surfaces a hydrodynamic load carrying film is formed by deflection of said inner and outer bearing elements wherein the improvement comprises at least one generally longitudinal discontinuity in at least one of said outer bearing elements dividing it into two or more sections which coact with each other upon relative motion therebetween.

3,884,535

SEAL

Charles A. Rich, Jr., Southboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Apr. 29, 1974, Ser. No. 464,838
Int. Cl. F16c 1/24, 33/72
U.S. Cl. 308—36.1 **10 Claims**



1. Apparatus for providing a seal between a housing and a rotatable shaft, comprising: a circular first sealing means supported on said shaft for rotation therewith, said first sealing means having a radially outwardly facing peripheral groove; a second sealing means supported by said housing, said second sealing means having an annular portion surrounding said first sealing means and protruding radially inwardly into said groove, with the surfaces of said protruding portion being spaced relative to the adjacent surfaces of said groove; and circular third sealing means supported by and rotatable with said first sealing means, said third sealing means in frictional contact with the said protruding portion of said second sealing means.

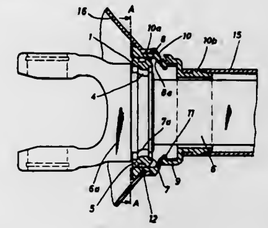
10. For use in combination with a roll shaft journalled for rotation in a roll housing, with one end of the roll shaft protruding from the housing to a axially receive a roll removably mounted thereon, and with roll parting adjustment means associated with the roll housing for adjusting the roll shaft, apparatus for providing a seal between the roll shaft and the roll housing, comprising: a circular flinger assembly mounted on the roll shaft for rotation therewith, said flinger assembly having an exterior groove formed by a base in sealing engagement with the roll shaft and opposed axially spaced flanges extending radially outwardly from said base; a wear ring having axially spaced inner and outer faces and radially spaced inner and outer edges, intermediate means in sealing engagement with the roll housing and the outer edge of said wear ring for supporting said wear ring in an operative position in said groove, the wear ring when thus supported having its inner edge spaced radially from said base and its inner and outer faces spaced axially from said flanges; and seal rings supported by and protruding from said flanges into engagement with the inner and outer faces of said wear ring.

3,884,536

PROTECTIVE GUARD DEVICE FOR A TRANSMISSION SHAFT

Theo Buthe, Lohmar, Rhine, Germany, assignor to Jean Walterscheid GmbH, Lohmar/Rhine, Germany

Filed June 11, 1974, Ser. No. 478,314
Claims priority, application Germany, May 30, 1973, 2327482
Int. Cl. F16c 17/10
U.S. Cl. 308—37 **8 Claims**



1. A protective guard device for a transmission shaft assembly comprising a transmission shaft having yoke arms on the ends thereof and comprising tubular guard means enclosing the transmission shaft, there being annular grooves in said transmission shaft assembly at the junctures of the transmission shaft and the yoke arms, a radially expandible bearing member for each groove freely slidable over the portion of the transmission shaft assembly having the annular grooves therein when in the expanded position and when contracted seated into the respective groove, conical guard members at the ends of said tubular guard means extending over the respective yoke arms, connectors interconnecting said conical guard members to the respective ends of said tubular guard means and each having a locking lug engageable with said tubular means, said connectors each having a cylindrical surface therein defining a fitting step having a diameter approximately equal to the outer diameter of the bearing member when in the expanded position.

3,884,537

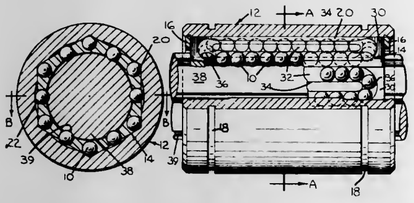
BALL BEARING ASSEMBLY

Albert R. McCloskey, Fairfield, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 15, 1973, Ser. No. 341,696
Int. Cl. F16c 17/00
U.S. Cl. 308—6 C **2 Claims**

1. An anti-friction ball bearing assembly in combination with a shaft comprising an outer sleeve and an inner sleeve

concentrically fitting within said outer sleeve, said inner sleeve having a central opening for the passage of said shaft therethrough, balls, the inner sleeve having a number of tracks defining paths for the circulation of said balls between said sleeves and said shaft during relative movement between said shaft and said bearing assembly, the outer surface of the inner sleeve being polyhedronal in shape, the inner surface of the outer sleeve being provided with a number of guideways, the intersections of the plane portions defining the outer surface of the inner sleeve registering with said guideways, said inner



surface of the outer sleeve is further provided with a number of substantially concave bearing surfaces aligned with said tracks such that they provide a rolling bearing surface for said balls, while said balls are in their loaded state, said shaft having a plurality of longitudinally extending shallow raceways providing generally conforming bearing surfaces for said balls as they encounter said shaft and said raceways, said vertical depth of said raceways being only a fraction of the diameter of said balls, the length of said raceways on said circular shaft is at least equal to the linear travel of said bearing assembly, there being a raceway on said circular shaft for each track of balls.

3,884,538

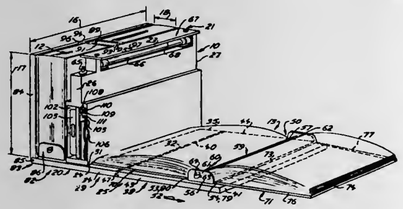
ILLUMINATED BOOK HOLDER

Norman Dudley Wise, 1260 Charlwell Dr., West Vancouver, British Columbia, Canada

Filed Feb. 25, 1974, Ser. No. 445,093

Int. Cl. A47b *63/00*

U.S. Cl. 312—233 **11 Claims**



1. An illuminated book holder for holding a book, the book having a length, a width and a thickness, the holder having:
   a. a generally plane base having spaced parallel inner and outer side edges and spaced parallel end edges, space between the side edges being no less than book thickness and space between the end edges being no less than the book length, the base having an upper surface having a base guide extending normally across from the inner side edge to the outer side edge,
   b. a pillar member extending normally upwards from the base, the pillar member having spaced upper and lower edges and spaced end faces, space between the upper and lower edges of the pillar being no less than the book width and the space between the end faces being no less than the book length,
   c. a cover member having spaced parallel inner and outer side edges and spaced parallel end edges, space between the side edges being no less than book width and space between the end edges being no less than the book length; the cover member having an upper surface having a cover member guide similar to the base guide and extending normally from the inner side edges across the cover member towards the outer side edges of the cover member to a position spaced sufficiently from the pillar member to permit the book to be opened to a generally fully opened condition, the cover member guide being adapted to be aligned with the base guide,
   d. a hinge extending between the outer side edge of the base and the inner side edge of the cover member, the hinge hinging the cover member to the base for swinging thereabout,
   e. a spine portion having spaced parallel side edges and spaced parallel end edges, space between the side edges being no less than book thickness and space between the end edges being no less than the book length, the spine portion having book retaining means to retain the book so that spine of the book is held against the spine portion, the spine portion further having a lower surface having a spine portion guide extending thereacross normal to the spine portion side edges, the spine portion guide being complementary to the base and cover member guides so as to form cooperating male and female portions of guide means when the cover member is folded outwards about the hinge so that the upper surfaces of the cover member and the base are coplanar, thus permitting the spine portion and the closed book to slide transversely across the base and cover member and concurrently being maintained generally normal to the side edges thereof by the guide means, to provide clearance between the book and pillar member to permit the book to be opened to the generally fully opened condition,
   f. cover member securing means cooperating with the cover member and the pillar member, so that when the spine portion is adjacent the pillar member the cover member can be held upright in a position generally parallel to the pillar member to retain the closed book therebetween, the securing means being releasable to permit the cover member to swing downwards to permit opening the book,
   g. a lamp provided on the pillar member to illuminate pages of the book when opened.

3,884,539

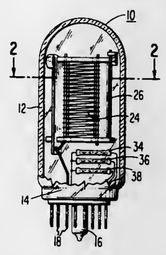
METHOD OF MAKING A MULTIALKALI ELECTRON EMISSIVE LAYER

Alfred Hermann Sommer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 314,001, Dec. 11, 1972, abandoned. This application Mar. 4, 1974, Ser. No. 447,936

Int. Cl. H01j *9/38*

U.S. Cl. 316—6 **11 Claims**



1. A method of activating a multialkali electron-emissive cathode layer, of the type wherein a layer of antimony is exposed at elevated temperature, within an evacuated body, to vapors of a plurality of alkali metals including cesium, to form an electron-emissive compound, wherein the improvement comprises:
   exposing the cathode layer to cesium vapor to achieve a photosensitivity exceeding approximately 0.1 microampere per lumen while maintaining the cathode at a temperature above 200°C.

3,884,540

MANUFACTURING PROCESS FOR SMALL BULBS

Jituo Hamai, Tokyo, Japan, assignor to Hamai Denkyu Kogyo Kabushiki Kaisha, Tokyo, Japan

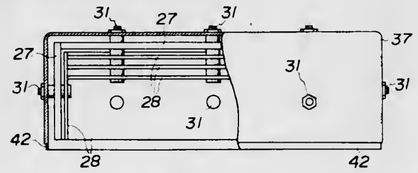
Filed July 31, 1973, Ser. No. 384,306

Claims priority, application Japan, July 31, 1972, 47-75842; July 31, 1972, 47-89086; Aug. 28, 1972, 47-85432; Aug. 28, 1972, 47-99307

Int. Cl. H01j *9/18*

U.S. Cl. 316—19 **4 Claims**

1. A method of making small bulbs by fusing bead mounts with elements therein to a bulb envelope comprising:
   a. inserting a plurality of said bead mounts into a plurality of holes in a carbon jig plate;
   b. placing a bulb envelope in contact with each of said bead mounts;
   c. placing said carbon jig plate with the plurality of unsealed bulbs assembled thereon within a heat insulated box;
   d. evacuating said heat insulated box;



   e. heating said carbon jig plate to a temperature for inducing the generation of impure gases and withdrawing said impure gases, further raising the temperature to a value close to the softening point of said bulb envelopes and then further heating said carbon jig plate to a temperature sufficient to cause the fusing of said bead mounts and said bulb envelopes; and
   f. gradually cooling the inside of said heat insulated box.

3,884,541

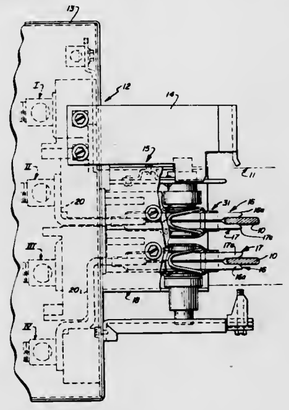
ASSEMBLY FOR CONNECTING A CURRENT TAKE-OFF UNIT TO A PLURALITY OF BUS BARS

Glenn S. O'Nan, Hamilton, Ohio; Allan E. Slicer, Brookville, Ind., and George N. Jorgensen, Oxford, Ohio, assignors to Square D Company, Park Ridge, Ill.

Filed Mar. 8, 1974, Ser. No. 449,299

Int. Cl. H01r *13/60*

U.S. Cl. 339—22 B **8 Claims**



1. In an electrical distribution system, an assembly for connecting a current take-off unit to a plurality of bus bars; said assembly comprising a housing and pairs of jaw members mounted within said housing and protruding outwardly therefrom; each pair of jaw members having corresponding ends for clampingly engaging a bus bar; an elongated connector piece secured to the opposite corresponding ends of said jaw members and adapted to be connected to the current take-off unit; first means for resiliently retaining said jaw members in a bus bar-clamping relation; adjustable second means for tightening said jaw members into said bus bar-clamping relation; an insulating element substantially encompassing a portion of said jaw members, said first and second means, and a portion of said connector piece disposed within said housing, and an elongated third means having at least a portion thereof disposed within said housing and engaging said second means, said third means having a segment thereof accessible from the housing exterior whereby manual adjustment of said third means is effected from said housing exterior.

3,884,542

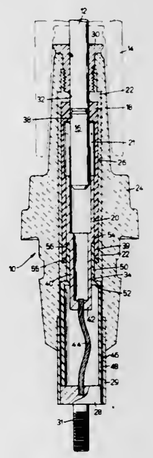
PRESSURE ACTUATED ELECTRICAL BYPASS CIRCUIT FOR A HIGH VOLTAGE BUSHING

Richard P. Flatt, Oconomowoc, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed Mar. 14, 1974, Ser. No. 451,167

Int. Cl. H01r *13/52*

U.S. Cl. 339—111 **18 Claims**



1. A bushing for connecting electrical apparatus to the conductive member of a high voltage cable terminator, said bushing including: a dielectric housing having a passage, an electrically conductive contact positioned within said passage, said contact being adapted to electrically engage the conductive member in the terminator, a frangible member within said passage, means for connecting said contact to the electrical apparatus, and electrical bypass means within said bushing for connecting said contact to the conductive member when the pressure of the gas produced by the heat of the prestrike arc on close-in is sufficient to break the frangible member.

3,884,543

APPLIANCE CORD ANCHOR

Gary S. McCachren, Asheboro, N.C., assignor to General Electric Company, Bridgeport, Conn.

Filed Mar. 14, 1974, Ser. No. 451,070

Int. Cl. H01r *13/58*

U.S. Cl. 339—105 **7 Claims**

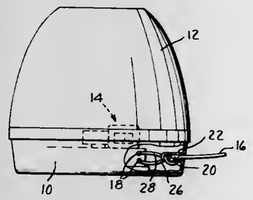
1. In an electric device cord-connected to internal terminals by a slit portion having separated conductors connected to the terminals, an improved means anchoring the cord to the device comprising,
   a cord opening to said device,
   a cross member fixed to and straddling the opening on the inside of the device,

whereby the slit cord is pushed into the opening to bottom

3,884,545

modulus and a phase each being a preselected value
e. a V-shaped reflector within said tubular body between

whereby the slit cord is pushed into the opening to bottom on the cross member with a conductor on each side



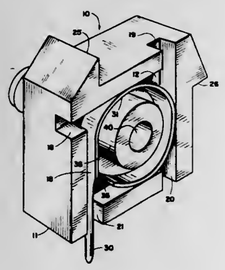
thereof for tying over the cross member before said terminals to limit ingress and egress of said cord.

3,884,544

CONNECTOR FOR CIRCUIT BOARDS OR THE LIKE

Robert Graham Lundergan, Camp Hill, and Paul J. Huntzinger, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 17, 1973, Ser. No. 407,326
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 G **8 Claims**



1. In an assembly of connectors for connecting external male terminals to female terminals, with each connector comprising:

an insulative housing having first and second oppositely positioned major surfaces lying respectively in first and second parallel planes, said side surfaces joining said first and second major surfaces;

a recessed chamber formed into said first major surface having side walls which define a generally trapezoidal cross sectional configuration for said chamber in a plane parallel to said parallel planes;

said housing further formed to have a tubular element extend axially from the bottom of said recessed chamber outwardly towards the plane of said first major surface;

at least first and second apertures formed in said side walls, and extending between the side surfaces of said housing and said recessed chamber, with said first aperture constructed to receive one of said external male terminals;

contact means comprising a post-like portion and a curled-around portion and positioned within said recessed chamber with said curled-around portion positioned around said tubular element with the axis of said curled-around portion being substantially perpendicular to said parallel planes, and said post-like portion extending through the second of said apertures; and

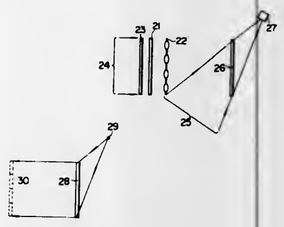
said housing further having a stub-like protuberance extending axially out from said second major surface and constructed to fit within the tubular element of a similar connector positioned adjacent thereto.

3,884,545

METHOD OF ELIMINATING GAPS BETWEEN THE EXIT PUPILS OF SUPERIMPOSED FOCUSED-IMAGE HOLOGRAMS

Tadashi Kasahara; Yoshiaki Kimura, and Masanori Kawai, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 11, 1972, Ser. No. 252,438
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **5 Claims**



1. A method of reproducing a three dimensional image comprising:

a first step of recording a plurality of focused-image holograms by placing between a photosensitive recording material and an array of first images of an object a lens array consisting of a plurality of multi-element photographic lenses mounted in an opaque mask in a uniform array such that the apertures of said lenses are uniformly spaced apart, each of said first images representing a different directional view of the object corresponding to the position of the image in the array of images, each of said lenses being disposed to form on said recording material a focused image of its corresponding first image, and illuminating said first images with coherent light and said photosensitive material with mutually coherent reference light, whereby said first images are recorded on said photosensitive recording material as an image hologram; and

a second step of reproducing said first images by illuminating said image hologram with incoherent light; wherein the uniform spacing between lenses is such as to define for each lens an area in which the lens is centered, each area being contiguous to those of adjacent lenses, the areas all having the same shape and size; and wherein one of said reference light in the first step and said incoherent light in the second step appears to come from a point source and the other appears to come from an extended source having a shape substantially identical to said shape of said area.

3,884,546

SPECTRUM SHAPING WITH PARITY SEQUENCES

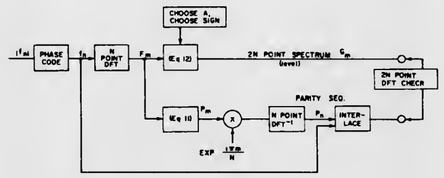
David C. Chu, Menlo Park, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed July 30, 1973, Ser. No. 383,639
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **16 Claims**

1. A method of synthesizing an output array of elements in which an input two-dimensional $N \times Q$ data array is embedded, each element of said data array being indicative of a complex number $f_{n,q}$, said method comprising the steps of:

producing an $N \times Q$ discrete Fourier transform spectrum array of said input data array, each element of said Fourier transform spectrum array being a complex number $F_{m,p}$;

producing an extended spectral array of order $(yN) \times (zQ)$, y and z being integer numbers, at least one of y and z being greater than unity, each element of said extended spectral array being a complex number $G_{m,p}$ having a modulus and a phase each being a preselected value, subject to a condition among the elements of said extended spectral array given by an equation to be satisified for a substantial number of $F_{m,p}$



$$F_{m,p} = \frac{1}{yz} \sum_{i=0}^{y-1} \sum_{j=0}^{z-1} G_{m+iN,\,p+jQ} \quad ; \text{ and}$$

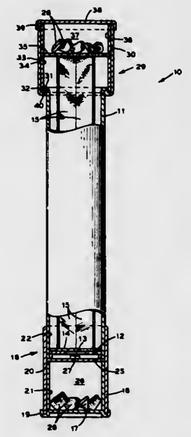
producing an inverse Fourier transform of said extended spectral array to generate an output array of order $(yN) \times (zQ)$ in which a representation of said input data array is embedded.

3,884,547

KALEIDOSCOPE

George Parrino, 98 Riverside Dr., New York, N.Y. 10024

Filed Apr. 18, 1974, Ser. No. 461,864
Int. Cl. G02b *27/08*
U.S. Cl. 350—5 **10 Claims**



1. A kaleidoscope comprising an elongated tubular body of circular cross-section,

a. said body having an eye opening at one end,

b. a revolvable unit of slightly larger diametrical size in overlapping relationship and projecting axially outwardly from said body at the opposite end, said revolvable unit having an outer wall

c. a transparent wall extending closurewise across a portion of said revolvable unit providing a recessed chamber at the end of said unit for holding a multiplicity of loosely assorted small pattern producing objects of irregular shapes,

d. a removable closure cap at the end of said unit in snug-fitting engagement with the outside surface of said outer wall of said revolvable unit permitting a user to change and replace said objects within said chamber at will,

e. a V-shaped reflector within said tubular body between said eye opening and said transparent wall,

f. a tubular storage compartment unit for holding said objects, said storage unit having a tubular outer wall with a projecting collar at one end and a bottom at its opposite end,

g. said projecting collar of said storage compartment unit adapted to frictionally, snugly and removably fit upon the viewing end of said tubular body,

h. a shoulder within said storage compartment unit within said tubular outer wall of said storage compartment unit, a removable cover which seats upon said shoulder,

i. said removable cover closing the interior of said storage compartment unit when it is placed in position upon said shoulder, said storage compartment unit used for storing and retaining said pattern producing objects therein,

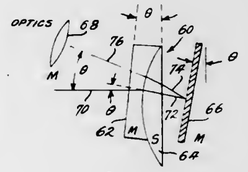
j. means on said removable cover for lifting said cover from said storage compartment unit permitting a user to store and replace said pattern producing objects.

3,884,548

VARIABLE OPTICAL WEDGE FOR IMAGE STABILIZATION AND OTHER PURPOSES

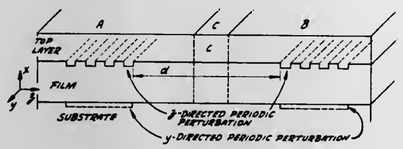
Solomon L. Linder, St. Louis, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Feb. 21, 1973, Ser. No. 334,260
Int. Cl. G02b *5/04*
U.S. Cl. 350—16 **10 Claims**



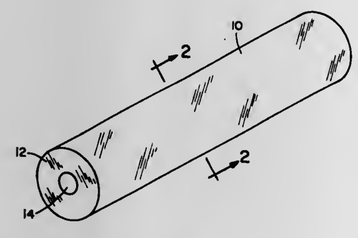
3. In an optical system including means for receiving and passing light from a remote source including directing exiting light in a predetermined direction therefrom regardless of changes in the position of the observed light source comprising an optical wedge including first and second adjacent wedge members, said first wedge member being a plano-concave lens element having a plane surface facing in the direction of the remote light source and an opposite concave surface having a radius of curvature equal to R, said second optical wedge member being a plano-convex lens element having a convex surface with a radius of curvature equal to R and an opposite plane surface, said convex surface being positioned adjacent to the concave surface of the first lens element, mirror means associated with the plane surface of one of said lens elements to reflect light exiting therefrom back through the optical wedge, means to stabilize the position of one of said lens elements, and means for moving the other lens element relative thereto, optical means including objective lens means, means connecting the objective lens means to the movable lens element for movement in concert therewith, movement of said optical means including the objective lens means and of the movable lens element to follow movements of the remote light source having relatively little effect on the position of the light exiting in the predetermined direction.

3,884,549
TWO DEMENSIONAL DISTRIBUTED FEEDBACK DEVICES AND LASERS
Shyh Wang, El Cerrito, and Sang K. Sheem, Albany, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.
Filed Apr. 30, 1973, Ser. No. 355,454
Int. Cl. H01s *3/05*
U.S. Cl. 350—96 WG **14 Claims**



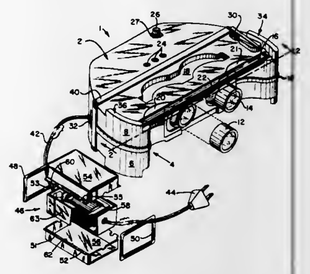
1. A thin film optical device comprising an optical waveguide having boundary surfaces and defining a guided wavelength for propagating wave of light at a predetermined frequency and guided wavelength therein, said waveguide having a predetermined optical index of refraction and made of a material transparent to light of said predetermined frequency, means defining at least one boundary layer adjacent to said waveguide such that the propagating wave for light at said predetermined frequency extends both within said waveguide and into said boundary layer, said boundary layer having one or more indices of refraction of said waveguide, perturbation means associated with said boundary layer and said waveguide for forming a first periodic variation of the index of refraction thereof in a first predetermined direction, said first periodic variation causing a spatial variation of said index of refraction between two values which repeat in a regular pattern of a first predetermined periodicity a_y, said perturbation means further forming a second periodic variation of said index of refraction in a second predetermined direction and causing a spatial variation of said second periodic variation between two values which repeat in regular patern of a second predetermined periodicity a_z.

3,884,550
GERMANIA CONTAINING OPTICAL WAVEGUIDE
Robert D. Maurer, and Peter C. Schultz, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Jan. 4, 1973, Ser. No. 320,943
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **8 Claims**



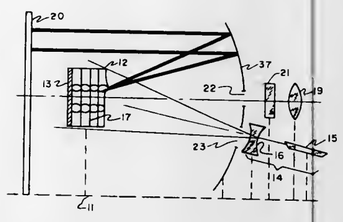
1. An optical fiber comprising
a cladding layer formed of high purity glass, and
a core of high purity germania containing glass having an index of refraction above that of the cladding layer, said high purity germania containing glass having a cation impurity level not exceeding ten parts per million of transition elements and a germania content in excess of 15% by weight, said optical fiber having light attenuation of less than about 80 db/km at the utilization wavelength or wavelengths of light.

3,884,551
STEREO VIEWER FOR A PAIR OF ARCUATE STEREO IMAGE STRIPS
Robert V. Bernier, Saugus, Calif., assignor to TRW Inc., Cleveland, Ohio
Filed Nov. 28, 1973, Ser. No. 419,525
Int. Cl. G02b *25/00*
U.S. Cl. 350—142 **10 Claims**



1. A stereo image viewer comprising, in combination:
a housing;
a means within said housing for receiving, positioning and holding a pair of arcuate stereo image film strips, each strip being held in a cylindrical plane for viewing;
lens means mounted within said housing for viewing said stereo image film pair; and
means for rotating said lens means to enable viewing all of the field of said stereo image film pair.

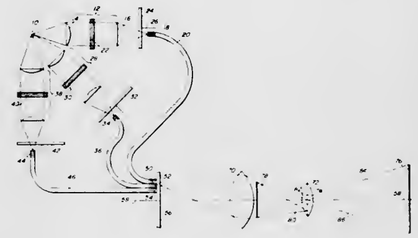
3,884,552
INVISIBLE TO VISIBLE LIGHT IMAGE CONVERTER
Reinhold Gerharz, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 5, 1973, Ser. No. 403,760
Int. Cl. G02f *1/28*
U.S. Cl. 350—161 **7 Claims**



1. An invisible to visible light image converter comprising:
an optical platform;
a Lippmann type space grating filter plate consisting of a layer of photographic emulsion having a multilayered lattice type of space grating imbedded therein having first and second broad surfaces and mounted in a first fixed position on said platform;
a localized source of visible light mounted in a second fixed position on said platform and having a beam angle and direction to fully illuminate said first broad surface of said plate;
a plane mirror mounted in a third fixed position on said platform with said first position between said second and third, said mirror also being within the beam angle from said source and oriented to fully illuminate said second broad surface; and

an objective optical means also mounted on said platform to project an invisible image of a distant object on said plate.

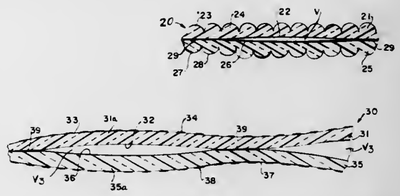
3,884,553
OPTICAL DISPLAY SYSTEM WITH IMPROVED SPECTRAL EFFICIENCY
Michael Graser, Jr., Bedford, Mass., assignor to Technical Operations Incorporated, Burlington, Mass.
Filed Jan. 16, 1974, Ser. No. 433,903
Int. Cl. G02b *5/18, 27/38*
U.S. Cl. 350—162 SF **21 Claims**



1. In Fourier transform optical apparatus for reconstructing on an optical axis an image from a record of that image located on said axis and which bears spatially periodic modulation with a unique carrier having a unique orientation in the record and relative to said axis, using light source means displaced a fixed distance from said axis at a prescribed azimuthal angle about said axis relative to said orientation to illuminate the record with a beam of light at such a diffraction angle to said axis that *n*-th order diffracted light from said beam falls on said axis (*n* being an integer greater than zero), said apparatus including a spatial filter mask with an aperture located on said axis for passing said *n*-th order diffracted light while substantially blocking zero-order light and light in diffraction orders other than said *n*-th order, for forming said image with said *n*-th order diffracted light, the improvement in light source means which comprises at least a first source of light in a first spectral range and a second source of light in a second spectral range that is different from said first spectral range, means locating said first source a first fixed distance from said axis at said azimuthal angle so as to illuminate the entire record with light in said first spectral range directed toward said axis at a first diffraction angle such that said unique carrier will diffract the light in said first spectral range so that only the *n*-th order diffracted light will pass through said aperture, means locating said second source a second fixed distance from said axis at said azimuthal angle so as to illuminate the entire record with light in said second spectral range directed toward said axis at a second diffraction angle such that said unique carrier will diffract the light in said second spectral range also so that only the *n*-th order diffracted light will pass through said aperture, and means to vary the relative intensities of said source or sources of light at the same azimuthal angle about said axis for controlling the effective color of light illuminating said image.

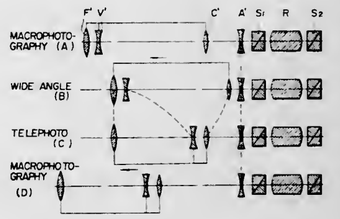
3,884,554
DISPLAY SHEET MATERIAL AND METHOD
Jerome H. Lemelson, 85 Rictor St., Metuchen, N.J. 08840
Continuation-in-part of Ser. No. 849,117, Aug. 11, 1969, Pat. No. 3,684,614. This application Mar. 27, 1972, Ser. No. 238,570
Int. Cl. B44f *1/06*
U.S. Cl. 350—164 **10 Claims**

1. A composite flexible display sheet material made of a plurality of thin light transmitting flexible plastic sheets comprising:
first and second sheets defining different strata of said sheet material,
means for joining said first and second sheets facewise together along a plurality of space-separated portions of said first and second sheets with juxtapositioned portions of said sheets between the joined portions of said sheets being unjoined and capable of some degree of relative shifting movement with respect to each other when the composite sheet material is deformed out of flatness,



each of said first and second sheets containing respective light diffracting means which cooperates with the light diffracting means of the other sheet in generating optical fringe pattern effects to an observer looking through said composite sheet material, and operable whereby, when the sheet material is flexed, said observed fringe pattern effects will appear to the observer to change in shape and to move a degree other than the degree of movement of the display sheet material during the flexure thereof.

3,884,555
OPTICAL SYSTEM CAPABLE OF EXTREME CLOSE UP PHOTOGRAPHY
Michiharu Suwa, Tokyo; Akira Tajima, Kawasaki; Mamoru Shimazaki, Tokyo, and Noritsugu Hirata, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Japan
Filed Sept. 18, 1973, Ser. No. 398,554
Claims priority, application Japan, Sept. 22, 1972, 47-95308
Int. Cl. G02b *15/18, 15/16*
U.S. Cl. 350—187 **14 Claims**



1. A variable focus optical system capable of extreme closeup photography comprising:
a first optical means for focussing said optical system on an object located at different distances within a selected normal range, said first optical means being movable along the optical axis of said optical system
a second optical means arranged on the optical axis of said optical system to vary the focal length of said optical system, said second optical means being operable independently of said first optical means, and having a first lens group and a second lens group which are mutually displaceable along said optical axis in a predetermined relationship for varying the focal length of said optical system
an extreme closeup mechanism for focussing said optical system on an object located at a distance closer than the normal range, said extreme closeup mechanism compris-

ing means for displacing both said first and second optical means in fixed relationship to each other along the optical axis of said optical system during operation of said extreme closeup mechanism, said second optical means also being operable independently of said extreme closeup mechanism for zooming said second optical means during the closeup operation.

3,884,556

RETROFOCUS WIDE-ANGLE LENS SYSTEM

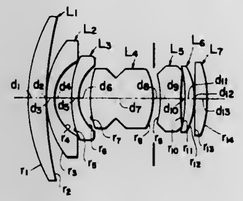
Jihei Nakagawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo-to, Japan

Filed May 4, 1973, Ser. No. 357,267

Claims priority, application Japan, May 10, 1972, 47-46084; Sept. 6, 1972, 47-89313

Int. Cl. G02b *9/62, 9/64*

U.S. Cl. 350—214 **10 Claims**



1. A retrofocus wide-angle lens system consisting of a first lens component being a positive meniscus lens, a second lens component being a negative meniscus lens, a third lens component being a negative meniscus lens, a fourth lens component means having a positive refractive power, a fifth lens component means having a negative refractive power, a sixth lens component being a positive lens, and said retrofocus wide-angle lens system satisfying the following conditions:

$0.4f < f_{123} < 0.8f, f_{123} < 0$

$0.5f < D_4 + D_5 < f$

where reference symbol f represents the total focal length of the lens system as a whole, reference symbol f_{123} represents the total focal length of said first, second and third lens components, reference symbol D_4 represents the distance from the front surface to the rear surface of said fourth lens component means and reference symbol D_5 represents the distance from the front surface to rear surface of said fifth lens component means.

3,884,557

MACROLENS

Sumio Nakamura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1973, Ser. No. 337,135

Claims priority, application Japan, Mar. 2, 1972, 47-21678

Int. Cl. G02b *9/36, 9/40*

U.S. Cl. 350—221 **4 Claims**



1. A macrolens comprising four lens components, the first through fourth lens components, wherein said first lens component is a positive meniscus lens of which convex surface having a small radius curvature is directed to the object side, said second lens component is a negative meniscus doublet lens which is cemented with a positive meniscus lens and a negative meniscus lens directed their convex surface to the object side, said third lens component is a negative meniscus lens of which concave surface having a small radius curvature is directed to the object side, said fourth lens component is a positive meniscus lens of which concave surface having a large radius curvature is directed to the object side, said macrolens having the following numerical data

r_1=24.549	d_1=4.13		
		n_1=1.72000	ν_1=43.70
r_2=47.203	d_2=0.25		
r_3=14.356	d_3=4.26		
		n_2=1.67003	ν_2=47.25
r_4=70.080	d_4=1.30		
		n_3=1.67270	ν_3=32.10
r_5=9.613	d_5=10.90		
r_6=−10.177	d_6=1.54		
		n_4=1.76182	ν_4=26.55
r_7=−13.869	d_7=0.20		
r_8=54.008	d_8=3.66		
		n_5=1.67000	ν_5=57.33
r_9=−15.167			

f=51.78

f_2=26.144

f_3=−16.706

f_{123}=138.96

where reference symbols r_1 through r_9 represent radii of curvature of successive lenses, reference symbols d_1 through d_8 represent thickness of successive lenses and distances between lenses on the axis, reference symbols n_1 through n_5 represent refractive indexes of successive lenses, reference symbols ν_1 through ν_5 represent Abbe's number of successive lenses, reference symbol f represents the total focal length of the whole lens system, reference symbols f_2 and f_3 respectively represent focal lengths of the front and rear lenses of the cemented second lens component and reference symbol f_{123} represents the total focal length of the first and second lens components.

3,884,558

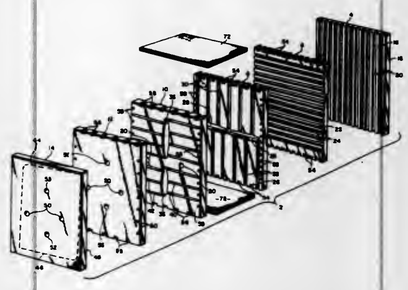
STABILIZED THERMALLY COMPENSATED MIRROR

Charlton Dunn, III, Chatsworth; Ronald D. Tobin, Newbury Park; Neil E. Bergstreser, Canoga Park, and Theodore A. Heinz, Moorpark, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed July 3, 1972, Ser. No. 269,674

Int. Cl. G02b *5/08*

U.S. Cl. 350—288 **4 Claims**



1. A thermally compensated mirror comprising:

a laminated structure formed by

a front plate having a reflective front surface and having a plurality of grooves formed in the rear surface for conducting coolant fluid in heat exchanging relation with said reflective surface,

a rear plate,

a minimum temperature plate interposed between said front and rear plates and formed with a plurality of coolant distribution passageways coupled to receive coolant fluid before said coolant fluid has been passed to said front plate and oriented to distribute coolant fluid in a manner to establish a minimum temperature plane parallel to said reflective surface,

a temperature stabilization plate interposed between said front plate and said minimum temperature plate and formed with a plurality of coolant distribution channels coupled to receive coolant fluid after said coolant fluid has passed in heat exchanging relation with said reflective surface and oriented to distribute said coolant fluid in a manner to establish a uniform temperature plane parallel to said reflective surface, and

means for circulating said coolant fluid through said structure.

3,884,559

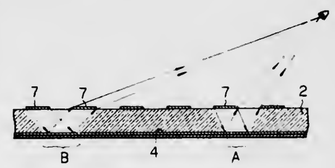
MIRROR FOR INTERIOR DECORATIVE USE

Yuji Baba, Tokyo, Japan, assignor to Nippon Steel Glass Co. Ltd., Osaka and Uni Design Co. Ltd., Tokyo, both of, Japan

Filed Mar. 19, 1973, Ser. No. 342,883

Int. Cl. G02b *5/08*

U.S. Cl. 350—288 **13 Claims**



1. A mirror for interior decorative use, said mirror comprising a transparent glass sheet having a front surface and a rear surface; at least one layer of a colored pattern on said front surface; and an image-reflecting layer on said rear surface, said colored layered pattern comprising a plurality of discreet areas each having a width substantially the same as the spacing between adjacent ones of said discreet areas with said discreet areas and said spacing therebetween being substantially equal to the thickness of said transparent glass sheet.

3,884,560

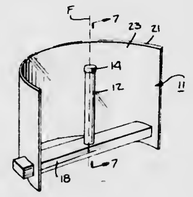
PACKAGE AND REFLECTOR ASSEMBLY FOR A LIGHT SOURCE

William J. Neylan, 1045 Fifth Ave., New York, N.Y. 10028, and Harvey Blomberg, 134-14 231st St., Laurelton, N.Y. 11413

Filed Nov. 26, 1971, Ser. No. 202,358

Int. Cl. G02b *5/10*

U.S. Cl. 350—293 **10 Claims**



1. A reflector assembly package for projecting light developed by a chemiluminescent light generating device comprising a flexible sheet having a light reflective portion on at least one surface thereof; a receptacle member releasably adhered to said sheet; a chemiluminescent light generating device disposed within said receptacle member; means for interengaging said sheet and said receptacle member upon removal of said member from said sheet, and distortion of said sheet into position to define a concave surface from said light reflective portion on said sheet; and means for mounting said device on said receptacle member in a light projecting position relative to said light reflective portion on said sheet.

3,884,561

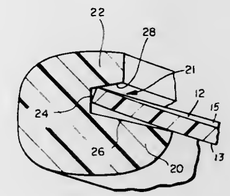
LENS HOLDING GROOVE MEANS

Edmund Kodys, Westminister, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.

Filed Jan. 30, 1974, Ser. No. 438,103

Int. Cl. G02c *5/00*

U.S. Cl. 351—83 **3 Claims**



1. In combination

a substantially rigid metal frame portion of a pair of spectacles including a pair of openings for receiving a pair of lenses therein;

a pair of substantially flexible lenses having a forwardly extending convex curvature mounted in said lens openings, each of said lenses having a front and rear surface and an edge extending about its periphery;

each of said lens receiving openings in said front frame including a lens receiving groove means which receives the edge of each of said lenses and extends completely around the periphery thereof;

each of said groove means comprising a front ledge portion joined to a rear ledge portion and spaced therefrom to form a lens receiving groove therebetween, said front and rear ledge portions being integral with said substantially rigid metal frame portion;

each of said front ledge portions extending inwardly from the edge of said lens mounted in each of said grooves and contacting a curved portion of the front surface of said lens spaced inwardly from the edge of said lens;

each of said front ledge portions extending inwardly from the edge of said lens mounted in each of said grooves a substantially greater distance than said rear ledge portions, said rear ledge portions being positioned to contact at least a portion of the edge of the rear surfaces of each said lenses mounted in said grooves to aid in maintaining said lenses in said grooves; whereby,

each of said lenses is insertible in its respective groove by flexing it to allow its edge to pass over said lesser inwardly extending rear ledge portion and into said groove, said further inwardly extending front ledge portion covering from view the outermost peripheral portion of each lens mounted in said groove.

3,884,562

VIEWER PROVIDING AUTOMATIC CASSETTE LATCHING AND EJECTION

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 227,093, Feb. 17, 1972. This application Jan. 2, 1974, Ser. No. 430,028

Int. Cl. G03b *23/02*

U.S. Cl. 352—74 **14 Claims**

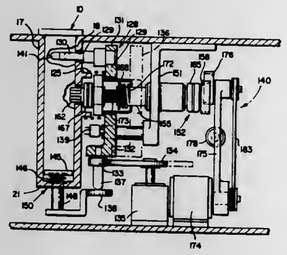
1. Photographic apparatus for use with a photographic

cassette including a cassette housing configured to retain a strip of photographic film, said apparatus comprising:

an apparatus housing;

means for receiving such cassette in operative position in said apparatus for purposes of actuating such cassette through a predetermined program, said receiving means including a cassette-receiving well;

means for locating and latching such cassette in said well including a latch member configured for displacement into said well for engagement with such cassette so as to operatively position said cassette in said well and to preclude removal of such cassette from said well, the opera-



tion of said locating and latching means being responsive to the insertion of such cassette into said well;

selective operable means for operating such cassette through a predetermined program;

means responsive to said locating and latching means performing its cassette locating and latching functions for actuating said cassette operating means; and

means responsive to the completion of such predetermined program for withdrawing said latch member from engagement with such cassette and for subsequently at least partially displacing such cassette from its operative position.

3,884,563

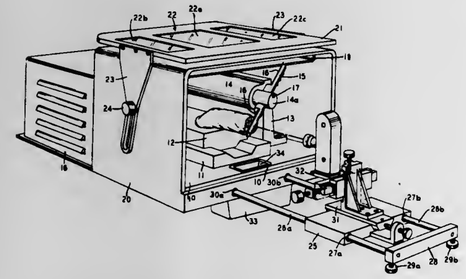
MICROTOME WITH ROTATING KNIFE

James King Evans, Reading, Pa., and Roy Mills, Rossville, Ind., assignors to John C. Fox, Auburn, N.Y., a part interest

Division of Ser. No. 132,120, April 7, 1971, abandoned. This application May 30, 1973, Ser. No. 365,048

Int. Cl. G03b *29/00*

U.S. Cl. 352—131 **9 Claims**



1. An apparatus for producing a motion picture of serial sections of a frozen organic specimen which when exhibited gives the impression that an observer is moving through the specimen, thus permitting the tracing of selected elements or features through the specimen comprising:

a rotating knife,

means for achieving relative motion of the knife and the specimen along an axis approximately parallel to the axis of rotation of the knife and within the periphery of the circle of rotation of the knife, so that said relative motion results in the cutting of serial sections from the specimen by the knife,

a thermally insulated housing enclosing the knife and the specimen, the housing containing at least one thermally insulated window to enable examination of the specimen's cut surfaces,

refrigeration means for maintaining the interior of the housing within the temperature range of −30°C. to +30°C.,

motion picture recording means, for serially recording the appearance of the surfaces of the specimen exposed by sectioning,

means to support the recording means outside the enclosure adjacent the window,

means for adjusting the position of the support means relative to the specimen, and

timer means for synchronizing the recording means with the rotating knife, so that the recording means is activated at least once after each new surface of the specimen is exposed by sectioning.

3,884,564

DEVICE FOR MAKING A PAIR OF STEREO-MAPS

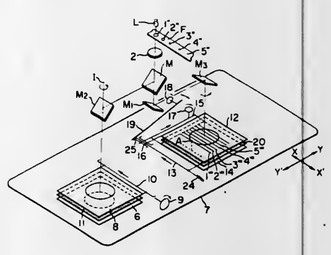
Munesato Yamada, and Shuji Yoshida, both of Kanazawa, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed July 21, 1972, Ser. No. 273,772

Claims priority, application Japan, Aug. 5, 1971, 46-58632

Int. Cl. G03b *21/00*

U.S. Cl. 353—6 **7 Claims**



1. A device for graphically reconstructing a series of sections, each of which is obtained by sectioning an object at various levels thereof, in the form of paired stereo-maps for observation with a stereoscope, comprising:

a support means (**7**);

a first recording sheet (**6**) fixed on said support means;

a second recording sheet (**8**) placed over said first sheet;

an optical system for projecting one of said series of sections on the second sheet so that the projected image of said one section may be traced on said second recording sheet, said optical system including a projection lens and reflection means, the latter being adjustable to adjust the position of each projected sectional image relatively to said second recording sheet; and

duplicating means (**11**) interposed between said first and second recording sheets to duplicate said traced image onto said first sheet;

said manually operable slider sliding said second recording sheet in said one direction to give a parallax in accordance with the perspective of a new section to be traced on said second recording sheet.

3,884,565

SYNCHRONIZING DEVICE FOR PICTURE-STORY SHOW AND CARTRIDGE TAPE PLAYER

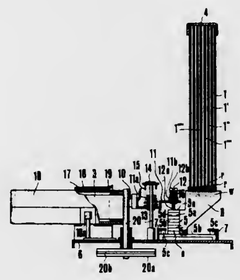
Yuji Tanno, Tokyo, Japan, assignor to ABE Engineering & Development Co. Ltd., Japan

Filed June 15, 1973, Ser. No. 370,410

Claims priority, application Japan, July 18, 1972, 47-71301

Int. Cl. G03b *31/06*

U.S. Cl. 353—15 **5 Claims**



1. A device for synchronizing visual display of a plurality of picture boards with an aural program played from a tape within a cartridge, comprising:

A. said cartridge tape comprising a corresponding plurality of record tracks aligned in order of sounds and voices recorded thereon to be reproduced throughout the aural program,

B. a picture casing for holding the plurality of picture boards in a predetermined display order corresponding to the order of said aural program on said plurality of record tracks and allowing sequential removal of the boards in said display order, exposing successive boards to view,

C. said plurality of picure boards being provided with a corresponding plurality of corner cuts in the respective boards, each board having one cut, each cut having a different depth, the depth of said cuts increasing from board to board in said predetermined display order, said cuts forming stopper surfaces,

D. a support plate having a first end and a second end, the support plate being mounted in a movable manner,

E. spring means for imparting a force to the support plate in a predetermined direction to thereby tend to move the support plate in the predetermined direction,

F. a playback head mounted on said first end of said support plate for movement across said record tracks when the support plate moves in the predetermined direction,

G. a support leg adjustable in the predetermined direction including a first end thereof, the support leg being mounted on said second end of the support plate,

H. a guide member comprising a stopper and a plurality of steps corresponding in number to the plurality of record tracks,

I. means including a coil spring for pulling the guide member in a direction parallel to the picture boards until the stopper of the guide member is stopped by the stopper surface of the corner cut in the board currently positioned for display and

J. means for causing said first end of the support leg to move into contact with whichever one of the plurality of steps is currently adjacent to it in accordance with the board currently positioned for display and thereby moving the support plate to cause the playback head to reproduce the corresponding record track.

3,884,566

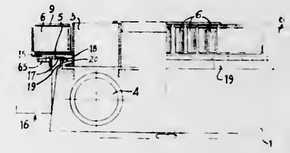
TRANSPARENCY PROJECTOR HAVING A DEVICE TO ALLOW THE PLAYBACK OF SOUND RECORDINGS

Marcel Jules Helene Staar, 479 Avenue Louise, Brussels, Belgium

Continuation of Ser. No. 35,961, May 11, 1970, abandoned. This application Mar. 5, 1973, Ser. No. 338,402

Int. Cl. C03b *31/06*

U.S. Cl. 353—19 **12 Claims**



1. In an automatic sound transparency slide projector, in combination; a compartmented transparency-supporting magazine for holding the transparencies radially arranged about a central axis; a control device adapted to provide a rotary movement by which the transparencies are successively projected by the projector; a ring on said magazine; a radially extending band supported on said ring in coaxial alignment with each transparency compartment and being disposed at the outer radii of the transparency compartments, said band being an endless magnetic recording tape located so that upon a given transparency being projected a corresponding associated recording on said tape is located in a playback position; a unit comprising a playback and recording apparatus being mounted on said projector for driving and reading the recording tape associated with the transparency being projected at any particular time intervals; projections on the outer edge of said ring in positions corresponding respectively to the axis of the transparency compartment; a solenoid including a circuit; switching means in said circuit of the solenoid; a mechanical connection extending between the armature of the solenoid and a playback head on said playback and recording apparatus whereby, when the solenoid is energised during the closure of said switch by one of the projections, the playback head is permitted to move into a position to start the playback.

3,884,567

FILM LOADING ASSEMBLY

Alexander Jesensky, Lake County, and Frederick D. Meller, Lombard, both of Ill., assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Aug. 16, 1973, Ser. No. 388,814

Int. Cl. G03b *1/48, 23/08*

U.S. Cl. 353—23 **19 Claims**

1. A device for maintaining a first film having at least one reproducible image disposed thereon in a planar, stationary condition for illumination by a radiant energy source comprising

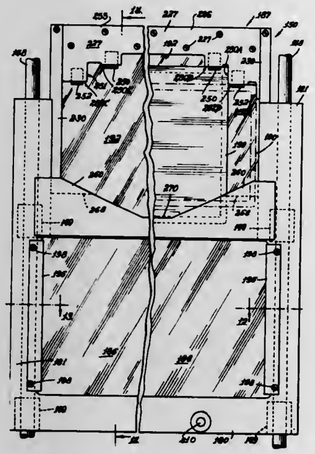
first and second transparent planar members for maintaining said film in said planar, stationary condition therebetween,

a support frame means,

said first member being mounted on said frame means in a relatively stationary condition with respect to said device, said first member having a first planar surface defining an image plane for receiving and maintaining said first film in said planar, stationary condition,

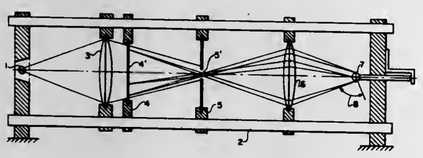
said second member being relatively movably mounted in said device, said second member including first means for receiving and for releasably securely retaining said first film in engagement with said second member and

means for controlling the movement of said second member along a path of travel wherein at least a portion of said path of travel is along a first elongated axis disposed in a plane substantially parallel to said image plane, said path



of travel including first and second points therealong, said second member being adapted to receive said film at least at said first point and adapted to position and maintain said film in said planar, stationary condition in said image plane at said second point.

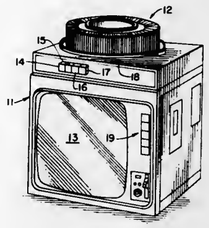
3,884,568
PROJECTION DEVICE FOR EXPOSING SPHERICAL SURFACES
Walter Fritzsch, Stetten, Germany, assignor to Dornier-System GmbH, Germany
Filed June 25, 1973, Ser. No. 373,257
Claims priority, application Germany, Aug. 11, 1972, 2239620
Int. Cl. G03b *21/14*
U.S. Cl. 353—62 **1 Claim**



1. In a projection device for exposing a spherical surface to light including a light source, a condenser lens, a pattern holder, and an imaging lens,

the improvement comprising aperture stop means between said condenser lens and said imaging lens, said aperture stop means having a light-transmissive opening means therein which is the minimum aperture for accurate projection, whereby only those projected rays will pass through for the formation of an image which, at the point of their representation, impinge upon the spherical surface with as large an angle as possible with respect to the tangential plane at the point of impingement of the rays.

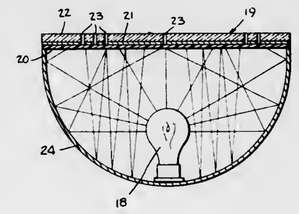
3,884,569
SLIDE TRAY AND SLIDE POSITIONING MECHANISM FOR A REAR-SCREEN PROJECTOR
Roy E. Hickey, Honeoye Falls, N.Y., assignor to The Singer Company, New York, N.Y.
Filed May 29, 1973, Ser. No. 364,399
Int. Cl. G03b *21/14, 23/02*
U.S. Cl. 353—88 **15 Claims**



1. Apparatus for projecting slides comprising:
a slide projector;
a slide tray, including a plurality of indexing pins depending therefrom, removably mounted on said projector and adapted to contain a plurality of slides for projection by said projector;
said projector including:
a gate;
said gate including a flat shutter member rotatably mounted near one end thereof about an axis in a plane substantially normal to the optical path of said projector;
said shutter having a first position blocking hte optical path of said projector and a second position for which the optical path of the projector is not blocked;
indexing means adapted to rotate said slide tray relative to said gate for successively bringing slides in said slide tray, one at a time, into substantially vertical registration with said projector gate; and
first means operating in time relation with said indexing means for successively feeding said slides substantially vertically from said tray into said gate under the influence of gravity, for projection, and from said gate substantially vertically back into said tray;
said indexing means including:
a driven indexing bar having a slide tray indexing element at one end thereof;
pivoted means including a rotatably pivoted, substantially flat, member having a slot therein a distance from said pivot coupled to said indexing bar by means of a pin depending from said driven indexing bar and extending into said slot in said pivoted member; said pivoted member guiding said indexing element to a position between two adjacent pins depending from said slide tray and then rotating said indexing bar around the pivot of said pivoted means to rotate said slide tray as said indexing bar is driven; and
second means in time relation with said indexing for causing said shutter to be in its first position in response to the absence of a slide to said gate and for causing said shutter to be in its second position in response to the presence of a slide in said gate;
said second means including:
means biasing said shutter in said second position;
means for rotating said shutter around said rotational axis to said first position in opposition to said biasing means and for enabling counter-rotation of said shutter around said rotational axis to said second position under the urging of said biasing means;
said means for rotating said shutter including an elongated member having a camming surface thereon in contact with the flat surface of said shutter member;

said elongated member adapted to be reciprocated in a direction transverse to the optical axis of said projector and in a plane substantially parallel to the rotational axis of said shutter with said camming surface to contact with the flat surface of said shutter to rotate said shutter to said first position;
means for sensing the absence of a slide in said gate for latching said elongated member in a position wherein said shutter is at said first position and for sensing the presence of a slide in said gate for enabling the return of said shutter to said second position;
a stationary slide guide located at said projector gate;
a slide clamp rotatably mounted on an axis in a plane substantially normal to the axis of said optical path; and
means biasing said slide clamp toward said slide guide.

3,884,570
READER FOR REFLECTIVE BACKGROUND MICRORECORDS
Adnan Waly, Stamford, Conn., assignor to Personal Communications, Inc., Stamford, Conn.
Division of Ser. No. 214,899, Jan. 3, 1972, abandoned. This application Oct. 23, 1973, Ser. No. 408,577
Int. Cl. G03b *21/28, 21/11, 23/08*
U.S. Cl. 353—98 **8 Claims**

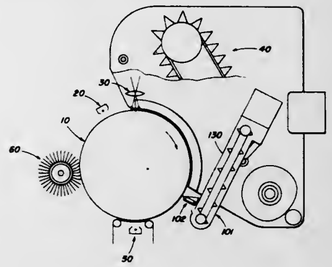


1. A reader for a microrecord constituted by a base of transparent film material having a layer of highly reflective material thereon forming an image background and a micro-image intelligence pattern on said base defined by shaped-light permeable openings in the reflective layer, said reader comprising:
A. a viewing screen,
B. a light source producing light rays which are radiated toward the reflective layer on said microrecord and pass through said openings to present said intelligence pattern on said screen, the rays impinging on said reflective layer being reflected back, and
C. reflective means contoured to collect and reflect said reflected-back rays and to return them toward said microrecord to cause substantially all rays emanating from said source to ultimately pass through the light-permeable openings in the microrecord whereby the light available from said source is fully exploited, said reflective means being constituted by a concave reflector whose mouth is fully covered by said microrecord.

3,884,571
LEAKAGE DEVELOPER RECIRCULATION ASSEMBLY
Adalbert A. Lux, Penfield, N.Y.
Filed May 5, 1972, Ser. No. 250,637
Int. Cl. G03g *15/08*
U.S. Cl. 355—3 **7 Claims**

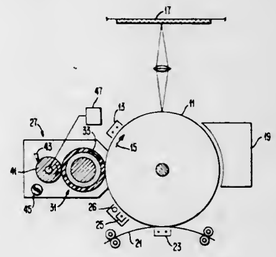
1. In an electrostatographic apparatus containing a development station for developing an electrostatic latent image formed on a surface including a developer housing in which solid developer is stored, transported to the electrostatic latent image bearing surface and received from said electrostatic latent image bearing surface, the improvement comprising:

catch means positioned externally to said developer housing for receiving solid developer which leaks past the developer housing during the development of the electrostatic latent image, said catch means comprising a tray positioned beneath said developer housing adjacent to the electrostatic latent image bearing surface to receive developer leaks between the electrostatic latent image bear-



ing surface and the developer housing, said tray including an outlet port for withdrawing developer therefrom, and a conveying means in said tray for conveying developer within said tray to said outlet port, said conveying means comprising a movable endless belt journaled in said tray, and
means for transporting the developer from said outlet port to said developer housing.

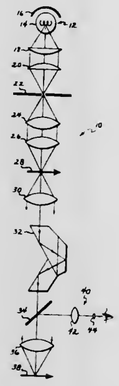
3,884,572
CLEANING APPARATUS
James L. Bacon, and Henry W. Simpson, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1972, Ser. No. 317,974
Int. Cl. B08b *1/02*
U.S. Cl. 355—15 **5 Claims**



1. Cleaning apparatus for removing electrostatically charged toner particles from the surface of an electrostatic plate comprising:
a continuous wiper means mounted for movement in a closed loop in wiping engagement with the surface of the electrostatic plate containing toner particles attracted thereto for removing said toner particles from said electrostatic plate, said wiper means comprising at least an outer layer of a compliant material having a resistivity of less than 10^{+8} ohm. centimeters and having an outer skin thereon;
cleaning means engagingly connected to said wiper means for removing toner therefrom;
drive means for moving said wiper in said closed loop past said electrostatic plate and past said cleaning means;
a current source connected to said wiper means for supplying current to the outer skin of said wiper means propor-

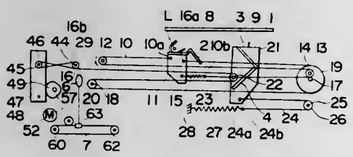
tional to the image charge of the toner in contact therewith.

3,884,573
APPARATUS FOR HIGH RESOLUTION PROJECTION PRINTING
David M. Franklin, Lexington, Mass., assignor to The Computervision Corporation, Bedford, Mass.
Filed Jan. 29, 1974, Ser. No. 437,746
Int. Cl. G03b *27/50*
U.S. Cl. 355—51 **7 Claims**



I. A high resolution projection printer comprising:
1. means for positioning a light transmitting planar object at an object plane;
2. means for illuminating a light transmitting planar object positioned at said object plane;
3. means for optically scanning an illuminated light transmitting planar object positioned at said object plane;
4. optical means for forming at an image plane, an erect, unity image of an illuminated light transmitting planar object positioned at the object plane in synchronization with the optical scanning of the illuminated object, said optical means including first and scond matched, infinity corrected objectives and an image erecting prism means positioned optically between said objectives; and,
5. means for positioning an unexposed, planar photosensitive element at the image plane whereby the photosensitive element is sequentially exposed in synchronization with the optical scanning of the illuminated object.

3,884,574
PLURAL MAGNIFICATION COPYING APPARATUS
Yasuhiko Doi, and Hiroshi Ikeda, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Feb. 21, 1974, Ser. No. 444,367
Claims priority, application Japan, Feb. 27, 1973, 48-24993
Int. Cl. G03b *27/70*
U.S. Cl. 355—66 **9 Claims**

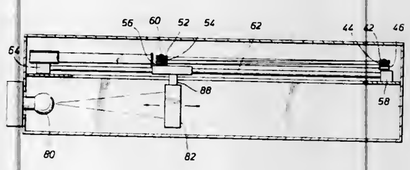


1. In a copying apparatus wherein image rays from a stationary original to be copied are directed at a certain magnification by a first carriage supporting a mirror and a lamp, a second carriage supporting at least one further mirror, and a lens carriage supporting a lens onto a photosensitive material moving at a certain speed, said second carriage being moved at half the speed of said first carriage, the length of the light path from the original to said lens carriage being thereby kept constant irrespective of the position of said first carriage, the improvement which comprises a means for shifting said lens carriage and said second carriage to positions corresponding to predetermined magnification, and a means for changing moving speeds of said first and second carriages in accordance with said magnification,

said shifting means comprised of a single cam having a plurality of cam surfaces with each of said surfaces defining a shifting distance of said second carriage, a rotatable member mounted for rotation about an axis and positioned in contact with one of said surfaces of said cam, a first cable connecting said rotatable member and said second carriage, and a means interconnecting said cam with said lens carriage, whereby upon rotation of said cam said rotatable member rotates about its axis for moving said second carriage by said first cable while said lens carriage is being moved through said interconnecting means, both of said second carriage and said lens carriage thereby being moved to positions corresponding to said predetermined magnification,

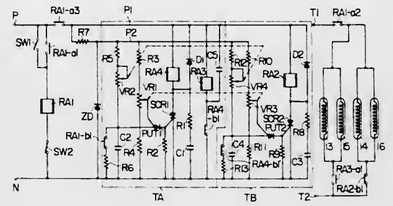
and said speed changing means being comprised of a plurality of clutch means operatively associated with a plurality of gears having different tooth ratios for controlling the moving speeds of said first and second carriages in accordance with said predetermined magnification.

3,884,575
PROCESS CAMERA MONOTORING APPARATUS
Warren Childers, Houston, Tex., assignor to Graphic Arts Mfg. Co., Inc., Houston, Tex.
Filed Jan. 29, 1973, Ser. No. 327,828
Int. Cl. G03b *27/27*
U.S. Cl. 355—68 **9 Claims**



1. Apparatus for monitoring light level within a process camera having a lamp for a flashing exposure, comprising:
a light sensitive device;
a light emitting device exposed to said light sensitive device; and,
means connected to either said light sensitive device or said light emitting device and adapted to be connected to a process camera in a manner to vary the relative position of said light emitting device to said light sensitive device and which is adapted to control a flashing exposure for an image receptor in the process camera, said means altering the light falling on said light sensitive device.

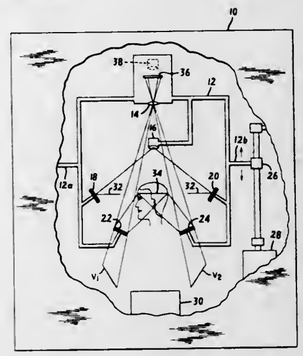
3,884,576
EXPOSURE UNIT FOR A COPYING MACHINE HAVING A VARIABLE MAGNIFICATION
Hideaki Mochimaru; Shigeru Suzuki, both of Yokohama; Yohei Ikezu, Tokyo; Masao Yaeshima, Sendai, and Takeshi Ukai, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan
Filed Dec. 3, 1973, Ser. No. 421,324
Claims priority, application Japan, Dec. 15, 1972, 47-12588; Dec. 29, 1972, 47-03737
Int. Cl. G03b *27/76*
U.S. Cl. 355—69 **7 Claims**



1. An exposure unit for a copying machine having a variable magnification, the exposure unit comprising
a. an optical system, including a lens having an optical axis, for projecting an image of an original to be copied, said optical system being adjustable, to vary the magnification of the image, in a manner effecting lateral displacement of the optical axis of said lens relative to the original;
b. a plurality of light sources for illuminating the original, disposed in succession along the path of displacement of said optical axis; and
c. means for controlling time periods during which the plurality of light sources are energized such that different ones of said light sources respectively disposed at different locations along said path are energizable for respectively different time periods to compensate for displacement of said optical axis and thereby to maintain a uniform exposure distribution.

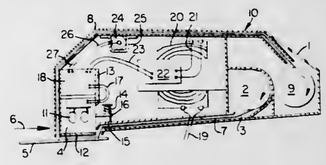
3,884,577
METHODS AND APPARATUS FOR OBJECT REPRODUCTION
Richard A. Carpentier, 41 Half Circle Dr., Holbrook, N.Y. 11741; Paul L. Di Matteo, 6 Carol Ct., Dix Hills, N.Y. 11746; Howard K. Stern, 89 Derby Ave., Greenlawn, N.Y. 11740, and Ernest C. Wittke, 1600 Grand Ave., Baldwin, N.Y. 11750
Filed Jan. 8, 1973, Ser. No. 321,732
Int. Cl. G03b *21/06*
U.S. Cl. 355—77 **12 Claims**

1. Apparatus for use in the reproduction of a three-dimensional object, comprising:
a. first means for supporting said object;
b. second means for generating a plurality of separate overlapping radiant energy images of said object, said second means defining an interior in which said object is positionable and supporting at said interior in mutually fixed relation:
1. lens means providing said separate overlapping images and being inclusive of at least one lens;
2. means for projecting radiant energy in a predetermined planar portion of said interior;
3. a plurality of radiant energy reflective means, each disposed in distinct viewing relation to said predetermined interior portion, each pair of said reflective means being further disposed in the field of view of at least one lens in said lens means; and
4. image rotating means for separately turning the plane of each of said images provided by said lens means to effect joint focusing and positioning thereof in a common plane; and



c. third means for providing relative movement between said first and second means to selectively position said object within said second means.

3,884,578
PHOTOGRAPHIC COPYING APPARATUS
Raymond Albert Roosen, B2232's-Gravenwezel, Parklaan 12, Belgium
Filed Aug. 9, 1973, Ser. No. 386,889
Claims priority, application United Kingdom, June 18, 1973, 37453/73
Int. Cl. G03b *27/30*
U.S. Cl. 355—100 **6 Claims**



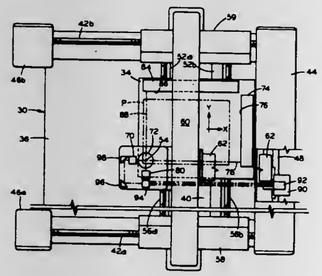
1. In a portable reflex copying apparatus adapted to be moved across the surface of an original to be copied to reproduce at least a portion thereof, said apparatus comprising a housing adapted for placement on said original and providing in the lower side thereof an exposure zone through which a portion of said original is visible, means in said housing for holding a supply web of radiation-sensitive recording material and means in said housing for collecting such material after exposure, guiding means in said housing for guiding said web from said web supply holding means through said exposure zone to said collecting means, web-advancing means for advancing the thus guided web between said supply means and said collecting means through said exposure zone, said advancing means including roller means journaled in said housing to project externally from the lower side thereof for rotation by frictional contact with the surface of said original, said rotation being transmitted to said web to advance the same at a rate corresponding to the speed of rotation of said roller means, at least one light source in said housing adjacent said exposure zone to reflexively expose the recording material passing therethrough to the underlying portion of said original, in combination an improved exposure control means for said light comprising triggering means cooperating with said roller means and periodically activated upon rotation of said roller means through successive equal predetermined arcs of rotation to generate electrical pulses, and lamp switching means responsive to said pulses to energize said lamp from an inoperative to an operative condition for the period of each said pulses.

3,884,579

3,884,579
METHOD FOR COUNTING BLOOD PLATELETS
Thomas Mauthner, Livonia, Mich., assignor to Cambridge Chemical Products, Inc., Detroit, Mich.
Filed June 14, 1973, Ser. No. 369,827
Int. Cl. G01n *33/16*, *1/00*
U.S. Cl. 356—39 2 Claims

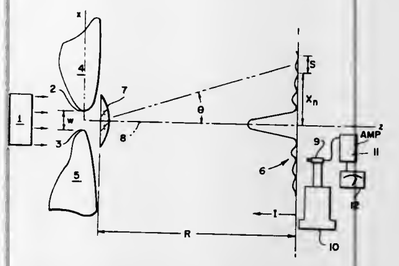
1. The method of counting platelets in a specimen of whole blood serum comprising dissolving the specimen in a solution having a surface tension in distilled water, measured at 22°C of between 29.8 and 31.0 dynes/cm, and observing and counting the platelets through a microscope after the red and white cells have been hemolyzed.

3,884,580
APPARATUS FOR MEASURING AND POSITIONING BY INTERFEROMETRY
Ronald B. Webster, Melrose, and Kenneth O. Wood, Hebron, both of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.
Filed Sept. 7, 1973, Ser. No. 395,010
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 R 17 Claims



1. Apparatus for measuring the position of a work table relative to a tool head having a tool axis extending substantially perpendicular to the work surface of the table comprising:
- a first interferometer mounted on the head in the vicinity of the tool axis and having a measuring axis extending at least in part parallel to the work surface in a first coordinate direction along a first line intersecting the tool axis;
- a first reflector mounted on the work table and having a reflecting surface extending adjacent the work surface perpendicular to the first line and facing inwardly of the table toward the tool head;
- a second interferometer also mounted on the tool head in the vicinity of the tool axis and having a measuring axis extending at least in part parallel to the work surface in a second coordinate direction along a second line intersecting the tool axis and perpendicular to the first line; and
- a second reflector mounted on the work table and having a reflecting surface extending adjacent the work surface perpendicular to the second line and facing inwardly of the table toward the tool head.

3,884,581
DIFFRACTOGRAPHIC AND OTHER SENSORS UTILIZING DIFFRACTION WAVES
Timothy R. Pryor, 5423 York Ln., Bethesda, Md. 20014
Continuation-in-part of Ser. No. 751,615, Aug. 9, 1968, Pat. No. 3,664,739. This application May 15, 1972, Ser. No. 253,421 The portion of the term of this patent subsequent to May 23, 1989, has been disclaimed.
Int. Cl. G01b *9/02*
U.S. Cl. 356—109 57 Claims

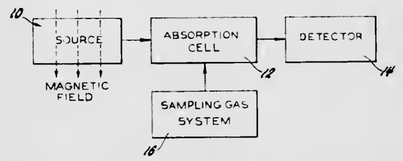


1. A method of determining a change in the separation of first and second members, said first member including means for producing a first diffraction wave, said second member including means for producing a second diffraction wave, said second diffraction wave producing means being separated from said first diffraction wave producing means, said first and second diffraction wave producing means each comprising a single boundary or a plurality of single boundaries spaced in a direction transverse to the direction of electromagnetic waves directed thereonto, each of said single boundaries being capable of producing a single diffraction wave upon incidence thereon of said electromagnetic waves, said method comprising the steps of:
- directing electromagnetic waves onto said first and second diffraction wave producing means to produce an interference pattern including fringes positioned about an axis in the direction of propogation of said electromagnetic waves, said interference pattern being produced by interaction between said first and second waves;
- detecting changes in intensity of electromagnetic radiation with detection means located at a fixed distance from the axis of said interference pattern to detect a portion of said fringes of said interference pattern as the fringes move past said detection means; and
- determining from said detected changes in intensity a change in separation between said first annd second diffraction wave producing means.

3,884,582
METHOD FOR PREDICTING DYEABILITY OF YARN
Robert Dewey Britt, Jr., Signal Mountain, and William Clair McCully, Hixson, both of Tenn., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.
Filed Dec. 6, 1973, Ser. No. 422,612
Int. Cl. G01j *3/46*
U.S. Cl. 356—173 4 Claims

1. The method for predicting the dyeability with acid dyes of synthetic yarn melt spun from polyamide flake, said method comprising: obtaining a control polymer flake sample; obtaining a test polymer flake sample from flake to be spun into said synthetic yarn; dyeing said control and test flake samples in the same dye bath containing acid dye; comparing the dyeability of the test and control flake samples; predicting the dyeability of said synthetic yarn based on said comparing step; selecting a second control polymer flake having a dyeability significantly different from the control flake; dyeing a sample of the second control flake with the control and test flake samples; and comparing the dyeability of the control and second control flake samples to subsequent dyeings to determine any change in the difference in dyeability between the control and second control flake samples as a check on the accuracy of said method for subsequent dyeings.

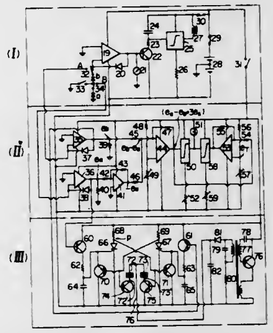
3,884,583
METHOD AND APPARATUS FOR MAGNETICALLY MODULATED RESONANCE ANALYSIS OF GAS
Tom T. Kikuchi, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.
Filed May 3, 1973, Ser. No. 357,017
Int. Cl. G01n *21/22*, *21/34*
U.S. Cl. 356—201 4 Claims



1. A resonance absorption analyzer for measuring the concentration of a predetermined gaseous specie in a sample comprising
- a line source of radiation fundamentally in resonance with the specie being measured including a quantity of gas of the predetermined specie and means for exciting the gas to produce radiation,
- means for directing the radiation through the sample for partial absorption thereby,
- means for detecting the radiation emitted from the sample, and means for producing second harmonic amplitude modulation of the emitted radiation including means for frequency modulating the source radiation for scanning the peak of the absorption curve of the specie being measured comprising means for establishing an AC magnetic field only across the source sufficient to produce modulated Zeeman splitting of the source radiation whereby second harmonic amplitude modulation of the emitted radiation occurs, the degree of amplitude modulation depending on the concentration of the predetermined specie in the sample.

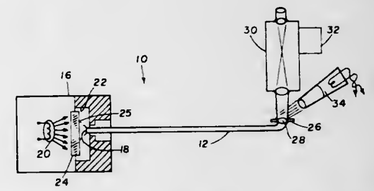
3,884,584
AUTOMATIC SWITCHING SYSTEM FOR PHOTOMETRIC PORTIONS
Tokuichi Tsunekawa, and Takashi Uchiyama, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Japan
Filed Nov. 19, 1973, Ser. No. 416,802
Claims priority, application Japan, Nov. 29, 1972, 47-119617
Int. Cl. G01j *1/16*
U.S. Cl. 356—226 8 Claims

1. An automatic switching device of a photometry type in an automatic exposure control system of a camera comprising in combination;
- a first photosensitive means formed to sense only the light flux mainly emitted from the central portion of a scene object, said means having at least one first photosensitive element of a photo-electromotive power type for generating photoelectric current by sensing said light flux,
- a second photosensitive means formed to sense the light flux emitted from the peripheral portion of a scene object, said means having at least one photosensitive element of a photo-electromotive power type for generating photoelectric current by sensing said light flux,
- a connecting means for coupling said first and said second elements in series with each other,
- a control circuit means for coupling at the input thereof with said series-connected first and second elements, said circuit means having at least an amplifier circuit to form



an output signal corresponding to the brightness of a scene object.

3,884,585
FIBER BREAK DETECTION METHODS FOR CABLES USING MULTI-FIBER OPTICAL BUNDLES
Robert L. Lebduska, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 25, 1974, Ser. No. 445,406
Int. Cl. G01n *21/16*
U.S. Cl. 356—239 8 Claims



1. A method of diagnostically assessing the breakage of individual fiber filaments in a composite fiber glass cable bundle comprising the steps of:
- illuminating an input terminal end of said cable for transmission of the light therethrough to an output terminal end of said cable:
- illuminating the surface of the output terminal end of the cable;
- magnifying the face of the output terminal end of said cable;
- whereby the integrity of light transmission through said cable can be assessed by determining the number of fiber filament ends which appear dark indicating the absence of transmitted light.

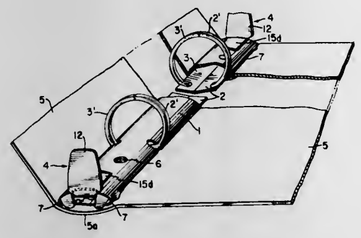
3,884,586
SAFETY LOCK LOOSE-LEAF RING BINDER MECHANISM
Jack H. Michaelis, Elmhurst, and Frank J. Malcik, Berwyn, both of Ill., assignors to Swingline, Inc., Long Island City, N.Y.
Filed Feb. 1, 1973, Ser. No. 328,783
Int. Cl. B42f *3/04*
U.S. Cl. 402—38 6 Claims

1. In a loose-leaf binding mechanism whcih includes an elongated spring case, a pair of relatively stiff but resilient elongated hinge plates pivotally mounted within the case, the outer longitudinal edge of each plate defining its pivot axis

with the inner longitudinal edges of the plate diverg-

with the inner longitudinal edges of the plate disposed in abutting relationship for all angular positions of the hinge plates, at least one prong on each hinge plate projecting externally of the case with each prong on one hinge plate being positioned in alignment with a prong on the other hinge plate, and actuator means for moving said hinge plates between a prong-closed position wherein each pair of aligned prongs form a substantially closed loop for retaining loose-leaf sheets and a prong-open position wherein each pair of aligned prongs are spread apart to permit insertion and removal of loose-leaf sheets, the improvement wherein the actuator means comprises:

a. a pivotally mounted lever member positioned in an opening in the hinge plates and pivotally-operated around the opening in the hinge plates;



b. hinge plate depressor means carried on said lever member for moving the hinge plates from said prong-open position to said prong-closed position upon pivoting of the lever member in one direction through a first predetermined arcuate segment of the path of movement of the lever member;

c. plate lifting means carried on said lever member for moving the hinge plates from said prong-closed position to said prong-open position upon pivoting of the lever member in the opposite direction through said first arcuate segment;

d. one portion of said lever member which portion includes lug elements being selectively movable along a second predetermined arcuate segment of the path of movement of the lever member between a first position where it is wedged tightly between the case and prong-closed hinge plates such that an imaginary line interconnecting any point of contact between said one portion and the case with any point of contact between said one portion and the hinge plates is oriented at an upwardly inclined outwardly extending attitude and a second position where it is wedged tightly between the case and prong-closed hinge plates such that said imaginary line is oriented at an upwardly inclined inwardly extending attitude, said second predetermined arcuate segment being adjacent to the said first arcuate segment and further being on the inward side of said first segment;

e. lock stop means capable of preventing pivotal movement of the lever member inwardly out of wedged-in engagement between the case and outwardly bowed hinge plates, said stop means including:

i. a stationary seating surface mounted on the case in the path of movement of said lever member which surface is along the centerline of the case and a substantial distance to either side of the centerline; and

ii. a retaining element mounted on said lever member for engagement along the centerline of the case and for engagement a substantial distance to either side thereof with said seating surface upon movement of said one portion of the lever member into said second wedged-in position; and

f. said case being transversely arched with the crown of the arch facing up and said one portion of the lever member including a transversely arched body conforming generally to the curvature of the case with its crown extending generally inwardly or upwardly depending on the angular position of the lever member, said body having a lower surface and a transversely arched upper surface conforming generally to the curvature of the case, said lug elements depending downwardly from the lower surface with one lug element positioned on one side of center and another lug element positioned on the other side of center with each lug element extending into engagement with one of said hinge plates, said upper surface engaging the case and the terminal ends of said lugs engaging the respective hinge plates at all wedged-in angular positions of said one portion of the lever member.

3,884,587

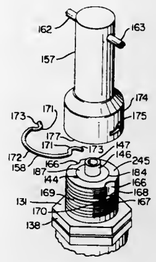
VALVE CONSTRUCTION AND IMPROVED PARTS FOR THE SAME OR THE LIKE

Edward N. Caldwell, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation-in-part of Ser. No. 290,558, Sept. 20, 1972. This application Oct. 10, 1973, Ser. No. 405,130

Int. Cl. F16b *21/07*

U.S. Cl. 403—14 **7 Claims**



1. In combination, a valve bonnet having opposed ends and an external peripheral surface intermediate said ends, said external peripheral surface having spaced arcuate locking recess means therein extending over the major arcuate portion of said peripheral surface, a cover member rotatably telescoped over said valve bonnet, and a spring retainer means carried by said cover member and having a portion thereof received in said recess means of said valve bonnet to detachably lock said cover member to said valve bonnet, said recess means and said portion of said cover member cooperating together in said locked condition thereof to permit rotational movement of said cover member through a relatively long arc relative to said valve bonnet.

3,884,588

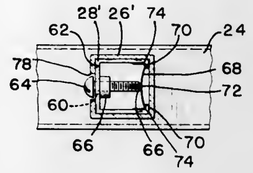
TUBE JOINING SYSTEM

Charles N. Apple, Sr., Greensboro, N.C., assignor to Metafab Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 132,362, April 8, 1971, abandoned. This application Oct. 5, 1972, Ser. No. 295,182

Int. Cl. F16b *9/00*

U.S. Cl. 403—194 **8 Claims**



1. A joint formed from a pair of members wherein the longitudinal axes of the members are out of alignment com-

prising; a first elongated tubular member having an exterior surface with at least one opening provided therein, a stem member rigidly secured to said first tubular member, said stem member having a portion extending through said opening and deformed and compressed therein and in firm engagement with the inner portion of said first tubular member for firm and rigid attachment thereto, a second tubular member substantially encompassing said stem member and having an end portion in abutting relation with said first tubular member, said stem member having an expansible, flexible, and slidably releasable fastening means cooperatively retained therewith, and means connected to said stem member for urging said fastener means and said stem member into frictional gripping relation with the inner periphery of said second tubular member.

3,884,589

LOCKING JOINT FOR CONCRETE PILES HAVING JOINED SECTIONS

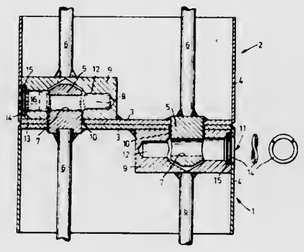
Per Liedholm, Solna, Sweden, assignor to Stabilator AB, Bromma, Sweden

Filed Feb. 6, 1973, Ser. No. 330,123

Claims priority, application Sweden, Feb. 22, 1972, 2184/72; Mar. 21, 1972, 72140/72

Int. Cl. E04b *1/48*

U.S. Cl. 403—316 **1 Claim**



1. A locking joint for joining first and second sections of a concrete pile comprising

a metal plate on the end of each pile section,

a metal collar extending from the metal plate on a first pile section around said pile section, said collar having an opening defined therein,

a locking block secured behind the metal plate of the first pile section, said locking block having a longitudinal pin receiving space defined therein and also a transverse bore defined therein intersecting the pin receiving space and aligned with the opening in said collar,

an outwardly projecting pin projecting from the metal plate of the second pile section and received in the pin receiving space in said locking block, said pin having a transverse hole therethrough,

a wedge device having a front end and a rear end and projecting through the transverse bore in said locking block and through the hole in said pin to hold the metal plates in firm abutting relationship,

a bulged portion constructed on the rear end of said wedge device and having toward its front an inwardly tapered portion and at its rear having a reduced cross section step, said locking block having defined therein a circumferentially extending groove around said bore adn adjacent said collar, and

an annular resilient ring of wavy configuration about its periphery having an inner and an outer diameter, the outer diameter being greater than the diameter of the opening in said collar and the inner diameter being smaller than the diameter of the opening in said collar, said annular ring being accommodated in the groove in said locking block and being retained therein by said collar, certain raised portions about the periphery of said ring resiliently engaging said reduced cross section step on said wedge device in a direction longitudinally of the bore and positively retaining said wedge device under all conditions of stress in said bore.

3,884,590

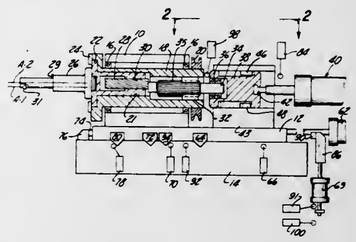
ADJUSTABLE DUAL TOOL BORING BAR

Frank C. Skrentner, Bloomfield Hills, and Werner W. Willuweit, St. Clair Shores, both of Mich., assignors to F. Jos. Lamb Company, Warren, Mich.

Filed May 22, 1974, Ser. No. 472,077

Int. Cl. B23b *47/00*

U.S. Cl. 408—8 **14 Claims**



1. In a machine tool of the type comprising a support, a spindle journalled on said support for rotation about a fixed first axis, means for rotating said spindle, a tool holder mounted on said spindle and means associated therewith for rotative adjustment of said tool holder on said spindle about a second axis parallel to and spaced from said first axis, a pair of cutting tools mounted on said tool holder in circumferentially spaced relation, and a member movable in opposite directions and operatively connected with said rotative adjustment means for rotating said tool holder on said spindle about said second axis whereby to radially retract one tool and radially project the other tool relative to said first axis, that improvement which comprises, a pair of abutment means spaced apart in the path of movement of said movable member for limiting movement of said member in opposite directions and means for individually adjusting said abutment means to vary the locus of the opposite ends of the stroke of said member and thereby individually adjust the radially outermost position of each cutting tool.

3,884,591

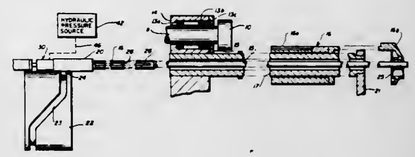
AUTOMATIC HYDRAULIC TOOL SLIDE CAM ASSIST FOR A MACHINE TOOL

Francis W. Cook, Jr., Newington, Conn., assignor to Litton Industrial Products, Inc., New Britain, Conn.

Filed Sept. 17, 1973, Ser. No. 397,716

Int. Cl. B23b *47/22*

U.S. Cl. 408—11 **9 Claims**



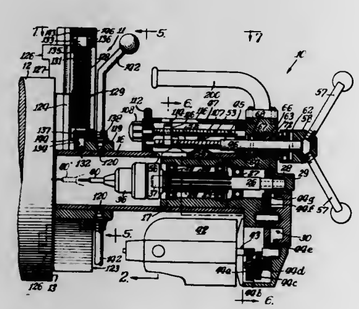
1. In a machine tool for machining a plurality of workpieces associated therewith, the apparatus which comprises:

a. workpiece holding means and tool holding means;

b. a slide carrying one of said holding means, said slide being mounted for reciprocating rectilinear motion be-

tween a point proximate the other of said holding means and a point distal the other of said holding means;
c. cam means for controlling movement of said slide between said proximate and said distal position;
d. cam follower means responsive to the movement of said cam and operatively connected to said slide to urge said slide between said proximate and distal positions; and
e. means responsive to predetermined forces developed when the tool is in engagement with the workpiece urging said slide toward said proximate position to assist said cam in moving said slide toward said proximate position.

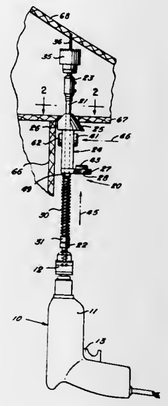
3,884,592
PORTABLE CENTER DRILL
Robert B. Shulters, P.O. Box 71, Batavia, Ill. 60510
Filed Jan. 15, 1973, Ser. No. 323,648
Int. Cl. B23b *41/00, 47/18*
U.S. Cl. 408—14 **9 Claims**



1. A portable center drill comprising a support member, retaining means carried by said support member for receiving and releasably retaining a drill bit or the like, drive means mounted on said support member and connected to said retaining means for rotating the same, chuck means carried by said support member and adapted to clamp onto a workpiece and to detachably secure said drill to said workpiece, said chuck means also being operable to precisely position said drill bit with respect to a drilling point on said workpiece, and feed means mounted on said support member for advancing said retaining means toward said chuck means and said drill bit into said workpiece, said support member, said drive means and said feed means being arranged in closely adjacent, side-by-side relation and said chuck means being arranged close to said drive means and said feed means, whereby the overall size and length of said drill is minimized and the bending moment imposed on said chuck means is reduced.

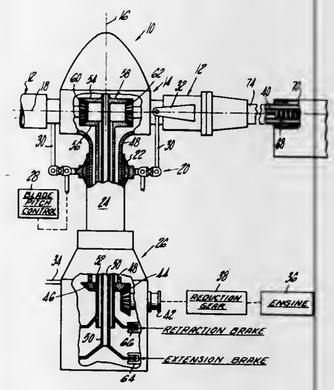
3,884,593
APPARATUS FOR DRILLING ALIGNED HOLES
Virgil F. Christoffer, 1603 S. Cooper, Arlington, Tex. 76010
Filed June 3, 1974, Ser. No. 475,825
Int. Cl. B23b *49/00*
U.S. Cl. 408—16 **10 Claims**

1. Apparatus for use with a portable power drill for drilling aligned holes in closely spaced panels, comprising:
an elongated shaft defining a drill bit extension having stop means at each end;
a housing rotatably and slidably mounted on said shaft for relative sliding and rotational movement;
an elongated coiled compression spring, disposed on said shaft, between said housing and the shaft stop means at the trailing end of the shaft, for continuously urging said housing along said shaft toward engagement with the shaft stop means at the leading end thereof;
at least one level indicator means mounted on said housing



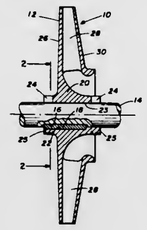
to enable the drill operator to level said bit extension shaft in a selected orientation for drilling.

3,884,594
VARIABLE LENGTH BLADE
Evan Albern Fradenburgh, Fairfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 26, 1973, Ser. No. 428,480
Int. Cl. B64c *11/28*
U.S. Cl. 416—87 **24 Claims**



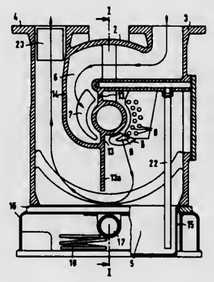
1. A variable length blade for aircraft comprising an inner blade portion and
an outer blade portion which telescopes with respect to said inner blade portion;
said inner blade portion including an external torque tube, and an internal torque tube;
means within said internal torque tube for telescoping said outer blade portion,
said internal torque tube being relatively fixed against rotation and translation;
and means associated with said external torque tube and said outer blade portion for changing the pitch of said outer blade portion.

3,884,595
IMPELLER AND SHAFT ASSEMBLY
David B. Herrick, Connersville, Ind., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed May 15, 1974, Ser. No. 469,999
Int. Cl. F01d *5/06*
U.S. Cl. 416—198 **6 Claims**



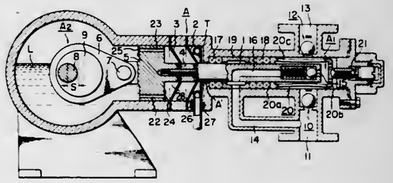
1. An improved impeller and shaft assembly for use in centrifugal compressors or the like comprising:
an elongated, generally cylindrical shaft; and,
an impeller located on and rotatable with said shaft, said impeller including a hub portion having first and second ends, a bore sized to closely receive said shaft and extending through said ends, a disk portion spaced axially inwardly from said ends and projecting radially outwardly from said hub portion, and a plurality of radially spaced slots in said hub portion extending axially inwardly from said ends toward said disk portion whereby the centrifugal or outward radial force generated by rotation of said assembly, which tends to enlarge said bore, causes a radially inwardly directed force on said hub portion adjacent said slots biasing said slotted end portions into tighter gripping engagement with said shaft.

3,884,596
DISTRIBUTOR WITH SEPARATE SUCTION AND PRESSURE NOZZLES FOR A LIQUID-RING GAS COMPRESSOR
Gunter Hoffmeister, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 10, 1974, Ser. No. 459,582
Claims priority, application Germany, Apr. 12, 1973, 2318538
Int. Cl. F04c *19/00*
U.S. Cl. 417—68 **3 Claims**



1. In a liquid-ring compressor for a pump medium having an operationally horizontal impeller shaft and a distributor having an outside wall separate suction and pressure nozzles and including at least one plane side wall containing one or more pressure slots and one or more suction slots adjoining a work chamber of the compressor and an enclosing outside wall and in which, below the pressure slots, the pressure nozzle, and the impeller shaft, a plenum is provided in the distributor for collecting liquids separated from the pump medium, with the pressure nozzle opening into the distributor at a point higher than the pressure slots, an improved distributor arrangement comprising:
a. all pressure slots arranged on one side of the impeller shaft and the pressure nozzles on the other side, with the pressure nozzles and pressure slots connected directly with each other through the plenum located below both with the plenum extending across the entire cross-section of the distributor; and
b. suction and pressure nozzles opening into the distributor near its top and suction slots in the side wall arranged between first and second internal partitions with the pressure slots arranged between the first partition and the outside wall of the distributor with the first and second partitions connected below the impeller shaft to a wall extending toward the plenum and ending a distance from the bottom side of the distributor.

3,884,597
RECIPROCATING PUMP
Kazuichi Ito, 1463-4, Ichibu-cho, Ikoma-shi, Nara-ken, Japan
Filed Oct. 31, 1973, Ser. No. 411,410
Claims priority, application Japan, June 4, 1973, 48-61833
Int. Cl. F04b *49/00*
U.S. Cl. 417—284 **10 Claims**



1. A reciprocating pump comprising:
a pump casing including a partition defining on one side thereof a cylinder chamber having an inlet port with an inlet valve and an outlet port with an outlet valve, and on the other side thereof a second chamber;
a plunger slidably supported in said casing;
a drive means mounted in said second chamber for driving said plunger in reciprocation;
a crosshead fixed to said plunger, and constituting a part of said plunger driving means;
a diaphragm including a central portion secured between said plunger and said crosshead, and with a peripheral portion secured to said casing, said diaphragm defining a closed space with said partition; and
a hollow elastic damping body disposed in said closed space between said diaphragm and said partition, said hollow elastic body extending through said casing and having an inner space which communicates with the ambient atmosphere.

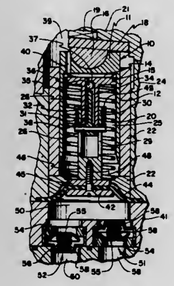
3,884,598
PISTON ASSEMBLY FOR DIAPHRAGM PUMP
William F. Wanner, Minneapolis, Minn., assignor to Wanner Engineering, Inc., Hopkins, Minn.
Filed Oct. 5, 1973, Ser. No. 403,937
Int. Cl. F04b *35/02*
U.S. Cl. 417—386 **14 Claims**

1. A piston assembly for use in a diaphragm pump having a piston adapted for reciprocal movement from a first to a second position defining a power stroke and from said second to said first position defining a return stroke, a diaphragm movable between first and second positions, a pumping chamber on one side of said diaphragm, a transfer chamber on the

other side of said diaphragm having a volume defined, in part, by the relative positions of said piston and said diaphragm, a source of hydraulic fluid means forming on inlet for hydraulic fluid to said transfer chamber, said fluid in said transfer chamber serving to transfer motion of said piston to said diaphragm, and means for reciprocating the piston, said piston assembly comprising:

bias means movable with said piston for continuously biasing said diaphragm toward said piston;

diaphragm stop means for limiting the movement of said diaphragm away from said pumping chamber, and defining the first position of said diaphragm when said diaphragm is in contact therewith;



valve means responsive to relative movement between said diaphragm and said piston for controlling the flow of hydraulic fluid from said hydraulic fluid source into said transfer chamber such that said valve means is closed whenever the pressure in said transfer chamber is greater than the pressure in said hydraulic fluid source and such that said valve means is open whenever the pressure in said transfer chamber is less than the pressure in said hydraulic fluid source and the volume of said transfer chamber is less than the volume thereof when each of said piston and said diaphragm is in its first position.

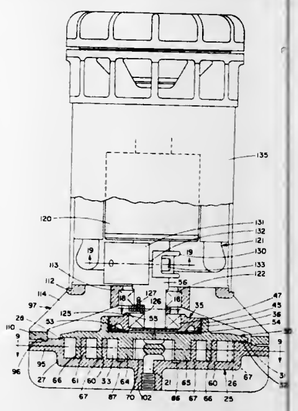
3,884,599

SCROLL-TYPE POSITIVE FLUID DISPLACEMENT APPARATUS

Niels O. Young, Mason, N.H., and John E. McCullough, Carlisle, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed June 11, 1973, Ser. No. 368,907
Int. Cl. F01c *1/02*
U.S. Cl. 418—55 **58 Claims**

1. In a positive fluid displacement apparatus into which a fluid is introduced through an inlet port for circulation therethrough and subsequently withdrawn through a discharge port, and in which two scroll members having wraps which make moving line contacts to seal off and define at least one moving pocket of variable volume and zones of different fluid pressure when one of said scroll members is driven to orbit said other scroll member while maintaining a fixed angular relationship therewith, the improvement comprising driving means including means to provide a centripetal radial force adapted to oppose a fraction of the centrifugal force acting upon said other orbiting scroll member, whereby the radial



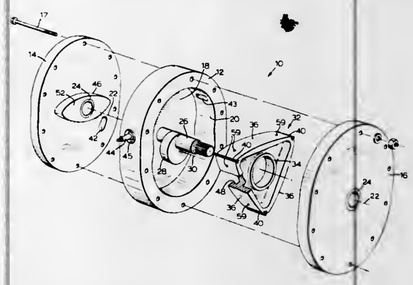
sealing force between said scroll member is maintained at a level to minimize both wear and internal fluid leakage.

3,884.600

GUIDANCE MEANS FOR A ROTARY ENGINE OR PUMP

Herbert Lewis Gray, Milton, Ontario, Canada, assignor to Gray & Bensley Research Corporation, Milton, Ontario, Canada

Filed Nov. 8, 1973, Ser. No. 414,000
Int. Cl. F01c *1/02;* **F04c** *17/02;* **F02b** *55/00*
U.S. Cl. 418—61 A **6 Claims**



1. A rotary mechanism comprising a body, a shaft mounted by the body for rotation about a corresponding axis, the body providing an internal chamber having an internal peripheral surface of two-lobed epitrochoidal cross-section perpendicular to and symmetrical about the said shaft axis, a three-lobed rotor of triangular cross-section mounted within the chamber for rotation about an axis displaced from and parallel to the said shaft axis, eccentric means connecting the shaft and the rotor for transmission of rotation between them, the rotor being symmetrical about its own axis and having three circumferentially-spaced apex portions in sealing engagement with the said chamber internal peripheral surface to form three working chambers between the rotor external peripheral surface and the chamber surface that vary in volume upon relative rotation of the rotor and the chamber, and guidance means for guiding the rotor in the required motion relative to the casing comprising a first essentially triangular guide surface movable with the rotor, symmetric about the rotor axis, and parallel to the rotor axis and a second guide surface movable with the body, symmetric about the shaft axis, and parallel to the shaft axis, the guide surfaces being in relatively-sliding engagement with one another, the said second surface being of the oval shape generated by the said first surface in

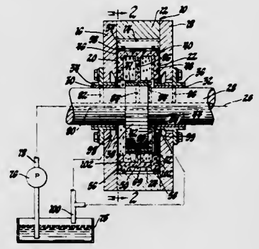
their required relative motion and having its major and minor axes parallel respectively to the minor and major axes of the internal body surface.

3,884,601

ROTARY ENGINE ROTOR SEAL LUBRICATION

Parme G. Anthony, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 24, 1973, Ser. No. 400,365
Int. Cl. F04c *29/02*
U.S. Cl. 418—90 **2 Claims**



1. A rotary engine comprising an engine housing having an internal peripheral wall and oppositely facing side walls cooperatively defining a cavity, a shaft extending through said cavity and side walls and rotatably supported by said housing, a hollow powdered metal rotor located in said cavity and rotatably mounted on said shaft, said rotor having a circumferentially extending wall cooperating with said peripheral wall of said housing and oppositely facing radially extending side walls cooperating with said side walls of said housing to provide a plurality of chambers that are spaced about and move with said rotor while varying in volume as said rotor and said shaft rotate, said rotor having apex seals engaging said peripheral wall and side seals engaging said side walls to seal said chambers from each other, a source of oil, passage means for delivering the oil to and from the interior of said rotor, and said circumferentially extending wall and radially extending side walls of said rotor constructed of a metal having a porosity over the entire thickness thereof effective to permit oil to diffuse from the interior to the exterior of said rotor as the result of centrifugal forces on the body of oil within said rotor at a rate providing sufficient oil delivery to the exterior of said rotor to be flung outward by rotor rotation against said peripheral wall to adequately lubricate said apex seals at minimum rotor speed and load and as a result of continuing centrifuging action of the oil in the interior of said rotor providing increasing oil delivery to the exterior to increase the lubrication of all said seals with increasing rotor speed at an exponential rate.

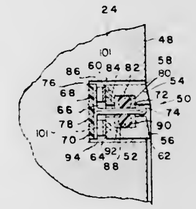
3,884,602

ROTARY ENGINE OIL SEAL ASSEMBLY

Ronald L. Phillips, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1974, Ser. No. 432,447
Int. Cl. F01c *19/00*
U.S. Cl. 418—142 **3 Claims**

1. In a rotary engine having a housing with an inwardly facing peripheral wall and oppositely facing inner side walls cooperatively defining a cavity, a crankshaft rotatably supported in said housing, said crankshaft having an eccentric located in said cavity, a rotor rotatably mounted on said eccentric in said cavity, said rotor having sides facing said side walls and peripheral faces facing said peripheral wall defining a plurality of chambers that are spaced about and move with said rotor while varying in volume as said rotor rotates, an annular seal groove in each side of said rotor with its center on the rotor axis, the improvement comprising; a seal assembly comprising in combination an annular supporting member having a T-shaped cross section including a horizontally disposed cylinder and vertically disposed radial flanges extending radially outwardly and radially inwardly of the cylinder, a first sealing ring positioned radially outwardly of the cylinder of said annular member and containing a substantially centrally located groove facing said cylinder, an O-ring seal disposed in said groove engaging said cylinder of said annular member, a first annular wave spring engaging a portion of said flange extending radially outward of said cylinder of said annular member and engaging said first sealing ring biasing it outwardly in said rotor annular groove, a second annular sealing ring disposed in said rotor groove radially inwardly of said



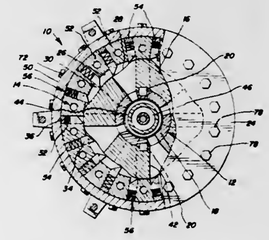
cylinder and containing a groove facing said cylinder, a second O-ring seal in said groove engaging said second sealing ring and said cylinder of said annular member, a second annular wave spring engaging a portion of said flange extending radially inwardly of said cylinder of said annular support member and engaging said second sealing ring biasing it outwardly in said rotor annular groove, an elastomeric annular seal member bonded to the back side of said flanges of said annular supporting member, and a detent member on the terminal end of said annular support member cylinder retaining said O-rings and thereby said seal rings and said wave biasing springs in assembled relationship whereby said seal assembly can be inserted within the circular rotor seal groove as an assembled unit.

3,884,603

FLUID TRANSLATING DEVICE WITH IMPROVED VANE SUPPORT

Birger F. Jansson, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed July 30, 1973, Ser. No. 384,106
Int. Cl. F04c *1/00*
U.S. Cl. 418—177 **5 Claims**



1. In a fluid translating device of the sliding vane type having a fixed element with fluid flow paths in said fixed element and a rotating element surrounding said fixed element and cooperating therewith to define a chamber, said rotating element including a vane supporting member comprising an annular ring; a plurality of circumferentially spaced segments inside said ring, and an equal number of spacers between adjacent segments and cooperating therewith to define vane receiving slots, characterized by at least one of said spacers

being wedge means movable axially of said ring to place said

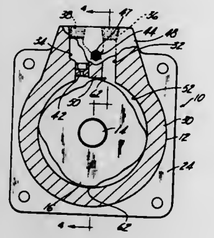
apertures, one group being connected by a system of tubes

a die having a generally slot-like extrusion orifice, the dis-

signal responsive to equality between signals received at

being wedge means movable axially of said ring to place said segments under compression and said ring in tension.

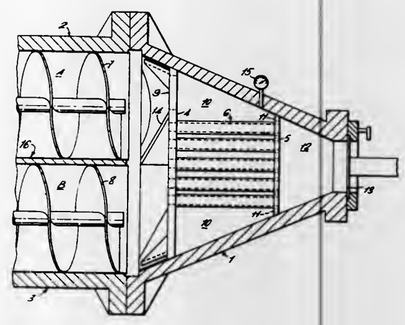
3,884,604
CONTROL VALVE
Robert J. Smith, Birmingham, Mich., assignor to Planet Corporation, Troy, Mich.
Filed Jan. 2, 1974, Ser. No. 430,218
Int. Cl. F15b *15/22*; **F01c** *21/00*; **F03c** *3/00*
U.S. Cl. 418—270 **4 Claims**



1. A valve assembly for controlling the acceleration and deceleration rates of a fluid motor comprising:
rotary mechanical force input means mechanically connected to said motor;
a fluid inlet passage in communication with a source of pressurized fluid;
a fluid outlet passage in communication with the inlet port of said motor;
a first valve means situated between said inlet passage and said outlet passage and capable of varying the pressure drop between said passages in response to changes in the rotary position of said force input means, said first valve means comprising a valve body having a central bore formed therethrough, said fluid inlet passage and said fluid outlet passage fluidly communicating with said central bore through the periphery of said central bore, and a cam member disposed in said central bore and secured for rotation to said force input means, said cam member employing one or more lobes which register with the periphery of said central bore for selectively communicating said inlet passage to said outlet passage in dependence on the rotational position of said cam member,
second valve means situated between said inlet and outlet passages and capable of limiting the pressure differential between said passages; and
flow control means situated in said outlet passage intermediate the point of communication of said first valve means and the inlet of said motor.

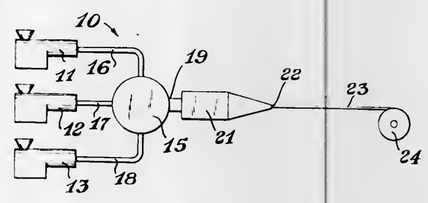
3,884,605
MANUFACTURE OF SOAP BARS
Pierre Grelon, Marq-en-Baroeul, France, assignor to Lever Brothers Company, New York, N.Y.
***Division* of Ser. No. 303,176, Nov. 2, 1972, abandoned. This application Feb. 15, 1974, Ser. No. 442,692**
Claims priority, application United Kingdom, Nov. 5, 1971, 51476/71
Int. Cl. B29f *3/12*
U.S. Cl. 425—131.1 **5 Claims**

1. An apparatus for the continuous preparation of multicolored detergent bar which comprises a twin-barrel soap plodder comprising at least one set of two parallel barrels, having a partition wall in between for the provision of two separated streams of soap mass, a cone attached to the barrel-twin outlets and two parallel plates positioned in the cone after the worm compressors, each plate having two groups of apertures, one group being connected by a system of tubes through which the soap mass emerging from one barrel passes,



the second group of apertures functioning as outlets for the soap mass emerging from the second barrel.

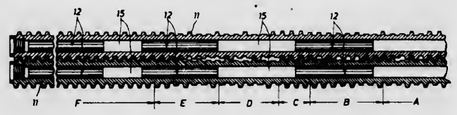
3,884,606
APPARATUS FOR MULTILAYER COEXTRUSION OF SHEET OR FILM
Walter J. Schrenk, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 185,534, Oct. 1, 1971, Pat. No. 3,773,882. This application June 12, 1973, Ser. No. 369,372
Int. Cl. B29f *3/12*
U.S. Cl. 425—133.5 **3 Claims**



1. An apparatus for the preparation of a multilayer film or sheet, the apparatus comprising
a body, the body defining at least
a first polymer entrance passage,
a first plenum in communication with the first polymer passage,
a stream dividing means to divide material flowing from the first passage into a plurality of first substreams,
second polymer receiving means in operative communication with a second plenum, the second plenum discharging to the dividing means which divides the second stream into a plurality of second substreams and interdigitates the plurality of second substreams with the first substreams, the dividing means being in operative communication with
a third or composite stream receiving plenum, the composite stream comprising the combined first and second substreams,
a third plenum discharge passage in operative communication with the third plenum and adapted to receive the composite stream from the third plenum, the discharge means being in combination with

a die having a generally slot-like extrusion orifice, the discharge passage having
a first or receiving end and
a second or discharge end, the improvement which comprises
disposing the discharge portion of the stream dividing means in an arcuate manner to form an arc of a circle wherein the discharge portion is generally equidistant from the discharge end of the third plenum discharge passage.

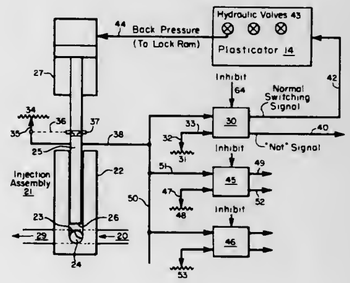
3,884,607
PLASTICIZING EXTRUSION DEVICE EMPLOYING WORMS
Bernhard Gerhards, Mausbach Uber Stolberg, Rhineland, Germany, assignor to Kleinewefers Industrie-Companie GmbH, Krefeld, Germany
Filed Jan. 15, 1974, Ser. No. 433,531
Claims priority, application Austria, Jan. 16, 1973, 342/73
Int. Cl. B29c *3/06*
U.S. Cl. 425—144 **11 Claims**



1. In a plasticizing worm extruder; a housing, a pair of elongated parallel and rotatable worms in said housing having interengaged helical rib means thereon, feed opening means in said housing for supplying material to be plasticized and extruded to said worms near one end thereof and discharge opening means in said housing for the extrusion of the plasticized material from near the other end of said worms, means in said worms for heating axial regions thereof to respective temperatures, at least one of said regions being heated to the plasticizing temperature of said material, each said worm having the radially outer ends of at least a portion of the said rib means thereon disposed close to the housing and each worm having at least one axial zone wherein the said rib means is reduced in at least the height thereof to increase the space to receive said material.

3,884,608
INJECTION MOLDING MACHINE WITH SHOT SIZE REGULATION
Earl H. King, Cygnet, Ohio, assignor to Sund-Borg Machines Corporation, Fremont, Ohio
***Continuation* of Ser. No. 116,789, Feb. 19, 1971, abandoned. This application Mar. 1, 1973, Ser. No. 337,092**
Int. Cl. B29f *1/04*
U.S. Cl. 425—145 **10 Claims**

1. A rotary injection molding machine including a plasticator unit, a plurality of molds for displacement along a path into a work position adjacent the plasticator, an injection assembly including an accumulator chamber, a reciprocable member positioned at least partially in the chamber, means for regulating movement of said member within the accumulator chamber, a valve effective in a first position to complete a passage between the accumulator chamber and an input channel through which molten plastic is received from the plasticator, and effective in a second position to complete a passage between the accumulator chamber and output channel for discharging the accumulated plastic toward the mold, and first and second control systems for regulating the amount of plastic accumulated and discharged into first and second molds by regulating displacement of said member; said first control system comprising:
a comparator circuit having first and second input connections and an output connection for providing a control signal responsive to equality between signals received at the input connections,
a first potentiometer coupled to a first input connection of the comparator circuit for presetting a reference signal indicating the desired quantity of plastic to be accumulated and discharged to the first mold,
a second potentiometer electrically coupled to the second input connection of the comparator circuit and mechanically coupled for operation as a function of displacement of said member to provide a position signal that varies as a function of the position of the member, and
switching means connected for operation by the control signal to termina' displacement of said member when the desired quantity of plastic material is present in the accumulator chamber;

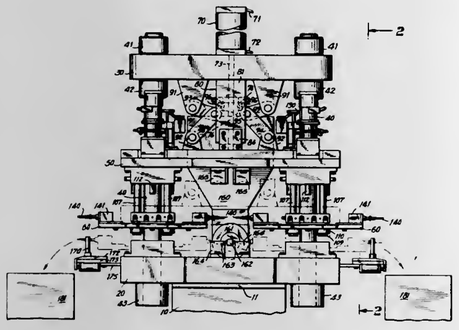


and said second control system comprising:
a comparator circuit having first and second input connections and an output connection for providing a control signal responsive to equality between signals received at the input connections,
a first potentiometer coupled to a first input connection of the comparator circuit for presetting a reference signal indicating the desired quantity of plastic to be accumulated and discharged to the second mold,
means for coupling the second input connection of the comparator circuit to said second potentiometer which provides the position signal as a function of the displacement of said member; and
switching means connected for operation by the lastmentioned control signal to terminate displacement of said member when the desired quantity of plastic material for the second mold is present in the accumulator chamber.

3,884,609
PLASTIC BLOW MOLDING MACHINE
George C. Britten, Westbury, N.Y., assignor to Manbritt Industries, Inc., Amityville, N.Y.
Filed May 30, 1973, Ser. No. 365,171
Int. Cl. B29d *23/03*
U.S. Cl. 425—242 B **28 Claims**

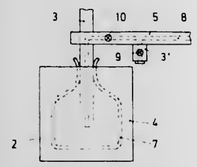
1. Blow molding machine for forming hollow plastic articles, comprising a fixed platen, an opposite end plate, and a vertically slidable movable platen, a pair of tie rods passing through the end portions of all the foregoing and being rigidly secured to the fixed platen and the end plate and passing

through the movable platen which has slidable fit thereon, and at least one turntable mounted between the movable platen



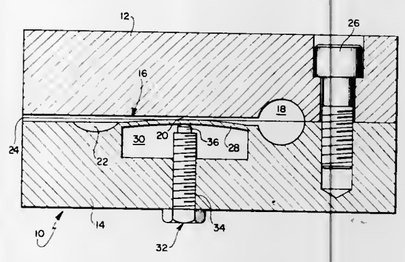
and the fixed platen with a tie rod passing through it, the turntable being slidable and rotable on the tie rod.

3,884,610
BLOW-MOLDING APPARATUS
Johannes S. Mehnert, Ernststrasse 11, 5205 St. Augustin-Menden, Germany
Filed Feb. 20, 1973, Ser. No. 334,134
Claims priority, application Germany, Feb. 22, 1972, 2208165
Int. Cl. B29c *5/06*
U.S. Cl. 425—387 B **6 Claims**



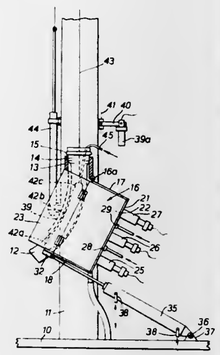
1. Blow-molding apparatus for the fabrication of a hollow body of thermoplastic material within a blow mold, the body being subsequently released from the mold, comprising:
a. a conventional blow pipe (3) capable of providing a first stream of gas,
b. a guide (5) for selectively implanting the blow pipe into the mold and extracting the blow pipe from the mold before the body is released from the mold,
c. a gas-supplying member of simple construction (3') mounted on the guide and separate from the blow pipe, the member being capable of supplying a second stream of gas to the mold after the removal of the blow pipe, the guide serving to move the said member into and out of the mold, and
d. a valve system (9, 10) for selectively directing gas to the blow pipe (3) and the member (3'), the blow pipe expanding the body of thermoplastic within the mold and the gas-supplying member maintaining a positive gas pressure within the body while it is allowed to cool.

3,884,611
EXTRUSION DIE
John W. Anderson; John J. Barney; James J. Flanagan, and Vernon Krupa, all of Chippewa Falls, Wis., assignors to Leesona Corporation, Warwick, R.I.
Filed Oct. 24, 1973, Ser. No. 409,305
Int. Cl. B29f *3/00*
U.S. Cl. 425—376 **11 Claims**



1. A die for the extrusion of thermoplastic materials comprising
a plurality of die components defining an internal plastic flow distribution channel of relatively thin flat configuration, said channel being upstream and removed from the exit portion of said die,
one of said die components having an integral segment thereof adjacent said channel and in part defining said channel so as to insure a smooth uninterrupted flow path, said segment deformable so as to modify the cross-sectional configuration of said channel upstream of said exit portion a distance to produce significant thermoplastic material flow control effective at said exit portion and means for deforming said segment.

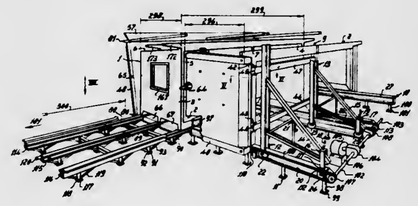
3,884,612
APPARATUS FOR BENDING THERMOPLASTIC PIPES
Gunnar Parmann, Kongsmyrvn 28b, 5070 Mathopen, Norway
Filed Jan. 4, 1973, Ser. No. 321,028
Claims priority, application Norway, Jan. 12, 1972, 48/72
Int. Cl. B29c *17/02*
U.S. Cl. 425—384 **23 Claims**



1. Apparatus for bending thermoplastic pipes which is capable of functioning as a self-contained unit and which comprises
heat-transfer means for controllably heating and cooling such a pipe,
means for locating one end of the pipe in a fixed position externally of said heat-transfer means,

means for internally reinforcing the pipe including an inflatable container adapted to be lowered into the pipe and to be inflated to a pressure sufficient to cause said container to abut the pipe so as to provide a reinforcement therefor while suspended therein and means for lowering and raising said container into and out of the pipe when said container is in its normal deflated condition, and means for applying a bending force to said pipe while said pipe is received in said heat-transfer means with said one end in said fixed position, the heat-transfer means being adapted to pivot as the pipe is being bent by actuation of the bending force-applying means.

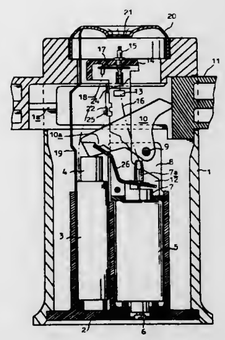
3,884,613
APPARATUS FOR FORMING AND DISPLACING A PREFABRICATED BUILDING SECTION
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland
Division of Ser. No. 882,647, Dec. 5, 1969, Pat. No. 3,652,052. This application Mar. 24, 1972, Ser. No. 237,991
Claims priority, application Netherlands, Dec. 10, 1968, 6817718
Int. Cl. B28b *7/22*
U.S. Cl. 425—404 **29 Claims**



1. A device for molding a prefabricated section configured to form and enclose a part of a building, said device comprising jig means to form a mold in which said section is cast, said jig means having displaceable outer side jigs and at least one displaceable inner jig whereby said section is releasable from said jig means, supporting structure provided for said inner jig adapted to move said inner jig in a first horizontal direction, displacement means to displace said outer side jigs also in said first direction, said jig means including a supporting member at the lower side to support the said section, said device including a conveyor to displace in a horizontal direction substantially perpendicular to said first mentioned direction said section over the supporting member and out of the mold defined by said jig means.

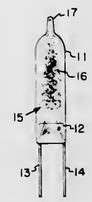
3,884,614
GAS LIGHTER
Nobuyoshi Moriya, Omiya, Japan, assignor to Mansei Kogyo Kabushiki Kaishya, Kawaguchi-Shi, Saitama, Japan
Filed May 22, 1974, Ser. No. 472,130
Int. Cl. F23q *2/38*
U.S. Cl. 431—88 **10 Claims**

1. In a gas lighter having a casing, a support means disposed within the casing, a fuel reservoir provided with a fuel refill valve, a high voltage generating device mounted on the support means, and a pair of discharge electrodes electrically connected to the high and low voltage sides, respectively of the high voltage generating device and forming a spark gap therebetween, means to preclude undesired spark discharge across said spark gap when said lighter is in inverted position, comprising a conducting metal plate disposed between the spark gap and the high voltage generating device and electrically connected to the high voltage side thereof, and a contact means mounted on the support means and displaceable into



electrical contact with said metal plate to parallel said spark gap and short-circuit the electric ignition circuit.

3,884,615
FLASH LAMP MOUNT CONSTRUCTION
John C. Sobieski, Russell Twp., Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 21, 1974, Ser. No. 453,487
Int. Cl. F21k *5/02*
U.S. Cl. 431—95 **15 Claims**

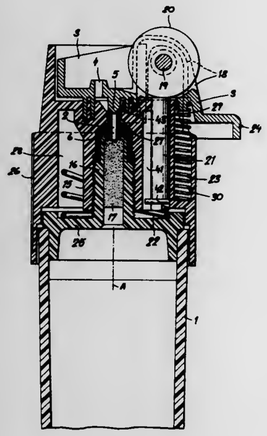


1. A photoflash lamp of the type having a bulb and a mount comprising a pair of inleads extending within the bulb and having flash ignition means connected across said inleads within said bulb, said bulb containing combustible material ignitable by said flash ignition means, wherein said flash ignition means comprises an electrically insulative member, said inleads extending into said insulative member, an opening through said insulative member between and in communication with both of said inleads, said opening having ends thereof at different locations on the surface of said insulative member and communicating with the interior of said bulb, at each of said ends, and primer material contained in said opening and connected electrically across said inleads said primer material being exposed to said interior of the bulb at both said ends of said opening.

3,884,616
LIGHTER WITH HEAD ROTATABLE FOR FLAME ADJUSTMENT

Guy Neyret, Francheville, France, assignor to Etablissements Genoud & Cie Societe Anonyme, Venissieux (Rhone), France

Continuation-in-part of Ser. No. 376,446, July 5, 1973. This application Nov. 26, 1973, Ser. No. 418,823
Claims priority, application France, Nov. 27, 1972, 72.42707
Int. Cl. F23q *2/00*
U.S. Cl. 431—142 **6 Claims**



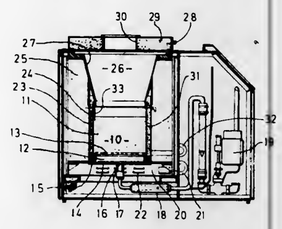
1. A lighter comprising:
a body having a gas reservoir;
a head mounted on and rotatable relative to said body about an axis passing through said body, said head being formed with a passage generally parallel to said axis and opening away from said body;
a flint axially displaceable in said passage; and
a compression spring received in said head concentrically to said axis and having one end bearing against said body, said flint bearing against the other end of said spring, said body being generally cylindrical and centered on said axis, said head having valve means operatively connected to said body for limiting gas flow therefrom through said head, said head being formed with an annular circular groove open toward said body and receiving said spring.

3,884,617
FLUIDISED BED HEATER

Michael John Virr, Stourbridge, England, assignor to Fluidfire Development Limited, Dudley, England

Filed July 27, 1973, Ser. No. 383,248
Claims priority, application United Kingdom, July 29, 1972, 35561/72
Int. Cl. F23d *19/02*
U.S. Cl. 431—170 **10 Claims**

1. In a heater comprising a bed of refractory particles, inlet means for admitting gases to the bed and feed means for feeding a gaseous fuel and air into the bed through the inlet means at a rate such as to fluidise the bed, the improvement wherein the feed means includes means for mixing a gaseous fuel and air and for feeding of mixture of fuel and air to the inlet means, the feed means further including a passageway communicating with said mixing means and with said inlet means, and cooling means comprising a coolant duct in thermal communication with the gaseous mixture which flows through the passageway and the inlet means when the heater is in use, and means for causing a fluid coolant to flow through

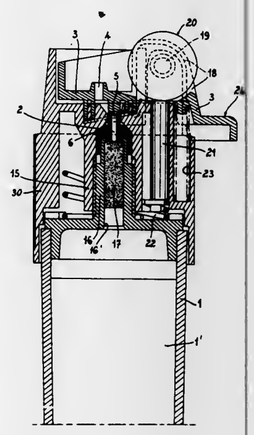


said coolant ducts, whereby heat can be extracted from said gaseous mixture.

3,884,618
GAS LIGHTERS

Guy Neyret, Francheville, France, assignor to Etablissements Genoud & Cie, Venissieux (Rhone), France

Filed July 5, 1973, Ser. No. 376,446
Claims priority, application France, July 10, 1972, 72.25377
Int. Cl. F23q *1/04*
U.S. Cl. 431—254 **4 Claims**

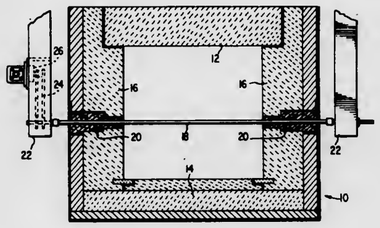


1. A lighter comprising:
a hollow cylindrical body defining a gas reservoir and having an axial passage;
a head rotatably mounted on said body and having means for varying the flow cross-section of said passage upon such rotation;
a lever pivotably mounted on said head and formed with valve means in axial alignment with said passage for selectively opening and closing same;
a burner aperture formed in said lever and laterally offset from said valve means;
sealing means between said burner aperture and said passageway; and
ignition means on said head for the ignition of gas emanating from said burner aperture.

3,884,619
METHOD FOR FAST FIRING GLAZED CERAMIC TILE TRIM PIECES

John A. Cable; Stephen J. Cable, and Richard R. Falbo, all of Canton, Ohio, assignors to United States Ceramic Tile Company, Canton, Ohio

Continuation-in-part of Ser. No. 397,732, Sept. 17, 1973, Pat. No. 3,830,625. This application Apr. 26, 1974, Ser. No. 464,471
Int. Cl. F27b *9/30*
U.S. Cl. 432—2 **12 Claims**



1. A method for removing glaze and other deposits from the rollers of a roller hearth kiln without cooling the kiln, the kiln being of the type which includes power driven rollers for receiving and transporting ceramic tile through the kiln, such method including raising the temperature of said kiln to a temperature which is higher than the temperature used for firing the glazed ceramic tile to decrease the molten viscosity of the glaze deposits on said rollers and subsequently introducing absorbent refractory material onto said rollers while driving said rollers to pass said refractory material over said rollers through the heated kiln after the viscosity of the glaze deposits is decreased to cause the glaze deposits to transfer from the rollers to said absorbent refractory material.

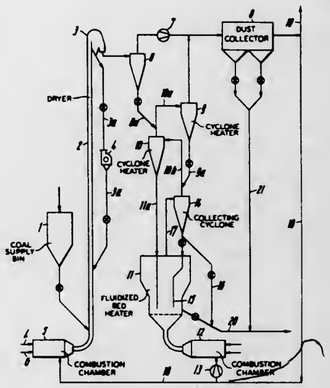
9. A method for removing glaze and other deposits from the power driven rollers of a roller hearth kiln which occur from the firing of glazed ceramic tile in the kiln without cooling the kiln which includes driving the rollers of the kiln, introducing absorbent cleaning refractory shapes having a low thermal expansion characteristic and a high absorption characteristic onto said rollers to be passed by said driven rollers through the heated kiln causing the glaze deposits on said rollers to transfer to said absorbent cleaning refractory shapes.

3,884,620
PROCESS AND APPARATUS FOR CONTINUOUSLY HEATING FINE-GRAINED COAL

Roland Rammler, Konigstein, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt, Germany

Filed Oct. 10, 1973, Ser. No. 405,233
Claims priority, application Germany, Nov. 17, 1972, 2256385
Int. Cl. F27b *15/00*; **F26b** *3/08*
U.S. Cl. 432—15 **10 Claims**

1. Process for continuously heating fine-grained coal to a controlled, uniform end temperature by direct contact with hot gases which comprises conveying the coal to be heated to elevated cyclonic zone and subsequently to one or more cyclonic heat exchange zones disposed on a lower level or on successively lower levels, the temperature of the coal being raised in said heat exchange zones, thereafter heating the coal to said end temperature in a fluidized-bed heating zone, the exhaust gas from the fluidized-bed heating zone being supplied to a separate cyclonic collecting zone where dust is collected from the exhaust gas, said gas being then passed as a hot conveying gas through said one or more heat exchange

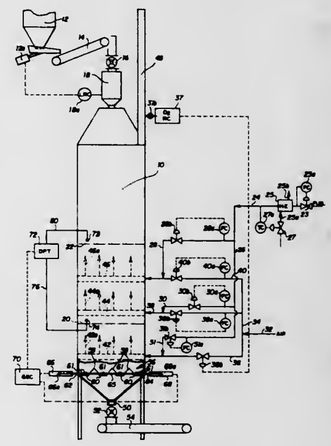


zones, said dust collected in the collecting zone being withdrawn or recycled to the fluidized bed zone.

3,884,621
CONTROL OF VERTICAL HEAT TREATING VESSELS

James R. Summer, Blum, Tex., assignor to Round Rock Lime Company, Blum, Tex.

Continuation-in-part of Ser. No. 383,484, July 30, 1973. This application May 6, 1974, Ser. No. 467,139
Int. Cl. F27b *1/26*
U.S. Cl. 432—19 **13 Claims**



1. In a process for heat treating particulate material of nonuniform gradation in a vertical vessel wherein the particulate material is passed to the inlet of the vertical vessel and allowed to gravitate through a heat treating zone in the vessel wherein it is contacted with upwardly moving heat treating fluid comprising oxygen and fuel which is passed through said heat treating zone and then through the gas outlet of said vessel at the upper end thereof, and the difference in pressure between said fluid passing to said heat treating zone and said

fluid passing from said heat treating zone is measured to determine the relative bulk density of said particulate material passing through said heat treating zone and at least one of (a) the flow rate of particulate material from the outlet of said vertical vessel at the lower end thereof, and (b) the heat input carried by said heat treating fluid to said heat treating zone, is regulated in response to variations in the measured differential pressure of said fluid passing into and from said heat treating zone to yield a product which has been heat treated equivalent to a charge of standard particles having a predetermined bulk density, and thereafter the heat treated material is removed from said outlet at the lower end of said vessel, the improvement comprising:

sensing the oxygen content of said fluid passing through said gas outlet and controlling the flow of oxygen to said heat treating fluid in response to variations of said measured oxygen content to yield a uniform oxygen content in said fluid passing through said outlet and a controlled oxygen-fuel conversion in said heat treating zone.

10. In a vertical kiln having means to feed particulate material to its upper inlet end thereof; means to pass a fuel/air mixture upwardly through said kiln and establish a burning zone within the midportion thereof; and an outlet grate means to remove heat treated particulate material from the lower outlet end thereof at a controlled rate in response to variations of the bulk density of said particulate material passing through said burning zone to yield a product which has been heat treated equivalent to a charge of standard particles having a predetermined bulk density; the improvement comprising:

means for sensing the oxygen content of gases passing from said burning zone, and means for controlling the quantity of air introduced into said fuel-air mixture in response to fluctuations in said oxygen content.

3,884,622

METHOD AND APPARATUS FOR POLYMERIZING MOLDED DENTAL PIECES

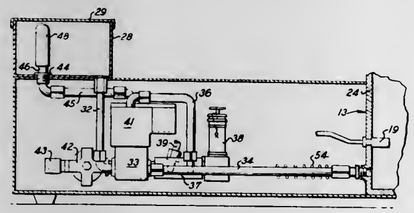
Erich Kopp, Panoramaweg 15, 7293 Pfalzgrafenweiler, Germany

Filed Aug. 7, 1973, Ser. No. 386,483

Claims priority, application Germany, Oct. 17, 1972, 2250819

Int. Cl. F27b *5/04*

U.S. Cl. 432—24 **35 Claims**



1. An apparatus useful for the matrix free polymerization of molded dental pieces comprising:

a. a hermetically sealable polymerization chamber,

b. means for raising the pressure within the chamber after it has been hermetically sealed,

c. means for elevating the temperature within the chamber,

d. means for supplying a sufficient amount of water in the polymerization chamber to form an unsaturated water vapor atmosphere in the chamber after it has been hermetically sealed under increased temperature and pressure,

e. means for exhausting the chamber after effecting polymerization for a predetermined amount of time while the chamber remains hermetically sealed, and

f. means for providing a flow of fluid into and out of the chamber after it has been hermetically sealed.

33. A method as defined in claim **32** wherein

said water is supplied in the polymerization chamber before the chamber has been hermetically sealed.

3,884,623

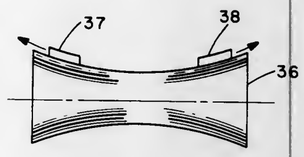
XEROGRAPHIC FUSER ROLLER

William Frederick Slack, Andover, N.J., assignor to Van Dyk Research Corporation, Whippany, N.J.

Filed Feb. 16, 1973, Ser. No. 333,289

Int. Cl. G03g *5/00*

U.S. Cl. 432—60 **1 Claim**



1. Xerographic fusing apparatus, comprising:

a relatively rigid generally concave hollow cylindrical fuser roller mounted for rotation about the longitudinal axis thereof, the diameter of said roller being linearly and symmetrically tapered along said axis with respect to the center thereof, from a maximum value at each end to a minimum value at the center, said fuser roller comprising a metal cylinder having an outer layer comprising polytetrafluoroethylene disposed thereon;

a radiant heating element disposed along said longitudinal axis within the interior of said fuser roller for heating said fuser roller to a desired xerographic toner fusing temperature;

a cylindrical pressure roller comprising a metal core surrounded by a cylinder comprising elastomeric material, and an outer layer comprising polytetrafluoroethylene disposed thereon, said pressure roller being disposed in juxtaposition with said fuser roller, said pressure roller being mounted for rotation about the longitudinal axis thereof,

said longitudinal axes being mutually parallel and spaced apart a given distance such that the peripheries of said rollers engage each other along the entire length of the line of contact thereof,

said fuser roller having a taper from the center to each end thereof such that the diameter of said fuser roller increases on the order of 0.001 inch per inch of length thereof; and

transport means for feeding paper sheets having xerographic toner thereon between said rollers.

3,884,624

NUCLEAR FUEL PREHEATING SYSTEM

Christo Andrea, Windsor Locks, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 15, 1973, Ser. No. 388,709

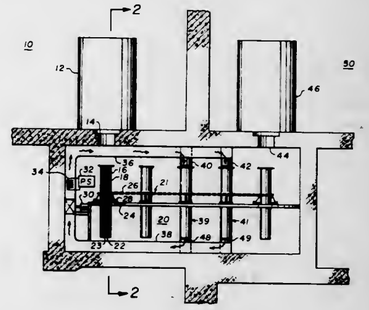
Int. Cl. F26b *25/00;* **G21c** *3/16*

U.S. Cl. 432—227 **5 Claims**

1. An improved nuclear reactor fuel handling system of the type having a transporter which conveys a new nuclear fuel assembly with coolant channels longitudinally therethrough through an isolation chamber into the nuclear reactor containment building, wherein the improvement comprises:

a. a heating station located in said isolation chamber for heating said fuel assembly from one end by passing heated fluid through the length of said fuel assembly; and

b. a transfer container mounted on said transporter for transporting said fuel assembly through said isolation chamber and into registry with said heating station, said transfer container adapted to carry said fuel assembly on its interior and said transfer container having a bottom plate with at least one perforation for allowing the passage of a fluid therethrough.



3,884,625
INDOPHENOLS DYES FOR COLORING KERATIN FIBERS

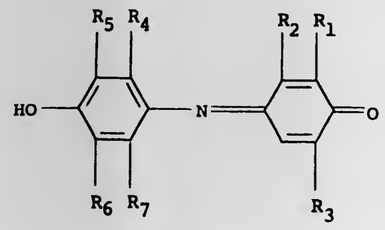
Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 100,433, Dec. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 49,905, June 25, 1970, abandoned. This application Feb. 28, 1973, Claims priority, application Luxembourg, June 25, 1969, 58,954

Ser. No. 336,531
Int. Cl. D06P *3/04*

U.S. Cl. 8—10 **9 Claims**

1. A composition for coloring keratin fibers comprising a solution of an indophenol in a solvent selected from the group consisting of water and an aqueous solution of a lower alkanol, said indophenol having the formula



wherein

R_1 and R_3 each independently represent a member selected from the group consisting of hydrogen, halogen, lower alkyl and —NHCOR wherein R is lower alkyl;

R_2 represents a member selected from the group consisting of ureido, —NHCOR wherein R is lower alkyl and $—NHR_8$ represents a member selected from the group consisting of hydrogen, lower alkyl and carbamylmethyl, with the proviso that when R_2 is $—NHR_8$, R_3 is not hydrogen; and

R_4, R_5, R_6 and R_7 each independently represent a member selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy, and said indophenol being present in said dye composition in amounts ranging between 0.01 to 0.5 weight percent of said composition.

3,884,626
PROCESS FOR THE DYEING OF TEXTILE MATERIAL CONTAINING AMINO OR AMIDE GROUPS

Hansruedi Hoster, Dornach, and Branimir Milicevic, Riehen, both of Switzerland, assignors to Ciba-Geigy AG, Switzerland

Continuation of Ser. No. 124,981, March 16, 1971, abandoned. This application Apr. 6, 1973, Ser. No. 348,657
Int. Cl. D06p *3/14*

U.S. Cl. 8—54 **13 Claims**

1. A process for the dyeing of a textile material containing amino or amide groups, which consists essentially of performing the dyeing by exhaust dyeing in a homogeneous solution of one or several dyestuffs, each of said dyestuffs containing at least one free sulphonic acid group and at least one fiber-reactive group in a solvent mixture consisting essentially of 98 to 60 percent by weight chlorinated aliphatic hydrocarbon, admixed with 2 to 50 percent by weight of a hydrophilic solvent.

3,884,627
OXIDATIVE HAIR DYE COMPOSITIONS

Frederick Brody, New York, and Stanley Pohl, New Rochelle, both of N.Y., assignors to Clairol Incorporated, New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,475
Int. Cl. A61k *7/00*

U.S. Cl. 8—10.2 **17 Claims**

1. A non-toxic oxidation hair dye composition comprising an aqueous carrier, as a para component from about 0.1% to 6% by weight based on the total weight of the composition of a compound of formula

(a)



or acid addition salts thereof and

b. from about 0.1% to 8% by weight based on the total weight of the composition of an oxidatively couplable component comprising a meta-phenylenediamine which couples with said para component to give blue or violet compounds wherein:

R_1 is hydroxyalkyl;

R_2 is hydrogen or hydroxyalkyl;

R_3 is hydrogen, alkyl, alkoxy or halogen; and

R_4 occupies any one of the remaining positions on the benzene ring and is hydrogen, alkyl, alkoxy or halogen;

and wherein the alkyl or alkoxy contains 1 to 6 carbon atoms and the hydroxyalkyl contains 2 to 6 carbon atoms; providing that R_2 is hydrogen when R_3 is alkyl, alkoxy or halogen;

and providing that at least two of R_2, R_3 or R_4 are other than hydrogen.

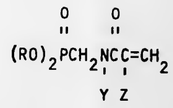
3,884,628
N-PHOSPHONOMETHYL ACRYLAMIDES AS FLAME RETARDING AGENTS FOR TEXTILES

James J. Duffy, Buffalo, and Peter Golborn, Lewiston, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 129,138, March 29, 1971. This application Nov. 30, 1972, Ser. No. 311,047
Int. Cl. D06m *1/00*

U.S. Cl. 8—116 P **11 Claims**

1. A process for imparting flame resistance to textile materials which comprises combining a flame retardant amount of a compound of the formula



in which R is aryl or alkyl; Y is —H or lower alkyl; and Z is —H or $—CH_3$ with a textile selected from the group consisting of a cellulosic material, a proteinaceous material, polyethylene terephthalate and blends thereof.

3,884,629
METHOD OF RENDERING TEXTILES FLAME RETARDANT AND THE PRODUCT

James J. Duffy, Buffalo, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 239,785, March 30, 1972. This application Sept. 4, 1973, Ser. No. 393,880
Int. Cl. D06m *1/00*

U.S. Cl. 8—116 P **8 Claims**

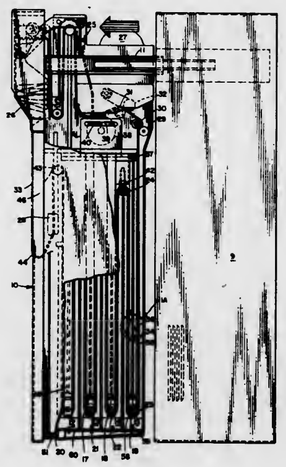
1. A process for rendering normally flammable textile materials flame retardant which comprises intimately mixing said textile materials with a flame retardant amount of a composition comprising a phosphorus containing N-hydroxymethyl amide and tetrakis (hydroxymethyl) phosphonium chloride.

3,884,630
TOWEL APPARATUS

James W. Schwartz, 500 51st St., Western Springs, Ill. 60558

Filed Aug. 8, 1968, Ser. No. 755,013
Int. Cl. D06l *1/00*

U.S. Cl. 8—142 **4 Claims**



3. A towel cleaning, drying, and dispensing apparatus comprising a cabinet, a towel, means within said cabinet for directing said towel through a predetermined path, tank means in said cabinet including cleaning fluid disposed in said path, said cleaning fluid being characterized by minimal toxicity, very low vapor pressure and evaporation rate, moderate specific heat and heat of evaporation, boiling point substantially greater than 100° C, but not excessively high, low viscosity, high solvent action for grease, waxes and soaps, faint or pleasant odor, low water solubility therein and minimal solubility in water, low flammability and high flash point, specific gravity differing substantially from that of water, chemical and thermal stability and low corrosivity.

3,884,631
PREPARATION OF CELLULOSE N,N-DIMETHYLFORMIMIDATE CHLORIDE IN TEXTILE FORM, AND CONVERSION TO HALOGENODEOXYCELLULOSES AND CELLULOSE FORMATE

Tyron L. Vigo, Kenner; Donald J. Daigle, New Orleans, and Clark M. Welch, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 26, 1973, Ser. No. 335,861
Int. Cl. D06p *3/00*

U.S. Cl. 8—194 **14 Claims**

1. As a textile material, fibrous cellulose N,N-dimethylformimidate chloride possessing the structure Cell—O—CH=$N^+(CH_3)_2$ Cl^-, wherein Cell represents a portion of a cellulose molecular chain, said material comprising a chlorine content of from 0.5 to 6 percent as well as a nitrogen content of from 0.2 to 2.4 percent, the ratio of chlorine atoms to nitrogen atoms being 1:1 and the formimidate groups being characterized by rapid hydrolysis to formate groups on contact with water, said textile material also being characterized by increased flame resistance relative to the original untreated textile.

3,884,632
CONTINUOUS DURABLE-PRESS PROCESSING OF FABRIC AND GARMENTS

George L. Payet; Cincinnati, Ohio, and Berthal D. Brummet, Barrington, Ill., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Mar. 14, 1973, Ser. No. 341,134
Int. Cl. D06m *13/12*

U.S. Cl. 8—116.4 **17 Claims**

1. A vapor-phase process for continuously treating cellulosic fabric-containing material to impart a durable press thereto comprising conveying said material through a first station to introduce moisture thereinto, conveying the material then through a second station to subject it to formaldehyde and sulphur-dioxide vapor agents, and conveying said material next through a third station to effect a drying thereof and to subject the material to a curing temperature of about 250°F.

3,884,633
RUST PREVENTION OF CONTAMINATED STEEL

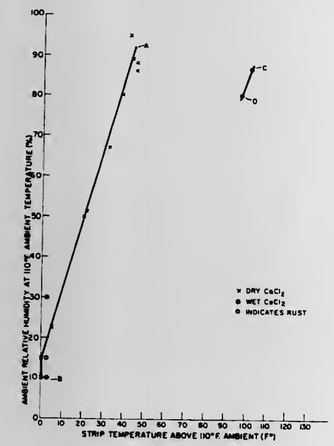
Roland Meadows Howard, Jr., Pittsburgh, and Richard Roy Webster, Bethel Park, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed May 21, 1973, Ser. No. 361,908
Int. Cl. C23f *15/00*; F26b *7/00*

U.S. Cl. 21—2.5 R **6 Claims**

1. A method of preventing the substantial occurrence of rust on steel surfaces comprising the steps of: taking a steel body having a surface contaminated by deliquescent compounds and which is exposed to ambient conditions of relative humidity and temperature that are sufficient to cause rust; and placing and maintaining said steel body under controlled conditions of ambient relative humidity, steel body temperature and ambient temperature which substantially prevent the occurrence of speckled rust and do not significantly influence the metallurgical characteristics of the steel body, said controlled conditions being established and maintained by controlling said ambient relative humidity and temperature and heating and maintaining said steel body to a temperature greater than ambient temperature, wherein said controlled condition of ambient relative humidity ranges from about 20 to about 95 percent, said steel body temperature ranges from above about 110°F to about 160°F, and said ambient tempera-

ture is about 110°F; said controlled conditions of ambient relative humidity and steel body temperature being further



defined by being located in the area to the right of curve A-B in FIG. 3.

3,884,634

END CAP FOR THE FLUID IMPREGNATION OF TIMBER

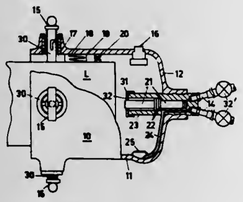
Cecil George Willmot Mason, Hwy. 60 Mapua, R.D. 1, Upper Moutere, Via Nelson, New Zealand

Filed June 27, 1973, Ser. No. 374,072

Claims priority, application New Zealand, July 3, 1972, 167652

Int. Cl. B27k *3/10, 5/02*

U.S. Cl. 21—72 **15 Claims**



1. An apparatus for longitudinal fluid impregnation of a log comprising a cap for enclosing one end of a log, the cap having a rear wall and a peripheral side wall so as to define a fluid treatment zone, locking members inserted through apertures in the side wall of the cap for slidably locking the cap to the log, a first ring for encircling the log and abutting the locking members, a compressible sealing means for encircling the log and abutting the first ring, a second ring for encircling the log and abutting the sealing means, means for preventing the second ring from moving toward said on end of the log, the first ring, the sealing means, the second ring and the preventing means respectively sequentially located on the log from the locking members toward said one end of the log to be located within the cap, ram means associated with said cap for exerting pressure on said one end of the log for longitudinally moving said locking members toward said one end of the log so that compression will be applied to the sealing means, and means for introducing a pressurized log-treating fluid into the treatment zone so that said fluid will be forced into the log.

3,884,635

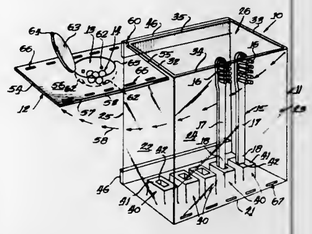
SANITARY TOOTHBRUSH HOLDER

Elizabeth Sloan, 4432 Cheer St., Ashland, Ky. 41101

Filed Aug. 24, 1973, Ser. No. 391,223

Int. Cl. A611 *3/00*; **A46b** *17/00*

U.S. Cl. 21—83 **2 Claims**



1. A toothbrush holder intended for the holding of a plurality of toothbrushes in a sanitary manner, the holder comprising, in combination:

a hollow box-like rectangularly shaped container including a horizontal bottom surface, opposed parallel vertical side wall surfaces, a front vertical wall surface, and a back vertical wall surface, said wall surfaces depending upwardly from the peripheral edges of said bottom surface and equal vertical distance with each of said wall surfaces terminating at the top thereof in a horizontally extending top edge portion, said top edge portion of said wall surfaces being co-planar with each other and definging a horizontal plane extending parallel to the container bottom surface and spaced vertically upwardly therefrom a distance greater than the length of a conventional toothbrush to be held in said container;

a compartment defined interiorly of said container surfaces extending upwardly from the interior of said bottom surface and opening out of the top of said container between said top edges of said side wall surfaces;

a plurality of longitudinally spaced apart and aligned rectangularly elongated air vent slots extending horizontally at spaced intervals in said container front wall surface adjacent said bottom surface;

a plurality of rectangularly shaped boss members longitudinally aligned and spaced apart and extending along the longitudinal midline of the interior surface of the bottom surface of said container intermediate said side wall surfaces thereof, each boss member projecting vertically upwardly an equal distance from said container bottom surface and terminating in a horizontally extending top surface;

a plurality of vertically extending rectangularly cross-section recesses, each recess disposed in one of said boss members centrally thereof and projecting vertically upwardly therethrough and opening out of said top surface thereof;

each of said recesses adapted to receive therein the handle end portion of a toothbrush inserted axially thereinto in a manner to supportedly retain the toothbrush in a vertical position projecting outwardly of the recess and into said container compartment;

said recesses of said boss members being spaced longitudinally apart along said bottom surface midline a sufficient distance to assure no possibility of contact between adjacently supported toothbrushes;

a flat rectangularly shaped cover member of a size and shape to completely close the open top end of said container compartment, the cover member having a flat top surface, a flat bottom surface, opposed parallel side edges, and opposed parallel back and front edges;

said cover being of an area configuration such that the edges of said cover member overlap the respective top

peripheral edges of the associated container side, front and back wall surfaces;

a vertical pin interconnecting a single corner of said cover defined between a side edge and a back edge thereof to a corner of said container at a top edge thereof wherein said container corner is defined as a corner between said vertical back wall surface and one of said side wall surfaces, said pin forming a hinge providing for swingable movement thereabout of said cover in a substantially horizontal plane between a closed position wherein the cover closes the top end of said container with associated cover edges overlapping and resting on associated container top edges, and an open position wherein said back edge of said cover is disposed adjacentmost to a side wall top edge of said container with said cover extending outwardly of said adjacentmost side wall and substantially parallel to said container bottom surface;

said hinge pin permitting a slight vertical canting of the main portion of said cover thereabout to provide required clearance of said cover over the top edges of said container wall surfaces when said cover is swung between said open and said closed positions about said hinge pin; said cover providing selective ingress and egress of said container compartment;

a compartment formed integrally with said cover centrally thereof and projecting downwardly therefrom out of the bottom surface thereof, the cover compartment being of an inverted hemi-spherical shaped having the base thereof opening outwardly of said top surface of said cover;

said opening being of a circular cross-sectional configuration;

a plurality of small diameter apertures disposed in spaced apart positions completely over said wall surfaces of said cover compartment to place the interior of said cover compartment in communication with the interior of said container compartment when said cover is in the closed position;

a closure cover of a circular diameter complementary to the diameter of said base opening of said cover compartment hingedly connected to said cover for movement between a closed position lying substantially co-planar with said cover in said opening and sealing said cover compartment, and an open position apart from said cover compartment opening to permit ready ingress thereinto and ready egress thereoutof;

a pair of transversely spaced apart longitudinally extending slots providing air vents in said cover member, each row of slots disposed adjacent one of the side edges of said cover member and extending longitudinally therealong and spaced slightly inwardly therefrom with the slots being spaced apart from each other, the slots being of an elongated rectangular configuration;

said cover compartment being of a sufficient size to loosely receive therein a plurality of sterilizing and dehydrating pellets of a size preventing the same from passing through said cover compartment apertures and with the fumes therefrom passing freely through said cover compartment apertures to communicate with the interior of said container compartment when said cover member is in the closed position;

said slot forming air vents in said cover member providing with said slot forming air vents in said container front wall surface a smooth slow constant air flow through the container compartment, this air flow mixing with the fumes from the pellet in the cover compartment to provide a sanitizing and dehydrating atmosphere within said container compartment about said toothbrushes stored therein;

a pair of elongated flat rectangular strips spaced vertically apart and extending horizontally across the top and bottom edges respectively of said container back wall surface between opposite side edges thereof; and

a layer of pressure sensitive adhesive disposed on the exterior surface of each of said strips to adhesively grip a vertical surface placed in juxtaposition therewith, such as a wall, door and the like, in a manner to support said container thereon.

3,884,636

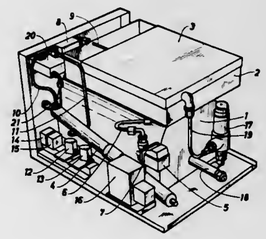
STEAM STERILIZING APPARATUS

Willi Knoblauch, Nygatan 12, 440 60 Skarhaman, Sweden, and Hans-Peter Baranowski, Rathausplatz 6, 3005 Hannover-Westerfeld, Germany

Filed June 11, 1971, Ser. No. 152,061

Int. Cl. A611 *3/00*

U.S. Cl. 21—94 **9 Claims**



1. Steam sterilizing apparatus comprising a sterilization chamber, a liquid and condensing container located at a higher level than said sterilization chamber, an evaporization container located at a lower level than said liquid and condensing container, means providing communication between said evaporization container and said sterilization chamber being permanently open and having a common point being located at a higher level than the highest level of the liquid in said liquid and condensing container during the operation of the sterilizing apparatus, an interruptable air escape way between said common point and the liquid and condensing container, interruptable communication means between at the one hand a point in the liquid and condensing container being located at a lower level than the lowest level of the liquid in the latter during the operation of the sterilizing apparatus and at the other hand said evaporization container, means for directing the liquid stream towards said evaporization container and separate means for heating a jacket surrounding said sterilization chamber.

3,884,637

METHOD AND COMPOSITION FOR THE DETERMINATION OF ALBUMIN

E. Melvin Gindler, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Filed Mar. 21, 1973, Ser. No. 343,438

Int. Cl. G01n *31/22, 33/16*

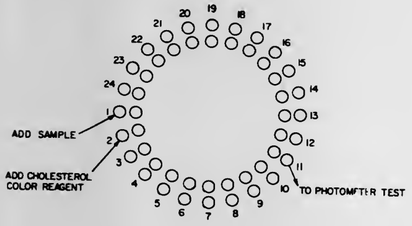
U.S. Cl. 23—230 B **13 Claims**

1. In a method for the determination of albumin comprising adding to an albumin containing biologic fluid an aqueous solution containing a sulphonphthalein dye buffered to an appropriate pH for sensitive spectrophotometric analysis and thereafter spectrophotometrically measuring the absorbance of the solution so formed; the improvement wherein the aqueous solution added to the biologic fluid contains a water soluble, phosphate containing anionic surfactant formed from a hydrophobic alcohol having at least eight carbon atoms, said anionic surfactant being present in an amount sufficient to prevent precipitation of protein-dye complexes.

3,884,638
METHOD OF DETERMINING CHOLESTEROL

Cheryl Dixon, Walpole, and Arnold Alpert, Natick, both of Mass., assignors to Damon Corporation, Needham Heights, Mass.

Filed Aug. 1, 1973, Ser. No. 384,515
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B **9 Claims**

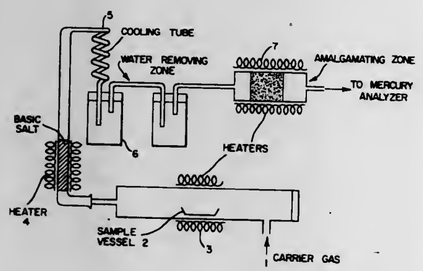


1. A method for determining total cholesterol comprising treating the cholesterol with water and a reagent containing acetic acid, acetic anhydride and sulfuric acid to form a colored substance which absorbs light at 500 nm, and measuring the optical density of the colored substance.

3,884,639
PROCESS FOR ANALYZING MERCURY

Yunosuke Sugiyama, Tokyo, Japan, assignor to Kabushiki Kaisha Sugiawa-Gen Iriki, Tokyo, Japan

Filed Feb. 4, 1974, Ser. No. 439,075
Claims priority, application Japan, Aug. 13, 1973, 48-90702
Int. Cl. G01n *7/08*
U.S. Cl. 23—230 PC **9 Claims**



1. A process for quantitatively analyzing mercury which comprises heating a mercury containing sample in the presence of oxygen to effect complete incineration of the sample to form a vapor containing atomic mercury, passing such vapor through a heated glass tube containing a basic salt, cooling the vapor, bringing the cooled vapor into contact with a metal capable of amalgamation to capture the mercury as an amalgam, heating the amalgam to regenerate mercury vapor and measuring the quantity of the mercury vapor.

3,884,640
APPARATUS TO ANALYZE FLUIDS

Richard G. Lock, Albany, and John F. Wilfore, Schenectady, both of N.Y., assignors to General Electric Company, Milwaukee, Wis.

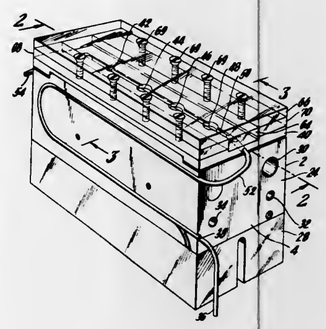
Filed Oct. 26, 1972, Ser. No. 301,145
Int. Cl. G01n *27/42, 31/00, 33/16*
U.S. Cl. 23—253 R **25 Claims**

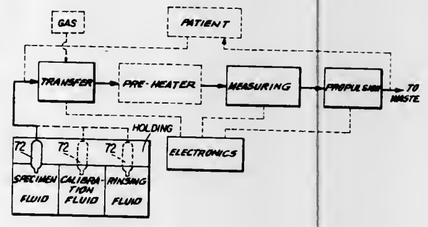
1. An apparatus for measuring at least two of the following characteristics of a fluid: pH, partial pressure of dissolved gas or gases therein, inorganic ion concentration, hemoglobin and temperature, said apparatus comprising:

a. a vessel including a flow channel for fluid passing therethrough, said flow channel including integral means for inducing turbulent flow in at least two locations therein during the measuring of the characteristics of said fluid;
b. at least two sensing means, each said sensing means being located within said channel and in proximity to one of said means for inducing turbulent flow; and
c. integral heat-exchanging means within said vessel for maintaining or achieving a preselected level of the temperature of a fluid passing through said flow channel and the sensing means in said vessel.

15. An apparatus for automatically analyzing at least two of the following characteristics of a fluid: pH, partial pressure of dissolved gas or gases therein, inorganic ion concentration, hemoglobin and temperature, said apparatus comprising:

a. plural holding means for individually storing a specimen fluid, a calibration fluid and a rinsing fluid;



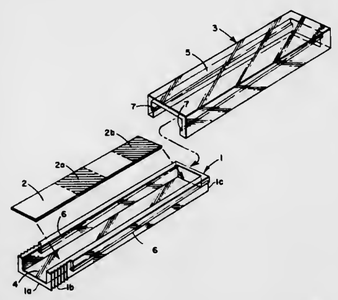


b. transfer means for removing each said fluid from the storage means and dispensing the same;
c. measuring means for receiving each said fluid, said measuring means comprising
i. a vessel including a flow channel for fluid passing therethrough said flow channel including integral means for inducing turbulent flow in at least two locations therein during the measuring of the characteristics of said fluid;
ii. at least two sensing means, each said sensing means being located within said channel and in proximity to one of said means for inducing turbulent flow; and
iii. integral heat exchanging means within said vessel for maintaining or achieving a pre-selected level of the temperature of a fluid passing through said flow channel and the sensing means in said vessel;
d. propulsion means for driving a fluid through the apparatus; and
e. electronic means for detecting and processing the output signals of the sensors, displaying and recording the characteristics of the fluid or fluids being measured.

3,884,641
REACTION CHAMBER UNIT FOR TEST STRIPS

Friedrich Kraffczyk, and Roland Helger, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschraentker Haftung, Darmstadt, Germany

Filed June 7, 1973, Ser. No. 367,951
Claims priority, application Germany, Oct. 11, 1972, 2249669
Int. Cl. B01l *3/00;* **B65d** *43/12;* **G01m** *33/00*
U.S. Cl. 23—253 R **6 Claims**

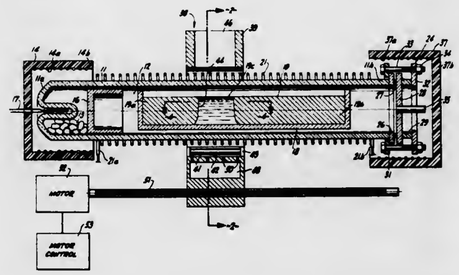


1. A reaction chamber unit for test strips, comprising a slide tray which is open at the top and at one end, and has a planar lower surface for receiving the test strip, a housing for said tray formed of a clear plastic which is open at the bottom and at one end for receiving said tray, the inner upper surface of said housing being planar, parallel to said planar lower surface of said tray, said planar surfaces having a precise, predetermined distance of separation of about 2–10 MM. when said tray is properly positioned in said housing, and guide means for guiding said tray into a precise fit in said housing, said guide means comprising a pair of diagonally extending shoulders on the outside surface of the side walls of said tray and a pair of cooperatively engaging corresponding diagonal shoulders on the inside face of the side walls of said housing, whereby said planar surfaces are automatically drawn into precise spatial relationship by the entry of said tray into said housing.

3,884,642
RADIANTLY HEATED CRYSTAL GROWING FURNACE

Theodore S. Benedict, Los Gatos, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed July 23, 1973, Ser. No. 381,500
Int. Cl. B01j *17/08, 6/00*
U.S. Cl. 23—273 SP **5 Claims**

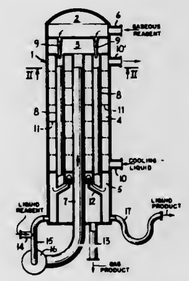


1. In a furnace for processing semiconductor materials:
A. Means defining an axially extending chamber having a wall fabricated of a material which is transparent to heat energy of a predetermined wavelength;
B. boat mean disposed within the chamber for holding a semiconductor material;
C. traveling heat source means comprising a generally annular heating element holder movable axially of the chamber and having a plurality of inwardly facing axially extending recesses, a plurality of axially extending radiant heating elements mounted in the recesses and elements spaced about the inner periphery of the heating element holder for delivering radiant heat energy of the predetermined wavelength to an axially limited portion of the material held by the boat means to melt the same, the walls of said recesses serving to reflect heat energy toward the material in the boat, and air passageways communicating with the recess in the heating element holder for directing air to the lamps and chamber wall to cool the same; means for moving the traveling heat source means axially of the chamber; and
E. the relative amounts of heat delivered by the heating elements being adustable whereby the distribution of heat peripherally of the chamber can be set to provide desired molten zone and freezing front contours in the material held by the boat means.

3,884,643
DEVICE FOR PERFORMING HIGHLY EXOTHERMIC REACTIONS

Mario Ballestra, Corso Buenos Aires 92, and Domenico Triberti, Via Burlamacchi 11, both of Milan, Italy

Division of Ser. No. 713,401, March 15, 1968, abandoned.
This application Feb. 22, 1972, Ser. No. 228,409
Int. Cl. B01j *1/00*
U.S. Cl. 23—285 **14 Claims**



1. A device suitable for carrying out an exothermic reaction between a gaseous reagent and a liquid compound wherein at least one product of the reaction is liquid which comprises an elongated housing, a manifold in the upper end of said housing, a separation chamber in the lower end of said housing for separating gaseous material from said liquid product, at least one reaction conduit within said elongated housing providing fluid communication between said manifold and separation chamber, the inlet end of said reaction conduit being at said manifold and the outlet end of said reaction conduit being at said separation chamber, discharge means for discharging said liquid product from said separation chamber, mixing means connected to said discharge means for mixing liquid reagent with at least part of said liquid product discharged from said separation chamber, at least one mixing-and-recycle conduit inside said housing providing fluid communication between said mixing means and said manifold for mixing said liquid reagent and recycled liquid product and for circulating said liquid reagent and recycled liquid product from the bottom to the top of said mixing-and-recycle conduit so that said liquid reagent and recycled liquid product in admixture then flow into said reaction conduit, at least one nozzle coaxial to and at the inlet of said reaction conduct for feeding said gaseous reagent into said reaction conduit in concurrent flow relationship with the mixture of liquid reagent and recycled liquid

product, and means for controlling the temperature of said

minute thereby providing a dilute upper phase of fine

product, and means for controlling the temperature of said reaction conduit.

3,884,644
PROCESS FOR RECOVERING AMMONIUM SULPHATE FROM AQUEOUS SOLUTIONS OF AMMONIUM SULPHATE CONTAINING ORGANIC CONSTITUENTS AND HEAVY METAL IONS

Jentje Bonnema, Beek, and Henri J. H. Simon, Geleen, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Continuation of Ser. No. 72,788, Sept. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 798,155, Feb. 10, 1969, abandoned. This application Jan. 3, 1973, Ser. No. 320,765

Int. Cl. B01d *9/02;* **C01c** *1/24*

U.S. Cl. 23—299 **5 Claims**

1. An improved process for recovering ammonium sulfate from an impure solution thereof obtained from the synthesis of organic compounds, said aqueous solution containing ammonium sulfate and tarry organic constituents and at least one heavy metal ion selected from the group consisting of ferrous, ferric, chromium, nickel, copper and mixtures thereof, said organic compounds selected from the group consisting of:
   a. acrylonitrile prepared by oxidation of gaseous propylene in the presence of ammonia wherein the reaction product is treated with sulfuric acid and then separated from the resulting ammonium sulfate solution;
   b. methyl methacrylate prepared from acetone, cyanohydrin, methanol and sulfuric acid; and
   c. methacrylate prepared from acrylonitrile, methanol and sulfuric acid;

   the improvement which consists in first adding to said ammonium sulfate solution, a water-soluble Werner complex forming compound with the heavy metal ions contained in said solution, said compound being selected from the group consisting of acetic acid, nitroliotriacetic acid and α,α'-dipyridyl, and thereafter treating said solution with a water soluble organic substance selected from the group consisting of dioxan, dimethyl formamide, acetonitrile, lactams containing 4 to 20 carbon atoms and mixtures thereof,

   said water-soluble organic substance being one which, at least in combination with a saturated aqueous ammonium sulfate solution, is capable of forming a two layer liquid phase system, wherein the said tarry organic constituents and the said heavy metal ions in Werner complexed form are both extracted into one of said layers and the other of said layers contains an aqueous solution of purified ammonium sulfate,

   thereafter separating said ammonium sulfate solution layer, and

   crystallizing therefrom purified substantially water-white, cubical ammonium sulfate crystals.

3,884,645
PRODUCTION OF ANHYDROUS SODIUM METASILICATE IN A FLUIDIZED BED

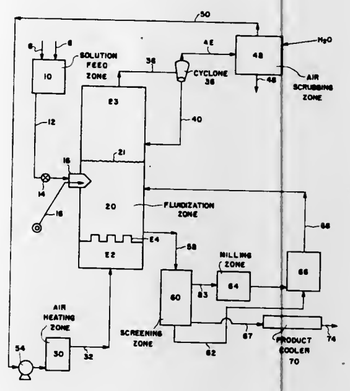
Walter E. Kinne, Fort Montgomery, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 28,028, April 13, 1970, abandoned, and a continuation-in-part of Ser. No. 1,089, Jan. 7, 1970, abandoned. This application Sept. 12, 1972, Ser. No. 288,471

Int. Cl. C01b *33/32;* **B01j** *2/16*

U.S. Cl. 23—313 **11 Claims**

1. A process for producing uniform spherical anhydrous sodium metasilicate particles of high attrition resistance and a minimum dust content, said process comprising:
   a. providing a plurality of anhydrous sodium metasilicate particles in a fluidization zone;
   b. contacting said particles in said fluidization zone with an upwardly flowing stream of heated air having a superficial velocity of between about 75 and about 200 feet per minute thereby providing a dilute upper phase of fine particulate anhydrous sodium metasilicate and a lower dense fluidized bed of said particles of anhydrous sodium metasilicate; and



   c. contacting said particles in said dense fluidized bed with an aqueous sodium metasilicate liquor to produce crystallized anhydrous sodium metasilicate said aqueous sodium metasilicate liquor being sprayed directly into said fluidization zone below the meniscus separating said dilute upper phase and said lower dense fluidized bed.

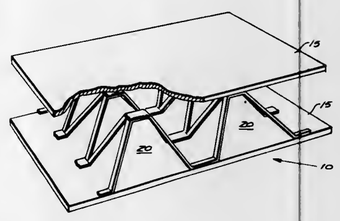
3,884,646
STRUCTURAL PANEL AND METHOD OF FABRICATION THEREOF

James T. Kenney, 1675 Elevado, Arcadia, Calif. 91006

Filed Dec. 5, 1972, Ser. No. 312,381

Int. Cl. B32b *3/00*

U.S. Cl. 29—191.4 **19 Claims**



1. A structural panel, comprising:
   first and second structural sheets; and
   a plurality of skeletal pyramid-shaped structural units having an apex, a base and three or more straight rigid edge members, the apex ends of said edge members meeting one another in proximity to the apex of the unit and the base ends thereof defining the base of the unit,

   said units being sandwiched between said first and second sheets with part of said apexes rigidly attached to said first sheet and part of said bases attached to said second sheet.

6. Panel as in claim **4,** wherein the material comprising the matrix adjacent to one of said structural sheets is of heavier gauge than that comprising the matrix adjacent to the other of said structural sheets.

3,884,647
DETERGENT AUTOMOTIVE FUEL COMPOSITION

Glenn M. Nakaguchi, Irvine, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 9, 1973, Ser. No. 387,207

Int. Cl. C10l *1/26*

U.S. Cl. 44—72 **10 Claims**

1. A fuel composition comprising a major proportion of a liquid hydrocarbon fuel and dissolved therein an effective detergent proportion of an additive comprising a mixture of N-aliphatic hydrocarbyl, N-hydroxyalkyl alkylene polyamines, the aliphatic hydrocarbyl radicals thereof being essentially saturated and having a branched chain structure and a molecular weight between about 400 and 4,000 the hydroxyalkyl radicals thereof having from 2 to about 6 carbon atoms, and said alkylene polyamine having from 2 to about 6 amine groups linked together through alkylene groups having from 2 to about 6 carbon atoms, a substantial portion of the amine groups in said additive being $-NH_2$ groups.

3,884,648
PROCESS FOR MAKING A REDUCING GAS

William B. Crouch, Whittier, Calif., assignor to Texaco Inc., New York, N.Y.

Filed June 28, 1972, Ser. No. 266,934

Filed June 28, 1972, Ser. No. 266,934. The portion of the term of this patent subsequent to Oct. 8, 1991, has been disclaimed.

Int. Cl. C01b *2/14*

U.S. Cl. 48—197 R **9 Claims**

1. A process for producing gaseous mixtures comprising principally hydrogen and carbon monoxide comprising simultaneously introducing into the reaction zone of a free-flow unpacked noncatalytic gas generator a free-oxygen containing gas, a liquid hydrocarbonaceous fuel, a methane-rich gas comprising at least **22** mole % of methane and H_2O from and external source, said free-oxygen containing gas comprising 0.6 to 1.2 atoms of free oxygen per atom of cabon present in the reaction zone, said methane rich gas comprising 0.25 to 0.75 parts by weight of said methane-rich gas for each part by weight of said liquid hydrocarbonaceous fuel, and said H_2O being introduced in an amount in the range of about 0.05 to 0.20 parts by weight of H_2O per part by weight of the combustible fuel in said reaction zone; reacting said materials by partial oxidation in said reaction zone at an autogenous temperature in the range of about 1,500° to 3,500°F. and at a pressure in the range of about 1 to 250 atmospheres; and removing from said reaction zone a product gas stream comprising H_2, CO, H_2O, CO_2 and particulate carbon in the amount of about 0.01 to 20 percent by weight of carbon in the liquid hydrocarbon; wherein the reducing ratio moles H_2+CO/H_2O+CO_2 of said product gas is at least about 9.

3,884,649
COAL PRETREATER AND ASH AGGLOMERATING COAL GASIFIER

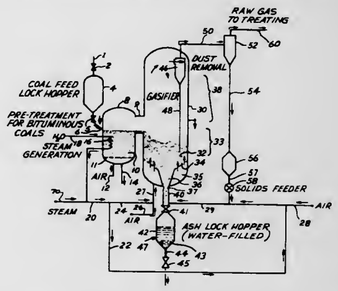
Charles W. Matthews, Darien, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Oct. 29, 1973, Ser. No. 410,476

Int. Cl. C10j *3/16*

U.S. Cl. 48—202 **6 Claims**

1. A process for the conversion of a finely divided carbonaceous material containing ash to a fuel gas having a heating value of between 100 – 300 BTU per cubic foot which comprises:
   i. pretreating a finely divided carbonaceous feed material by mild oxidation at a temperature of about 700°–800°F for about 10 to 30 minutes to destroy any caking properties of the carbonaceous feed material in a fluidized pretreatment zone;
   ii. said fluidized pretreatment zone being in direct fluid communication with an adjacent gasification zone;
   iii. withdrawing heat from the pretreatment zone by indirect heat exchange with water to produce steam and to maintain said pretreatment temperature;
   iv. passing the pretreated carbonaceous material and the resultant gases from the upper portion of the pretreatment zone to said gasification zone and passing at least a portion of the steam produced in said pretreatment zone to said gasification zone;
   v. said gasification zone being maintained at the same pressure as the pretreatment zone;
   vi. maintaining the pretreated carbonaceous material as a fluidized bed in the lower portion of the gasification zone at conditions sufficient to convert said pretreated material to ash and a gaseous mixture of fuel gas and oils and tars;
   vii. passing the gaseous mixture to the upper portion of said gasification zone above the fluidized bed and maintaining the gaseous mixture in the upper portion of the gasification zone at a temperature of about 1,200°– 1,500°F for about 10 – 100 seconds to crack the oils and tars in the gaseous mixture; and
   viii. withdrawing ash from the bottom of said gasification zone.



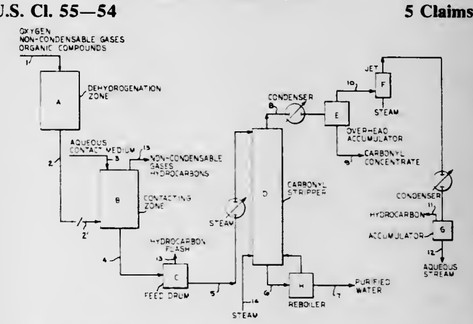
3,884,650
WASTE DISPOSAL FROM OXIDATIVE DEHYDROGENATION

Rudolph C. Woerner, Houston; Lloyd D. Tschopp, Humble, and Carl O. Oelze, Houston, all of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed July 11, 1973, Ser. No. 378,292

Int. Cl. B01d *19/00*

U.S. Cl. 55—54 **5 Claims**



1. In a process for preparation of butadiene -1,3 comprising oxidatively dehydrogenating a stream having butene-2 as the major hydrocarbon component, in the presence of air and stream,

   producing a product stream comprising from 8 to 65 mol percent butadiene -1,3, from 0.1 to 40 mol percent butene, from 40 to 75 mol percent nitrogen, and from 0.03 to 0.30 mol percent carbonyl compounds exclusive of water,

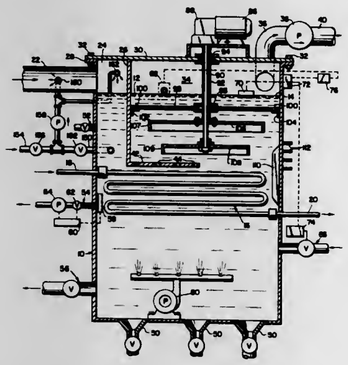
contacting said product stream with an aqueous medium having a pH of 10 to 12,
recovering an aqueous stream containing the principal amount of carbonyl compounds from said product stream,
removing a portion of said hydrocarbons from said aqueous stream, and,
feeding said aqueous stream to a steam stripping zone,
wherein the improvement comprises said aqueous stream having from 0.045 to 0.06 mol percent carbonyl compounds, from 0.036 to 0.042 mol percent hydrocarbons and from 99.86 to 99.88 mol percent water,
said stripping zone operating at a temperature in the range of 80° to 179°F at 2.5 to 5 psia,
adjusting the temperature of said aqueous stream prior to feeding into said stripping zone to a temperature less than the operating temperature of said stripper,
maintaining conditions in said stripping zone to provide internal reflux of the material therein,
withdrawing a gaseous overhead from said stripping zone, said overhead containing at least 80 percent of the carbonyl compounds fed into said stripping zone in said stream,
condensing an aqueous portion of said gaseous overhead, said condensed portion containing the major amount of carbonyl compounds in said gaseous overhead, and
withdrawing a liquid bottoms, comprising the major amount of water in said stream and having substantially less carbonyl compounds than said stream.

3,884,651

METHOD AND APPARATUS FOR REMOVING HEAT AND ELEMENTS FROM EXHAUST

John L. Velegol, Rt. No. 1, Colliers, W. Va. 26035

Continuation of Ser. No. 86,592, Nov. 3, 1970, abandoned, which is a continuation of Ser. No. 842,098, July 16, 1969, abandoned, which is a continuation-in-part of Ser. No. 537,630, March 25, 1966, abandoned. This application Dec. 30, 1971, Ser. No. 214,480
Int. Cl. B01d *47/02*
U.S. Cl. 55—86 **18 Claims**



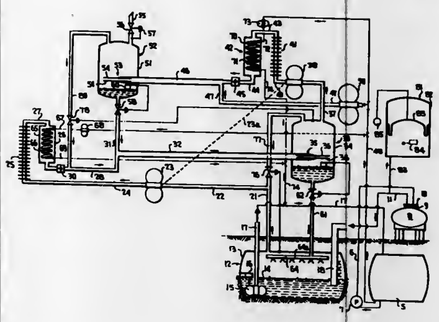
1. The method of treating combustion exhaust gas products, including smoke from furnaces and the like wherein ambient heat, foreign particles and impurities in such gas products are removed for utilization as desired, comprising the steps of: providing at least one closed container carrying a body of liquid material at temperatures lower than that of the gas products to be treated; maintaining the body of liquid material to desired levels; introducing and subjecting such exhaust gases to substantial surface areas of the liquid material and thereby transferring heat, particles and impurities from the gas products to and trapping the same in the liquid material; exhausting the treated gas products from the container; using a heat exchanging means having a portion thereof immersed in said liquid material to absorb heat transferred from the liquid material and transferring the heat via the heat exchanging means to a location exterior of the container; said gas products being passed down and up through the body of liquid material, contacting a substantial part of the body of liquid material and during such passage, passing the gas products adjacent the portion of the heat exchanging means internal of the tank so that both the gas products and the liquid material are simultaneously transferring heat into that portion of the heat exchanging means; concentrating solids transferred to the liquid material at desired locations within the container; and removing the solids from said locations for further disposition.

3,884,652

VAPOR RECOVERY WITH AMBIENT COOLING

Richard A. Nichols, 519½ Iris, Corona Del Mar, Calif. 92014

Filed Mar. 9, 1973, Ser. No. 339,584
Int. Cl. B01d *53/14*
U.S. Cl. 55—88 **25 Claims**



1. A vapor recovery system for recovering volatile liquid vapors, said vapor recovery system comprising a first absorber-separator for receiving collected vapors, first compressor means associated with said first absorber-separator for delivering collected vapors to said first absorber-separator at a first pressure, a second absorber-separator for receiving a vaporair mixture from said first absorber-separator, second compressor means associated with said second absorber-separator for delivering vapor-air mixture from the first absorber-separator to said second absorber-separator at a second and higher pressure, means for delivering condensed vapors from said first and second absorber-separators to a collection area, and means for utilizing only ambient air for cooling said vapors.

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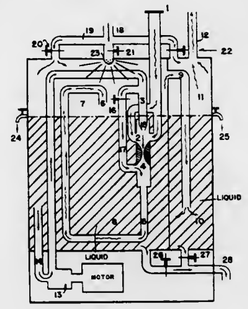
SYSTEM FOR PURIFICATION OF GASES

Giuseppe Capulli, Rua General Cristovao Barcelos, 180, Apt. 102, Laranjeiras; Gasparino José DeSant, Rua Aristides Espinola, Leblon, Apt. 304, Guanabara; Theodoro DeCarvalho, Rua Hilario de Gouveia No. 30, Apt. 402, Guanabara, and Helio Marcos Penna Beltrao, Rua Prudente de Morais, No. 1.179, last floor, Guanabara, all of Brazil

Filed July 27, 1973, Ser. No. 383,079
Int. Cl. B01d *47/02*
U.S. Cl. 55—223 **4 Claims**

1. A system for removing impurities, including soot from residual gases such as flue and exhaust gases comprising
an enclosed tank having a liquid retaining lower portion and a gas holding space above the liquid retaining portion,
means for maintaining liquid at a predetermined level in said tank,
a Venturi-type suction means having a Venturi-type constricted discharge opening and positioned with the discharge opening below the predetermined liquid level,

a first pipe means extending outside the enclosed tank connecting said Venturi-type suction means to a source of residual gas to be purified,
said Venturi-type suction means comprising a nozzle constructed and arranged to supply liquid to the constricted opening,



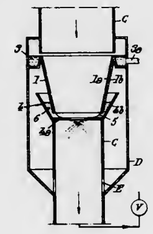
pump means including a pipe line for passing liquid from the tank under pressure to the nozzle of the Venturi-type suction means,
a second pipe means connecting the discharge opening of the Venturi-type suction means to the gas holding space above the liquid retaining portion, a substantial portion of said second pipe means being immersed in the liquid retaining portion of said tank below the predetermined liquid level.

3,884,654

DEVICES FOR FORMING A HOMOGENEOUS SHEET OF A FLOWING SUBSTANCE

Philippe de Crevoisier, Nancy, and John George Stockholm, Pont-a-Mousson, both of France, assignors to Tunzini-Ameliorair, Paris, France

Filed Jan. 17, 1972, Ser. No. 218,186
Claims priority, application France, Feb. 3, 1971, 71.03650; Apr. 26, 1971, 71.14834; May 26, 1971, 71.19056
Int. Cl. B01d *47/02*
U.S. Cl. 55—225 **27 Claims**



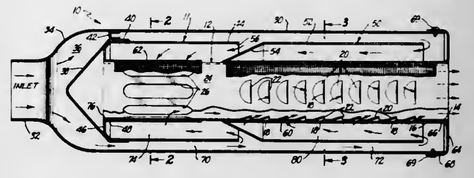
1. A device for producing a homogeneous sheet of liquid for washing polluted gas, the device comprising a liquid supply; an inclined first wall; means for causing liquid from said liquid supply to trickle down on one side of said first wall to form a sheet of liquid thereon; reserve means defining a reserve liquid volume, said reserve means comprising a second wall, said second wall being spaced from the other side of said first wall and having an upper portion facing said other side of said first wall to define a reserve liquid tank, and a lower portion extending from said upper portion and spaced below the lower edge of said first wall and cooperating with the lower edge of said first wall to define a slot, said lower portion extending transversely beyond the lower edge of said first wall; means for causing a stream of polluted gas to flow over said one side of said first wall so that said liquid will wash said gas; and means for placing the top surface of said reserve liquid volume in said reserve liquid tank in communication with a zone of the device situated downstream of the lower edge of said first wall with respect to the flow of polluted gas, such that, in operation, the lowered pressure induced by said stream is communicated to said reserve liquid tank and causes suction of liquid into the reserve tank through said slot, the liquid in the reserve tank being available to compensate for streaking in said sheet of liquid.

3,884,655

SPARK ARRESTER AND SILENCER

Jeffrey W. Coop, 13036-D Los Nietos Rd., Santa Fe Springs, Calif. 90670

Filed Apr. 22, 1974, Ser. No. 462,934
Int. Cl. B01d *50/00*
U.S. Cl. 55—276 **2 Claims**



1. A spark arrester and silencer comprising:
a core comprising a tube having an upstream portion and a downstream portion, the tube being open at its downstream end for the outlet of gas, said tube having a plurality of sets of longitudinally spaced openings, said sets being annularly spaced apart, at least one set of said openings being positioned in said upstream portion of said tube, and at least one set of said openings being positioned in said downstream portion of said tube;
means closing the upstream end of said tube against the entrance of gases;
a fine mesh screen disposed about said tube to cover said openings;
a first cylindrical conduit about said upstream portion of said tube, said first conduit having a greater interior diameter than the exterior diameter of said tube and screen, to form a first annular passageway between the upstream portion of said tube and said first conduit, the downstream end of said first conduit being open, and terminating adjacent the downstream portion of said tube;
said means closing the upstream end of said tube further comprises a generally conical deflector connected to the end of the first conduit adjacent said closed end of said tube, the apex of said deflector being adjacent the inlet of the spark arrester and silencer;
a shell in which the core is disposed, said shell having an upstream portion and a downstream portion, the inside diameter of said shell being substantially greater than the outside diameter of said first conduit of the core, to form a second annular passageway between the upstream portion of said shell and said first conduit, said shell extending beyond the open end of the first conduit to substantially the downstream end of said tube;
whereby said upstream portion of said tube, said first conduit, and said upstream portion of said shell coact to define a first upstream muffler section, said first muffler section and said deflector causing gas to flow longitudinally along said second annular passageway, to reverse flow along said first annular passageway, to traverse said screen and openings of said upstream portion of said tube, to flow in the original direction along said tube, and to exit at the downstream end of the said tube;
a second cylindrical conduit positioned about said downstream portion of said tube, said second conduit having a

greater interior diameter than the exterior diameter of said tube and screen, to form a third annular passageway between the downstream portion of said tube and said second conduit, the downstream end of said second conduit being open, and terminating at substantially the downstream end of said tube, said second conduit having its upstream end closed by attachment to the exterior of said tube at said upstream portion thereof;

the inside diameter of said shell being substantially greater than the outside diameter of said second conduit, to form a fourth annular passageway between the downstream portion of said shell and said second conduit;

the upstream end of said shell tapering inwardly and terminating in an inlet for gases, the tapered portion of said shell forming a chamber;

means providing a seal between the downstream end of said shell and the downstream end of said tube, said sealing means being spaced from the downstream end of said second conduit;

whereby said downstream portion of said tube, said second conduit, and said downstream portion of said shell coact to define a second downstream muffler section, said second muffler section, said deflector, and said sealing means causing gas to flow longitudinally along said fourth annular passageway, to reverse flow along said third annular passageway, to traverse said screen and openings of said downstream portion of said tube, to flow in the original direction along said tube, to comingle with the gas from said first muffler section, and to exit at said downstream end of said tube;

said first and second muffler sections being similar in structure and function, being longitudinally separated, and being substantially aligned and coaxial.

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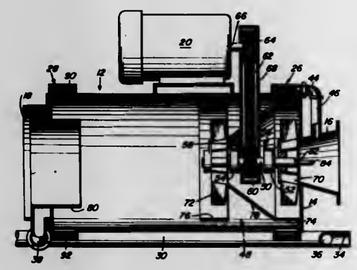
RECIRCULATING AIR CLEANER

Clifford T. Deane, P.O. Box 817, Strawberry Rd., St. Albans, W. Va. 25177

Filed June 28, 1974, Ser. No. 485,148

Int. Cl. B01d *47/06*

U.S. Cl. 55—257 **10 Claims**



10. In combination with a gas cleaning device having a housing through which a vortical flow stream of contaminated gas is conducted toward an exhaust outlet and liquid is injected into the flow stream to form a slurry of liquid and contaminants centrifugally separated from the gas discharged from the outlet; the improvement comprising collection means connected to the housing in radially spaced relation to the outlet for receiving said slurry, said collection means enclosing a lower collection zone within which the slurry accumulates and an upper zone within which gas evolving from the accumulated slurry is received, and gas recycling means connected to the upper zone of the collection means in radially spaced relation to the outlet for returning said evolving gas to the vortical flow stream within the housing.

3,884,657

FILTERING DEVICES WITH AT LEAST ONE FILTERING CAVITY

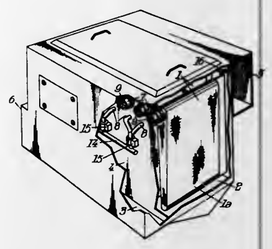
Albert Rebours, Chatou, and Christian Carre, Houilles, both of France, assignors to Air-Industrie, Courbevoie, France

Filed July 20, 1973, Ser. No. 381,001

Claims priority, application France, July 28, 1972, 72.27274

Int. Cl. B01d *46/04*

U.S. Cl. 55—293 **7 Claims**



1. In a filtering device, the combination comprising: at least one filtering cavity in the form of a hollow member of filter material; means defining an inlet enclosure containing said filtering cavity; means for introducing a gas to be filtered into said inlet enclosure so as to be exposed to the external sides of said filtering cavity; an outlet enclosure separated from said inlet enclosure by a separating partition; an open ended connecting pipe connecting the cavity interior to the oulet enclosure by passing through the separating partition; exhausting means for evacuating filtered gas out of said outlet enclosure, said filtered gas having passed through the cavity from the exterior thereof to the interior thereof; and gas injection means, including an injection nozzle, arranged in said outlet enclosure opposite the open end of the connecting pipe in the outlet enclosure for introducing from time to time and during relatively short periods a flow of clearing gas under pressure into said filtering cavity, in counter flow with respect to the normal issuing flow of the filtered gas out of the cavity; and means connecting said injection means to a supply of compressed clearing gas, through controllable valve means; said connecting pipe being internally provided with fixed helicoid blade means for effecting rotation of the flow of clearing gas delivered by said injection means as said clearing gas passes into said filtering cavity.

3,884,658

AIR CLEANER FOR SUPERCHARGED ENGINES

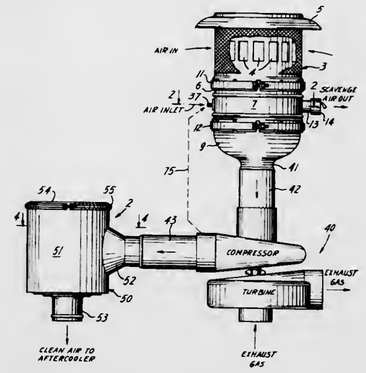
Charles J. Roach, Brooklyn, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Apr. 18, 1972, Ser. No. 245,166

Int. Cl. B01d *50/00*

U.S. Cl. 55—315 **8 Claims**

1. An air cleaner-supercharger-compressor assembly for supercharged engines including a supercharger compressor comprising, in combination, a vortex air cleaner, a supercharger compressor, and a barrier filter, each in series fluid flow connection with the other, and each having an inlet and an outlet; the outlet of the air cleaner being in fluid flow connection with the inlet of the supercharger-compressor, and the outlet of the supercharger-compressor being in fluid flow connection with the inlet of the barrier filter; the air cleaner being disposed upstream of the supercharger compressor, and the barrier filter being disposed downstream of the supercharger compressor, the barrier filter being capable of with-



standing elevated temperatures of at least about **250°** F to about **350°F.**

3,884,659

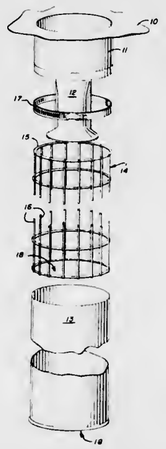
FILTER BAG ASSEMBLY FOR PULSE JET COLLECTOR

Frank M. Ray, Hoffman Estates, Ill., assignor to Flex-Kleen Corporation, Chicago, Ill.

Filed June 3, 1974, Ser. No. 475,518

Int. Cl. B01d *46/02*

U.S. Cl. 55—379 **3 Claims**



1. A freely suspended filter bag assembly for a pulse jet type dust collector comprising an elongated, generally cylindrical wire cage having an end ring defining an open cage end, an elongated sleeve-like bag of porous flexible filter media disposed in slack telescoping relation along said cage and having a circumambient bag end portion defining an open end adjacent said end ring and a metal end cap for closing said open end of the bag and including a circumambient clamping rim portion in airtight peripheral engagement with the circumambient bag end portion, said end cap having a pilot portion axially offset from said rim portion and projecting into said end ring in mechanically interlocked relation with said end ring to center and hold the circumambient bag end portion and said end ring of the cage in peripherally spaced apart relationship.

3,884,660

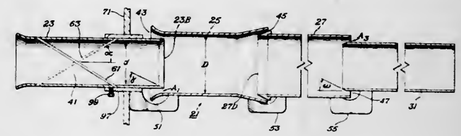
GAS-LIQUID SEPARATOR

Marney Dunman Perry, Jr., Mineral Wells, Tex., and Robert A. Graff, Live Oak, Fla., assignors to Perry Equipment Corporation, Mineral Wells, Tex.

Filed Dec. 7, 1973, Ser. No. 422,966

Int. Cl. B01d *45/16*

U.S. Cl. 55—396 **23 Claims**



1. A separator for removing from a gas stream, heavier components present in the gas stream, comprising:

a housing chamber,

a gas stream inlet conduit extending into said chamber and having an upstream end and a downstream end, the latter of which is located in said chamber,

gas swirl means located in said inlet conduit for imparting a swirling motion to the gas stream,

a separation conduit axially aligned with said inlet conduit, the downstream end of said inlet conduit being coaxially located within the upstream end of said separation conduit defining an annular injection orifice for the entry of recirculating gas from said chamber,

conduit means axially aligned with said inlet conduit and said separation conduit and having an upstream end coaxially located within the downstream end of said separation conduit defining an annular ejection port for the removal of said heavier components from said gas stream, said separation conduit between said downstream end of said inlet conduit and said upstream end of said conduit means and from its axis radially outward to its surrounding wall being free of internal structure,

said annular ejection port being formed by an inward facing surface formed on the downstream end of said separation conduit and by an outward facing surface formed on the upstream end of said conduit means,

said inward and outward facing surfaces flaring outward in the downstream direction at different angles relative to the axis such that the distance between said flared inward and outward facing surfaces decreases at positions radially outward from the axis and in the downstream direction from the entrance to said ejection port,

said conduit means including a downstream end extending out of said chamber for the passage of gas separated from said heaview components, and

means for removing from said chamber said components separated from the gas stream.

3,884,661

METHOD OF AND INSTALLATION FOR FRACTIONATION BY ADSORPTION

Guy Simonet, Paris, France, assignor to L'Air Liquide, Societe Anonyme pour L-Etude et L-Exploitation des Procedes Georges Claude, Paris, France

Filed Sept. 11, 1972, Ser. No. 287,728

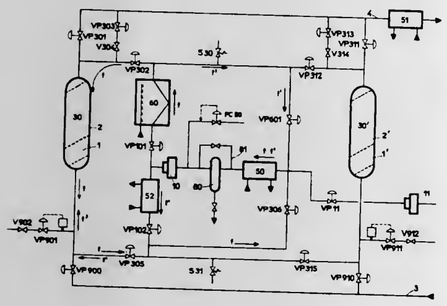
Claims priority, application France, Sept. 13, 1971, 71.32900

Int. Cl. B01d *53/04*

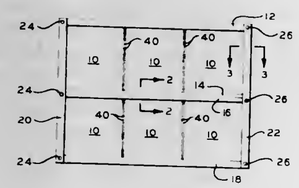
U.S. Cl. 55—62 **1 Claim**

1. A method of fractionation of a gaseous mixture, employing at least an adsorption zone comprising an adsorbent mass which preferentially adsorbs at least a constituent of said gaseous mixture, comprising at least an elementary adsorption cycle carried out with at least said adsorption zone, said adsorption cycle comprising successively:

a. in an adsorption phase, introducing said gaseous mixture, under an adsorption pressure, into said adsorption zone in an adsorption direction, and withdrawing a gaseous fraction impoverished in at least said constituent from said adsorption zone in said adsorption direction,
b. in a regeneration phase, circulating a gaseous regeneration fraction, originating exclusively from a gaseous residual fraction contained in said adsorption zone at the end of the preceding phase, in a closed regeneration circuit under a regeneration pressure lower than said adsorption pressure, cyclically and successively heating said regeneration fraction, passing said fraction in said adsorption zone countercurrently to the adsorption direction, recycling said fraction to said adsorption zone, and withdrawing at least the desorbed said constituent in excess from said closed regeneration circuit,
c. in a cooling phase, circulating a gaseous cooling fraction, originating exclusively from another gaseous residual fraction contained in said adsorption zone at the end of the preceding phase, in a closed cooling circuit under a cooling pressure substantially equal to said regeneration pressure, cyclically and successively cooling said cooling fraction, passing said cooling fraction in said adsorption zone concurrently to the adsorption direction, recycling said cooling fraction to the adsorption zone, and introducing a gaseous fraction impoverished in at least said constituent into said regeneration circuit for balancing the cooling fraction in default.



3,884,662
AIR FILTER AND SUPPORT FRAME
Stephen M. Hladik, Belmont Village, Apt. 31-B, Liverpool, N.Y. 13088
Continuation-in-part of Ser. No. 248,424, April 28, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 397,935
Int. Cl. B01d *27/08*
U.S. Cl. 55—484 **12 Claims**

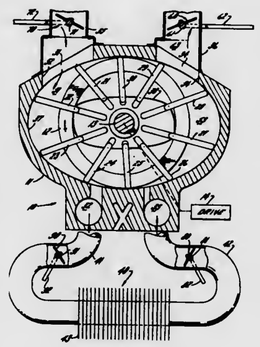


1. An air filter support frame comprising in combination:
a. a first horizontally disposed support having three parallel, upwardly directed lips, one along each longitudinal edge and one intermediate thereof, to define two adjacent tracks;
b. a second horizontally disposed support, parallel to and spaced a predetermined distance above said first support and having three parallel, downwardly directed lips, one along each longitudinal edge and one intermediate thereof, to define two adjacent tracks of the same width as the two tracks of said first horizontal support and vertically aligned therewith;
c. two vertically disposed supports, fixedly attached to said first and second horizontal supports at opposite ends thereof, said vertical supports each having two parallel inwardly directed lips, one along each longitudinal edge, to define a channel of substantially the same width as the combined width of the two tracks of said horizontal members;
d. a gasket of resilient material affixed within at least one vertically aligned pair of said tracks, extending substantially the entire lengths thereof;
e. an additional vertically disposed member movably mounted upon one of said pair of vertical supports and extending substantially from one to the other of said horizontal supports; and
f. means connected to one of said vertically disposed supports for moving said vertical member away from and toward said one vertical support while remaining substantially parallel thereto.

3,884,663
REFRIGERATOR SYSTEM WITH REFRIGERANT EXPANSION THROUGH CAPILLARY TUBES OF ADJUSTABLE LENGTH
Ettore Funaro, Pizza Cimone 2, Rome, Italy
Filed May 6, 1974, Ser. No. 467,443
Claims priority, application Italy, May 8, 1973, 4938/73
Int. Cl. F25b *41/04*
U.S. Cl. 62—222 **4 Claims**

1. A refrigerator system with mechanical compression and refrigeration cycle comprising a compressor, a condenser connected to a discharge line, an evaporator connected to the suction line to compressor and a set of capillary expansion tubes in parallel to one the other between said condenser and said evaporator, which system further comprises a receiver tank connected to the outlet of condenser which receiver is provided with an outlet pipe of which the open end terminates at nearly the bottom of the receiver and which passes through the top thereof to communicate with a regulating device comprising at least a capillary tube of which the length is adjusted to fit the temperature changes of said evaporator the outlet of said regulating device being connected to one end of said set of capillary tubes of which the other end communicates with a vertical manifold; a siphon being provided at the lower end of said manifold; a collector tank being connected to said siphon at the lowermost point thereof through a check valve and through a capillary tube of which one end terminates at nearly the bottom of said tank and at the other end communicates with said siphon at a point higher than said lowermost point and located between the latter and the condenser; said system being further provided with a first solenoid controlled valve located between said regulating device and said set of fixed capillary tubes which valves is open when the compressor is running and with a second solenoid controlled valve located between said check valve and said siphon which valve is open when the compressor is not running.

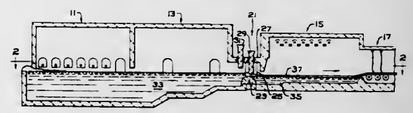
3,884,664
THROTTLE VALVE ARRANGEMENT FOR NOISE CONTROL IN COMPRESSOR-EXPANDER
Thomas C. Edwards, Casselberry, Fla., assignor to The Rovac Corporation, Maitland, Fla.
Filed Apr. 23, 1974, Ser. No. 463,296
Int. Cl. F25d *19/00*
U.S. Cl. 62—296 **8 Claims**



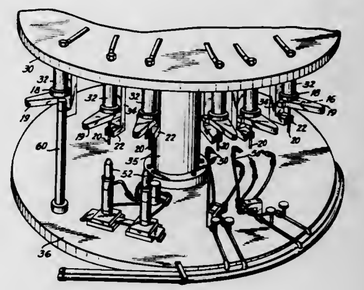
1. In a refrigeration system the combination comprising a compressor-expander including a frame defining a chamber having a compression side and an expansion side, a vane type rotor means mounted in the chamber for positive displacement of air in the form of entering and exiting charges, the frame defining compression side inlet and outlet ports as well as expansion side inlet and outlet ports, a heat exchanger connected between the compression side outlet port and the expansion side inlet port so that upon driving of the rotor means air drawn into the compression side is compressed between adjacent vanes, cooled in the heat exchanger to remove the heat of compression, expanded between adjacent vanes, and discharged in the cold state, and a throttle valve in the path of the air flowing through the heat exchanger, the throttle valve being adjustable for alternatively enlarging and narrowing the cross section of the air stream to vary the pressure drop in the heat exchanger so that the initial pressure of an exiting charge of air more nearly matches the pressure of the air at the discharge side of the expansion side outlet port, thereby to minimize explosive puffing of air and its attendant noise upon traverse of the vanes past the expansion side outlet port.

3,884,665
FLAT GLASS MANUFACTURING APPARATUS AND METHOD
Charles K. Edge, Sarver, and Gerald E. Kunkle, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 338,497, March 6, 1973, Pat. No. 3,843,346. This application Mar. 27, 1974, Ser. No. 455,463
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A **16 Claims**

1. An apparatus for the manufacture of flat glass comprising:
a. a glass melter;
b. a glass conditioner connected to said glass melter;
c. means for forming a continuous, dimensionally stable sheet of glass including a pool of molten metal upon which glass floats during forming said pool of molten metal having an upper surface; and
d. means connected to said glass conditioner and to said forming means for delivering molten glass from said glass conditioner onto said pool of molten metal of said forming means; wherein said delivery means is an enclosed channel comprising:
1. a threshold member over which molten glass may flow extending transversely across the bottom of said channel and having an upwardly-facing, convex upper surface having a highest portion located at least at the elevation of the upper surface of said pool of molten metal, said threshold member being located for separating said pool of molten metal from molten glass in said glass conditioner;
2. side members extending upwardly from both ends of said transversely extending threshold member; and
3. a roof member extending between said side members and extending transversely across the top of said channel.



3,884,666
METHOD OF MAKING A CLINICAL MONOCOQUE GLASS THERMOMETER
Seymour N. Blackman, 284 E. Palisades Ave., Englewood, N.Y. 07631
Continuation-in-part of Ser. No. 219,308, Jan. 20, 1972, abandoned. This application Mar. 21, 1974, Ser. No. 453,324
Int. Cl. C03b *9/32*
U.S. Cl. 65—110 **9 Claims**



1. In a method of manufacturing a monocoque clinical glass thermometer having a stem and a bulb formed integrally therewith, that improvement comprising the steps of:
placing a thermometer, blank having a capillary bore therein extending the length thereof in a vertical position, subjecting a portion of said blank adjacent the bottom thereof to heat above the flow temperature of the glass until the heated portion elongates under the force of gravity on said heated portion and on the adjacent portion of the blank beneath the heated portion,
the heated portion stretching until it breaks and the part beneath the break falls off,
the portion of the blank above the break which now is the lower tip of the blank assuming a downwardly tapering conical configuration,
the lower end of the capillary bore being sealed within the upper part of said conical lower tip,
placing the said tip, the glass of which still is hot enough to flow, in a one-piece open-topped die cavity,
introducing gas under pressure into the open upper end of the capillary bore so as to expand the sealed lower end of

the capillary bore into a pocket which forces the glass of the tip downwardly and outwardly as the pocket expands until the outer surface of the tip assumes the configuration of the cavity where the tip engages the walls of the cavity, whereby the side and bottom walls of the bulb formed by the pocket have substantially the same wall thicknesses and the bulb thus formed is in one piece with the remainder of the blank.

3,884,667

TUNNEL FURNACE, AND A METHOD OF OPERATING SAME

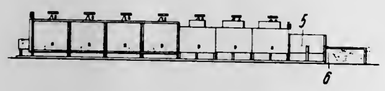
Willem Schraven, Nijmegen, Netherlands, assignor to Smit Nijmegen B.V., Nijmegen, Netherlands

Filed Sept. 17, 1973, Ser. No. 398,020

Claims priority, application Japan, Nov. 29, 1972, 47-117660

Int. Cl. C03b *25/04*

U.S. Cl. 65—119 **3 Claims**



1. A method for the heat treatment of articles comprising transporting said articles in a longitudinal direction through a horizontal tunnel furnace having separate successive sections each with variable temperature controls, controlling the temperature of the air in each of said sections by operating said variable temperature controls, circulating air transversely to the articles traveling in the longitudinal direction to obtain a more uniform air temperature about the articles in each section, drawing air into each section by a selectively controlled air damper and fan means in each section, exhausting air from each section through selectively controlled outlet damper means in each section, sensing the temperature in said sections, inducing a longitudinal flow of air between adjacent sections by varying the pressure between sections, and controlling in accordance with the temperature values in said sections the selective drawing in and exhausting of air from the respective sections to change the pressure between the sections and to induce the longitudinal flow and to provide a uniform and predictable cooling cycle for the articles passing longitudinally through the furnace.

3. A tunnel furnace for cooling articles with a controlled temperature as the articles pass longitudinally through the furnace, said furnace comprising a plurality of successive sections through which articles are transported, conveyor means for transporting the articles in the longitudinal direction through said sections, variable temperature control means in each of said sections for controlling the temperature of air therein, circulating means in each section for circulating the air therein transversely to the articles traveling in the longitudinal direction to obtain a more uniform air temperature about the articles in each section, temperature sensing means for sensing the air temperature within said sections, air inlet and exhaust damper means in each of said sections movable to positions to vary the quantity of cooling air drawn in relative to the quantity of exhaust air expelled, and a control means for positioning said air inlet and exhaust damper means in accordance with temperature values in said sections to induce a longitudinal flow of air between adjacent sections to provide a more uniform and predictable cooling cycle as the articles pass longitudinally through the furnace.

3,884,668

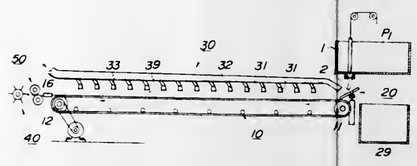
APPARATUS FOR PRODUCING GLASS PELLETS

Kiitiro Suzuki, 64-6, Aza-Yashikiura, and Minoru Hunakawa, 1-banchi, Aza-Maeyama, both of Nishigo-Mura, Nishishirakawa-gun, Hukushima-ken, Japan

Filed Mar. 1, 1974, Ser. No. 447,385

Int. Cl. C03b *19/00, 9/46*

U.S. Cl. 65—142 **10 Claims**



1. Apparatus for continuously mass-producing glass pellets comprising, in combination, a melting furnace having a gravity discharge port; means operable to controllably discharge a continuous stream of molten glass material through said discharge port; an endless chain conveyer constituted by a plurality of pivotally interconnected, V-shape cross-section holder elements, said conveyor having a receiving end beneath said discharge port for receiving, drawing and conveying a continuous length of the glass material discharged through said discharge port; a relatively elongated chilling and guiding means, formed with a glass material guiding groove, situated between said discharge port and the receiving end of said conveyor to receive, chill and guide the continuous length of glass material, and to direct it onto said conveyor; an elongated cooling means arranged above said conveyor and extending throughout the entire conveying length thereof for forcibly cooling the continuous length of glass material conveyed by said conveyor, to form a continuous length of glass material bar; cutting means arranged adjacent a discharge end of said conveyor, said cutting means including a bladed wheel having a plurality of blades operable to successively strike the glass bar continuously discharged from said chain conveyor to cut small pieces, of preselected length, from said glass bar; and glass bar holding means positioned between the discharge end of said chain conveyor and said cutting means and operable to support the glass bar discharged from said conveyor and to supply the glass bar to said cutting means; whereby glass pellets, of uniform length, are continuously formed by said apparatus.

3,884,669

REFRACTORY ELEMENTS

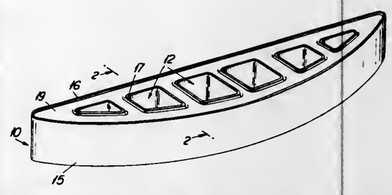
Harry Frederick Friend, Saint Helens, England, assignor to Pilkington Brothers Limited, Liverpool, England

Continuation of Ser. No. 301,407, Oct. 27, 1972, abandoned. This application Sept. 19, 1974, Ser. No. 507,505

Claims priority, application United Kingdom, Nov. 3, 1971, 51173/71

Int. Cl. C03b *5/20*

U.S. Cl. 65—343 **5 Claims**



1. In a refractory element for use in glass making apparatus, having a body of refractory material, and a skin of refractory metal encasing said body, which skin includes an upwardly facing portion covering an upwardly facing surface of the refractory body which in use would be exposed above molten glass in the apparatus, the improvement comprising refractory metal lip means integral with said skin and extending upwardly above the upper surface of said upwardly facing portion of the skin and located around the periphery of said upwardly facing portion sufficient to retain a static pool of molten glass on top of said upwardly facing portion of the skin.

3,884,670

PLANT GROWTH REGULATORS

Bernd Zeeh, Ludwigshafen; Johann Jung, Limburgerhof, and Hans Joachim Pander, Rodersheim-Gronau, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

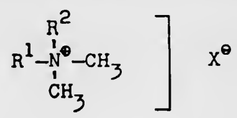
Filed Oct. 13, 1972, Ser. No. 297,364

Claims priority, application Germany, Oct. 28, 1971, 2153600

Int. Cl. A01n *9/20*

U.S. Cl. 71—76 **13 Claims**

1. A process for stunting the growth height of plants which comprises applying to the loci of the plants an effective amount for effecting said stunting of a salt of the formula



where R^1 denotes a cycloalkyl or cycloalkenyl radical having 3 to 5 ring members and which may be substituted by alkyl, R^2 denotes methyl or amino, and X^- denotes a halogen anion.

3,884,671

HERBICIDAL N-HALOACYL (2-ALKYLATED) OXAZOLIDINES

James A. Albright, St. Louis, Mich., and Kenneth P. Dorschner, Vienna, Va., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 280,851, Aug. 15, 1972. This application July 27, 1973, Ser. No. 383,349

Int. Cl. A01n *9/22*

U.S. Cl. 71—88 **6 Claims**

1. A process for controlling growth of undesirable weeds amongst crop plants which comprises applying to the locus thereof a herbicidally effective amount of an N-(C_{2-4} haloacyl) oxazolidine alkylated in the 2-position with at least one C_{1-12} alkyl group and having the 4 and 5 carbon atom valences satisfied by hydrogen atoms or C_{1-6} alkyl groups.

3,884,672

SYNERGISTIC CHEMICAL CONTROL OF NUTSEDGE WITH COMBINATION OF A 1-METHYL-4-PHENYL-PYRIDINIUM SALT AND A CYCLOPROPYLAMINO-TRIAZINE HERBICIDE

James L. Ahle, Shawnee, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 288,645, Sept. 13, 1972, abandoned. This application Oct. 30, 1973, Ser. No. 411,126

Int. Cl.[2] A01n

U.S. Cl. 71—93 **2 Claims**

1. The method of combating nutsedge consisting of applying post-emergently to the locus of nutsedge plants an effective amount, at least five-eighths lb per acre of a synergistic combination of 1-methyl-4-phenylpyridinium chloride with from 0.1 to 1.0 parts by weight of 2-Chloro-4-cyclopropylamino-6-isopropylamino-s-triazine and an inert carrier.

3,884,673

HERBICIDAL 2-HALO-N-(ACYLOXYALKYLENE) ACETANILIDES

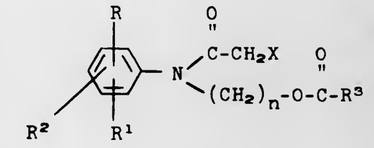
John F. Olin, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 148,894, June 1, 1971, Pat. No. 3,830,829. This application Nov. 30, 1973, Ser. No. 420,423

Int. Cl. A01n *9/24*

U.S. Cl. 71—106 **10 Claims**

1. A herbicidal composition comprising an adjuvant and an effective amount of a compound of the formula



wherein:

R and R^1 are hydrogen, alkyl or alkoxy having at least 1 and not more than 10 carbon atoms and can be like or unlike,

R^2 is hydrogen, alkyl or alkoxy having at least 1 and not more than 10 carbon atoms, NO_2 or halogen,

R^3 is haloaryl or haloaryloxyalkyl having at least 6 and not more than 24 carbon atoms;

X is chlorine, bromine or iodine, and

n is an integer of 1 or 2.

3,884,674

COMPOSITION AND METHOD FOR TREATING PLANTS AND TREES

Roland S. Grybek, and Frederick B. Johnston, both of Tampa, Fla., assignors to Marketing and Research Services, Inc., Coral Gables, Fla.

Continuation-in-part of Ser. Nos. 829,771, June 2, 1969, Pat. No. 3,712,802, Ser. No. 804,717, March 5, 1969, abandoned, and Ser. No. 417,215, Dec. 9, 1964, abandoned. This application Nov. 7, 1972, Ser. No. 304,480The portion of the term of this patent subsequent to Nov. 27, 1988, has been disclaimed.

Int. Cl. A01n *9/24*

U.S. Cl. 71—113 **1 Claim**

1. The method of synchronizing maturity of fruiting bodies of tomato plants comprising applying to said fruit bearing plants about 0.5 to 1.0 milligrams per plant of an aqueous solution of equal parts by weight of α-keto phenyl acetic acid, β-hydroxy pyruvic acid, α-keto-β-hydroxy butyric acid, and p-hydroxy phenyl pyruvic acid.

3,884,675

PRODUCTION OF TITANIUM COMPOUNDS FROM ORES CONTAINING OXIDES OF TITANIUM AND IRON

Joseph Thomas Pullukattu, and Mathew Mathew Pulimoottil, both of Kerala, all of India, assignors to Kerala State Industrial Development Corporation, Kerala, India

Continuation of Ser. No. 42,478, June 1, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 287,918

Int. Cl. C01g *23/08*

U.S. Cl. 75—1 **9 Claims**

1. A process for the production of titanium dioxide from ores principally containing mixed oxides of titanium and iron which comprises roasting the ore in air in powdered form at a temperature above 1000°C. to form the iron oxide into ferric oxide, mixing said roasted ore with twice its volume of a dense form of carbon, heating said mixture to a temperature of from 700°–900°C. in the absence of air to obtain a homogeneous mass reactable with chlorine to less than 0.1% iron contamination, powdering said mass, roasting said powdered mass in air

to form titanium dioxide and separating the remainder of the mass from the titanium dioxide.

3,884,676

DISPERSION STRENGTHENING OF METALS BY IN-CAN PROCESSING

Anil V. Nadkarni, Baltimore, and Erhard Klar, Pikesville, both of Md., assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 217,506, Jan. 13, 1972, Pat. No. 3,779,714. This application June 27, 1973, Ser. No. 373,998

Int. Cl. B22f *1/04*

U.S. Cl. 75—.5 BC **8 Claims**



1. A self-contained powder metal mixture adapted to be dispersion strengthened by internal oxidation and extruded under heat and pressure, the self-contained powder metal mixture comprising:

an intimate mixture of 100 weight parts of a powdered alloy and at least about 0.1 weight parts of an oxidant, said powdered alloy having an average particle size of less than 300 microns and consisting of a relatively noble matrix metal having a negative free energy of oxide formation at 25°C of up to 70 kilocalories per gram atom of oxygen, and a solute metal having a negative free energy of oxide formation exceeding the negative free energy of oxide formation of said matrix metal by at least about 60 kilocalories per gram atom of oxygen at 25°C, said oxidant consisting of an intimate mixture of heat-reducible metal oxide having a negative free energy of formation at 25°C of up to 70 kilocalories per gram atom of oxygen, and finely divided hard, refractory metal oxide having a negative free energy of formation exceeding the negative free energy of formation of said heat-reducible metal oxide by at least about 60 kilocalories per gram atom of oxygen at 25°C;

said heat-reducible metal oxide being present in substantially stoichiometric proportion for complete oxidation of said solute metal in said alloy whereby a residue of heat-reducible metal oxide remains in said powder metal mixture after internal oxidation adapted to be dispersion strengthened during coalescence by said hard, refractory metal oxide; and

a metal container comprising side wall portions, a forward wall, and a rearward wall, said walls defining a cavity within said metal container for containing said powder metal mixture of alloy and oxidant free from contamination during internal oxidation and extrusion whereby said powder metal mixture is adapted to be dispersion strengthened within said metal container and directly extruded from said metal container.

3,884,677

BLAST FURNACE OPERATING METHODS

Werner Wenzel; Heinrich Wilhelm Gudenau, and Tsutomu Fukushima, all of Aachen, Germany, assignors to Nippon Kokan Kabushiki Kaisha, Japan

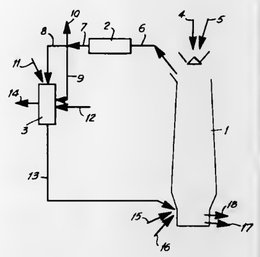
Filed Nov. 20, 1973, Ser. No. 417,622

Claims priority, application Germany, Nov. 25, 1972, 2257922; Mar. 8, 1973, 2311466

Int. Cl. C21b *5/06*

U.S. Cl. 75—42 **15 Claims**

1. In a blast furnace operating method for producing metal comprising providing a blast furnace having an hearth, stack and top, charging said blast furnace with ore and coke, introducing a blast into the hearth of the blast furnace, introducing a reducing gas into the stack of the blast furnace, reducing the ore to form metal and simultaneously producing blast furnace gas, recovering the metal and discharging all of the blast furnace gas from the top of the blast furnace, the improvement in combination therewith comprising the steps of regenerating a first portion of blast furnace gas issuing from the top of a blast furnace by means of fossil fuel into a condition where it is enriched with carbon monoxide and hydrogen, utilizing a second portion of the blast furnace gas as at least part of a source of heat for regenerating the first portion of the



blast furnace gas, introducing into the hearth of the blast furnace a blast which is substantially free of nitrogen and which is made up in part of a portion of the regenerated blast furnace gas, preheating that part of the blast which does not include the regenerated blast furnace gas at least partly with the residual portion, if any, of the blast furnace gas remaining after said first and second portions are taken therefrom, and simultaneously introducing the remainder of the regenerated blast furnace gas, which does not form part of the blast, into the stack.

3,884,678

FLUXES

Ramachandra K. Iyengar, Mt. Lebanon, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Feb. 4, 1974, Ser. No. 439,465

Int. Cl. C21c *7/00*; C22b *9/10*

U.S. Cl. 75—52 **6 Claims**

1. A solid solution of flux consisting essentially of 28 to 32% MnO, 30 to 35% FeO, 25 to 30% CaO and 8 to 12% MgO.

3,884,679

METHOD OF PREPARING A STABLE MIXTURE OF CALCIUM WITH A COMPOUND YIELDING WATER AT ELEVATED TEMPERATURE

Rudolf Mitteldorf; Erich Pfluger, and Werner Steinicke, all of Trostberg, Germany, assignors to Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft, Trostberg, Upper Bavaria, Germany

Filed May 13, 1974, Ser. No. 469,624

Claims priority, application Germany, May 24, 1973, 2326539

Int. Cl. C21c *7/00*

U.S. Cl. 75—53 **9 Claims**

1. A method of producing a stable desulfurizing composition for molten metal which comprises:

a. mixing particulate calcium carbide with a compound solid at 20°C,

said compound yielding water when heated in the presence of calcium carbide to a temperature above 250°C while being stable in air at temperatures below 250°C; and

b. grinding the resulting mixture at 50°C to 250°C in an atmosphere inert to said calcium carbide and to said compound to a particle size not greater than 2 mm,

the amount of calcium carbide in said mixture being between 50 and 97% of the combined weight of said calcium carbide and of said compound.

3,884,680

AUTOMATICALLY CONTROLLING THE OXYGEN CONTENT IN COPPER AND COPPER ALLOYS

Edouard De Bie, Antwerpen, Belgium, assignor to Metallurgie Hoboken-Overpelt, Brussels, Belgium

Filed Aug. 15, 1972, Ser. No. 280,918

Claims priority, application Luxembourg, Aug. 31, 1971, 63808

Int. Cl. C22b *15/00*

U.S. Cl. 75—72 **1 Claim**

1. A process for maintaining the oxygen content of a molten copper or copper alloy at a desired value in a furnace heated by burners supplied with a gaseous fuel and an oxygen-containing combustive gas selected from the group consisting of air, oxygen-enriched air and oxygen which comprises:

a. maintaining the ratio between the intake pressures of the gaseous fuel and the oxygen-containing gas to each burner at a fixed value,

b. heating a portion of the gaseous fuel that is conducted to each burner and not heating another portion,

c. heating a portion of the oxygen-containing gas that is conducted to each burner and not heating another portion,

d. continuously measuring the oxygen content of the molten copper or copper alloy by electrochemical means so as to generate an electrical signal,

e. comparing the electrical signal generated by step (d) with an electrical signal which corresponds to the desired oxygen content of the molten copper or copper alloy and generating an electrical signal proportional to the difference therebetween,

f. continuously measuring the temperature of the gaseous fuel that enters each burner,

g. continuously measuring the temperature of the oxygen-containing gas that enters each burner,

h. comparing the difference in the measured temperature of the gaseous fuel and the measured temperature of the oxygen-containing gas, and converting this measured difference into an electrical signal, and

i. adjusting the volume of the unheated portion of either the gaseous fuel or the oxygen-containing gas in proportion to the difference between the magnitude and polarity of the electrical signal generated by step (e) and the electrical signal generated by step (h).

3,884,681

PROCESS FOR THE PRODUCTION OF HIGH-PURITY METALS FROM NICKELIFEROUS MATTES

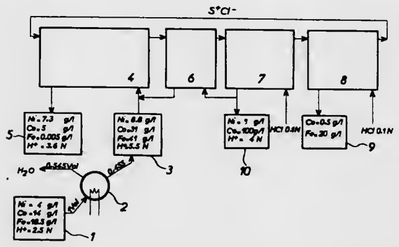
Louis Gandon, Rambouillet, France, assignor to Le Nickel, Paris Cedex 15, France

Filed Nov. 28, 1973, Ser. No. 419,534

Claims priority, application France, Dec. 1, 1972, 72.42775

Int. Cl. C22d *1/14*; C22b *3/00*

U.S. Cl. 204—113 **7 Claims**



1. In a method for producing high-purity nickel from impure nickel matte containing cobalt and other impurities comprising successively the following steps: a) comminuting and roasting said impure matte at a temperature of about 900°C to obtain impure nickel oxide; (b) dissolving this impure nickel oxide in concentrated hydrochloric acid; c) oxidizing to the ferric state the iron which is contained in the impure solution resulting from the preceding step; (d) removing the impurities from this solution by means of ion-exchange resin to produce a purified nickel chloride solution and selectively eluting said impurities to recover a cobalt chloride solution; and e) subjecting the purified nickel chloride solution to an electrolysis to recover high-purity nickel; the improvement according to which said ion-exchange resin containing said impurities is eluted with approximately decinormal hydrochloric acid, the eluate obtained is concentrated and then contacted with an organic phase in a first liquid-liquid extraction to yield an at least partly purified aqueous solution of nickel and cobalt chlorides, the organic phase is washed and then subjected to cobalt re-extraction to produce an aqueous solution rich in cobalt, the organic phase is then subjected to iron re-extraction and then recycled to said first liquid-liquid extraction.

3,884,682

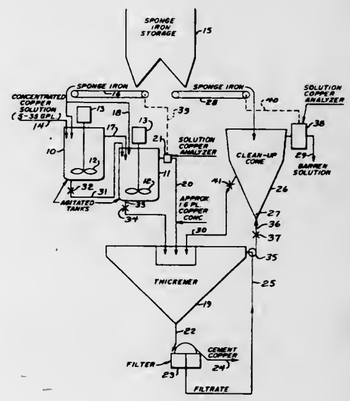
RECOVERING COPPER FROM ACIDIC SOLUTIONS BY CONTINUOUS CEMENTATION

William A. Griffith; Howard E. Day, both of Osburn, Idaho; Clarence A. Lefler, Casa Grande, Ariz., and Stephen M. Cottam, Osburn, Idaho, assignors to Hecla Mining Company, Wallace, Idaho

Filed Apr. 6, 1973, Ser. No. 348,586

Int. Cl. C22h *15/12*

U.S. Cl. 75—109 **6 Claims**



1. The method of recovering solid copper metal from a flowing dilute acidic copper solution containing greater than 5 grams per liter of dissolved copper in the form of salts to produce solid cement copper and substantially copper free barren solution, comprising: continuously contacting said flowing solution with iron to form a mixture of a low copper content solution having a maximum dissolved copper content of approximately 1 gram of copper in the form of dissolved salts per liter of solution and solid copper particles; directing said mixture of low copper content solution and copper particles to a thickener; continuously separating in said thickener said solid copper particles from said resulting low copper content solution; then contacting said resulting low copper content solution with additional iron in a clean up step to precipitate substantially all of the remaining dissolved copper from said resulting low copper content solution to form more solid cement copper and the substantially copper free barren solution; directing said precipitated remaining copper with a portion of said barren solution into said thickener; and discarding the remaining said barren solution from said solution clean up step.

3,884,683
NOVEL SUPERCONDUCTING MATERIAL

Ushio Kawabe, Hamura; Shigeo Fukase; Masato Ishibashi both of Hachioji; Mitsuhiro Kudo, Hamura, and Kazue Takatoku, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 24, 1972, Ser. No. 220,211
Claims priority, application Japan, Jan. 22, 1971, 46-1584
Int. Cl. C22c *27/00*; **C22f** *1/18*; **H01f** *1/04*
U.S. Cl. 75—174 **14 Claims**

1. A superconducting material consisting essentially of an intermetallic compound having a β-W type crystal structure represented by the formula:

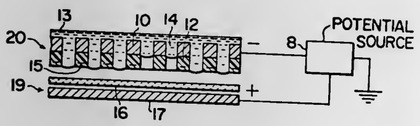
$$(Nb_{1-x}Ta_x)_kAl_{1-y}M_y ,$$

wherein M is an element selected from the group consisting of Be, and Si and the values of x, y, and k are $0 \leqq x \leqq 0.1$, $0.01 \leqq y \leqq 0.2$, and $2.3 \leqq k \leqq 4.0$, respectively.

3,884,684
ELECTROSTATIC DEVELOPING PROCESS EMPLOYING A POROUS PHOTOCONDUCTIVE MEMBER

Genji Ohno, Yokohama, and Eiichi Inoue, Tokyo, both of Japan, assignors to Research and Development Laboratories of Ohno Co., Ltd., Kanagawa, Japan

Division of Ser. No. 233,547, March 10, 1972, Pat. No. 3,776,630. This application Apr. 23, 1973, Ser. No. 353,799
Claims priority, application Japan, Mar. 29, 1971, 46-17940
Int. Cl. G03g *13/10*
U.S. Cl. 96—1 LY **11 Claims**



1. A method for electrostatic developing which comprises the steps of:
   forming a latent electrostatic image on a composite transfer member comprising an electrically conductive substrate having a surface coated with a thin photoconductive layer, said transfer member having uniformly distributed fine pores disposed therethrough, and said photoconductive layer being repellent to aqueous liquids;
   applying to said composite transfer member opposite said photoconductive layer a developer liquid comprising toner in an aqueous carrier to provide developer liquid in the pores of said substrate adjacent said photoconductive layer, said aqueous developer liquid establishing a contact angle with said photoconductive layer in said pores of greater than 90°;
   advancing an absorbent printing member in contact with the photoconductive member bearing the latent electrostatic image;
   applying a D.C. voltage between the electrically conductive substrate of the composite transfer member and electrode means adjacent the printing member on opposite side from said transfer member to decrease the contact angle of said aqueous liquid developer in said pores to less than 90°;
   flowing aqueous liquid developer through said pores onto said printing member in selected areas corresponding to the latent electrostatic image; and
   separating said printing member from said transfer member

3,884,685
LOW DENSITY PAPER USED IN TRANSFER ELECTROPHOTOGRAPHY

Charles J. Green, Jr.; George Treier, and Robert H. MacClaren, all of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 98,883, Dec. 16, 1970, which is a continuation-in-part of Ser. No. 50,886, June 29, 1970, abandoned. This application Dec. 6, 1973, Ser. No. 422,452
Int. Cl. G03q *13/22*
U.S. Cl. 96—1.4 **3 Claims**

1. A method of electrophotographically copying comprising:
   a. charging an electrophotographic plate;
   b. exposing the charged electrophotographic plate to activating radiation to create an electrostatic image;
   c. developing the resulting electrostatic image with electroscopic marking particles; and
   d. transferring said developed image to an electrophotographic copy paper comprising paper making fibers having incorporated therein a low density bulking material in a proportion of up to about 10 percent by weight of the paper making fibers, and a surface size on said bulked paper having a composition comprising binder material, a metallic sulfate salt which imparts conductivity to the paper, in an amount of from about 1 to 50 percent by weight based on said binder, and clay in an amount of from about 40 to 50 percent of the total composition, the combination of salt and clay not exceeding 60 percent of the total composition.

3,884,686
COLOR CORRECTION METHOD

Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 213,088, Dec. 28, 1971, abandoned. This application Oct. 26, 1973, Ser. No. 409,978
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.4 **23 Claims**

1. A method for obtaining a color corrected electrostatic latent image comprising the steps of:
   a. providing a xerographic member comprising an electrically insulating layer overlying a photoconductive insulating layer which overlies a conductive substrate;
   b. applying a first electrostatic charge to said member;
   c. imagewise exposing said member to an original color image through a filter of a first primary color;
   d. applying a second electrostatic charge to said member, said second charge having a polarity opposite to that of said first charge;
   e. imagewise exposing said member to said original color image through a filter of a second primary color, said second primary color being complementary to the color information of said original image which is represented by the electrostatic latent image being formed;
   f. applying a third electrostatic charge to said member; and
   g. flood exposing said member whereby there is formed a color corrected electrostatic latent image on said member.

3,884,687
ELECTROSTATIC PRINTING PROCESS

Donald W. Breck, White Plains, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

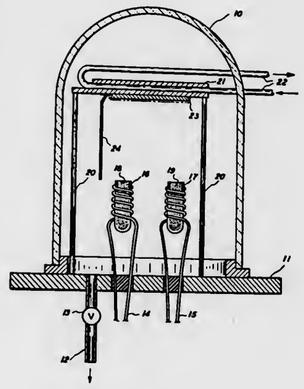
Division of Ser. No. 527,065, Feb. 14, 1966, abandoned, which is a division of Ser. No. 166,948, Jan. 17, 1962, abandoned. This application Nov. 13, 1969, Ser. No. 871,285
Int. Cl. D21h *3/66*; **G03g** *7/00*
U.S. Cl. 96—1.4 **2 Claims**

1. In an electrostatic printing process the improvement which comprises applying a uniform layer of photoconductive insulating material to an electrically conductive paper backing provided with a sufficient amount of crystalline zeolite material to impart to such paper an electrical resistivity of less than 1×10^{12} ohm-cm over the range of relative humidity of from 5 to 90%; developing a strong electrostatic charge on the surface of said layer; exposing the charged layer to light source to render the illuminated areas thereof sufficiently conductive to drain off a substantial portion of said charge to said electrically conductive paper backing; then contacting a fine dust with the surface whereby to form an electrostatic dust deposit on the areas of said surface remaining charged after exposure and removing excess dust not electrostatically held on said surface.

3,884,688
PHOTOSENSITIVE ELEMENT EMPLOYING A VITREOUS BISMUTH-SELENIUM FILM

John C. Schottmiller; Francis W. Ryan, both of Penfield, N.Y., and Charles Wood, Sycamore, Ill., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 798,750, Feb. 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 674,267, Oct. 10, 1967, Pat. No. 3,627,573, which is a continuation-in-part of Ser. No. 550,225, May 16, 1966, abandoned. This application Jan. 5, 1973, Ser. No. 321,194The portion of the term of this patent subsequent to Dec. 14, 1988, has been disclaimed.
Int. Cl. G03g *5/04*
U.S. Cl. 96—1.5 **2 Claims**



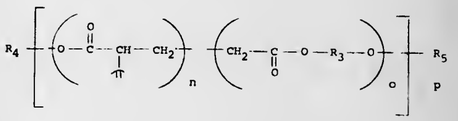
1. A photosensitive element exhibiting infrared sensitivity and adapted for use in a vidicon device, said element comprising an electrically conductive supporting substrate having thereon a vitreous bismuth-selenium film which comprises about 2.0 to 4.0 atomic percent bismuth with the balance comprising selenium.

3,884,689
POLYCYCLIC AROMATIC POLYMER AS A PHOTOCONDUCTOR OR OVERLAYER

William W. Limburg, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1973, Ser. No. 393,082
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.5 **14 Claims**

1. A photoconductive member comprising a substrate and at least one organic photoconductive layer comprising an aromatic polyvinyl polymer of the formula



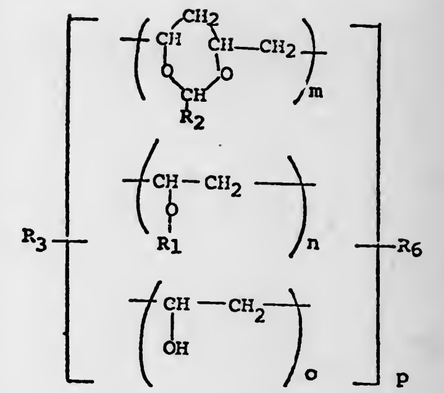
wherein π is defined as a pyrene, a benzopyrene, a chrysene, a dibenzanthracene, a perylene, a picene, a tetracene, a fluorene, a phenanthrene, an anthraquinone or a thiophene group;
R_3 is defined as a divalent polycyclic aryl group or as a straight or branched methylene chain of from 1 – 20 carbon atoms;
R_4 and R_5 are individually defined as polymeric end groups;
n and o are integers in a ratio of about 1–3:1; and
p is an integer commensurate with a number average molecular weight of about 5,000 – 100,000.

3,884,690
POLYESTER PHOTOCONDUCTORS AND MATRIX MATERIALS

Richard W. Radler, Jr., Marion, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 27, 1973, Ser. No. 401,468
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.5 **6 Claims**

1. A photoconductive member comprising a substrate and at least one organic photoconductive layer comprising hole-generating photoconductive material and a polyester of the formula

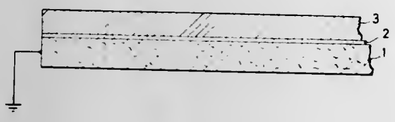


wherein
R_1 is defined as a hydrogen atom, a lower alkyl group or as a lower alkyl carbonyl group;
R_2 is an aromatic polycyclic radical having 4–5 fused ring nuclei; or a 3 ringed N-containing heterocyclic group
R_3 and R_6 are polymeric end groups;
m, n, o and p are positive numbers commensurate with a number average molecular weight of at least about 5,000; m, n, and o falling within the respective ratios of about 1–6:0–1:1–8 in random or block polymers.

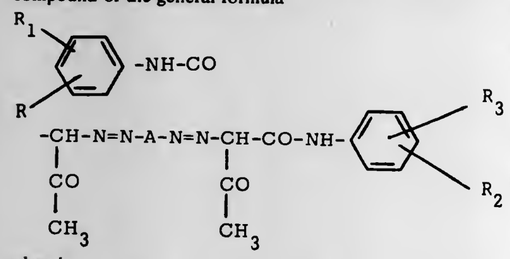
3,884,691
ELECTROPHOTOGRAPHIC ELEMENT OF AZO DYE LAYER AND CHARGE TRANSPORT OVERLAYER

Jürgen Rochlitz, Breckenheim, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Apr. 25, 1973, Ser. No. 354,319
Claims priority, application Germany, Sept. 21, 1972, 2226254
Int. Cl. G03g 5/06
U.S. Cl. 96—1.6 **19 Claims**



1. Electrophotographic recording material comprising an electroconductive support material and a photoconductive double layer of organic materials composed of a tightly packed, homogeneous, uniform, opaque charge carrier producing dyestuff layer and a transparent top layer of insulating materials containing at least one charge transporting compound, in which the organic dyestuff layer is composed of a compound of the general formula



wherein

—A— is a diphenyl, 2-phenyl-benzimidazole or azobenzene group which may be substituted, and

R, R_1, R_2 and R_3 may be the same or different and are hydrogen, alkyl with one to four carbon atoms, alkoxy with one to four carbon atoms, or halogen,

and in which the transparent top layer is composed of a mixture of a binder with a charge transporting, monomeric, heterocyclic compound substituted by at least one dialkyl-amino group or two alkoxy groups and having an extended π-electron system,

which recording material is useful in an electrophotographic copying process with negative charging of the top layer if an electron-donating compound is used, and is useful in an electrophotographic copying process with positive charging of the top layer if the top layer contains an electron-accepting compound.

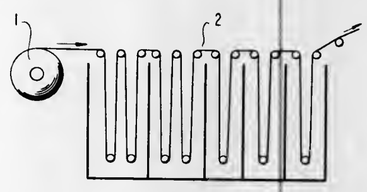
3,884,692
PHOTOGRAPHIC SUPPORT

Nobuhiko Minagawa, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 13, 1973, Ser. No. 340,790
Claims priority, application Japan, Mar. 14, 1972, 47-25881
Int. Cl. G03c 1/86
U.S. Cl. 96—85 **14 Claims**

1. A photographic light-sensitive material comprising

a. a support which comprises a polyolefin-laminated paper having on its back a coating layer composed of fibrous colloidal alumina (hydrate), and



b. a silver halide emulsion layer on the side of said support opposite the alumina coated side.

3,884,693
LIGHT-SENSITIVE TRANSFER MATERIAL

Sigrid Bauer, Hahn, Taunus, and Helga Sikora, Wiesbaden-Biebrich, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

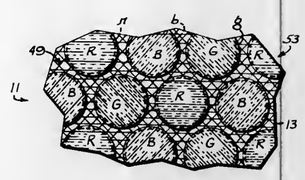
Filed May 8, 1972, Ser. No. 251,351
Claims priority, application Germany, May 13, 1971, 2123702
Int. Cl. G03c 11/12, 7/16
U.S. Cl. 96—15 **14 Claims**

1. Light-sensitive transfer material comprising a support, a light-sensitive thermoplastic layer, and a thin intermediate release layer of low permeability to the oxygen of the air which does not become tacky when heated at temperatures up to 150°C. and has a greater adhesion to said light-sensitive layer than to said support.

3,884,694
PROCESS FOR FORMING A COLOR CATHODE RAY TUBE SCREEN STRUCTURE HAVING OPTICAL FILTER ELEMENTS THEREIN

Anthony V. Gallaro, Auburn, and Robert A. Hedler, Seneca Falls, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 2, 1973, Ser. No. 412,142
Int. Cl. G03g 13/22
U.S. Cl. 96—30 **8 Claims**



2. In the viewing panel of a color cathode ray tube whereon a patterned screen structure formed of first, second and third pattern elements in disposed on the interior surface of said panel relative to a multiple apertured pattern mask spatially positioned adjacent thereto, an improved process for forming an improved multi-windowed screen structure defined by a webbing of uniform opaque interstices disposed on the interior surface of said panel prior to the fabrication of the phosphor screen thereon, each of said windows defining an area of a selected substantially transparent optical filter material and evidencing a peripheral shaping free of indentations similar to that of the respective formative aperture in said pattern mask, said improved process comprising the steps of:

coating the interior of said panel with a uniform layer of a protective coating formed of a negative photosensitive resist material admixed with an inert substance;

exposing said coated panel by directing actinic radiations emanating from two spaced apart positions through the apertures in said pattern mask to light-polymerize those portions of said photosensitive coating mixture in the areas subsequently occupied by said second and third filter pattern windows;

developing said light exposed panel coating by removing the unexposed photosensitive coating mixture therefrom to provide second and third polymerized filter pattern window elements on the bare glass of said panel;

overcoating said patterned panel with a uniform liquid primary layer of a heat formable first optical filter material;

heating said overcoated panel in a controlled oxygen atmosphere to thermally degrade said polymerized window elements formed of said resist mixture and oxidize said first optical material and adhere a substantially continuous and transparent primary layer of said first optical filter material to the glass surface of said panel, said primary layer having defined second and third filter pattern window areas therein wherein said degraded mixture and associated first filter materials are loosely retained;

treating said panel to remove said loosely retained materials from said second and third filter pattern window areas to provide a primary layer of said first optical filter material having second and third pattern open filter windows therein;

coating said panel with a uniform layer of said protective coating formed of said negative photoresist material admixed with said inert substance;

exposing said coated panel by directing actinic radiations emanating from two spaced apart positions through the apertures of said pattern mask to light-polymerize discrete portions of said photosensitive coating mixture in those areas subsequently occupied by said first and third filter pattern windows;

developing said light-exposed panel coating by removing the unexposed photosensitive mixture therefrom to provide a plurality of first polymerized filter pattern elements superimposed on said first optical filter material in a manner to define the first filter pattern window areas, and a plurality of third polymerized filter pattern elements disposed in the open third pattern window areas of said primary filter layer;

overcoating said patterned panel with a uniform liquid secondary layer of a heat formable second optical filter material;

heating said overcoated panel in a controlled oxygen atmosphere to thermally degrade said polymerized window elements formed of said resist mixture and oxidize and adhere a substantially continuous and transparent secondary layer of said second optical filter material to portions of said primary filter layer including deposition in the second filter pattern windows thereof, said secondary layer having defined first and third filter pattern window areas therein wherein said degraded mixture and associated second filter materials are loosely retained;

treating said panel to remove said loosely retained materials from said first and third filter window areas whereupon said primary filter layer is covered with said secondary layer of the second optical filter material having first and third pattern open filter windows therein;

coating said panel with a uniform layer of said protective coating formed of said negative photoresist material admixed with said inert substance;

exposing said coated panel by directing actinic radiations emanating from two spaced apart positions through the apertures in said pattern mask to light polymerize discrete portions of said photosensitive coating mixture in those areas subsequently occupied by said first and second filter pattern windows;

developing said light exposed panel coating by removing the unexposed photosensitive coating mixture therefrom to provide a plurality of first polymerized filter pattern elements deposed in said open first pattern window areas of said secondary filter layer, and a plurality of second polymerized filter pattern elements disposed in the open second pattern window areas of said secondary filter layer;

overcoating said patterned panel with a uniform liquid tertiary layer of a heat formable third optical filter material;

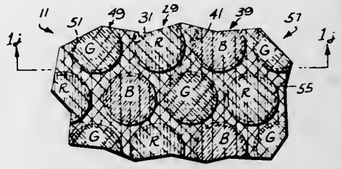
heating said overcoated panel in a controlled oxygen atmosphere to thermally degrade said polymerized window elements formed of said resist mixture and oxidize and adhere a substantially continuous and transparent tertiary layer of said third optical filter material to portions of said secondary filter layer including deposition in the third filter pattern windows thereof, said teritary layer having defined first and second filter pattern window areas therein wherein said degraded mixture and associated third filter materials are loosely retained; and

treating said panel to remove said loosely retained materials from said first and second filter pattern window areas whereupon the secondary filter layer is recovered with said tertiary layer of a third optical filter material having first and second pattern open filter windows therein, the combination of said superimposed primary, secondary and tertiary filter layers provides a substantially opaque uniformly structured interstitial webbing fully surrounding each of the respective optical filter windows in said screen structure whereof the uniform peripheral encompassment of each filter window is free of indentations.

3,884,695
PROCESS FOR FABRICATING A COLOR CATHODE RAY TUBE SCREEN STRUCTURE HAVING SUPERIMPOSED OPTICAL FILTER MEANS THEREIN

Anthony V. Gallaro, Auburn, and Robert A. Hedler, Seneca Falls, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 2, 1973, Ser. No. 412,144
Int. Cl. G03g 13/22
U.S. Cl. 96—30 **4 Claims**



1. In the viewing panel of a color cathode ray tube whereon a patterned cathodoluminescent screen formed of green-emitting, blue-emitting, and red-emitting phosphor elements is disposed relative to a multiple apertured pattern mask spatially positioned adjacent thereto, an improved process for forming an improved multi-windowed screen structure defined by a webbing of uniform opaque interstices disposed on an interior surface of said panel prior to the fabrication of said patterned phosphor screen thereon, said windows being definitive of dual-layered optical filter components formed of superimposed selected transparent optical filter materials and evidencing peripheral shapings free of indentations similar to those of the respective formative apertures in said pattern mask, said process improvement comprising the steps of:

coating the interior of said panel with a uniform layer of a protective coating formed of a negative photosensitive resist material admixed with an inert substance;

exposing said coated panel by directing actinic radiation emanating from a first exposure position through the apertures in said pattern mask to light polymerize those portions of said photosensitive coating mixture in the

areas subsequently occupied by said first filter pattern windows;

developing said light-exposed panel coating by removing the unexposed photosensitive mixture therefrom to provide polymerized first filter pattern window elements on the bare glass of said panel;

overcoating said patterned panel with a uniform liquid primary layer of a heat formable first optical filter material;

heating said overcoated panel in a controlled oxygen atmosphere to thermally degrade said polymerized first window elements formed of said resist mixture and oxidize said first optical filter material and adhere a substantially continuous and transparent primary layer of said first optical filter material to the glass surface of said panel, said primary layer having defined first filter pattern window areas therein wherein said degraded mixture and associated first filter materials are loosely retained;

treating said panel to remove said loosely retained materials from said first filter pattern window areas to provide a primary layer of first optical filter materials having a first pattern open filter windows therein;

coating said panel with a uniform layer of said protective coating formed of said negative photoresist material admixed with said inert substance;

exposing said coated panel by directing actinic radiation emanating from a second exposure position through the apertures of said pattern mask to light-polymerize discrete portions of said photosensitive coating mixture in those areas subsequently occupied by said second filter pattern windows;

developing said light exposed panel coating by removing the unexposed photosensitive mixture therefrom to provide a plurality of second polymerized filter pattern elements superimposed on said first optical filter material in a manner to define the second filter pattern window areas;

overcoating said patterned panel with a uniform liquid secondary layer of a heat formable second optical filter material;

heating said overcoated panel in a controlled oxygen atmosphere to thermally degrade said polymerized second window elements formed of said resist mixture and oxidize and adhere a substantially continuous and transparent secondary layer of said second optical filter material to portions of said primary filter layer including deposition in the first filter pattern windows thereof, said secondary layer having defined second filter pattern window areas therein wherein said degraded mixture and associated second filter materials are loosely retained;

treating said panel to remove said loosely retained materials from said second filter window areas whereupon areas of said primary filter layer are evidenced through said open second filter pattern windows;

coating said panel with a uniform layer of said protective coating formed of said negative photoresist material admixed with said inert substance;

exposing said coated panel by directing actinic radiation emanating from a third exposure position through the apertures in said pattern mask to light-polymerize discrete portions of said photosensitive coating mixture in those areas subsequently occupied by said third filter pattern windows;

developing said light exposed panel coating by removing the unexposed photosensitive mixture therefrom to provide a plurality of polymerized third filter pattern elements disposed on said secondary filter layer;

overcoating said patterned panel with a uniform liquid tertiary layer of a heat formable third optical filter material;

heating said overcoated panel in a controlled oxygen atmosphere to thermally degrade said polymerized third window elements formed of said resist mixture and oxidize and adhere a substantially continuous and transparent tertiary layer of said third optical filter material to portions of said secondary filter layer including deposition in the second filter pattern windows thereof, said tertiary layer having defined third filter pattern window areas therein wherein said degraded mixture and associated third filter materials are loosely retained; and

treating said panel to remove said loosely retained materials from said third filter pattern window areas whereupon areas of said secondary filter layer superposed on said primary filter layer are evidenced through said open third filter pattern windows, areas of said tertiary filter layer superposed on said primary filter layer being evidenced and defined by said second filter pattern windows, areas of said tertiary filters layers superposed on said secondary filter layer being evidenced and defined by said first filter pattern windows; said first, second and third dual-layered filter pattern areas being associated with specific color-emitting phosphor elements to provide enhanced selective optical filtering thereof, the combination of said superimposed filter layers provide an opaque uniformly structured interstitial webbing fully surrounding each of the respective optical filter windows in said screen structure, the uniform peripheral encompassment of each filter window being free of indentations provides an optimized area for display of a respective color emission.

3,884,696

POSITIVE PHOTORESIST COMPRISING POLYSULFONES FORMED BY REACTING VINYL AROMATIC HYDROCARBONS WITH SULFUR DIOXIDE

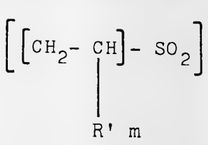
Murrae John Stanley Bowden, Chatham, and Edwin Arthur Chandross, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 5, 1974, Ser. No. 448,399

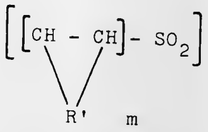
Int. Cl. G03c *5/00;* **B01j** *1/10, 1/12*

U.S. Cl. 96—35 **5 Claims**

1. The method of forming a patterned resist on the surface of a substrate which comprises exposing a portion of an arylated polysulfone film on said substrate to ultraviolet radiation having a wavelength within the range of 1,700–4,000 A for a time period sufficient to lower the molecular weight of the polysulfone, and selectively removing the exposed portion from said substrate, said polysulfone being selected from the group consisting of

(a) 

and

(b) 

wherein *m* is an integer having a value of at least 1, R is an aromatic hydrocarbon radical selected from the group consisting of phenyl, biphenyl, naphthyl, phenanthyl, fluoroanthryl and anthracyl radicals and R′ is a 1,8 naphthylidene radical.

3,884,697

PHOTOGRAPHIC PROCESS UTILIZING SPIROPYRAN COMPOUND DISPERSED IN NITROCELLULOSE FILM WITH HIGH NITROGEN CONTENT

Eiichi Inoue, and Mitsunobu Nakazawa, both of Tokyo, Japan, assignors to Eiichi Inoue, Japan; Dai Nippon Insatsu Kabushiki Kaisha, Japan and Canon Kabushiki Kaisha, Japan, part interest to each

Division of Ser. No. 256,570, May 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 20,410, March 17, 1970, abandoned. This application Mar. 19, 1974, Ser. No. 452,516

Claims priority, application Japan, Mar. 31, 1969, 44-23819

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 R **2 Claims**

1. A method for producing a reversible color change image by the use of a reverse photochromic film consisting essentially of nitrocellulose having a nitrogen content of from about 10 to 12.2% by weight and a molecular weight of about 10,000 to 250,000 and a spiro-pyran compound being present in an amount of about 1 part by weight per 60 parts by weight nitrocellulose, said method comprising (i) decoloring said reverse photochromic film, which is originally colored and in a stable state, by subjecting it to irradiation with visible light to form an image, and (ii) restoring the decolored image to the original color by subjecting the film to irradiation with ultraviolet light or by placing the film in the dark.

3,884,698

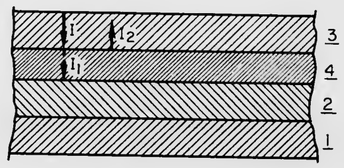
METHOD FOR ACHIEVING UNIFORM EXPOSURE IN A PHOTOSENSITIVE MATERIAL ON A SEMICONDUCTOR WAFER

Sanehiko Kakihama, and Edward B. Stoneham, both of Los Altos, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 23, 1972, Ser. No. 283,143

Int. Cl. B44d *1/16, 1/18*

U.S. Cl. 117—217 **3 Claims**



1. A method of preparing a substrate for transfer of a pattern to said substrate from a mask imprinted with said pattern, said method comprising:

depositing an insulating layer of one or more solid insulating materials onto said substrate;

depositing an antireflection layer of one or more solid materials onto said insulating layer; and

depositing a layer of photosensitive material onto said antireflection layer, the thickness of said antireflection layer and the thickness of said insulating layer being chosen to achieve cancellation among light waves reflected back into said photosensitive layer from the other layers.

3,884,699

PHOTOGRAPHIC MATERIALS HAVING REDUCED STATIC CHARGEABILITY AND METHOD FOR THEIR PRODUCTION

Elio Cavallo, Carcare, and Fulvio Furlan, Savona, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 18, 1973, Ser. No. 380,410

Claims priority, application Italy, July 24, 1972, 51726/72

Int. Cl. G03c *1/06*

U.S. Cl. 96—87 A **28 Claims**

1. A method for reducing the chargeability of photographic layers, upon a support, which essentially consist of a hydrophylic colloidal binder comprising gelatin, said method consisting of introducing at least one surfactant having a substantially fluorinated cation or anion bonded to a hydrophilic group and at least one of a nonfluorinated betaine or N-oxide surfactant into said layers by mixing the hydrophilic colloidal binder and surfactants prior to formation of the photographic layer containing the surfactants.

3,884,700

SILVER HALIDE EMULSIONS CONTAINING TWO-EQUIVALENT BENZOYLACETANILIDE PHOTOGRAPHIC COUPLERS

Andrea Quaglia, Albisola Mare, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 26, 1972, Ser. No. 318,561

Claims priority, application Italy, Dec. 28, 1971, 55062/71

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **3 Claims**

1. A silver halide photographic emulsion containing at least one two-equivalent benzoylacetanilide photographic coupler carrying on an aromatic ring thereof at least one ballasting group capable of imparting non-diffusing properties to said coupler, characterized by the fact that the coupler has a halogen atom in ortho position in the benzoyl residue, a chlorine or bromine atom as a substituent in the reactive methylene, and a hydrogen or halogen atom, or an alkyl, alkoxy, or dialkylamino group as substituent in the 2-position in the aniline residue, and a hydrogen atom or an acylamino, acyl, aryloxyacrylamino, arylaminosulfoxy or arylsulfonamido group as substituent in the 5-position in the aniline residue, the said 2-position and 5-position substituents together including alkyl groups having a total of at least 10 carbon atoms.

3,884,701

METHOD OF PREPARING SILVER HALIDE EMULSIONS

Alfons Jozef De Pauw, Edegem, and Jan Albert Carpentier, Walem, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed July 24, 1973, Ser. No. 382,115

Claims priority, application United Kingdom, Aug. 3, 1972, 36370/72

Int. Cl. G03c *1/02, 1/04*

U.S. Cl. 96—114.8 **8 Claims**

1. In a method of preparing a washed photographic silver halide emulsion in which an emulsion incorporating an acid-coagulable gelatin derivative is prepared and wherein the undesirable by-products of silver halide grain-formation and physical ripening are removed by lowering the pH to bring about coagulation and by washing the coagulum, the improvement which comprises effecting silver halide grain formation in an aqueous solution of both gelatin and an acid-coagulable gelatin derivative, the said derivative being present in a proportion sufficient to impart acid-coagulable properties to the entire mass, and effecting coagulation in the presence of a polystyrene sulfonic acid having a molecular weight of at most 30,000.

3,884,702
PHOTOSENSITIVE POLYAMIDE COMPOSITION
Akio Koshimo; Kosuke Tomita; KunihiKo Takagi; Minoru Mitsui, and Kunihiro Isikawa, all of Kyoto, Japan, assignors to Unitika, Ltd., Amagasaki-shi, Hyogo, Japan
Filed Dec. 14, 1972, Ser. No. 315,058
Int. Cl. G03c 1/68
U.S. Cl. 96—115 P 21 Claims

1. A photosensitive polyamide composition comprising at least one non-photosensitive polyamide copolymer, having a molecular weight of from 2,000 to 40,000, containing 2 to 50 mol percent of a monomer having pendent sulfonate salt groups with the amount of sulfonate salt group-containing comonomer being sufficient to impart water solubility or dispersibility to the polyamide, at least one unsaturated compound having at least two polymerizable ethylenic double bonds and at least one photoinitiator.

3,884,703
BISAZIDE SENSITIZED PHOTORESISTOR COMPOSITION WITH DIACETONE ACRYLAMIDE
Yoichi Oba, Hachioji, and Teruo Tsunoda, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan
Filed Apr. 11, 1973, Ser. No. 350,012
Claims priority, application Japan, Apr. 17, 1972, 47-37702
Int. Cl. G03c 1/52, 1/72
U.S. Cl. 96—115 R 4 Claims

1. A photoresist composition comprising a water soluble organic resin selected from the group consisting of polyacrylamide, polyvinylpyrrolidone, gelatin, methylcellulose, a water soluble salt of poly-L-glutamate, a water soluble polyacrylate, a copolymer of vinyl alcohol and maleic acid, and a copolymer of vinyl alcohol and acrylamide, and a bisazide selected from the group consisting of sodium-4,4′-diazidestilbene-2,2′-disulfonate, sodium-4,4′-diazidestilbene-γ-carboxylate and sodium-4,4′-diazidebenzalacetophenone-2-sulfonate, as a photochemical reaction initiator, characterized in that diacetone acrylamide is added therein in an amount of at least 5 parts by weight based on 100 parts of said water soluble resin, whereby said photoresist composition is remarkably improved in adhesion for a substrate.

3,884,704
CATALYST SYSTEM FOR ACTIVATING SURFACES PRIOR TO ELECTROLESS DEPOSITION
Alan Rantell, London, England, and Abraham Holtzman, Bat-Yam, Israel, assignors to MacDermid Incorporated, Waterbury, Conn.
Filed Oct. 4, 1973, Ser. No. 403,503
Claims priority, application United Kingdom, Mar. 21, 1973, 13545/73
Int. Cl. C23c 3/02
U.S. Cl. 106—1 6 Claims

1. A method for preparing a catalyst solution by heating a hydrochloric acid solution of a catalytic ion selected from the group consisting of Pd(II), Au(I), Au(III), Pt(II), Pt(IV), Rh(III), Ru(III), Ru(IV), Os(III), Os(IV), Ir(III), Ir(IV), Ag(I) with a solution containing a stochiometric excess of stannous salt wherein at least one of said solutions is first heated to a temperature in excess of 75°C before the other is added to it, and said elevated temperature is maintained during the progress of the reaction upon admixing the solutions, the concentration of the selected catalytic ion being equivalent to 6 to 30 mg/l of palladium metal in solution and said acid being present in the ratio of 400–500 milliliters of concentrated hydrochloric per liter of catalyst solution for each 30 milligrams of catalyst metal present in solution.

3,884,705
ANTI-CORROSION WELDABLE COATING COMPOSITIONS
Noel D. Blair, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.
Filed Apr. 19, 1972, Ser. No. 245,384
Int. Cl. C09d
U.S. Cl. 106—1 10 Claims

1. In an anti-corrosion, weldable coating composition containing from about 3 to 80 percent by weight of a binder, and from about 20 to 97 percent by weight of a filler containing from about 60 to 99 percent by weight of said filler a comminuted refractory ferro alloy and from about 0 to 10 percent by weight of zinc dust, the improvement which comprises including as a component in said filler from about 1 to 40 percent of at least one non-metallic corrosion inhibitor selected from the group consisting of chromates, nitrites, phosphates, molybdates, tungstates, silicates and benzoates.

3,884,706
ALGICIDAL ROOFING GRANULES
David C. Little, Hagerstown, Md., assignor to GAF Corporation, New York, N.Y.
Filed Oct. 25, 1972, Ser. No. 300,854
Int. Cl. C04b 41/06
U.S. Cl. 106—15 R 12 Claims

1. Algicidal roofing granules having an enhanced ability to inhibit or prevent the growth of discoloring algae and fungi organisms upon exposure of roofing surfaces containing such granules for extended periods of time, comprising base mineral granules coated with a moisture permeable, substantially water insoluble, durable, pigmented, fired, inorganic alkali metal silicate-clay coating containing zinc and copper algicides, said zinc algicide being present in an amount within the range of from about 0.05 to about 0.5 percent by weight based on the total weight of said granules, said copper algicide being present in an amount within the range of from about 0.05 to about 0.5 percent by weight based on the total weight of said base granules, said coating releasing zinc and copper ions slowly over an extended period of time during periods of rain and dew, whereby the zinc and copper ions released or leached during such periods of rain and dew produce a bimetallic toxic effect in retarding biological growth of algae and fungi, thus enhancing the resistance of roofing surfaces containing such granules to discoloration during extended periods of exposure to atmospheric weathering, particularly in humid environments conducive to the growth of such algae and fungi.

3,884,707
PRINTING INK AND PROCESS
Franklin A. Dick, Princeton; Donald W. Miller, Middletown, and Charles J. Miller, Hazlet, all of N.J., assignors to Beatrice Foods Co., Chicago, Ill.
Filed Nov. 9, 1973, Ser. No. 414,438
Int. Cl. C09d 11/04, 11/08
U.S. Cl. 106—24 14 Claims

1. A printing ink consisting essentially of a solution having an alkalinity within the pH range of 7.0 to 11.5 containing 0.5 to 5% by weight basic dye, 8 to 65% by weight water miscible organic solvent selected from the group consisting of ethylene glycol, diethylene glycol, ethylene glycol ethyl ether, diethylene glycol ethyl ether, n-propyl alcohol and isopropyl alcohol and other water soluble alcohols of the type of n-propyl and isopropyl alcohol, 15 to 85% by weight water, 4 to 35% by weight resin soluble in said water-organic solvent combination selected from the group consisting of maleated rosin, fumerated rosin, phenolic modified rosin, acrylic resins, proteins, shellac, polyethylene oxide, carboxyl methyl cellulose, polyvinyl alcohol and reconstituted starch, and 0 to 6% pigment, the total weight percentage being 100% and the alkalinity, if any, being imparted to said composition by the addition of ammonia or a water soluble amine selected from the group consisting of monoethanolamine, diethanolamine and diethylamine said ink being substantially free of laking agent.

3,884,708
THERMOPLASTIC PATTERN MATERIAL
Edward F. Burkert, Garfield Heights, Ohio, assignor to The Freeman Supply Company, Toledo, Ohio
Continuation-in-part of Ser. No. 238,966, March 28, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,219
Int. Cl. B22 7/00; C08f 45/52
U.S. Cl. 106—38.6 12 Claims

1. A filled heat liquefiable pattern material for use in making refractory molds and the like comprising the following materials in approximate percentages by weight: 5–60 percent of a material from the group consisting of mineral waxes, animal waxes, vegetable waxes and synthetic waxes; 10 to 60 percent of a hard thermoplastic resin plasticized by said wax and having a softening point between approximately 70°C and approximately 160°C; and 5 to 45 percent of a polyhydric alcohol of tetra substituted methane having no more than one substituted nonpolar alkyl carbon atom and having alcohol groups of up to and including six carbon atoms with an OH group on at least half of the carbon atoms of the alcohol groups.

3,884,709
POROUS MULLITE REFRACTORY
John Hay, Shrewsbury, Mass., assignor to Norton Company, Worcester, Mass.
Filed Dec. 17, 1973, Ser. No. 425,204
Int. Cl. C04b 35/10
U.S. Cl. 106—65 4 Claims

1. A method of making porous monolithic shapes of bonded mullite grits comprising forming a mix of mullite grits and a manganese compound having a melting point below 1,450°, and which decomposes to manganese oxide between its melting point and 1,450°, forming said mix to shape and firing to produce a bond including manganese oxide adjacent the contacting portions of the mullite grits.

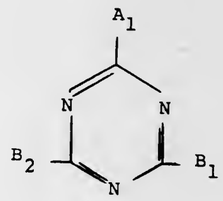
3,884,710
EXPANSIVE CEMENT
Joseph H. Allen, Irving; Waldemar A. Klemm, and John P. Luker, both of Dallas, all of Tex., assignors to General Portland, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 301,334, Oct. 27, 1972, abandoned. This application Oct. 10, 1973, Ser. No. 404,934
Int. Cl. C04b 7/04, 7/34
U.S. Cl. 106—89 28 Claims

1. An expansive cement comprising a mixture of:
a. from about 99 to about 1% by weight of a hydratable cement; and
b. from about 1 to about 99% by weight of an expansive cement composition made from argillaceous and calcareous materials and containing from about 1 to about 30 weight % of free CaO, with the remaining portion being primarily tricalcium silicate and containing substantially no dicalcium silicate.

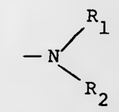
25. The method of claim 24 wherein said clinker is ground to yield particles which are no larger than about 20 mesh (Tyler) and have a fineness of no greater than about 6,000 cm^2/gm.

3,884,711
FLOOR CARE COMPOSITIONS CONTAINING TRIS-AMINO-S-TRIAZINES
Denis Varsanyi, Ariesheim, and Willy Roth, Aargau, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 243,818, April 13, 1972, abandoned, which is a continuation-in-part of Ser. No. 121,139, March 4, 1971, Pat. No. 3,752,811, which is a division of Ser. No. 672,701, Oct. 4, 1967, Pat. No. 3,594,374, which is a continuation-in-part of Ser. No. 560,855, June 27, 1966, abandoned. This application Mar. 27, 1974, Ser. No. 455,457
Claims priority, application Switzerland, June 30, 1965, 9158/65
Int. Cl.² C08H 9/06
U.S. Cl. 106—271 13 Claims

1. A floor care composition comprising
a. a waxy component, from about 20 to 100 percent by weight of which calculated on the total weight of solids in the composition consists of a waxy triazine of the formulaa



wherein
A_1 is selected from the group consisting of



in which
R_1 represents alkyl of from 1 to 5 carbon atoms, and
R_2 represents alkyl of from 10 to 18 carbon atoms, pyrrolidino, piperidino, 4-methyl-piperazino, morpholino and hexamethyleneimino, and each of B_1 and B_2 is selected from the group consisting of pyrrolidino, piperidino, 4-methylpiperazino, morpholino and hexamethyleneimino,
b. a volatile organic solvent compatible with the floor to be treated with said composition and in sufficient amount to dissolve the solids content of the composition, and
c. from 0 percent to a sufficient amount of emulsifying agent for obtaining an aqueous emulsion of the mixture of the components (a) and (b), said floor-care composition being an organic solution or an aqueous emulsion capable, after evaporation of the solvent (b), of forming on a wooden floor a waxy, non-slippery coating having a gloss enhanceable by rubbing with a soft cloth, said coating being resistant to water and alkaline detergents.

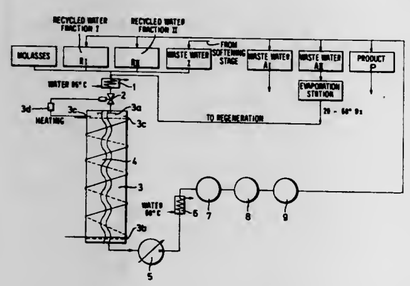
3,884,712
PROCESS FOR PREPARING LIQUID POLYMERS
Tadahiro Go; Hiroshi Yaginuma, and Masaaki Inoue, all of Kawasaki, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan
Filed June 29, 1973, Ser. No. 375,102
Claims priority, application Japan, July 5, 1972, 47-67411
Int. Cl. C09d *3/48*
U.S. Cl. 106—285 **10 Claims**

1. A process for preparing a liquid polymer having an average molecular weight of 300–10,000 and an iodine number of at least 250 and being capable of forming hydrocarbon solvent-insoluble coatings, comprising copolymerizing a monomeric mixture containing 90–50% by weight of 1,3-pentadiene and 10–50% by weight of 1,3-butadiene in the presence of a homogenizable Friedel-Crafts type catalyst selected from the group consisting of boron trifluoride and complexes thereof, tin tetrachloride, ferric chloride, titanium tetrachloride, solubilized aluminum chloride, alkylaluminum dichloride, sulphuric acid and hydrogen fluoride.

3,884,713
PIGMENT DISPERSIONS
Robert Langley, Newton Mearns; George Heddle Robertson, Paisley, and Christopher James Bridge, Dalry, all of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Oct. 5, 1973, Ser. No. 403,740
Claims priority, application United Kingdom, Oct. 11, 1972, 46746/72
Int. Cl. C09c *3/02*
U.S. Cl. 106—308 N **10 Claims**

1. A flocculation-resistant dispersion of a solid in a liquid comprising a particulate solid material selected from the group consisting of a pigment or a dyestuff, an organic solvent suitable as a dispersion median for said particulate solid material and as a stabilizer a material which contains groups soluble in the organic solvent, which contains more than one urethane group and which contains no significant proportion of basic amino groups, wherein said stabilizer is within the range of from 5 to 200% by weight based on the particulate solid in the dispersion and said particulate solids is in the range of from 10 to 60% by weight based on the total weight of the dispersion.

3,884,714
PROCESS FOR MAKING SUGAR FROM MOLASSES BY ION REMOVAL
Hans-Georg Schneider, and Jiri Mikule, both of Euskirchen, Germany, assignors to Pfeiffer and Langen, Cologne, Germany
Filed July 9, 1973, Ser. No. 377,227
Int. Cl. C13d *3/14*
U.S. Cl. 127—46 B **13 Claims**



1. A process for extracting sugar from impure sugar bearing solution containing ionic impurities including alkaline earth ions comprising the steps of

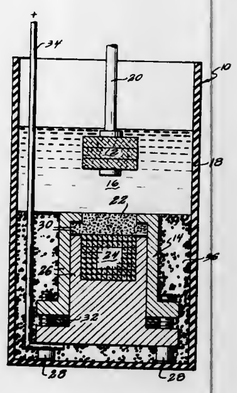
passing said solution over an ion exclusion resin so that sugar is adsorbed by said resin and ionic impurities are excluded, then

passing a first sugar containing solution over said resin, then passing water over said resin,

separately collecting the effluent from said resin in a plurality of separate fractions of different ionic impurity content concentrating at least a portion of the fraction of highest ionic content to provide a regeneration solution, and

regenerating said resin by passing said regeneration solution over said resin.

3,884,715
SECONDARY ELECTROCHEMICAL POWER-PRODUCING CELLS HAVING MIXED CATHODE COMPOSITION
Eddie C. Gay, Park Forest; Hiroshi Shimotake, Hinsdale, both of Ill.; Elton J. Cairns, Troy, Mich., and William J. Walsh, Naperville, Ill., assignors to The United States of America as represented by the Energy Research and Development Administration, Washington, D.C.
Continuation of Ser. No. 228,619, Feb. 23, 1972, abandoned.
This application Sept. 28, 1973, Ser. No. 401,729
Int. Cl. H01m *35/02, 43/00*
U.S. Cl. 136—6 F **2 Claims**



1. In a high-temperature, secondary electrochemical cell comprising an anode containing an alkali metal, an electrolyte containing ions of said metal and a cathode containing sulfur, the improvement wherein said cathode includes about 10 atom percent arsenic in a sulfur-arsenic mixture to inhibit loss of said sulfur from said cathode.

3,884,716
STORAGE BATTERY PLATE HAVING A CORE OF ALUMINUM AND A METHOD OF PREPARING THE SAME
Henry D. Walker, 4906 Bluebell Ave., North Hollywood, Calif.
Continuation of Ser. No. 313,835, Dec. 11, 1972, abandoned.
This application Mar. 11, 1974, Ser. No. 449,921
Int. Cl. H01m *35/00*
U.S. Cl. 136—26 **8 Claims**

1. A method of preparing a battery plate for a lead-acid storage battery comprising:

forming the core of said battery plate out of aluminum,

depositing a barrier coating over said core of one of the metals selected from the group consisting of zinc, nickel and chrome,

depositing a silver coating over said barrier coating, and

applying a lead coating over said silver coating.

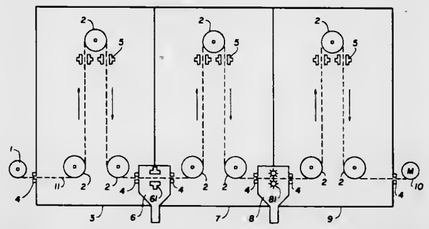
5. In a lead-acid battery wherein the battery plates are coated with lead, the improvement comprising:

an aluminum core for each said battery plate,

a coating of zinc over each said aluminum core, and

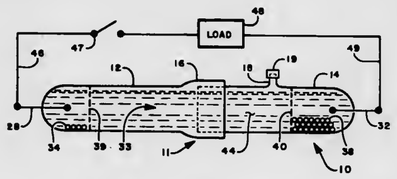
a coating of silver over each said zinc coating, on which said lead coating is deposited.

3,884,717
METHOD AND DEVICE FOR INTRODUCING ACTIVE MASS INTO POROUS ELECTRODE STRUCTURES FOR GALVANIC CELLS
Eckart Buder, Kelkheim, Taunus, and Wolfgang Knabenbauer, Hagen, both of Germany, assignors to Varta Batterie Aktiengesellschaft, Hannover, Germany
Filed Oct. 25, 1973, Ser. No. 409,600
Claims priority, application Germany, Oct. 28, 1972, 2253077; Apr. 11, 1973, 2318075
Int. Cl. H01m *35/18*
U.S. Cl. 136—67 **11 Claims**



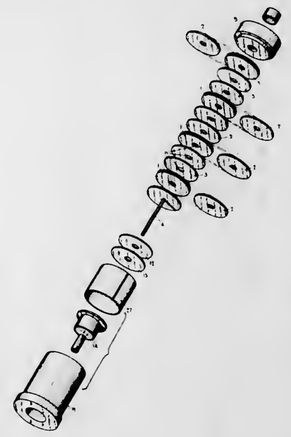
1. In a method of impregnating porous electrode structures of galvanic cells with active mass wherein the porous electrode structure is saturated with a metal salt solution from which, subsequently precipitated compounds of the metal remain in the electrode structure, the step of treating the electrode briefly with hot water after it has been saturated with the metal salt solution but before the metal compounds are precipitated.

3,884,718
RADIOACTIVE BATTERY
Ronald L. Deaton, Germantown, and Gary L. Silver, Centerville, both of Ohio, assignors to The United States of America as represented by the Energy Research and Development Administration, Washington, D.C.
Filed Apr. 19, 1973, Ser. No. 352,827
Int. Cl. H01m *29/00*
U.S. Cl. 136—83 R **6 Claims**



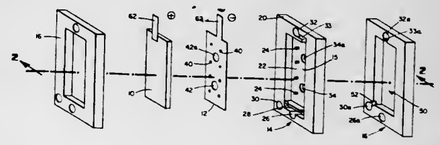
1. A radioactive battery comprising a housing, an electrolyte, said housing filled with said electrolyte, said electrolyte including radiation oxidizable material and radiation reducible material, catalytic material taken from the group consisting of platinum and platinized platinum disposed within said electrolyte, first and second electrodes spaced from each other each having one end immersed in said electrolyte and another end extending outside of said housing, said first and second electrodes of a material selected from the group consisting of platinum, gold, graphite, conductive ceramic and platinized platinum, a first portion of insoluble radioactive material selected from the group consisting of curium-244, thorium-229, thorium-230, actinium-227, plutonium-238, plutonium-239, and combinations thereof disposed in said electrolyte at from contacting to about one centimeter distance from said first electrode and restraining means for maintaining said first portion of said radioactive material at said first electrode.

3,884,719
BATTERY
Richard C. Evans; Murray A. Heine, both of Hamden, and Stanley J. Closek, East Haven, all of Conn., assignors to Olin Mathieson Chemical Corporation, New Haven, Conn.
Filed June 29, 1955, Ser. No. 518,718
Int. Cl. H01m *21/14*
U.S. Cl. 136—90 **9 Claims**



1. An electrode for a heat activated cell of the stacked disc type comprising a nickel metallic folder of circular planar section having a narrow joining fold portion between its leaves which enclose a layer of electrolyte fusible heat producing composition, the outer face of one of said leaves being coated with calcium.

3,884,720
MULTICELL SEAWATER BATTERY
John Armstrong, Winnipeg, Manitoba, Canada, assignor to ESB Incorporated, Philadelphia, Pa.
Continuation-in-part of Ser. No. 323,932, Jan. 15, 1973, abandoned. This application Apr. 9, 1973, Ser. No. 349,291
Int. Cl. H01m *17/00*
U.S. Cl. 136—100 R **9 Claims**

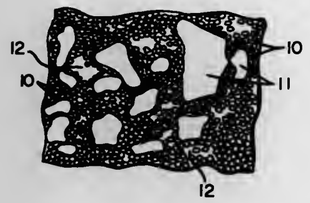


1. A multicell seawater battery wherein a series of cells each having a metal halide cathode, a metal anode arranged in face to face orientation and an electrolyte space therebetween which comprises:

a. at least one top duct located at the top of the battery each duct connected by at least one port to the electrolyte space of each cell;

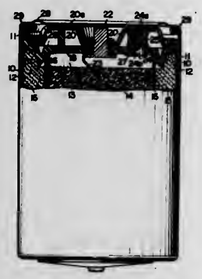
b. at least one first bottom duct located at the bottom of the battery each duct connected by at least one port to the electrolyte space of each cell;
c. a reservoir located adjacent each metal anode and at least one port leading from each such reservoir to each top duct;
d. at least one second bottom duct located at the bottom of the battery and connected by at least one port to the reservoir of each cell; and
e. at least one opening formed through the anode of each cell connecting the reservoir of each cell to the electrolyte space of each cell.

3,884,721
ANODE FOR GALVANIC CELLS
Gary Ronald Tucholski, Parma, Ohio, assignor to Union Carbide Corporation, New York, N.Y.
Filed Mar. 18, 1974, Ser. No. 452,121
Int. Cl. H01m 13/00
U.S. Cl. 136—102 13 Claims



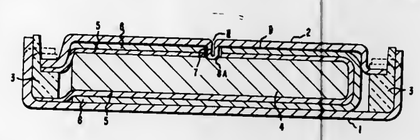
1. An improved composite anode for use in an alkaline galvanic cell comprising in combination, zinc particles, an alkaline electrolyte and a cross-linked polyacrylamide, wherein said alkaline electrolyte is absorbed in said cross-linked polyacrylamide to form electrolyte nuggets and wherein said zinc particles are wetted with electrolyte and are distributed throughout said composite anode in a manner such that said zinc particles are in contacting relation with said electrolyte nuggets and with each other.

3,884,722
ALKALINE GALVANIC CELLS
Gary Ronald Tucholski, Parma, Ohio, assignor to Union Carbide Corporation, New York, N.Y.
Filed Mar. 18, 1974, Ser. No. 452,131
Int. Cl. H01m 17/00
U.S. Cl. 136—102 29 Claims



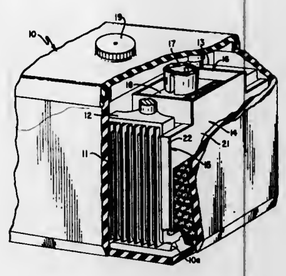
1. An improved alkaline galvanic cell which comprises, in combination a cell container, an anode chamber and a cell closure for said cell container, venting means including a venting orifice in said closure defining a conduit for the passage of gas from said anode chamber, said venting orifice having a top portion and a bottom portion, a pressure movable resealable venting valve member biased into sealing position on the top portion of said orifice and gas-permeable, liquid-impermeable membrane disposed on the bottom portion of said venting orifice, said anode chamber including a composite anode containing zinc particles, an alkaline electrolyte and cross-linked polyacrylamide, wherein said alkaline electrolyte is absorbed in said cross-linked polyacrylamide to form electrolyte nuggets and wherein said zinc particles are wetted with electrolyte and are distributed throughout said composite anode in a manner such that said zinc particles are in contacting relation with said electrolyte nuggets and with each other.

3,884,723
BUTTON TYPE GALVANIC CELL
Klaus Guenther Wuttke, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.
Filed Oct. 12, 1973, Ser. No. 405,806
Int. Cl. H01m 1/02
U.S. Cl. 136—111 8 Claims



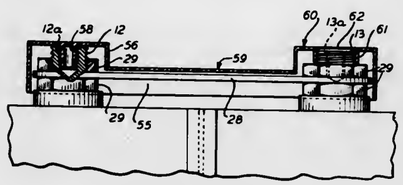
1. In a generally flat relatively thin button type galvanic cell comprising a conductive container and a conductive top for the container insulated from the container and at least one contact element from the container or top, and within the container an anode electrode, a cathode electrode, a separator between the electrodes, and an electrolyte, the improvement comprising
a first electrode having two flat sides encased on both sides by a porous nonconductive separator and by a second electrode, the second electrode and the separator each containing at least one aperture in the same relative location through which contact is made between the encased electrode and either the container or top by means of said contact element, said contact element being a protuberance from the container or top, there being no contact between the protuberance and the electrode through which the protuberance passes.

3,884,724
METHOD OF ACTIVATING STORAGE BATTERIES
John P. Badger, Genoa, and Herbert A. Bernholtz, Sylvania, both of Ohio, assignors to Eltra Corporation, Toledo, Ohio
Continuation-in-part of Ser. No. 733,135, May 29, 1968, Pat. No. 3,540,939. This application Nov. 12, 1970, Ser. No. 88,813The portion of the term of this patent subsequent to Nov. 17, 1987, has been disclaimed.
Int. Cl. H01m 45/00
U.S. Cl. 136—114 2 Claims



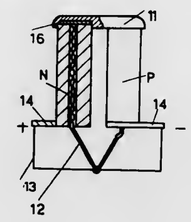
1. A method of activating a storage battery of the water-activable type in which concentrated battery acid is retained within each cell in liquid form in a body of liquid absorbent material at a level below saturation in an area remote from the plates in said cell comprising the steps of adding water directly to said body of adsorbent material, retaining said added water in said absorbent body while percolating therethrough, and subsequently releasing the combined water and acid as battery electrolyte to the plates within said cell.

3,884,725
BATTERY WITH POST-STRAP INSULATIVE CAP
Jacob E. Schmidt, Little Falls, N.J., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Feb. 15, 1974, Ser. No. 443,020
Int. Cl. H01m 1/02
U.S. Cl. 136—134 R 5 Claims



1. A battery comprising a plurality of individual cells having cases permitting the cells to be set side-by-side in rows and having upright terminal posts of positive and negative polarity, each with threaded end portions, said cells being arranged with the terminal post of one polarity of one cell adjacent to a terminal post of the opposite polarity of the next cell, post connectors between successive cells each comprising upper portions of a pair of said adjacent posts and a metal strap having apertured end portions fitted on said upper portions, nuts threaded on said posts to secure said straps thereto, and an insulative cap for each of said post connectors having a channel-shaped central portion covering said metal strap and having hollow end portions covering the respective terminal posts connected to said strap, each of said hollow end portions of each of said caps having internal elements releasably engaging the respective terminal posts to hold the cap in place over a post connector in response to pressing the cap thereon.

3,884,726
THERMOELECTRIC ELEMENT
Kurt Landecker, 157 Marsh St., Armidale, New South Wales, Australia
Filed Apr. 19, 1973, Ser. No. 352,843
Claims priority, application Australia, May 11, 1972, 8924/72
Int. Cl. H01v 1/02
U.S. Cl. 136—203 17 Claims



1. A thermoelectric element comprising an N conductor and a P conductor connected together at a working junction and adapted to be connected to an external current source or an electrical load by means creating a non-working junction, at least one shunting conductor providing a leakage current flow-path between the N and P conductors in parallel with the working junction, and means to maintain said shunting conductor at a potential intermediate the potentials of those ends of the N and P conductors having disparate potentials.

3,884,727
METHOD OF COATING WIRE SCREEN CLOTH
Louis John Jacobs, Chicago, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 21, 1972, Ser. No. 317,335
Int. Cl. C23c 1/10
U.S. Cl. 148—6.2 4 Claims

1. A method of treating wire screen cloth so as to form a coating thereon containing chromic oxide and to bond the wires together at the points of intersection comprising the steps of:
a. providing a wire screen cloth, the wires of said wire screen cloth having a thin porous oxide layer thereon;
b. coating said wire screen cloth with a chromic acid solution; and
c. heating said wire screen cloth to a temperature sufficient to convert said chromic acid solution to chromic oxide and to heat treat said wire whereby a coating of chromic oxide is formed on said wires and said wires at the points of intersection are bonded together with chromic oxide.

3,884,728
THERMO-MECHANICAL TREATMENT OF ZIRCONIUM ALLOYS
Ira S. Levy, Kennewick, Wash., assignor to Exxon Nuclear Company Inc., Bellevue, Wash.
Filed Feb. 26, 1973, Ser. No. 335,679
Int. Cl. C22f 1/18
U.S. Cl. 148—11.5 F 18 Claims

1. A method of treating a metal comprising at least 95 percent zirconium and also comprising at least one constituent selected from the class consisting of chromium, tin, niobium, iron, tantalum, nickel and aluminum, which metal is in a thoroughly annealed condition, said method comprising subjecting said metal to a tensile creep strain of 3 to 10 percent while holding it in a temperature range in which creep will occur, yet which is below the temperature for significant recovery, said tensile creep strain being attained by tensile loading said metal at a strain rate of about 0.001 to 0.01 inch/inch/minute until said strain is attained, followed by holding said metal at the final load for at least 15 minutes.

3,884,729
METHOD OF PROVIDING AN ALUMINUM COATING ON A STEEL SUBSTRATE
Albert Edward Jackson, Gwernaffield Mold, and Ernest Wynne Williams, Mold, both of Wales, assignors to British Steel Corporation, London, England
Filed Nov. 1, 1973, Ser. No. 411,846
Claims priority, application United Kingdom, Nov. 3, 1972, 50773/72
Int. Cl. C21d ; B22f 7/00
U.S. Cl. 148—11.5 A 13 Claims

1. In a method of providing a surface of a steel substrate with an aluminium coating, the said method comprising electroplating the said surface of the steel substrate with a layer of iron, coating the iron layer with a layer containing aluminium powder, and compacting the said iron and powder layers to the substrate, the improvement which consists of subsequently effecting a cold reduction which reduces the gauge of the so-called substrate by at least 30 percent, and effecting a subsequent recrystallisation annealing heat treatment to make the iron and powder layers adhere tightly to the substrate.

3,884,730
MACHINE ELEMENT OF SURFACE-HARDENED STEEL HAVING AN IMPROVED RESISTANCE AGAINST WEAR, HEAT, AND MECHANICAL STRESS

Karl Hehl, Siedlung 183, 7291 Lossburg, Wurttemberg, Germany

Filed July 5, 1973, Ser. No. 376,292
Claims priority, application Germany, July 5, 1972, 2232932
Int. Cl. C21d *1/42, 9/00*
U.S. Cl. 148—12.4 **8 Claims**

5. A method of producing a plastification feed screw for the processing of abrasive plastic raw materials in an injection molding machine, or the like, comprising the steps of:
machining the feed screw from a piece of tool steel alloy containing no less than 1.5 percent carbon and no less than 3.5 percent carbide and super carbide forming alloy components;
heating the feed screw surface in an induction field, by moving it in relation to a surrounding induction coil whose frequency is comprised between 0.5 and 20 kHz, in at least two successive passes, thereby progressively heating the feed screw to a temperature above the transformation point Ac_3, over a depth of at least 2 mm; and thereafter
quenching the heated feed screw, by passing it through a quenching means surrounding the feed screw.

3,884,731
METAL COMPOSITE AND METHOD OF PRODUCING THE SAME

Erik F. Barkman, Henrico; John Harry Jackson, Richmond, and Bennie Ray Ward, Jr., Chesterfield, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Division of Ser. Nos. 380,064, July 2, 1964, abandoned, and Ser. No. 656,946, July 28, 1967, abandoned. This application Oct. 24, 1968, Ser. No. 798,513
Int. Cl. C22c *41/02*; **C21c** *1/00*
U.S. Cl. 148—127 **9 Claims**

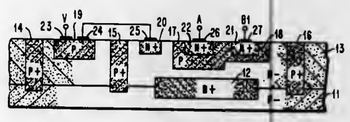
1. In the art of producing a metal composite having a layer of stainless steel and a layer of aluminous metal, the latter being a heat-treatable aluminum base alloy of the type adapted for solution heat treatment in the range of about 850°–950°F., the improvement comprising:
providing a bonded composite of the aluminum alloy and a member of the class of semi-austenitic precipitation hardenable stainless steels which are susceptible to aging treatment at a temperature in said range of about 850°–950°F. effective to strengthen the steel;
heating the bonded composite in said temperature range for a period sufficient to effect solution treatment of the aluminum alloy component, thereby concurrently age hardening the stainless steel component; and
quenching the composite at a cooling rate sufficient to retain the aluminum alloy's soluble constituents in solid solution.

3,884,732
MONOLITHIC STORAGE ARRAY AND METHOD OF MAKING

Utz G. Baitinger, Stuttgart, and Knut K. Najmann, Gartringen, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 267,324, June 29, 1972, Pat. No. 3,810,123. This application Sept. 17, 1973, Ser. No. 398,040
Claims priority, application Germany, July 29, 1971, 2137976
Int. Cl. H01l *7/44, 29/72, 7/64*
U.S. Cl. 148—175 **1 Claim**

1. In the planar process for fabricating multi-emitter transistor devices in integrated form in which a subcollector is diffused into a semiconductor substrate and an epitaxial layer is grown on said substrate and diffused subcollector, the improvement comprising the steps of:
diffusing a first base zone of predetermined width into the epitaxial layer over the subcollector,
diffusing a second base zone into the first zone and into the epitaxial layer laterally adjacent to said first zone so that

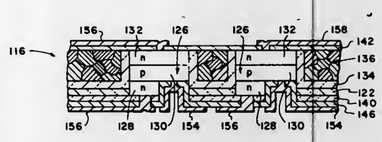


said second zone merges into the first zone, said first base zone thereby extending nearer said subcollector than said second base zone, and
diffusing simultaneously emitters into the first and second base zones, whereby the width of said first base zone is greater than the width of said second base zone.

3,884,733
DIELECTRIC ISOLATION PROCESS

Kenneth Elwood Bean, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 171,665, Aug. 13, 1971, abandoned. This application Feb. 19, 1974, Ser. No. 443,290
Int. Cl. H01l *7/36, 27/04*
U.S. Cl. 148—175 **7 Claims**



1. A method for the manufacture of dielectrically isolated semiconductor devices comprising:
a. planarizing a monocrystalline semiconductor substrate to provide a surface parallel to a selected crystallographic plane;
b. epitaxially depositing a semiconductor material at predetermined sites on said substrate to provide a plurality of deposited regions, each having at least one p-n junction therein;
c. forming a dielectric coating on the deposited semiconductor material;
d. depositing a reinforcing material on the dielectric coating to a depth sufficient to substantially fill the spaces between the deposited regions;
e. removing the original substrate to expose surfaces of the epitaxial structures;
f. then planarizing the reinforced surface of the structure to reexpose the opposite surfaces of the epitaxial structures; and
g. then selectively metallizing both surfaces of the composite structure to establish ohmic contact to selected portions of both surfaces of said epitaxial structures.

3,884,734
PHOSPHORUS-CONTAINING COMPOSITIONS

Malcolm George Palmer, Blakedown, and Anthony Donald Ball, Coseley, both of England, assignors to Albright & Wilson Limited, Oldbury, England

Filed May 3, 1973, Ser. No. 356,888
Claims priority, application United Kingdom, May 5, 1972, 21061/72
Int. Cl. C06b *19/02*
U.S. Cl. 149—6 **13 Claims**

1. A solid combustion composition consisting essentially of (i) powdered red phosphorus particles coated with from 0.5 to 10percent by weight on the phosphorus of a liquid unsaturated organic compound selected from the group consisting of vinyl hydrocarbons, hydrocarbon substituted ethylenes, unsaturated carboxylic acids and esters of unsaturated carboxylic acids or with a polymeric resin formed by autoxidation of said liquid organic compound;
ii. an oxidising agent for the phosphorus selected from the group consisting of metal carbonates, alkali metal sulphates and alkaline earth metal sulphates in a proportion of from 0.5 : 1 to 1.5 : 1 by weight on the phosphorus; and
iii. a substance which will decompose during combustion of the phosphorus to give an inert gas, which substance is selected from the group consisting of oxalic acid and urea and is present in a proportion of from 0.5 to 10 percent by weight on the composition.

3,884,735
EXPLOSIVE COMPOSITION

Charles H. Cramer, Woodbury, N.J., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed July 19, 1956, Ser. No. 598,734
Int. Cl. C06b *19/02*
U.S. Cl. 149—11 **5 Claims**

1. An explosive composition consisting of pellets of a crystalline high-explosive compound selected from the group consisting of pentaerythritol tetranitrate, cyclotrimethylenetrinitramine, cyclotetramethylenetetranitramine, tetranitromethylaniline, and trinitrotoluene, said explosive compound being coated with an epoxy hydroxy polyether nonreactive with the high-explosive compound and which is at least partially cured by means of a curing agent nonreactive with the high-explosive compound, said epoxy hydroxy polyether being present in the amount of 3–15 percent by weight of the mixture of high-explosive compound and epoxy hydroxy polyether.

3,884,736
DOUBLE-BASE PROPELLANT CONTAINING AN AROMATIC HYDROXY COMPOUND

Joseph S. Stack, Riverdale, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 6, 1967, Ser. No. 630,490
Int. Cl. C06b *5/00*
U.S. Cl. 149—100 **16 Claims**

1. In a double base plastisol type propellant containing nitrocellulose and liquid nitrate esters in combination with between 0.5 and 2.0 percent by weight of either 2,4-tolylene diisocyanate or hexamethylene diisocyanate based on the weight of said propellant, the improvement consisting in the incorporation of between 0.5 and 2.0 percent by weight of an aromatic hydroxy compound based on the weight of said diisocyanate, thereby rendering said propellant homogeneous and void-free, said aromatic hydroxy compound selected from the group consisting of
1,3-dihydroxy benzene,
1,2-dihydroxy benzene,
1-methyl-3,5-dihydroxy benzene,
1,4-dihydroxy benzene,
1,2,3-trihydroxy benzene,
1,3,5-trihydroxy benzene,
1,3-dihydroxy-2-nitro-benzene,
1-hydroxy-3-aceto-benzene,
1-3-dihydroxy-2-methyl benzene,
1-methanol-2-hydroxy benzene, and
1,3-dihydroxy-2,4-nitroso-benzene.

3,884,737
METHOD OF FORMING A DECORATIVE PANEL AND WALL

Ernest O. Bransford, Jr., Greensboro, N.C., assignor to Beaman Corporation, Greensboro, N.C.

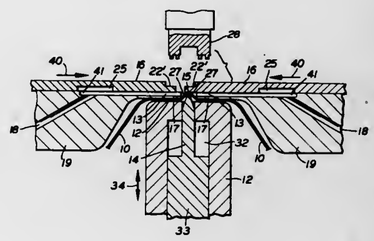
Filed Apr. 16, 1973, Ser. No. 351,148
Int. Cl. B44c *3/12*
U.S. Cl. 156—63 **5 Claims**

1. A method of forming a panel simulating a true masonry wall comprising the steps of; providing an uncured, resin mixture substrate over a selected area of a support, arranging a plurality of bricks in a selected pattern upon said uncured, resin substrate, applying granular material chosen from the group consisting of (a) sand, (b) rock dust, (c) marble dust over the exposed, portions of the ungelled resin mixture between adjacent bricks, and bonding the bricks and at least a portion of the granular material to the resin during curing of the resin by capillary action of the ungelled resin mixture which arises through the granular material and partially encompasses the edges of the bricks.

3,884,738
METHOD AND APPARATUS FOR FASTENING SLIDE FASTENERS TO AN ARTICLE

David V. Hofius, Sr., 235 Pierce Ave., Sharpsville, Pa. 16150

Filed Apr. 8, 1974, Ser. No. 458,681
Int. Cl. B32b *31/20*
U.S. Cl. 156—73.1 **14 Claims**



2. A method of attaching a zipper to another material by ultrasonic welding comprising
a. loading the material to which the zipper is to be joined onto a movable clamping anvil,
b. clamping the material against two spaced vacuum plates,
c. die cutting a slit in the clamped material against said sliding plates,
d. moving said sliding plates apart,
e. pushing the edges of said material adjacent said slit between said vacuum plates by punch overtravel,
f. applying a vacuum to the cut edges of said material to turn the edges of said material 180° back over on said vacuum plates,
g. moving the upper slide plate laterally thereby opening up slots in the top side of the plate,
h. loading a zipper in said machine,
i. welding the zipper to the edges ultrasonically.

3. An apparatus for ultrasonically welding a zipper to a sheet of material comprising
two spaced vacuum plates defining a slot,

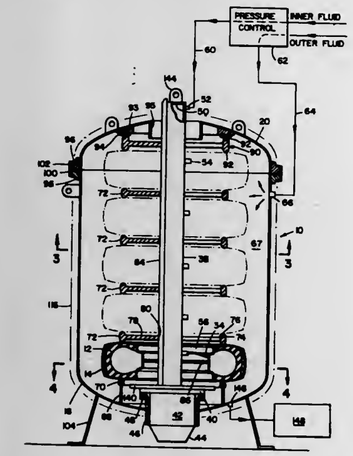
laterally extending slots in the top surface of said vacuum plates extending from adjacent the ends thereof,
two sliding plates, one said sliding plate slidable laterally on top of each of said vacuum plates from a position where the ends of said sliding plates are adjacent each other to a position spaced further from each other,
means for connecting said slots in said vacuum plates to a vacuum channel,
a source of vacuum connected to said vacuum channel,
a punch,
an anvil below said vacuum plates adapted to clamp said sheet material to said vacuum plates,
said punch being slidably received in said anvil,
and means connected to said punch to move said punch into engagement with a said sliding plate when said plate is slid over said top of said punch whereby a slit may be cut in said sheet material,
means on said vacuum plates to receive the edges of said cut material with a zipper on top thereof,
and an ultrasonic head above said anvil adapted to move down into engagement with said zipper, clamping said zipper in engagement with said anvil, and means connected to said ultrasonic head for ultrasonically welding said zipper to said material.

3,884,739

APPARATUS FOR SIMULTANEOUSLY RECAPPING A PLURALITY OF TIRES WITH PRECURED TREAD RUBBER

Herbert B. Hindin, Alamo; Alfred E. Johnson, El Cerrito, and Donald P. Knapp, San Francisco, all of Calif., assignors to Oliver Tire & Rubber Company, Oakland, Calif.

Filed Sept. 13, 1973, Ser. No. 397,014
Int. Cl. B29h *5/04, 17/36*
U.S. Cl. 156—96 **21 Claims**



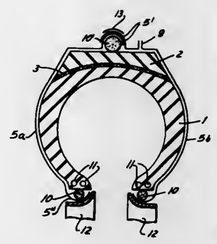
1. Apparatus for simultaneously recapping a plurality of tires arranged as axially aligned tire assemblies, each said assembly including a tire casing, a strip of precured tread rubber about the casing, a rim device contacting the beads of the tire and a flexible envelope covering the precured tread rubber with means for venting air from under the envelope, said apparatus comprising:
a tubular body member with a fixed end wall forming a cavity and adapted to surround the axially aligned tire assemblies;
a removable end cover member forming a fluid tight connection with one end of said body member;
a first annular end sealing member supported by and extending axially from the inner surface of said end wall to engage the envelope of the lowermost tire assembly of said plurality of tire assemblies;
a second annular end sealing means for engaging the envelope of the uppermost tire assembly of said plurality of tire assemblies and for forming a fluid tight seal between it and the inner surface of said end cover member;
annular intermediate sealing members located between pairs of adjacent tire assemblies and bearing against their respective envelopes;
a fluid pressure manifold means extending axially through said tubular body member and said end cover means;
retaining means attached to said manifold means near one end thereof and adapted to support a plurality of stacked tire assemblies so that they can be installed on said retaining means outside of said body member;
centering means attached to and extending axially from said manifold means below said retaining means;
guide means in said fixed end wall for removably receiving said centering means for thereby holding the stacked tire assemblies on said manifold means in substantially axial alignment within said tubular body member;
connector means spaced apart along said manifold means adapted to be coupled to each tire assembly for maintaining a predetermined internal pressure within each said tire; and
means for maintaining said end cover member locked to said body member while maintaining internal pressure within the tires to cause said sealing members to assume a fluid tight sealing engagement with said envelopes, thereby forming a sealed toroidal chamber around said tire assemblies for retaining fluid pressure at a level slightly less than said internal pressure.

3,884,740

METHOD OF RETREADING TIRES

Wilhelm Schelkmann, Crengeldanzstr 85a, D.581 Witten, Germany

Filed Sept. 20, 1973, Ser. No. 399,060
Int. Cl. B29h *5/04;* **B60c** *11/00, 21/00*
U.S. Cl. 156—96 **6 Claims**



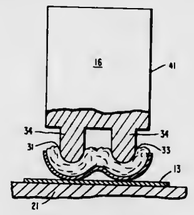
1. In a method of retreading tires, the steps of forming an assembly from a tire carcass having a U-shaped cross-section, a profiled tread strip on the peripheral surface of said carcass, and a layer of binder material sandwiched between said surface and said tread strip; stretching an elastic annular cord onto the radially outermost peripheral portion of the profiled tread strip so that it presses radially inwardly against the profiled tread strip; surrounding the thusly formed assembly over the entire circumference of said carcass with a flexible annular envelope not permanently connected to said annular cord and comprised of a first and a second marginal portion defining together with said assembly at least one gap communicating with the interior of the envelope; and sealing said gap by stretching said first marginal portion over said annular cord to such an extent that said first marginal portion stays in place stretched over said annular elastic cord by virtue of the tension in the thusly stretched first marginal portion, and then stretching said second marginal portion over said annular cord and over said first marginal portion to such an extent that said second marginal portion afterwards stays in place stretched over said annular elastic cord and over said first marginal portion by virtue of the tension in the thusly stretched second marginal portion.

3,884,741

METHOD AND APPARATUS FOR THE MANUFACTURE OF FILTER RODS CONTAINING PARTICULATE MATERIAL BY A SPLIT ROD TECHNIQUE

John H. Sexstone, Middletown, Ky., assignor to Brown & Williamson Tobacco Corp., Louisville, Ky.

Filed Feb. 22, 1974, Ser. No. 445,311
Int. Cl. A24b *15/02;* **A24d** *1/06*
U.S. Cl. 156—259 **9 Claims**



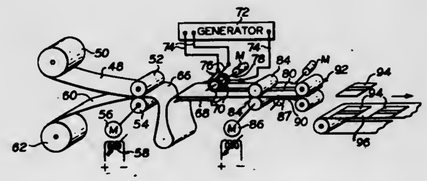
1. A method of manufacturing tobacco smoke filters comprising the steps of:
a. providing a preformed filter rod of filtering material having a longitudinal axis,
b. cutting said rod in the direction of said axis,
c. spreading apart the cut rod to expose the interior of said rod,
d. providing pockets at axially spaced positions in the interior of said rod prior to depositing particulate material,
e. depositing particulate material in said pockets,
f. closing the rod about said particulate material, and
g. sealing the rod.

3,884,742

METHOD OF MAKING PLASTIC BOOK COVER

Alvin V. Roberts, Scarsdale, N.Y., assignor to Bookwrights, Inc., Scarsdale, N.Y.

Filed Mar. 21, 1973, Ser. No. 343,017
Int. Cl. B32b *31/20*
U.S. Cl. 156—268 **14 Claims**



1. The method of making a plastic book cover, which method includes feeding into a zone between electrodes a plastic laminate comprising a first component layer of plastic, of a stiffness suitable for front and back panels of a cover for a book and that has the further characteristic of becoming highly heated and flowable locally between said electrodes when the electrodes are used to produce a high frequency dielectric field at said zone, said first layer being bonded to a second component layer of plastic having substantially more flexibility than the first layer and suitable for hinges of the cover and having the further characteristic that substantially less heat is generated in it by the same high frequency dielectric field that heats the first layer, heating the first component of the laminate, between said electrodes by the high frequency dielectric field, to a flowable condition, exerting pressure by one of the electrodes against the flowable material of the first component with sufficient pressure to displace permanently the flowable material to produce a groove in the first component while the second component has less heat generated therein by said dielectric field and remains below flowable temperature, and displacing said material of the first component along a hinge line of the cover made from the laminate.

3,884,743

PROCESS FOR PRODUCING DECORATIVE PILE FABRICS

Anthony F. Kunak, and Andrew Falatok, both of Spartanburg, S.C., assignors to Atteny, Inc., Spartanburg, S.C.

Filed Oct. 16, 1972, Ser. No. 297,773
Int. Cl. B29c *19/00*
U.S. Cl. 156—304 **4 Claims**

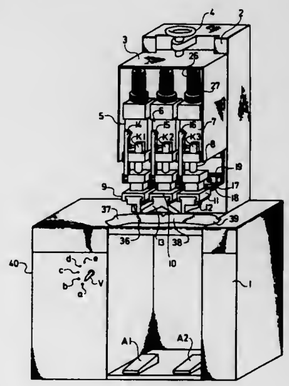
1. A method for producing a multicolored decorative pile fabric comprising:
a. cutting a plurality of selectively shaped pile fabric sections such that the fiber grain of all sections will be in alignment when the sections are joined, said sections having substantially the same pile height and density and at least one different color, said cutting being accomplished by bringing a cutting edge into contact with said pile fabric and removing any pile fibers from under said cutting edge prior to making the cut;
b. assembling said sections on a backing material in substantially abutting relationship according to a predetermined pattern while removing any pile fibers that extend into joints between the sections, said backing material having a thermoplastic adhesive thereon;
c. heating the assembly to a temperature not greater than approximately 375°F. for a time sufficient to activate the adhesive;
d. applying pressure along the edges of the sections adjacent the joints to insure a good bond and preclude curling of said edges; and
e. permitting the composite to cool to securely bond the sections together.

3,884,744

APPARATUS FOR WELDING SHOE PARTS

Jaromir Ranocha; Dusan Repka, and Bohumil Machu, all of Gottwaldov, Czechoslovakia, assignors to Zavody elektrotepelnych zarizchi, hardoni podnik, Prague, Czechoslovakia

Filed May 31, 1973, Ser. No. 365,448
Int. Cl. B29c *27/04;* **B30b** *15/34*
U.S. Cl. 156—351 **5 Claims**



1. Apparatus for the high frequency welding of articles such as shoe parts and the like comprising a table for receiving said

shoe parts, a frame extending above said table, a plurality of pressure cylinders arranged on said frame having piston rods extending downwardly therefrom, means for actuating said cylinders to extend said rods toward said table, means for removably mounting to the ends of selected ones of said piston rods either an electrode or a clamp, a terminal board mounted on said frame and connected to a source of current, first contacts adapted to be mounted on respective ones of said piston rods and extend therefrom toward said terminal board, second contacts adapted to be mounted on said terminal board, each of said second contacts being adapted to extend from said terminal board in association with a selected one of said first contacts, at least one of each of said associated first and second contacts being removably mounted respectively to said piston rod and terminal board so as to permit engagement of said contacts in association with selected ones of said piston rods, said terminal board being arranged on said frame so that the first and second contacts engage at the bottommost dead center position of said piston rods.

3,884,745

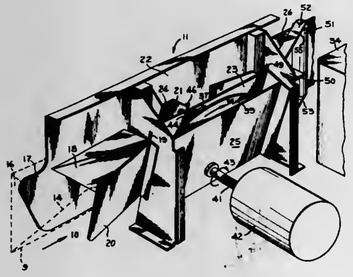
ENVELOPE MOISTENING AND SEALING APPARATUS

Paul R. Sette, Hamden, Conn., and Anthony Storace, Tarrytown, N.Y., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Mar. 20, 1974, Ser. No. 452,676

Int. Cl. B43m *5/04*; B65c *11/04*

U.S. Cl. 156—441.5 **1 Claim**



1. Apparatus for replenishing moisture dispensed by a fluid moistening applicator to a flap of an envelope, said apparatus comprising:

a reservoir for supplying a quantity of moistening fluid;

a trough-like container connected to said reservoir for receiving said moistening fluid therefrom, and for dispensing said fluid to said envelope flap, said container having a fluid level and a window disposed above said fluid level, a rotatably mounted plate disposed within said trough-like container for movement through said fluid and past said window during rotation thereof, said plate carrying fluid towards said window as it rotates, said window has a flap restriction spanning across said window which allows a brush to project through said window, but which prevents the flap of said envelope from projecting therein;

means connected to said plate for rotating said plate within the container, said plate being disc-shaped, and said means for rotating said plate being a motor having a rotative shaft which is flexibly coupled to a shaft connected to a center section of said disc-shaped plate;

moistening applicator means supported adjacent said container window, said moistening applicator means being biased towards said window and projecting through said window into engagement with said plate to absorb moistening fluid from said plate in the absence of an envelope, said moistening applicator means comprising a brush which is articulatively mounted opposite said window, and a spring acting upon said brush to bias the brush towards said window; and

means for transporting a flap of an envelope between said moistening applicator means and said window, whereby the flap of said envelope causes the moistening applicator means to separate from its engagement with said plate, and engage with said flap, thereby applying moistening fluid to said flap from said moistening applicator means.

3,884,746

WELDING APPARATUS FOR A PACKAGING MACHINE

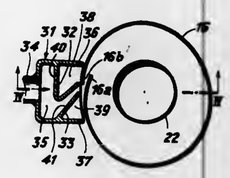
Willi Löliger, and Rudolf Schmied, both of Konolfingen, Switzerland, assignors to Alpura Koreco A.G., Konolfingen, Switzerland

Filed July 7, 1972, Ser. No. 269,523

Claims priority, application Switzerland, July 9, 1971, 10095/71

Int. Cl. B32b *31/20*

U.S. Cl. 156—466 **2 Claims**



1. Welding apparatus for a packaging machine in which the longitudinal edges of a moving web of packaging material are welded for creating a flexible tube from which the finished packages are formed, in which hot air can be led into the gap between the longitudinal edges of the packaging material pre-formed into a flexible tube and provided with pressure-applying means for welding together the portions of the web extending along the longitudinal edges and heated by the hot air, characterized by a hood to bring up the hot air having an opening surrounded by wall portions and directed on to the portions of each edge of the flexible tube to be welded and whose wall portions are shaped in such a way that the opening is located in the immediate area of the external surface of the pre-formed flexible tube and with the opening in the hood extending at least over the side edges of the web to be welded in the peripheral direction of the flexible tube, said hood being subdivided by means of partitions extending in the direction of travel of the flexible tube, which partitions forms a chamber opening in nozzle-like manner towards the gap between the longitudinal edges of the flexible tube and communicating with the hot air supply, and in that together with the wall portions of the hood the partitions form additional side chambers.

3,884,747

MACHINE FOR SIZING AND PROCESSING DRAPERY MATERIAL

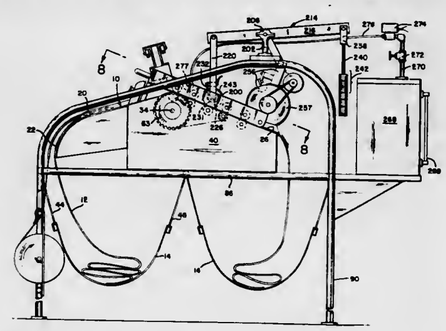
Enrique Soto, 514 Orange Grove Ave., South Pasadena, Calif. 91030

Continuation-in-part of Ser. No. 841,246, July 14, 1969, abandoned, and a continuation-in-part of Ser. No. 155,022, June 21, 1971, Pat. No. 3,795,565. This application Aug. 22, 1973, Ser. No. 390,332

Int. Cl. B29d *31/00*

U.S. Cl. 156—467 **10 Claims**

1. A machine for tabling and sizing fabric material comprising: means providing a tabling surface, on which the material is tumbled from one side to the opposite side of the surface means; said surface means having a gap with an elongated cylindrical driven roller means having a part of its surface in the gap; means adjacent one end of the roller means for applying a flat stiffener strip on the edge part of the material, and means overlying the surface means and extending along the surface means transversely to the direction of movement for guiding and holding the fabric material while transversing the surface means, said overlying means including means for



holding down the fabric and for accurately positioning and guiding the opposite edge part of the material whereby to accurately establish an overall dimension of finished fabric material processed by the machine.

3,884,748

PROCESS AND DEVICE FOR THE STRETCHING OF PLASTICS SHEETS

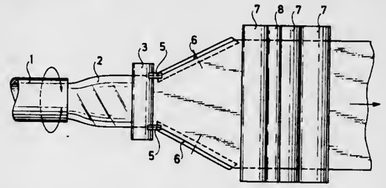
Heinz-Erhardt Andersen, Burgkirchen/Alz, and Georg Stangl, Ehring, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 21, 1972, Ser. No. 308,564

Claims priority, application Germany, Nov. 24, 1971, 2158141

Int. Cl. B31b *31/02*

U.S. Cl. 156—494 **4 Claims**



1. An apparatus for producing stretched solid thermoplastic sheet material comprising an axially rotating blow head for blowing a tubular sheet of solid thermoplastic sheet material, a pair of heated squeeze rollers disposed adjacent the blow head for flattening and welding together the blown tubular sheet of solid thermoplastic material, a pair of rotatably mounted disks disposed adjacent and after the heated squeeze rollers in contact with the edges of the flattened and welded together sheet material, heating means arranged to apply heat to the edges of the sheet material contacting the disks, the disks being disposed at a divergent angle with respect to the edges of the sheet material, pressure applying means disposed on the opposite sides of said sheet material from the disks and adjacent the disks for applying pressure to the edges of the sheet material to urge them in forceful contact with the circumferential surfaces of the disks whereby the formation of air pockets between the edges and the disks is prevented and the edges are maintained in firm engagement with the circumferential surface of the disks by atmospheric pressure to laterally stretch the sheet of thermoplastic material in accordance with the divergent angle of the disks without using any mechanical means gripping over the edges of the sheet, and the distance between the axially rotating blow head and the pair of heated squeeze rollers is approximately from one-half to ten times the diameter of the outlet from the axially rotating blow head.

3,884,749

MACHINE FOR THE MANUFACTURE OF WOOD FIBRE PANELS IN CONTINUOUS LENGTHS

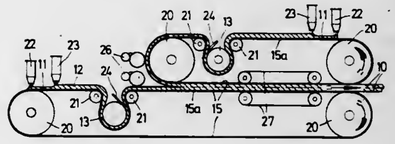
Christa Pankoke, Am Jahnplatz 10, 4800 Bielefeld, Germany

Filed Sept. 12, 1972, Ser. No. 288,294

Claims priority, application Austria, Sept. 13, 1971, 7940/71; Switzerland, Nov. 30, 1971, 017444/71

Int. Cl. B30b *3/00*, *5/06*

U.S. Cl. 156—501 **10 Claims**



3. In a machine for continuously producing from a material which is in comminuted form and includes a binder which will set when heated, a sheet having a pair of opposed faces providing the sheet with a cross sectional configuration having a straight line at one of said opposed faces and a predetermined profile at the other of said opposed faces, an endless belt, guide rollers supporting said belt, a first feeding device depositing on said belt a continuous layer of said material, a second feeding device depositing ridges of said material on the layer deposited by said first-feeding device, a pressure roller formed with grooves extending around the surface thereof, said belt and said layer with ridges thereon passing around said pressure roller to form said ridges into ribs, and means for applying heat to the ribbed layer to set said binder, said conveyor belt being provided in each region between adjacent ribs with an insulating strip transmitting less heat than the portions of said belt below the ribs.

3,884,750

METHOD OF RECOVERING SEPARATE FIBER FRACTIONS FROM CORRUGATED BOARD

Fred D. Iannazzi, Andover, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Continuation of Ser. No. 291,950, Sept. 25, 1972, abandoned. This application July 5, 1974, Ser. No. 486,073

Int. Cl. D21c *5/02*

U.S. Cl. 162—4 **20 Claims**

19. A method for separating the fiber fraction forming the corrugated medium, having low moisture resistance or high water receptivity, from the fiber fraction forming the linerboard, having high moisture resistance, or low water receptivity, in corrugated board, comprising the steps of

a. reducing corrugated board stock to intermediate-sized pieces no larger than about six inches in any one dimension;

b. introducing said intermediate-sized pieces of corrugated stock into water for dispersion therein;

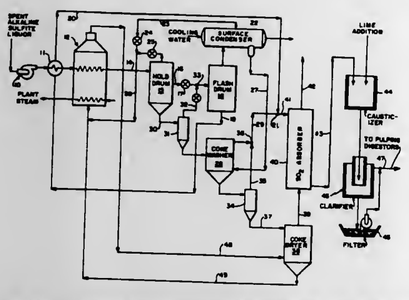
c. subjecting said corrugated stock in water to differential size reduction by mechanical action, the temperature of said water and the length of time and energy level input of said mechanical action being adjusted to separate said corrugated medium from said linerboard and to reduce said corrugated medium fraction to fibers or small pieces no larger than about three-eights inch in any one dimension while retaining substantially all of the linerboard fraction in the form of larger or intermediate-sized pieces; and

d. separating said fibers and small pieces of said corrugated medium fraction from said linerboard fraction.

3,884,751
COKING OF SPENT PULPING LIQUORS USED IN THE ALKALINE SULFITE PROCESS

Howard V. Hess, Glenham; Edward L. Cole, Fishkill, and William F. Franz, Gardiner, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Apr. 25, 1972, Ser. No. 247,379
Int. Cl. D21c 11/02; C21c 11/14
U.S. Cl. 162—31 **2 Claims**



1. In the coking of spent pulping liquors used in the Alkaline Sulfite Process which have a pH of about 9 to about 12; the steps of:

coking said liquors in the liquid phase in a coking zone at about 450°F. to about 750°F. under a pressure of about 100 to about 3000 psig for about 0.5 minute to about 6 hours to form gases including CO_2, liquid effluent and coke; separating said gases, said effluent and said coke; flowing said gases to a combustion zone wherein malodorous sulfur compounds are converted to SO_2; vaporizing a portion of said effluent and cooling the remainder by heat exchange with incoming liquor to preheat said liquor; flowing said vaporized portion of said effluent to a condensing zone; condensing said portion to form a condensate; washing said coke with said condensate to remove sodium ions and other pulping chemicals retained on said coke;

combining said condensate now containing chemicals recovered from said coke, with the cooled effluent and conveying the combined stream to an SO_2-containing absorbing zone;

drying said coke with flue gas, burning said coke in a combustion zone to provide useful heat, to incinerate aforementioned sulfur-bearing gases and to generate an SO_2-bearing flue gas;

then flowing said flue gas to said SO_2 absorbing zone; venting off the pollutant-free fluw gas obtained thereby;

flowing said liquid stream to a causticizing zone, and adding lime to said stream to convert sodium carbonate produced therein by reaction with CO_2 produced by said coking to NaOH and clarifying said stream to remove solids resulting from causticizing, thereby forming new cooking liquor having a pH suitable for alkaline sulfite pulping.

3,884,752
SINGLE VESSEL WOOD PULP BLEACHING WITH CHLORINE DIOXIDE FOLLOWED BY SODIUM HYPOCHLORITE OR ALKALINE EXTRACTION

Robert T. Campbell; Laurence B. Ritter, both of Mobile, Ala., and Joseph G. Land, Jr., Panama City, Fla., assignors to International Paper Company, New York, N.Y.

Filed Sept. 17, 1973, Ser. No. 398,165
Int. Cl. D21c 9/14
U.S. Cl. 162—89 **31 Claims**

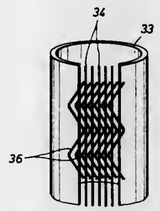
9. In the process of bleaching pulp wherein the pulp is sequentially subjected to a conventional chlorine dioxide treatment and then an alkaline extraction treatment, wherein in said chlorine dioxide treatment chlorine dioxide is added to said pulp in an amount such that substantially all of said chlorine dioxide is consumed in said chlorine dioxide treatment, the improvement which comprises sequentially conducting said conventional chlorine dioxide treatment and said alkaline extraction treatment in the same vessel and without draining the pulp between said treatments.

10. In the process of bleaching pulp wherein the pulp is sequentially subjected to a conventional chlorine dioxide treatment and then a hypochlorite treatment, wherein in said chlorine dioxide treatment chlorine dioxide is added to said pulp in an amount such that substantially all of said chlorine dioxide is consumed in said chlorine dioxide treatment, the improvement which comprises sequentially conducting said chlorine dioxide treatment and said hypochlorite treatment in the same vessel and without draining the pulp between said treatments.

3,884,753
OPEN TUBE WITH NET OVERLAY

George S. Nalle, Jr., 108 W. 2nd St., Austin, Tex. 78701

Continuation of Ser. No. 167,929, Aug. 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 762,519, Sept. 25, 1968, Pat. No. 3,620,883. This application Dec. 17, 1973, Ser. No. 425,268
Int. Cl. B32b 1/00
U.S. Cl. 428—36 **10 Claims**



1. An extruded plastic product which comprises: an elongated hollow tubular member of extrudable thermoplastic having a configuration generally corresponding to a hollow cylinder having an open segment extending the length of said member to define a self-supporting trough shaped member; and a set of filaments of extrudable thermoplastic extending transversely with respect to the open segment of said tubular member, each of the filaments of said set being fused to a surface of said tubular member to define an overlay proximate the open segment of said member.

3,884,754
HOLLOW FILAMENTS AND PROCESS FOR PRODUCING SAME

Isao Kimura, and Hiroaki Koyama, both of Osaka, Japan, assignors to Kaneon, Ltd., Tokyo and Nippon Kynol Inc., Osaka, both of, Japan

Filed Feb. 21, 1973, Ser. No. 334,200
Claims priority, application Japan, Feb. 22, 1972, 47-18750
Int. Cl. B28b 3/20; D02g 3/00
U.S. Cl. 161—178 **13 Claims**

1. A hollow filament comprising a filamentary polymer composed of from 50% to 100% by weight of a flame-resistant and anti-fusing cured novolak resin and up to 50% by weight of a fiber-forming thermoplastic synthetic resin selected from at least one of the group consisting of polyamides, polyesters, polyesterethers, polyolefins and polyurethanes, characterized in that the hollow structure continuously extends in the axial direction of the filament, the degree of hollowness thereof being in the range of 10-80%.

3,884,755
CLOSED CYCLE PAPER SHEET PRODUCTION

Arthur W. Frost, III., Lansdowne, Pa., assignor to GAF Corporation, New York, N.Y.

Filed June 18, 1973, Ser. No. 371,242
Int. Cl. D21f 1/66
U.S. Cl. 162—190 **26 Claims**

1. An improved process for the production of constuction paper sheets comprising:

a. blending fibrous stocks including groundwood stock having dissolved solids therein, together with water, in a milling zone to produce an aqueous suspension of said stocks;

b. dewatering said suspension in a sheet fabrication zone as to fabricate said paper sheets;

c. removing particulate objects and suspended fiber from the waste water stream removed from said fabrication zone, thereby producing an effluent aqueous stream having dissolved and colloidal material present therein, said stream having a relatively high BOD loading;

d. separating said colloidal material from the effluent aqueous stream as a sludge of waste solids material;

e. blending said sludge and groundwood stock so as to coat individual strands of the wood fibers with said sludge;

f. recycling essentially all of said effluent aqueous stream having dissolved solids therein to said milling zone as make-up water for blending with additional quantities of said fibrous stocks; and

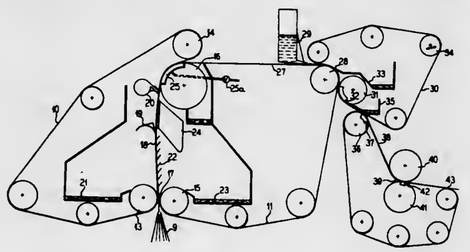
g. recycling said sludge coated on the fibers of said groundwood stock to the milling zone, the sludge-coated wood fibers serving as said wood stock components of the aqueous suspension produced in the milling zone, essentially all of said sludge separated from the effluent aqueous stream thus being recycled to said milling zone,

whereby said sheet is produced essentially without discharge of high BOD aqueous effluent to waste and without undesired sludge accumulation, the disruption of the orientation of the fibers of the resulting sheet, with accompanying adverse effect on the properties and quality of the sheet, occasioned by the incorporation of loose sludge particles in the aqueous suspension being substantially obviated by the indicated coating of said sludge on the individual strands of wood fiber prior to incorporation into said aqueous suspension, the properties of the resulting sheet thus being comparable to those of said sheet produced without the recycle and incorporation of said sludge therein.

3,884,756
MULTI-PLY LINERBOARD MACHINE WITH VERTICAL AND HORIZONTAL FORMING RUNS

David R. Gustafson, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Sept. 27, 1973, Ser. No. 401,170
Int. Cl. D21f 1/00
U.S. Cl. 162—299 **13 Claims**



1. A mechanism for making a multi-ply sheet from fibrous stock comprising in combination:

first and second looped forming wires;

first and second guide means within the respective wires training them to travel in a vertically extending forming throat leading to a vertically running forming run between the wires;

a first headbox having a slice positioned to discharge stock vertically into said throat to form a first web layer;

a suction couch roll within the second wire at the end of the forming run;

a breast roll within the second wire downstream from the forming run positioned horizontally of the couch roll so that the second wire extends through a horizontal run to the breast roll and wraps the breast roll;

a third looped forming wire;

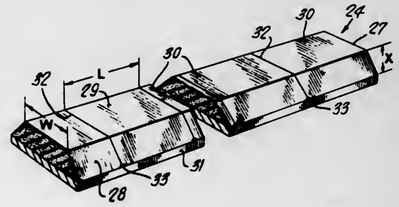
third guide means within the third wire training the third wire to wrap said breast roll over the second wire so that a multi-ply web on the second wire is dewatered outwardly through the third wire;

and a second headbox positioned in advance of said breast roll for directing a flow of stock horizontally onto the first web layer during said horizontal run to be dewatered through said third wire over the breast roll.

3,884,757
INSERT FOR PAPER MACHINE DRAINAGE ELEMENTS

Oliver J. Beacom, 141 Arrowhead Cresent, Pointe Claire, Quebec, and Donald G. MacBean, 13241 Aragon St., Pierrefonds, Quebec, both of Canada

Continuation-in-part of Ser. No. 118,767, Feb. 25, 1971, Pat. No. 3,732,142. This application Jan. 22, 1973, Ser. No. 325,079
Claims priority, application Canada, Mar. 10, 1970, 077028The portion of the term of this patent subsequent to May 8, 1990, has been disclaimed.
Int. Cl. D21g 9/00
U.S. Cl. 162—374 **7 Claims**



1. A replaceable drainage element for paper machines, said drainage element having an elongated body formed with a supporting surface and a diverging surface, an insert receiving groove in said supporting surface longitudinally of said body and located a short distance behind a leading edge of said body, said insert receiving groove having opposed side walls the upper portion of which defines an undercut section terminating in a channel section in the base of said groove, a wear resistant insert removably retained securely within said groove and unaffected by the differential in expansion between said body and said wear resistant insert at operating temperatures of said paper machine, said insert being formed of a plurality of discrete elongated elements glued to a backing plate and maintained in end abutting relationship.

3,884,758

TRIGLYCERIDE-ACCUMULATING CLONAL CELL LINE

Howard Green, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 30, 1974, Ser. No. 438,042
Int. Cl. C12k 9/00
U.S. Cl. 195—1.8 10 Claims

1. A process for screening drugs for their effect on cell accumulation of lipid comprising culturing isolated, clonal, adipose-like, 3T3-L1 cells with the drug to be screened in the presence of culture medium and subsequently detecting the amount of lipid accumulated by said 3T3-L1 cells.

3,884,759

METHOD FOR PRODUCING ERGOSTEROL AND ITS ESTERS

Yoshio Nakao; Mitsuzo Kuno, both of Osaka, and Masaru Suzuki, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 19, 1973, Ser. No. 325,116
Claims priority, application Japan, Jan. 28, 1972, 47-10765
Int. Cl. C12d 5/00
U.S. Cl. 195—28 R 16 Claims

1. A method for producing ergosterol, its esters or a mixture thereof which comprises inoculating a microorganism capable of accumulating ergosterol, its esters or a mixture thereof extracellularly belonging to the genus Trichoderma, the genus Fusarium or the genus Cephalosporium in a culture medium; cultivating the culture until ergosterol, its esters or a mixture thereof is accumulated extracellularly; and recovering ergosterol, its esters or a mixture thereof from the culture broth.

3,884,760

PRODUCTION OF UROKINASE

Nathan H. Sloane, 1842 Brookside Dr., Germantown, Tenn. 38038

Filed Apr. 1, 1974, Ser. No. 456,553
Int. Cl. C07g 7/026
U.S. Cl. 195—66 B 4 Claims

1. A method for purifying and concentrating urokinase from a solution by adsorbing said urokinase onto a suspention of uric acid and then recovering the urokinase from the adsorbent.

3,884,761

BONDING OF ENZYMES, ENZYME DERIVATIVES AND OTHER COMPOUNDS TO POLYMERIC MATERIALS

David Thomas Cowling, Suffolk, England, assignor to Koch-Light Laboratories Limited, Buckinghamshire, England

Filed Dec. 4, 1972, Ser. No. 311,924
Claims priority, application United Kingdom, Dec. 6, 1971, 56621/71
Int. Cl. C07g 7/02
U.S. Cl. 195—68 6 Claims

1. A method of making a hydrophilic water-insoluble polymer with molecular chains having repeating thiol side groupings to which biologically active molecules are attached to give a combined water-insoluble polymer and biologically-active molecule comprising,

a. polymerizing an N-substituted thiazolidine in the presence of an inert gas to give a polymer having thiazolidine side groups,

b. hydrolyzing said thioazolidine side groupings to give a polymer having thiol side groupings, and

c. bonding biologically active molecules through the thiol side groups to the hydrophilic water-insoluble polymer.

3,884,762

FERMENTATION PROCESS FOR THE PREPARATION OF ERGOT ALKALOIDS

Géza Wack; Lajós Nagy; Dénes Szekély; József Szolnoky; Eva Udvardy-Nagy, and Erzsebét Zsóka, all of Budapest, Hungary, assignors to Richger Gedeon Vegyeszetl Gyar RT, Budapest, Hungary

Filed June 27, 1973, Ser. No. 374,105
Claims priority, application Hungary, July 21, 1972, OE 11471
Int. Cl. C12d 13/00
U.S. Cl. 195—81 2 Claims

1. A fermentation process for the preparation of ergot alkaloids, mainly ergocryptine and ergocornine, by cultivating a *Claviceps purpurea* strain on a liquid, aerated culture broth containing saccharose and an inorganic nitrogen source, in which a *Claviceps purpurea* variant strain deposited with the National Institute of Public Health (Orszagos Kozegeszsegugyi Intezet), Budapest, Hungary, under No. 88/1972 is used as Claviceps strain.

3,884,763

PRODUCTION OF RIFAMYCIN S AND RIFAMYCIN SV BY MICROMONOSPORA CHALCEA

Walter D. Celmer, New London; Walter P. Cullen, East Lyme, and John B. Routien, New London, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Mar. 11, 1974, Ser. No. 450,071
Int. Cl. C12d 9/14
U.S. Cl. 195—96 2 Claims

1. A process for producing rifamycin S and rifamycin SV which comprises aerobically propagating *Micromonospora chalcea* ATCC 21994 in an aqueous nutrient medium and separating the rifamycins therefrom.

3,884,764

METHOD AND COMPOSITION FOR BLOOD SERUM CHOLESTEROL ANALYSIS

Charles T. Goodhue, Rochester; Hugh A. Risley, Ontario, and Roy E. Snoke, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,622
Int. Cl. C12k 1/04
U.S. Cl. 195—103.5 R 86 Claims

1. An aqueous test solution useful in the quantitative assay of a sample for total cholesterol content comprising:

a. a lipase having cholesterol esterase activity;

b. a protease; and

c. cholesterol oxidase said test solution being buffered to a pH of between about 5.5 and 8.5.

3,884,765

AUTOMATIC MICROBIAL TRANSFER DEVICE

Judd R. Wilkins, and Stacey M. Mills, both of Hampton, Va., assignors to The United States of America as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

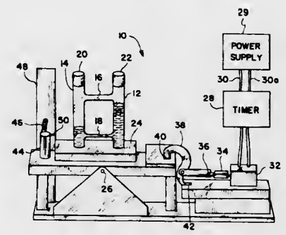
Filed Oct. 26, 1973, Ser. No. 409,990
Int. Cl. C12b 1/02
U.S. Cl. 195—127 6 Claims

1. In an apparatus for automatically tranferring a predetermined volume of inoculated culture from a first container into a second container having a sterile culture therein comprising in combination:

a pivoted support surface having a top side and first and second ends, said surface being normally horizontally disposed;

first and second containers, said containers being disposed on said top side of said support surface;

a horizontally disposed conduit connected between said first and second containers for permitting flow of said inoculated culture from said first container through said conduit into said second container upon pivoting of said support surface from the horizontal; and



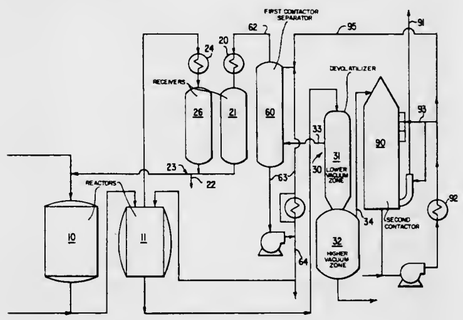
pivoting means mechanically coupled to said support surface for automatically pivoting said support surface from its normal horizontal positon upon occurrence of a predetermined condition.

3,884,766

RECOVERY OF ALKENYL-AROMATIC MONOMERS BY FALLING STRAND DEVOLATILIZATION

Wallace G. Bir, Creve Coeur, Mo., and Joseph Novack, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 9, 1973, Ser. No. 339,783
Int. Cl. B01d 3/02
U.S. Cl. 202—173 8 Claims



1. An apparatus for the continuous on-line recovery of alkenylaromatic monomer from a stream containing alkenylaromatic monomer, alkenylaromatic high polymer, alkenylaromatic oligomer, high boiling organic compounds and inert hydrocarbons, and for reducing the concentration of alkenylaromatic oligomers and high boiling organic compounds in said recovered alkenylaromatic monomer, said apparatus comprising in combination

A. a two-stage falling strand devolatilizing means for an alkenylaromatic polymer-monomer melt, comprising a heating means for said melt mounted integrally above first and second flash vaporization chambers positioned respectively in contiguous descending vertical relationship and communicating with one another, means for producing a different vacuum within each of said flash vaporization chambers and means for maintaining an elevated temperature in said chambers;

B. a first contacting and separation means for bringing into direct and intimate contact a vapor stream from the said first flash vaporization chamber of said volatilizing means and a liquid stream and for thereafter separating said vapor stream from said liquid stream, comprising an enclosed vessel having a plurality of perforated sieve trays carrying said liquid stream and permitting direct and intimate contact with said vapor stream passing upwardly through said perforations in said trays and the liquid stream carried thereby, and a separation zone for separating said vapor stream from said liquid stream;

C. a second contacting means for bringing into direct and intimate contact a vapor stream from said second flash vaporization chamber of the devolatilizing means and a cooled liquid stream sufficiently to condense substantially all of said vapor stream;

D. conduit means establishing communication between said first flash vaporization chamber and said first contacting and separation means; and

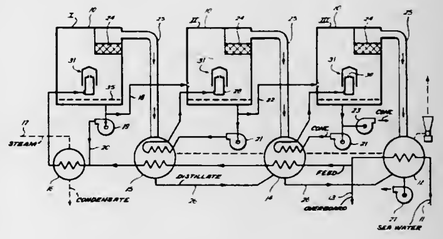
E. conduit means establishing communication between said second flash vaporization chamber and said second contacting means.

3,884,767

MULTI-EFFECT FLASH EVAPORATOR

John E. Pottharst, Jr., 861 Carondelet St., New Orleans, La. 70130

Filed Sept. 21, 1973, Ser. No. 399,375
Int. Cl. B01d 3/00, 3/02, 1/28, 1/26, 1/00
U.S. Cl. 202—174 5 Claims



1. In a multi-effect flash evaporator system wherein means are provided for preheating water and then flashing same into a vessel to provide steam and unflashed water and wherein a mist eliminator is provided through which the flashed steam passes to thereafter be condensed as distilled water, the improvement in combination therewith of a preheated water inlet header extending horizontally and at least partially across said vessel and including a plurality of upwardly directed restricted discharge means spaced along the header for discharging upwardly from the header the preheated feedwater which is to be flashed, and means forming a flash chamber comprising a roof for receiving the upwardly discharged water from said discharge means, said flash chamber extending along and generally above said discharge means and having substantially imperforate side walls which extend downwardly on both sides of the header and forming flow passages therewith so that flashed steam as well as unflashed water is directed to flow downwardly through said flow passages, said means forming a flash chamber being disposed at a level below that of the mist eliminator so that steam flowing down through said passages must substantially change its flow direction in order to pass upwardly to said mist eliminator.

3,884,768

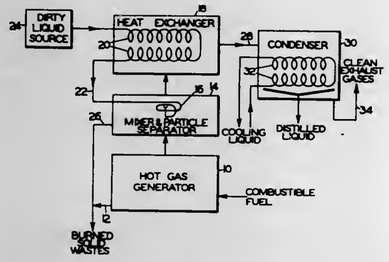
RECLAMATION OF NON-COMBUSTIBLE LIQUIDS BY DIRECT FLAME VAPORIZATION, CENTRIFUGAL SOLIDS SEPARATION AND SUBSEQUENT CONDENSATION

Joseph W. Griffith, 8705 S.W. White Court, Portland, Oreg. 97225

Continuation-in-part of Ser. No. 231,153, March 2, 1972, abandoned. This application July 20, 1972, Ser. No. 273,504
Int. Cl. B01d 3/00, 3/10
U.S. Cl. 203—11 6 Claims

1. The method of reclaiming condensible, non-combustible liquid containing impurities, comprising

a. vaporizing the liquid,
b. mixing the vaporized liquid and impurities with the hot gases of combustion of a combustible fuel,



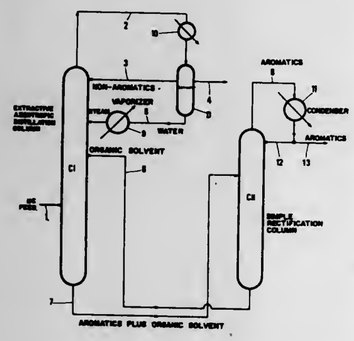
c. separating the non-combustible solids component of impurities from the mixture by momentum differences, and
d. separating the condensible liquid from the non-condensible vapor component of impurities by condensation.

3,884,769

PROCESS FOR PURIFYING BENZENE AND TOLUENE BY EXTRACTIVE AZEOTROPIC DISTILLATION

Paul Mikitenko, Chatou; Georges Cohen, Rueil-Malmaison, and Lionel Asselineau, Paris, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Mar. 20, 1973, Ser. No. 343,108
Claims priority, application France, Mar. 20, 1972, 72.09763
Int. Cl. B01d *3/34*; **C07c** *15/28*
U.S. Cl. 203—53 **10 Claims**



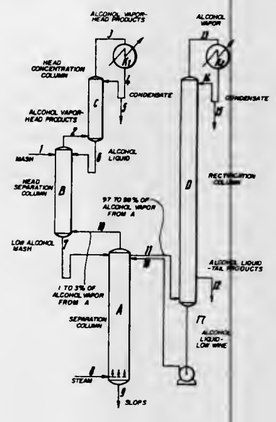
1. A process for separating at least one aromatic hydrocarbon selected from the group consisting of benzene and toluene, from mixtures containing the same together with at least one saturated paraffinic or cycloparaffinic hydrocarbon, in which said mixtures are subjected to an extractive azeotropic distillation in the presence of an extraction solvent in the liquid state, said extraction solvent being an alkyl aliphatic amide, said process comprising introducing the mixture of hydrocarbons to be separated to an intermediate point of a distillation zone, introducing said extraction solvent to a point of the distillation zone above said intermediate point, introducing steam at a point of the distillation zone above the point of introduction of the extraction solvent, withdrawing from the bottom of said distillation zone the aromatic hydrocarbons and the extraction solvent, and withdrawing from the top of said distillation zone, a distillate substantially free of the extraction solvent and containing non-aromatic hydrocarbons and steam.

3,884,770

PROCESS FOR OBTAINING PURIFIED ALCOHOL FROM FERMENTED MASH

Klaus Misselhorn, Ascheberger Weg 41, Berlin 27, Germany

Continuation of Ser. No. 185,653, Oct. 1, 1971, abandoned. This application Feb. 26, 1974, Ser. No. 446,110
Claims priority, application Germany, Oct. 2, 1970, 2050212
Int. Cl. B01d *3/16, 3/38*
U.S. Cl. 203—82 **1 Claim**



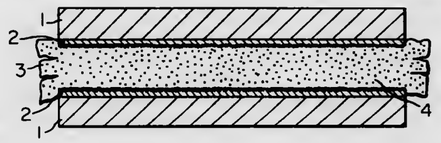
1. A process for the preparation of purified alcohol from fermented mash, said purified alcohol having therein typical aroma imparting ingredients of the mash thereof, said process comprising:
passing said mash into a degassing column;
degassing said mash in said degassing column;
passing the head products containing vapor from said degassing column to a concentration column to obtain a head products concentrate including aroma imparting ingredients of said mash;
returning all of said concentrate to said degassing column to join the degassed mash;
passing said degassed mash and concentrate into a separation column;
separating the alcohol from said mash and concentrate in said separation column and forming an alcohol containing vapor stream;
dividing said vapor stream into a first partial stream and a second partial stream in such a way that 1 to 3 percent of the alcohol in said mash is contained in said first partial stream and 97 to 99 percent of the alcohol in said mash is contained in said second partial stream;
passing said first partial stream into said degassing column as a heat source;
passing said second partial stream into a rectification column and distilling therein said second partial stream; and
removing the resultant distilled and purified alcohol, whereby typical aroma imparting ingredients of the raw material used for said mash are retained in said purified alcohol.

3,884,771

PROCESS OF PRODUCING RESINOUS BOARD HAVING A ROUGH SURFACE USABLE FOR FIRMLY SUPPORTING THEREON A PRINTED CIRCUIT

Takayoshi Hanabusa, Kawasaki; Hiroshi Isozuka, Yokohama; Kunioki Miyao, Tokyo, and Morio Gaku, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed June 21, 1973, Ser. No. 371,995
Claims priority, application Japan, June 29, 1972, 47-65172
Int. Cl. C23b *7/02, 5/58*
U.S. Cl. 204—12 **20 Claims**



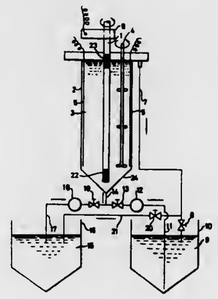
1. A process of producing a rigid resinous board having a rough surface effective for firmly supporting thereon a printed circuit, comprising
providing a rough surface metal layer of Sn, Pb, or Zn formed on a base material by way of an electrolytic plating method using an aqueous solution containing at least one compound selected from the group consisting of Sn $(BF_4)_2$, Pb $(BF_4)_2$, K_2SnO_2, $ZnSO_4$, ZnO, $Zn_2P_2O_7$, $SnCl_2$, $ZnCl_2$, $Zn(CN)_2$, and $SnSO_4$;
superimposing at least one prepreg consisting of at least one insulating fibrous substrate impregnated with an insulating synthetic resin liquid half-dried, on the rough surface metal layer of the base material;
pressing and heating the superimposed prepeg and base material to convert the prepeg to a rigid resinous board; and
removing the base material entirely and at least a part of the plated rough surface metal layer from the rigid resinous board, whereby the rough surface pattern of the plated rough surface metal layer is transferred to the surface of the rigid resinous board.

3,884,772

METHOD FOR PRODUCING A HEAT EXCHANGER ELEMENT

Shoji Shiga, Nikko, Japan, assignor to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,626
Claims priority, application Japan, Mar. 6, 1972, 47-23032; Dec. 6, 1971, 46-98548; Sept. 25, 1971, 46-74926; Apr. 11, 1972, 47-35767
Int. Cl. C23b *7/00, 5/00*
U.S. Cl. 204—23 **9 Claims**



1. A method of producing a heat exchanger element having a porous surface layer containing electrodeposited metal and finely divided electroconductive particles, which comprises immersing a substrate for the heat exchange surfaces in a metal-electrodepositing solution containing a source of the metal ions which are to be deposited on the substrate and suspended finely divided electroconductive metal particles having an average particle size of about 0.5 to 500 microns in a concentration of 5 to 500 g/l, and creating a potential difference between the substrate, connected as the cathode, and an anode in the solution, under conditions satisfying the formula
$0.6\ T+16>Dc>0.75\ T-18$
wherein T is the temperature of the solution in °C and Dc is the cathode current density in A/dm² within the range of 10–40 A/dm², so as to deposit a mixture of the electroconductive metal particles and metal on the substrate in a weight ratio of particles to metal of not greater than 1:3 and form porous projections having a height of at least 0.05 mm on the substrate.

3,884,773

ELECTRODEPOSITION OF NICKEL

Reuven Merker, Englewood Cliffs, and Salvatore Lucca, Paramus, both of N.J., assignors to The Metalux Corporation, Paterson, N.J.

Filed Aug. 17, 1973, Ser. No. 389,379
Int. Cl. C23b *5/08, 5/46*
U.S. Cl. 204—49 **12 Claims**

1. A bath for producing bright nickel electrodeposits comprising an aqueous acid solution of a nickel salt and at least 0.001 g./l. of a sulfonated ester reaction product of maleic acid and an acetylenic alcohol, said alcohol having the formula

$$RC{\equiv}CC(H_2)(OCH_2CH_2)_nOH$$

wherein R is selected from the group consisting of hydrogen, H_3C-, and $HO(CH_2CH_2O)_nCH_2-$, n is 0-2, and n is 0 when R is hydrogen or H_3C-.

3,884,774

ELECTROLYTIC DEPOSITION OF ZINC

Richard B. Kessler, Jericho, N.Y., assignor to Lea-Ronal, Inc., Freeport, N.Y.

Filed Feb. 1, 1973, Ser. No. 328,782
Int. Cl. C23b *5/10, 5/46*
U.S. Cl. 204—55 Y **6 Claims**

1. An aqueous zincate bath having a pH of about 12 and above for electroplating bright metallic zinc deposits on substrates over a wide current density range which comprises
1. an aqueous alkaline solution containing less than about 2 oz./gal. of cyanide;
2. a soluble zinc compound dissolved therein and capable of plating zinc metal by electrolytic deposition;
3. a substituted pyridine or quinoline compound possessing at least one amino substituent in an amount sufficient to increase the brightness of the zinc deposit electrolytically deposited therefrom over an increased current density range; and
4. an amine brightening agent other than the amino substituted pyridine or quinoline compound in sufficient amount to increase the brightness of the entire deposit.

3,884,775

ELECTROLYTIC PROCESS FOR PRODUCTION OF CHLOROFLUORINATED ETHERS

Shunji Nagase; Hajime Baba; Kazuo Kodaira, all of Nagoya and Kooshi Okazaki, Saitama-ken, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 12, 1973, Ser. No. 340,601
Claims priority, application Japan, June 14, 1972, 47-59185
Int. Cl. B01k *3/00*
U.S. Cl. 204—59 F **2 Claims**

1. A process for production of chlorofluoroethers which comprises, dissolving partially chlorinated ethers in anhydrous hydrogen fluoride to form a solution thereof wherein 1–25% by weight of the partially chlorinated ether based on the anhy-

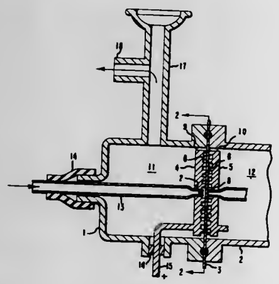
drous hydrogen fluoride is dissolved in the anhydrous hydrogen fluoride, said partially chlorinated ether being one member selected from the group consisting of 2,2'-dichloroethyl ether, pentachloroethylmethyl ether, 2,2,2-trichloroethylmethyl ether, trichlorovinylmethyl ether, allyl-2-chloro-1,1,2-trifluoroethyl ether, 2-chloro-1,1,2-trifluoroethyl-1,2,2-trichloroethyl ether, 2,2,2-trichloro-1,1-difluoroethylmethyl ether, and 2,2-dichloro-1,1,2-trifluoroethyltrichloromethyl ether, electrolyzing said solution in an alternately nickel-plate anode-cathode electrolyzing cell wherein the anode current density is between 0.5 and 4.0 A/dm², bath temperature is between −10° and +20°C and bath voltage is between 4 and 9 V., removing impurities and by-products from gas evolved from the electrolyzing cell and thereafter recovering chlorofluoroethers, said chlorofluoroethers being the same in construction and in number of carbon atoms as said partially chlorinated ethers and being selected from the group consisting of 2-chloro-1,1,2,2-tetrafluoroethyltrifluoromethyl ether, 2-chloro-1,1,2,2-tetrafluoroethyldifluoromethyl ether, 2,2-dichloro-1,1,2-trifluoroethyltrifluoromethyl ehter, 2,2-dichloro-1,1,2-trifluoroethyldifluoromethyl ether, chlorodifluoromethylmethyl ether, 1-chloro-1,1,2,2-tetrafluoroethylchlorodifluoromethyl ether, 2,2-dichloro-1,1,2-trifluoroethylchlorodifluoromethyl ether, 2,2-dichloro-1,1,2-trifluoroethyldichlorofluoromethyl ether.

3,884,776

PREPARATION OF HYDROQUINONE

Frederick Andrew Keidel, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed May 15, 1973, Ser. No. 360,427
Int. Cl. C07c *39/08, 37/00;* **C07b** *29/06*
U.S. Cl. 204—73 R **11 Claims**



1. The process for preparing hydroquinone from benzene in a single electrolytic cell having an anode and a cathode separated by an ion-permeable membrane which comprises

A. anolyzing a dispersion of benzene phase in aqueous anolyte at the anode electrode, thereby producing benzene enriched with quinone while

B. simultaneously catholyzing a dispersion in aqueous catholyte of benzene phase enriched with quinone at the cathode electrode, thereby producing a benzene phase of lowered quinone content and aqueous catholyte phase enriched with hydroquinone,

C. separating the benzene phase enriched with quinone from the aqueous anolyte and dispersing it in the aqueous catholyte,

D. separating the benzene phase of lowered quinone content from the aqueous catholyte phase and dispersing it in the aqueous anolyte, and

E. recovering hydroquinone from an aqueous phase,

wherein the aqueous catholyte contains at least one member of a redox couple, which can be converted from the reduced to the oxidized form at a standard potential at least as positive as 0.7 volts, in an amount sufficient to accelerate the reduction of quinone to hydroquinone, the couple comprising an oxidized and a reduced form wherein

A. both the oxidized and reduced forms are soluble in the catholyte,

B. the oxidized form is electrochemically reducible to its reduced form, and

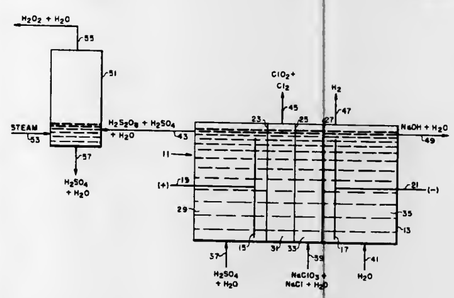
C. the reduced form is capable of chemically reducing quinone to hydroquinone and thereby be converted to the oxidized form.

3,884,777

ELECTROLYTIC PROCESS FOR MANUFACTURING CHLORINE DIOXIDE, HYDROGEN PEROXIDE, CHLORINE, ALKALI METAL HYDROXIDE AND HYDROGEN

Cyril J. Harke, Burnaby, British Columbia, and Jeffrey D. Eng, North Vancouver, British Columbia, both of Canada, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Jan. 2, 1974, Ser. No. 429,998
Int. Cl. C01b *11/02;* **C01d** *1/06;* **B01k** *3/00*
U.S. Cl. 204—84 **11 Claims**



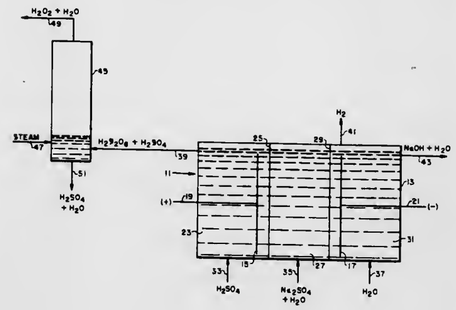
11. A method of manufacturing chlorine dioxide, hydrogen peroxide, chlorine, substantially alkali metal chloride-free aqueous alkali metal hydroxide and hydrogen from alkali metal chloride, alkali metal chlorate, sulfuric acid and water which comprises electrolyzing with a direct current, in a cell having an anode in an anode compartment, a cathode in a cathode compartment and a plurality of intermediate buffer compartments, with the anode compartment being separated from a buffer compartment by a cation-active permselective membrane, the cathode compartment being separated from a buffer compartment by a cation-active permselective membrane and at least one buffer compartment being separated from another by an anion-active permselective membrane, electrolytes resulting from feeds of sulfuric acid to the anode compartment, alkali metal chloride and alkali metal chlorate to a buffer compartment nearer to the cathode compartment than another buffer compartment, and water to the cathode compartment, so that with the passage of direct electric current through the cell hydrogen ions selectively pass from the anode compartment to an adjacent buffer compartment through the cation-active permselective membrane, chloride and chlorate ions selectively pass from a buffer compartment nearer to the cathode compartment to another buffer compartment through an anion-active permselective membrane, and alkali metal cations selectively pass from a buffer compartment to the cathode compartment through a cation-active permselective membrane, sulfuric acid is converted to persulfuric acid in the anode compartment, chloride and chlorate ions react to produce chlorine and chlorine dioxide in a buffer compartment nearer to the anode compartment than the buffer compartment into which chloride and chlorate are fed, and water and alkali metal cations are converted to aqueous, substantially alkali metal halide-free alkali metal hydroxide and hydrogen in the cathode compartment, and removing from the electrolytic cell the persulfuric acid solution, chlorine dioxide, chlorine, aqueous alkali metal hydroxide and hydrogen produced.

3,884,778

ELECTROLYTIC PRODUCTION OF HYDROGEN PEROXIDE AND ALKALI METAL HYDROXIDE

Jeffrey D. Eng, North Vancouver, British Columbia, and Cyril J. Harke, Burnaby, British Columbia, both of Canada, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Jan. 2, 1974, Ser. No. 430,004
Int. Cl. C01b *11/02;* **C01d** *1/06;* **B01k** *3/00*
U.S. Cl. 204—84 **11 Claims**



11. A method for electrolytically manufacturing persulfuric acid and aqueous alkali metal hydroxide from the sulfuric acid and alkali metal sulfate which comprises electrolyzing in a cell having an anode compartment with an anode therein, a cathode compartment with a cathode therein, and one or more intermediate buffer compartments separating the anode and cathode compartments, an anion-active permselective membrane separating the anode and buffer compartments, and a cation-active permselective membrane separating the buffer and cathode compartments, solutions resulting from feeding sulfuric acid to the anode compartment and alkali metal sulfate to one or more buffer compartments, so that with the passage of direct electric current through the cell, sulfate anion selectively diffuses from the buffer compartment to the anode compartment through the anion-active permselective membrane, sodium cation selectively diffuses from the buffer compartment to the cathode compartment through the cation-active permselective membrane, sulfuric acid is oxidized at the anode to produce a sulfuric acid solution of persulfuric acid, and sodium cation is reacted with water at the cathode to produce hydrogen and aqueous alkali metal hydroxide solution, withdrawing the persulfuric acid solution from the anode compartment and withdrawing the hydrogen and alkali metal hydroxide solution from the cathode compartment.

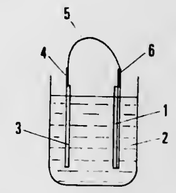
3,884,779

METHOD FOR THE CONTROLLED FORMATION OF THE LAYER OF COPPER SULPHIDE OF A CADMIUM SULPHIDE PHOTOCELL

Thuoc Nguyen Duy, Ivry, and Wolfgang Palz, Paris, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed May 24, 1973, Ser. No. 363,424
Int. Cl. C01b *17/00*
U.S. Cl. 204—92 **4 Claims**

1. A method for the controlled formation of the layer of Cu_2S of a CdS—Cu_2S photocell through ion exchange by immersion in a solution of cuprous ions, the photocell being produced being maintained throughout the duration of its immersion in said solution at a constant positive or zero potential with respect to metallic copper immersed in the same solution.

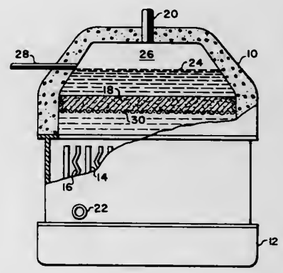


3,884,780

ABSORPTION OF GASEOUS CELL PRODUCT IN CELL LIQUOR

Edward H. Cook, Jr., and Morris P. Grotheer, both of Lewiston, N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 755,845, Aug. 28, 1968, Pat. No. 3,616,443. This application Oct. 21, 1971, Ser. No. 191,533
Int. Cl. C01b *11/26;* **B01k** *3/00*
U.S. Cl. 204—95 **2 Claims**

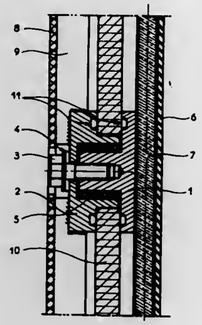


1. In the process for the production of an oxy-halogen acid selected from hypochlorous acid and hypobromous acid, by the electrolysis of a halide containing brine in electrolytic cell, said halide being selected from chloride and bromide, wherein said brine is electrolyzed between anode and cathode members in said cell to form a halogen anode product corresponding to the halide of said brine, a cell liquor containing water and the said oxy-halogen acid and a hydrogenous gaseous cathode product, which cathode product has entrained therein a portion of the halogen anode product, the improvement which comprises passing said gaseous cathode product containing the entrained halogen upwardly in the cell through a layer of inert, absorptive packing material, which layer is pervious to said gaseous cathode product and is disposed completely above the anode and cathode members of the cell but at least partially below the upper surface of the cell liquor in the cell, maintaining the upper surface of the cell liquor above the anode and cathode members but below the top of the cell so as to form a gas disengaging zone between the top of the cell and the upper surface of the cell liquor in which separation of the gases from the cell liquor is effected, dispersing said gaseous cathode product in said cell liquor so as to effect intimate mixing of the cell liquor and the gaseous cathode product as it passes through said packing material, and, thereby, reacting the halogen in said gaseous cathode product with the water in the cell liquor to form additional oxy-halogen acid.

3,884,781
PROCESSES FOR THE ELECTROLYSIS OF ALKALI HALIDES EMPLOYING DISMANTLEABLE BIPOLAR ELECTRODES

Pierre Bouy, Ehghien-Les-Bains, and Guillaume Maizac, Martigues, both of France, assignors to Rhone-Progil, Paris, France

Division of Ser. No. 314,783, Dec. 13, 1972, Pat. No. 3,824,173. This application Jan. 7, 1974, Ser. No. 431,024
Claims priority, application France, Dec. 22, 1971, 71.46072
Int. Cl. C01d *1/06*
U.S. Cl. 204—98 1 Claim



1. Processes for the electrolysis of alkali halides in an electrolytic cell employing dismantleable bipolar electrodes in which the anodically active portion comprises a film-forming metal or alloy thereof, covered with a corrosion-resistant, electrical-conducting layer, and in which the cathodically active portion comprises a metal which can be used cathodically, characterized in that said active portions are separated in space, at least one of said active portions being apertured, an electrical contact between portions being produced by means of two series of parts, each of said series being mechanically and electrically fixed with respect to one of said portions, the corresponding parts of each series being of shapes such that once connected in order to form pairs of parts, said pairs define a sealed cavity for housing a device or means for establishing an electrical contact between the parts of each pair, which process comprises feeding an alkali halide to said electrolytic cell employing said dismantleable bipolar electrodes and applying an electrical current to the said dismantleable bipolar electrodes to electrolyze the alkali halide.

3,884,782
ELECTROLYTIC COPPER RECOVERY METHOD AND ELECTROLYTE

Tobe A. Pittman, 603 S. 400 West, Centerville, Utah 84014, and Jack L. Woods, 1517 9th St., Ogden, Utah 84404

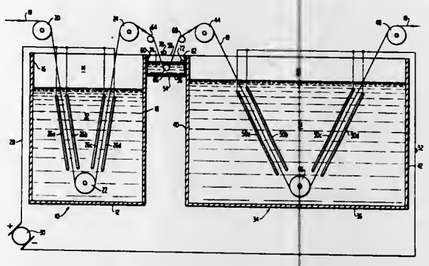
Filed Apr. 8, 1974, Ser. No. 458,887
Int. Cl. C22d *1/16*
U.S. Cl. 204—108 9 Claims

1. An electrolytic process for the recovery of high purity copper from copper containing ores which comprises the steps of (a) extracting copper from the ore in an aqueous solution containing from 10 to 1000 grams per liter of an inorganic acid; from 0.1 to 10 grams per liter of an oxidizing agent; from 0.1 to 20 grams per liter of a water soluble saturated aliphatic alcohol and from 0.1 to 25 grams per liter of a lignin sulfonic acid or salt thereof; and (b) subjecting the copper containing solution from step (a) to a pulsed direct current power source in an electrolytic cell wherein the pulse current is from 1.1 to 99.1 times the average current flow thereby depositing high purity copper at the cathode.

3,884,783
DIRECT CURRENT ELECTROLYTIC ETCHING OF ALUMINUM FOIL WITHOUT THE USE OF CONTACT ROLLS

Lowell W. Austin, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 284,922, Aug. 30, 1972, abandoned. This application Dec. 18, 1973, Ser. No. 425,734
Int. Cl. B23p *1/16, 1/00*
U.S. Cl. 204—129.35 2 Claims

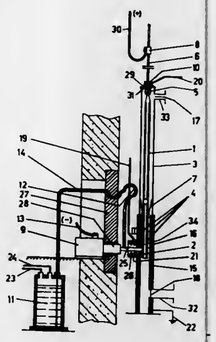


1. Method of direct current electrolytic etching of aluminum foil comprising
passing electric current into the foil in a contact cell zone to provide an apparent cathode current density ranging from about 1 ampere per square inch to about 20 amperes per square inch by exposing the foil to insoluble anodes in an electrolyte consisting essentially of an aqueous solution containing by weight from about 5 to about 30% sulfuric acid, and
passing electric current from the foil as an anode in an etching zone by exposing the foil to cathodes in an aqueous solution comprising sodium chloride.

3,884,784
PROCESS FOR ELECTRO-CHEMICALLY CUTTING AN IRRADIATED NUCLEAR FUEL ASSEMBLY

Joseph Gerard Wurm, Mol; Jean Van Impe, Rhode St. Genese; Antoine De Coninck, Groot Bijgaarden; Paul Raymond Heylen, Mol, and Jean-Pierre Rombaux, Grimbergen, all of Belgium, assignors to Centre d'Etude de l'Energie Nucleaire, C.E.N.; E.N.I.-Electrische Nijverheids-Installaties and Belgonuclearie, all of Brussels, Belgium

Filed July 3, 1972, Ser. No. 268,800
Claims priority, application Belgium, July 1, 1971, 769377
Int. Cl. B23p *1/16, 1/04*
U.S. Cl. 204—129.75 4 Claims



1. A process for electrochemically cutting an irradiated fuel assembly comprising the steps of:

connecting the assembly as an anode into an electric circuit,
connecting a tool with a row of channels as a cathode into the electric circuit,
and throwing an electrolyte through the channels against the assembly,
the electrolyte consisting in a molten salt comprising an alkali nitrate, in which a fluoride selected from the group comprising NaF, KF and LiF is dissolved in a concentration of 1–10 mol %.

3,884,785
METHOD OF MAKING DICHLOROACETYL CHLORIDE

Alfred Hoelle, Grenzach, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Oct. 15, 1971, Ser. No. 188,663
Claims priority, application Germany, Oct. 15, 1970, 2050562
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 8 Claims

1. In a process of making dichloroacetyl chloride from trichloroethylene through oxidation and utilization of irradiation by short-wave light, the improvement which comprises carrying out the reaction in the presence of at least one salt selected from the group of salts of aliphatic nitrogenous bases and ammonium salts.

3,884,786
HOT MELT COMPOSITIONS PRODUCED BY IRRADIATING ETHYLENE COPOLYMERS IN THE PRESENCE OF WAX

Joseph Dominic Domine, Somerville, and Roy Henry Schaufelberger, Basking Ridge, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 273,542, July 20, 1972. This application Oct. 2, 1973, Ser. No. 402,758
Int. Cl. Bo1j *1/10;* B01j *1/12*
U.S. Cl. 204—159.14 3 Claims

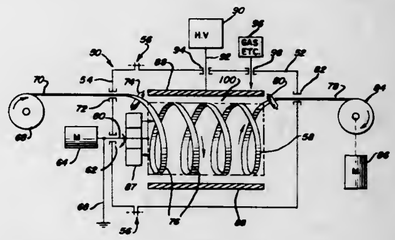
1. An irradiated concentrate of wax and an ethylene-vinyl acylate copolymer or an ethylene-alkyl acrylate copolymer containing a major amount of said copolymer, wherein the vinyl acylate or the alkyl acrylate content is from 5 to 40 weight percent, said copolymer having an initial melt index of from about 1.5 dgm./min. to about 100 dgm./min., said irradiated concentrate obtained by the steps of (a) producing a concentrate of said wax and said copolymer and (b) irradiating said concentrate with high energy ionizing radiation of an absorbed dose of from 0.01 to 5 megareps to increase the molecular weight of said copolymer and thereby produce said irradiated concentrate.

3,884,787
SPUTTERING METHOD FOR THIN FILM DEPOSITION ON A SUBSTRATE

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Information Systems, Inc., Bedford, Mass.

Filed Jan. 12, 1973, Ser. No. 323,133
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 30 Claims

1. Method of coating a thin film on elongate substrate means by electric field sputtering plasma vapor deposition in a pressure vessel which comprises moving the substrate means along a predetermined tortuous and generally circular path established within said vessel while subjecting only the exterior surface of said substrate means to an arcuately configured volume of plasma vapor repeatedly between the ends of the tortuous path, the configuration of the volume of plasma vapor generally conforming to the geometric figure generated by the tortuous path and cathodic target means having the



general configuration of at least a partial cylinder surrounding and substantially uniformly spaced from said path.

3,884,788
SUBSTRATE PREPARATION FOR LIQUID PHASE EPITAXY OF MERCURY CADMIUM TELLURIDE

Ralph B. Maciolek, Hennepin; Richard A. Skogman, Dakota, and Charles J. Speerschneider, Hennepin, all of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

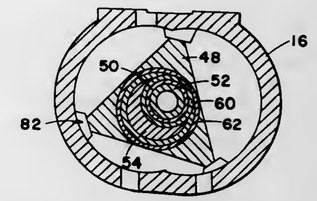
Filed Aug. 30, 1973, Ser. No. 393,265
Int. Cl. C23c *15/00;* B44d *1/14, 1/18*
U.S. Cl. 204—192 3 Claims

1. A method of depositing a layer of mercury cadmium from a liquid solution on to a substrate which does not substantially chemically react with the liquid solution, the method comprising:
sputter etching a surface of the substrate;
sputter depositing a thin layer of cadmium telluride on the surface; and
epitaxially depositing a layer of mercury cadmium telluride by contacting the cadmium telluride coated surface with a liquid solution of mercury, cadmium and tellurium.

3,884,789
APPARATUS FOR FINISHING TROCHOIDAL SURFACES

Albin S. Czubak, Holland, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.

Filed Feb. 22, 1973, Ser. No. 334,734
Int. Cl. B01k *3/00;* C23b *5/68*
U.S. Cl. 204—224 R 9 Claims



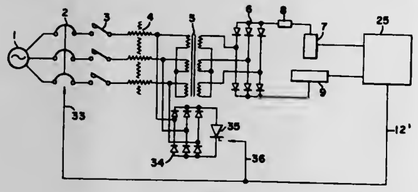
1. In an apparatus for finishing an epitrochoidal-shaped surface of a workpiece, including:
a tool holder having finishing tool means mounted thereon;
means for positioning said workpiece with respect to said tool holder;
a mandrel, said tool holder being rotatably supported on said mandrel;
means for eccentrically rotating said tool holder with respect to said mandrel; and
means for synchronizing the eccentric rotation of said holder with respect to said mandrel whereby said holder will trace an epitrochoidal path, the improvement comprising:

said finishing tool including at least one finishing element adapted to engage the surface of said workpiece and at least one electrically conductive element positionable with respect to said surface for effecting the deposition of metallic plating thereon; said finishing element comprising at least one abrasive element; means for moving said abrasive element into and out of operative engagement with said surface; means on said conductive element engageable with said surface for spacing said conductive element with respect to said surface; and biasing means for biasing said conductive element toward said surface, whereby said abrasive element and said conductive element will simultaneously follow said surface as said holder is eccentrically rotated.

3,884,790
APPARATUS FOR ELECTROLYTICALLY ETCHING

Kazuhiko Kobayashi, Seto; Tamio Takawashi, Nagoya, and Shinji Arai, Nagoya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed June 29, 1973, Ser. No. 374,960
Claims priority, application Japan, July 5, 1972, 47-67216
Int. Cl. B23p *1/02*; B01k *3/00*
U.S. Cl. 204—224 M **6 Claims**

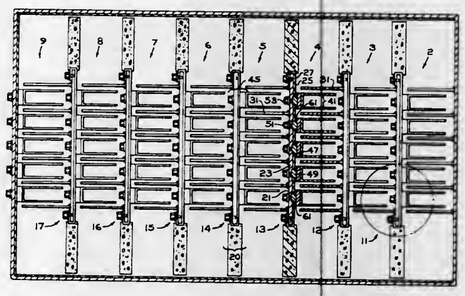


1. Apparatus for electrolytically etching a workpiece which comprises:
- a three phase saturable reactor having an input and an output,
- three phase alternating current transformer means having primary windings and second windings,
- rectifier means for rectifying three phase alternating current having three inputs and first and second outputs,
- an electrode,
- an abnormal phenomenon detector,
- means connecting the input of said three phase alternating current saturable reactor to a three phase alternating current power source,
- means connecting the output of said three phase alternating current saturable reactor to the primary windings of said three phase alternating current transformer means,
- means connecting the secondary windings of said three phase alternating current transformer means to the three inputs of said rectifier means,
- means connecting the first output of said rectifier means to said electrode,
- means for connecting the second output of said rectifier means to said workpiece,
- means connecting said abnormal phenomenon detector between said electrode and said workpiece;
- an interrupting thyristor,
- interrupting diode means,
- means connecting said interrupting diode in parallel with the primary windings of said three phase alternating current transformer means,
- means connecting said interrupting thyristor to the direct current output of said interrupting diode means,
- means connecting said abnormal phenomenon detector to said interrupting thyristor to short circuit the primary windings of said three phase alternating current transformer means in response to the detection of an abnormal phenomenon signal.

3,884,791
ELECTROLYTIC CELL HAVING METAL ELECTRODES

Carl W. Raetzsch, and Hugh Cunningham, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 30, 1973, Ser. No. 420,744
Int. Cl. B01k *3/00*
U.S. Cl. 204—268 **6 Claims**



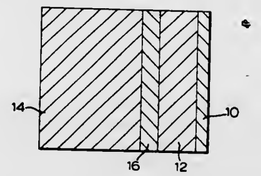
5. In a bipolar electrolyzer having a plurality of individual bipolar units in series, each of said individual bipolar units including a backplate having an aperture extending therethrough, a steel cathodic surface, cathode means mounted on and extending from said cathodic surface, a titanium anodic surface, and anode means extending from said anodic surface, whereby the anode means of one bipolar unit and the cathode means of the next adjacent bipolar unit are in the same electrolyte compartment, the improvement wherein said anode means is removable independently of said cathode means and comprises:
- a titanium anode base member larger than said aperture;
- finger-like metal anodes mounted on and extending from one side of said titanium anode base member;
- an electroconductive, substantially hydrogen impermeable copper member friction welded to the opposite side of said acid resistant anode base and corresponding to the aperture in the backplate; and
- threaded bolt means friction welded to and extending from the hydrogen impermeable copper member through said aperture to the cathodic surface of the backplate, whereby said anode base member applies a compressive force on the titanium anodic surface of said backplate thereby forming an electrolyte tight seal between said titanium anode base member and said backplate.

3,884,792
BIPOLAR ELECTRODES

James D. McGilvery, Etobicoke, Ontario, Canada, assignor to Erco Industries Limited, Islington, Ontario, Canada

Filed Sept. 4, 1973, Ser. No. 393,945
Claims priority, application Canada, Sept. 15, 1972, 151886
Int. Cl. B01k *3/06*
U.S. Cl. 204—290 F **13 Claims**

1. A bipolar electrode structure comprising an anode surface, a layer of iron or an alloy thereof providing the cathode, a layer of passivatable metal located between the anode surface and the cathode and a layer of an electrically conducting metal or alloy thereof resistant to atomic hydrogen flow therethrough selected from the group consisting of gold, tin, lead, nickel, cobalt, chromium, tungsten, molybdenum, cadmium and copper, and alloys thereof and located between and in

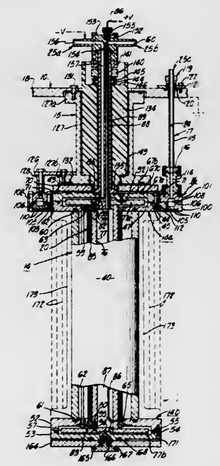


electrical contact with the iron or alloy thereof layer and the layer of passivatable metal.

3,884,793
ELECTRODE TYPE GLOW DISCHARGE APPARATUS

Alan S. Penfold, Playa Del Rey, and John A. Thornton, Los Angeles, both of Calif., assignors to Telic Corporation, Santa Monica, Calif.

Filed Sept. 7, 1971, Ser. No. 178,240
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **45 Claims**



1. Electrode glow discharge apparatus for sputtering material in a gaseous environment of approximately 10^{-2} torr and below, comprising:
- a housing for said environment and means through which said housing can be evacuated;
- cathode means from which material is to be sputtered, said cathode means being adapted to be coupled with a power supply and including a central elongated portion and ends extending radially therefrom forming a trap region for high and low energy electrons between the ends contiguous to said central portion, said trap region including a cathode sheath, substantially all of said high energy electrons being generated on the surface of said cathode means by secondary emission;
- anode means being adapted to be coupled to a power supply, said anode means being outside said trap region of said cathode means;
- magnetic field means for generating a magnetic field of approximately 300 gauss and below within said trap region, said magnetic field having magnetic field lines closely contiguous to and substantially parallel with said central portion of said cathode means, whereby said trap region is formed completely by said magnetic field and surfaces at substantially cathode potential; and
- means for supporting within said housing workpieces intended to be sputter coated.

3,884,794
SOLVENT REFINED COAL PROCESS INCLUDING RECYCLE OF COAL MINERALS

Willard C. Bull, Prairie Village; Charles H. Wright, Overland Park, both of Kans., and Gerald R. Pastor, Takoma, Wash., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 4, 1974, Ser. No. 446,973
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 **18 Claims**

1. A process for preparing deashed solid and liquid hydrocarbonaceous fuel from hydrocarbonaceous feed coal containing ash comprising contacting the feed coal with hydrogen and a solvent for the hydrocarbonaceous material in the coal to form a coal-solvent slurry in contact with hydrogen, passing the slurry and hydrogen through a preheater for a residence time between 0.01 and 0.25 hours, said preheater having a length to diameter ratio of at least 100 to inhibit backmixing so that an increment of said slurry gradually increases in temperature in passage through the preheater from a low inlet temperature to a maximum temperature at the preheater outlet, the maximum temperature at the preheater outlet being 400° to 525°C., the viscosity of an increment of the slurry in passage through the preheater increasing intially to a value at least 20 times the viscosity of the solvent along when each is measured at a temperature of 99°C., the viscosity of the slurry when measured a 99°C. subsequently dropping to a value lower than 10 times the viscosity of the solvent alone when each is measured at 99°C. in continued passage through the preheater, the viscosity of said slurry finally tending to increase to a value greater than 10 times that of the solvent along when each is measured at 99°C. at the exit temperature of said preheater but the slurry and hydrogen being removed from said preheater after the relative viscosity drops to a value below 10 but before the relative viscosity finally increases to a value of 10, passing the slurry to a dissolver maintained at a temperature between 350° and 475°F. and which is below the temperature at the outlet of the preheater, the residence time of the slurry in the dissolver being greater than in the preheater, removing the slurry from the dissolver, separating from the slurry an ash-containing stream, a gaseous stream, a fuel product which is liquid at room temperature, and a deashed fuel product which is solid at room temperature, and recycling a portion of the separated ash to said preheater step.

3,884,795
SOLVENT REFINED COAL PROCESS WITH ZONES OF INCREASING HYDROGEN PRESSURE

Charles H. Wright, Overland Park, Kans., and Gerald R. Pastor, Takoma, Wash., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 4, 1974, Ser. No. 446,972
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 **15 Claims**

1. A process for preparing deashed solid and liquid hydrocarbonaceous fuel from hydrocarbonaceous feed coal containing ash comprising contacting the feed coal in a slurry with a solvent for the hydrocarbonaceous material in the coal with a contaminant containing hydrogen stream obtained from the dissolver step described below without scrubbing of contaminant gases, passing the slurry and said contaminant containing hydrogen through a preheater for a residence time between 0.01 and 0.25 hours, said preheater having a length to diameter ratio of at least 100 to inhibit backmixing so that an increment of said slurry gradually increases in temperature in passage through the preheater from a low inlet temperature to a maximum temperature at the preheater outlet, the maximum temperature at the preheater outlet being 400° to 525°C., the viscosity of an increment of the slurry in passage through the

preheater increasing initially to a value at least 20 times the viscosity of the solvent alone when each is measured at a temperature of 99°C., the viscosity of the slurry in continued passage through the preheater subsequently dropping to a value lower than 10 times the viscosity of the solvent alone when each is measured at 99°C., the viscosity of said slurry finally tending to increase to a value greater than 10 times that of the solvent alone when each is measured at 99°C. at the exit temperature of said preheater but the slurry and hydrogen containing contaminant gases being removed from said preheater after the relative viscosity drops to a value below 10 but before the relative viscosity finally increases to a value of 10, flashing hydrogen containing contaminant gases from the slurry, charging relatively purer hydrogen to said slurry, reducing the temperature of the slurry at least 10°C. after it leaves the preheater to a temperature at which the viscosity of the slurry does not increase to a value above 10 times that of the solvent alone when each is measured at 99°C., passing the cooled slurry to a dissolver maintained at a temperature between 350 and 475°C. which is below the temperature at the outlet of the preheater, the residence time of the slurry in the dissolver being greater than in the preheater, the hydrogen partial pressure in the dissolver being greater than in the preheater, removing the slurry from the dissolver and separating the slurry into hydrogen containing contaminant gases, a fraction which is liquid at room temperature and a deashed fraction which is solid at room temperature, passing hydrogen-containing contaminant gases to the preheater, and recycling at least a portion of said liquid fraction as solvent for said preheater step.

3,884,796
SOLVENT REFINED COAL PROCESS WITH RETENTION OF COAL MINERALS

Charles R. Hinderliter, Overland Park, and Russell E. Perrussel, Merriam, both of Kans., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

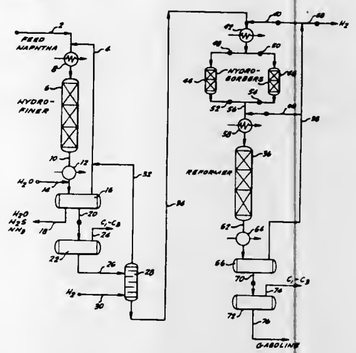
Filed Mar. 4, 1974, Ser. No. 446,974
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 **18 Claims**

1. A process for preparing deashed solid and liquid hydroocarbonaceous fuel from hydrocarbonaceous feed coal containing ash comprising contacting the feed coal with hydrogen and a solvent for the hydrocarbonaceous material in the coal to form a coal-solvent slurry in contact with hydrogen, passing the slurry and hydrogen through a preheater for a residence time between 0.01 and 0.25 hours, said preheater having a length to diameter ratio of at least 100 to inhibit backmixing so that an increment of said slurry gradually increases in temperature in passage through the preheater from a low inlet temperature to a maximum temperature at the preheater outlet, the maximum temperature at the preheater outlet being 400° to 525°C., the viscosity of an increment of the slurry in passage through the preheater increasing initially to a value at least 20 times the viscosity of the solvent alone when each is measured at a temperature of 99°C., the viscosity of the slurry when measured at 99°C. subsequently dropping to a value lower than 10 times the viscosity of the solvent alone when each is mesured at 99°C. in continued passage through the preheater, the viscosity of said slurry finally tending to increase to a value greater than 10 times that of the solvent alone when each is measured at 99°C. at the exit temperature of said preheater but the slurry and hydrogen being removed from said preheater after the relative viscosity drops to a value below 10 but before the relative viscosity finally increases to a value of 10, passing the slurry to a dissolver maintained at a temperature between 350° and 475°F. and which is below the temperature at the outlet of the preheater, the residence time of the slurry in the dissolver being greater than in the preheater, selectively retaining in the dissolver a portion of the ash removed from the coal relative to flow of fuel through the dissolver, removing dissolver effluent and separating said effluent into a gaseous stream, a fraction which is liquid at room temperature and a deashed fraction which is solid at room temperature, recycling hydrogen contained in said gaseous stream to the preheater, and recycling at least a portion of said liquid and/or solid fraction as solvent for said preheater step.

3,884,797
HYDROFINING-REFORMING PROCESS

Starling K. Alley, Jr., Brea, and Edward C. Attane, Jr., Orange, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 183,793, Sept. 27, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,931
Int. Cl. C10g *23/04, 31/14*
U.S. Cl. 208—89 **12 Claims**



6. A process for the hydrodesulfurization and reforming of a sulfur-containing naphtha feedstock, at least a portion of the sulfur in said feedstock appearing in compounds comprising a thiophene ring, which comprises:
1. contacting said feedstock plus added hydrogen with a sulfided Group VIB and Group VIII mixed-metal hydrofining catalyst under hydrofining conditions adjusted to reduce the organic sulfur content of said feedstock to between about 0.5 and 10 ppm;
2. separating hydrogen sulfide from the resulting intermediate gasoline product;
3. contacting said intermediate gasoline product plus added hydrogen with a hydrogen-reduced, initially substantially sulfur-free molybdenum and Group VIII mixed-metal hydrofining catalyst under hydrofining-sorption conditions adjusted to effect a further substantial reduction in the organic sulfur content thereof, to a level below about 2 ppm, and also to sorb substantially all of the hydrogen sulfide thereby generated on said hydrogen-reduced hydrofining catalyst, said hydrofining-sorption conditions including a temperature above about 575°F; and
4. subjecting total effluent from step (3) to catalytic reforming in contact with a sulfur-sensitive Group VIII noble metal reforming catalyst.

3,884,798
HYDROCRACKING PROCESS USING CO-EXTRUDED NICKEL-ON-SILICA-ALUMINA

Lee Hilfman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

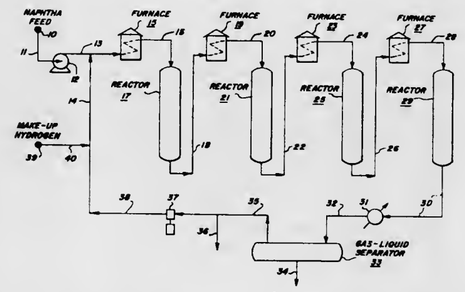
Division of Ser. No. 228,825, Feb. 24, 1972, abandoned. This application Mar. 12, 1973, Ser. No. 340,423
Int. Cl. C10g *13/06, 31/14*
U.S. Cl. 208—111 **3 Claims**

1. A process for hydrocracking a hydrocarbonaceous charge stock which comprises reacting said charge stock with hydrogen in contact with a catalytic composite of coextruded particles of a carrier material consisting essentially of a silica-alumina amorphous refractory inorganic oxide in which the silica is present in an amount of from about 10.0 to about 90.0% by weight and from about 6.5 to about 10.5% by weight of a nickel component, calculated as the elemental metal, said particles being prepared by coextruding a mulled acidic admixture of a powdered preformed carrier material consisting essentially of a silica-alumina amorphous refractory inorganic oxide and a powdered nickel salt, said coextruded particles being calcined at a temperature above about 1200° F., reduced, and sulfided prior to contact thereof with said hydrocarbonaceous charge stock; said reaction conditions including a maximum catalyst bed temperature of about 600° to about 900° F., a pressure of about 500 psig. to about 5000 psig., a liquid hourly space velocity of about 0.1 hr. $^{-1}$ to about 10 hr. $^{-1}$ and a hydrogen concentration in the range of about 1000 to about 50,000 scf./Bbl.

3,884,799
REFORMING WITH PLATINUM-RHENIUM-SELENIUM CATALYSTS

John A. Mahoney, Park Forest South, Ill., and Albert L. Hensley, Jr., Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 11, 1972, Ser. No. 314,133
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **8 Claims**



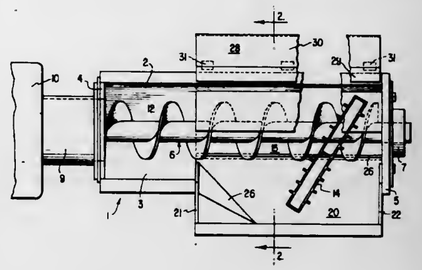
1. A process for the reforming of a petroleum hydrocarbon fraction, which process comprises contacting said hydrocarbon fraction in a reforming zone under reforming conditions and in the presence of hydrogen with a catalytic composition consisting essentially of about 0.1 to about 5 weight percent Group VIII noble metal, about 0.1 to about 5 weight percent rhenium, and at least 0.005 weight percent selenium deposited on a solid catalytic support comprising a refractory inorganic oxide.

3,884,800
AUTOMATIC SORTING AUGER CONVEYER

Wendell R. Helmolt, Sr., Windsor, Conn., assignor to Polymer Machinery Corporation, Berlin, Conn.

Filed Aug. 16, 1974, Ser. No. 498,133
Int. Cl. B07b *13/04*
U.S. Cl. 209—82 **8 Claims**

1. For use with a grinder for the plastic waste runners resulting from a multi-cavity injection molding process, a sorting-conveyor for automatically sorting the molded parts from the runners and for conveying the runners to the grinder, comprising in combination:
an elongated trough having opposed end walls one of which is provided with a circular opening and is connectable to the grinder, and first and second side walls with at least said first side wall being inclined and sloping downwardly and inwardly;
an auger disposed in the bottom of said trough and having one end thereof extending through said opening, the pitch of the auger helix being less than the length of the runners and greater than the length of the molded parts to be separated;
means for rotatably mounting the opposite end of said auger in the other of said end walls;
an elongated opening of a width sufficient to pass the molded parts in the bottom of said trough beneath said auger and extending from said other end wall along a substantial portion of the length of said auger;
a plate fastened to said second side wall of said trough and extending laterally therefrom so as to cover at least one-half of said auger, the clearance between said plate and said auger being substantially less than the thickness of a runner; and
means fastened to said first side wall below the locus of the longitudinal axis of said auger and extending along the entire length of said opening for preventing any runners from sliding along said first side wall and through said opening, whereby when the auger is rotated in a direction toward the edge of said plate, the molded parts supplied to said trough will fall through the auger helix and out the bottom opening in the trough while the runners supplied to said trough will be carried along by the auger toward the end wall which is fastened to the grinder.



3,884,801
PREPARATION OF REVERSE OSMOSIS MEMBRANES BY COMPLETE EVAPORATION OF THE SOLVENT SYSTEM

Robert Emil Kesting, Mount Baldy, Calif., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

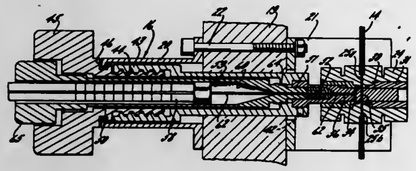
Continuation-in-part of Ser. No. 249,571, May 2, 1972, abandoned. This application Sept. 26, 1973, Ser. No. 401,003
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **8 Claims**

1. A process for forming an asymmetric reverse osmosis membrane consisting essentially of the steps:
a. preparing a dilute solution consisting of a cellulose ester in an amount less than or equal to 15 percent by weight of the solution, a solvent for the cellulose ester consisting of acetone or dioxane, and at least one pore-forming material,
the solvent having a boiling point at least 30°C lower than the boiling point of the pore-forming material and the pore-forming material being a nonsolvent for the cellulose ester,
b. casting said dilute solution to form a thin film, and
c. allowing the solvent and pore-forming material to evaporate completely.

3,884,802
LIQUID CHROMATOGRAPHY INJECTION SYSTEM

Johannes Spaans, Schipluiden, and Adrianus Onderwater, Delft, both of Netherlands, assignors to Packard Becker BV, Netherlands

Filed Oct. 5, 1973, Ser. No. 403,791
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 C **12 Claims**

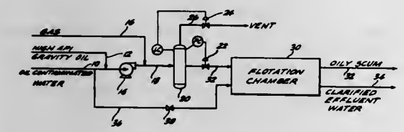


1. A sample injection apparatus for use in a liquid chromatography system in which a continuous high pressure, high velocity solvent stream is directed through a column comprising, in combination, a valve housing, a valve member mounted for relative lateral sliding movement within said housing, said valve member being formed with a pair of passages extending transversely through said member, said valve member being positionable such that one of said transverse passages is in alignment with said solvent stream so that said stream flows through said one passage, a sample holding means for selectively drawing in and ejecting variable quantities of a sample, said sample holding means having an outlet at one end thereof and being removably positionable within said valve member such that said outlet is disposed at the other of said transverse valve passages, and means for laterally moving said valve member with said sample holding means positioned therein from a position where said one valve passage is aligned with said solvent stream to a position where said other valve passage is aligned with said solvent stream and said solvent flows through said other passage.

3,884,803
PROCESS FOR SEPARATING LOW API GRAVITY OIL FROM WATER

Verlon L. Traylor, Casper, Wyo., assignor to Union Oil Company of California, Brea, Calif.

Filed June 23, 1972, Ser. No. 265,649
Int. Cl. B01d *17/02*
U.S. Cl. 210—44 **11 Claims**

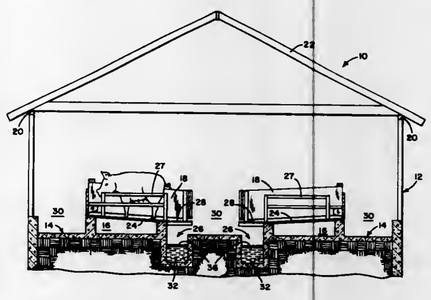


1. In a process for treating water contaminated with low API gravity oil to remove the oil contaminent therefrom wherein said contaminated water is contacted with finely divided gas bubbles in a flotation chamber to float the oil to the surface of said water, oil is mechanically removed from the surface of said water and water having reduced oil contamination is withdrawn from said flotation chamber, the improvement which comprises adding to said contaminated water prior to its introduction into said flotation chamber about 1 to 10 volumes of a high API gravity crude petroleum per volume of said low API gravity oil, said high API gravity crude petroleum having an API gravity above about 35°.

3,884,804
METHOD OF DEODORIZING ANIMAL WASTES

James V. Robinson, Chillicothe, and Larry O. Hill, Frankfort, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed June 29, 1973, Ser. No. 375,076
Int. Cl. C02b *3/06*
U.S. Cl. 210—64 **13 Claims**

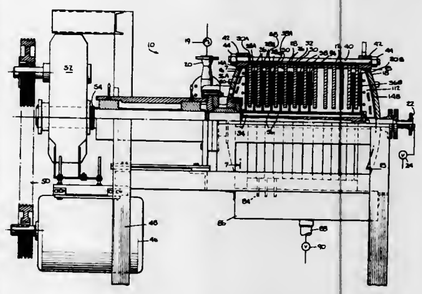


1. A method of treating animal wastes to reduce the odors produced by the degenerative breakdown of said animal wastes comprising floating on the surface of a watery mass of said animal wastes solid catalyst particles selected from the group consisting of carbon and activated carbon particles having surface portions of a hydrophobic material which forms a discontinuous film thereon, said hydrophobic material selected from the group consisting of polytetrafluoroethylene, silicone resins and silica colloids made hydrophobic by surface conversion to silicone.

3,884,805
APPARATUS AND PROCESS FOR CONTINUOUS CONCENTRATION OF SOLIDS FROM A SOLIDS-CONTAINING FLUID

Alex Bagdasarian, Arlington, and James Donovan, Cambridge, both of Mass., assignors to Artisan Industries Inc., Waltham, Mass.

Filed May 13, 1974, Ser. No. 469,628
Int. Cl. B01d *37/02*
U.S. Cl. 210—65 **24 Claims**

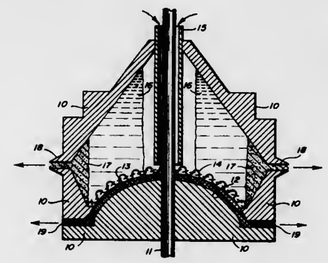


18. A process for separating a concentrated slurry and a filtrate from a solids-containing fluid, said process comprising the steps of (1) introducing a solids-containing fluid into one end of a housing characterized by said one end and another, opposite end and containing (i) at least one filter means comprising a filter chamber having at least one filtering surface, the interior of said chamber being in fluid communication with the exterior of said housing and said filtering surface being disposed in a path wherealong fluid may flow through said housing, and (ii) a rotor means including an edged blade disposed to be rotated with its edge turning substantially parallel with and in spaced relation to said filtering surface; (2) flowing said solids-containing fluid under pressure through said housing past and against said filtering surface and thereby and thereat effecting a separation of said fluid into a concentrated slurry flowing past said filtering means and a filtrate entering said filter chamber; (3) discharging the concentrated slurry from said other, opposite end of said housing and the filtrate from said filter chamber; (4) simultaneously with the effecting of said separation forming a filter cake layer on said filtering surface of solids deposited thereon from said solids-containing fluid, and (5) then and thereafter maintaining said filter cake layer at a predetermined thickness by rotation of the blade of said rotor means across that layer.

3,884,806
METHOD AND APPARATUS FOR CENTRIFUGALLY REGENERATIVE FILTRATION

Robert W. Coughlin, Bethlehem, Pa., and Joseph R. Polek, Baltimore, Md., assignors to Robert W. Coughlin, Bethlehem, Pa.

Filed Dec. 26, 1972, Ser. No. 318,266
Int. Cl. B01d *33/04*
U.S. Cl. 210—78 **10 Claims**



1. A method of separating particles from a mixture thereof with fluid which comprises:
   a. introducing said mixture into a rotatable container having an internal wall disposed oppositely from the axis of rotation of said container and adapted to collect dense particulate portions of said material-to-be-filtered, said container also having therein a porous filtration surface disposed at an angle with respect to said internal wall,
   b. causing fluid to pass through said porous filtration surface thereby filtering said particles from said mixture,
   c. rotating said container thereby causing said filtered particles to be removed from said filtration surface toward said inner wall of said container by centrifugal action,
   d. recovering the filtered fluid thereby produced.

3,884,807
APPARATUS FOR SKIMMING IN MULTI-PHASE FLUID MEDIA

Merlyn W. Heddon, 8912 Victoria Ave., South Gate, Calif. 90280

Continuation-in-part of Ser. No. 29,783, April 20, 1970, abandoned. This application Oct. 18, 1971, Ser. No. 190,082
Int. Cl. E02b *15/04*
U.S. Cl. 210—104 **1 Claim**

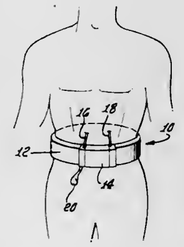


1. A system for separation of the upper phase from the lower phase of a two-phase fluid medium, said system comprising:
   a towable skimming vessel having an inlet lip, a collection chamber adjoining said lip, a settling chamber adjoining said collection chamber, and a separation and storage chamber adjoining said settling chamber, said lip being adjustable to be positioned in the two phase fluid medium so as to substantially separate the upper phase from the lower phase thereof and to direct said upper phase fluid into said collection chamber;
   a paddle means and a baffle means disposed at the end of said collection chamber, adjoining said lip, and positioned so as to further separate said upper phase fluid from said lower phase fluid and to further urge a substantial portion of said upper phase fluid over said baffle means into said settling chamber;
   an adjustable weir positioned in said vessel so as to form a common barrier between said settling chamber and said separation and storage chamber; and
   automatic control means operatively disposed on said weir for adjusting the position of said weir to permit optimum flow of said upper phase fluid from said settling chamber into said separation and storage chamber, said automatic control means comprising:
   a motor for moving the weir;
   a source of power;
   first electrode means including a pair of electrodes positioned on said weir, one higher than the other, and arranged to connect said motor to said source of power when said first electrode means is positioned above or below the interface between the upper and lower phase of said fluid medium in said settling chamber to lower or raise said weir, and arranged to disconnect said motor from said source of power when one of said electrodes in said electrode pair is above and the other electrode of said electrode pair is below said interface;
   a pump having an outlet, said pump being positioned in the lower portion of said separation and storage chamber, and a motor for exciting said pump; and
   a second electrode means in the lower portion of said separation and storage chamber positioned to operate said pump motor so long as said second electrode means is in the lower phase of said fluid medium in said separation and storage chamber.

3,884,808
WEARABLE, SELF-REGENERATING DIALYSIS APPLIANCE

Robert D. Scott, Covina, Calif., assignor to Research Development Systems, Inc., Pasadena, Calif.

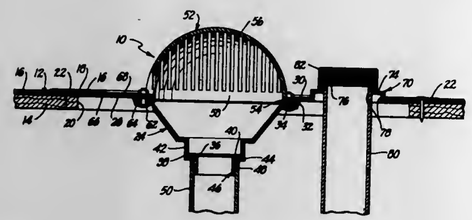
Filed June 20, 1973, Ser. No. 371,950
Int. Cl. B01d *31/00*
U.S. Cl. 210—109 **9 Claims**



1. In a dialyzing appliance of the type adapted to be worn about the human body for continuous use as the user goes about his daily tasks which comprises a dialyzing means including a dialysis fluid chamber and dialysis membrane defining an extended blood flow passage for blood circulation

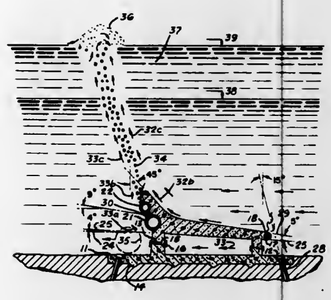
through the fluid chamber in dialyzing relation with the dialysis fluid, means to regenerate the dialysis fluid continuously during blood circulation comprising a regeneration loop having in series flow connection with the dialysis fluid chamber a first regeneration chamber containing sorbtive material adapted to remove from the dialyzing fluid impurities dialyzed thereinto from the blood, and a second regeneration chamber containing particulate make-up dialyzate solids adapted for controlled rate dissolution by dialyzing fluid passing through said second chamber for reconstituting the dialysis fluid, and means to pump the dialysis fluid continuously through the regeneration loop in solid dialyzate dissolving relation; and means to removably attach the appliance to the body of the wearer comprising a belt adapted to encircle the waist of the wearer and having a buckle portion for securing the belt in position; said pump means including an electrically operated motor carried by the belt and buckle to drive the pump.

3,884,809
SCUPPER DRAIN STRUCTURE
Duane D. Logsdon, 1719 Canyon Rd., Fullerton, Calif. 92631
Filed June 28, 1973, Ser. No. 374,752
Int. Cl. E03f *5/06*
U.S. Cl. 210—163 **1 Claim**



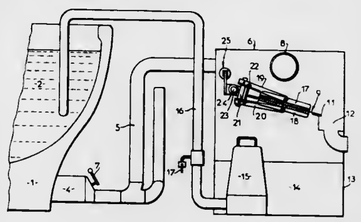
1. A scupper drain structure which comprises:
a body of a laminated material having a peripheral section and an integral central section which is completely surrounded by said peripheral section,
said peripheral section having a top and bottom and being nearly flat and sloping downwardly from its periphery towards said central section,
said central section having a top and a bottom and having a generally funnel like shape, said central section extending beneath said bottom of said peripheral section,
said central section including a peripheral, internal groove extending completely around the interior of said central section located at the top thereof immediately below the adjacent, surrounding surface of said top of said peripheral section,
said central section also including a bottom discharge opening,
said body and said central section consisting of an imporous, continuous, lower, self-supporting layer of ABS polymer material and an imporous, continuous upper surface layer of an acrylic polymer material, said surface layer being thermally bonded to said lower layer,
fitting means for securing the bottom of said central section to a pipe located on the exterior of the bottom of said central section so that such a pipe may be attached to said central section in communication with said discharge opening,
said fitting means including at least two stepped shoulders of different outer diameters corresponding to the internal diameters of different standard pipes,
a self-supporting screen means having a peripheral mounting flange and a central foraminous structure completely surrounded by said mounting flange and extending upwardly from the top of said mounting flange,
said screen means being located with said mounting flange fitting within said groove so as to support said screen means on said body,
said screen means including an imperforate guard wall extending around said foraminous structure adjacent to said flange, said guard wall serving to prevent roof debris from entering said central section of said body,
said mounting flange being no thicker than the depth of said groove beneath said surface of said top of said peripheral section adjacent to said screen means on said body with said mounting flange within said groove, said fastening means extending between said body and said screen means,
overflow means located on said peripheral section adjacent to said central section, said overflow means internally spaced from the periphery of said peripheral section,
said overflow means consisting of an upstanding hollow boss having an open top extending upwardly from said top of said peripheral section, said boss having internal stepped shoulders of different internal diameters corresponding to the outer diameters of different standard pipes.

3,884,810
ANTI POLLUTION WATERWAY DEVICE AND PROCESS
Wassily Smyrnow, 2813 Arlington Blvd. Apt. 102, Arlington, Va. 22201
Filed July 13, 1972, Ser. No. 271,244
Int. Cl. E02b *15/04*
U.S. Cl. 210—170 **8 Claims**



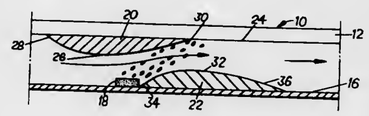
1. An improved anti-pollution system for a waterway having a normal direction of flow and carrying a certain amount of pollutants in said flow comprising in combination:
a rigid, elongated member having a weight substantially greater than the water it displaced disposed across the bottom of said waterway,
a conduit carried by said member along its longitudinal length,
mounting means to securely affix said member to said bottom surface at an angle from about 15° to 75° to said direction of flow,
a plurality of air escapement perforations spaced along the length of said conduit,
said member having an upper surface having an upstream edge and a downstream edge and said upper surface angles upwardly from said upstream edge to said downstream edge so as to deflect water moving in said normal direction of flow in an upward direction,
pump means providing air to said conduit at a pressure sufficient to cause a rising plane of turbulence from said conduit to the surface of the waterway where a line of turbulence is formed having an upstream end and a downstream end and of sufficient pressure to cause pollutants in said flow to move toward said downstream end, and
means for collecting said pollutants at said downstream end.

3,884,811
FILTER
George Anthony Chattaway, Meriden, and Arthur James Pearson-Coleman, Warwick, both of England, assignors to Vortex (Fishery Equipment) Ltd., England
Continuation of Ser. No. 324,952, Jan. 19, 1973, abandoned. This application June 25, 1974, Ser. No. 482,931
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **4 Claims**



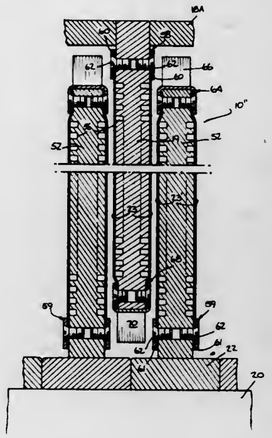
1. Apparatus for removing solid materials from the liquid of a fish tank comprising a filter housing, an inclined liquid permeable screen means fixed within said housing and having upper and lower surfaces, means for removing liquid from said fish tank and discharging the liquid onto the upper surface of said inclined screen means so that a major portion of the liquid filters through said screen means and a lesser portion of the liquid flushes solid materials down the inclined upper surface of said screen means, means for receiving said lesser portion of liquid and solid materials and discharging the same from said housing, carrier means located within said housing adjacent to said screen means, a first brush means pivotally mounted on said carrier means for engaging the upper surface of said screen means, a second brush means pivotally mounted on said carrier means for engaging the lower surface of said screen means and substantially beneath said first brush means, means for moving said carrier means and said first and second brush means along said screen means in a direction transverse to the slope of the screen means adjusting means interconnecting said first and second brush means for adjusting the pressure of said first and second brush means relative to the upper and lower surfaces of said screen means so that the pressure applied to the screen means by both brush means is substantially the same, receiver means located below said screen means for receiving filtered liquid passing therethrough, and means for returning the filtered liquid from said receiver means to said fish tank.

3,884,812
LIQUID TREATMENT APPARATUS
Hans Lindquist, Rotterdam, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.
Filed Dec. 13, 1973, Ser. No. 426,951
Int. Cl. C02c *1/12*
U.S. Cl. 210—220 **2 Claims**



1. An apparatus for circulating and aerating a body of water containing waste sludge comprising:
a continuous channel having a bottom and a pair of side walls;
upper and lower generally airfoil-shaped planes substantially horizontally disposed within said channel perpendicular to said side walls, each of said planes having a leading edge and a trailing edge with a camber therebetween;
said upper plane being disposed above said channel bottom and said lower plane being disposed adjacent to said channel bottom, with the cambers of said planes facing one another;
the trailing edge of said lower plane being disposed in front of the trailing edge of said upper plane and below the forward portion of said upper plane;
means for introducing air into said channel immediately adjacent to said lower plane trailing edge;
the height of each said plane being within the range of about 1/4 and 3/4 of the distance between said bottom of said channel and the top of said upper plane; and
the length of each said plane being from about 4 to 20 times greater than the height thereof.

3,884,813
SOLIDS CONCENTRATOR WITH A ROTOR HAVING PLOUGHS THEREON
James Donovan, Cambridge, and Alex Bagdasarian, Arlington, both of Mass., assignors to Artisan Industries Inc., Waltham, Mass.
Filed May 13, 1974, Ser. No. 469,627
Int. Cl. B01d *33/00*
U.S. Cl. 210—297 **10 Claims**



1. A dynamic concentrator for separating a filtrate and a concentrated slurry from a solids-containing fluid, said concentrator comprising (1) a housing characterized by a longitudinal axis and having an inlet for introducing a solids-containing fluid into said housing and an outlet for removing a concentrated slurry of solids therefrom; (2) at least two substantially parallel, coaxially spaced apart and relatively stationary filter means mounted within said housing between said inlet and said outlet, said filter means each comprising a filter chamber having at least one filtering surface with the interior of each filter chamber being in fluid communication with the exterior of said housing for the removal of filtrate from those chambers and filtering surfaces on said two filter means being in facing relation one to the other from filter means to filter means; (3) a rotor shaft extending coaxially through said housing and disposed to have a motor means connected thereto for imposing rotation thereon; (4) a rotor disc mounted to said rotor shaft to be rotated therewith coaxially with said filter means and located between opposite, facing filtering surfaces thereof to thereby provide a flow path for solids-containing fluid from said inlet to said outlet which extends across said filtering surfaces and from one side of said disc to the opposite side thereof passing around the peripheral outer edge of said disc between that edge and the interior

surface of said housing, and (5) at least one plough member extending outwardly from the peripheral, outer edge of said rotor disc into said flow path to deter accumulation of solids between said two filter means in the region defined radially between the interior surface of said housing and said outer edge of said rotor disc as said rotor shaft and disc are rotated and said plough member is rotated therewith.

3,884,814

APPARATUS FOR FRACTIONATING FLUIDS

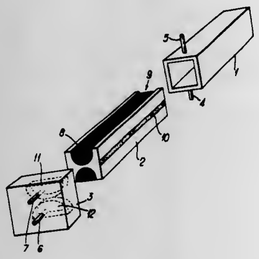
Bernard Vogt, and Michel Rochet, both of Rhone, France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed July 23, 1973, Ser. No. 381,427

Claims priority, application France, July 26, 1972, 72.26956; May 4, 1973, 73.16147

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **29 Claims**



1. Apparatus which can be used especially for fractionating fluid mixtures, said apparatus comprising, in combination:

a. a jacket;

b. a plurality of hollow fibres arranged in the shape of at least one U and positioned within the jacket;

c. a core supporting the hollow fibres and placed inside the branches of the U;

d. means defining at least one groove in which said hollow fibres are located;

e. means for fixing the fibres to one another at their ends, said means being firmly fixed to the core;

f. at least one fluid inlet passage formed in the jacket; and

g. at least one fluid outlet passage formed in the jacket.

3,884,815

OIL INTERCEPTORS FOR SEPARATING OIL FROM WATER BY GRAVITY

Jan Cornelissen, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

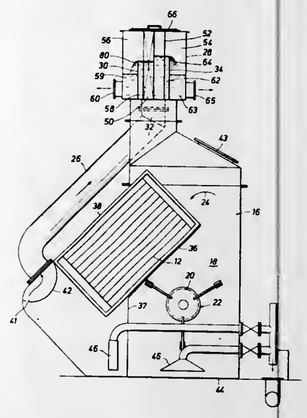
Filed Oct. 26, 1973, Ser. No. 410,279

Claims priority, application United Kingdom, Oct. 27, 1972, 49593/72; July, 1973, 34471/73

Int. Cl. B01d *21/00*

U.S. Cl. 210—521 **7 Claims**

1. Oil interceptor for separating oil from water by gravity comprising a closed interceptor vessel having an oil/water inlet, an overflow container mounted above said interceptor vessel, said overflow container having a cross-sectional area less than one-half that of said interceptor vessel, a dividing wall mounted in the overflow container dividing the interior thereof into an oil overflow compartment and a water overflow compartment, each of said compartments having an fluid inlet port and a fluid outlet port, an oil conduit operatively connecting one side of the interceptor vessel with the inlet port of the oil overflow compartment of said overflow container, a water conduit operatively connecting the other side of said interceptor vessel with the inlet port of the water overflow compartment of said overflow container, separate oil outlet wnd water outlet weirs mounted in said oil and said water overflow compartments of said overflow container and being connected respectively in fluid communication to said oil outlet port and said water outlet port of the overflow container of said interceptor vessel, the oil outlet weir and the water outlet weir being mounted closely adjacent to one another and at a position above the interceptor vessel, the edge of the oil weir being at a higher level than the edge of the water weir, and at least one of the weirs being of a curved configuration at its upper edge between the ends thereof.



3,884,816

METHOD AND APPARATUS FOR DETECTING DANGEROUS ARTICLES AND/OR PRECIOUS METALS

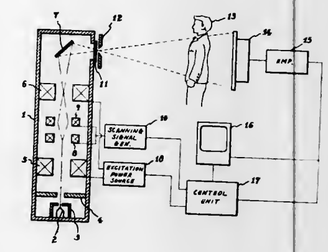
Kanjiro Takahashi, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

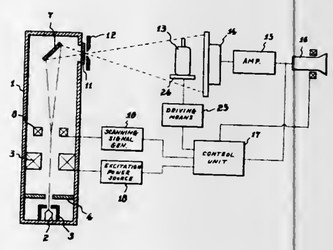
Filed Dec. 12, 1973, Ser. No. 426,638

Claims priority, application Japan, Dec. 19, 1972, 47-127365; Dec. 27, 1972, 48-2158

Int. Cl. G01n *23/04, 23/08, 23/10*

U.S. Cl. 250—359 **12 Claims**





1. A method for searching objects for metallic articles such as weapons or contraband comprising the steps for:

a. generating and accelerating an electron beam,

b. irradiating said electron beam on a target,

c. irradiating an object to be searched with an X-ray obtained by scanning said electron beam in coarse steps on said target,

d. detecting the X-ray transmitted to said object,

e. surveying the portion of the object where the X-ray absorption is comparatively high by means of said detected signal, and

f. obtaining a detailed X-ray transmission image of said portion of the object where the X-ray absorption is comparatively high.

3,884,817

IONIZATION CHAMBER

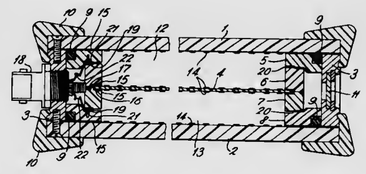
Phillip Harvey Jilbert, Tadley, England, assignor to National Research Development Corporation, London, England

Filed Aug. 1, 1972, Ser. No. 277,042

Claims priority, application United Kingdom, Aug. 11, 1971, 37799/71

Int. Cl. G01t *1/00*

U.S. Cl. 250—385 **5 Claims**



1. An ionisation chamber comprising housing means enclosing and defining an active volume, said housing means including walls having inner surfaces contacting the active volume, said walls comprising spaced apart circular discs formed of an insulating material having a mean atomic number approximating that of air, said circular discs having an electrically conducting material of an atomic number different from said mean atomic number approximating that of air formed on the inner surface thereof, said electrically conducting material being arranged on said circular discs inner surfaces as a pattern of lines in order to occupy only a small proportion of the area of said wall surfaces whereby the effect of the thickness of said electrically conducting material on the sensitivity of the ionisation chamber is minimized.

3,884,818

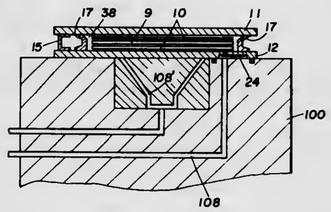
FILM CASSETTE FOR RADIOGRAPHIC APPARATUS

Chuji Tomita; Kouichi Shimizu, both of Tokyo; Shizuo Shima, and Tatsuhiro Ishizuka, both of Chiba, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Sept. 17, 1973, Ser. No. 397,815

Int. Cl. G03b *41/16*

U.S. Cl. 250—480 **8 Claims**



1. A cassette for use in radiographic apparatus, comprising: an upper lid and a lower lid, both comprised of a quadrilateral thin plate and having flat surfaces, said lower lid having an aperture extending therethrough;

a packing having a base portion fixed to said a flat surface of said lower lid, a projection extending from said base portion and a flexible lip having an upper portion overlaying a lower portion thereof and extending beyond said projection, a space being defined by said flat surfaces of the upper and lowerlids and also by said packing for containing a film and intensifying screens, said lower lid defining a passageway between said aperture and said space; and

valve means positioned within said aperture for selectively sealing said space from the external atmosphere and allowing the space to communicate with the external atmosphere, said valve means comprised of a valve seat, said valve seat defining lower and upper chambers in said aperture, a valve body positioned in said lower chamber, a shaft coupled to said valve body and upwardly extending therefrom into the upper chamber, a push button coupled to said shaft and housed in the upper chamber, and a coil spring disposed between said push button and said valve seat, said coil spring biasing said valve body against said valve seat.

3,884,819

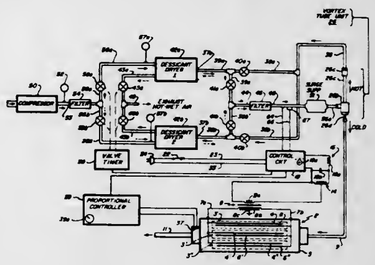
GAS COOLING AND DRYING SYSTEM FOR CORONA DISCHARGE OZONE GENERATING UNIT

Ronald A. Schultz, Berkeley, and Robert I. Tenney, Deerfield, both of Ill., assignors to Ozone Incorporated, Deerfield, Ill.

Filed Aug. 19, 1974, Ser. No. 498,845

Int. Cl. C01b *13/12;* **F25b** *9/02*

U.S. Cl. 250—533 **7 Claims**



1. In combination, a corona discharge ozone generating unit; means for cooling the corona discharge ozone generating unit comprising a vortex tube unit for receiving gas to be ozonized at a first inlet and separating the high energy gas molecules from the low energy gas molecules therein and delivering the resultant relatively cool gas molecules to a cool gas outlet therof and the relatively warm gas molecules to a warm gas outlet thereof; a main inlet for an oxygen containing gas to be ozonized; a drying unit providing for the flow in one direction or the other therethrough of gas to be dried and ozonized and including means for absorbing moisture from the gas flowing therethrough which must be periodically dried with warm gas, said gas drying unit having a first inlet at one end into which oxygen containing gas to be dried is to pass into the unit, an outlet for a de-moisturizing gas from which outlet drying gas passes from the unit, and an opening from whcih dried oxygen containing gas can exit from the unit or drying warm gas can enter the unit; conduit means forming a first passageway interconnecting said main inlet and said first inlet of said drying unit; valve means in said first passageway for selectively opening and closing said first passageway; conduit means forming a second passageway extending between said outlet for de-moisturizing gas of said drying unit and a discharge point therefor; second valve means for said second passageway for selectively opening or closing the same; conduit means forming a third passageway extending between

said opening in said drying unit from which dried oxygen containing gas can exit and said inlet of said vortex tube unit; third valve means for said third passageways for closing off the associated passageway leading to said inlet of said vortex tube unit when the opening of the associated drying unit acts as an entryway for de-moisturizing gas and for opening the same when the opening of the associated drying unit is to act as an exitway for dried oxygen containing gas; conduit means forming a fourth passageway extending from the warm air outlet of said vortex tube unit to a point of said third passageway on the side of said third valve means nearest said opening in said drying unit; foruth valve means for said fourth passageway for closing off the associated passageway when the opening in hte associated drying unit is to act as an exitway for dried gas to be ozonized and for opening the associated passageway when the opening of said drying unit acts as an entryway for de-moisturizing gas; and conduit means extending between the cool gas outlet of said vortex tube unit and the inlet to said ozone generating unit for feeding sufficient quantities of cold gas through said ozone generating unit to generate the required amount of ozone and to cool the surfaces within said ozone generating unit so that the temperature of the ozone produced does not reach an elevated temperature at which ozone substantially dissociates.

3,884,820
GREASE COMPOSITION

James E. Miller, Griffith, and Reuben A. Swenson, Whiting, both of Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Apr. 19, 1971, Ser. No. 135,473
Int. Cl. C10m *5/14, 5/10*
U.S. Cl. 252—41 **10 Claims**

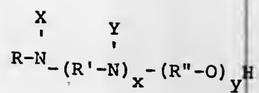
1. A grease resistant to separation by centrifugal force consisting essentially of a mineral lubricating oil having a viscosity in the range of from about 130 to about 200 SSU at 210°F containing as the sole thickening agent for said oil either (a) from about 6 to about 10 weight per cent of polyethylene having a number average molecular weight in the range of from about 1,500 to about 3,000 or (b) from about 6.5 to about 12 weight per cent of a mixture consisting of (i) from about 6 to about 10 weight per cent of polyethylene having a number average molecular weight in the range of from about 1,500 to about 3,000 and (ii) from about 0.5 to about 2 weight per cent of a lithium higher fatty acid soap.

3,884,821
POLYBUTENYL-ALKYLENE POLYAMINE-POLYALKANOL LUBRICANT ADDITIVE AND LUBRICATING COMPOSITIONS CONTAINING SAME

Edward F. Miller, Wappingers Falls, and Walter W. Hellmuth, Hopwell Junction, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 155,286, June 21, 1971, abandoned. This application Oct. 19, 1973, Ser. No. 408,226
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 R **7 Claims**

1. A lubricating oil composition comprising a major amount of a mineral lubricating oil and a dispersant amount of an oil-soluble ashless polybutenyl-alkylene polyamine-alkanol having the structural formula:



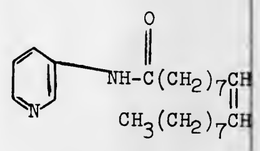
in which R is a polybutenyl radical having a molecular weight from 900 to 10,000, X and Y are H or $(R''—O)_y—H$ at least one of X or Y being $(R''—O)_y—H$, R' is a divalent hydrocarbyl radical having from 2 to 8 carbon atoms, R'' is a divalent hydrocarbyl radical having from 2 to 4 carbon atoms, x has a value from 1 to 6 and y has a value from 1 to 5.

3,884,822
LUBRICANT COMPOSITION CONTAINING 3-AMIDOPYRIDINE CORROSION INHIBITOR

Robert M. Gemmill, Jr., Pitman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed July 6, 1973, Ser. No. 377,002
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 A **7 Claims**

1. A lubricant composition comprising a major amount of a lubricating oil or grease containing, in an amount sufficient to inhibit metal corrosion, a 3-amidopyridine having the structure:



3,884,823
CERAMIC PERMANENT MAGNET

Ronald L. Clendenen, Orinda; Eugene E. Olson, Oakland, and Charles M. Schlaudt, Berkeley, all of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Sept. 27, 1971, Ser. No. 183,896
Int. Cl. C04b *35/00*
U.S. Cl. 252—62.63 **3 Claims**

1. A permanent ceramic magnet having a normal coercive force of not less than 3600 oersteds and a remanence of not less than 3600 gauss consisting essentially of a magnetoplumbite of the formula $MO.nFe_2O_3$ wherein M is strontium and n has a value of from 3 to 6.5; and having a density of not less than 95% of the theoretical maximum, an average grain size of less than 2.0 microns, not less than 90% of its grains less than 2.5 microns in diameter and a crystallite orientation of not less than 95%.

3,884,824
METHOD AND COMPOSITION OF MIXED $BASO_4$ AND $SRSO_4$ FOR POLISHING A PHOTOCONDUCTOR SURFACE

Kazunori Matsuo, Tokyo; Kohji Suzuki, and Katutsohi Endo, both of Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1973, Ser. No. 326,561
Claims priority, application Japan, Feb. 17, 1972, 47-16724
Int. Cl. C09g *1/02*; **C11d** *7/50*
U.S. Cl. 252—164 **5 Claims**

1. Method for polishing a surface of photoconductor consisting essentially of amorphous selenium with polishing material, said polishing material comprising a mixture of strontium sulfate and barium sulfate.

4. Polishing materials for use with photoconductive amorphous selenium, comprising a mixture of strontium sulfate and barium sulfate in the ratio of from 15:1 to 1:15 parts by weight, the particle size of the strontium sulfate and barium sulfate being from 0.1 μ to 30 μ.

3,884,825
IMAGING COMPOSITION

Nero R. Lindblad, Palmyra; Gordon E. Johnson, Webster, and James H. Sharp, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 3, 1972, Ser. No. 277,542
Int. Cl. G03g *9/02*
U.S. Cl. 252—62.1 **13 Claims**

1. A developer composition comprising particles, said particles including finely divided discrete particles having a size of less than about 30 microns of electrostatographic electroscopic toner material and a minor proportion based upon the weight of said toner material of discrete particles having a size of from about 0.5 to about 20 microns of at least one finely divided, solid additive compound selected from the group consisting of phthalic acid, isophthalic acid, terephthalic acid, the metal and ammonium salts thereof.

3,884,826
THIXOTROPIC CLEANING AGENT FOR HARD CONTACT LENSES

Russell E. Phares, Jr., San Jose, and Rebecca F. Nite, Sunnyvale, both of Calif., assignors to Barnes-Hind Pharmaceuticals, Inc., Sunnyvale, Calif.

Filed July 20, 1973, Ser. No. 381,179
Int. Cl. C11d *3/48*
U.S. Cl. 252—106 **8 Claims**

1. An aqueous thixotropic composition for cleaning hard contact lenses consisting essentially of:
   - from 0.1 to 20 weight percent of an anionic or nonionic detergent;
   - from 0.1 to 5 weight percent and in an amount sufficient to form a gel of a thixotropic gelling agent;
   - from 0.001 to 1 weight percent of a sterilizing agent, and water.

3,884,827
PROCESS FOR PREPARING QUANINE

Norio Asai, Chiba, Japan, assignor to Sagami Chemical Research Center, Tokyo, Japan

Division of Ser. No. 205,764, Dec. 7, 1971, Pat. No. 3,857,842. This application May 31, 1973, Ser. No. 365,676
Claims priority, application Japan, Dec. 9, 1970, 45-108579; Dec. 9, 1970, 45-108578
Int. Cl. C07d *57/40*
U.S. Cl. 260—252 **1 Claim**

1. A process for preparing guanine which comprises the steps of hydrolyzing 4(5)-aminoimidazole-5(4)-carbonitrile with hydrochloric acid at a temperature of from 50° to 108°C to produce the corresponding 4(5)-aminoimidazole-5(4)-carboxyamide and reacting the resulting carboxyamide with guanidine at a temperature of from 80° to 170°C in the absence of a solvent.

3,884,828
PROPELLANTS AND REFRIGERANTS BASED ON TRIFLUOROPROPENE

Anthony J. Butler, Greensboro, N.C., assignor to Dow Corning Corporation, Midland, Mich.

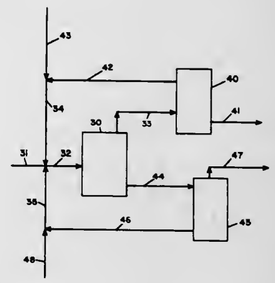
Filed Oct. 15, 1970, Ser. No. 81,123
Int. Cl. C09k *3/30, 3/06*; **F25**
U.S. Cl. 252—305 **10 Claims**

1. In an aerosol product which consists essentially of an active ingredient, a solvent and a propellant in a container, the improvement comprising employing trifluoropropene as 1 to 100 percent by weight of the propellant, the balance of the propellant being selected from the group consisting of fluorodichloromethane, difluorochloromethane, fluorotrichloromethane, difluorodichloromethane, 1,2,2-trifluoro-1,1,2-trichloroethane, 1,1,2,2-tetrafluoro-1,2-dichloroethane, 1,1,2,2,2-pentafluoro-1-chloroethane, 1,1-difluoro-1-chloroethane, 1,1-difluoroethane, octafluorocyclobutane, methylene chloride, 1,1,1-trichloroethane, tetrafluoroethylene, vinyl chloride, propane, n-butane, isobutane, ethylene, dimethyl ether, nitrogen, nitrous oxide, carbon dioxide and mixtures thereof.

3,884,829
METHODS AND COMPOSITIONS FOR REFINING BITUMINOUS FROTH RECOVERED FROM TAR SANDS

James L. Moyer, New Castle, Del., assignor to Great Canadian Oil Sands, Ltd., Toronto, Canada

Filed Nov. 14, 1972, Ser. No. 306,475
Int. Cl. B01d *17/04*
U.S. Cl. 252—331 **10 Claims**



1. An improved diluent suitable for improving the processability of bituminous froth consisting of:
   a. 20 to 80 percent petroleum naphtha characterized as boiling in the range of 150° to 500° F. and containing 5 to 50 percent aromatic hydrocarbons, 0 to 50 percent olefins, 50 to 95 percent saturated hydrocarbons and
   b. 20 to 80 percent of a C_3 to C_7 ketone and mixtures thereof.

3. A method for upgrading emulsion containing bituminous froth containing water and mineral impurities which comprises diluting the froth with petroleum naphtha containing 10 to 50 percent by volume of a C_3 and C_7 ketone and thereafter centrifuging the diluted froth and recovering a froth product free of emulsions and substantially reduced in water and mineral matter.

3,884,830
CONTROLLED SELECTIVITY ACTIVATED CARBON

Richard John Grant, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 132,217, April 7, 1971, abandoned. This application Oct. 2, 1973, Ser. No. 402,682
Int. Cl. C01b *31/10*
U.S. Cl. 252—421 **10 Claims**

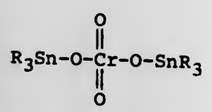
1. Method of making a molecular sieve in granular form, comprising agglomerating pulverized bituminous coal or charred naturally-occurring carbonaceous material with pitch, crushing the agglomerations thereof, activating the granular material thus obtained by treating it in a heating zone at from 300°C to 400°C for a period of at least 120 minutes with about 5 to 18 liters of air per gram of carbon, subsequently calcining it at a temperature of 850°C to 960°C for a period of 5 to 20 minutes, and recovering a granular, highly activated carbon having an iodine number of at least 450 and a carbontetrachloride number of no greater than 2.

3,884,831
CATALYST SYSTEM AND METHOD FOR IMPROVING THE LEACHING OF ELEMENTS SUCH AS COPPER FROM THEIR ORES USING THE CATALYST SYSTEM
Stanley H. Bloom, 6747 Hillwood Ln., Dallas, Tex. 75240
Continuation of Ser. No. 131,553, April 5, 1971, abandoned, which is a continuation-in-part of Ser. No. 749,564, Aug. 2, 1968, abandoned. This application Feb. 16, 1973, Ser. No. 333,321
Int. Cl. C22b *3/00*
U.S. Cl. 252—429 R **5 Claims**

1. A catalyst system for addition to an aqueous mother liquor solution to improve the leaching of elements such as cobalt, nickel, zinc, copper, uranium, cadmium, tin, thorium or silver from their ores which comprises, per ton of ore and about 2200 pounds of mother liquor, a chloride ion source selected from the group consisting of ammonium chloride, hydrogen chloride, lithium chloride, potassium chloride, and sodium chloride, a nitrate ion source selected from the group consisting of ammonium nitrate, nitric acid, lithium nitrate, potassium nitrate and sodium nitrate, and an ammonium ion source selected from the group consisting of ammonium sulphate, ammonium sulfite, ammonium fluoride and ammonium bifluoride, the amounts of the chloride, nitrate and ammonium ion sources being present in amounts sufficient to provide in the mother liquor from about 0.0022 lbs. to about 200 lbs. of each ion, with the proviso that the total amount of the ammonium ions may be provided by a member selected from the group consisting of ammonium chloride, ammonium nitrate and mixtures thereof, an anionic hydrophile selected from the group consisting of sodium dodecylatedoxydibenzene disulfonate, sodium lauryl sulphate, sodium N-alkylcarboxy sulfosuccinate, sodium alkylsulfosuccinate, polyalkanolamine-fatty acid condensate, sodium alkylbiphenyl sulfonate, sodium alkylnaphthalene sulfonate and sodium dodecylbenzene sulfonate, and present in an amount of from about 0.02 lbs. to about 20 lbs., and a polar solvent present in an amount sufficient to allow dissolution therein of the components of the catalyst system.

3,884,832
ORGANOTIN CHROMATE POLYMERIZATION CATALYST
Thomas J. Pullukat, Hoffman Estates; Mitsuzo Shida, and Robert L. Gillilan, both of Barrington, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.
Filed Feb. 4, 1974, Ser. No. 439,248
Int. Cl. B01j *11/84*
U.S. Cl. 252—429 C **16 Claims**

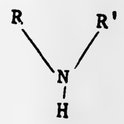
1. A catalyst system for the polymerization of at least one 1-olefin consisting essentially of a mixture of (1) a support which is a finely divided insoluble inorganic support material of the class consisting of silica, alumina, zirconia, thoria and mixtures thereof mixed with a compound of the class consisting of alkyl esters containing 1 to about 7 carbon atoms in the alkyl group and halides of titanium, zirconium, nickel and mixtures thereof in amounts to give about 0.5–10% metal on the support, and (2) an organotin chromate essentially of the formula



and (3) cocatalytic amounts of an alkyl aluminum compound of the formula R_aAlX_b in each of which formula each R is an individually selected hydrocarbon radical containing from 1 to about 14 carbon atoms, X is a member of the class consisting of halogen, hydrogen and alkoxy, *a* is an integer from 1 to 3 inclusive and *b* is an integer from 0 to 2 inclusive, with the sum of *a* and *b* being 3, the said system having an aluminum-chromium ratio of at least 2 to 1.

3,884,833
ZERO-VALENT NICKEL COMPOUND-AMINE CATALYST
Guenther Wilke, and Paul Heimbach, both of Mulheim, Ruhr, Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim/Ruhr, Germany
Continuation of Ser. No. 816,159, April 7, 1969, abandoned, which is a continuation of Ser. No. 582,224, Sept. 27, 1966, abandoned. This application May 11, 1972, Ser. No. 252,395
Claims priority, application Germany, Sept. 28, 1965, 24437
Int. Cl. B01j *11/84*
U.S. Cl. 252—431 N **4 Claims**

1. A composition comprising at least one carbonyl free zero-valent nickel complex compound having 1 to 4 electron donor constituents selected from the group consisting of compounds containing non-benzenoid carbon-carbon unsaturation, alkyl phosphites, aryl phosphites, alkyl phosphines and aryl phosphines, and morpholine or an amine of the formula



wherein R is cycloalkyl or aryl, R′ is hydrogen, alkyl, cycloalkyl or aryl or R and R′ taken together form an alkylene group which, together with said N form a closed ring, wherein said amine is present in said composition in a proportion in excess of any amine bondable to said nickel in said zero-valent complex, said composition containing free amine.

3,884,834
PROCESS CATALYST
Paul E. Eberly, Baton Rouge; Neville L. Cull, Baker, both of La.; Fred J. Buchmann, deceased, late of Baton Rouge, La., and Cordelia Atkeson Buchmann, legal representative, Baton Rouge, La., assignors to Exxon Research & Engineering Company, Linden, N.J.
Continuation-in-part of Ser. No. 183,381, Sept. 24, 1971, Pat. No. 3,758,600. This application June 11, 1973, Ser. No. 368,821
Int. Cl. B01j *11/74*
U.S. Cl. 252—439 **9 Claims**

1. A catalyst comprising from about 0.5 to about 30 wt. %, based on total catalyst, of an oxide or sulfide or mixture thereof of chromium, said chromium being deposited upon a support consisting essentially of a mixture of from about 15 to 50 wt. % titania and at least about 20 wt. % alumina, each based upon the weight of the support.

3,884,835
CRYSTALLINE SILICA COMPOSITIONS
David E. W. Vaughan, Ellicott City, Md., assignor to W. R. Grace & Co., New York, N.Y.
Filed Feb. 9, 1973, Ser. No. 331,290
Int. Cl. B01j *11/36, 11/40, 11/06*
U.S. Cl. 252—451 **17 Claims**

2. The method of producing a crystalline silica comprising forming an aqueous alkali silica mixture wherein the ratio of alkali oxide to silica is in the range of 0.3 up to 7, heating said mixture at about 100°C to 250°C for from about 10 up to 40 days, and recovering a crystalline silica.

5. The method as in claim 2 wherein said mixture contains a promotional metal oxide selected from the group consisting of Group 3A metal oxides, Group 5B metal oxides, Group 6B metal oxides and mixtures thereof.

3,884,836
COMPOSITION FOR CATALYTIC DECOMPOSITION OF HYDROGEN
Dieter Kühl, Rathsberger, Germany, and Manfredo Marchetto, Viale Oleandri, Italy, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Feb. 8, 1973, Ser. No. 330,642
Claims priority, application Germany, Feb. 16, 1972, 2207281
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 R **11 Claims**

1. A mixed-oxide catalyst for the decomposition of hydrogen peroxide, comprising oxides of the following metals in the following metal proportions between about 20 and 30% by weight of manganese, 4 and 7% by weight of cobalt, 12 and 16% by weight of copper, 10 and 13% by weight of silver, and 40 and 50% by weight of lead.

3,884,837
CATALYST CONTAINING A PEROVSKITE-LIKE MANGANITE
Joseph Peter Remeika, Warren, and Rudolf Johannes H. Voorhoeve, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 2, 1973, Ser. No. 375,948
Int. Cl. B01j *11/06*
U.S. Cl. 252—462 **6 Claims**

1. Catalyst containing an active ingredient consisting essentially of a perovskite-like manganite of at least one rare earth element selected from the group consisting of La, Pr and Nd in which the said rare earth element is partially replaced, characterized in that the said manganite is of a composition represented by the atom formula $RE_{1-x}M_xMnO_3$ in which RE is at least one element selected from the group consisting of La, Pr, and Nd; M is at least one element selected from the group consisting of Na, K, and Rb, in which *x* is from 0.1 to 0.4 and in which the amount of any of the indicated cations may be reduced by up to about 15 atom percent to accommodate vacancy structures.

3,884,838
RUTHENIUM-REDUCED AMORPHOUS TUNGSTEN OXIDE CATALYST
Donald Kingsley Fleming, Park Ridge, Ill.; Sarabjit Singh Randhava, Hartsdale, N.Y., and Elias Humberto Camara, Hickory Hills, Ill., assignors to Institute of Gas Technology, Chicago, Ill.
Continuation-in-part of Ser. No. 68,632, Sept. 1, 1970, Pat. No. 3,787,468. This application Oct. 4, 1973, Ser. No. 403,538
Int. Cl. B01j *11/08*
U.S. Cl. 252—470 **4 Claims**

1. A catalyst composition consisting essentially of ruthenium, having from 0 – 50 percent of said ruthenium alloyed with platinum, and reduced amorphous oxide of tungsten.

3,884,839
NEUTRON ATTENUATING CONSTRUCTION MATERIAL
Charles K. Bon, and Robert J. Moolenaar, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Apr. 16, 1971, Ser. No. 134,887
Int. Cl. C04b *41/24;* **G21f** *C04*
U.S. Cl. 252—478 **3 Claims**

1. A body suitable for building construction comprising an expanded clay porous body impregnated with at least from about 10 to about 50 weight percent of at least one inorganic neutron absorber selected from the group consisting of an alum having a melting temperature within the range of about 50°C to about 400°C, boric acid, hydrated ammonium and alkali metal borates, and hydrated sodium silicate, said impregnated body characterized by light weight and absorption of neutron flow.

3,884,840
GRAPHITE-PITCH ELECTRODE PASTE
Andrezej Antoni Florian Romanski; Michael John Allen; John Malcolm Fletcher; Ian Burnett Laing, and Harry Markham, all of Sheffield, England, assignors to British Steel Corporation, London, England
Filed Apr. 10, 1973, Ser. No. 349,789
Claims priority, application United Kingdom, Apr. 27, 1972, 19666/72; Dec. 9, 1972, 58717/72
Int. Cl. H01b *1/106;* **H01j** *1/88*
U.S. Cl. 252—511 **4 Claims**

1. A carbon electrode paste, the paste comprising a mixture of pitch and graphite, the graphite being of particle size 98% below 10 microns, the mixture being sufficiently viscous to be applied as a paste but to set and be substantially nonsticky at normal ambient temperatures, the viscosity of the pitch lying in the range 10 to 150,000 poises at 15.5°C, and the proportion of graphite powder to pitch lying in the range of 10 to 40 percent by weight.

3. Carbon electrodes coated with a paste comprising pitch and graphite powder on their faces which are to be brought together when joining two electrodes, the paste being nonsticky at ambient temperatures but melting to form an electrically conductive bond when two electrodes are joined together and heated to a high temperature, the viscosity of the pitch lying in the range 10,000 to 150,000 poises at 15.5°C, the proportion of graphite powder to pitch lying in the range of 10 to 40 percent by weight, and the particle size of the graphite being about 98 percent below 10 microns.

4. A method of joining two parts of a carbon electrode comprising coating the end faces of the two parts, which are subsequently to be brought together, with a paste comprising pitch having a viscosity between 10,000 and 150,000 poises at 15.5°C and graphite powder, the proportion of the graphite powder being 10 to 40 percent by weight of the pitch and the graphite powder having a particle size being about 98 percent below 10 microns, the paste being sufficiently viscous to be applied as a paste but to set on said end faces and be substantially non-sticky at room temperatures and, at a subsequent time, bringing the parts together with their end faces in contact, placing the electrode in a furnace and heating so that the paste melts and carbonises to form an electrically conducting bond between the two parts.

3,884,841
2-N-BUTYL 4,4,6-TRIMETHYL-1,3 DIOXANE PERFUME
Jan Th. M. F. Maessen, and David DeRijke, both of Naarden, Netherlands, assignors to Naarden International, N.V., Naarden-Bussum, Netherlands
Filed Mar. 29, 1974, Ser. No. 456,317
Claims priority, application Netherlands, Apr. 18, 1973, 7305487
Int. Cl. C11b *7/00*
U.S. Cl. 252—522 **1 Claim**

1. A perfume composition comprising from 5 to 16% of 2-n-butyl-4,4,6-trimethyl-1,3-dioxane in a perfume carrier.

3,884,842

PYRAZINE DERIVATIVE PERFUME COMPOSITIONS

Alan Bramwell, Cottenham; John William Kidman Burrell; Peter Ward, both of Ashford, and Alfred Hagemann, Folkestone, all of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 43,166, June 3, 1970, abandoned. This application Feb. 4, 1974, Ser. No. 439,181

Claims priority, application United Kingdom, June 10, 1969, 29388/69

Int. Cl. A61k *7/00*

U.S. Cl. 252—522 **1 Claim**

1. A perfume composition consisting essentially of at least one known perfume ingredient selected from the group consisting of odoriferous aldehydes, odoriferous alcohols, odoriferous ketones and odoriferous esters and at least one alkoxyalkylpyrazine selected from the group consisting of 2-methoxy-3-sec.butylpyrazine, 2-methoxy-3-isobutylpyrazine and 2-n-propoxy-6-methylpyrazine in an amount varying from about 0.001 to about 1% by weight of the perfume ingredients.

3,884,843

ALKYL MONOMETHYL-RINGSUBSTITUTED-DIACETOXY-BENZOATE PERFUME COMPOSITIONS

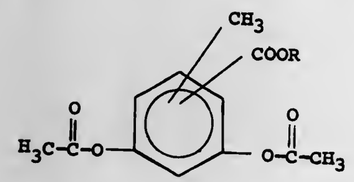
Kurt Kulka, New York, and Teodosij Zazula, Rego Park, both of N.Y., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Filed Jan. 31, 1974, Ser. No. 438,248

Int. Cl. C11b *9/00*

U.S. Cl. 252—522 **10 Claims**

1. A perfume composition comprising at least 1% by weight of an alkyl monomethyl-ringsubstituted-diacetoxy-benzoate and at least 1% by weight of an odoriferous perfume component, said alkyl monomethyl-ringsubstituted-diacetoxy-benzoate having the formula:



in which R is methyl or ethyl.

3,884,844

PROCESS FOR FORMING FOAMED POLYESTER RESINS

Mark Plunguian, 461 W. Chestnut Hill Rd., Newark, Del. 19711, and Charles E. Cornwell, 7104 Marian Dr., Alexandria, Va. 22307

Filed Mar. 11, 1974, Ser. No. 449,593

Int. Cl. C08g *53/10*

U.S. Cl. 260—2.5 N **6 Claims**

1. A process for producing a cured cellular structure in a composition comprising (a) an unsaturated polyester formed by condensing at least one dicarboxylic acid containing α, β-ethylenic unsaturation with a dihydric alcohol, (b) an α, β-ethylenically unsaturated copolymerizable monomer, (c) a blowing agent, and (d) a nucleating agent, characterized by carrying out the copolymerization reaction under subatmospheric pressure at a range of about 180 to 50 Torr.

3,884,845

POLYCATIONIC INTERFERON INDUCER

David L. Steward, Carmel, Ind., and Wen-Hong Tong, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 382,975, July 26, 1973. This application Jan. 2, 1974, Ser. No. 430,308

Int. Cl. C08g *33/08*

U.S. Cl. 260—2 EN **4 Claims**

1. A condensation polymer of polyethylenimine with pentachloropyridine wherein the gram atomic ratio of polyethylenimine nitrogen to pentachloropyridine nitrogen is from about 2:1 to about 8:1 and the molecular weight is about 600 to about 60,000.

3,884,846

PROCESS FOR PRODUCING MATERIALS WHICH COMPLEX HEAVY METALS IN LIQUID

Susumu Otsuki; Isao Miyanohara; Norimasa Mizui, and Hideo Kawamura, all of Shin Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed May 17, 1973, Ser. No. 361,313

Claims priority, application Japan, May 23, 1972, 47-50376; May 30, 1972, 47-53010

Int. Cl. C08f *27/08, 27/02*

U.S. Cl. 260—2.2 R **12 Claims**

1. A process for the production of a heavy metal complexing material which comprises reacting a reaction product from the partial dehydrochlorination reaction of polyvinylchloride from which 5 –90% of its chlorine content is removed, with at least one amine reagent selected from the group consisting of alkylamines, alkylpolyamines, and hydroxyamines.

3,884,847

PROCESS FOR THE PREPARATION OF SO-CALLED COLD-CURED FLEXIBLE POLYURETHANE

Pierre Pruvost, Lyon, and Jacques Cluchat, Saint-Cord, both of France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed July 19, 1973, Ser. No. 380,693

Claims priority, application France, July 20, 1972, 72.26231

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AH **5 Claims**

1. Process for the production of cold-cured flexible polyurethane foams by pouring into a mould, a foamable composition that will react in the mould to form a flexible polyurethane foam without external application of heat, closing the mould, forming the foam and releasing the foam from the mould, wherein the foamable composition contains 0.1 to 5% of its weight of an organosilicon compound which is a compound of the general formula:

$$(T)_a Si[OSi(CH_3)R'_2]_{4-a} \qquad F_1$$

in which each symbol R', which may be the same or different, represents a hydrogen atom, a monovalent hydrocarbon group of 1 to 8 carbon atoms, or a monovalent halogenohydrocarbon group of 1 to 3 carbon atoms; each symbol T, which may be the same or different, represents a hydrogen atom, an alkyl radical with 1 to 15 carbon atoms, a halogenalkyl radical with 1 to 3 carbon atoms, an alkenyl radical with 2 to 4 carbon atoms or a cycloaliphatic radical with 5 to 6 carbon atoms in the ring and a represents zero, 1 or 2.

3,884,848

MANUFACTURE OF MEMBRANE-FREE NONLUSTROUS POLYURETHANE FOAM

Michael A. Ricciardi, Conyngham; Michael L. Cordora, Exeter, both of Pa., and David Smudin, Piscataway, N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 415,609, Nov. 14, 1973, abandoned. This application Jan. 7, 1974, Ser. No. 431,512

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 BD **11 Claims**

1. In a process for the preparation of a flexible cellular solid urethane polymer from a reaction mixture including a polyol, an organic polyisocyanate, a blowing agent and a hydrophilic organsilicon foam-stabilizing emulsifier-surfactant designed and adapted for use in the preparation of urethane polymer foam from a polyether polyol and an organic polyisocyanate, the improvement which comprises employing as the polyol reactant (1) a polyether polyol or (2) a polyester polyol admixed with at least two percent by weight of a polyether polyol, based upon the weight of the mixture of polyester polyol and polyether polyol, and including in the reaction mixture at least one ester of the formula (RCOO)n R′ in a suitable proportion whereby a nonlustrous, substantially membrane-free foam is obtained, R and R′ in the preceding formula being alkyl or alkenyl groups having from one to 30 carbon atoms, at least one of R and R′ having at least three carbon atoms, and n being an integer from 1 to 3, with the proviso that when n is one at least one of R and R′ has at least eight carbon atoms.

3,884,849

FLAME RETARDANT FLEXIBLE URETHANE FOAMS

Robert A. Molbert, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Dec. 26, 1973, Ser. No. 427,880

Int. Cl. C08g *22/46, 51/56, 51/62*

U.S. Cl. 260—2.5 BB **12 Claims**

1. In the production of a flexible or semi-flexible low density, flame retardant polyurethane foam using the one-shot or prepolymer process by the reaction of (A) a polyetherpolyol having from two to four hydroxyl groups and having a molecular weight of from about 1,000 to 10,000, (B) an organic polyisocyanate and (C) a blowing agent comprising water in admixture with (D) a surfactant, (E) a catalyst, (F) from about 1 to 50 parts by weight per 100 parts by weight of said polyol of a finely divided, solid chlorine-containing polymeric resin having an intrinsic viscosity of from about 0.25 to 2.5, (G) finely divided zinc oxide in an amount of from about 0.1 to 10 parts by weight per 100 parts by weight of said polyol, and (H) finely divided antimony trioxide in an amount of from about 0.5 to 15 parts by weight per 100 parts by weight of said polyol, the improvement comprising incorporating in said formulation prior to foaming a zinc salt of an organic monocarboxylic acid, said salt having from 1 to 25 carbon atoms in each acid moiety of said salt, and said salt being used in an amount of from about 0.01 to 0.90 part by weight, computed as metallic zinc, per 100 parts by weight of total polyol, to prevent or reduce discoloration of said foam during the production of the same.

3,884,850

CONTINUOUS ATMOSPHERIC DEPOLYMERIZATION OF POLYESTER

Henry S. Ostrowski, 3729 Country Ridge Rd., Charlotte, N.C. 28211, assignor to Fiber Industries, Inc., Charlotte, N.C.

Filed Feb. 13, 1970, Ser. No. 11,221

Int. Cl. C07c *69/82*

U.S. Cl. 260—2.3 **9 Claims**

1. A process for continuously depolymerizing high molecular weight linear polyester scrap said polyester being the polycondensation product of a dihydric alcohol and a dicarboxylic acid comprising dissolving said polyester scrap at an elevated temperature in a solvent which is liquid at the dissolving temperature, said solvent being selected from the group consisting of monomeric ester, bisester, low molecular weight esters and oligomers of said high molecular weight polyester to form a depolymerization mixture, continuously adding with said scrap polyester, dihydric alcohol corresponding to the dihydric alcohol of said polyester scrap in a stoichiometric excess sufficient to produce the desired degree of depolymerization to at least an oligomer, effecting said depolymerization under atmospheric pressure at a temperature above the boiling point of said dihydric alcohol but below the melting point of said polyester and continuously recovering lower molecular weight depolymerizate.

3,884,851

PRIMER FOR TREATING METAL SURFACES

Woodrow E. Kemp, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 64,613, Aug. 17, 1970, abandoned, and a continuation-in-part of Ser. No. 785,358, Dec. 19, 1968, abandoned. This application May 19, 1972, Ser. No. 255,128

Int. Cl. C08c *13/00;* **C08g** *41/04*

U.S. Cl. 260—3.3 **10 Claims**

6. A coating composition for the priming of a metal surface, said coating composition consisting essentially of, by weight:

a. 1 part chlorinated natural rubber having about 50 to 67% by weight total chlorine;

b. from 1/18 to 1 part of a polyamide resin that is the condensation product of a polyalkylene-polyamine and an unsaturated fatty acid; and

c. from 1 to 3 parts of an inert volatile solvent that has an evaporation rate between the evaporation rate of toluene and high flash naphtha and that dissolves both said chlorinated rubber and polyamide resin.

3,884,852

ACRYLIC COATING COMPOSITION FOR FINISHING FLEXIBLE SUBSTRATES

Ronald J. Sheppard, Flushing, Mich., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 285,094, Aug. 30, 1972, Pat. No. 3,824,397. This application May 9, 1974, Ser. No. 468,481

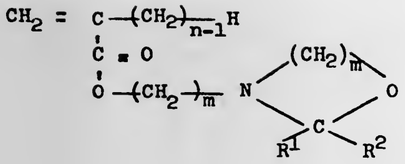
Int. Cl. C08b *21/08;* **C08f** *37/18;* **C03f** *37/06;* **C08f** *45/38*

U.S. Cl. 260—17 R **5 Claims**

1. A coating composition which comprises 40 to 60% by volume, based on the total volume of the coating composition of Composition I and correspondingly, 60 to 40% by volume, based on the total volume of the coating composition of Composition II; wherein Composition I consisting essentially of 10–50% by weight of film-forming binder and correspondingly, 90–50% by weight of an organic solvent for the binder wherein the binder consists essentially of

1. 35–65% by weight, based on the weight of the binder, of a copolymer consisting essentially of the reaction product of 80–90% by weight of methyl methacrylate and correspondingly, 10–20% by weight of an alkyl acrylate or an alkyl methacrylate having 2–12 carbon atoms in the alkyl groups;

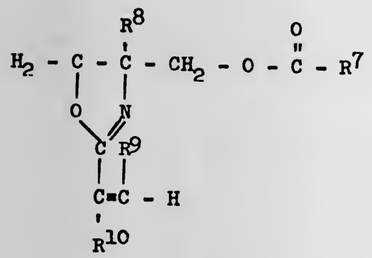
2. 5–20% by weight, based on the weight of the binder, of a copolymer consisting essentially of the reaction product of 85–95% by weight of methyl methacrylate and 5–15% by weight of polymerized adhesion promoting monomer of the formula



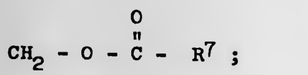
wherein *n* is 1–2, *m* is 2–3 and R^1 and R^2 are selected from the group consisting of hydrogen, phenyl, benzyl, an alkyl group having 1–12 carbon atoms, or in combination are 2,2-spirocyclohexyl; and

3. 30–50% by weight, based on the weight of the binder, of an organic plasticizer of a phthalate ester or an alkyd resin; and Composition II comprises a pigmented coating composition containing 0.1–20% by weight pigment and 10–50% by weight, based on the weight of the coating composition, of a film-forming binder which consists essentially of

1. 40–60% by weight, based on the weight of the film-forming binder, of an acrylic oxazoline polymer which consists essentially of
   a. 30–70% by weight of methyl methacrylate;
   b. less than about 35% by weight of an alkyl acrylate methacrylate having 2–12 carbon atoms in the alkyl group;
   c. less than about 10%, by weight of acrylonitrile;
   d. 15–35% by weight of a compound of the formula



wherein R^7 is a saturated hydrocarbon group of 3–21 carbon atoms or an unsaturated hydrocarbon group of 3–21 carbon atoms; R^8 is H, an alkyl group having 1–4 carbon atoms or



R^9 is H, an alkyl group having 1–4 carbon atoms; R^{10} is a saturated hydrocarbon group having 2–20 carbon atoms or an unsaturated hydrocarbon group having 2–20 carbon atoms;

2. 60–40% by weight, based on the weight of the binder, of cellulose acetate butyrate having a viscosity of 0.5–20 seconds measured at 25°C. according to AST-M–D–1343–56 and a butyryl content 30–55 by weight; and

3. 0–10% by weight, based on the weight of the binder, of an organic plasticizer of a phlhalate ester on an alkyd resin.

3,884,853

ALKALI-CURABLE CATIONIC/ANIONIC STARCH FOR PAPER COATING BINDERS

Jerrel L. Zimmerman, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Nov. 14, 1973, Ser. No. 415,913
Int. Cl. C08b *25/02*
U.S. Cl. 260—17.3 **16 Claims**

1. A coating color composition for paper and paperboard substrates comprising:

a. a coating clay comprising 20–98 parts, dry substance basis, of the total solids of a coating color having 35–68% solids;

b. 1–40 parts, dry substance basis, of the dry substance basis weight of the clay of a cooked amphoteric (cationic-anionic) starch derivative having a cationic group degree of substitution in the range from 0.0075 to 0.05, said cationic groups being derived by the reaction of the starch with chlorohydroxypropyl quaternary ammonium chloride, said amphoteric starch derivative having an anionic group degree of substitution ranging from 0.018 to 0.0705, said anionic groups being derived from the reaction of the quaternary ammonium starch ether with maleic anhydride using triethylamine catalyst; and the ratio of cationic groups to anionic groups is such that the net anionic group degree of substitution is at least equal to the net cationic group degree of substitution; and

c. 1–40 parts, dry substance basis, of a latex binder based on the total weight, dry substance basis of the clay, provided that the total weight of said latex is at least equal to the total weight of the amphoteric starch, dry substance basis; said coating color composition being capable of self-crosslinking insolubilization due to the presence of maleic anhydride.

3,884,854

PROCESS FOR PREPARING POLYETHYLENE TEREPHTHALATE OF IMPROVED COLOR

John J. Ventura, Eatontown, and Philip H. Ravenscroft, Edison, both of N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

Filed June 16, 1969, Ser. No. 833,805
Int. Cl. C08g *17/013*
U.S. Cl. 260—22 CA **7 Claims**

1. A process for preparing polyethylene terephthalate of improved color, as determined by the difference between the luminance value and yellowness index of the polymer, wherein dimethyl terephthalate is reacted with ethylene glycol to form an ester of ethylene glycol and terephthalic acid or where terephthalic acid is reacted with ethylene glycol to form an ester of terephthalic acid and ethylene glycol wherein the resulting ester is polycondensed in the presence of a catalytic amount of a polycondensation catalyst consisting of

a. an antimony compound having one of the following formulae:

$$Sb(Y)_n \text{ or } Y_3Sb=O; \text{ and}$$

b. an arsenic compound having one of the following formulae:

$$As(Y)_n,\ As_2O_3,\ As_2O_5 \text{ or } Y_3As{=}O,$$

wherein *n* is 3 or 5 and each Y is individually selected from the group of monovalent radicals consisting of —R, —OOCR, —OR, —SR, OOCR'SH and SR'COOR wherein R is in turn selected from the group consisting of alkyl, cycloalkyl, aryl, aralkyl and alkaryl radicals and R' is a divalent radical selected from the group consisting of alkylene, cycloalkylene, arylene, aralkylene and alkarylene radicals.

3,884,855

PROCESS FOR THE PRODUCTION OF REGENERATE FROM POLYPROPYLENE WASTE

Reinhold Baumann, Hausen; Robert Lauerbach-Lemeier; Ernst-Günter Kunze, both of Frankfurt am Main; Alfred Striebich, Bischofsheim, and Hans-Joachim Rothe, Bad Vilbel, all of Germany, assignors to Davy-Ashmore Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 237,174, March 22, 1972, Pat. No. 3,789,026. This application Nov. 2, 1973, Ser. No. 412,133
Claims priority, application Germany, Mar. 24, 1971, 2114304
Int. Cl. C08f *47/24, 29/02*
U.S. Cl. 260—2.3 **12 Claims**

1. A process for the production of regenerate from the waste product from a process for producing synthetic polypropylene fibers, said polypropylene waste products comprising wool, fibers, bands or foil which comprises the steps of:

i. cutting the polypropylene waste product to produce a cut waste product;
ii. spreading the cut waste products into a fleece;
iii. washing said fleece in a washing zone to produce a wet, washed fleece;
iv. drying the washed fleece in a drying zone to produce a dried fleece;
v. dividing said fleece into fiber clusters;
vi. compacting the fiber clusters to produce a compacted waste material; and
vii. granulating the compacted waste material to produce a regenerate.

3,884,856

ELECTROCOATING COMPOSITION CONTAINING STYRENE-MALEIC ANHYDRIDE COPOLYMER AND EPOXY ESTER RESIN EXHIBITING HIGH THROWING POWER

John F. Motier, Secane, Pa., and Donald L. Marion, Turnersville, N.J., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Nov. 19, 1973, Ser. No. 416,906
Int. Cl. C08g *45/08*
U.S. Cl. 260—23 EP **15 Claims**

1. A composition suitable for electrocoating an electrically conductive substrate in an aqueous medium using high voltages and characterized by exhibiting high throwing power and crosslinkable by oxygen promoted radical graft polymerization comprising:

a. a partial ester of styrene maleic anhydride copolymer resin esterified to about 25 to 125 per cent half-ester with a saturated or olefinically unsaturated alkanol of 12 to 30 carbon atoms said styrene-maleic anhydride copolymer having a mole ratio of styrene to maleic anhydride of about 1:1 to 4:1 and a molecular weight of about 500 to 4000, said partial ester of said copolymer having an acid number in the range of about 20 to 350 and neutralized to the extent of 20 to 120 per cent based on said acid number of said partial ester copolymer with a neutralization agent selected from the group consisting of ammonia, lower aliphatic amines, lower alkanol amines and alkali metal hydroxides and

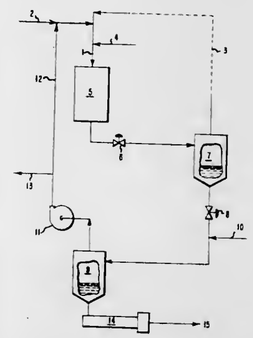
b. a carboxyl functional epoxy resin esterified with an olefinically unsaturated fatty acid, said olefinically unsaturated fatty acid being derived from a semi-drying oil or drying oil having an iodine value of greater than 90, said carboxyl functionality being provided by either (1) half acid ester formation between residual hydroxyl groups of the epoxy ester resin and a dicarboxylic acid anhydride, or (2) by reaction of maleic anhydride with olefinic sites on the unsaturated fatty acid moieties of said esterified epoxy resin, said epoxy ester provided with carboxyl functionality having an acid nunber in the range of from 40 to 80 and neutralized to the extent of 20 to 120 per cent based on said acid number of said resin with a neutralization agent selected from the groups consisting of ammonia, a lower aliphatic amine, a lower alkanol amine and an alkali metal hydroxide wherein said epoxy resin is in the range of from 30 to 300 weight per cent of said esterified copolymer and wherein said esterified copolymer and said epoxy resin range in amount from 5 to 30 weight per cent of said aqueous medium.

3,884,857

LOW GEL CONTENT ETHYLENE COPOLYMER/WAX BLENDS AND PROCESS FOR PREPARATION THEREOF

Edward Cooper Ballard, and John Ricks Priest, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 143,311, May 14, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,484
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 AV **25 Claims**



1. In a continuous, high-pressure, free radical polymerization process for preparing ethylene copolymers having reduced gel content comprising

a. introducing ethylene and at least one monomer selected from the group consisting of vinyl esters of C_1 to C_4 monobasic aliphatic acids, acrylates and methacrylates wherein the alcohol moiety is derived from aliphatic C_1 to C_4 monohydroxy alcohols, acrylic acid, methacrylic acid, maleic acid, and maleic anhydride, provided that at least 85 mol percent of the monomers is ethylene and sufficient amount of said vinyl ester, acrylate or methacrylate monomer is introduced to yield at least about 5 weight percent of units derived from said monomer in the resulting copolymer, and an initiator into the reactor,

b. maintaining said monomers and initiator in contact in said reactor at a temperature of about 100°C. –250°C. and a pressure of about 1,000–2,500 atmospheres until the desired extent of conversion to ethylene copolymers has been obtained,

c. removing the reaction mixture from said reactor,

d. reducing the pressure by first pressure let-down means such that the reaction mixture enters a first separator at about 100–400 atmospheres,

e. separating out from said reaction mixture in said first separator about 90–97 percent of the unreacted monomers,

f. further reducing the pressure by second pressure let-down means such that the reaction mixture enters a second separator at about 0–5 atmospheres, and

g. separating out from said reaction mixture in said second separator substantially all of the remaining about 3–10 percent by weight of unreacted monomers,

the improvement in said process comprising the in-line addition of about 5–50 percent by weight based on the total weight of the copolymer and wax, of molten petroleum, polyethylene

or Fischer-Tropsch wax to said ethylene copolymer reaction mixture after the pressure has been reduced to below about 250 atmospheres and after at least about 90 percent by weight, but not more than about 97 percent by weight, of the unreacted monomers have been separated out from said reaction mixture.

3,884,858

PROCESSING OF THERMOPLASTIC POLYESTERS

Gottfried Morawetz, Kufstein, Tirol, Austria, assignor to Ciba-Geigy Corporation, Basel, Switzerland

Filed Mar. 27, 1972, Ser. No. 238,642
Claims priority, application Austria, Mar. 20, 1971, 2670/71
Int. Cl. C08g *17/04*
U.S. Cl. 260—29.15 B 5 Claims

1. A process of molding saturated polyester by contacting a liquid composition with a heated metal surface during solidifying said composition consisting essentially of
   a. linear saturated polyester from aromatic dicarboxylic acid and
   b. polydimethyl siloxane having a viscosity of 35 to 200 cSt, in an amount of 0.25 to 0.8 weight percent in relation to the weight of the polyester, or
   c. a synthetic wax produced by the Ziegler process with a solidification point at 109°–113°C, a molecular weight of about 1,600 and a viscosity of 110–130 cp at 150°C, in an amount of 0.5 to 6 weight percent in relation to the polyester, and
   d. mixtures of (a), (b) and (c).

3,884,859

ADHESIVE COMPOSITION FOR ADHESION BETWEEN FABRIC MATERIAL AND RUBBER AND A PROCESS FOR PREPARATION THEREOF

Toshio Honda; Takehiro Ueki, and Yukio Fukuura, all of Tokyo, Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1972, Ser. No. 298,584
Claims priority, application Japan, Oct. 26, 1971, 46-84373
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.3 3 Claims

1. In a process for making a synthetic fabric-to-rubber adhesive having improved stability and improved adhesion for bonding synthetic fabric and natural rubber, styrene-butadiene copolymer and high ratio blends of styrene-butadiene-natural rubber copolymers comprising mixing a synethic rubber latex with an aqueous, alkaline, aldehyde-free resole solution; the improvement comprising preparing said resole by reacting one mole of a monohydric phenol selected from phenol and an alkyl phenol with from about 4–10 moles of formaldehyde or an aldehyde polymer, in a solvent, employing an alkali metal hydroxide catalyst at a temperature from about 30° – 100°C. to form a resole resin having a molecular weight from about 200 to 2500; separating said resole resin by neutralizing the reaction mixture with an acid drying and; dissolving the separated resin in dilute ammoniacal solution free of aldehyde and thereafter mixing the resulting solution with the rubber latex in the weight ratio of 2 – 50 parts resin per 100 parts rubber latex solids.

3,884,860

CARBOXY-FUNCTIONAL SILICONES

Lawrence H. Brown, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Apr. 15, 1974, Ser. No. 460,849
Int. Cl. C08f *11/04*
U.S. Cl. 260—29.2 M 8 Claims

1. A copolymeric organopolysiloxane consisting essentially of (a) from 10 to 65 mol percent of siloxy units selected from the group consisting of $HOOCRCH_2CH_2SiO_{3/2}$ and

$$HOOCRCH_2CH_2\overset{R'}{\underset{|}{S}}iO \quad ,$$

in which R is R is selected from the group

$$-CH_2\overset{COOH}{\underset{|}{C}}HS-$$

and divalent radicals consisting of carbon, hydrogen and sulfur, the sulfur atoms being present in the form of thioether linkages, said divalent radical containing from 1 to 7 carbon atoms; and R′ is selected from the group consisting of methyl, phenyl and vinyl radicals; and (b) from 35 to 90 mol percent of siloxy units of the formula $R'_nSiO_{(4-n)/2}$ in which R′ is as defined and n is an integer having a value of from 1 to 3; at least 30 mol% of all the siloxane units in said copolymer having a degree of substitution of 1, said siloxane copolymer having an overall degree of substitution of from about 1.2 to 1.8 with from 15 to 55 percent of the total substituents present being phenyl groups.

3,884,861

SOIL GROUTING PROCESS AND COMPOSITION

Anthony J. Whitworth; Stephen Yi-Sun Tung, both of Scarsborough, Ontario, and Ernest Anthony Hajto, Willowdale, Ontario, all of Canada, assignors to Borden, Inc., Columbus, Ohio

Continuation of Ser. No. 271,530, July 13, 1972, which is a division of Ser. No. 51,359, June 30, 1970, Pat. No. 3,686,872.
This application Apr. 12, 1974, Ser. No. 460,424
Claims priority, application United Kingdom, May 19, 1970, 24269/70
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.3 2 Claims

1. An aqueous gel-forming composition, useful in stabilizing soil, having a pH of about 8.5–11.5 and containing dispersed therein
   a. between about 2 and 45 percent of a polyphenolic vegetable material selected from the group consisting of tannin extracts, catechins and alkaline extracts of coniferous tree barks, said polyphenolic material being soluble in alkaline solution, able to gel rapidly and having a formaldehyde combining capacity of at least 5.0,
   b. based on 100 parts of polyphenolic material, between about 5 and 30 parts of formaldehyde and/or paraformaldehyde or between about 10 and 90 parts of a phenol formaldehyde resole and
   c. a gelling compound, soluble or colloidally dispersible in said aqueous composition, said gelling compound being selected from the group consisting of the vanadates, molybdates, manganates, permanganates, titanates, cuprates, and zirconates of potassium, sodium, lithium and ammonium and the chlorides, sulfates, nitrates, hydroxides and oxides of vanadium, molybdenum, manganese, titanium, copper, zinc and zirconium, said compound being present in an amount corresponding to between about 0.01 and 10 parts of the vanadium, molybdenum, manganese, titanium, copper, zinc or zirconium therein per 100 parts of polyphenolic material.

3,884,862

ADHESIVE COMPOSITION AND METHOD OF MAKING SAME

Kenneth Francis King, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 37,842, May 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 26,772, April 8, 1970, abandoned. This application Feb. 9, 1972, Ser. No. 224,911
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.3 5 Claims

1. A liquid adhesive composition having a total solids content of about 10–40% by weight prepared by
   1. dry milling an elastomer selected from the group consisting of copolymers of about 60–84% by weight of ethylene and about 16–40% by weight of 1,4-hexadiene having an unsaturation value of about 2-4 and copolymers of about 50–62% by weight of ethylene, about 20–42% by weight of propylene and about 4–16% by weight of 1,4-hexadiene or 5-ethylidene-2-norbornene having an unsaturation value of about 0.25–2 with a reinforcing carbon black until the carbon black is substantially uniformly dispersed in the elastomer, the weight ratio of the carbon black to the elastomer being about 25:75 to 50:50,
   2. mixing the resulting milled blend with an organic solvent for the elastomer until the elastomer is in solution in the solvent and a liquid composition is formed,
   3. forming an emulsion of the composition obtained in step 2 in water by mixing said composition in a high-shear mixer with water containing an emulsifying agent,
   4. removing said solvent from the resulting emulsion, and
   5. mixing with the resulting latex a resorcinol-aldehyde resin component selected from the group consisting of a mixture of resorcinol and an aldehyde capable of forming a heat-hardenable resin, the resorcinol: aldehyde molar ratio being about 1:0.05 to 1:2 and a heat-hardenable resin made from said mixture the weight ratio of the elastomer to the resin being about 50:50 to 91:9.

3,884,863

ZINC ENRICHED LITHIUM SILICATE-LATEX COATING COMPOSITION

Ronald W. Beers, Spring, Tex., and Julian Lakritz, Edison, N.J., assignors to Exxon Research & Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 93,389, Nov. 27, 1970, abandoned, which is a continuation of Ser. No. 708,785, Feb. 28, 1968, abandoned. This application Dec. 29, 1972, Ser. No. 319,969
Int. Cl. C08d *7/02*; C08f *45/24*; C09d *5/10*
U.S. Cl. 260—29.6 S 6 Claims

1. A homogeneous vehicle for a zinc-enriched, self-curing, water-resistant coating composition consisting essentially of: a. between about 57 to 91 parts of an aqueous alkali-lithium silicate solution, said alkali and lithium silicates being employed in amounts sufficient to provide a molar ratio of X_2O, where X is selected from the group consisting of sodium, potassium, and quaternary ammonium, to lithium oxide to silicon dioxide, respectively, within the range from about 0.25 to 0.65 X_2O: 0.35 to 0.75 Li_2O: 2.5 to 4.5 SiO_2;
   b. between 9 and 40 parts of a film-forming organic alkali stable latex of an interpolymer selected from the group consisting of interpolymers of methyl methacrylate/butyl acrylate/aminoester of an unsaturated carboxylic acid; and
   c. between 0 and 3 parts of an alkali stable anionic surfactant.

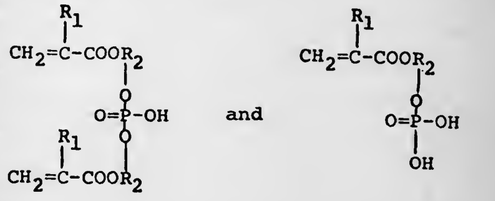
3,884,864

PROCESS FOR PREPARATION OF NONFLAMMABLE WATER-CONTAINING POLYMER MATERIAL FROM BASIC SALTS OF POLYMERIZABLE MIXTURES OF ETHYLENICALLY UNSATURATED PHOSPHATES

Hideaki Matsuda, Marugame; Fujio Yamauchi, Kanonji; and Hisakazu Mori, Kagawa-ken, all of Japan, assignors to Okura Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 117,115, Feb. 19, 1971, abandoned. This application May 14, 1973, Ser. No. 360,058
Claims priority, application Japan, Feb. 21, 1970, 45-14948; Feb. 28, 1970, 45-17221
Int. Cl. C08g *45/24*
U.S. Cl. 260—29.7 NR 9 Claims

1. A process for preparing a non-flammable, resinous water-containing cured composition which is insoluble and infusible, which comprises adding water to a mixture of A and B or A, B and C, wherein A is a basic salt of a polymerizable mixture of phosphates containing at least one compound from each of the formulae



and

or partial alkylene oxide addition products of said compounds having an acid value of at least one-half the initial acid value of the mixture of phosphates, wherein R_1 is hydrogen or methyl and R_2 is a lower alkylene or halogenated lower alkylene group, B is a polymerizable ethylenically unsaturated monomer and C is an unsaturated polyester obtained by reacting the components of a mixture containing propylene glycol and maleic anhydride, to obtain a water-in-oil emulsion, adding a polymerization catalyst selected from the group consisting of benzoyl peroxide, azobis isobutylonitrile, potassium persulfate, ammonium persulfate, hydrogen peroxide and soda perborate to the emulsion and curing the resultant mixture at from room temperature to 80°C,
   the quantity of water being 10–200% by weight based on the weight of the A and B mixture or the A, B and C mixture, the weight ratio of B to A in the A and B mixture being from 0.5:1 to 2.0:1,
   the weight ratio of B+C to A and of B to C in the A, B and C mixture being from 0.5:1 to 3.0:1 and from 4:1 to 1:1, respectively.

3,884,865

PLASTICIZED POLYVINYL BUTYRAL INTERLAYERS

Robert H. Fariss, Amherst, and James A. Snelgrove, Monson, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed June 18, 1973, Ser. No. 371,014
Int. Cl. C08f *45/38*
U.S. Cl. 260—31.8 R 12 Claims

1. A polyvinyl butyral interlayer for laminated safety glass having a molecular weight in the range of from 30,000 to 600,000, from 0 to 10% by weight residual ester groups, calculated as polyvinyl ester, and a hydroxyl content in the range of from 12 to 20% by weight calculated as polyvinyl alcohol which is plasticized with from 15 to 45 parts by weight of dihexyl adipate per hundred parts of polyvinyl butyral resin; wherein the sum of (a) 3.2 times the percent polyvinyl alcohol content and (b) the parts of plasticizer per hundred parts of resin is equal to or less than 100; and wherein the plasticized

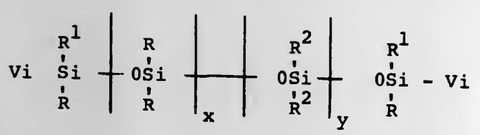
interlayer has a 100% tensile modulus at 72°C. in the range of from 100 to 1000 psi.

3,884,866
HIGH STRENGTH ORGANOPOLYSILOXANE COMPOSITIONS

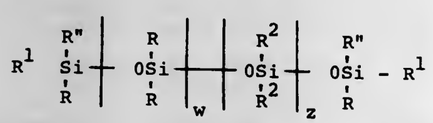
Edward M. Jeram, Burnt Hills, and Richard A. Striker, Troy, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,107
Int. Cl. C08g *51/34*
U.S. Cl. 260—32.8 SB **7 Claims**

1. An organopolysiloxane composition combining high strength with exceptionally good elongation comprising (A) 100 parts of a combination of ingredients having therein (i) 20 to 90 parts of a polymer selected from the class consisting of a vinyl-containing high viscosity organopolysiloxane and a blend of vinyl-containing high viscosity organopolysiloxanes having no more than 25 mole percent phenyl radicals having a viscosity of 5,000 to 1,000,000 centipoise at 25°C of the formula,



where Vi stands for vinyl, R^1 is selected from the class consisting of lower alkenyl, alkyl, and aryl radicals, and R is selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, R^2 is selected from the class consisting of alkyl and aryl radicals, x varies from 100 to 10,000, y varies from 0 to 300; (ii) from 5 to 40 parts of a polymer selected from the class consisting of a low viscosity vinyl-containing organopolysiloxane and a blend of low viscosity vinyl-containing organopolysiloxanes having a vinyl content that may vary from 0.01 mole percent vinyl to 60 mole percent vinyl and a viscosity that varies from 50 to 5,000 centipoise at 25°C and having no more than 25 mole percent phenyl radicals of the formula,



wherein R^1, R^2 and R are as previously defined, R'' is selected from the class consisting of alkyl, aryl and alkenyl radicals, w varies from 0 to 500 and z varies from 0 to 200; (iii) from 5 to 70 parts of a filler; (iv) from 0.1 to 50 parts per million of (A) and (B) of a platinum catalyst; and (B) from 1 to 100 parts based on 100 parts of the combination of ingredients of (A) of a material selected from the class consisting of hydrogen containing silanes and hydrogen containing polysiloxanes and mixtures thereof.

3,884,867
SELF-EXTINGUISHING POLYOXYMETHYLENE MOLDING COMPOSITIONS REINFORCED WITH GLASS FIBERS

Albrecht Hilt; Bruno Sander, both of Ludwigshafen; Willia Hild, Limburgerhof; Hugo Fuchs, Ludwigshafen, and Franz Schmidt, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 7, 1972, Ser. No. 278,585
Claims priority, application Germany, Aug. 11, 1971, 2140195
Int. Cl. C08g *51/10*
U.S. Cl. 260—37 AL **7 Claims**

1. A self-extinguishing molding composition based on a polyoxymethylene characterized by a content of from 5 to 15% by weight (based on the total weight of the molding composition) of finely divided neutral or basic red phosphorus and by a content of from 1 to 40% by weight (based on the total weight of the molding composition) of glass fibers.

3,884,868
COATING COMPOSITIONS COMPRISING POLYIMIDES AND POLYSILOXANES

Robert T. Trice, Fort Wayne; Gordon D. McLeod; Amos R. Anderson, both of Adrian, and Dennis C. Wilson, Fort Wayne, all of Ind., assignors to Phelps Dodge Industries, Inc., New York, N.Y.

Filed May 17, 1973, Ser. No. 361,133
Int. Cl. C08g *47/04*
U.S. Cl. 260—37 N **12 Claims**

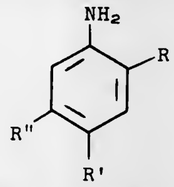
1. A non-porous, durable, tough coating composition having good release properties, good resistance to thermal degradation, and good cut, scratch and abrasion resistance comprising an essentially linear, high molecular weight polyaromatic, polycarboxylic aromatic polyimide and a miscible phenyl and methyl substituted polyfunctional polysiloxane having a degree of substitution from about 1.0 to about 1.5 in an amount up to about 100 percent weight of said imide.

3,884,869
COLORING SYSTEM FOR THERMOSETTING PLASTIC COMPOSITIONS

Joseph Clyde Conger, Sr., Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 8, 1974, Ser. No. 431,799
Int. Cl. C08g *51/04*
U.S. Cl. 260—38 **10 Claims**

1. A process for coloring a thermosetting plastic composition which comprises adding to said composition from about 0.5 to 3.0 weight percent, based on the weight of said composition, of the by-product obtained in the preparation of a triphenylmethane dye by reacting a total of three moles of one or more monocyclic aromatic amines of the general formula



wherein R and R'' are individually hydrogen or alkyl of one to two carbon atoms and R' is hydrogen or methyl, said reaction being carried out under acidic conditions in the presence of an oxidizing agent and an oxidation catalyst with the following provisions:

1. when the three moles of amine individually selected contain R' as hydrogen, one mole of formaldehyde is present to form the melamine moiety;
2. when one of the three moles of amine individually selected contains R' as a methyl group, said methyl group forms the methane moiety; and
3. only one of the three moles of amine individually selected contains R' as a methyl group; said by product being the residue remaining after removal of the triarylmethane dyes from the dye product produced in said preparation.

3,884,870
POLYETHYLENE TEREPHTHALATE FILM

Keith D. Dodson, Greenville, S.C., and Thomas G. Squires, Durango, Colo., assignors to Celanese Corp., New York, N.Y.

Filed July 15, 1974, Ser. No. 488,593
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R **9 Claims**

1. A biaxially oriented polyethylene terephthalate film characterized by the inclusion of a small particle size inert additive having an average particle size ranging between about 10 and 1,000 millimicrons and provided in a concentration in the range of between about 0.3 percent and 2.5 percent by weight of the total film and further characterized by the inclusion of a large particle size inert additive having an average particle size in the range of between about 0.5 and 30 microns, said large particle size inert additive present in a concentration in the range of between about 0.002 percent and 0.018 percent by weight of the film, said large particle size and said small particle size inert additives being substantially completely dispersed throughout said film wherein said film has a thickness no greater than 2 mils, a haze not in excess of 2.5 percent, and a kinetic coefficient of friction not in excess of 0.7.

3,884,871
PROCESS FOR COATING PIGMENT PARTICLES WITH ORGANIC POLYMERS

Daniel F. Herman, Princeton, and Dominic Simone, Lyncroft, both of N.J., assignors to N L Industries, Inc., New York, N.Y.

Filed June 29, 1973, Ser. No. 374,937
Int. Cl. C08f *45/04*
U.S. Cl. 260—42.14 **7 Claims**

1. A process for the coating of titanium dioxide pigment particles to form discrete pigment particles individually coated with organic polymers which comprises the steps of:

a. adding to a water slurry of titanium dioxide pigment particles wherein said particles comprise 70% by weight of said slurry, a polyanionic dispersing agent selected from the group consisting of sodium hexametaphosphate, potassium tripolyphosphate, and sodium salt of polycarboxylic acid in an amount equivalent to the dispersant demand of the particles to form a water dispersion wherein the dispersant demand is from 0.15 to 0.50 weight percent of the amount of particles and thereby maintaining said dispersion at a minimum viscosity;
b. diluting said water dispersion with an aqueous medium until said particles comprise from 15 to 30% by weight of said dispersion;
c. adding an anchoring agent to said dispersion; said anchoring agent comprising an organic vinyl monomer containing polar groups which are adsorbed on the surface of said particles; said anchoring agent being capable of polymerization with vinyl monomers;
d. adding an organic vinyl monomer to said dispersion;
e. polymerizing said monomer and said anchoring agent in the presence of a polymerization catalyst thereby coating said individual and discrete pigment particles with the formed organic polymers;
f. and filtering and drying the product of step (e).

3,884,872
INORGANIC ZINC SALTS AS COLOR STABILIZERS FOR ACRYLONITRILE VINYL CHLORIDE DYESITE CONTAINING COPOLYMERS

Robert R. Falconio, Pottstown, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 7, 1973, Ser. No. 386,470
Int. Cl. C08f *45/56*
U.S. Cl. 260—45.75 W **12 Claims**

1. A color stabilized copolymer composition comprising, a copolymer having from about 20 to about 80 percent by weight of vinyl chloride and from about 80 to about 20 percent of acrylonitrile, said copolymer having from 0.01 to 10 percent by weight of a dye site, said dye site being an amine sulfonate salt of a sulfonic acid and a higher alkyl group containing primary, secondary or tertiary amino compounds and, said copolymer having from 0.01 to about 5 percent by weight of a color stabilizing inorganic zinc compound, said inorganic zinc compound selected from the group consisting of zinc oxide, zinc chloride, zinc carbonate and zinc sulfate.

3,884,873
ARYLENE SULFIDE POLYMER CURED WITH THE AID OF CERTAIN COMPOUNDS

James N. Short, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 29, 1973, Ser. No. 420,254
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.85 B **8 Claims**

1. A composition of matter comprising an arylene sulfide polymer and an amount sufficient to reduce melt flow of said polymer of a compound selected from the group consisting of tetrakis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionyloxymethyl]methane, 1,3,5-trimethyl tris [3,5-di-tert-butyl-4-hydroxybenzyl]benzene, and octadecyl-3-(3',5'-di-tert-butyl-4'-hydroxyphenyl)propionate.

3,884,874
DIACYL-HYDRAZINE STABILIZERS FOR POLYOLEFINS

Siegfried Rosenberger, Riehen, and Andreas Schmidt, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 16, 1972, Ser. No. 307,269
Claims priority, application Switzerland, Nov. 26, 1971, 17241/71
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.85 B **13 Claims**

1. A composition of matter stabilised against thermo-oxidative degradation and discoloration which comprises a polyolefin and

a. from 0.01 to 5 percent by weight of a compound A of the formula

$$R_1—CO—NHNH—CO—R_2$$

wherein

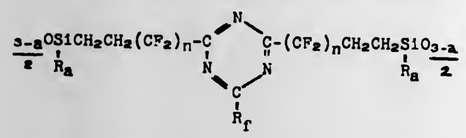
R_1 and R_2 independently of one another denote the unsubstituted phenyl group, a phenyl group substituted by a hydroxyl group in the m- or p-position, by one or two alkyl groups each with 1 to 4 carbon atoms, by one or two alkenyl groups each with 3 or 4 carbon atoms, by one or two cycloalkyl groups with 6 to 8 carbon atoms, by 1 or 2 chlorine atoms, by one or two alkoxy groups each with 1 to 18 carbon atoms or by an acylamino group with 2 to 18 carbon atoms or by an amino group in the o-position, or where

R_2 also denotes hydrogen, alkyl with 1 to 18 carbon atoms, cyclohexyl or benzyl if R_1 denotes a substituted phenyl group, and

b. 0.3 percent by weight of an ester of β-thiodipropionic acid selected from the group consisting of dilauryl β-thiodipropionate and distearyl β-thiodipropionate.

3,884,875
FLUOROCARBON TRIAZINE COMPOUNDS
Yung Ki Kim, and Ogden R. Pierce, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Division of Ser. No. 25,579, April 3, 1970, Pat. No. 3,847,916, which is a division of Ser. No. 733,833, June 3, 1968, Pat. No. 3,532,696. This application Apr. 1, 1974, Ser. No. 456,923
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 E 4 Claims

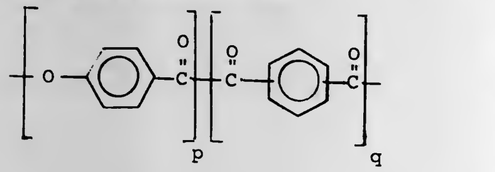
1. A siloxane having at least one unit of the formula

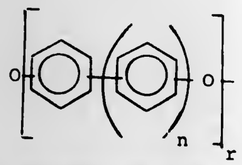


R_f is a polyfluorinated alkyl radical of no more than 12 carbon atoms,
R is a monovalent hydrocarbon radical or an ACH_2CH_2 radical in which A is a perfluoroalkyl radical;
n has a value of from 1 to 10 inclusive, and each
a independently has a value of from 0 to 2 inclusive; and remaining units being of the formula $Z_bSiO_{4-b/2}$ in which Z is a hydrocarbon or halohydrocarbon radical, a hydrogen atom, the hydroxyl group or a hydrolyzable group, and
b has a value of from 0 to 3 inclusive.

3,884,876
PARTIALLY CROSSLINKED LINEAR AROMATIC POLYESTERS
Steve G. Cottis, Amherst; James Economy, Eggertsville, and Arnold A. Wosilait, Grand Island, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.
Filed Aug. 31, 1973, Ser. No. 393,705
Int. Cl. C08g *17/02*
U.S. Cl. 260—47 C 13 Claims

1. A moldable partially crosslinked polyester containing recurring moieties of the formula





wherein *n* is 0 or 1 and *p*, *q* and *r* are integers which total 30 to 600, wherein crosslinking is between susceptible moieties in the polymer chain and adjacent polymer chains of the same formula and is so limited as to make the crosslinked polymer produced thermoplastic and moldable while being sufficient to make it incapable of being melt drawn or spun to a fiber or deposited as a film, which crosslinking is that effected by heating a linear polyester of the formula given to an elevated temperature in the range of 250° to 500°C. in the presence of oxygen for a period of time long enough to make the polymer produced incapable of being fiber forming by drawing or spinning from a melt and incapable of being deposited as a film, while still retaining thermoplasticity and being moldable.

3,884,877
FLUOROELASTOMER COMPOSITIONS WITH TRIORGANOPHOSPHORUS OXIDE
Robert E. Kolb, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 16, 1973, Ser. No. 406,836
Int. Cl. C08f *29/16*, *45/72*
U.S. Cl. 260—47 UA 8 Claims

1. A curable fluoroelastomer composition comprising elastomeric copolymer of vinylidene fluoride and terminally ethylenically unsaturated fluorinated comonomer and for each hundred parts thereof:
a. 0.2 to 5 parts triorganophosphorus oxide
b. 0.1 to 5 parts quaternary phosphonium or ammonium compound
c. a total of 3 to 40 parts consisting of
i. 0 to 25 parts acid acceptor
ii. 0 to 25 parts optional base
d. 0.2 to 5 parts aromatic hydroxy or amino compound.

3,884,878
OXALYL CYANIDE
Donald R. Hariter, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.
Division of Ser. No. 54,617, July 13, 1970, Pat. No. 3,763,161. This application Mar. 14, 1973, Ser. No. 341,248
Int. Cl. C07c *121/20*
U.S. Cl. 260—545 R 1 Claim

1. Oxalyl cyanide.

3,884,879
PERFLUOROALKYL-THIOETHER ALCOHOLS, ESTERS AND POLYMERS THEREOF
Edward Karl Kleiner, New York, and Martin Knell, Ossining, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 299,487, Oct. 20, 1972, Pat. No. 3,763,116, which is a continuation-in-part of Ser. No. 199,793, Nov. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 720,370, April 10, 1968. This application Apr. 30, 1973, Ser. No. 355,640
Int. Cl. C07c *149/18*
U.S. Cl. 260—609 R 8 Claims

1. A compound of the formula:
$R_fC_mH_{2m}SC_nH_{2n}OH$
wherein
m is 2 to 12,
n is 3 to 12,
R_f is $C_pF_{2p+1}OC_qF_{2q}$
p is 3 to 18, and
q is 2 to 8.

3,884,880
MODIFIED AMIDE-IMIDE RESINS AND METHOD OF MAKING THE SAME
Denny R. Disque, and Ernest C. Koerner, both of Fort Wayne, Ind., assignors to Phelps Dodge Magnet Wire Corporation, Fort Wayne, Ind.
Filed Sept. 21, 1973, Ser. No. 399,393
Int. Cl. C08q *22/04*
U.S. Cl. 260—77.5 AM 22 Claims

1. A composition of matter comprising the reaction product of aromatic tricarboxylic acid anhydride reactant and aromatic diisocyanate reactant and aliphatic dicarboxylic acid reactant having more than 6 carbon atoms reacted in a reaction solution comprising aprotic solvent having solvency parameters within the following ranges: δd 8.0 through 10.0, δp 1.5 through 4.5, δh 1.0 through 4.0 and said reactants at a temperature ranging from about 150°C. to about 200°C., said reactants being a major portion of said reaction solution, said dicarboxylic acid reactant being present in an amount which is greater than about 10 mol percent and less than about 50 mol percent of said anhydride reactant.

3,884,881
PREPARATION OF POLY(P-PHENYLENE TEREPHTHALAMIDE) BY MIXING SOLUTION OF P-PHENYLENE DIAMINE WITH MOLTEN TEREPHTHALOYL CHLORIDE
Archie Robert Bice; James Allen Fitzgerald, both of Richmond, and Alan Ellsworth Hoover, Chesterfield County, all of Va., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.
Filed May 18, 1973, Ser. No. 361,818
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 2 Claims

1. In a process wherein a solution of p-phenylene diamine and hexamethylphosphoramide is mixed with molten terephthaloyl chloride and the resulting mixture is forwarded within one second to a first polymerizer where it is mixed with cooling to yield a partially polymerized product having a viscosity of from about 10 to 100 poises and a temperature of less than about 95°C. and said product is then passed to an externally cooled second polymerization chamber, the improvement comprising introducing said partially polymerized product into one end of said second polymerization chamber and forwarding it to the exit of the chamber while mixing and shearing it at a rate of at least 100 $sec.^{-1}$ as it passes through said polymerization chamber, recycling a portion of it as it flows towards the exit of the polymerization chamber in a plurality of zones along the flow path whereby the retention time of the recycled material in the polymerization chamber is increased beyond the time it would have remained in the chamber in the absence of recycling, and withdrawing a crumb-like product containing high molecular weight poly(p-phenylene terephthalamide) from the exit of the polymerization chamber, the said material stream being retained in the polymerization chamber for from 1 to 15 minutes and being uniformly cooled to result in an exit temperature between about 40°C. and 95°C.

3,884,882
CERTAIN EPDM COPOLYMER/MALEIC ANHYDRIDE ADDUCTS AND THERMOPLASTIC ELASTOMERS THEREFROM
Stanley William Caywood, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.
Filed Jan. 10, 1973, Ser. No. 322,360
Int. Cl. C08f *15/40*, *27/04*
U.S. Cl. 260—78.4 D 22 Claims

1. An adduct of maleic anhydride and an elastomeric copolymer of ethylene, at least one C_3 to C_6 α-olefin, and at least one nonconjugated diene; the adduct having an inherent viscosity of at least one as measured on 0.1 gram of adduct dissolved in 100 milliliters of perchloroethylene at 30°C. and having a gel content less than about 5 percent as measured by weight percent adduct insoluble in boiling tetrahydrofuran at atmospheric pressure after 48 hours.

22. A method of preparing a thermoplastic elastomer, said method comprising the following steps:
1. mixing
A. an adduct of maleic anhydride with an ethylene/-propylene/1,4-hexadiene terpolymer, the proportion of maleic anhydride being about 1-4 weight percent of the adduct; the gel content of the adduct being less than about 2 weight percent as measured by the proportion of adduct insoluble in boiling tetrahydrofuran at atmospheric pressure for 48 hours; and the inherent viscosity of the adduct being at least 1 as measured on 0.1 gram of adduct dissolved in 100 ml. of perchloroethylene at 30°C.; and
B. an amount of at least one zinc salt selected from the group consisting of zinc acetate dihydrate, hydrated zinc acetylacetone, and hydrated zinc catecholate effective to cure the adduct;
2. exposing the resulting mixture to at least one accelerator selected from the group consisting of water, mercaptans, phenols, organic acids, alcohols, and amines; and
3. heating the exposed mixture for a sufficient time to cure the adduct.

3,884,883
ARYLENE SULFIDE POLYMERS
Charles W. Moberly, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 19, 1973, Ser. No. 416,823
Int. Cl. C08g *23/00*
U.S. Cl. 260—79.1 14 Claims

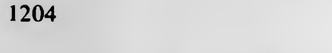
1. A method of producing a polymer which comprises:
a. forming a composition by contacting at least one polyhalo-substituted aromatic compound wherein the halogen atoms are attached to aromatic ring carbon atoms, at least one base selected from the hydroxides of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium and barium and the carbonates of sodium, potassium, rubidium and cesium, at least one organic amide and at least one thiocarbonate having the formula



wherein each R is an alkali metal or a monovalent hydrocarbyl radical selected from alkyl, cycloalkyl and aryl and combinations of said radicals, the number of carbon atoms in said hydrocarbyl radical being within the range of one to about 12, at least one R being said monovalent hydrocarbyl radical, and X is oxygen or sulfur, at least one X being oxygen and at least one X being sulfur; and,
b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer.

3,884,884
ARYLENE SULFIDE POLYMERS
Lacey E. Scoggins, and Robert W. Campbell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Ohio
Filed Nov. 20, 1973, Ser. No. 417,581
Int. Cl. C08g *23/00*
U.S. Cl. 260—79.1 11 Claims

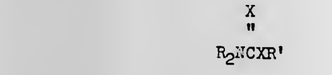
1. A method of producing a polymer which comprises:
contacting at least one polyhalo-substituted aromatic compound in which the halogen atoms are attached to aromatic ring carbon atoms, at least one alkali metal aminoalkanoate having the formula $R_2N(CR_2)_nCO_2M$ wherein each R is selected from the group consisting of hydrogen and hydrocarbyl radicals selected from alkyl, cycloalkyl and aryl radicals and combinations of said radicals, the number of carbon atoms in each of said radicals being within the range of one to about 12, M is an alkali metal selected from lithium, sodium, potassium, rubidium, and cesium, *n* is an integer having a value of 1 to about 12, and the total number of carbon atoms in each molecule of the alkali metal aminoalkanoate is within the range of two to about 24 and at least one sulfur source selected from the group consisting of (a) elemental sulfur; (b) hydrogen sulfide; (c) carbon disulfide; (d) carbon oxysulfide; (e) phosphorus pentasulfide; (f) thiosulfates selected from lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, and barium thiosulfates; (g) thiocarboxylates and thiocarboxylic acids having the formula



wherein R is a hydrocarbon radical having 1 to about 20 carbon atoms and a valence of *n*, *n* is an integer having a value within the range of 1 to 4, each X is selected from oxygen and sulfur, each M is hydrogen or a metal selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, and barium and y is equal to the valence of M; (h) thiocarbonates having the formula



wherein each R is an alkali metal or a monovalent hydrocarbyl radical selected from alkyl, cycloalkyl and aryl radicals and combinations of said radicals, the number of carbon atoms in said hydrocarbyl radical being within the range of one to about 12, at least one R being a monovalent hydrocarbyl radical, and X is selected from oxygen and sulfur, at least one X being oxygen and at least one X being sulfur; (i) thiocarbamates represented by the formula



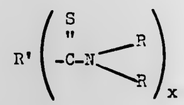
wherein each R is selected from hydrogen and R'', R' is selected from alkali metals and R'', R'' is a monovalent hydrocarbyl radical selected from alkyl, cycloalkyl and aryl radicals and combinations of said radicals, the number of carbon atoms in said hydrocarbyl radical being within the range of one to about 12 and each X is selected from oxygen and sulfur, at least one X being sulfur; (j) trithiocarbonates represented by the formula



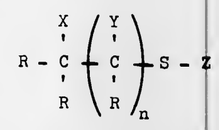
wherein R is an alkali metal or a monovalent hydrocarbyl radical selected from alkyl, cycloalkyl and aryl radicals and combinations of said radicals, the number of carbon atoms in said hydrocarbyl radical being within the range of one to about 12; (k) thioureas having the formula



wherein R is selected from the group consisting of hydrogen and alkyl, cycloalkyl and aryl radicals and combinations of said radicals, the number of carbon atoms in each R group being within the range of 0 to about 12; (l) thioamides having the formula



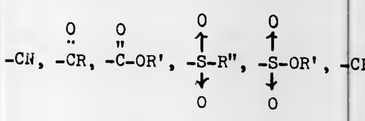
wherein each R is selected from the group consisting of hydrogen and alkyl, cycloalkyl and aryl radicals and combinations of said radicals, R' is selected from the group consisting of hydrogen and hydrocarbon radicals of valence x selected from saturated hydrocarbon radicals, aromatic hydrocarbon radicals and combinations of said radicals and *x* is an integer having a value of 1 to 4, with the proviso that when $x = 1$, R' and one R, together, can represent a divalent hydrocarbon radical selected from the group consisting of unsubstituted and alkyl-substituted, cycloalkyl-substituted, and aryl-substituted alkylene, cycloalkylene and arylene radicals, the total number of carbon atoms in said thioamide being with the range of one to about 20; and (*m*) mercaptans, mercaptides and sulfides having an alpha and/or beta activating substituent and represented by the formula

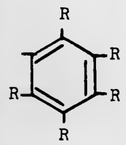


wherein each R is selected from hydrogen and monovalent hydrocarbon radicals selected from alkyl, cycloalkyl and aryl radicals and combinations of said radicals having one to about 16 carbon atoms, *n* is 0 or 1, X and Y are each selected from R and Q, at least one of X and Y being Q, with the proviso that when *n* is 0, X is Q, and when *n* is 1 and Y is R, at least one R attached to

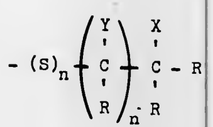


is hydrogen, Q is an activating substituent selected from





R' is selected from monovalent hydrocarbon radicals selected from alkyl, cycloalkyl and aryl radicals and combinations of said radicals, having one to about 16 carbon atoms, and M/*y*, where M is a metal selected from lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, and barium and *y* is the valence of the metal M, R'' is selected from monovalent hydrocarbon radicals selected from alkyl, cycloalkyl and aryl radicals and combinations of said radicals having one to about 16 carbon atoms, Z is selected from hydrogen, M/*y* and



and the total number of carbon atoms in each molecule is within the range of one to about 40, under polymerization conditions to produce said polymer.

3,884,885
MELT PROCESSING OF FLUORINATED POLYMERS

Walther Gustav Grot, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Aug. 1, 1973, Ser. No. 384,502
Int. Cl. C07c *143/68*; C08f *15/02*
U.S. Cl. 260—79.3 R 19 Claims

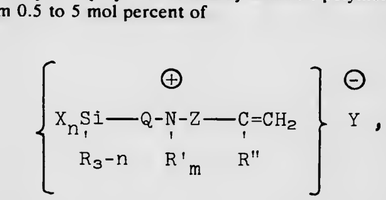
1. A method for treating a fluorinated polymer which degrades prior to melting, said polymer containing pendant side chains with sulfonyl groups which are attached to carbon atoms which have at least one fluorine atom attached thereto, said sulfonyl groups in the form of $—SO_3H$, salt thereof, or salt of $—SO_2NH_2$, which method comprises contacting said polymer with a tertiary amine, quaternary ammonium base or the salt of said amine or base with the proviso that when said pendant side chain is in the form $—SO_3Y$ with Y an alkali metal, the salt of the tertiary amine, the quaternary ammonium base or salt thereof is employed; and melt processing the contacted polymer.

3,884,886
CATIONIC UNSATURATED AMINE-FUNCTIONAL SILANE COUPLING AGENTS

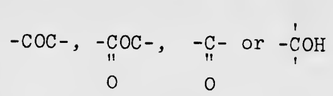
Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 323,595, Jan. 15, 1973, Pat. No. 3,819,675, which is a division of Ser. No. 99,228, Dec. 17, 1970, Pat. No. 3,734,763, which is a continuation-in-part of Ser. No. 825,035, May 15, 1969, abandoned. This application Apr. 4, 1974, Ser. No. 457,943
Int. Cl. C08f *3/16*, *11/04*
U.S. Cl. 260—80 PS 7 Claims

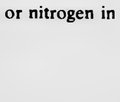
1. A vinylic copolymer formed by addition polymerization of from 0.5 to 5 mol percent of



hydrolyzates and partial condensates thereof, in which
X is the hydroxyl group or a hydrolyzable radical;
R is a lower alkyl radical;
n is an integer having a value of from 1 to 3 inclusive;
Q is a divalent hydrocarbon radical or a divalent hydrocarbon radical containing oxygen in the form of



groups or nitrogen in the form of



groups;
R' is independently selected from the group consisting of the hydrogen atom, a lower alkyl radical or a heterocyclic organic compound containing the nitrogen atom as a ring member;
m is an integer of 1 or 2;
Z is a divalent organic radical having a double bond conjugated with the

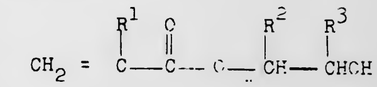
moiety, Z being bonded to the nitrogen atom by a C–N bond;
R'' is the hydrogen atom or a lower alkyl radical; and
Y is an acid anion,
with from 95 to 99.5 mol percent of a vinylic organic monomer.

3,884,887
VINYL COPOLYMERS AND PROCESSES FOR MAKING THEM

Donald R. Montgomery, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 200,569, Nov. 19, 1971, Pat. No. 3,755,271. This application July 26, 1972, Ser. No. 275,356
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.75 3 Claims

1. An uniformly random copolymer having a mer content of about 70 to 90 weight per cent vinyl chloride derived mers, based in weight of the copolymer, about 10 to 30 weight per cent based on the weight of the copolymer, of an ester derived mers having the formula:



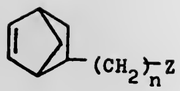
wherein R^1, R^2 and R^3 are each one of hydrogen or methyl, and up to about 15 weight percent, based on the weight of the copolymer, of an alkyl ester of an alpha, beta-ethylenically unsaturated acid or a vinyl ester of a saturated carboxylic acid derived mers, which copolymer has an inherent viscosity of about 0.2 to about 0.5, determined at 30°C using 0.2 grams of the copolymer in a deciliter of cyclohexanone, and a ratio of weight average to number average molecular weight of not greater than about 2.

3,884,888
FUNCTIONALLY SUBSTITUTED TERPOLYMERS AND TETRAPOLYMERS OF α-OLEFINS AND PROCESS FOR MANUFACTURING FUNCTIONAL SUBSTITUTED COPOLYMERS

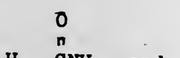
John Wilfred Collette; Rolland Shih-Yuan Ro, and Fred Max Sonnenberg, all of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 829,758, June 2, 1969, Pat. No. 3,748,316. This application Apr. 27, 1973, Ser. No. 355,084
Int. Cl. C08f *3/86*, *1/28*, *15/40*, *27/10*
U.S. Cl. 260—80.78 3 Claims

1. An addition copolymer of (1) ethylene, (2) propylene, (3) nonconjugated diene, and (4) an unsaturated functional monomer from the group represented by the following formula



where n is an integer within the range 0–20 and Z is a functional group selected from the following: $-NH_2$,



$-CO_2H$, $-CNH_2$, and $-CN$.

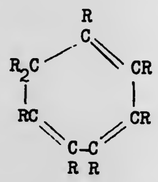
3,884,889

CYCLIC TRIENE COUPLING AGENTS

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 1, 1973, Ser. No. 366,244
Int. Cl. C08d *1/20, 1/36*
U.S. Cl. 260—83.7 **6 Claims**

1. In a process for the production of rubbery conjugated diene polymers having a tendency to cold flow by polymerizing a conjugated diene having from 4 to 12 carbon atoms per molecule in the presence of a hydrocarbon lithium initiator, the improvement for increasing the Mooney viscosity, inherent viscosity, molecular weight values, processability, as well as reducing cold flow of such polymers which improvement comprises carrying out said polymerizing in the presence of a 1,3,5-cycloheptatriene coupling agent having the formula



wherein R is hydrogen or alkyl such that the total number of carbon atoms in the molecule will not exceed about 16 in an amount sufficient to reduce the cold flow without gel formation of the resulting polymer, as well as improving said other physical properties of the polymer.

3,884,890

PREPARATION OF TRANSPARENT AND THERMOSTABLE COPOLYMERS

Johannes T. Van Oosterhout, Leersum, Netherlands, assignor to Stamicarbon, N.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 55,969, July 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 810,820, March 26, 1969, abandoned. This application Sept. 15, 1971, Ser. No. 180,901
Claims priority, application Netherlands, Mar. 28, 1968, 6804333
Int. Cl. C08f *1/11, 15/02*
U.S. Cl. 260—87.5 C **7 Claims**

1. Process for preparing thermostable copolymers of a vinyl halide and 4-methyl pentene-1 having a melt index not exceeding about 100 comprising copolymerizing under oxygen-free conditions a vinyl halide and 4-methyl pentene-1 in a ratio such that the resulting copolymer contains from 0.1 to 9% by weight of 4-methyl pentene-1, at a pressure below about 15 atm, at a temperature between −50° C and +80° C and in the presence of a polymerization initiator of a compound soluble in the monomers and producing free radicals.

3,884,891

METHOD FOR PREPARING BRANCHED COPOLYMERS BY ETHYLENE WITH UNSATURATED SILICONE MONOMERS

Sergei Mikhailovich Samoilov, Simonovsky val 8, kv. 60; Viktor Nikolaevich Monastyrsky, ulitsa Vasilievskaya, 9, kv. 62, both of Moscow; Svetlana Tikhonovna Pudovik, ulitsa Kutuya, 14, kv. 83, and Evgeny Vasilievich Kuznetsov, ulitsa Karla Marxa, 72, kv. 10, both of Kazan, all of U.S.S.R.

Filed July 17, 1972, Ser. No. 272,661
Int. Cl. C08f *15/02*
U.S. Cl. 260—88.1 R **13 Claims**

1. Branched copolymers consisting essentially of ethylene and 0.2-40 mole per cent unsaturated silicon monomers having the formula $R^1CH{=}CHSiR_m^2R_n^3(OR^4)_p$, where R^1 is selected from the group consisting of H and saturated C_1–C_{20} aliphatic radicals; R^2 is a C_1–C_{20} saturated aliphatic radical; R_3 is phenyl; R^4 is a radical selected from the group consisting of C_1–C_{20} saturated aliphatic radicals and aryl radicals having no more than two aromatic rings; m is from 0 to 2, when R^1 is H, and from 1 to 3 when R^1 is a saturated aliphatic radical; n is from 0 to 3; p is from 0 to 2; and $m + n + p = 3$; said copolymers containing links expressed by the formula (—CH_2—CH_2—) and (—R^1CH— $CHSiR_m^2R_n^3(OR^4)$p—).

3,884,892

METHOD FOR THE PRODUCTION OF POLYVINYL ALCOHOL

Heinz Winkler; Eduard Bergmeister, both of Burghausen, Upper Bavaria, and Siegfried Strebel, Raitenhaslach, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Jan. 28, 1974, Ser. No. 436,964
Claims priority, application Germany, Jan. 31, 1973, 2304684
Int. Cl. C08f *27/16*
U.S. Cl. 260—91.3 PV **10 Claims**

1. A process for the production of polyvinyl alcohol by catalytic alcoholysis of its esters comprising the steps of charging into a confined space an alcoholic polyvinyl ester solution of a relatively high viscosity and a specific gravity of over 0.9 measured at 20°C, disposing a layer of one or more alcohols having a specific gravity of below 0.84 on top of said alcoholic ester solution, disposing a layer of a liquid alcoholysis catalyst solution in an alcohol having a specific gravity of at leat 0.1 higher than the specific gravity of said alcohols layer below said alcohols layer, where the alcohols employed are alkanols having 1 to 4 carbon atoms, stirring said reactants whereby a suspension of said polyvinyl ester solution in droplet form in said alcoholic layer is formed, for a time sufficient to effect alcoholysis, and recovering polyvinyl alcohol.

3,884,893

CHLORINATED POLYPENTENAMER

Günter Kolb, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 22, 1970, Ser. No. 100,814
Claims priority, application Germany, Jan. 10, 1970, 2000955
Int. Cl. C08f *5/00, 27/02*
U.S. Cl. 260—93.1 **1 Claim**

1. chlorinated polypentenamers having a chlorine content of 60 to 70 percent by weight.

3,884,894

OLEFIN POLYMERIZATION

Allan John Amass, Southampton; Anthony Vincent Butcher, New Milton; Edward William Duck, Southampton, and John Michael Locke, Lyndhurst, all of England, assignors to The International Synthetic Rubber Co., Ltd., England

Filed Feb. 26, 1973, Ser. No. 336,041
Claims priority, application United Kingdom, Mar. 3, 1972, 10188/72; Jan. 11, 1973, 1601/73
Int. Cl. C08f *3/02*
U.S. Cl. 260—93.7 **17 Claims**

1. A process for the preparation of a homopolymer of propylene wherein the polymerization is effected in a hydrocarbon diluent by means of a catalyst comprising:
   1. An intimate dispersion of:
      A. titanium trichloride, and
      B. a compound of a transition metal selected from the group consisting of vanadium oxytrichloride, vanadium tetrachloride, vanadyl acetyl acetonate, niobium pentachloride and molybdenum oxytetrachloride in which the mole ratio of component A to component B is in the range 10:1 to 100:1, said intimate dispersion 1 having been prepared by ball milling for at least 2 hours component A with component B and
   2. An aluminum compound selected from the group consisting of an aluminum hydrocarbyl, an aluminum hydrocarbyl halide and a mixture thereof; and recovering the polypropylene.

3,884,895

BONDING EPDM RUBBER TO GENERAL PURPOSE BUTADIENE POLYMER RUBBER

Charles F. Eckert, Wayne, and Norman J. Pinkowski, Bloomfield, both of N.J., assignors to Uniroyal, Inc., New York, N.Y.

Filed Apr. 27, 1970, Ser. No. 32,425
Int. Cl. C08d *3/08, 13/20, 9/00*
U.S. Cl. 260—94.2 R **5 Claims**

1. A bonding cement consisting essentially of a solution of compounded polybutadiene in a volatile organic solvent, said polybutadiene having a cis content of 10% to 25%, a trans content of from 40% to 70%, a vinyl content of from 17% to 35%, and a combined trans and vinyl content at least equal to 70%, said percentages being by weight, and an intrinsic viscosity greater than 2, said cement comprising compounding and vulcanizing ingredients capable of effecting vulcanization of said polybutadiene.

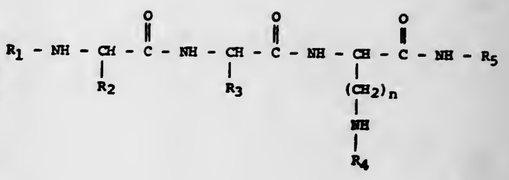
3,884,896

NEW SUBSTRATES FOR DIAGNOSTIC USE, WITH HIGH SUSCEPTIBILITY TO THROMBIN AND OTHER PROTEOLYTIC

Gustaf Erik Birger Blomback; Margareta Blomback, both of Solna; Karl Goran Claeson, and Lars-Gundro Svendsen, both of Goteborg, all of Sweden, assignors to AB Bofors, Bofors, Sweden

Filed Apr. 24, 1973, Ser. No. 354,036
Claims priority, application Sweden, May 2, 1972, 5757/72
Int. Cl. C07c *105/52;* **C07g** *7/00;* **A61k** *27/00*
U.S. Cl. 260—112.5 **21 Claims**

1. Substrate with high susceptibility to proteolytic enzymes of the type peptide peptidohydrolases, which substrate is represented by the formula:



or acid addition salts thereof, where R_1 is selected from the group consisting of hydrogen, an alkyl-carbonyl having 1 -12 carbon atoms, a ω-aminoalkyl-carbonyl having 1–12 carbon atoms in a straight chain, cyclohexyl-carbonyl, a ω-cyclohexyl-alkyl-carbonyl having 1–6 carbon atoms in a straight chain, 4-aminoethyl-cyclohexylcarbonyl, benzoyl, benzoyl substituted with at least one substituent selected from the group consisting of halogen atoms, methyl, amino and phenyl, a ω-phenyl-alkyl-carbonyl having 1–6 carbon atoms in a straight chain, benzenesulphonyl, 4-toluenesulphonyl and N benzoyl-phenylalanyl; R_2 is selected from the group consisting of phenyl, benzyl, 4-hydroxybenzyl, 4-methoxybenzyl and 4-methylbenzyl; R_3 is selected from the group consisting of a straight, branched or cyclic alkyl having 3–8 carbon atoms, phenyl and benzyl; n is selected from the group consisting of 3 and 4; R_4 is selected from the group consisting of hydrogen and quanyl; R_5 is selected from the group consisting of phenyl, nitrophenyl, methylnitrophenyl, naphthyl, nitronaphthyl, quinolyl and nitroquinolyl.

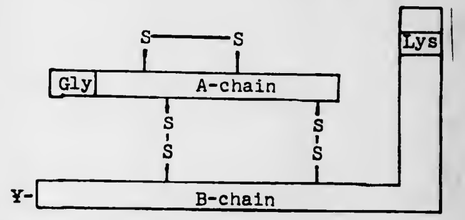
3,884,897

PROCESS FOR THE MANUFACTURE OF INSULIN, ANALOGS AND DERIVATIVES THEREOF

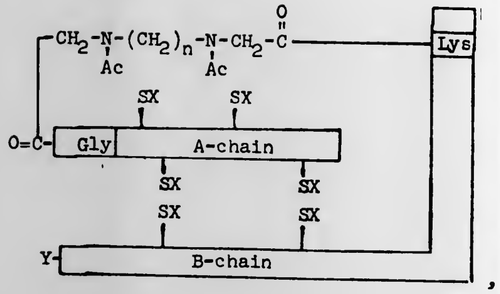
Rolf Geiger, Frankfurt am Main; Hans Wissmann, Bad Soden, Taunus, and Dietrich Langner, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 29, 1973, Ser. No. 410,312
Claims priority, application Germany, Oct. 31, 1972, 2253297
Int. Cl. C07c *103/52;* **C08h** *1/00*
U.S. Cl. 260—112.7 **2 Claims**

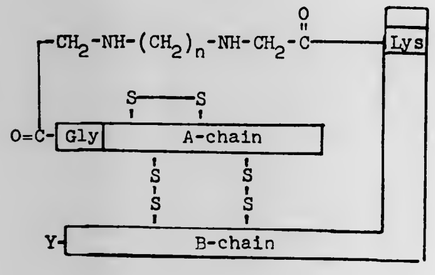
1. A method for making an insulin compound of the formula



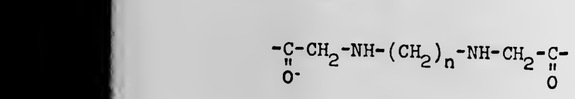
wherein Y is hydrogen, alkanoyl having 1 to 4 carbon atoms, phenyl-alkanoyl having 1 to 3 carbon atoms in the alkanoyl portion, benzoyl, alkyloxy-carbonyl or aralkyloxy-carbonyl having 1 to 4 carbon atoms in the alkyl portion, or aminoacyl derived from a naturally-occurring α-or β- amino acid or from the D-enantiomer thereof, and biologically-active analogs thereof in which one or more amino acids have been exchanged for other, preferably simpler, amino acids or in which the chains are modified, preferably shortened, in length, which process comprises cleaving N-protective and S-protective groups from a compound of the formula



or analogs thereof in which one or more amino acids have been exchanged for other, preferably simpler, amino acids or in which the chains are modified, preferably shortened, in length wherein Ac is an N-protective group cleaved by proton solvolysis, X is hydrogen or an S-protective group, and *n* is 2 or 3, dehydrogenating -SH groups in the resultant product to form S-S bonds, whereby a compound of the formula



or an aforementioned analog thereof, is obtained, and then subjecting the last-mentioned compound or analog to Edman degradation to remove the



bridge therefrom.

3,884,898

NORMORPHINE DERIVATIVES BONDED TO PROTEINS

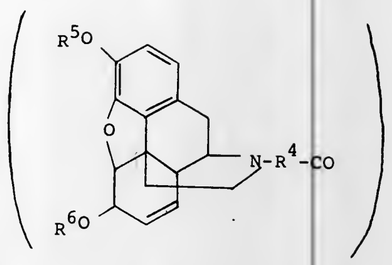
Richard S. Schneider, Sunnyvale, Calif., assignor to Syva Company, Palo Alto, Calif.

Filed Aug. 18, 1972, Ser. No. 281,883

Int. Cl. C07g *7/00;* **G01n** *27/78, 33/16*

U.S. Cl. 260—121 **4 Claims**

1. A normorphine derivative of the formula:



wherein R^4 is aliylene of from 1–6 carbon atoms;
R^5 and R^6 are hydrogen or acyl of from 1–2 carbon atoms;
Y′ is an antigenic polypeptide residue; and
n′ is from 1 to 250;
wherein said polypeptide residue is bonded through amide linkages.

3,884,899

WATER SOLUBLE QUATERNIZED BENZTHIAZOLE PHENYLAZOPYRIDINE DYESTUFFS

John Lindley Leng, and David Frederick Newton, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

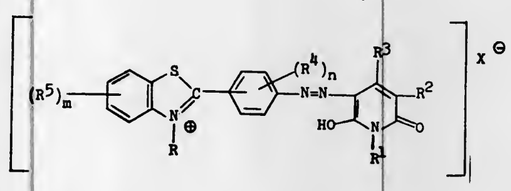
Filed Apr. 9, 1973, Ser. No. 349,191

Claims priority, application United Kingdom, Apr. 17, 1972, 17583/72

Int. Cl. C09c *29/36*

U.S. Cl. 260—146 R **3 Claims**

1. Water-soluble azo dyestuff devoid of carboxylic acid or sulphonic acid groups of the formula



wherein
R represents methyl, ethyl, benzyl or carbonamidoethyl,
R^1 represents hydrogen, amino, methyl, ethyl, propyl, butyl, hydroxyethyl, aminoethyl, benzyl, naphthyl, phenyl, chlorophenyl, tolyl, nitrophenyl or methoxy phenyl,
R^2 represents hydrogen, cyano, methyl, chloro, amino, acetylamino, carboethoxy or carbonamido,
R^3 represents hydrogen, methyl, ethyl or phenyl, or R^2 and R^3 taken together with the carbon atoms to which they are attached form a benzene ring,
R^4 represents hydrogen, methyl, chloro or methoxy,
R^5 represents hydrogen, methyl, chloro, methoxy or ethoxy,
X represents an anion, and
m and n are integers from 1-3.

3,884,900

SUBSTITUTED 4-(2-NITRO-4-PHENOXY-SULFONYLANILINO)PHENYLAZOPYRAZOLES

Ruedi Altermatt, Buckten, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

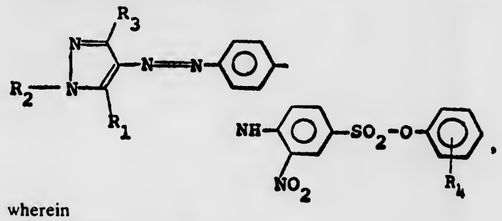
Continuation-in-part of Ser. No. 74,924, Sept. 23, 1970, Pat. No. 3,741,954. This application May 30, 1973, Ser. No. 365,107

Claims priority, application Switzerland, Oct. 21, 1969, 15709/69; May 16, 1973, 6967/73

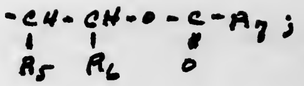
Int. Cl. C09b *29/38;* **D06p** *3/54*

U.S. Cl. 260—162 **13 Claims**

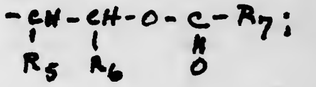
1. A compound of the formula



wherein
R_1 is hydroxy or amino,
R_2 is hydrogen, alkyl of 1 to 4 carbon atoms, cyclohexyl, phenyl, tolyl or benzyl,
R_3 is hydrogen, methyl, carbamoyl, methoxycarbonyl or ethoxycarbonyl, and
R_4 is hydrogen, methyl or methoxy.



R_4 is hydrogen, lower alkyl, hydroxy(lower alkyl), lower alkoxy(lower alkyl), cyano(lower alkyl), chloro(lower alkyl), bromo(lower alkyl), benzyl, chlorobenzyl, bromobenzyl, nitrobenzyl or



one of R_5 and R_6 is hydrogen or methyl; and the other of R_5 and R_6 is hydrogen:
each R_7 is independently lower alkyl, chloro(lower alkyl), bromo(lower alkyl), cyano(lower alkyl), phenyl, chlorophenyl, bromophenyl, lower alkylphenyl, lower alkoxyphenyl or cyanophenyl;
X is hydrogen, chlorine, bromine, lower alkyl, lower alkoxy, hydroxy(lower alkyl) or lower alkoxy(lower alkoxy); and Y is hydrogen, chlorine, or bromine.

3,884,901

O-(BENZYL OR BENZOYL)-BENZOIC ACID-AZO-PHENYL COMPOUNDS

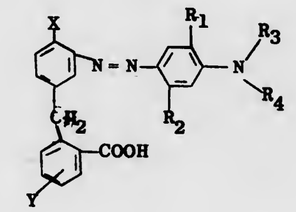
Edgar Earl Renfrew, and Dominic Andrew Zanella, both of Lock Haven, Pa., assignors to American Aniline Products, Incorporated, Paterson, N.J.

Filed Apr. 6, 1972, Ser. No. 241,810

Int. Cl. C09b *29/08, 29/26;* **D06p** *1/06*

U.S. Cl. 260—207 **5 Claims**

1. A compound of the formula



wherein
R_1 is hydrogen, chlorine, bromine, lower alkyl, or lower alkoxy;
R_2 is hydrogen, chlorine, bromine, lower alkyl, lower alkoxy, R_7CONH- or R_7SO_2NH-;
R_3 is hydrogen, lower alkyl, hydroxy(lower alkyl), lower alkoxy(lower alkyl), cyano(lower alkyl), chloro(lower alkyl), bromo(lower alkyl), or

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3,884,902

SULFONYL DERIVATIVES OF ERYTHROMYCIN

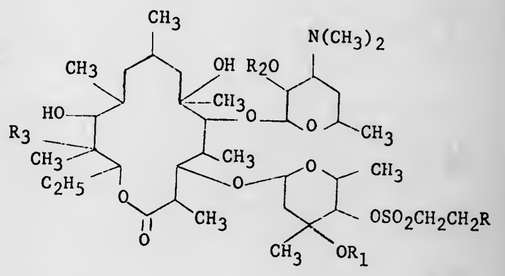
Robert Hallas; Jerry Roy Martin, both of Waukegan, and John Soloman, Chicago, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 4, 1973, Ser. No. 357,124

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 E **24 Claims**

1. An erthromycin compound having the formula:



where R contains at least one alkyl group containing 1–6 carbon atoms and is selected from the group consisting of amino, mono, alkyl amino, dialkyl amino, alkoxy, morpholino, piperazino, piperidino, alkylthio, alkylsulfonyl, phenylthio, phenylsulfonyl thiamorpholino, aziridino, benzylthio, thiamorpholinosulfone, benzylsulfinyl, phenylsulfinyl, benzylsulfonyl, chloroalkyl, fluoroalkyl, cyanoalkyl, chlorocyanoalkyl, fluorocyanoalkyl, benzylamino, benzoxy, and benzylcyano; R_1 is methyl, R_2 is hydrogen or loweralkanoyl, and R_3 is hydrogen or hydroxy.

3,884,903

4''-DEOXY-4''-OXOERYTHROMYCIN B DERIVATIVES

Peter Hadley Jones, Lake Forest; Jerry Roy Martin, Waukegan; James Bruce McAlpine, Libertyville; Jeanne Marie Pauvlik, Chicago, and John Soloman Tadanier, Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

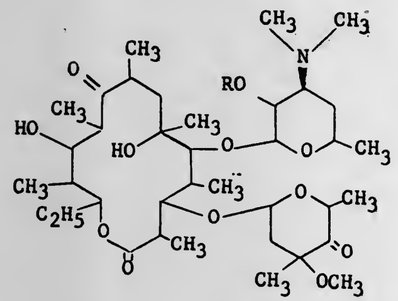
Continuation-in-part of Ser. No. 372,387, June 21, 1973, Pat. No. 3,842,069. This application Sept. 9, 1974, Ser. No. 504,417

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 E 8 Claims

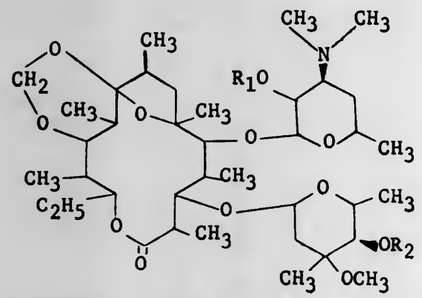
1. A 4''-deoxy-4''-oxoerythromycin derivative having a formula selected from the group consisting of:

Formula III



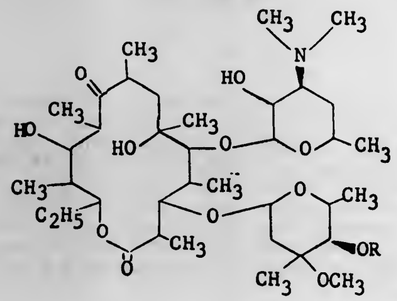
where R is hydrogen or CH_3CO;

Formula IV



where R_1 is hydrogen or RCO where R is as before defined, R_2 is hydrogen, CH_3CO or RCO; and

Formula V



where R_3 is H or RCO where R is as before defined.

3,884,904

11-SUBSTITUTED ERYTHROMYCIN B DERIVATIVES

Peter Hadley Jones, Lake Forest; James Bruce McAlpine, Libertyville; Jeanne Marie Pauvlik, Waukegan, and Thomas John Perun, Libertyville, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

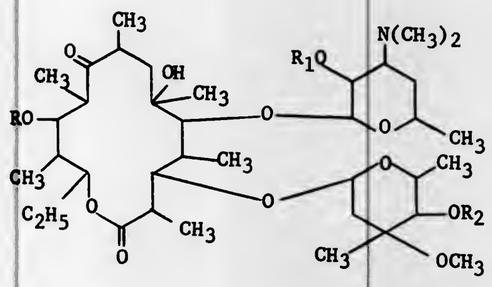
Filed June 21, 1973, Ser. No. 372,386

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 E 5 Claims

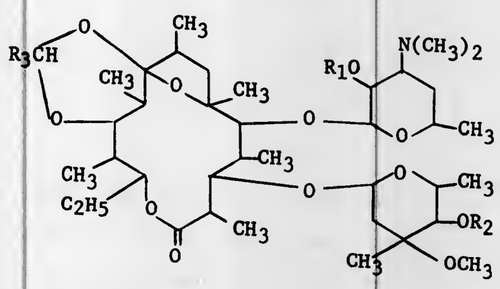
1. An 11-substituted erythromycin B derivative selected from the group consisting of:

Formula I



where R is selected from the group consisting of lower alkyl, CH_2SCH_3 CH_3SCH_2, $CH_3CH_2CH_2CH_2$ and $-CHR_3SR_4$ where R_3 and R_4 are lower alkyl, and R_1 and R_2 are hydrogen or lower alkanoyl and;

Formula II



where R_1, R_2 and R_3 are as before defined.

3,884,905

PRO-DRUG FORMS OF DIGOXIN

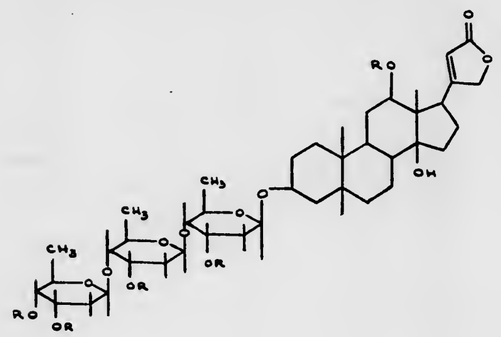
Nicolae S. Bodor, Lawrence, Kans., assignor to INTREX Research Corporation, Lawrence, Kans.

Filed May 2, 1974, Ser. No. 466,241

Int. Cl.[2] C07C *173/02*

U.S. Cl. 260—210.5 7 Claims

1. A digoxin compound of the formula:



wherein R represents a member selected from the group consisting of a hydrogen atom, picolinoly, nicotinoyl, and iso-nicotinoyl, with the proviso that at least one of said R must represent a member selected from the group consisting of picolinoyl, nicotinoyl, or iso-nicotinoyl, and wherein, when R is other than hydrogen, all of said R's must be picolinoyl, nicotinoyl or iso-nicotinoyl.

3,884,906

2,2-METHYLENDEIPHENOLS PROCESSES OF PREPARING THE SAME, AND METHODS OF TREATING THEREWITH MAMMALS INFECTED WITH INTERNAL PARASITES

Samuel Van der Meer, Amstelveen, and Hendrikus Matheus van Alphen, Purmerand, both of Netherlands, assignors to ACF Chemiefarma N.V., Maarssen, Netherlands

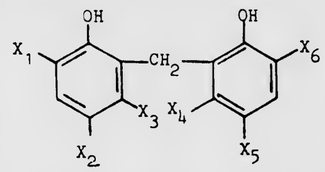
Filed Mar. 29, 1972, Ser. No. 239,341

Claims priority, application Netherlands, Apr. 9, 1971, 7104839

Int. Cl. C07c *39/12*

U.S. Cl. 260—211 R 12 Claims

1. A compound having activity against fascioliasis and which is selected from the group consisting of substituted 2,2'-methylenediphenols having the formula



in which X_1 and X_3 are each selected from the group consisting of halogen and a nitro group, X_2 is a halogen atom, X_3 and X_4 are each selected from the group consisting of halogen and hydrogen, and X_6 is selected from the group consisting of halogen, hydrogen and a nitro group, and further in which at least one of X_1, X_3 and X_6 represents a nitro group and, in the event that each of X_1 and X_6 represents a nitro group, X_3 represents halogen and their salts with alkali metals or methyl and ethyl glucamines.

3,884,907

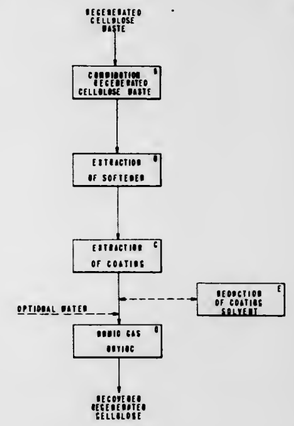
REGENERATED CELLULOSE RECOVERY PROCESS USING A HUMID GAS TO REMOVE COATING SOLVENT

Dale Roderic Laurance; Richard Dale Roe, and Robert Gene Sheppard, all of Lawrence, Kans., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Sept. 5, 1974, Ser. No. 503,501

Int. Cl. B29h *19/00*

U.S. Cl. 260—212 21 Claims



1. In a regenerated cellulose recovery process wherein (1) coated, softened, regenerated cellulose is comminuted, (2) the softener is removed leaving coated regenerated cellulose having open internal pores, (3) the coating is removed from the regenerated cellulose by flushing with a coating solvent, and (4) the regenerated cellulose is dried of coating solvent, the improvement wherein the regenerated cellulose is dried of coating solvent by contacting the regenerated cellulose having a solvent content of at least about 6 percent by weight at an elevated temperature with a gas stream containing an effective amount of water vapor to raise the regenerated cellulose water content to about 7 to 22 percent by weight and to reduce the coating solvent content of the regenerated cellulose.

3,884,908

STRONG ACID NEUTRALIZATION OF POLYMERIC ALCOHOL XANTHATES

N. I. Burke, Danville, and D. J. Bridgeford, Champaign, both of Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Mar. 14, 1973, Ser. No. 340,988

Int. Cl. C08b *9/00*; C08f *27/06*

U.S. Cl. 260—218 9 Claims

1. A process for neutralizing a solid finely divided film-forming alkali metal polymeric alcohol xanthate containing free alkali and alkaline by-products, to form a neutral stable solid product in finely divided form which comprises:

adding, in small increments, a substantially stoichiometric quantity of strong acid based on the free alkali and alkaline by-product content in said xanthate to a liquid slurry of said finely divided alkali metal polymeric alcohol xanthate containing free alkali and alkaline by-products in an inert liquid vehicle in which the xanthate is substantially insoluble, and

intimately mixing said acid and xanthate slurry at a rate sufficient to neutralize the free alkali and alkaline by-products without regenerating the polymeric alcohol.

3,884,909
GELATINIZABLE CROSSLINKED CATIONIC STARCH AND METHOD FOR ITS MANUFACTURE

Adrian P. Kightlinger, Clinton, Iowa; Edward K. Crosby, deceased, late of Clinton, Iowa (by Lovice Vivian Crosby, executrix), and Edwin L. Speakman, Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

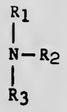
Continuation-in-part of Ser. No. 400,300, Sept. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 298,067, Oct. 16, 1972, Pat. No. 3,778,431. This application Apr. 1, 1974, Ser. No. 456,493The portion of the term of this patent subsequent to Dec. 11, 1990, has been disclaimed.

Int. Cl. C08b *19/06*

U.S. Cl. 260—233.3 R **13 Claims**

1. A gelatinizable crosslinked cationic starch product prepared by the sequential steps of:

a. reacting an aqueous suspension of granular starch under non-gelatinizing conditions with (1) an alkali-catalyzable polyfunctional organic crosslinking agent, the functional moieties of which are reactive with starch hydroxyl groups, ammonia, and secondary and tertiary amine groups under aqueous alkaline conditions and (2) the reaction product of said crosslinking agent with a nitrogenous compound selected from the group consisting of ammonia and C_{2-12} secondary and tertiary amines having the structure,



in which R_1 is a monovalent radical selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, aryl, alkaryl, and aralkyl, R_2 and R_3 are monovalent radicals independently selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, aryl, alkaryl, and aralkyl, and R_2 and R_3 when taken together form with the N atom saturated heterocyclic rings selected from the group consisting of substituted and unsubstituted piperidine, piperazine and morpholine, the length of any acyclic alkyl group being no greater than 4 carbon atoms, the reaction mixture having a slurry alkalinity of from about 20 to about 65, the amount of crosslinking agent being sufficient to impart to the starch a Sedimentation Value of from about 81 to about 98, and the amount of amine being sufficient to impart to the starch a degree of cationic substitution of from about 0.001 to about 0.10; and

b. depolymerizing the cationic crosslinked reaction product of step a to an alkaline paste fluidity of from about 201 to 299.

3,884,910
TRIAZOLINONES

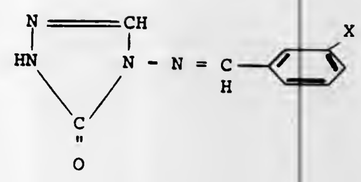
Kurt H. G. Pilgram, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 30, 1972, Ser. No. 311,008

Int. Cl. C07d *55/06*

U.S. Cl. 260—240 G **1 Claim**

1. A compound of the formula



wherein X is chlorine, trifluoromethyl or trifluoromethoxy.

3,884,911
DERIVATIVES OF BERBERINE

Fumitaka Shimada, Iwatsuki; Tetsuro Ikekawa, Narashino; Tomio Endo, Kobe; Hideo Kuroda, Urawa; Yoshiaki Ikeda, Tokyo; Kooishi Tachibana, Ohmiya, and Yoshimi Okazaki, Tokyo, all of Japan, assignors to Kanebo, Ltd., Tokyo and Tetsuro Ikekawa, Chiba, both of, Japan

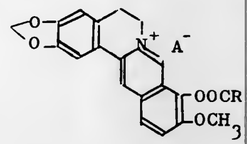
Filed Aug. 22, 1973, Ser. No. 390,402

Claims priority, application Japan, Aug. 25, 1972, 47-85651

Int. Cl. C07d *35/28*

U.S. Cl. 260—240 J **6 Claims**

1. A derivative of berberine of the formula:



wherein RCO represents a cinnamoyl group which may be substituted with chloro, acetoxy, methoxy or methylenedioxy groups on the benzene ring, and A represents an anion.

3,884,912
4-PIPERIDONE DERIVATIVES, THEIR PREPARATION AND THEIR USE AS STABILIZERS

Keisuke Murayama; Susumu Higashida, and Katsuaki Matsui, all of Tokyo, Japan, assignors to Sankyo Company Limited, Japan

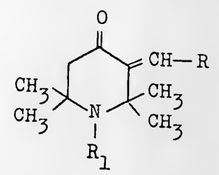
Filed Jan. 22, 1973, Ser. No. 325,742

Claims priority, application Japan, Jan. 26, 1972, 47-9670; Feb. 22, 1972, 47-18346

Int. Cl. C09b *23/00*

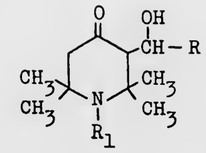
U.S. Cl. 260—240 F **12 Claims**

1. A compound selected from the group consisting of the piperidone derivatives having the formulae



(I)

wherein R represents a phenyl or naphthyl group which may be substituted with nitro, lower alkyl, halogen, hydroxy, lower alkyl hydroxy, hydroxy lower alkyl or formyl or a 5- or 6-membered heterocyclic group selected from the group consisting of 2-furyl, 2-thienyl, 3-pyrrolyl, 2-pyridyl and 4-pyridyl and R_1 represents hydrogen atom or an alkyl group of 1 to 4 carbon atoms and



wherein R and R_1 are as defined above.

3,884,913
4-(1'-ALKYL-5'-NITROIMIDAZOLYL-2'-METHYLENE-IMINO)-TETRAHYDRO-1,4-THIAZINE-1,1-DIOXIDES AND PROCESS FOR THEIR MANUFACTURE

Erhardt Winkelmann, Kelkheim, Taunus, and Wolfgang Raether, Dreieichenhain, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

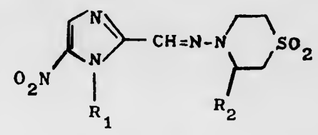
Filed Dec. 19, 1973, Ser. No. 425,979

Claims priority, application Germany, Dec. 21, 1972, 2262553

Int. Cl. C07d *49/36*; **C09b** *23/00*

U.S. Cl. 260—240 G **7 Claims**

1. A 4-(1'-alkyl-5'-nitroimidazolyl-2'-methylene-imino)-tetrahydro-1,4-thiazine-1,1-dioxide of the formula I



in which R_1 stands for a hydrogen atom, a methyl, ethyl or 2-hydroxy-ethyl group and R_2 for a hydrogen atom, a methyl, ethyl or methoxy-methyl group.

3,884,914
MANDELAMIDOCEPHALOSPORINS WITH IMPROVED PROPERTIES

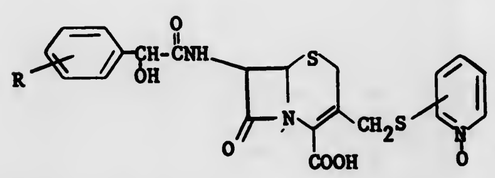
James S. Frazee, Collingswood, N.J., and Timothy Yu-Wen Jen, Broomall, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed July 5, 1973, Ser. No. 376,653

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **5 Claims**

1. A compound of the formula



where R is hydrogen, alkyl or alkoxy of C_1–C_4, fluoro, chloro, bromo, hydroxy, amino, nitro, or trifluoromethyl or the non-toxic pharmaceutically acceptable salts thereof.

3,884,915
7-ALKYLMERCAPTOACETAMIDO CEPHALOSPORINS

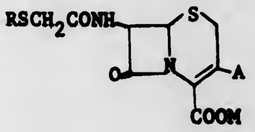
Robert M. DeMarinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed June 4, 1973, Ser. No. 366,816

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **7 Claims**

1. A compound of the formula:



in which:

R is lower alkyl of one to six carbon atoms;

M is hydrogen or an alkali metal or ammonium cation; and

A is CH_2SHet, where Het is a five or six membered heterocyclic ring containing two to four atoms selected from the group consisting of N, O and S, unsubstituted or substituted with from one to two groups selected from lower alkyl, alkoxyalkyl or trifluoromethyl, each alkyl or alkoxy having from one to four carbon atoms.

3,884,916
2,2-DIARYL-4-(4-ARYL-4-HYDROXY-PIPERIDINO)-BUTYRAMIDES

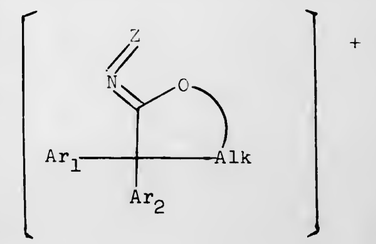
Paul Adriaan Jan Janssen, Vosselaar; Carlos Jan Ernest Josef Niemegeers, Deurne; Raymond Antoine Stokbroekx, and Jan Vandenberk, both of Beerse, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 129,607, March 30, 1971, Pat. No. 3,714,159, which is a continuation-in-part of Ser. No. 42,530, June 1, 1970, abandoned. This application Dec. 7, 1972, Ser. No. 379,155

Int. Cl. C07d *87/32, 27/04, 29/12*

U.S. Cl. 260—247.7 G **20 Claims**

1. 3,3-Diaryl-tetrahydro-2-furylidene ammonium salts having the formula:

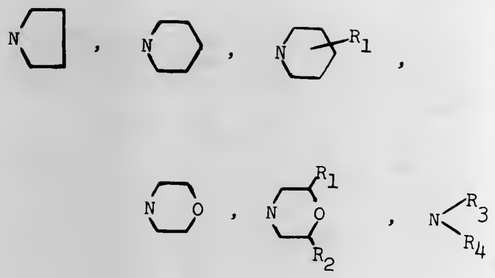


wherein:

Ar_1 is a member selected from the group consisting of phenyl and halophenyl;

Ar_2 is a member selected from the group consisting of phenyl and halophenyl;

N=Z is a member selected from the group consisting of



and $N(CH_2CH=CH_2)_2$, in which R_1 and R_2 represent lower alkyl, R_3 is a member selected from the group consisting of lower alkyl and benzyl, and R_4 is lower alkyl; and

—Alk— is a member selected from the group consisting of $—CH_2CH_2—$ and $—CH_2CH(CH_3)—$;

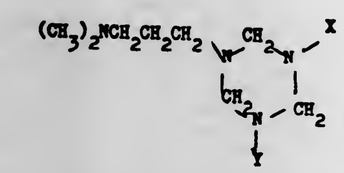
provided that, when said —Alk— is $—CH_2CH(CH_3)—$, then said N=Z is other than $N(CH_2CH=CH_2)_2$.

3,884,917
TERTIARY AMINES

Arthur Ibbotson, Blackley, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 29, 1974, Ser. No. 465,417
Claims priority, application United Kingdom, May 8, 1973, 21827/73
Int. Cl. C07d *55/14*
U.S. Cl. 260—248 NS **2 Claims**

1. A tertiary amine having the formula:



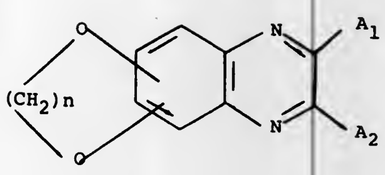
wherein X represents dimethylaminopropyl, lower alkyl, amino lower alkyl or hydroxy lower alkyl and Y represents lower alkyl, amino lower alkyl or hydroxy lower alkyl.

3,884,918
2,3 SUBSTITUTED, 5,6 OR 6,7 ETHYLENE OR METHYLENE DIOXY QUINOXALINES

Hans-Peter Schlunke, Marly-le-Petit, and Christian Egli, Magden, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 176,689, Aug. 31, 1971, Pat. No. 3,767,402. This application May 21, 1973, Ser. No. 361,913
Claims priority, application Switzerland, Sept. 4, 1970, 13251/70
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 Q **4 Claims**

1. A quinoxaline of the formula



(1)

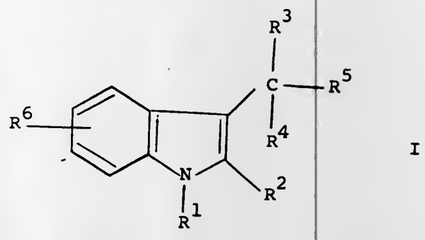
wherein A_1 and A_2 are each alkyl with maximum 3 carbon atoms, phenyl, dimethylaminophenyl, methoxyphenyl or pyridyl and *n* is 1 or 2, whereby the oxygen-containing ring is connected in the 5, 6 or 6, 7 position with the quinoxaline group.

3,884,919
1-(QUINAZOLINYL) INDOL-3-YLACETIC ACIDS, ESTERS AND AMIDES

George Richard Birchall; Walter Hepworth, and Stephen Collyer Smith, all of MacClesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 10, 1972, Ser. No. 296,202
Claims priority, application United Kingdom, Nov. 3, 1971, 51086/71; Apr. 19, 1972, 18116/72; June 30, 1972, 30767/72
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.4 Q **7 Claims**

1. A compound of the formula:



I

wherein:

R^1 is a quinazolinyl radical or a quinazolinyl radical bearing not more than two substituents selected from C_{1-5}- alkyl, C_{1-5}-alkoxy, C_{1-5}-alkylthio, amino, halogen, trifluoromethyl, trichloromethyl and phenyl substituents, the quinazolinyl radical being linked to the nitrogen atom of the indole nucleus through position 2 or 4 of the quinazolinyl radical;

R^2 is hydrogen or a C_{1-3}-alkyl radical;

R^3 and R^4, which can be the same or different, are hydrogen or a methyl radical;

R^5 is a radical of the formula $-COR^7$, wherein R^7 is a hydroxy, C_{1-5}-alkoxy, benzyloxy, phenoxy, di-C_{1-5}-alkylamino-C_{1-5}-alkoxy, (C_{3-6}-cycloalkyl)methoxy, amino, C_{1-5}-alkylamino or di-C_{1-5}-alkylamino radical; and

R^6 is hydrogen or a methylenedioxy or ethylenedioxy radical or not more than two substituents selected from the group consisting of C_{1-5}-alkoxy, C_{1-5}-alkyl, cycloalkyl of not more than 5 carbon atoms, di-C_{1-5}-alkylamino radicals and halogen atoms;

or a pharmaceutically-acceptable salt thereof.

3,884,920
11-BASICALLY SUBSTITUTED DIBENZ [B,F] [1,4] OXAZEPINES

Jean Schmutz, Muri; Fritz Hunziker, and Franz Martin Kunzle, both of Bern, all of Switzerland, assignors to Sandoz-Wander, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 55,603, July 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 797,281, Feb. 6, 1969, Pat. No. 3,546,226, which is a continuation-in-part of Ser. No. 712,956, March 14, 1968, abandoned. This application Dec. 29, 1971, Ser. No. 213,709
Claims priority, application Switzerland, July 14, 1967, 11015/67; Nov. 3, 1967, 15453/67; Feb. 14, 1968, 2201/68
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR **8 Claims**

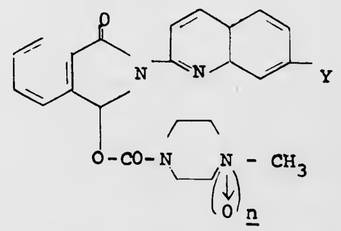
1. The compound, which is 2-Methylsulphonyl-11-(4-methyl-1-piperazinyl)-dibenz[b,f] [1,4] oxazepine and its acid addition salts.

3,884,921
ISOINDOLINE DERIVATIVES

Claude Cotrel, Val-de-Marne; Claude Jeanmart, and Mayer Naoum Messer, both of Essonne, all of France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed Dec. 29, 1972, Ser. No. 319,879
Claims priority, application France, Jan. 10, 1972, 72.00650; Nov. 21, 1972, 72.41272
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 BQ **8 Claims**

1. An isoindoline of the formula:



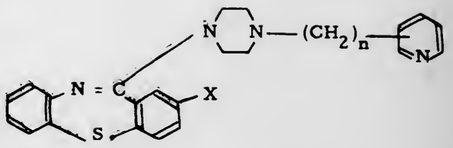
wherein Y is halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or nitro, and *n* is zero or 1, or a pharmaceutically acceptable non-toxic acid addition salt thereof.

3,884,922
11-(4-PYRIDYLALKYL-PIPERAZINO)-DIBENZOTHIAZEPINES

Michio Nakanishi, Oita; Tomohiko Munakata, Fujuoka; Yutaka Maruyama, Tokyo, and Shinro Setoguchi, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industry, Ltd., Osaka, Japan

Division of Ser. No. 60,139, July 31, 1970, Pat. No. 3,761,481. This application Mar. 9, 1973, Ser. No. 339,794
Claims priority, application Japan, July 31, 1969, 44-60651; Sept. 25, 1969, 44-76775; Oct. 2, 1969, 44-79478
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR **9 Claims**

1. A compound of the formula:



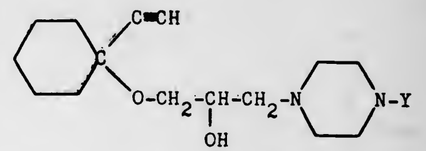
wherein X is H or Cl, and *n* is 1 or 2; or the pharmaceutically acceptable acid addition salts thereof.

3,884,923
1-[3-(1-ETHYNLCYCLOHEXYLOXY)-2-HYDROXY]-PROPYL-[4-PHENYL, OR 4-(2-PHENYL-2-ALKOXY)-]ETHYL-PIPERZINES

Roland-Yves Mauvernay, 13 rue Eugene Gilbert, 63000 Riom; Norbert Bush, Le Bouquet, 63410 Loubeyrat; Jacques Moleyre, 21, rue Sarrazin, 63200 Mozac; Andre Monteil, 25 bld Thermal, 63400 Chamalieres, and Jacques Simond, 63360 Gerzat, all of France

No Drawing. Filed Apr. 12, 1973, Ser. No. 350,517
Claims priority, application France, Apr. 13, 1972, 72.12893
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 PH **7 Claims**

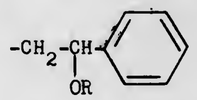
1. A piperazine of the formula



wherein Y is selected from the group consisting of groups having the formula



wherein X is selected from the group consisting of hydrogen, halogen, trifluoromethyl, alkyl of 1–4 carbon atoms, and alkoxy of 1–4 carbon atoms, and groups having the formula



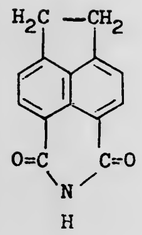
wherein R is alkyl of 1–4 carbon atoms, or the pharmaceutically acceptable acid addition salts thereof.

3,884,924
PROCESS FOR THE PREPARATION OF ACENAPHTHENE-5,6-DICARBOXYLIC ACID IMIDE

Kurt Eiglmeier, Idstein, Taunus, and Henning Lubbers, Schwalbach, Staunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

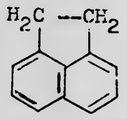
Filed Jan. 30, 1974, Ser. No. 437,993
Claims priority, application Germany, Feb. 1, 1973, 23048739
Int. Cl.² C07D *39/00*
U.S. Cl. 260—281 **2 Claims**

1. A process for the preparation of acenaphthene-5,6-dicarboxylic acid imide of the formula (1)



(1)

which comprises the step of successively reacting acenaphthene of the formula (2)



(2)

with an alkali metal cyanate in an at least 90% hydrofluoric acid at a temperature of from −10°C to 40°C, and then at a temperature of from 60° to 120°C.

3,884,925

DIISOQUINOLYL-DIPYRIDYL-BUTANES, THEIR SALTS AND THEIR MANUFACTURING PROCESS

Stanislaw Buchner, Birsfelden, Switzerland, assignor to Sulco Basel AG, Basel, Switzerland

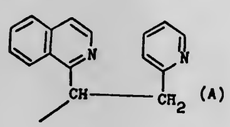
Filed June 19, 1973, Ser. No. 371,526

Claims priority, application Switzerland, June 19, 1972, 9150/72

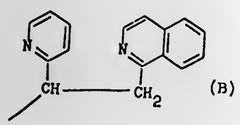
Int. Cl. C07d *33/50*

U.S. Cl. 260—288 R **2 Claims**

1. Di-(1-isoquinolyl)-di-(2-Pyridyl)-butanes of the formulae A—A, A–B and B—B, in which A and B represent the following groups:



(A)



(B)

and their non-toxic salts with inorganic and organic acids.

3,884,926

DISPERSE DYESTUFFS

Colin William Greenhalgh, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

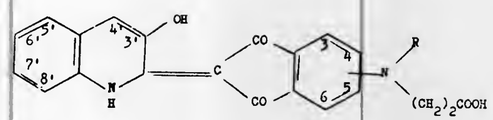
Filed July 12, 1973, Ser. No. 378,608

Claims priority, application United Kingdom, Aug. 15, 1972, 38011/72

Int. Cl. C07d *33/48*

U.S. Cl. 260—289 QP **1 Claim**

1. A disperse dyestuff of the formula:



(1)

wherein R is selected from the group consisting of hydrogen, lower alkyl and —CO lower alkyl, and the carbon atoms in the 4′, 6′ or 8′ positions of the quinoline ring can be substituted by chlorine or bromine.

3,884,927

PROCESS FOR THE PREPARATION OF VINCAMINE

Jacques Martel, Bondy, and Germain Costerousse, Vernouillet, both of France, assignors to Rousell Uclaf, Paris, France

Filed Mar. 27, 1973, Ser. No. 345,255

Claims priority, application France, Apr. 14, 1972, 72.13135

Int. Cl. C07d *57/08*

U.S. Cl. 260—293.53 **3 Claims**

1. A process for the preparation of vincamine, which comprises:

a. reacting eburnamonine with an ethynylmagnesium halide to give [20α,21α] 16α-ethynyl eburnane 16β-ol;

b. reacting the [20α,21α] 16α-ethynyl eburnane 16β-ol; with an oxidizing agent to give vincaminic acid;

c. treating the vincaminic acid with a methylating agent to give vincamine; and

d. isolating the vincamine.

3,884,928

IMIDAZOLE DERIVATIVES

Hans Bruderer, Benken, and Rudolf Ruegg, Bottmingen, both of Switzerland, assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

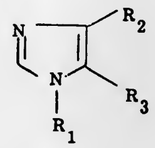
Filed Mar. 25, 1974, Ser. No. 454,537

Claims priority, application Switzerland, Apr. 5, 1973, 4919/73

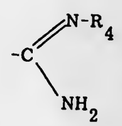
Int. Cl. C07d *31/36, 49/36*

U.S. Cl. 260—295.5 R **7 Claims**

1. A compound of the formula



wherein R_1 is lower alkyl, R_2 is fluorine, chlorine or bromine and R_3 is



wherein R_4 is hydroxy, lower alkoxy, lower alkanoyloxy, lower alkoxycarbonyloxy, phenylcarbonyloxy, lower alkylphenylcarbonyloxy, lower alkoxyphenylcarbonyloxy, halophenylcarbonyloxy, pyridylcarbonyloxy, lower alkylpyridylcarbonyloxy, lower alkoxypyridylcarbonyloxy or halopyridylcarbonyloxy, or a pharmaceutically acceptable salt thereof.

3,884,929

SELECTED 3-TRICHLOROMETHYL-5-SUBSTITUTED 1,2,4-THIADIAZOLES

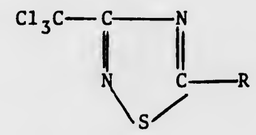
Eric Smith, P.O. Box 208, Farmington, Conn. 06032

Continuation-in-part of Ser. No. 98,182, Dec. 14, 1970, abandoned, which is a division of Ser. No. 751,728, Aug. 12, 1968, Pat. No. 3,573,317. This application Oct. 29, 1973, Ser. No. 410,728

Int. Cl. C07d *91/60*

U.S. Cl. 260—302 SD **3 Claims**

1. A 3-trichloromethyl-5-substituted-1,2,4-thiadiazole having the formula



wherein R is m-haloanilino or N,N-di(lower alkyl having 1–4 carbons)-dithiocarbamoyl.

3,884,930

MESOIONIC 2,3-SUBSTITUTED 5-ACYLIMINO-1,3,4-THIADIAZOLES

Horst Koenig, Ludwigshafen; Peter Thieme, Ruchheim, and August Amann, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

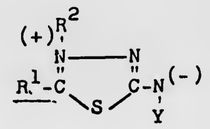
Filed Sept. 11, 1972, Ser. No. 288,124

Claims priority, application Germany, Sept. 21, 1971, 2147025

Int. Cl. C07d *91/62*

U.S. Cl. 260—306.8 D **3 Claims**

1. A mesoionic 1,3,4-thiadiazolimino-5 derivative of the formula:



in which

R^1 is phenyl which may bear chlorine, methoxy or ethoxy as a substituent,

R^2 is alkyl of one to five carbon atoms which may bear phenyl as a substituent; Y is acyl derived from a fatty acid of two to five carbon atoms, phenacetyl, phenylpropionyl, carbethoxy, dimethylaminocarbonyl, phenoxyacetyl, benzoyl or benzoyl substituted by 1-3 methoxy groups, ethoxy, carbethoxy, 1 or 2 chlorine groups, nitro, hydroxyl, acetoxy or methylaminocarbonyloxy, or a salt of a strong inorganic acid or a methoiodide of said derivative.

3,884,931

2-TRIFLUOROMETHYLIMINO-BENZO-HETEROCYCLIC COMPOUNDS

Gerhard Buttner, Cologne; Erich Klauke, Odenthal-Hahnenberg; Paul-Ernst Frohberger, Leverkusen, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

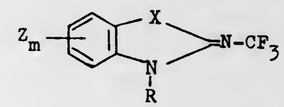
Filed Mar. 26, 1973, Ser. No. 344,800

Claims priority, application Germany, Apr. 15, 1972, 2218329

Int. Cl. C07d *85/48*

U.S. Cl. 260—307 D **7 Claims**

1. A 2-trifluoromethylimino-benzo-heterocyclic compound with five-members in the heterocyclic ring of the formula



in which

X is oxygen or sulfur,

R is methyl, ethyl, cyclohexyl, phenyl, chlorophenyl, nitrophenyl, lower alkylcarbo-lower alkoxy, methanesulfonyl, ethanesulfonyl, p-toluenesulfonyl, dimethylamidosulfonyl, or —CO-R′,

R′ is alkyl or alkoxy with up to 8 carbon atoms, phenyl, lower alkylamino or di-lower alkylamino,

each Z independently is halogen, trifluoromethyl, nitro, lower alkyl, sulfonic acid, sulfonic acid amide, or sulfonic acid amide substituted by alkyl with up to 6 carbon atoms, and

m is an integer from 0 to 2.

3,884,932

REACTION PRODUCT OF ALKYL OR ALKENYL SUCCINIC ANHYDRIDES WITH BENZOTRIAZOLE OR METHYL BENZOTRIAZOLE

Harry J. Andress, Jr., Pitman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 247,067, April 24, 1972, Pat. No. 3,788,993, which is a continuation-in-part of Ser. No. 222,642, Feb. 1, 1972, abandoned. This application Oct. 3, 1973, Ser. No. 403,142

Int. Cl. C07d *55/04, 99/04*

U.S. Cl. 260—308 B **5 Claims**

1. The reaction product of at least one member of the group consisting of alkyl and alkenylsuccinic anhydrides wherein the alkyl and alkenyl groups each contain from eight to 30 carbon atoms, and at least one member of the group consisting of benzotriazole and methyl benzotriazole in a mole ratio of from 1:1 to 1:2 at a temperature from about 125°C. to about 145°C.

3,884,933

CERTAIN SUBSTITUTED BENZIMIDAZOLES

Hans F. W. Röchling; Karl-Heinz Büchel, and Friedrich W. A. G. K. Korte, all of Hangelar, Germany, assignors to Shell Oil Company, Houston, Tex.

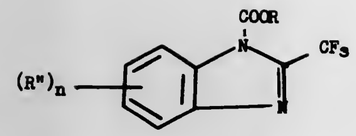
Filed Apr. 13, 1966, Ser. No. 542,204

Claims priority, application Germany, Apr. 15, 1965, 96569; Apr. 15, 1965, 96570

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **1 Claim**

1. A benzimidazole of the formula



wherein R is a member selected from the group consisting of lower alkenyl and benzyl and wherein R'' is a member selected from the group consisting of halo and nitro and wherein *n* is an integer of 1–4.

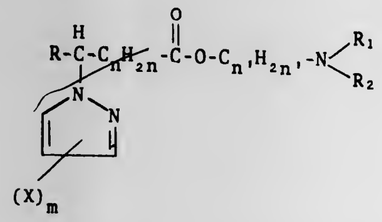
3,884,934

AMINOALKYL ESTERS OF DI- AND TRIHALOPYRAZOLE-1-ALKANOIC AND -1-ALKENOIC ACIDS

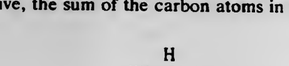
Gabriel Kornis; Arnolds Steinhards; Eldon George Nidy, and Henry J. Vostral, all of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 16,577, March 4, 1970, Pat. No. 3,849,106. This application Aug. 19, 1974, Ser. No. 498,478
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 R **5 Claims**

1. A compound of the formula:



wherein *n* is an integer 0, 1, 2, or 3; X is a bromine atom; *m* is the integer 3, R is hydrogen, alkyl of from one to 10 carbon atoms, inclusive, or alkenyl of from two to 10 carbon atoms, inclusive, the sum of the carbon atoms in the group



being not more than 11; $-C_{n'}H_{2n'}-$ is alkylene of from 2 to eight carbon atoms, inclusive; *n'* being an integer from 2 to 8, inclusive; and R_1 and R_2 are individually lower-alkyl of from one to eight carbon atoms; or mineral acid addition salts thereof.

3,884,935

SHRINK-FILM PACKAGE

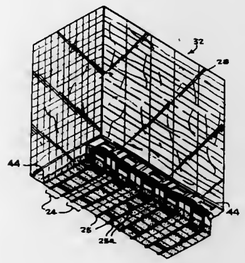
Henry Knox Burns, III, 1830 Redwood Dr., Macon, Ga.

Filed Nov. 6, 1972, Ser. No. 303,762
Int. Cl. B65d *65/16, 19/22, 71/00, 85/46, 85/62*
U.S. Cl. 206—322 **16 Claims**

1. A heat-shrunk film-wrapped rigid, generally cube-shaped unitary package of masonry brick articles and having substantial 3-dimensional size, said brick articles being of parallelpiped prismatic form and having a pair of major planar opposed surfaces for stacking said bricks and having inherent tolerance variations which contribute collectively to the unstable stacking of bricks in substantial height, superimposed layer-relation when uniformly oriented, said brick package comprising;

a. a predetermined plurality of generally uniform masonry brick articles oriented in like manner and disposed in abutting uniform alignment collectively having corresponding sides coplanarly aligned, and covered and held together to collectively constitute a sub-package by an overlaying film of heat-shrunk flexible material having film edge portions overlaying opposite end sides of endmost brick articles of said sub-package;

b. a predetermined plurality of said heat-shrunk-wrapped sub-packages disposed in adjacent contiguous and generally coplanar relation to constitute at least one tier or layer of said package; and



c. said tier of sub-packages having at least one layer of heat-shrunk material outwardly overlaying and essentially tightly embracing all of said heat-shrunk film-wrapped sub-packages so as to hold them in rigid assembly capable of being lifted from beneath, supported and transported as a unitary package.

3,884,936

PREPARATION OF 2-PYRROLIDONE

Elmer J. Hollstein, Wilmington, Del., assignor to Sun Research and Development Company, Marcus Hook, Pa.

Continuation-in-part of Ser. No. 108,376, Jan. 21, 1971, abandoned. This application Apr. 23, 1973, Ser. No. 353,277
Int. Cl. C07d *27/08*
U.S. Cl. 260—326.5 FN **3 Claims**

1. A process for preparing 2-pyrrolidone which comprises reacting maleic acid or maleic ahydride with hydrogen and ammonia in an aqueous system at a mole ratio of ammonia to acid or anhydride of from 1.0:1 to 1.2:1 at a temperature from about 200° to about 300°C, at a pressure from about 1,000 to about 3,000 psig for a time of about 0.5 to about 8 hours, and in the presence of from about 1% to about 10% by weight of said acid or anhydride of a catalyst of palladium supported on carbon.

3,884,937

ESTERS OF 1,4-BENZODIOXAN-2-CARBOXYLIC ACID AS ATTRACTANTS FOR THE EUROPEAN CHAFER

Terrence P. McGovern, Bowie; Morton Beroza, Silver Spring, both of Md., and Bart J. Fiori, Genova, N.Y., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 90,792, Nov. 18, 1970, Pat. No. 3,777,017. This application Aug. 1, 1973, Ser. No. 384,652
Int. Cl. C07d *15/18*
U.S. Cl. 260—340.3 **1 Claim**

1. Propyl 1,4-benzodioxan-2-carboxylate.

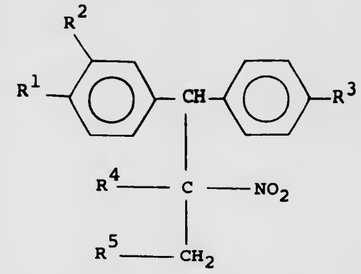
3,884,938

1-(4-ALKOXY(OR ALKYLTHIO)PHENYL)-1-(METHYLENEDIOXYPHENYL)-2-NITROALKANES

George Holan, Brighton, Australia, assignor to Commonwealth Scientific & Industrial Research Organization, Campbell, Australia

Division of Ser. No. 174,265, Aug. 23, 1971, Pat. No. 3,823,192. This application Dec. 20, 1973, Ser. No. 426,533
Claims priority, application Australia, Feb. 5, 1971, 3947/71; Feb. 12, 1971, 4010/71
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 **4 Claims**

1. A compound of the formula:



wherein R^1 and R^2 together form a methylenedioxy group; R^3 is a methoxy, ethoxy, propoxy, methylthio, ethylthio or propylthio group; and one of the groups R^4 and R^5 is hydrogen and the other of said groups is hydrogen or a methyl group.

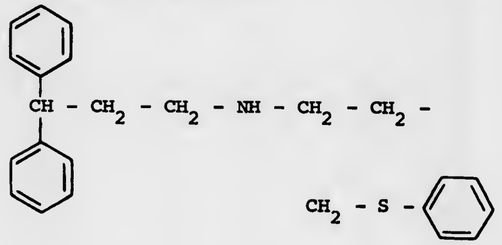
3,884,939

1,1-DIPHENYL-1'-PHENYLTHIO-DI-PROPYLAMINE AND THE SALTS THEREOF

Pietro Blanchini, Via Sagittario, 58, Modena, Italy; Eupremio Vitale, Via Murri, 153; Guido Guerra, Via Castuglione, 34, and Giustino Censoni, Via Mazzini, 44, all of Bologna, Italy

Continuation-in-part of Ser. No. 270,807, July 11, 1972, abandoned. This application Sept. 22, 1972, Ser. No. 291,273
Claims priority, application Italy, July 15, 1971, 3476/71
Int. Cl. C07d *5/12*
U.S. Cl. 260—343.7 **2 Claims**

1. Compound of the formula:



and its pharmaceutically acceptable salts.

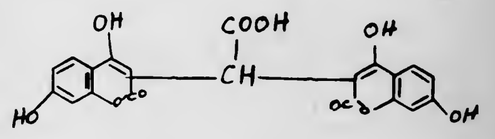
3,884,940

NEW BIS-(4,7-DIHYDROXYCOUMARINYL-3-)-ACETIC ACID

Karel Fucik, Prague, Czechoslovakia, assignor to SPOFA, United Pharmaceutical Works, Prague, Czechoslovakia

Filed Apr. 11, 1973, Ser. No. 350,157
Claims priority, application Czechoslovakia, Apr. 12, 1972, 2442-72
Int. Cl. C07d *7/26*
U.S. Cl. 260—343.2 R **12 Claims**

1. The bis-(4,7-dihydroxycoumarinyl-3)-acetic acid of the formula



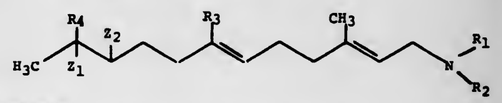
3,884,941

EPOXY CONTAINING ACYLATED TERPENOID AMINES

Friedrich Karrer, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 155,602, June 22, 1971, Pat. No. 3,786,097. This application Oct. 17, 1973, Ser. No. 407,111
Claims priority, application Switzerland, June 26, 1970, 9706; June 26, 1970, 14890
Int. Cl. C07d *1/00, 1/06*
U.S. Cl. 260—348 A **3 Claims**

1. A compound of the formula:



wherein
Z_1 and Z_2 together form an oxygen bridge,
R_1 is acyl,
R_2 is C_1-C_4 alkyl or C_2-C_4 alkenyl, and
R_3 and R_4 are each methyl or ethyl.

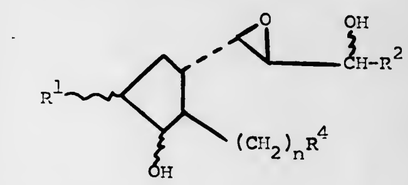
3,884,942

PROCESS FOR THE PREPARATION OF CYCLOPENTANE DERIVATIVES

Michael Peter Lear Caton, Upminster; Edward Charles John Coffee, London, and Gordon Leonard Watkins, Dagenham, all of England, assignors to May & Baker Limited, Essex, England

Continuation-in-part of Ser. No. 108,981, Jan. 22, 1971, abandoned. This application Mar. 21, 1973, Ser. No. 343,460
Claims priority, application United Kingdom, Mar. 2, 1973, 10402/73; Jan. 23, 1970, 3494/70
Int. Cl. C07d *1/22, 1/20*; **C07c** *69/74*
U.S. Cl. 260—348 A **2 Claims**

1. A cyclopentane compound of the formula:



wherein R^1 represents a hydrogen atom or a lower alkyl group, R^2 represents a straight- or branched-chain alkyl group of 4 to

9 carbon atoms, R^4 represents a carboxy group or a group of formula $COOR^8$, wherein R^8 represents a lower alkyl group, and n represents 5 or 6, and, when R^4 represents a carboxy group, non-toxic salts thereof.

3,884,943

PREPARATION AND SEPARATION OF 1,5- AND 1,8-DIHYDROXYANTHRAQUINONE

Rudolf Winkler, Reinach, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed May 22, 1972, Ser. No. 255,253

Claims priority, application Switzerland, May 26, 1971, 7686/71

Int. Cl. C07c *49/74*

U.S. Cl. 260—383 **15 Claims**

1. A process for the production and isolation of 1,5-dihydroxyanthraquinone from a mixture of 1,5- and 1,8-dialkoxyanthraquinones in which the alkoxy groups contain 1 to 3 carbon atoms, which comprises the steps of

a. hydrolyzing said mixture with a strong mineral acid in a molar ratio of at least 2 mols of the mineral acid per mol of said mixture, in acetic acid as solvent and at a temperature of above 80°C., to form a reaction mixture containing 1,5-dihydroxyanthraquinone and 1,8-dihydroxyanthraquinone,

b. maintaining the reaction mixture at a temperature of above 80°C. to retain the 1,8-dihydroxyanthraquinone in solution and allow the 1,5-dihydroxyanthraquinone to precipitate, and

c. removing the precipitated 1,5-dihydroxyanthraquinone at a temperature of above 80°C. to leave a mother liquor containing the 1,8-dihydroxyanthraquinone.

3,884,944

CYCLIC ACETALS CONTAINING EPOXIDE GROUPS

Alfred Renner, Munchenstein, and Rolf Hugi, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

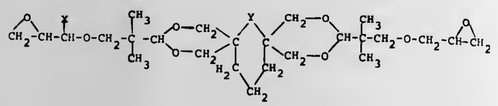
Filed Feb. 15, 1973, Ser. No. 332,840

Claims priority, application Switzerland, Feb. 24, 1972, 2638/72

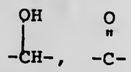
Int. Cl. C07d *15/04*

U.S. Cl. 260—340.7 **4 Claims**

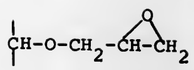
1. A cyclic acetal of 2-epoxy-propoxy-pivaldehyde of the formula



wherein X is hydrogen or methyl; and Y is



or



3,884,945

SYNTHESIS OF STEROIDS BY CYCLIZATION IN NITRO SOLVENTS

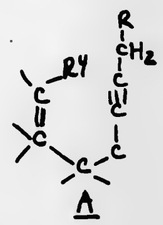
William S. Johnson, Portola Valley; Douglas R. Morton, Palo Alto, both of Calif., and Michael B. Gravestock, Worthing, England, assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Apr. 26, 1973, Ser. No. 354,532

Int. Cl.² C07C *169/22*

U.S. Cl. 260—397.3 **5 Claims**

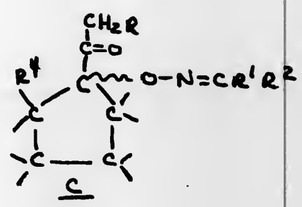
1. In the method of cyclizing a substrate having in its molecule the skeletal structure A



to produce a cyclizatiin product having in its molecule the skeletal structure B



wherein R selected from the class consisting of hydrogen, lower alkyl, aryl, halogen and protected hydroxyl; R^4 is H or lower alkyl and X is a group derived from $R—CH_2—C$, the improvement which comprises conducting the cyclization in a solvent which contains at least a major proportion of a primary or secondary aliphatic nitro compound or mixture thereof, thereby forming a cyclization product having in its molecule the skeletal structure C



wherein R^1 and R^2 are monovalent groups or a single bivalent group derived from the nitro compound or mixture of nitro compounds.

3,884,946

PROCESS FOR THE PRODUCTION OF ALKYLENE GLYCOL MONOESTERS

Eric Sung, Monheim Rhld.; Wilfried Umbach, Langenfeld, and Horst Baumann, Leichlingen, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

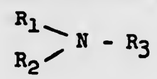
Continuation-in-part of Ser. No. 141,962, May 10, 1971, abandoned. This application Sept. 24, 1973, Ser. No. 399,812

Claims priority, application Germany, May 16, 1970, 2024050

Int. Cl. C07c *67/00, 143/90*

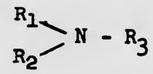
U.S. Cl. 260—400 **4 Claims**

1. A process for the production of alkylene glycol monoesters which consists essentially of reacting a carboxylic acid having from 8 to 24 carbon atoms selected from the group consisting of alkanoic acids, alkenoic acids, and mixtures thereof with an alkylene-vic.-oxide having 2 to 4 carbon atoms in substantially the stoichiometric amount based on said carboxylic acid, at a temperature of from 20°C to 200°C in the presence of from 1 to 5% by weight, based on said carboxylic acid, of an aliphatic tertiary amine catalyst which is in liquid form at the reaction temperature having the formula



wherein R_1 and R_2 are alkyl having 1 to 4 carbon atoms and R_3 is alkyl having 8 to 20 carbon atoms, and recovering said alkylene glycol monoester in yields of 87% or over.

4. A process for the production of sulfates of carboxylic acid alkylene glycol monoesters which consists essentially of reacting a carboxylic acid having from 8 to 24 carbon atoms, selected from the group consisting of alkanoic acids, alkenoic acids, and mixtures thereof, with an alkylene-vic.-oxide having 2 to 4 carbon atoms in substantially the stoichiometric amount based on said carboxylic acid, at a temperature of from 20°C to 200°C in the presence of from 1 to 5% by weight, based on said carboxylic acid, of an aliphatic tertiary amine catalyst which is in liquid form at the reaction temperature, having the formula



wherein R_1 and R_2 are alkyl having 1 to 4 carbon atoms and R_3 is alkyl having 8 to 20 carbon atoms, reacting the catalyst-containing reaction product with a sulfating agent, and recovering said sulfates of carboxylic acid alkylene glycol monoesters.

3,884,947

HYDROCARBON FUEL COMPOSITIONS

Elmer J. Badin, Highstown; Paul M. Kerschner, Trenton, and Aldo Crestl, New Brunswick, all of N.J., assignors to Cities Service Oil Service Company, Tulsa, Okla.

Division of Ser. No. 77,041, Sept. 30, 1970, Pat. No. 3,765,850. This application Apr. 18, 1973, Ser. No. 352,841

Int. Cl. C07c *103/30*

U.S. Cl. 260—404.5 **7 Claims**

1. A carboxylic acid salt of a compound having the formula



wherein *m* is at least 1 and the sum of *n* plus *m* is from 2 to about 6, R is a multivalent hydrocarbon group of about 2 to about 52 carbons, R' is a hydrocarbylene group of about 2 to about 12 carbons, R'' is selected from the group consisting of hydrogen and hydrocarbyl groups of about 1 to about 30 carbons, R''' is a hydrocarbyl group of about 2 to about 12 carbons, and at least about 10% of the amino groups contained therein are converted to the carboxylic acid salt.

3,884,948

METHOD OF PRODUCING INDIVIDUAL HIGHER BRANCHED CARBOXYLIC ACIDS

Viktor Judkovich Gankin; Vyacheslav Alexeevich Rybakov, both of ulitsa Khalturina, 23, kv. 6, Leningrad, U.S.S.R.; David Moiseevich Rudkovsky, deceased, late of Leningrad, U.S.S.R., and Galina Davydovna Rudkovskaya, administrator, Lesnoi prospekt, 61, kv. 250, Leningrad, U.S.S.R.

Filed Oct. 7, 1971, Ser. No. 187,546

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **9 Claims**

1. A method of producing individual higher branched unsaturated carboxylic acids having at least nine atoms in the "six" position with respect to the carbonyl oxygen, comprising the steps of aldol condensation of β-methyl-branched aldehydes having at least five carbon atoms at a temperature selected from the range of from 50° to 100° C., in the presence of an aqueous alkali solution as a catalyst with a concentration of 1 to 10 weight percent, followed by oxidation of the higher α, β-unsaturated aldehydes formed during the condensation with an oxygen-containing gas in the presence of an aqueous solution of an alkali having a concentration from 1 to 10 weight percent at a temperature selected from the range of from 10° to 70° C and subsequent neutralization of the reaction mass with 15–25 percent sulphuric acid to a ph of 4–7.

3,884,949

PROCESS FOR THE MANUFACTURE OF METAL COMPLEXES IN A PURE FORM

Hans Eicke, Reinach; Vladimir Arnold, Basel, and Francois L'Eplattenier, Therwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

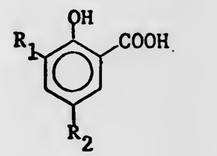
Filed Nov. 8, 1973, Ser. No. 413,993

Claims priority, application Switzerland, Nov. 22, 1972, 17010/72

Int. Cl. C07f *7/00*

U.S. Cl. 260—429.3 **4 Claims**

1. Process for the manufacture of metal complexes of divalent metals or oxo complexes of tetravalent metals with the acids of the formula I



(I)

in which R_1 and R_2 independently of one another denote hydrogen, bromine, chlorine, alkyl, cycloalkyl or aralkyl, characterised in that a successive reaction is carried out, in a solvent, of

a. an acid of the formula I with
b. a salt of the formula II

$$M_pX_{2-p}$$
$$m$$

in which M denotes the divalent cation of a divalent metal or of an oxo complex of a tetravalent metal, X denotes an anion which forms with M a salt which is soluble in the solvent of the process and p denotes 1 or 3 and m corresponds to the valency of the anion X, and

c. an alcoholate of the formula III

M'OR (III)

in which M' denotes the cation of an alkali metal and R denotes lower alkyl, the methoxyethyl group or the ethoxyethyl group, a, b and c are employed in the molar ratio of (2-i): 1/p:2 and i denotes 1 or 0 and, in the case that i is 1, the reaction mixture is reacted with water, the molar ratio of water to the acid of the formula I being at least 1.

3,884,950

ORGANOPOLYSILOXANE COMPOSITION HAVING IMPROVED HEAT STABILITY

Yoshinobu Koda, Chiba; Shosaku Sasaki, and Yoshiyuki Koda, both of Ichihara, all of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Dec. 13, 1973, Ser. No. 424,524
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 S 10 Claims

1. A method for improving the heat stability of organosilicon compounds in which the substituents on the silicon are monovalent hydrocarbon or halogenated monovalent hydrocarbon radicals having 1 to 30 carbon atoms comprising adding thereto the reaction product of a cerium salt of an organic carboxylic acid which is soluble in an aromatic hydrocarbon solvent or a chlorinated hydrocarbon solvent with an alkali metal siloxanolate having an average of at least three organosiloxane units per molecule and in which the substituents on the silicon are methyl, ethyl, phenyl, vinyl or 3,3,3-trifluoropropyl.

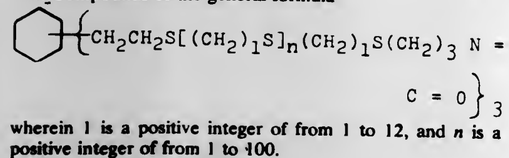
3,884,951

THIOETHER ISOCYANATE ADDUCTS

Alexis A. Oswald, Mountainside, N.J., assignor to Exxon Research & Engineering Company, Linden, N.J.

Division of Ser. No. 759,200, Sept. 11, 1968, Pat. No. 3,597,341. This application Jan. 18, 1971, Ser. No. 107,474
Int. Cl. C07c 119/04
U.S. Cl. 260—453 A 3 Claims

1. Compounds of the general formula



wherein 1 is a positive integer of from 1 to 12, and *n* is a positive integer of from 1 to 100.

2. Compound of the formula

$[CH_2 - S - CH_2 - CH_2 - CH_2 - N = C = O]_2$.

3. 3-β-hydroxyethylthiopropyl isocyanate.

3,884,952

VAPOR PHASE PROCESS FOR PREPARING HALOGENATED ISOCYANATES

Ehrenfried H. Kober, Kraiburg, Upper Bavaria, Germany; Richard H. Martin, Brevard, N.C., and Maurice A. Raymond, Northford, Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 53,562, July 9, 1970, abandoned. This application Apr. 5, 1973, Ser. No. 348,442
Int. Cl. C07c 119/04
U.S. Cl. 260—453 PC 10 Claims

1. A continuous vapor phase process for preparing a halogenated aromatic isocyanate from the corresponding aromatic nitro compound, which comprises:

a. vaporizing an aromatic nitro compound containing between about 6 and about 14 carbon atoms
b. reacting the resulting vapor with gaseous carbon monoxide
c. in the presence of a halogen donating gas selected from the group consisting of chlorine, bromine, fluorine, iodine, thionyl chloride, thionyl bromide, thionyl fluoride, thionyl iodide, sulfuryl chloride, sulfuryl bromide, sulfuryl fluoride, sulfuryl iodide, sulfur dichloride, sulfur dibromide, sulfur chloride, sulfur bromide, sulfur fluoride, sulfur iodide, hydrogen chloride, hydrogen bromide, hydrogen iodide, hydrogen fluoride, phosgene, carbon oxybromide, carbon oxyfluoride, nitrogen oxychloride, nitrogen oxybromide, nitrogen oxyfluoride, nitroxyl chloride, nitroxyl fluoride and nitrosotribromide and
d. an active catalyst selected from the group consisting of palladium halides and palladium oxides
e. in a reaction zone at a temperature from about 100° to about 500°C. and at a pressure of up to about atmospheric pressure and
f. withdrawing the reaction product containing the halogenated aromatic isocyanate from said reaction zone.

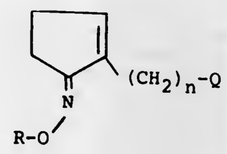
3,884,953

1-ALKOXIMINO-2-(ω-SUBSTITUTED-ALKYL)-2-CYCLOPENTENES

Karel Francis Bernady, Rockland; John Frank Poletto, Nanuet both of N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 335,842, Feb. 26, 1973, Pat. No. 3,836,581, which is a continuation-in-part of Ser. No. 208,951, Dec. 16, 1971, abandoned. This application June 19, 1974, Ser. No. 480,908
Int. Cl. C07c 143/68
U.S. Cl. 260—456 A 3 Claims

1. Compounds of the formula:



wherein *n* is an integer from 3 to 8, inclusive; R is a lower alkyl group; and Q is a lower alkanesulfonyloxy.

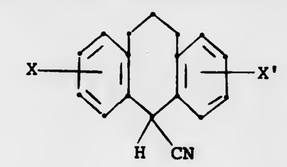
3,884,954

12-CYANO-5,6,7,12-TETRAHYDRODIBENZO[A,D]CYCLOOCTENES

Marcia E. Christy, Perkasie, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 701,541, Jan. 30, 1968, abandoned. This application Nov. 7, 1972, Ser. No. 304,588
Int. Cl. C07c 121/64
U.S. Cl. 260—465 R 2 Claims

1. A compound of the structural formula



wherein X and X' are selected from the group consisting of hydrogen, halogen, alkyl having from 1–6 carbon atoms, trifluoromethyl, C_1–C_5-alkylsulfonyl, C_1–C_5-alkylmercapto, C_1–C_5-alkoxy or di-C_1–C_4-alkylsulfamoyl.

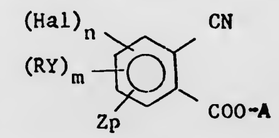
3,884,955

PROCESS FOR THE MANUFACTURE OF SUBSTITUTED O-CYANOBENZOIC ACID ESTERS

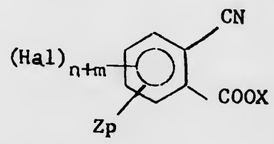
Jost Von Der Crone, and Andre Pugin, both of Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,686
Claims priority, application Switzerland, Jan. 17, 1972, 617/72
Int. Cl. C07c 121/52
U.S. Cl. 260—465 D 5 Claims

1. Process for the manufacture of substituted o-cyanobenzoic acid esters of the formula



wherein A denotes an alkyl or aralkyl group, Hal denotes a chlorine or bromine atom, Y denotes an oxygen or sulphur atom, R denotes a hydrogen atom or an optionally substituted alkyl, cycloalkyl or aryl group, Z denotes a hydrogen atom, *n* denotes the number 0 to 3, *m* denotes the number 1 to 4 and p denotes the number 0 to 2, with the sum of *m+n+p* being at most 4, characterised in that a halogenocyanobenzoic acid derivative of the formula



wherein X denotes an ammonium, alkyl or aralkyl group and the remaining symbols have the abovementioned meaning, is reacted in a hydrophilic organic solvent with a compound of the formula RYMe, wherein Me denotes an alkali metal atom and R and Y have the abovementioned meaning and, if X denotes an ammonium group, the resulting reaction product is esterified.

3,884,956

PROCESS FOR THE MANUFACTURE OF 2,4-DICYANO-,5-DIMETHYLANILINE

Klaus Komorowski, Cologne, and Peter Kurtz, Tegernsee, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 18, 1973, Ser. No. 361,507
Claims priority, application Germany, May 6, 1972, 2222381
Int. Cl. C07c 121/78
U.S. Cl. 260—465 E 7 Claims

1. Process for the preparation of 2,4-dicyano-3,5-dimethylaniline, comprising the steps of heating β-methyleneglutaric acid dinitrile or β-methylglutaconic acid dinitrile or a mixture thereof in the presence or absence of inert solvent to a temperature above 100°C in the presence of a basic catalyst under conditions sufficient to form 2,4-dicyano-3,5-dimethylaniline; and recovering said 2,4-dicyano-3,5-dimethylaniline.

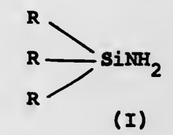
3,884,957

PROCESS FOR THE PREPARATION OF NITRILES FROM ACIDS AND ORGANOSILYAMINES

Georges Bakassian, and Marcel Lefort, both of Caluire, Rhone, France, assignors to Rhone-Poulenc, S.A., Paris, France

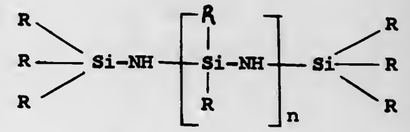
Continuation of Ser. No. 223,301, Feb. 3, 1972, abandoned. This application Feb. 21, 1974, Ser. No. 444,680
Claims priority, application France, Feb. 4, 1972, 72.03791
Int. Cl. C07c 121/02
U.S. Cl. 260—465 B 8 Claims

1. A process for the preparation of a nitrile from a carboxylic acid wherein a carboxylic acid of formula $R'(COOH)_p$ is reacted with a primary silylamine or linear or cyclic silazane having the general formula:



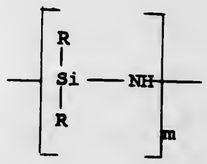
(I)

or



(II)

or



in the presence of a Lewis acid as catalyst wherein *p* is 1, 2 or 3, R' is a straight or branched alkyl or alkenyl group having 1–12 carbon atoms, a cycloalkyl or cycloalkenyl group with 5–12 ring carbon atoms which is unsubstituted or substituted by alkyl radicals containing up to 12 carbon atoms, or is a phenyl, alkylphenyl or phenylalkyl group, where the alkyl

residue contains 1–12 carbon atoms and where the phenyl residue is unsubstituted or is substituted by one or more hydroxyl groups in a juxta-nuclear position to the carboxy group, or is a monovalent group derived from a heterocyclic compound with 5 or 6 ring atoms in which the hetero atom is N, O or S, or is an aromatic radical consisting of a chain of at least 2 benzene rings where each benzene ring is bonded to the adjacent benzene ring by a direct valency bond or by an alkylene group having 1–6 carbon atoms, or R′ is a divalent or trivalent radical obtained by the removal of one or two hydrogen atoms respectively bonded to carbon atoms in the monovalent radical R′ as defined above: the symbols R, which may be the same or different, each represent an alkyl, alkylphenyl or phenylalkyl group where the alkyl group or portion is straight or branched and contains 1–12 carbon atoms or a cycloalkyl group of 5–6 ring carbon atoms or a phenyl group $n=o$ or an integer of 1–100 and m=3, 4 or 5.

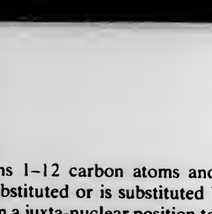
3,884,958

PROCESS FOR THE PREPARATION OF N-ACYL-α-(2- AND 4-HYDROXY)ARYLGLYCINE ESTERS

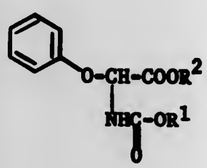
Kenneth G. Holden, Haddonfield, N.J., and Nelson C. F. Yim, Philadelphia, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Feb. 28, 1974, Ser. No. 446,984
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **9 Claims**

1. A process for preparing a compound of the formula:



in which:
the hydroxy group is ortho or para to the glycine side chain;
R^1 is t-butyl, β,β,β-trichloroethyl, benzyl, p-methoxybenzyl or p-nitrobenzyl; and
R^2 is lower alkyl of 1 to 4 carbon atoms, β,β,β-trichloroethyl, benzyl, p-methoxybenzyl or p-nitrobenzyl; comprising treating a compound of the formula:



where R^1 and R^2 are as defined above,
in a nonpolar organic solvent with a Lewis or a protic acid catalyst.

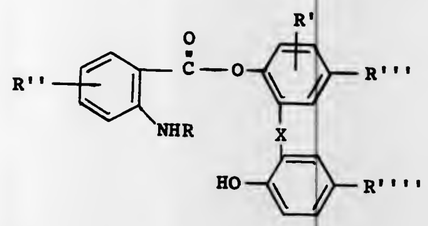
3,884,959

AROMATIC ESTERS OF ANTHRANILIC ACID

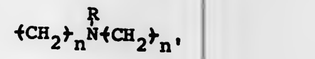
John Howard Adams, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 227,609, Feb. 18, 1972, Pat. No. 3,758,437, which is a continuation-in-part of Ser. No. 102,968, Dec. 30, 1970, abandoned. This application Feb. 13, 1973, Ser. No. 331,717
Int. Cl. C07c *101/54, 149/42*
U.S. Cl. 260—471 R **3 Claims**

1. Ester of anthranilic acid having the following structure:



in which
R is H or an alkyl group of 1 to 4 carbon atoms,
R′ and R″ are H, NO_2, alkyl groups of 1 to 20 carbon atoms or halogen,
R‴ is an alkyl group of 5 to 20 carbon atoms either straight or branched chain in structure,
R⁗ is H or an alkyl group of 1 to 20 carbon atoms, and
X is $+S+_n$, or



where n and n' are the same or different and have a value from 1 to 5.

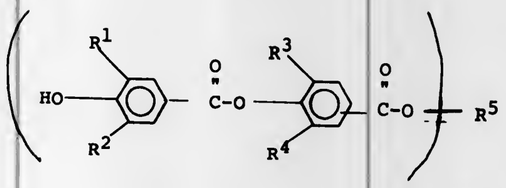
3,884,960

POLYOL ESTERS OF ALKYL SUBSTITUTED HYDROXY-BENZOYLOXYBENZOIC ACIDS

John J. Spivack, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,326
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 S **8 Claims**

1. A benzoyloxybenzoate having the formula



wherein
R^1, R^2, R^3, and R^4 are independently lower alkyl groups.
R^5 is alkylene or oxyalkylene derived from ethylene glycol, 1,2 and 1,3-propylene glycols, 1,10-decanediol, 2,2,4-trimethylhexanediol, diethylene glycol, neopentylglycol, trimethylolethane, glycerol, pentaerythritol, 1,2,3,4-tetrahydroxybutane, and
m is an integer from 2 and 4.

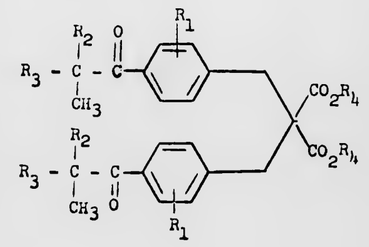
3,884,961

BIS-(SUBSTITUTED BENZYL) MALONIC ACID ESTERS

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 403,225, Oct. 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 333,892, Feb. 20, 1973, abandoned. This application Dec. 4, 1973, Ser. No. 421,673
Int. Cl. C07c *69/76*
U.S. Cl. 260—475 SC **4 Claims**

1. A compound of the formula



where
R_1 represents hydrogen, fluoro or chloro or straight chain lower alkoxy, and
R_2 and R_3 each independently represent lower alkyl having 1 to 2 carbon atoms, and
R_4 each independently represents lower alkyl having 1 to 4 carbon atoms.

3,884,962

PHENYLCARBAMATES

Richard C. Koch, Niantic, Conn., and Hugh C. Richards, Canterbury, England, assignors to Pfizer Inc., New York, N.Y.

Filed June 21, 1973, Ser. No. 372,023
Claims priority, application United Kingdom, June 29, 1972, 30396/72
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C **10 Claims**

1. A compound selected from the group consisting of 4-(4-bromophenylthio)-3,5-dimethylphenyl N-methyl-carbamate, 4-(4-chlorophenylthio)-3,5-dimethylphenyl N-methyl-carbamate, 3,5-dimethyl-4-phenylthiophenyl N-methyl-carbamate, 4-(4-chlorophenylthio)-3,5-dimethylphenyl N-acetyl-N-methyl-carbamate, 4-(4-bromophenylthio)-3,5-dimethylphenyl N-acetyl-N-methylcarbamate, 3,5-dimethyl-4-phenylthiophenyl N-acetyl-N-methylcarbamate, 4-(4-chlorophenylthio)-3,5-dimethylphenyl N-methyl-N-propionyl-carbamate, 4-(4-chlorophenylthio)-3,5-dimethylphenyl N-methyl-N-(n-butyryl)-carbamate and 4-(4-chhlorophenylthio)-3,5-dimethylphenyl N-methyl-N-isobutyryl-carbamate.

3,884,963

ADDITION OF N,N-DICHLORO-N-ACYL COMPOUNDS TO DIENES

Francis A. Daniher, Westfield, and Alexis A. Oswald, Mountainside, both of N.J., assignors to Exxon Research & Engineering Company, Linden, N.J.

Filed Dec. 6, 1967, Ser. No. 688,308
Int. Cl. C07c *125/06*
U.S. Cl. 260—482 C **27 Claims**

1. A selective monoaddition process for the preparation of C_1 to C_{30} alkyl N-chloro-N-(4-chlorocrotyl-1) carbamate compounds, comprising reacting a C_1 to C_{30} N,N-dichloro alkyl carbamate compound with a C_4 to C_{30} conjugated diene at a temperature of between about −80° and about 100°C. and pressures about 1 and about 10 atmospheres in the liquid phase in the absence of added catalyst.

12. Compounds according to claim 11 wherein R_1 is methyl, ethyl, propyl and R_2 to R_7 are hydrogen, chlorine, fluorine, methyl.

3,884,964

PIGMENT DISPERSANT IN AQUEOUS SLURRIES

Joseph V. Otrhalek, Dearborn, Mich., and Gunther H. Elfers, Mutterstadt, Germany, assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 31, 1974, Ser. No. 438,336
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **8 Claims**

1. A composition for controlling the viscosity of pigments in an aqueous slurry consisting essentially of an alkali neutralized terpolymer produced by the free radical polymerization in water of
a. from about 60 to 88 parts by weight of at least one alpha, beta unsaturated carboxylic acid containing 3 to 4 carbon atoms.
b. from about 6 to 28 parts by weight of at least one alkylate of an alpha, beta unsaturated carboxylic acid containing 3 to 4 carbon atoms, said alkylate containing from 1 to 18 carbon atoms, and
c. from about 4.5 to about 20 parts by weight of allyl alcohol.
the total of said parts being 100.

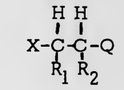
3,884,965

VICINAL GLYCOL ESTER PURIFICATION PROCESS

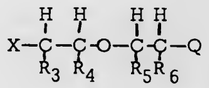
John Kollar, Wyckoff, N.J., assignor to Halcon International, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 220,889, Jan. 26, 1972, abandoned. This application Apr. 30, 1973, Ser. No. 355,843
Int. Cl. C07c *67/06*
U.S. Cl. 260—499 **18 Claims**

1. A process for purification of C_1–C_5 hydrocarbon carboxylic acid esters of [C_2-C_3] vicinal ethylene and propylene glycols containing less than 5 wt. % water, said esters containing organic halogen compound impurities predominating in at least one member of the group consisting of:



and



wherein:
X is chlorine, bromine or iodine;
Q is a radical selected from the group consisting of chlorine, bromine, iodine, hydroxy and C_1–C_5 alkanoyloxy; and,
R_1 through R_6 inclusive are independently selected from the group consisting of hydrogen and methyl with the total number of carbon atoms of R_1 plus R_2 being either zero or one, the total number of carbon atoms of R_3 through R_6 inclusive being an integer from zero to two, R_3 and R_4 not both being methyl and R_5 and R_6 not both being methyl;

said purification process comprising the steps of:

a. Contacting at a temperature between about 50° C. and about 400°C. said impurity-containing vicinal glycol ester, the ester being in the liquid phase, with at least one metal compound selected from the group consisting of the aquobasic alkali metal compounds, aquobasic alkaline earth metal compounds and compounds other than the halides selected from the group consisting of oxides, hydroxides, carbonates, bicarbonates, salts of mineral acids having a pK in 0.1N water solution at 25°C. of 3.0 or more, salts with alkyl monobasic hydrocarbon carboxylic acids having up to 20 carbon atoms, salts with naphthenic acids of up to 20 carbon atoms, salts with benzoic acid and salts with lower alkyl-substituted benzoic acids of zinc, lead, cadmium, tin, mercury, silver, manganese, copper, nickel, cobalt, iron and chromium, the ratio of total equivalents of metal to total equivalents of halogen during such contact being in excess of 1:1;

b. Maintaining the ester in contact with the metal compound for a time sufficient to permit reaction between the metal compound and the organic halogen compound impurities, the time being in excess of 1 minute; and,

c. Separating the vicinal glycol ester, having a reduced quantity of organo-halogen compound impurity, from metal compounds.

3,884,966
PHENENTHRENE SALTS OF α,γ-DIHYDROXY-β,β-DIMETHYLBUTYRIC ACID

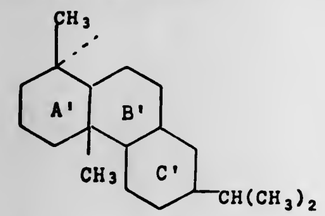
Sidney Frank Schaeren, Bottmingen, Switzerland, assignor to Hoffman-LaRoche Inc., Nutley, N.J.

Filed Apr. 12, 1966, Ser. No. 541,976
Int. Cl. C07c *87/42*
U.S. Cl. 260—501.1 **19 Claims**

1. A salt of α,γ-dihydroxy-β,β-dimethylbutyric acid of the formula:

$$[HOCH_2C(CH_3)_2CHOHCO_2]^- \ {}^+H_3N(CH_2)_nX$$

wherein n is an integer having a value of from 0 to 1 inclusive and X is a radical of the formula:



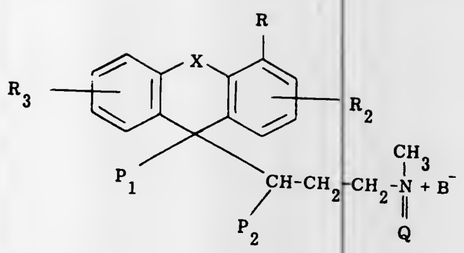
wherein the phenanthrene nucleus is selected from the group consisting of octahydrophenanthrene having an aromatic C' ring, Δ^8-dodecahydrophenanthrene and perhydrophenanthrene.

3,884,967
TRICYCLIC AMINES AND PROCESSES FOR THE PREPARATION THEREOF

Emilio Kyburz, Reinach, and Hans Spiegelberg, Basel, both of Switzerland, assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Division of Ser. No. 107,499, Jan. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 679,644, Nov. 1, 1967, abandoned. This application Mar. 8, 1974, Ser. No. 449,405
Int. Cl. C07c *119/00*
U.S. Cl. 260—501.1 **1 Claim**

1. A compound of the formula



wherein R is chlorine or fluorine, R_2 and R_3 are hydrogen, chlorine or fluorine, X is ethylene, vinylene or a halo-substituted vinylene, one of P_1 or P_2 is hydrogen and the other is hydrogen or hydroxyl, or P_1 and P_2 taken together represent an additional bond, Q is benzylidene, and B is the anion of an acid selected from the group consisting of hydrochloric acid, sulfuric acid, methane-sulfonic acid, benzenesulfonic acid and toluenesulfonic acid.

3,884,968
N-2,4-DIMETHYLPHENYL-N'-METHYLFORMAMIDINE COMPOUNDS

Ian Robert Harrison, Bleasby; John Felix McCarthy, Bramcote Hills, and Bryan Harper Palmer, Burton Joyce, all of England, assignors to Boots Pure Drug Company, Nottingham, Great Britain

Division of Ser. No. 94,208, Dec. 1, 1970, Pat. No. 3,729,565. This application Dec. 8, 1972, Ser. No. 313,234
Claims priority, application United Kingdom, Dec. 12, 1969, 60793/69; May 14, 1970, 23500/70
Int. Cl. C07c *129/00*
U.S. Cl. 260—501.14 **3 Claims**

1. N-2,4-dimethylphenyl-N'-methylformamidine addition salts of (pesticidally acceptable) acids selected from the group consisting of hydrobromic, hydriodic, hydrofluoric, sulphuric, nitric, phosphoric, perchloric, sulphamic, formic, acetic, trichloroacetic, oxalic, picric, benzenesulphonic, and p-toluenesulphonic acids.

3,884,969
NOVEL PROSTAGLANDINS

Robert Eugene Schaub, Upper Saddle River, and Martin Joseph Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 20, 1973, Ser. No. 353,152
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—514 D **28 Claims**

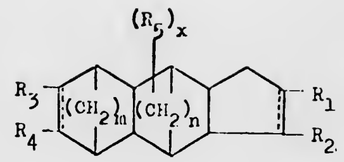
1. 1-9-Oxo-15-hydroxy-16-methyl-18,20-ethano-13-trans-prostenoic acid and the pharmaceutically acceptable cationic salts thereof.

3,884,970
RESINOUS CARBOXYLIC ACID DERIVATIVES

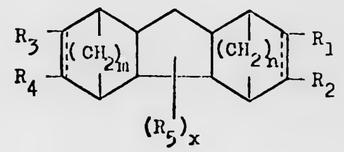
Morimasa Arakawa, Ashiya; Akisato Katanosaka, Toyonaka; Manabu Hanamoto, Nishinomiya, and Jyunichiro Ohtsubo, Izumi, all of Japan, assignors to Nard Institute, Ltd., Japan

Filed Sept. 19, 1973, Ser. No. 398,780
Claims priority, application Japan, Sept. 21, 1972, 47-95517; Dec. 1, 1972, 47-120825; Dec. 29, 1972, 47-453; May 10, 1973, 48-52274
Int. Cl. C07c *61/12, 61/28, 69/74*
U.S. Cl. 260—514 G **7 Claims**

1. A resinous condensed cyclic alkane or alkene carboxylic acid derivative of the general formula:



or



wherein R_1, R_2, R_3 and R_4 are each carboxyl, alkoxycarbonyl or hydrogen but one or two of R_1 to R_4 are always carboxyl or alkoxycarbonyl of which the alkoxy moeity has 1 to 6 carbon atoms and, when more than one carboxyl or alkoxycarbonyl is present, they can not be present at the adjacent positions; R_5 is alkyl having 1 to 6 carbon atoms which may be present at any position from the 1- to 9a-positions; m and n are each an integer of 0 or 1 but at least one of them is 1; x is an integer of 0 to 3; and not more than one double bond may be present between the positions indicated by a dotted line and, when present, carboxyl or alkoxycarbonyl can not exist at such positions.

3,884,971
REDUCTION OF CARBONYL COMPOUNDS

Theodore P. Goldstein, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,806
Int. Cl. C07c *59/08*
U.S. Cl. 260—535 R **20 Claims**

1. A process of reducing carbonyl compounds comprising reacting an alpha-keto acid compound with a heterocyclic nitrogen compound containing a reduced pyridine group in the presence of a polyvalent metal ion of a metal selected from the group consisting of Groups IIB, IVA, VIIB and VIII of the Periodic Table, said reaction being carried out at a pH of from about 4 to about 10.

3,884,972
TRIS (2-CHLOROETHYL)PHOSPHORAMIDE— A CROSSLINKING AGENT FOR CELLULOSIC COMPOSITIONS

Earl J. Roberts, New Orleans; Mary Ann F. Brannan, Metairie, and Stanley P. Rowland, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 24, 1970, Ser. No. 49,551
Int. Cl. C07f *9/22*
U.S. Cl. 260—551 P **1 Claim**

1. Tris(2-chloroethyl)phosphoramide.

3,884,973
BUTANONE SEMICARBAZONE

Hamish Christopher Swan Wood, Gearson, and Alexander Stuart, Bromley, both of England, assignors to The University of Strathclyde, Glasgow C.1, Scotland

Division of Ser. No. 160,216, July 6, 1971, Pat. No. 3,725,408, which is a division of Ser. No. 794,786, Jan. 28, 1969, Pat. No. 3,635,978. This application Oct. 31, 1972, Ser. No. 302,509
Int. Cl. C07c *133/02*
U.S. Cl. 260—554 **2 Claims**

1. 3-Amino-1-hydroxy-3-methylbutan-2-one semicarbazone.

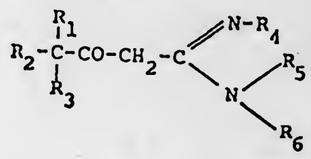
2. The hydrochloride salt of 3-amino-1-hydroxy-3-methylbutan-2-one semicarbazone.

3,884,974
2-KETOAMIDINES

Wilhelm Heffe, Neuenegg, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 366,681, June 4, 1973. This application Dec. 13, 1973, Ser. No. 426,714
Claims priority, application Switzerland, June 7, 1972, 8443/72; Feb. 28, 1973, 2917/73
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R **97 Claims**

1. A compound of the formula:



wherein

R_1 is alkyl of 1 to 4 carbon atoms, phenyl, substituted with halo or alkyl of 1 to 4 carbon atoms, and

R_2 is alkyl of 1 to 4 carbon atoms, or

R_1 and R_2 together are $-(CH_2)_n-$, wherein n is an integer from 2 to 7,

and

R_3 is alkyl of 1 to 4 carbon atoms,

R_4 is alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, and

R_5 and R_6 are the same or different and each is alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, or one of R_4, R_5 and R_6 is phenyl or phenyl substituted with halo or alkyl of 1 to 4 carbon atoms and the others of R_4, R_5 and R_6 are as defined above,

or a salt thereof of a pharmaceutically acceptable acid.

3,884,975
RHODIUM CATALYST FOR HYDRATION OF ACRYLONITRILE

Anthony Joseph Fanelli, and Francis Clyde Rauch, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 5, 1972, Ser. No. 296,363
Int. Cl. C07c *103/08*
U.S. Cl. 260—561 N **5 Claims**

1. In a process for producing acrylamide by the catalytic hydration reaction of acrylonitrile with water in a liquid homogeneous solution with a catalytic amount of homogeneous catalyst which comprises a member selected from the group consisting of diaryl phosphine oxides and which also comprises a compound of rhodium that is capable of forming a coordination complex with said phosphine oxide, the improvement wherein there is also present in said liquid homogeneous solution a catalytic amount of a soluble mercuric compound.

3,884,976

7-AMINO NORBORNANE DERIVATIVES

Karl Bernauer, Allschwil; Janos Borgulya; Marc Montavon, both of Basel, all of Switzerland; Hermann Breitschneider; Kraft Hohenlohe-Oehringen, both of Innsbruck, Austria, and Gunter Weis, Igls, Austria, assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

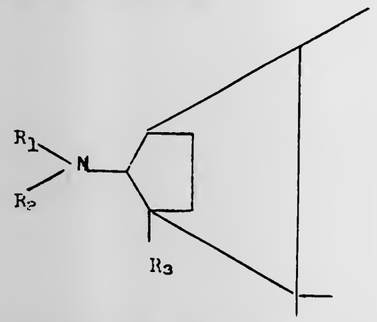
Filed July 30, 1973, Ser. No. 383,953

Claims priority, application Switzerland, Aug. 10, 1972, 11844/72

Int. Cl. C07c *87/40*

U.S. Cl. 260—563 P 12 Claims

1. A compound of the formula



wherein R_1 and R_2 each is hydrogen, lower alkyl, or lower alkenyl or R_1 and R_2 together with the nitrogen atom to which they are attached are a 5-membered or 6-membered heterocyclic group selected from the group consisting of pyrnolidino, piperidino, lower alkyl pyrrolidino and lower alkyl piperidino and pyrrolidino, 3 is hydrogen or methyl or an optically active enantiomer or a pharmaceutically acceptable acid addition salt thereof.

3,884,977

ANTIBACTERIAL QUATERNARY AMMONIUM SALTS AND METHOD OF PREPARING THE SAME

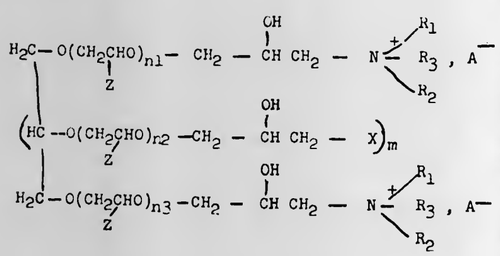
Nicholas M. Molnar, 215 E. 68th St., New York, N.Y. 10021

Filed Feb. 3, 1972, Ser. No. 223,308

Int. Cl. C07c *91/02*

U.S. Cl. 260—567.6 P 6 Claims

1. A quaternary ammonium salt of the following general structure:



wherein R_1 and R_2 are alkyl groups each having 1 to 3 carbon atoms,

R_3 is alkyl or alkenyl containing 8 to 18 carbon atoms,

Z is hydrogen or CH_3,

X is chlorine or bromine,

A is chosen from the group of chloride, bromide, iodide, paratoluene sulfonate or any other physiologically acceptable anion,

n_1, n_2 and n_3 are integers ranging from 1 to 10, and m has the value of 1 or 2.

3,884,978

PROCESS FOR THE PREPARATION OF 2,6-HEPTANEDIONE

Pius Anton Wehrli, North Caldwell, N.J., assignor to Hoffmann-LaRoche Inc., Nutley, N.J.

Division of Ser. No. 53,281, July 8, 1970, Pat. No. 3,767,677.

This application July 9, 1973, Ser. No. 377,495

Int. Cl. C07c *49/04*

U.S. Cl. 260—593 R 5 Claims

1. A process for the preparation of 2,6-heptanedione which process comprises reacting diketene with formaldehyde in water at a temperature in the range of about 0° to about 100°C.

3,884,979

SYNTHESIS OF UNSATURATED DIKETONES

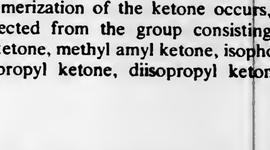
George Buchi, Cambridge, Mass., assignor to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed June 29, 1971, Ser. No. 158,080

Int. Cl. C07c *49/20*, *49/46*

U.S. Cl. 260—593 R 1 Claim

1. A process for preparing a compound of the formula:



wherein R is hydrogen, lower alkyl containing from 1 to 7 carbon atoms, or lower alkenyl containing from 2 to 7 carbon atoms, and the dotted bond can be optionally hydrogenated; comprising reacting a compound of the formula:

with a hydroxy compound of the formula:

YO—CH_2—C C—R

wherein R is as above; —OY is p-toluenesulfonyloxy and lower alkylsulfonyloxy and the dotted bond can be optionally hydrogenated;

in the presence of a base selected from the group consisting of tri(lower alkyl)amines and pyridine in an aqueous medium containing a lower alkanol.

3,884,980

ALDOL CONDENSATION USING COBALT II HALIDE HYDRAZINE COMPLEXES

Christian H. Stapfer, Newton, and Richard W. D'Andrea, New Hope, both of Pa., assignors to Cincinnati Milacron Chemicals, Inc., Reading, Ohio

Division of Ser. No. 26,161, April 6, 1970, Pat. No. 3,728,087.

This application Sept. 16, 1971, Ser. No. 181,214

Int. Cl. C07c *45/00*, *49/04*

U.S. Cl. 260—586 C 9 Claims

1. In a process of forming a polymer by aldol condensation of a ketone the improvement consisting essentially of heating a composition comprising (a) a compound having one of the formulae:

(1) [Co (II) (R-$NHNH_2$)$_3$] X_2

(2) [Co (II) (N_2H_4.HX)$_3$] X_2 and

(3) [Co (II) (R—$NHNH_2$)$_2$] X_2

where R is H. alkyl, aralkyl, aryl or haloaryl and X is halogen as a catalyst and (b) said ketone as solvent for said compound (a) until polymerization of the ketone occurs, wherein the ketone is selected from the group consisting of acetone, methyl ethyl ketone, methyl amyl ketone, isophorone, diethyl ketone, di-n-propyl ketone, diisopropyl ketone, di-n-butyl ketone, diisobutyl ketone, di sec butyl ketone, di-n-amyl ketone, methyl-n-propyl ketone, pinacolone, 6-methyl-2-heptanone, methyl n-octyl ketone, ethyl n-butyl ketone, 1-hydroxy-2-propanone, 3-hydroxy-2-butanone, diacetone alcohol, cyclobutanone, cyclohexanone, 2-methyl cyclohexanone, cycloheptanone, fenchone, acetophenone, biacetyl, acetyl propionyl, acetyl acetone, mesityl oxide and hexanone-3.

3,884,981

VAPOR PHASE HYDROGENOLYSIS DEHYDROGENATION PROCESS

Ben W. Kiff, Ona, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,708

Int. Cl. C07c *45/18*

U.S. Cl. 260—595 4 Claims

1. A process for the production of methyl ethyl ketone from normally-liquid oxygenated products comprising sec-butanol and sec-butyl acetate which comprises:

i. reacting a vaporous mixture of said oxygenated products with hydrogen,

ii. at an elevated temperature in the range of from about 300° to about 450°C.,

iii. in the presence of a catalyst consisting essentially of (a) an oxide of chromium, (b) an oxide of manganese, and (c) an oxide of at least one metal of the group consisting of zinc and nickel, said metal oxides being predominately in their lower oxidation states, the molar ratios of both manganese to chromium and said metal to chromium being in the range of from about 0.3:1.0 to about 1.5:1.0, and

iv. from about 1 to about 5 moles of hydrogen per mol of sec-butyl acetate contained in said oxygenated products,

v. for a period of time sufficient to convert said sec-butanol and said sec-butyl acetate to methyl ethyl ketone, said period being less than about 30 seconds, and

vi. recovering methyl ethyl ketone from the reaction product mixture;

wherein said normally-liquid oxygenated products comprise from about 5 to about 30 weight percent sec-butanol and from about 10 to about 50 weight percent sec-butyl acetate.

3,884,982

PROCESS FOR PREPARING CHLOROMETHYL METHYL ETHER

Lawrence A. Ens, Ann Arbor, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 19, 1973, Ser. No. 380,777

Int. Cl. C07c *41/00*, *41/10*

U.S. Cl. 260—614 R 9 Claims

1. An improved process for preparing chloromethyl methyl ether containing a reduced level of bischloromethyl ether comprising:

A. Saturating methanol, methylal or a liquid mixture thereof with HCl under essentially anhydrous conditions;

B. Adding formaldehyde at a controlled rate consistent with maintaining a reaction temperature between about −10°C and 45°C together with sufficient anhydrous HCl to maintain an essentially HCl saturated reaction mixture until about 0.6 to 1.0 equivalent of formaldehyde per equivalent of methanol has been added; and then

C. Recovering chloromethyl methyl ether from the reaction mixture.

3,884,983

PROCESS FOR THE PRODUCTION OF PHOTOGRADE HYDROQUINONE

Ward J. Burkholder, Houston; Glenn E. Miller, Pasadena, and Ronald C. Hays, Houston, all of Tex., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 19, 1970, Ser. No. 65,135

Int. Cl.[2] C07C *37/22*

U.S. Cl. 260—621 A 6 Claims

1. In a method for the recovery of crystalline photograde hydroquinone wherein a rearranged effluent obtained by the acid catalyzed rearrangement of paradiisopropylbenzene dihydroperoxide in a rearrangement solvent is neutralized and the rearrangement solvent removed and wherein there is obtained from the rearrangement solvent-free product an organic phase and a neutralized, dilute aqueous product containing said hydroquinone, the improvement comprising:

a. concentrating the dilute aqueous product by evaporating water therefrom at a temperature of from about 170° to 220°F,

b. carbon treating the concentrated hydroquinone solution from step (a),

c. cooling the carbon treated hydroquinone solution in a crystallizer vessel to effect crystallization of the hydroquinone from said aqueous solution,

d. separating the crystallized hydroquinone from step (c),

e. maintaining the aqueous product under a reducing environment throughout the hydroquinone recovery operation by excluding air from the process streams and injecting sodium bisulfite into the process stream at the commencement of the recovery process step.

3,884,984

PROCESS FOR OXIDIZING OLEFINS

Isao Hirose; Kazutoshi Funabashi; Takeshi Fujii, all of Iwakuni, and Kiyoshi Kawajiri, Hiroshima-ken, all of Japan, assignors to Teijin Ltd., Osaka, Japan

Continuation of Ser. No. 56,871, July 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 615,432, Feb. 13, 1967, abandoned. This application May 16, 1973, Ser. No. 360,684

Int. Cl. C07c *29/04*

U.S. Cl. 260—634 8 Claims

1. A process for the preparation of an alkylene chlorohydrin, bromo-hydrin or mixture thereof, having 2 to 4 carbon atoms, which comprises contacting an unsubstituted monoolefin having 2 to 4 carbon atoms with an aqueous solution containing chlorine ions, bromine ions or a mixture thereof, and thallic ions (Tl III) said chlorine ion and bromine ion being derived from at least one compound selected from hydrogen chloride, hydrogen bromide, thallium chloride, thallium bromide, chlorides and bromides of redox metals, chlorides and bromides of alkali metals or chlorides and bromides of alkaline earth metals, and said thallic ions (Tl III) being derived from a thallium salt which is soluble in the reaction system at a temperature of from room temperature to 180°C. and at a partial pressure of the olefin above 5 atmospheres, the atomic ratio of said chlorine ions, bromine ions or mixture theeof, to thallic ions being at least 6:1, and recovering by extraction, distillation, azeotropic distillation or flash evaporation, the resulting alkylene chloro-hydrin, bromohydrin or mixture thereof.

3,884,985

METHOD OF SEPARATING SULFUR MONOCHLORIDE FROM CARBON TETRACHLORIDE

Kenneth P. Hoffman, Niagara Falls, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 15, 1973, Ser. No. 406,457

Int. Cl. C07c *17/38*

U.S. Cl. 260—664 7 Claims

1. A process for recovering sulfur monochloride from a mixture containing sulfur monochloride and carbon tetrachlo-

ride derived from a process for preparing carbon tetrachloride by the chlorination of carbon disulfide which comprises; contacting the mixture containing sulfur monochloride and carbon tetrachloride with a substantially dry inert gas at a temperature between about 70° and about 150°C. to separate carbon tetrachloride from the sulfur monochloride.

3,884,986

CATALYTIC CONVERSION OF POLYCYCLIC AROMATIC HYDROCARBONS IN THE PRESENCE OF HYDROGEN

Ronald D. Bushick, Glen Mills, and Alfred E. Hirschler, Springfield, both of Pa., assignors to Sun Ventures, Inc., Marcus Hook, Pa.

Continuation of Ser. No. 118,177, Feb. 23, 1971, Pat. No. 3,776,968, Continuation-in-part of Ser. No. 749,932, Aug. 5, 1968, Pat. No. 3,565,964. This application Dec. 3, 1973, Ser. No. 420,988The portion of the term of this patent subsequent to Feb. 23, 1988, has been disclaimed.

Int. Cl. C07c *15/28*

U.S. Cl. 260—668 F **16 Claims**

1. Process for converting a polycyclic aromatic hydrocarbon containing at least one saturated ring to an isomer, or the conversion of said isomer to said polycyclic aromatic hydrocarbon, said process comprising contacting a feed rich in said polycyclic aromatic hydrocarbon, or rich in the said isomer with an acidic alumino-silicate catalyst in the presence of from 5–1500 p.s.i. of hydrogen at a temperature above 40°C. but below cracking temperature, whereby isomerization of the contacted isomer to the other isomer occurs.

3,884,987

PRODUCTION OF DEALKYLATED AROMATIC HYDROCARBONS AND HYDROGEN

Masao Uchiyama, and Shoichiro Mori, both of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Dec. 1, 1972, Ser. No. 311,431

Claims priority, application Japan, Dec. 29, 1971, 47-3448

Int. Cl. C07c *3/58*

U.S. Cl. 260—672 R **18 Claims**

1. A process for producing dealkylated aromatic hydrocarbons and hydrogen by steam dealkylation of alkylaromatic hydrocarbons which comprises subjecting a hydrocarbon oil to catalytic steam dealkylation at a reaction temperature of from 350° to 600°C and at a pressure ranging from atmospheric pressure to 50 kg/cm².G in the presence of a nickel-based catalyst containing a catalytic amount of nickel and a catalytically effective amount of thorium, said hydrocarbon oil containing at least 50% by weight of an alkylaromatic hydrocarbon and the remainder consisting essentially of non-aromatic hydrocarbons and having an initial boiling point higher than that of the dealkylated aromatic hydrocarbon to be produced by at least 5°C, the mole ratio of steam to the hydrocarbon oil during the steam dealkylation being less than 20 and recovering the dealkylated aromatic hydrocarbon and hydrogen from the resulting products.

3,884,988

PRODUCTION OF SYNTHETIC LUBRICANTS FROM ALPHA-OLEFINS THROUGH A TERNARY CATALYTIC SYSTEM

Pierleone Girotti; Renato Tesei, and Telemaco Floris, all of San Donato Milanese, Italy, assignors to Snamprogetti S.p.A., San Donato Milanese, Italy

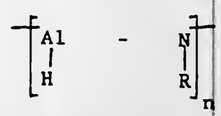
Filed Feb. 15, 1973, Ser. No. 332,627

Claims priority, application Italy, Feb. 15, 1972, 20564/72

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D **8 Claims**

1. Process for the preparation of high quality lubricating oils through the polymerization of a member of the group consisting of pure normal alpha-olefins and of mixtures of commercial alpha-olefins having the general formula $R - CH = CH_2$, in which R is an alkyl radical containing from 2 to 16 carbon atoms, wherein the catalytic system used for effecting the polymerization is a catalyst consisting of a compound of a transition metal selected from the group consisting of $TiCl_4$, $TiCl_3$, VCl_4 and $VOCl_3$ and two anionic coordinate cocatalysts, consisting, respectively, of: (a) a linear polymer constituted by a polyiminic compound having the following general formula



wherein n is a whole number not higher than 50 and R is an alkyl or cycloalkyl radical; and (b) a member of the group consisting of an aluminum alkyl sesquichloride an aluminum dialkyl mono chloride, and an aluminum monoalkyl dichloride the ratio between compound (a) and compound (b) is from 60/40 to 90/10 and the ratio between compound (a) and the transition metal compound is from 1.1 to 1.7.

3,884,989

COMPOSITION, PROCESS AND ARTICLE

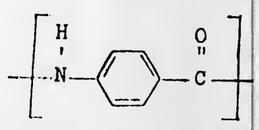
Richard N. Blomberg, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 747,123, July 24, 1968, abandoned. This application Jan. 20, 1971, Ser. No. 108,216The portion of the term of this patent subsequent to Mar. 28, 1989, has been disclaimed.

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 R **3 Claims**

1. Fiber consisting essentially of a first solid phase consisting essentially of a synthetic organic fiber-forming matrix polymer selected from the group consisting of polyamides, polyesters, spandex polymers, and polyacrylics, and a second solid phase distributed throughout said matrix polymer and present in a reinforcing amount of from about 1% up to about 25% by weight, based upon the weight of said matrix polymer, consisting essentially of recurring units of the formula:



wherein said reinforcing polymer is in the form of solid acicular particles having a length of less than about 10 microns, having a length-to-width ratio greater than about 2:1.

3,884,990

AROMATIC CO-POLYESTER COMPOSITION CONTAINING POLYETHYLENE OXYBENZOATE AND AROMATIC PHENOLIC POLYESTER

Hiroshi Sakata; Nakaba Asahara; Yasuhiko Asai, and Hirozo Hasegawa, all of Kyoto, Japan, assignors to Unitika, Ltd., Amagasaki, Japan

Filed May 16, 1974, Ser. No. 470,485

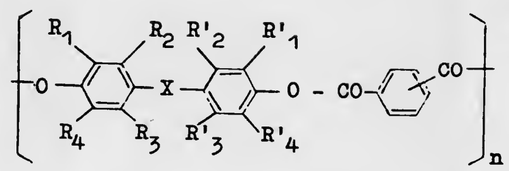
Claims priority, application Japan, May 18, 1973, 48-55297

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 **23 Claims**

1. A composition comprising an aromatic co-polyester and poly(ethylene oxybenzoate), in which

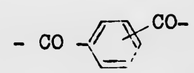
a. the aromatic co-polyester is a resinous product represented by the formula:



wherein X is —O—, —S—, —SO_2—, an alkylene group or an alkylidene group; R_1, R_2, R_3, R_4, R_1', R_2', R_3' and R_4' which may be the same or different, each is a hydrogen atom, a chlorine atom, a bromine atom or a hydrocarbon group having 1 to 6 carbon atoms, and n is a positive integer which provides a resinous product;

b. the poly(ethylene oxybenzoate is present in an amount of from 0.1 to 50 weight % based on the sum of the weight of said aromatic co-polyester and the poly(ethylene oxybenzoate); and

c. the



moiety in the above formula is a terephthalic acid unit or an isophthalic acid unit, which is present in said aromatic co-polyester at a molar ratio of 9:1 to 1:9, respectively.

3,884,991

GRAFT-POLYMER OF VINYL CHLORIDE AND PRODUCING PROCESS THEREOF

Yujiro Kosaka; Masaru Uemura; Mitsutaka Saito; Yuji Suzuki, and Kunio Takamoto, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Continuation-in-part of Ser. No. 876,577, Nov. 13, 1969, abandoned. This application Nov. 18, 1971, Ser. No. 200,199

Claims priority, application Japan, Nov. 11, 1968, 43-85481

Int. Cl. C08f *15/02*, *15/24*, *15/30*

U.S. Cl. 260—878 R **1 Claim**

1. A graft copolymer blend comprising

a. polyvinylchloride grafted onto chlorinated ethylene vinyl acetate copolymer, and

b. polyvinyl chloride,

said blend containing 5 to 25% by weight of said chlorinated ethylene vinyl acetate, said chlorinated ethylene vinyl acetate containing 15 to 45% by weight chlorine; said chlorinated ethylene vinyl acetate, prior to chlorination, containing 50 to 97% by weight of combined ethylene and having a melt index of 0.1 to 500g/10 min., said blend being prepared by reacting 15 to 35 parts by weight of said chlorinated ethylene vinyl acetate with 326 to 370 parts by weight vinyl chloride in the presence of a radical initiator at a temperature of 30° to 80° C.

3,884,992

THERMOSETTING RESIN CONTAINING EPOXY RESIN AND POLYHYDROXYSTYRENE

Masaru Shimizu, Kanagawa; Hiroshi Fujiwara, Saitama, and Shinji Iwai, Kanagawa, all of Japan, assignors to Maruzen Oil Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1973, Ser. No. 411,874

Claims priority, application Japan, Nov. 1, 1972, 47-109675

Int. Cl. C08g *45/04*

U.S. Cl. 260—837 R **17 Claims**

1. A thermosetting resin composition comprising a polyhydroxystyrene having a degree of polymerization of from 4 to 70,000 and an epoxy resin comprising an epoxy compound having at least 2 epoxy groups per molecule, wherein the ratio of the number of hydroxyl groups in said polyhydroxystyrene to the number of epoxy groups in said epoxy resin is in the range of 0.5 – 5.0.

3,884,993

EPM AND EPDM RUBBERS HAVING IMPROVED PROCESSABILITY

Harold J. Gros, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Continuation of Ser. No. 109,191, Jan. 25, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 348,902

Int. Cl. C08f *37/18*

U.S. Cl. 260—897 A **11 Claims**

1. The method of inproving the processability and ozone resistance characteristics of elastomers of ethylene and monoolefin having from 3–16 carbon atoms (EPM) and elastomers of ethylene, a monoolefin having from 3–16 carbon atoms and a polyene (EPDM) comprising blending solution of separately formed low molecular weight and high molecular weight polymers of the respective elastomers, in the ratio of 0.7 to 1.3 parts by weight of the low molecular weight polymer per 1 part by weight of the high molecular weight polymer, in which, for the EPDM elastomeric system, the low molecular weight polymer is an EPDM having a molecular weight average less than 25,000 and the high molecular weight polymer is an EPDM having an average molecular weight measured by Mooney level of ML_{1+8} at 300°F which is greater than 100 and in which, for the EPM elastomeric system, the low molecular weight polymer is an EPM having an average molecular weight of less than 10,000 and the high molecular weight polymer is an EPM having an average molecular weight measured by Mooney level of ML_{1+8} at 300°F which is greater than 90, separating the blended solids by coagulation, and processing the solid blend by milling or extrusion.

3,884,994

GRAFT COPOLYMERS OF LACTONE POLYESTERS

Frank E. Critchfield, and Joseph V. Koleske, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 273,300, July 19, 1972, which is a division of Ser. No. 109,982, July 26, 1971, Pat. No. 3,760,034. This application Feb. 8, 1974, Ser. No. 440,779

Int. Cl. C08f *29/24*

U.S. Cl. 260—899 **8 Claims**

1. Polyblend of polyvinyl chloride and about 10 to about 100 parts of graft copolymer, per hundred of polyvinyl chloride, said graft copolymer comprising:

a. lactone polyesters having a reduced viscosity of about 0.2 to 2.0 dl./gm., a molecular weight of about 5,000 to 150,000 and repeating units having the general formula:



wherein R_1 is H or an alkyl group containing one to about six carbon atoms, and n is an integer having a value of at least 3; and

b. graft copolymerized thereon about 1 to about 20% by weight based on the weight of said lactone polyesters of an ethylenically unsaturated monomer having the general formula:



wherein R is a monovalent radical selected from the group consisting of —H and methyl, R′ is a monovalent radical selected from the group consisting of —COOH and —COOR″, and R″ is an alkyl radical containing one to about 18 carbon atoms.

3,884,995

NON-FLOCCULATED DISPERSIONS OF PERFLUOROOLEFIN POLYMER PARTICLES IN ORGANIC LIQUID

Henry K. Seller, Woodbury, N.J., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed July 18, 1973, Ser. No. 380,335

Int. Cl. C08f *29/22*

U.S. Cl. 260—900 **9 Claims**

1. A process for preparing a dispersion in an organic liquid of particles of perfluoroolefin polymer which comprises:

A. contacting

1. 4–12 volumes of an aqueous dispersion of particles of perfluoroolefin polymer consisting essentially of polymers of tetrafluoroethylene and copolymers of tetrafluoroethylene and hexafluoropropylene the polymer bearing functional groups and the dispersion being substantially free of ionic contaminants that would materially interfere with the reaction described in 3 below,
2. one volume of an organic liquid immiscible with water, and
3. at least about 10% by weight, based on weight of perfluoroolefin polymers, of a stabilizer which is a polymer formed from 99.9–20% by weight, based on the total weight of the stabilizer, of monomers selected from the groups consisting essentially of esters of acrylic acid or methacrylic acid with alkanols of C_1—C_{18}, vinyl esters of fatty acids having 2–20 carbon atoms, styrene, acrylonitrile, methacrylonitrile and mixtures of the foregoing and 0.1–80% by weight, based on the total weight of the stabilizer, of monomer bearing functional groups that will interact with those born by the perfluoroolefin polymer, the stabilizer being present in such an amount and the contacting being done under conditions in which some of the functional groups of the perfluoroolefin polymer and the functional groups of the stabilizer interact thereby causing at least some of the perfluoroolefin polymer particles that have interacted with the stabilizer to be transferred to the organic liquid,

B. decanting up to 95% of the total water present the said percentage of the total water having formed into a separate phase, and

C. separating the organic liquid containing perfluoroolefin polymers particles from the remaining water.

3,884,996

O,O-DIALKYL-1-CYANOALKYL-KETONOXIME-THIONOPHOSPHORIC ACID ESTERS

Walter Lorenz, Wuppertal; Manfred Jautelat, Hilgen; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

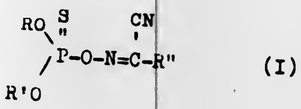
Filed Jan. 15, 1974, Ser. No. 433,603

Claims priority, application Germany, Feb. 1, 1973, 2304848

Int. Cl. C07f *9/16*; **A01n** *9/36*

U.S. Cl. 260—940 **7 Claims**

1. An 0,0-dialkyl-1-cyanoalkyl-ketonoxominethionophosphoric acid ester of the formula



(I)

in which

R and R′ each independently is lower alkyl, and

R″ is n-propyl, iso-propyl, 1,1-dimethyl-propyl or optionally methyl-substituted cyclopentyl or cyclohexyl.

3,884,997

PROCESS FOR PREPARATION OF AROMATIC PHOSPHORUS COMPOUNDS

Howard E. Shook, Jr., Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 2, 1973, Ser. No. 356,444

Int. Cl. C07f *9/08, 9/32, 9/40*

U.S. Cl. 260—973 **6 Claims**

1. In a process for preparing an organic phosphorus compound of the formula $R_xP(OR')_{(3-x)}$ wherein R is an alkyl or aryl radical of 1 to 18 carbon atoms, R′ is an aryl radical of 6–25 carbon atoms and x has a value of 0–2 by maintaining a reaction mixture comprising a phenol and a phosphorus halide of the formula $R_xPX_{(3-x)}$, wherein X is a halide of the group consisting of chloride, bromide and iodide, and R and x are as defined above, at a temperature in the range of about 25°C. to the boiling point of the resulting organic phosphorus compound;

the improvement which comprises incorporating into the reaction mixture when reaction of the phenol with the phosphorus halide is substantially complete at least a stoichiometric amount based on the resultant hydrogen halide in the reaction mixture of a metal selected from the class consisting of zinc, chromium, titanium, cadmium and mixtures thereof and maintaining the reaction mixture at a temperature in the range of 25°C. to the boiling point of the reaction medium for from 0.1 to 2 hours to produce an organic phosphorus compound free of hydrogen halide.

3,884,998

S-DIPHENYLMETHYL-DITHIOPHOSPHATES

Odd Kristiansen, Reinach, Basel-Land, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

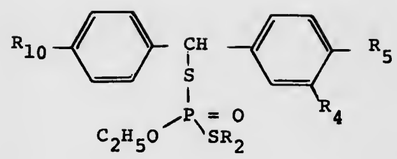
Filed Jan. 28, 1974, Ser. No. 437,414

Claims priority, application Switzerland, Feb. 7, 1973, 1755/73; Dec. 20, 1973, 17773/73

Int. Cl. A01n *9/36*; **C07f** *9/16*

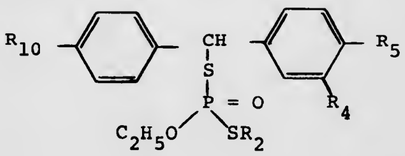
U.S. Cl. 260—948 **8 Claims**

1. A compound of the formula



wherein R_2 represents ethylthiomethyl or propargyl; and each of R_4, R_5 and R_{10} represents hydrogen, chlorine or methoxy.

4. A compound of the formula



wherein R_2 represents n-propyl, n-butyl or isobutyl; and each of R_4, R_5 and R_{10} represents hydrogen or chlorine.

3,884,999

O-ALKYL-S-[3-METHYL-BUTEN-(2)-YL]-(THIONO)THIOL-PHOSPHORIC-(PHOSPHONIC) ACID ESTERS

Gerhard Schrader, Wuppertal Cronenberg, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

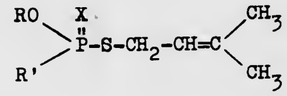
Filed Aug. 15, 1973, Ser. No. 388,678

Claims priority, application Germany, Aug. 26, 1972, 2242097

Int. Cl. C07f *9/16*; **A01n** *9/36*

U.S. Cl. 260—956 **7 Claims**

1. A (thiono)thiol-phosphoric-(phosphonic) acid ester of the formula



(I)

in which

R is lower alkyl,

R′ is lower alkyl, lower alkoxy, lower alkylmercapto or phenyl, and

X is oxygen or sulfur.

3,885,000

S,S-DIALKYL-O- AND S-ALKENYL PHOSPHITES AND PHOSPHATES

Ernst Beriger, Neuallschwil, and Henry Martin, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

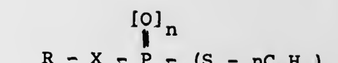
Division of Ser. No. 105,125, Jan. 8, 1971, Pat. No. 3,760,042. This application June 27, 1973, Ser. No. 374,218

Claims priority, application Switzerland, Jan. 16, 1970, 595/70

Int. Cl. C07f *9/16*; **A01n** *9/36*

U.S. Cl. 260—956 **4 Claims**

1. A compound of the formula



in which R is alkenyl of from 3 to 6 carbon atoms, X is oxygen or sulphur, and n is the number 0 or 1.

3,885,001

MANUFACTURE OF THIOPEROXYDIPHOSPHATES

Donald Burrell Graves, Wadsworth, and Otto William Maender, Akron, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 6, 1974, Ser. No. 448,470

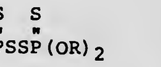
Int. Cl. C07f *9/16*

U.S. Cl. 260—968 **11 Claims**

1. A process for converting phosphorodithioic acid of the formula



to thioperoxydiphosphate of the formula



in which R is alkyl of 1–20 carbon atoms, phenyl substituted lower alkyl, cycloalkyl of 5–8 carbon atoms, phenyl, or lower alkyl substituted phenyl which comprises adding to an aqueous solution of alkali metal salt of said phosphorodithioic acid at a pH of 6 or above alkali metal hypohalite and a quantity, equivalent to the major portion of base generated from the hypohalite, of mineral acid or said phosphorodithioic acid.

3,885,002

MANUFACTURE OF TRIALKYLTRITHIOPHOSPHITES AND TRIALKYLPHOSPHOROTHIOATES

F. Taylor Barber, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 30, 1973, Ser. No. 355,614

Int. Cl. C07f *9/16*

U.S. Cl. 260—972 **9 Claims**

1. A process for the preparation of trialkyltrithiophosphites which comprises the steps of:

reacting under reaction conditions at least one phosphorous trihalide with at least one alkyl mercaptan of 3 to 5 carbon atoms per molecule, thereby producing a first product mixture comprising trialkyltrithiophosphite, and a first off-gas stream comprising hydrogen halide and alkyl mercaptan, wherein said reaction conditions include a temperature in the range of about 125° to 250°F.,

contacting said first off-gas stream with a first strong aqueous caustic solution, thereby substantially absorbing said hydrogen halide and said alkyl mercaptan from said off-gas,

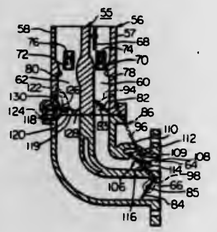
continuing said contacting and absorbing, thereby reducing the pH of said strong caustic containing absorbed alkyl mercaptan to below about 10, whereby said absorbed alkyl mercaptan substantially separates as an alkyl mercaptan phase from said aqueous phase, and

recycling said separated alkyl mercaptan to said reacting step.

3,885,003
INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kazuaki Kobayashi; Tatsujiro Okuno; Shinya Katayama, and Takehiko Kita, all of Tokyo, Japan, assignors to Nissan Motor Company Limited, Japan

Filed Feb. 6, 1974, Ser. No. 439,982
Claims priority, application Japan, Feb. 7, 1973, 48-16937
Int. Cl. F02m *11/02*
U.S. Cl. 261—23 A **4 Claims**

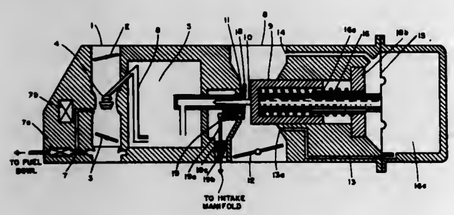


1. An intake system for an internal combustion engine, comprising primary and secondary combustible mixture intake passageways providing communication between the atmosphere and said engine, a primary throttle valve movably disposed in said primary intake passageway, a check valve disposed in said primary intake passageway downstream of said primary intake passageway and near said engine and opening said primary intake passageway only when the pressure on the engine side of said check valve is below that on the opposite side thereof, a secondary throttle valve disposed in said secondary intake passageway near said engine and operatively connected through a linkage to said primary throttle valve to be actuated to open said secondary intake passageway when said primary throttle valve is opened in excess of a predetermined amount, an auxiliary throttle valve disposed in said secondary intake passageway upstream of said secondary throttle valve and actuated to open said secondary intake passageway in response to combustible mixture acting on the surface area of said auxiliary throttle valve, and a fuel port opening into said secondary intake passageway at a position where said auxiliary throttle valve closes said secondary intake passageway.

3,885,004
HIGH VELOCITY CARBURETOR

Frederick J. Marsee, Clawson, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 157,087, June 28, 1971, Pat. No. 3,768,787. This application Mar. 20, 1973, Ser. No. 343,106
Int. Cl. F02m *7/06, 9/06*
U.S. Cl. 261—23 A **9 Claims**



1. A multibarrel, multistage carburetor for a spark ignition internal combustion engine which comprises

a. at least one primary barrel which includes
1. a first mixing conduit having a venturi,
2. a fuel nozzle situated in said venturi to deliver fuel to said first conduit,
3. a first throttle means mounted in said conduit downstream of said fuel nozzle, said throttle means being manually moveable between opened and closed position,
4. choke means situated in said first conduit upstream of said nozzle, said choke means being mounted in said conduit to permit manual movement between closed and opened positions,
5. a vacuum modulated throttle by-pass which provides required enrichment of fuel/air mixture during engine deceleration, and

b. at least one secondary barrel, having no choke means, which includes
6. a second mixing conduit having a cross-sectional area larger than said first mixing conduit,
7. a second throttle means rotatably mounted in said second conduit to permit manual movement between closed and opened positions, said second throttle means being directly linked to said first throttle means so that said second throttle means begins to open when said first throttle means reaches a pre-determined open position,
8. slidably adjustable means situated above said second throttle means, and being positioned to move across the short axis of and into said second conduit, said slidably adjustable means having a needle axially attached to the end which enters said conduit and being attached to a vacuum operator at the opposite end, said vacuum operator being responsive to a vacuum signal obtained at a point in said second conduit just above said second throttle means,
9. a fuel orifice for providing fuel to said second conduit, situated in said second conduit upstream of said second throttle means and opposite said slidably adjustable means, the extent of said fuel orifice opening being controlled by the movement of said needle into and out of said orifice as said slidably adjustable means responds to said vacuum operator,
10. a fuel/air mixture enrichment means which comprises a vane situated in and substantially parallel to the long axis of said second conduit, said vane being responsive to manifold vacuum and acting to reduce the cross-section area of said second conduit in the region of the slidably adjustable means at high engine loads,

c. means for enriching the air/fuel mixture in at least said primary barrel during acceleration,

said primary barrel providing fuel/air mixture to said engine at idle and relatively low engine loads and combining with said second barrel to provide fuel/air mixture to said engine at higher engine load.

3,885,005
PRODUCTION OF REFRACTORY ARTICLES BY A FREEZECAST PROCESS

Howard Leroy Downing, and Ned Wright Roudabush, both of Cincinnati, Ohio, assignors to The Chas. Taylor's Sons Company, Cincinnati, Ohio

Filed Aug. 20, 1973, Ser. No. 389,465
Int. Cl. B29c *25/00*
U.S. Cl. 264—28 **1 Claim**

1. A method for preparing a precision shaped refractory body having finished dimensions, said refractory body being selected from the group consisting of metal oxide and metal silicates, which comprises selecting a refractory composition in which at least 70 percent of the particles in said composition are of size greater than 200 mesh up to one-half inch, adding to said composition a colloidal silica sol to form an aqueous slurry, said slurry containing from 85 to 95 percent solids and said sol containing from 5 to 20 percent silica,

feeding said slurry into the die cavity of a pair of precision, non-porous complimentary mold pieces, refrigerating said slurry in said die cavity to a temperature below 15°F., to form an irreversible precipitation of the colloidal silica sol between the refractory particles, thus forming a bond of great strength, then freezing the entire refractory body, removing said frozen body from said die, subjecting the frozen body to an elevated temperature to thaw the ice and to dry the water from said material before the water reacts with the surface of the refractory body, thereby preventing the water from harming the finished dimensions of the precision shaped body and firing said dried material at a temperature from 2,000° to 3,500°F. to form a refractory body having a porosity of less than 25 percent, a density above 2.0 g/cc, and a modulus of rupture above 1,200 psi, and having a substantially increased thermal shock resistance, said refractory body being precision shaped and having finished dimensions.

3,885,006
COMPOSITE FRICTION ARTICLES AND METHODS OF MAKING SAME

Donald M. Hatch; George M. Studdert, both of Huntington Beach; John B. Williamson, Corona Del Mar, and Roger W. Wycinowski, Fountain Valley, all of Calif., assignors to Hitco, Irvine, Calif.

Filed May 2, 1973, Ser. No. 356,516
Int. Cl. B29c *25/00*
U.S. Cl. 264—29 **8 Claims**

1. A method of making a composite friction article from a mixture including asbestos fibers and a carbonizable resin comprising the steps of heating the mixture to a temperature of 250°–400° F at a pressure of 500–12,000 psi to cure the mixture, thereafter heating the mixture to a temperature of 350°–500° F at a pressure of 1,000–5,000 psi to postcure the mixture, and thereafter heating the mixture to at least 700° F at a pressure of 500–1,000 psi to pyrolyze the mixture.

3,885,007
PROCESS FOR EXPANDING PYROLYTIC GRAPHITE

Larry C. Olsen, Richland, and Howard W. Scott, Kennewick, both of Wash., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

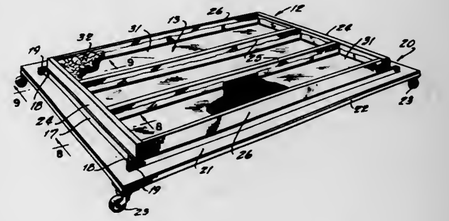
Filed Sept. 8, 1969, Ser. No. 855,838
Int. Cl. C01b *31/00*
U.S. Cl. 264—42 **10 Claims**

1. A process for expanding pyrolytic graphite which comprises placing said pyrolytic graphite in a chamber having dimensions in which movement in the direction parallel to the deposition surface (the a-b direction) is constrained by the chamber side walls, but which allows movement only in the direction normal to the depostion surface (the c-direction), treating said pyrolytic graphite with an intercalating agent to cause said pyrolytic graphite to expand in the direction normal to the deposition surface (the c-direction) while constraining movement in the direction parallel to the deposition surface (the a-b direction) by the side walls of said chamber and continuing said treatment for a period of about 1 to about 120 minutes sufficient to substantially completely delaminate said expanded pyrolytic graphite, and heating from about 300° to about 700°C, said delaminated expanded pyrolytic graphite while permitting movement in the direction normal to the deposition surface and constraining movement of said delaminated pyrolytic graphite in the direction parallel to the deposition surface by the side walls of said chamber, to cause said delaminated expanded pyrolytic graphite to expand further in the direction normal to the deposition surface.

3,885,008
METHOD FOR PRODUCING PREFABRICATED WALL SECTION WITH MOLDED PANELS

Robert E. Martin, Route No. 3, Box 188A, Gainesville, Tex. 76249

Continuation-in-part of Ser. No. 880,088, Nov. 26, 1969, abandoned. This application Aug. 11, 1972, Ser. No. 279,871
Int. Cl. B29d *27/00*; E04c *2/02*
U.S. Cl. 264—45.3 **8 Claims**



1. A method for manufacturing a prefabricated building wall section including a thin wall panel defining a simulated masonry surface and a support frame integrally attached to one surface thereof including the steps
providing a shallow mold having a substantially planar bottom wall, defining the mold surface for forming the exposed finish surface of a molded wall panel, and having side walls of uniform height to define the edges of the molded wall panel;
mixing a liquid component including, by volume, about 60% of a thermosetting resin, about 25% resin thinner, about 9% flow enhancer, and a curing agent;
mixing thoroughly about 18 to 30% by weight of said liquid components with about 70 to 82% of a solids component consisting of a comminuted, crystalline, insoluble earthen material, to produce a homogeneous panel mixture;
filling said shallow mold with said panel mixture and leveling said mixture with the mold side walls;
placing a unitary, open panel supporting frame contiguous to the surface of said panel mixture exposed by said mold, while said mixture remains in said mold, in position to be bonded to said mixture;
applying a coating of fiberglass reinforced plastic to the exposed surface of said panel mixture and to the adjacent transverse surfaces of the wall frame members, to effect a bond between said panel and frame;
effecting the cure of said panel mixture and the bonding of said frame thereto;
and removing the integral assembly of cured panel and frame from said mold.

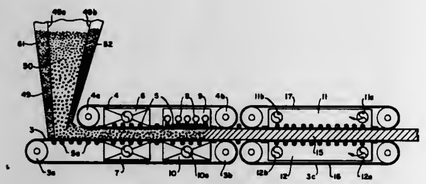
3,885,009
METHOD AND APPARATUS FOR PRODUCTION OF STRATIFIED SHEETS AND ARTICLES OF EXPANDED THERMOPLASTIC MATERIALS

Andre Rivat-La housse, Paris, France, assignor to Certainteed Products Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 781,372, Dec. 5, 1968, abandoned. This application Jan. 14, 1969, Ser. No. 791,063
Claims priority, application France, Dec. 6, 1967, 67.131156; Jan. 15, 1968, 68.135998
Int. Cl. B29d *27/03*
U.S. Cl. 264—45.4 **7 Claims**

1. The method of forming blocks, sheets and specially shaped articles from granular thermoplastic material containing a blowing agent, comprising, depositing discrete superposed layers of granules into a mold, preheating the granules

to about their softening temperature without agglomerating them, and subsequently insufflating the preheated granules



with steam to effect their expansion and cohesion into a unitary article, while confined in the mold.

3,885,010

PROCESS AND APPARATUS FOR THE CONTINUOUS MANUFACTURE OF PHENOLIC RESIN FOAM IN ENDLESS SHEETS

Klaus Bruning; Hans Junger; Wolfgang Pungs; Peter Rheinfeld, all of Troisdorf; Franz Weissenfels, and Michael Wienand, both of Siegburg, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Dec. 4, 1972, Ser. No. 311,913

Claims priority, application Germany, Dec. 2, 1971, 2159726

Int. Cl. B32b *5/18, 11/06;* **C08g** *53/10*

U.S. Cl. 264—46.2 **30 Claims**

1. In a process for the continuous manufacture of phenolic resin foam in an endless sheet by mixing a liquid phenolic resin with a blowing agent and an acid-containing curing agent and by processing of the mixture in a temperature-controllable double belt press, the improvement which comprises cooling the liquid phenolic resin to a temperature of from about 8° to about 15°C., admixing a blowing agent under a high pressure with said resin to form a resin premix, mixing said resin premix with a curing agent to form a curable reaction mixture, continuously applying said mixture uniformly onto a moving substrate, covering the mixture on said substrate with a continuous protective layer, passing the covered mixture in the double belt press, and foaming the mixture under pressure until said sheet is formed.

3,885,011

VACCINE ADJUVANTS

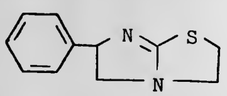
Gerard Renoux, and Micheline Renoux, both of Indre et Loire, France, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 213,554, Dec. 29, 1971, abandoned. This application Mar. 16, 1973, Ser. No. 342,118

Int. Cl. C12k *5/00*

U.S. Cl. 424—92 **9 Claims**

1. In the method of producing an immunological response in a host by the administration of a vaccine, the improvement which comprises the adjunctive administration to said host of an effective immunostimulating amount of a member selected from the group consisting of an imidazo[2,1-b]-thiazole having the formula:



and the therapeutically active acid addition salts thereof.

3,885,012

NEW PROTEASE-INHIBITING SUBSTANCE, ITS EXTRACTION, AND ITS USE

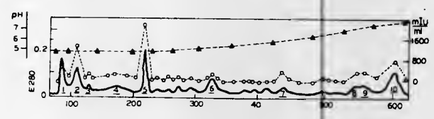
Harald Tschesche, Groebenzell; Hans Fritz, Hohenbrunn, and Rudolf Christoph, Munich, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 2, 1973, Ser. No. 337,699

Claims priority, application Germany, Mar. 3, 1972, 2210262

Int. Cl. C07c *103/52*

U.S. Cl. 424—177 **15 Claims**



1. A protease-inhibiting substance characterized by an inhibiting action toward tyrpsin chymotrypsin, plasmin and kininogenases; said substance containing at least one isoinhibitor having an isoelectric point below 10.5, a content of 55–70 amino acid residues, and a molecular weight of about 6500, wherein said protease-inhibiting substance is obtained by a process comprising:

i. homogenizing edible snails of the genus Helix of the family *Helicidae* to produce a homogenate;

ii. separating the homogenate into a precipitate and a supernatant liquid, and

iii. mixing the supernatant liquid with ammonium sulphate up to 63% of the saturation cencentration to precipitate the protease-inhibiting substance.

3,885,013

METHOD FOR PRODUCING ACRYLIC SYNTHETIC FIBERS

Mitsunori Sato, Okayama, Japan, assignor to Japan Exlan Company Limited, Osaka, Japan

Filed Mar. 19, 1973, Ser. No. 342,430

Claims priority, application Japan, Mar. 21, 1972, 47-28296

Int. Cl. D01f *7/00*

U.S. Cl. 264—182 **2 Claims**



1. A method of producing acrylic synthetic fibers which comprises extruding a spinning solution of an acrylonitrile polymer containing at least 80 percent by weight of combined acrylonitrile, dissolved in a rhodanide as solvent to produce a solvent concentration of 40–70 percent by weight, through spinnerette orifices into a coagulation bath, containing a concentration of the rhodanide which is 40–70 percent of the concentration of the rhodanide in the spinning solution, while maintaining a linear velocity ratio of the free-extrusion above 1 and a jet-stretch ratio above 1.5.

3,885,014

PRODUCTION OF FINE FIBER MASS

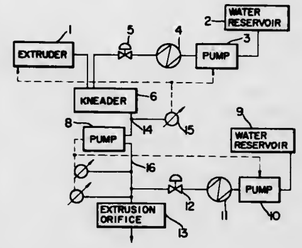
Tadayuki Fukada, and Isao Fujita, both of Kashima, Japan, assignors to Kabushiki Kaisha Oji Yuka Goseishi, Tokyo, Japan

Filed May 26, 1972, Ser. No. 257,419

Claims priority, application Japan, June 1, 1971, 46-38109

Int. Cl.² D01D *5/04*

U.S. Cl. 264—205 **10 Claims**



1. A process of producing a mass of fine fibers which comprises:

1. introducing water into a mass of molten linear water-insoluble polyolefin polymer under an elevated temperature and pressure in a quantity of from 2 to 50 percent by weight of the resulting mixture;
2. kneading the resulting mixture while maintaining the mixture at an elevated pressure thereby to produce a molten polymer mass which contains water finely and uniformly dispersed therein;
3. transferring the resultant molten polymer mass under an elevated temperature and pressure to an orifice with an introduction of supplementary water under an elevated temperature and pressure in a quantity of at least 100 percent by weight of said molten polymer mass produced from step (2) at a part immediately before or just at the orifice; and then
4. extruding the mixture of water and molten polymer mass obtained from the step (3) into a region of lower pressure so as to evaporate the water dispersed in the molten polymer mass and the supplementary water introduced into the step (3) whereby the molten polymer mass is cooled and subdivided into a mass of fibers.

3,885,015

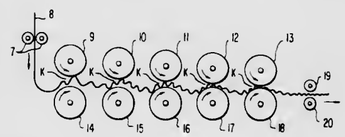
METHOD OF PROCESSING A HEAT-SHRINKABLE SHEET-LIKE MATERIAL

Michikaze Ono; Toshio Ito; Shoichi Nagai, all of Nagoya, and Hironaga Mizuno, Nogakute-Mura, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jan. 11, 1973, Ser. No. 322,823

Int. Cl. B29c *25/00*

U.S. Cl. 264—230 **4 Claims**



1. A method of processing a heat-shrinkable sheet-like material having a specific volume of not more than 5 cm^3/g and a maximum heat-shrinkage stress under dry heat of at least 1/10 W g/cm wherein W is the weight in grams of the sheet-like material per square meter, to produce a pattern in said material comprising passing said sheet-like material sequentially through nips between a first heating device heated to a surface temperature not lower than the minimum temperature at which the sheet-like material can shrink but below the melting point of the heat-shrinkable substance contained in said sheet-like material to produce a pattern in said material and a second heated device heated to a surface temperature which is at least the temperature of the atmosphere during processing but is below the melting or softening point of any heat-shrinkable thermoplastic substance contained in said sheet-like material and spaced from said first heating device by a distance larger than the thickness of said sheet-like material but not larger than 100 times the thickness of the sheet-like material to control the pattern produced in said sheet-like material, under a tension not exceeding the shrinkage stress of said sheet-like material while bringing the sheet-like material into contact with said first heating device without positive pressing thereto and at least bringing a portion of said sheet-like material into contact with said second device, heating the sheet-like material and developing a random solid heat-shrinkage pattern thereon, there being at least two of said first heating devices and two of said second heated devices used, said first and second devices being used in pairs.

3,885,016

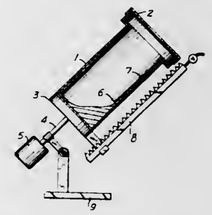
PROCESS FOR MOLDING HOLLOW THERMOPLASTIC ARTICLES AND RESULTING ARTICLES

Stewart Pivar, Muttontown, N.Y., assignor to Rototron Corporation, Farmingdale, N.Y.

Continuation of Ser. No. 202,975, Nov. 29, 1971, which is a continuation-in-part of Ser. No. 84,503, Oct. 27, 1970, Pat. No. 3,703,348, which is a continuation of Ser. No. 724,802, April 29, 1968, abandoned. This application Oct. 26, 1973, Ser. No. 410,045

Int. Cl. B29d *9/08*

U.S. Cl. 264—269 **14 Claims**



1. A process for molding a hollow article from a thermoplastic material comprising the steps of depositing a measured amount of said thermoplastic material in a hollow metal mold having side and bottom walls, rotating said mold about a horizontal axis while simultaneously heating said mold and maintaining said axis in horizontal attitude until a layer of partially fused material is formed against the side wall thereof, pivoting said mold to an attitude which is inclined with respect to the horizontal and heating the mold in the latter said attitude for an additional period of time until a layer of partially fused material is formed against the bottom wall and during which additional period of time said layer of partially fused material previously formed against the side wall is permitted to continue to further fuse by the continued application of heat, returning the mold to horizontal attitude for an additional period of time to form an additional layer of partially fused material on the previously formed layer, continuing heating of said mold until at least substantially all of the material is fused, there being dwell periods at the horizontal and inclined attitudes which are of such duration that interfacial bonds are formed which are insufficiently complete to form a homogeneous mass, cooling the mold, and removing the thusly molded article from the mold whereby a laminated article is formed entirely from said measured amount and from the said material.

3,885,017

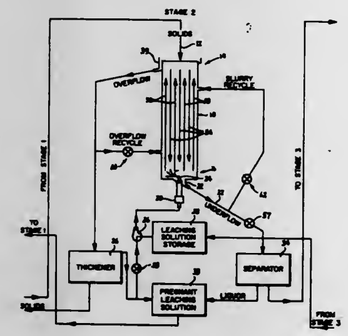
HYDROMETALLURGICAL LEACHING

Charles W. Robinson, San Francisco, and Kenneth E. Merklin, Tiburon, both of Calif., assignors to Marcona Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 305,144, Nov. 9, 1972, abandoned. This application Nov. 1, 1973, Ser. No. 411,912

Int. Cl. C01b ; C01c ; C01d ; C01f ; C01g ; C22b

U.S. Cl. 423—1 **9 Claims**



1. A method for leaching the extractable mineral values from an ore having particulate form using a reactor vessel in which ore and a leaching liquid are simultaneously placed in contact, comprising the steps of introducing the ore into the upper region of the reactor vessel and simultaneously introducing the extracting liquid into a lowermost region of the vessel such that the solids gradually move as a solids-in-contact bed downwardly under gravity through a rising column of extracting liquid to provide counter-current extraction of the values from said ore, and further comprising the steps of directing the extracting liquid as a rotating agitating stream in a region generally parallel to and above the bottom wall of said vessel, progressively moving said stream about said lower region at a speed sufficient to cause the development of a highly agitated reaction zone in said lower region, the agitation being sufficiently great that constant intermixing and recontact is obtained between the liquid and the solids in said zone, simultaneously withdrawing a liquid overflow stream from the upper region and withdrawing solids as underflow from said lower region of said vessel and, controlling the rate of solids withdrawal so that a substantial predetermined height of solids introduced into the vessel is maintained in an overlying zone of solids-in-contact, said overlying zone gradually moves downwardly toward and then through said agitation zone at a rate controlled by said solids withdrawal rate, said overlying zone being in contact with said agitation zone.

3,885,018

REGENERATING ANION EXCHANGE ZONE CONTAINING HEXAVALENT CHROMIUM

Robert B. Smith, Crown Point, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed June 4, 1973, Ser. No. 366,544

Int. Cl. C01g *37/14;* **B01d** *15/06*

U.S. Cl. 423—54 **8 Claims**

1. Method both for recovering chromium from strong base anion exchange resin which has been used in the hydroxide form to remove hexavalent chromium in the form of anions from a solution and for regenerating the resin for reuse for removing hexavalent chromium in the form of anions from a solution; comprising the steps of

a. introducing water into a column containing the resin thereby backwashing the resin to remove extraneous solids and resin fines,

b. removing residual backwash water,

c. passing aqueous alkali metal hydroxide into the column containing the resin and providing effluent from the column containing from about 90 to about 95% of the hexavalent chromium present in the column while leaving in the column alkali metal cations and the remainder of the hexavalent chromium in the form of anions to thereby optimize the concentration of hexavalent chromium in the effluent,

d. introducing water into the column and recirculating resulting liquid between that column and a column containing cation exchange resin of the strong acid type in the hydrogen form to react hexavalent chromium in the form of anions with the anion exchange resin and to react the alkali metal cations with the cation exchange resin, to establish a continuing 5 to 10% level of hexavalent chromium in the anion exchange resin thereby conserving chromium.

3,885,019

CATALYTIC REDUCING DECOMPOSITION OF OXIDES OF NITROGEN

Kunichi Matsushita, Kawasaki; Hikaru Sakurada, Yokohama, and Kazuhiko Onuma, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Japan

Filed Dec. 26, 1973, Ser. No. 428,222

Claims priority, application Japan, Dec. 25, 1972, 48-784

Int. Cl. B01d *53/00*

U.S. Cl. 423—213.2 **11 Claims**

1. In a process for the catalytic reduction of oxides of nitrogen present in exhaust gas, the improvement which comprises: contacting said exhaust gas with a catalyst of cerium oxide or uranium oxide in the presence of ammonia.

3,885,020

METHOD OF OXIDIZING HYDROCARBONS AND OXYGENATED HYDROCARBONS TO CARBON DIOXIDE AND WATER

James M. Whelan, La Canada, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Oct. 28, 1971, Ser. No. 194,769

Int. Cl. C01b *53/34;* **B01d** *53/34*

U.S. Cl. 423—245 **1 Claim**

1. A process for the oxidation of hydrocarbons and oxygenated hydrocarbons to carbon dioxide and water with oxygen which comprises: combining the hydrocarbons and oxygenated hydrocarbons with a predetermined amount of oxygen containing gas to give at least a 1% stoichiometric excess of oxygen for the oxidation of the hydrocarbons and oxygenated hydrocarbons to carbon dioxide and water; and passing the resulting mixture over a ceramic homogenous mixed oxide catalyst compound at a temperature between about 100°C. and about 1,000°C., said catalyst compound having the following empirical formula:

$$W_kX_nJ_{(1-k-n)}ZO_{(3 \quad m)}, m),$$

wherein

W is Zirconium, Tin or Thorium, or mixture thereof;

X is an alkaline earth metal or mixture thereof;

J is scandium, yttrium, or the rare earth elements, or mixtures thereof;

Z is a metal of the first transition series or a mixture thereof, at least 0.01% of said metal having an oxidation state other than +3;

k is a number having a value between 0 and about 0.1;

m is a number having a value of from 0 to about 0.26; and *n* is a number having a value from 0 to about 0.51, provided when *n* has a value of 0, *k* has a value between 0 and about 0.05.

3,885,021

Patent Not Issued For This Number

3,885,022

METHOD OF PRODUCING BORON CARBIDE FROM WATER-ALCOHOL SOLUTION OF CARBON SOURCE

Geoffrey Lyall Harris, Monroeton, and Donald S. Parsons, Towanda, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 10, 1974, Ser. No. 432,345

Int. Cl. C01b *31/30*

U.S. Cl. 423—291 **10 Claims**

1. In a process wherein a boron source selected from the group consisting of boric acid and boron oxide, a hydrocarbon carbon source which under heat will decompose to form elemental carbon and water and a polyhydric alcohol selected from the group consisting of glycerol, ethylene glycol and diethylene glycol are mixed together to form a solution which is heated to form boron carbide, the improvement comprising

a. adding a controlled amount of water to said solution of said boron source, said hydrocarbon carbon source and polyhydric alcohol,

b. drying said solution in air at a temperature relatively close to the boiling point of the alcohol,

c. heating the dried material in a hydrogen atmosphere at a temperature of from about 690° C to about 710° C to form a granular product, and

d. firing said granular product at a temperature of at least about 1700° C in an inert gas atmosphere to form a free flowing boron carbide powder.

3,885,023

PREPARATION OF IRON CARBIDE (FE_5C)

Peter R. Gray, and Billy J. Leroy, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 15, 1973, Ser. No. 332,567

Int. Cl. C01b *33/12*

U.S. Cl. 423—439 **4 Claims**

1. A process for preparing high yields of essentially pure iron carbide, which comprises treating in a batch a feed material consisting essentially of ferric oxide at atmospheric pressure with a gas consisting essentially of carbon monoxide at a temperature within the range of 500°–550°C for a period of time sufficient to allow essentially complete conversion to occur and produce a product containing at least about 98 weight percent iron carbide (Fe_5C).

3,885,024

PROCESS FOR THE PREPARATION OF PYROSULPHATES

Paolo Koch, San Giuliano Milanese, and Emilio Perrotti, San Donato Milanese, both of Italy, assignors to Snamprogetti S.p.A., San Donato Milanese, Italy

Filed May 21, 1973, Ser. No. 362,052

Int. Cl. C01b *17/98*

U.S. Cl. 423—512 **4 Claims**

1. A process for the preparation of ammonium and alkali metal pyrosulphates characterized in that ammonium or alkali metal hydroxide is reacted with sulphurous anhydride and oxygen in an alcohol containing 3 or more carbon atoms, at temperatures lower than 60°C by employing, as catalyst, a copper compound selected from cuprous or cupric salts of the anions Cl^-, Br^-, I^-, ClO_4^-, $SO_4^=$, and CH_3COO^-.

3,885,025

PREPARATION OF BERYLLIUM HYDRIDE

Byron R. Lowrance, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Feb. 26, 1962, Ser. No. 176,865

Int. Cl. C01b *6/04*

U.S. Cl. 423—645 **11 Claims**

1. A process for the preparation of beryllium hydride which comprises pyrolyzing, while in solution in a solvent inert, under the reaction conditions, with respect to reactants and products and at a temperature in the range of about 100° to about 200°C, sufficient to result in the formation of beryllium hydride, a di-t-alkyl beryllium etherate wherein each tertiary alkyl radical contains from 4 to 20 carbon atoms, the pyrolysis being carried out under an atmosphere inert, under the reaction conditions, with respect to reactants and products.

3,885,026

PREPARATION OF POROUS TABLETS

Helmut Heinemann, Heidelberg, and Werner Rothe, Hockenheim, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed Sept. 10, 1973, Ser. No. 395,796

Claims priority, application Germany, Sept. 20, 1972, 2246013

Int. Cl. A61j *3/10;* **A61k** *9/02;* **B29d** *27/00*

U.S. Cl. 424—14 **13 Claims**

1. In the production of pharmaceutical or reagent tablets which are to undergo disintegration in use wherein the tablet components are mixed and pressed into predetermined shape, the improvement which comprises incorporating into the mix at least one inert solid adjuvant, sublimable at a temperature up to about 110°C pressing the mix into tablets, and thereafter subjecting the tablets to at least one of vacuum and heating to a temperature up to about 110°C so as to sublime the adjuvant, whereby the resulting tablets are porous, strong, shape retaining and readily disintegratable.

3,885,027

ORALLY ADMINISTERED DRUG COMPOSITION FOR THERAPY IN THE TREATMENT OF NARCOTIC DRUG ADDICTION

Irving F. Shaw, East Rockaway, and Jerome Berk, New Rochelle, both of N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

Continuation-in-part of Ser. No. 133,344, April 12, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,712

Int. Cl. A61k *9/00, 27/00*

U.S. Cl. 424—44 **13 Claims**

1. A solid composition for the oral treatment of narcotic addiction which is dispersible for dissolution in an acidic medium before ingestion, said composition comprising:

a. an effective amount of amine-containing therapeutic agent for the maintenance therapy treatment of narcotic drug addiction, the hydrochloride salt form of which is soluble in water but essentially insoluble in alkaline solution,

b. a precipitating agent selected from the class consisting of:

1. an ingestible solid alkalinizing agent in an amount which provides an alkaline pH of at least 7.5 when dissolved in water either directly, or indirectly upon heating or concentration of the solution,

2. an ingestible alkaloid precipitating substance selected from the group consisting of tannic acid and picrolonic

acid in an amount active as a precipitant in non-acidic conditions, and

3. combinations of (1) and (2).

3,885,028
FLUORIDE-CONTAINING TOOTHPASTE

John A. Cella, Lake Forest, Ill., and William H. Schmitt, Branford, Conn., assignors to Alberto-Culver Company, Melrose Park, Ill.

Continuation-in-part of Ser. No. 31,789, April 24, 1970, Pat. No. 3,703,578. This application Sept. 22, 1972, Ser. No. 291,315

Int. Cl. A61k *7/16*

U.S. Cl. 424—52 **21 Claims**

1. A non-foamable toothpaste containing (a) a major proportion of a toothpaste abrasive based on the weight of the solids of said toothpaste, said abrasive consisting essentially of at least one member selected from the group consisting of precipitated calcium carbonate, dicalcium phosphate dihydrate, dicalcium phosphate anhydrous, dibasic calcium phosphate, tribasic calcium phosphate, calcium pyrophosphate, calcium sulfate, hydrated alumina and insoluble sodium metaphosphate, (b) from about 0.01% to about 0.4%, 0.4%, by weight of the toothpaste, of a fluorine-containing compound which is ionizable in water to yield fluoride ions, (c) at least one paste-forming ingredient, (d) at least 20%, by weight of the total of the liquid ingredients of said toothpaste, of at least one water-soluble polyoxyalkyleneglycol having an average molecular weight of at least 200, the alkylene radicals of said polyoxyalkyleneglycol containing from 2 to 4 carbon atoms, said polyoxyalkyleneglycol constituting at least about 15% by weight of the toothpaste, said toothpaste being essentially free of mineral oil, vegetable and animal triglyceride oils.

3,885,029
DENTIFRICE PREPARATION

James Norfleet, Plainfield, and Donald W. Clipper, Edison, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 9, 1973, Ser. No. 349,314

Int. Cl. A61k *7/16*

U.S. Cl. 424—57 **4 Claims**

1. A dentifrice preparation comprising about 30 to 50 percent by weight of said dentifrice of individual particles of polyvinyl chloride and a cleaning and polishing material which consists of up to about 15 percent by weight of said dentifrice of individual particles of cleaning and polishing material wherein anhydrous dicalcium phosphate having particles of sizes ranging up to about 50 microns is present in an amount of effective to clean and polish dental enamel up to about 10 percent by weight of said dentifrice and at least two-thirds by weight of said cleaning and polishing material is anhydrous dicalcium phosphate.

3,885,030
MEDICINE COMPRISING LYSINE BY-PRODUCTS

Georges Tixier, 37 Ave. d'Iena, Paris, 16, France

Filed May 9, 1973, Ser. No. 358,694

Claims priority, application France, May 19, 1972, 7218165

Int. Cl.² A01N *9/00*

U.S. Cl. 424—180 **8 Claims**

1. A pharmaceutical composition in dosage form for reestablishing normal leukocyte formula figures in leukopenic patients comprising:

an amount sufficient to reestablish normal leukocyte figures in leukopenic patients of a mixture of on the order of about 60 parts by weight of lysine pantothenate with on the order of about 30 parts by weight of a nucleotid selected from the group consisting of lysine desoxyribonuclinate and lysine ribonucleinate, and on the order of about 30 to 40 parts by weight of the puric and pyrimidic bases of the bone medulla and of the spleen; and

a pharmaceutically acceptable carrier therefor.

3,885,031
INSECTICIDAL COMPOSITIONS AND METHODS OF COMBATTING INSECTS USING CYCLOPROPANE CARBOXYLATE INSECTICIDES WITH A SYNERGISTIC COMPOUND OF MONO (ALKYL AND ALKENYL) MONO OMEGA-ALKYNYL ARYLPHOSPHONATES

Ronald Eugene Montgomery, Middleport, and Harry Hobart Incho, Medina, both of N.Y., assignors to FMC Corporation, New York, N.Y.

Division of Ser. No. 122,168, March 8, 1971, Pat. No. 3,709,988, which is a division of Ser. No. 800,264, Feb. 18, 1969, Pat. No. 3,652,741, which is a continuation-in-part of Ser. No. 630,204, April 12, 1967, abandoned, which is a continuation-in-part of Ser. No. 559,422, June 22, 1966, abandoned, and Ser. No. 624,689, March 21, 1967, abandoned. This application Oct. 2, 1972, Ser. No. 294,238

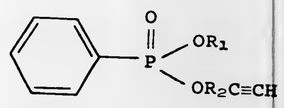
Int. Cl. A01n *9/08, 4/36*

U.S. Cl. 424—192 **11 Claims**

1. An insecticidal and acaricidal composition comprising and insecticidally and dicaricidally effective amount of a combination of

A. an insecticidal cyclopropanecarboxylate the insecticidal activity of which is synergized by

B. a synergistically effective amount of a compound of the formula



wherein R_1 is selected from the group consisting of alkyl and alkenyl having one to six carbon atoms; and R_2 is alkylene of one to four carbon atoms; wherein the ratio of A:B is in the range of 1:2 to 1:50.

3,885,032
INSECTICIDAL N-ARALKANOYL AND N-ARALKENOYL DERIVATIVES OF O,S-DIHYDROCARBYLPHOSPHOROAMIDOTHIOATES AND S,S-DIHYDROCARBYLPHOSPHOROAMIDODITHIOATES

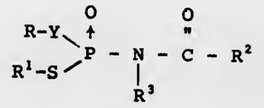
Philip S. Magee, Ignatio, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 317,476, Dec. 21, 1972, Pat. No. 3,825,634, which is a continuation-in-part of Ser. No. 13,846, Feb. 24, 1970, Pat. No. 3,716,600, which is a continuation-in-part of Ser. No. 810,383, March 25, 1969, abandoned. This application June 14, 1974, Ser. No. 479,344

Int. Cl. A01n *9/36*

U.S. Cl. 424—212 **12 Claims**

1. A method of killing insects which comprises contacting said insects or their habitats with an insecticidally toxic amount of the compound of the formula



wherein R and R^1 individually are alkyl, alkenyl or alkynyl of up to 6 carbon atoms, R^2 is phenylalkyl or phenylalkenyl of 7 to 10 carbon atoms substituted with up to 2 fluorine, chlorine or bromine atoms, R^3 is hydrogen or alkyl of 1 to 6 carbon atoms and Y is oxygen or sulfur.

3,885,033
METHOD OF ANESTHETIZING A MAMMAL BY ADMINISTRATION OF A SUBSTITUTED 2-ARYLALKYLOXY BENZAMIDE

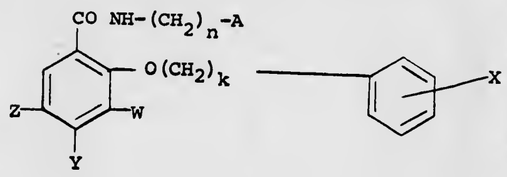
Michel Leon Thominet, Paris, France, assignor to Societe d'Etudes Scientifiques et Industrielles de L d'Ile-de-France, Paris, France

Division of Ser. No. 324,509, Jan. 17, 1973, Pat. No. 3,833,733, which is a division of Ser. No. 108,963, Jan. 22, 1971, Pat. No. 3,723,416, which is a continuation-in-part of Ser. No. 714,795, March 21, 1968, Pat. No. 3,594,417. This application Dec. 13, 1973, Ser. No. 424,218

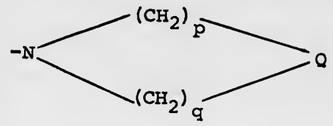
Int. Cl. A61k *27/00*

U.S. Cl. 424—246 **9 Claims**

1. The method of anesthetizing a mammal which comprises administering to said mammal an anesthetically effective amount of a compound selected from the class consisting of 2-arylalkyloxy benzamides and their pharmaceutically acceptable acid addition and quaternary ammonium salts, said substituted 2-arylalkyloxy benzamides having the formula:



in which A is a monovalent radical having the formula:



in which *p* and *q* are 1 or 2, at least one of *p* and *q* being 2; Q is methylene, sulfur, oxygen, nitrogen or monoalkylamino in which the alkyl group has from one to five carbon atoms; W, Y and Z are hydrogen, halogen, amino or alkylamino in which the alkyl group has from one to five carbon atoms; X is hydrogen or halogen and *k* is 1 or 2; *n* is 1, 2 or 3, at least one of W, Y and Z being other than hydrogen.

3,885,034
PHENOTHIAZINE DERIVATIVES IN THE TREATMENT OF PSYCHOTIC PERSONS

Klaus Heinz Risse; Ulrich Hörlein, and Wolfgang Wirth, all of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

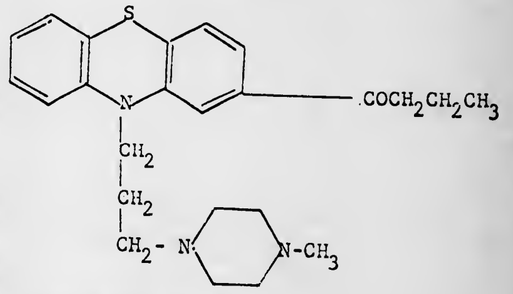
Continuation of Ser. No. 350,684, March 10, 1964, abandoned, which is a continuation-in-part of Ser. Nos. 608,170, Sept. 8, 1956, abandoned, and Ser. No. 669,458, July 2, 1957, abandoned, and Ser. No. 26,707, May 4, 1960, abandoned. This application Apr. 24, 1972, Ser. No. 246,953

Claims priority, application Germany, Sept. 7, 1955, 18365; May 5, 1956, 20224; June 12, 1956, 20503; June 12, 1956, 20504; July 12, 1956, 20682

Int. Cl. A61k *27/00*

U.S. Cl. 424—247 **7 Claims**

1. The method of treating a psychotic person who exhibits regression predominantly characterized by symptoms of withdrawal and apathy when said person is in a withdrawn or catatonic state to arouse or awaken said person which comprises administering to said person a therapeutic composition containing a compound of the class consisting of a free base and salts thereof with pharmaceutically acceptable acids, said free base having the formula



combined with a carrier therefor.

3,885,035
METHOD FOR TREATING ARRHYTHMIA BY USING 1,4-BIS(4 QUINAZOLINYL) PIPERAZINES

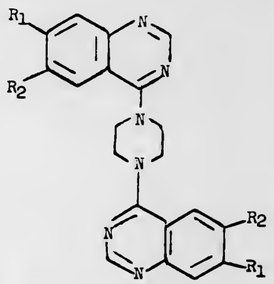
William R. Simpson, Mendham, N.J., assignor to Sandoz-Wander, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 241,408, April 5, 1972, abandoned. This application Feb. 20, 1973, Ser. No. 333,556

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 **6 Claims**

1. A method for treating arrhythmia, which comprises administering to a mammal in need of said treatment an antiarrhythmic effective amount of a compound of the formula:



where R_1 and R_2 each independently represent hydrogen or lower alkoxy or a pharmaceutically acceptable acid addition salt thereof.

3,885,036
ANTIMICROBIAL THIENYLIODONIUM SALT METHODS AND COMPOSITIONS

Clarence L. Moyle, Clare, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 265,395, June 22, 1972, Pat. No. 3,763,187, which is a continuation-in-part of Ser. No. 154,182, June 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 806,739, March 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 677,772, Oct. 24, 1967, abandoned. This application Jan. 15, 1973, Ser. No. 323,977

Int. Cl.[2] A01N *9/12*

U.S. Cl. 424—275 **2 Claims**

1. The method for controlling microbes selected from the group consisting of bacteria, fungi and yeasts which comprises contacting the said microbes with an antimicrobial amount of 4-chlorophenyl-2-thienyliodonium chloride, trifluoroacetate or trichloroacetate salt.

3,885,037
METHOD OF PRODUCING ANOREXIA USING IMIDAZOLINYL PHENYL CARBONYL COMPOUNDS, THEIR ACID ADDITION SALTS AND RELATED COMPOUNDS

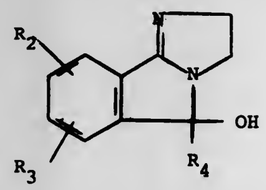
Theodore S. Sulkowski, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 757,792, Sept. 5, 1968, Pat. No. 3,768,178, which is a continuation-in-part of Ser. No. 622,918, March 14, 1967, abandoned, and a continuation-in-part of Ser. No. 622,931, March 14, 1967, abandoned, and a continuation-in-part of Ser. No. 576,833, Sept. 2, 1966, abandoned, and a continuation-in-part of Ser. No. 487,587, Sept. 15, 1965, abandoned. This application Sept. 6, 1973, Ser. No. 394,952

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **2 Claims**

1. A method of producing anorexia in an animal in need thereof which comprises administering to said animal an effective amount of a compound having the formula



wherein R_2 is selected from the group consisting of hydrogen, halogen, amino, lower alkylamino, lower alkyl, and lower alkoxy; R_3 is hydrogen when R_2 and R_3 are dissimilar and when R_2 and R_3 are the same they are both selected from the group consisting of hydrogen, halogen, lower alkyl, and lower alkoxy; and R_4 is selected from the group consisting of phenyl, monohalophenyl, dihalogphenyl, mono(lower)alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxy phenyl, and di(lower)alkoxyphenyl.

3,885,038
METHOD OF USING SUBSTITUTED XANTHONE CARBOXYLIC ACID

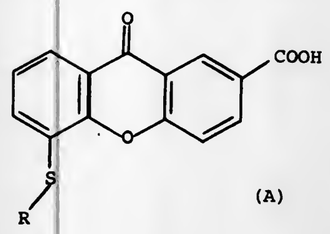
Jurg R. Pfister; Ian T. Harrison, and John H. Fried, all of Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 174,259, Aug. 23, 1971, Pat. No. 3,803,174. This application Dec. 18, 1973, Ser. No. 425,885

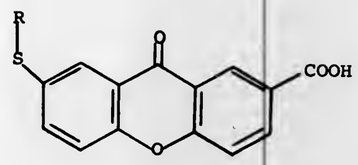
Int. Cl. A61k *27/00*

U.S. Cl. 424—283 **14 Claims**

1. A method for inhibiting the symptoms of the asthmatic condition resulting from an antigen-antibody reaction in a host susceptible to said reaction which comprises administering to said host an effective amount of from about 0.005 to about 100mg. per kg. of body weight per day sufficient to produce said inhibition of a compound selected from those represented by the formulas:



(A)



(B)

wherein R is hydrogen or lower alkyl; or a pharmaceutically acceptable lower alkyl ester, unsubstituted, monolower alkyl, or dilower alkyl substituted amide or salt thereof wherein said lower alkyl group contains one to five carbon atoms.

3,885,039
ANTIFOULING COMPOSITIONS

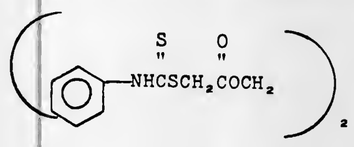
Norman J. Pinkowski, St. Louis, Mo.; Aaron Freiman, Brooklyn, N.Y., and Charles B. Beiter, Carteret, N.J., assignors to M & I Chemicals Inc., Greenwich, Conn.

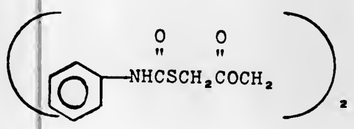
Division of Ser. No. 173,680, Aug. 20, 1971, abandoned. This application Feb. 11, 1974, Ser. No. 441,379

Int. Cl. A01n *9/00*

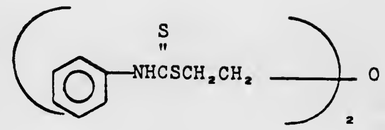
U.S. Cl. 424—288 **1 Claim**

1. An antifouling coating composition comprising a paint containing 10—30%, based on the total paint formulation, of a toxicant containing between 50 and 97% by weight of tri-n-butyltin fluoride, the remainder of said toxicant consisting of a compound selected from the group consisting of





and



3,885,040
METHODS AND BENZAMIDE COMPOSITIONS FOR PRODUCING HYPOTENSIVE ACTIVITY

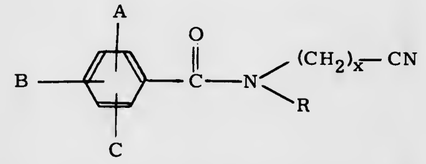
William D. Roll, Toledo, Ohio, assignor to The University of Toledo, Toledo, Ohio

Division of Ser. No. 336,415, Feb. 28, 1973, Pat. No. 3,808,315, which is a continuation-in-part of Ser. No. 180,206, Sept. 13, 1971, abandoned, which is a division of Ser. No. 822,029, May 5, 1969, Pat. No. 3,660,461. This application Apr. 25, 1974, Ser. No. 463,959

Int. Cl. A61k *27/00*

U.S. Cl. 424—304 **12 Claims**

1. A method of producing hypotensive activity in an animal needing such treatment comprising administering internally to said host animal a nontoxic but effective quantity of a compound of the formula:



wherein A, B and C are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, and halogen, at least one of which is alkoxy or halogen, wherein x is a whole number from one to three, and wherein R is cyclo-alkyl containing between three and seven carbon atoms.

3,885,041
ANTIINFLAMMATORY USE OF PROSTAGLANDINS

Richard L. Aspinall, Glenview, and Peter S. Cammarata, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 102,076, Dec. 28, 1970, abandoned. This application July 31, 1972, Ser. No. 276,580

Int. Cl. A61k *27/00*

U.S. Cl. 424—318 **3 Claims**

1. A method of inhibiting chronic inflammation or the unpleasant effects thereof in a mammal which comprises administering an antiinflammatory amount of PGB_2 or PGF_2 to said mammal.

3,885,042
BENZYLIDENESEMICARBAZIDE COMPOUNDS HAVING INSECTICIDAL ACTIVITY

Rudolf Mulder, and Martin Jacob Handelé, both of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

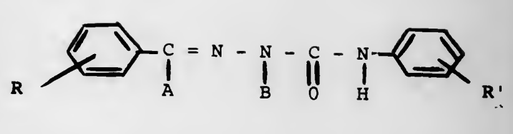
Filed Feb. 6, 1973, Ser. No. 330,004

Claims priority, application Netherlands, Feb. 9, 1972, 7201673

Int. Cl. A01n *9/12, 9/20*

U.S. Cl. 424—323 **10 Claims**

1. A method of combatting insects and larvae of insects comprising treating said insects and larvae with an insecticidally effective amount of a semicarbazide of the formula



wherein R is a moiety selected from the group consisting of 3,4-dichloro and para-positioned substituents selected from the group consisting of hydrogen, chlorine, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbons, and amino substituted with 1 to 2 alkyls of 1 to 4 carbons each,

A is a member selected from the group consisting of hydrogen, cyclopropyl, alkyl of 1 to 4 carbons, phenyl substituted alkyl of 1 to 4 carbons and halogen substituted alkyl of 1 to 4 carbons,

B is a moiety selected from the group consisting of hydrogen and methyl, and

R' is a moiety selected from the group consisting of 3,4 dichloro and para-positioned substituents selected from the group consisting of chlorine, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, and amino containing 1 to 2 alkyls of 1 to 4 carbons each.

3,885,043
CERTAIN OXIME COMPOSITIONS AND THEIR USE IN CONTROLLING FUNGI

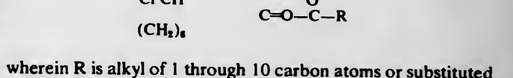
Don R. Baker, Orinda, and Arnold D. Gutman, Berkeley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 875,576, Nov. 10, 1969, abandoned. This application Feb. 8, 1973, Ser. No. 330,764

Int. Cl. A01n *9/20*

U.S. Cl. 424—327 **4 Claims**

1. A fungicidal composition comprising a fungicidally effective amount of a compound of the formula



wherein R is alkyl of 1 through 10 carbon atoms or substituted alkyl of 1 through 10 carbon atoms in which the substituents are selected from the group consisting of chlorine and bromine and an inert carrier.

3,885,044
CHLOROTHIANTHRENES

Gunther Beck, Leverkusen, and Hans Holtschmidt, Leverkusen-Steinbuechel, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

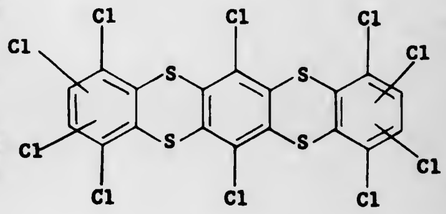
Filed May 30, 1973, Ser. No. 365,351

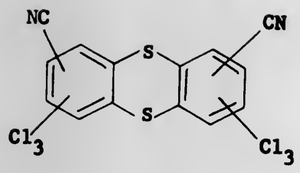
Claims priority, application Germany, June 15, 1972, 2229162

Int. Cl. C07d *73/02*

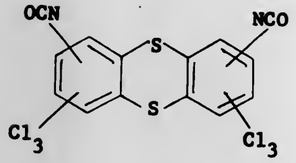
U.S. Cl. 260—327 P **2 Claims**

1. Chlorothianthrene selected from the group of

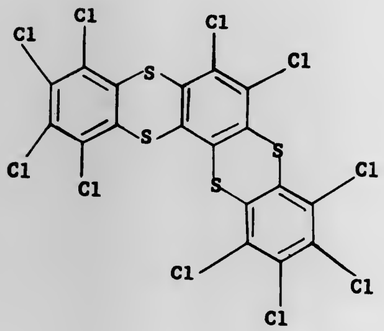




,



, and



3,885,046
META CHLORO OR FLUORO SUBSTITUTED ALPHA-T-BUTYLAMINOPROPIOPHENONES IN THE TREATMENT OF DEPRESSION

Nariman B. Mehta, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

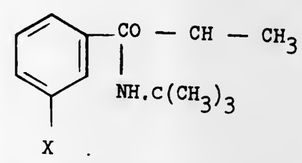
Division of Ser. No. 93,852, Nov. 30, 1970, Pat. No. 3,819,706. This application Aug. 23, 1973, Ser. No. 390,845

Claims priority, application United Kingdom, Dec. 4, 1969, 59231/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **14 Claims**

1. A pharmaceutical composition suitable for use in the treatment of the depressed state comprising an antidepressant-effective amount of a compound of the general formula



wherein X is chlorine or a pharmaceutically acceptable acid addition salt thereof and a pharmaceutically acceptable carrier therefor.

3,885,047
OCULAR HYPOTENSIVE PROCESS EMPLOYING DEXTROROTATORY PHENETHANOLAMINES

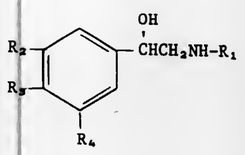
Richard J. Seidehamel, and Kendrick W. Dungan, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation-in-part of Ser. No. 263,496, June 16, 1972, abandoned. This application Dec. 21, 1973, Ser. No. 427,274

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **18 Claims**

1. The process of lowering intraocular pressure in the mammalian eye which comprises topical application thereto of an effective ophthalmologically acceptable amount for lowering intraocular pressure of the dextrorotatory stereoisomer substantially free of the levorotatory stereoisomer of a compound selected from the group consisting of phenethanolamines having Formula I



Formula I

wherein

R_1 is isopropyl or tert.-butyl;

R_2 is hydroxy, hydroxymethyl, or uredio; and one of

R_3 and R_4 is hydrogen and the other is hydroxy;

and an ophthalmologically acceptable acid addition salt thereof said amount being substantially free of adrenergically mediated side effects.

3,885,045
THERAPEUTIC COMPOSITION CONTAINING 1-(2-HYDROXY-2-INDANYL)-PROPYLAMINE

Jacques Georges Maillard, Paris, France, assignor to Laboratoires Jacques Logeais, Issy-les-Moulineaux, France

Filed July 19, 1973, Ser. No. 380,542

Claims priority, application France, July 20, 1972, 72.26162

Int. Cl.² A61K *27/00*

U.S. Cl. 424—330 **6 Claims**

1. A method for the treatment of obesity which comprises administering to an obese host a pharmaceutical composition containing an anoretically effective quantity of a compound selected from the group consisting of 1-(2-hydroxy-2-indanyl)-propylamine and the pharmaceutically acceptable salts thereof.

3,885,048
METHOD FOR PREPARING SIMULATED MEAT, FISH AND DAIRY PRODUCTS

James J. Liggett, 1203 Fairlane Ave., Libertyville, Ill. 60048

Continuation-in-part of Ser. No. 113,637, Feb. 8, 1971, abandoned. This application Sept. 7, 1972, Ser. No. 286,976

Int. Cl. A23l *1/20*

U.S. Cl. 426—18 **10 Claims**

1. A process for making a food product, comprising the steps of

cooking a mixture of about 50 percent split soybeans, 25 percent bulgar wheat and 25 percent sesame in the presence of water until the vegetable pieces become saturated with water,

inoculating the cooked mixture with an aqueous culture of the group consisting of *Rhizopus Oligosporous*, aspergillus, mucor, actinomucor, monascess, saccharomyces, neurospora, acetobacter, bacillus or lactobacillus, and

incubating the inoculated mixture at a temperature exceeding 30°C in an atmosphere sufficiently humid to support mold growth until the spaces between the particles in the mixture are filled with the fibrous mycelia of the mold and the particles are thoroughly knitted together by said mycelia.

3,885,049
PREPARATION OF ACTIVE DRY YEAST

Robert Taylor, Alloa, Scotland, assignor to The Distillers Company (Yeast) Limited, England

Filed Mar. 16, 1973, Ser. No. 342,294

Claims priority, application United Kingdom, Sept. 5, 1972, 41144/72

Int. Cl. C12c *11/32*

U.S. Cl. 426—18 **4 Claims**

1. A process in which active dried yeast is made by feeding crumbly yeast having a dry matter content of 27 to 40 percent and a particle size of 1 mm to 2 cm continuously into a mill, said mill having a substantially cylindrical milling chamber, an inlet substantially on the axis of the chamber and an outlet leading from the cylindrical wall of the chamber, and a rotor mounted on a shaft coaxial with the milling chamber for high speed rotation, the blades on the rotor being so pitched that upon rotation of the rotor air is drawn in through the inlet and expelled through the outlet, said mill being operated at a speed of at least 1000 rpm, continuously feeding air through said mill, disintegrating the yeast in the mill, without any substantial breakdown of the yeast cells themselves, at least predominantly by air turbulence in the mill, to form a disintegrated yeast powder wherein substantially none of the particles thereof are greater than 1.7 mm in diameter and wherein the volume of the disintegrated yeast is at least twice the volume of a compressed cake of the same yeast of the same dry matter content, continuously carrying the disintegrated yeast powder out of the mill in a stream of air, separating it from the airstream and then drying it to a dry matter content of at least 92 percent, the drying being conducted by passing warm air at a temperature of less than 100°C up through a bed of the powder for a period of 10 minutes to 4 hours in such a manner as to form a fluidized or spouted bed system.

3,885,050
TREATMENT OF PROTEIN - CONTAINING MICROBIAL CELLS TO REMOVE UNDESIRABLE FLAVOR AND ODOR SUBSTANCES

John A. Ridgway, Jr., La Porte, Ind., and Kwei C. Chao, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 285,848, Sept. 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 64,866, July 24, 1970, abandoned. This application Feb. 13, 1974, Ser. No. 442,247

Int. Cl. C12c *11/18, 11/30;* **A23j** *1/18*

U.S. Cl. 426—60 **24 Claims**

1. A process for improving the flavor characteristics of heat-killed single-cell microbial organisms, comprising the steps of:

a. heat-killing the single-cell microbial organisms by pasteurization;

b. drying said heat-killed single-cell microbial organisms to a moisture content no greater than about 8 wt. percent;

c. preparing a slurry of the dried single-cell microbial organisms with an aqueous alcoholic solution containing 60 to 80 vol. percent of an aliphatic alcohol having 1 to 3 carbon atoms per molecule in an amount to provide a weight ratio of alcoholic solution to single-cell microbial organisms within the range from 3:1 to 7:1;

d. agitating the slurry at a temperature in the range from 20° to 100°C. for a period of 0.1 to 2.0 hours;

e. filtering the slurry to recover an extracted single-cell microbial organisms; and

f. drying the extracted single-cell microbial organisms to yield a substantially solvent-free product.

3,885,051
FLAVORING AND AROMATISING WITH 3-ACETYL-2,5-IALKYL FURANS OR THIOPHENES

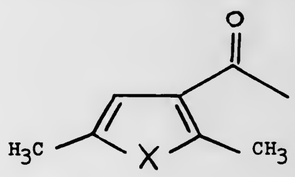
Cynthia J. Mussinan, Brick Town; Manfred Vock, West Orange, both of N.J.; Edward Joseph Shuster, Brooklyn, and Alton Dewitt Quinn, Calicoon, both of N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 301,865

Int. Cl. A23l *1/26*

U.S. Cl. 426—535 **3 Claims**

1. A process for altering the hazelnut or walnut flavor of a foodstuff comprising the step of adding to a foodstuff a flavoring composition comprising from about 5×10^{-8} to about 90 percent by weight based on the total weight of the flavoring composition, of a compound having the formula:



wherein X is selected from the group consisting of sulfur and oxygen.

3,885,052

PROCESS OF PRODUCING A SOY PRODUCT HAVING IMPROVED SORPTION

Robert P. Starr, Spanish Lake, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 144,324, May 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 643,342, June 5, 1967, abandoned. This application Nov. 9, 1973, Ser. No. 414,553

Int. Cl. A23j *1/14*; **A23l** *1/31*

U.S. Cl. 426—250 **9 Claims**

1. A method of preparing an improved food product which exhibits a shortened time of preparation, increased retention of fat and aqueous juices on cooking, and which does not crumble and lose shape on cooking, comprising mixing a meat portion containing fat and as an emulsifier a dehulled, defatted, desolventized soy meal protein product containing less than about 40 percent of the aqueous-alkaline soluble substances originally present in the soy meal and further containing between about 20 to 45 percent by weight of protein on a dry basis which has been dried at a temperature such that the temperature of the emulsifier is about 140°F.–250°F. for a period of approximately 180–60 minutes, the meat portion containing at least about 20% by weight fat based on the weight of the meat portion, binding the mixed portions together with 5–30 percent by weight of the non-meat portion of the mixture with a binder selected from the group consisting of albumen and isolated soy protein, and forming the mixed bound portions into a shape which does not crumble and break apart under normal handling and preparation, cooking the formed mixture and retaining the fat and aqueous juices with the protein emulsifier in the mixture.

3,885,053

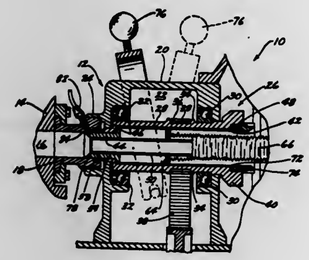
METHOD OF FORMING A SKIN SURFACE ON AN EXTRUDED MEAT EMULSION

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Continuation-in-part of Ser. No. 222,088, Jan. 31, 1972, abandoned. This application Aug. 17, 1973, Ser. No. 389,388

Int. Cl. A22c *18/00*

U.S. Cl. 426—276 **3 Claims**



1. A method of forming a skin surface on an extruded edible protein emulsion selected from a group consisting of meat, vegtable, fish and poultry, comprising the steps of: introducing the emulsion into a tube having a substantially continuous interior wall, extruding the emulsion from said tube by subjecting said emulsion to pressure to move said emulsion through said tube, introducing a film of an edible acid solution into said tube in intimate contact with said interior wall and the outer surface of said emulsion whereby said edible acid solution will serve as a lubricant between said emulsion and said interior wall and whereby said edible acid solution reacts with said emulsion while said emulsion is confined within said tube to form a cohesive skin surface thereon as said emulsion is moved through said tube.

3,885,054

EDIBLE COLLAGEN CASING CROSS-LINKED BY BISULFITE ADDITION

Mauj A. Cohly, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Filed Apr. 26, 1973, Ser. No. 354,727

Int. Cl. A22c *13/00*

U.S. Cl. 426—277 **11 Claims**

1. In a process for producing an edible collagen casing which comprises extruding an aqueous collagen slurry through a die into an aqueous coagulating medium to form a thin-walled tubular collagen casing, hardening the tubular casing, and drying to produce an edible casing product, the improvement for hardening said tubular collagen casing which comprises:

forming a bisulfite addition product with said collagen by contacting said collagen with a bisulfite providing material selected from the group consisting of alkali metal and ammonium sulfite, alkali metal and ammonium bisulfite, alkali metal and ammonium hydrosulfite, and sulfurous acid at a pH and temperature effective for forming said bisulfite addition product, and

subsequently decomposing said bisulfite addition product to form a reactive aldehyde which then reacts with functional groups on said collagen to crosslink and harden the thinwalled tubular collagen casing.

3,885,055

Patent Not Issued For This Number

3,885,056

METHOD OF COOKING FOOD PRODUCTS

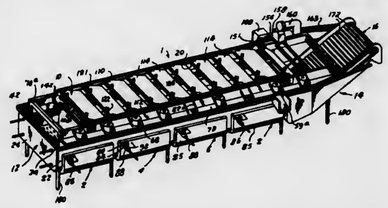
Donald Paul Smith, and Raymond E. Booth, both of Dallas, Tex., assignors to Donald P. Smith, Dallas, Tex.

Division of Ser. No. 209,132, Dec. 17, 1971, Pat. No. 3,731,614. This application Mar. 2, 1973, Ser. No. 337,675

Int. Cl. A23l *1/00*

U.S. Cl. 426—441 **6 Claims**

1. A method of cooking pieces of a food product comprising the steps of: forming compartments; positioning pieces of food products in each compartment; moving the compartments through a trough containing liquid; circulating liquid heated to a first temperature upwardly through said compartments and across the pieces of the product in a direction transverse to the length of the trough in a first portion of the trough; circulating liquid heated to a second temperature, lower than the first temperature, upwardly through said compartments and across the pieces of the product in a direction transverse to the length of the trough in a second portion of the trough, said first portion and said second portion being spaced from one another along the length of said trough; withdrawing liquid from said compartments in a direction transverse to the length of the trough; and controlling the flow rate and the temperature of the circulating liquid in said first portion and said second portion.



3,885,057

PROCESS FOR STERILIZING A PRODUCT

Raoul Wander, Paris, and Robert Angue, Antibes, both of France, assignors to Approvisionnement-Transport Aerien-Distribution, Paris, France

Division of Ser. No. 93,015, Nov. 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 718,044, April 2, 1968, abandoned. This application Nov. 15, 1972, Ser. No. 306,522

Int. Cl. A23c *3/02*; **A23l** *3/00*

U.S. Cl. 426—519 **3 Claims**

1. A process of sterilizing a product in liquid form which may contain microorganisms consisting essentially of subjecting said product simultaneously to internal heat generated within the product by internal friction brought about between rotating substantially planar surfaces in relative movement with respect to said product thereby elevating and maintaining said product, for a few tenths of a second, to a temperature sufficient to destroy microorganisms which may be present in said product by coagulating the protoplasm of the microorganisms; and to a centrifugal force sufficient to destroy said microorganisms by degrading the cell walls of said microorganisms; and to pressure sufficient to prevent thermal shock even at said temperature; whereby said temperature and said centrifugal force pressure possess combined effects sufficient to destroy any microorganisms present to yield a sterilized product with substantially no chemical degradation of physical segregation of the product.

3,885,058

METHOD OF MANUFACTURING CADMIUM SULPHIDE PHOTOCELLS

Thuoc Nguyen Duy, Ivry; Wolfgang Palz, Paris, and Jacques Vedel, Asnieres, all of France, assignors to The Unites States of America as represented by the Secretary of the Navy, Washington, D.C.

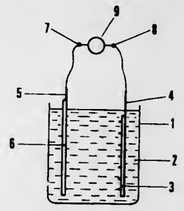
Filed Apr. 27, 1973, Ser. No. 355,147

Claims priority, application France, May 3, 1972, 72.15598

Int. Cl. B44d *1/44*, *1/18*

U.S. Cl. 427—10 **2 Claims**

1. In a method for manufacturing a CdS photocell which comprises adhering a collector grid to a layer of Cu_2S, reducing oxidized copper sulfide on the surface of said layer by dipping the photocell to which the grid has just been adhered into an aqueous solution of cuprous ions and then removing the photocell from said solution; the improvement which comprises permitting the reduction of said oxidized copper sulfide by said aqueous solution to proceed until the curve representing the variation with respect to time of the potential difference between the photocell and a pure copper electrode dipped into the same solution, passes through its minimum



value, and then removing said photocell from said aqueous solution.

3,885,059

METHOD FOR FORMING A CARBIDE LAYER OF A IV-GROUP ELEMENT OF THE PERIODIC TABLE ON THE SURFACE OF A CEMENTED CARBIDE ARTICLE

Noboru Komatsu, Toyoakeshi; Tohru Arai, Nagoyashi; Yoshihiko Sugimoto, Nagoyashi, and Masayoshi Mizutani, Nagoyashi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoyashi, Japan

Filed Apr. 11, 1974, Ser. No. 460,148

Claims priority, application Japan, Apr. 12, 1973, 48-40821

Int. Cl. C23f *7/00*; **B44d** *5/12*

U.S. Cl. 427—12 **7 Claims**



x 400

1. A method for the surface treatment of a cemented carbide article, comprising the steps of preparing a treating molten bath consisting essentially of boric acid or borate and a substance containing at least one element of the group consisting of titanium, zirconium and hafnium and immersing the article in the treating molten bath, thereby forming a carbide layer of said element on the surface of the article thus treated.

3,885,060

PRODUCTION OF INSOLUBILIZED ORGANIC POLYMERS

Takako Hirai, Kodaira; Yoshio Hatano, Uenoharamachi; Saburo Nonogaki, Tokyo, and Teruaki Kobayashi, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 852,234, Aug. 22, 1969, abandoned. This application Nov. 29, 1972, Ser. No. 310,583

Claims priority, application Japan, Aug. 23, 1968, 43-59886

Int. Cl. B44d *1/50*; **C08f** *3/16*; **C08g** *30/10*

U.S. Cl. 427—43 **34 Claims**

1. In a method for forming a cathode ray image comprising:

a. providing a substrate;

b. coating said substrate with a cathode ray-sensitive film consisting essentially of an organic polymer; and

c. exposing at least a portion of said cathode ray-sensitive film to a cathode ray beam to effect crosslinking of the polymer whereby said portion of film is insolubilized with respect to certain organic solvents, the improvement wherein the organic polymer is selected from the group consisting of a diene polymer selected from the group consisting of epozidized 1, 4-polybutadiene, epoxidized 1,4-polyisoprene, epoxidized 1, 4-polychloroprene, and epoxidized 1, 2-polybutadiene, and an epoxy-containing

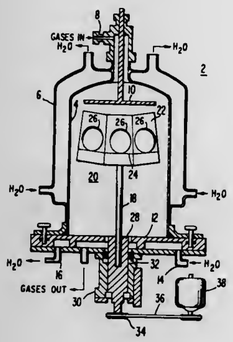
vinyl polymer selected from the group consisting of polyglycidyl methacrylate, polyglycidyl acrylate, a glycidyl methacrylate-acrylonitrile copolymer and a glycidyl acrylate-acrylonitrile copolymer, said organic polymer having a molecular weight of from 100,000 to 10,000,000; the diene polymer having a degree of epoxidation of from 8 to 70%.

3,885,061

DUAL GROWTH RATE METHOD OF DEPOSITING EPITAXIAL CRYSTALLINE LAYERS

John Francis Corboy, Ringoes; Glenn Wherry Cullen, Princeton, and Nicholas Pastal, Trenton, all of N.J., assignors to RCA Corp., Princeton, N.J.

Filed Aug. 17, 1973, Ser. No. 389,192
Int. Cl. C23c *11/00*
U.S. Cl. 117—201 **5 Claims**



1. A method of comprising a composite layer of hetero-epitaxial silicon on a heated sapphire or spinel substrate comprising:

depositing a first portion of said layer having a thickness of about 500–2000 A at an average growth rate of about 4–6 μm/min and the remainder of said layer at a rate of not more than about 0.5 μm/min.

3,885,062

PROCESS FOR TREATING MOLDS USED IN MOLDING GLASS PARTS

Frank Bombola, Garden Grove, Calif., assignor to E/M Lubricants, Inc., West Lafayette, Ind.

Filed May 17, 1973, Ser. No. 361,343
Int. Cl. B29c *1/04*
U.S. Cl. 427—133 **9 Claims**

1. A process for treating molds adapted for use in molding glass parts comprising the steps of:

cleaning the surfaces of such molds; and

thereafter, applying to said mold surfaces an aqueous composition comprising a mixture of monoaluminum dihydrogen phosphate, $Al(H_2PO_4)_3$, and a member selected from the group consisting of graphite, carbon black, molybdenum disulfide, tungsten disulfide, molybdenum diselenide, molybdenum telluride, iron oxide, lead sulfide and molybdenum, tungsten, chromium, and carbides thereof, and mixtures thereof,

whereby a sacrificial protective coating is provided on the mold surfaces thereby facilitating release of molded glass parts and protecting the surface of the mold.

3,885,063

PROCESS FOR PROTECTING A METALLIC SURFACE AGAINST CORROSION AND WEAR

Herbert Schachner; Helmut Tannenberger, and Bastian O. Baumberger, all of Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge, Geneva, Switzerland

Filed June 17, 1974, Ser. No. 480,152
Claims priority, application Switzerland, June 15, 1973, 8705/73
Int. Cl. C23c *11/08*
U.S. Cl. 427—226 **5 Claims**

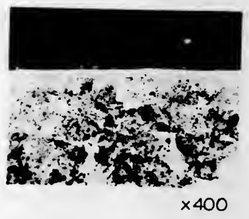
1. A process for protecting against corrosion and wear a metallic surface consisting essentially of at least one element belonging to Group IB of the Periodic Classification of Elements in pure or alloyed form, which process comprises forming on said surface by chemical vapor deposition a layer of amorphous and transparent aluminium oxide.

3,885,064

METHOD FOR FORMING A CHROMIUM CARBIDE LAYER ON THE SURFACE OF AN IRON, FERROUS ALLOY OR CEMENTED CARBIDE ARTICLE

Noboru Komatsu, Toyoakeshi; Tohru Arai, Nagoyashi; Yoshihiko Sugimoto, Nagoyashi, and Masayoshi Mizutani, Nagoyashi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoyashi, Japan

Filed Apr. 11, 1974, Ser. No. 460,149
Claims priority, application Japan, Apr. 12, 1973, 48-40823; June 22, 1973, 48-69752
Int. Cl. B44d *1/06*
U.S. Cl. 427—228 **9 Claims**


×400

1. A method for forming a carbide layer on the surface of an iron, ferrous alloy or cemented carbide article in a treating molten bath, comprising the steps of preparing the treating molten bath consisting essentially of chromium halide and a member selected from the group consisting of boric acid, borate and the mixture thereof, immersing the article containing at least 0.05% of carbon into said treating molten bath, keeping said article in said treating molten bath for forming a chromium carbide layer on the surface of said article, and taking said article out of said treating molten bath.

3,885,065

HYDRATED METAL OXIDE DEPOSITION

George O. Suman, Jr.; Edwin A. Richardson, both of Houston, and Ronald F. Scheuerman, Bellaire, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 221,401, Jan. 27, 1972, Pat. No. 3,756,315. This application Feb. 12, 1973, Ser. No. 331,939The portion of the term of this patent subsequent to Sept. 4, 1990, has been disclaimed.
Int. Cl. B44d *1/02*
U.S. Cl. 427—230 **3 Claims**

1. A process for depositing a strongly adherent hydrated metal oxide coating on a surface of a solid material that is located within a relatively inaccessible region into which a fluid can be flowed, which process comprises:

compounding a basic aqueous solution of an amphoteric metal oxide and a pH-reducing reactant that subsequently lowers the pH of the solution to one at which a hydrated metal oxide is precipitated after a time sufficient for the solution to be flowed from the location in which it is compounded to the location in which it contacts the surface of the material to be coated; and

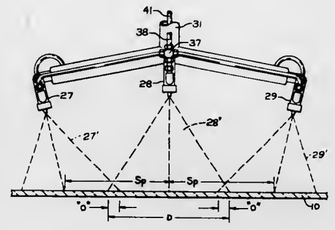
flowing the solution into contact with and along the surface of the material to be coated while the precipitation of the hydrated metal oxide is occurring so that a relatively uniform coating of a relatively insoluble hydrated metal oxide is deposited over substantially all of that surface and is deposited at a relatively slow rate.

3,885,066

METHOD FOR COATING CONTINUOUSLY ADVANCING SUBSTRATE

Ronald L. Schwenninger, Cumberland, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1972, Ser. No. 309,049
Int. Cl. C23c *7/00*
U.S. Cl. 427—314 **19 Claims**



1. In a method of coating a surface of a glass substrate continuously advancing along a predetermined path, the coating method comprising the steps of directing a coating medium as a diverging stream from each of at least two coating dispensing means toward the surface of the substrate at sufficient velocity to impinge on the surface of the substrate to coat same, and cyclically displacing the at least two dispensing means along a reciprocating path transverse to the predetermined path of the substrate to coat the surface of the substrate, wherein the improvement provides the surface of the substrate with a substantially uniform coating and comprises: performing the displacing step with the at least two dispensing means on a center-to-center spacing as measured (1) at the substrate surface to be coated and (2) along the substrate path a distance approximately equal to S_p for each cyclic traverse of the at least two dispersing means along the reciprocating path wherein S_p is

$$\frac{R_s}{F_m}\left(\frac{N_g+n}{N_g}\right)$$

wherein:

R_s = the speed at which the substrate is advancing, in inches per minute;

N_g = the number of dispensing means;

n = any positive or negative whole integer other than $n = N_g$ or any multiple of $n = N_g$; and

F_m = the cycle speed of the dispensing means, in cycles per minute.

3,885,067

METHOD FOR TREATING A POLYESTER SYNTHETIC FIBER FOR USE AS A RUBBER-REINFORCING MATERIAL

Hiroaki Ishika, Ohiso; Koji Maruyama, Chigasaka, and Kenzi Katsushima, Hiratsuka, Japan, assignors to The Yokohama Rubber Co. Ltd., Tokyo, Japan

Filed May 18, 1973, Ser. No. 361,762
Claims priority, application Japan, May 29, 1973, 47-53121
Int. Cl. B32b *25/08, 27/36*
U.S. Cl. 427—381 **8 Claims**

1. A process for treating a polyester fiber for use as rubber reinforcement comprising the steps of applying to said polyester fiber a solution comprising the reaction product which is obtained by reacting an excess of resorcinol with an allyl halide and an alkali metal hydroxide, drying said polyester fiber and further applying to said polyester fiber resorcinol-formalin resin latex.

3,885,068

EMULSIFIED ASPHALT EMULSION FORTIFIED WITH ASBESTOS FIBERS

Clarence R. Bresson, and Forrest D. Spaulding, Bartlesville, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 22, 1972, Ser. No. 308,697
Int. Cl. B44d *1/02*; **C08h** *13/00*
U.S. Cl. 427—394 **9 Claims**

1. A method for preparing an asphalt impregnated non-woven polyolefin fabric material capable of withstanding fluid or hydraulic pressure tending to cause the asphalt to extrude from the fabric, which comprises prewetting asbestos fibers having a fiber length of about 0.01–0.1 inches with a nonionic surface-active agent, blending enough of the thus-treated asbestos fibers with an anionic asphalt emulsion to obtain a stable emulsion mixture containing about 4–15 parts of asbestos fibers per 100 parts of asphalt emulsion, applying such stable emulsion mixture to said fabric in an amount sufficient to insure the filling of the interstices of the fabric, and curing the coating thus obtained.

3,885,069

PREPARATION OF CROSSLINKED POLYETHYLENIMINE AND IMPREGNATION OF CELLULOSIC MATERIAL WITH IN SITU CROSSLINK-POLYMERIZED ETHYLENIMINE

Earl J. Roberts, and Stanley P. Rowland, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 11, 1972, Ser. No. 279,919
Int. Cl. C02b *1/46*; **D06m** *13/48, 15/12*
U.S. Cl. 427—396 **5 Claims**

1. A method for producing in situ formed, crosslinked polyethylenimine in a fibrous material, the method comprising:

a. mixing ethylenimine with an alkyl halide selected from the group consisting of 1,2-dichloroethane, tris(2-chloroethyl)phosphoramide, bis(2-chloroethylinyl)-phosphonate, tris(2,3-dibromopropyl)phosphate, tris(1,3-dichloroisopropyl)phosphate, B,B'-dichloroethyl ether and dichloromethane in a molar ratio of about from 44:1 to 27:1;

b. allowing the mixture to stand at 10° to 50° C for from 2 to 16 hours, thereby forming a prepolymer;

c. diluting the mixture in water or ethanol to obtain a 5 to 50 percent concentration of the prepolymer;

d. impregnating the fibrous material with the prepolymer of step (c) to obtain a wet pickup of about from 50 to 150 percent; and

e. allowing the impregnated material to dry at about 25° C until the prepolymer is crosslinked and polymerized.

3,885,070
SELF-ADHESIVE CLOSURE

John C. Chapman, Western Springs, Ill., assignor to Avery Products Corporation, San Marino, Calif.

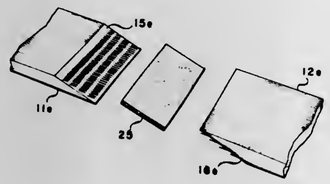
Filed July 26, 1973, Ser. No. 382;755
Int. Cl. B32b 3/14
U.S. Cl. 428—42 6 Claims

1. A flexible web product comprising an elongated carrier web strip having a release-coated surface, a plurality of closure webs in a row along the length of said web strip, each of said closure webs having a pressure-sensitive adhesive face adhered to said release-coated surface, said strip having a longitudinal split along its length separating said strip into first and second strip portions with said closure webs bridging said portions, only said second portion having a plurality of transverse cross slits or notches extending to but not beyond said longitudinal split and separating said second portion into a plurality of discrete carrier strips each backing one portion of its own closure web.

3,885,071
FIBER-REINFORCED EPOXY COMPOSITE JOINTS

Leiv H. Blad, Van Nuys, and Robert F. Warkow, Granada Hills, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Aug. 10, 1972, Ser. No. 279,703
Int. Cl. B32b 3/10, 5/12
U.S. Cl. 428—60 3 Claims



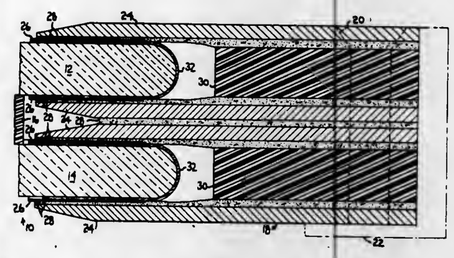
1. An improved fiber-reinforced epoxy composite joint comprising at least a pair of fiber-reinforced epoxy composite adherends having ends scarfed and mated in complementary relation to each other across an unsupported adhesive, all bonded together, each of such adherends having a plurality of layers of substantially equally exposed lengths of inert fibers disposed within and extending unidirectionally from its scarfed mating surface substantially parallel to the longitudinal axis of the elements-to-be-joined and being intermeshed with like lengths of fibers extending from the other adherend.

3,885,072
ATTACHMENT OF RIGID MEMBERS TO FRANGIBLE WINDOW PANELS

George Zibritosky, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 85,153, Oct. 29, 1970, abandoned, which is a continuation-in-part of Ser. No. 829,366, June 2, 1969, abandoned. This application May 3, 1973, Ser. No. 357,055
Int. Cl. B32b 1/04, 3/02, 17/06; C03c 27/08; E06b 3/24
U.S. Cl. 428—38 12 Claims

1. A panel assembly comprising a panel of brittle sheet material selected from the group consisting of glasses, ceramics, graphites, carbon-like materials, plastics and combinations thereof, a ductile metallic foil having a first major surface thereof rigidly bonded by a high temperature resistant, high strength resinous cement to portions of a major surface of said brittle sheet material and a rigid edge attachment extending beyond the periphery of said brittle sheet material, for attachment to a panel assembly support, and being rigidly bonded by a high temperature resistant, high strength resinous

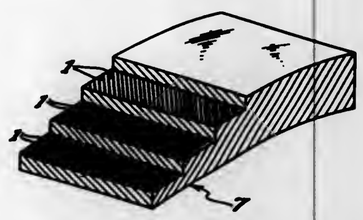


cement to the thicknesswise opposite major surface of said ductile foil.

3,885,073
PRE-STRESSED PYROLYTIC GRAPHITE-REFRACTORY CARBIDE MICROCOMPOSITES

Eugene L. Olcutt, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Continuation-in-part of Ser. No. 65,899, Aug. 21, 1970, Pat. No. 3,738,906. This application Apr. 12, 1973, Ser. No. 350,550
Int. Cl. B32b 5/12
U.S. Cl. 428—112 27 Claims



1. A pre-stressed pyrolytic graphite microcomposite comprising crystallite layers of pyrolytic graphite containing embedded therein codeposited crystals of a refractory carbide selected from the group consisting of silicon, zirconium, hafnium, titanium, tantalum, and niobium carbide, and mixtures thereof, in which the concentration of the codeposited refractory carbide crystals relative to the concentration of pyrolytic graphite adjacent at least one surface of the microcomposite is less than the concentration of said codeposited crystals interiorly of said surface, the concentration of the codeposited crystals in the total microcomposite being in the range of about 5 to 95 percent by volume.

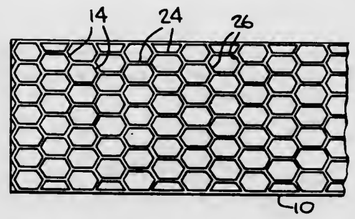
3,885,074
THERMOPLASTIC NET

Edmond A. Chandler, Northwood, N.H., assignor to Breveteam S.A., Fribourg, Switzerland

Division of Ser. No. 145,663, May 21, 1971, Pat. No. 3,769,120, which is a division of Ser. No. 733,576, May 31, 1968, Pat. No. 3,616,152. This application Sept. 6, 1973, Ser. No. 394,776. The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.
Int. Cl. B32b 3/10; B65b 53/06; B29f 5/00
U.S. Cl. 428—136 2 Claims

1. A thermoplastic film or sheet product having openings forming a net-like pattern or configuration determined by laterally interspaced lines of interrupted slits or cuts with the solid portions between each line overlapped by the slits or cuts of adjacent lines and which are initially formed in unslit or uncut thermoplastic film or sheet and thereafter opened to form said openings; wherein the improvement comprises said

openings being defined by net-work linking portions comprising shrunken or retracted segments of initially unshrunk or unretracted shrinkable or retractable thermoplastic film or

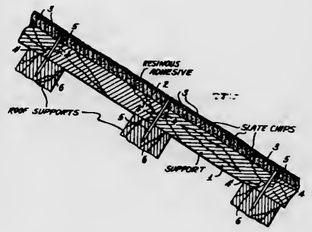


sheet in which said slits or cuts were formed, said segments being shrunk or retracted via the solid portions of the film or sheet between said slits or cuts.

3,885,075
COMPOSITE SLATE STRUCTURE

Elmer A. Ferrante, Easton, Pa., assignor to Elmer A. Ferrante; Frank LaBarba, both of Easton and Alexander D. Ricci, Huntingdon Valley, all of, Pa., part interest to each.

Filed Oct. 1, 1973, Ser. No. 402,271
Int. Cl. E04c 1/40; B32b 3/00
U.S. Cl. 428—150 7 Claims



1. A roofing material comprising a solid support of such thickness that it is not rigid, a first layer of a substantially weather resistant, crack resistant, non-rigid cured resinous adhesive adhering a first layer of individual slate chips of at least one to about 100 square millimeters in area to a surface of said support, so as to cover at least 60% of said surface, a second layer of said cured resinous adhesive adhering a second layer of individual slate chips of at least one to about one hundred square millimeters in area to said first layer and covering at least 60% of said first layer of said chips, and a third layer of said cured resinous adhesive adhering a third layer of individual slate chips of at least one to about one hundred square millimeters in area to said second layer and covering at least 60% of said second layer of said chips.

3,885,076
ELECTRON BEAM GENERATED PATTERNS OF METAL-CONTAINING POLYMERS

Robert Darrow Heidenreich, Warren Township, Somerset County, and Larry Flack Thompson, Gillette, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 9, 1973, Ser. No. 358,731
Int. Cl. B44d 1/18; B05c 5/00
U.S. Cl. 428—195 7 Claims

1. A method of product fabrication comprising the formation of a patterned layer of matter upon a substrate and, optionally, further processing steps, which said formation includes directing a beam of electrons against a selected portion of a layer of an organo-metallic di-π-cyclopentadienyl compound on a substrate thereby cross-linking the compound of the selected portion, wherein the compound contains di-π-cyclopentadienyl M in a relative concentration such that at least one atom of M is present in the layer for every 500 carbon atoms, where M is at least one member selected from the group consisting of Fe, Ni, Co, V, Cr, and Ti.

3,885,077
FLOATABLE RUBBERIZED FABRIC

Jack M. Lederman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 8, 1972, Ser. No. 313,284
Int. Cl. D06m 15/28
U.S. Cl. 428—265 1 Claim

1. A rubberized fabric capable of floating on water consisting essentially of a polypropylene fabric with a coating of a vulcanized natural rubber composition thereon, said rubber composition having a specific gravity no greater than 0.99 and being comprised of natural rubber, sulfur curative, and filler.

3,885,078
HYDROGEL LAMINATES AND METHOD OF MANUFACTURING THEREOF

Otto Wichterle, and Karel Kliment, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation of Ser. No. 802,202, Feb. 25, 1969, abandoned. This application Nov. 22, 1971, Ser. No. 201,236
Claims priority, application Czechoslovakia, Mar. 26, 1968, 1767-68
Int. Cl. B32b 3/26, 7/02
U.S. Cl. 428—315 1 Claim

1. A laminate product comprising at least (A) one preformed film layer of an initially soluble non-crosslinked homogeneous polymer formed from a solution of a copolymer of ethylene glycol monomethacrylate with ethylene glycol dimethacrylate and adhered thereto (B) a thicker layer of a spongy hydrophilic hydrogel polymerized in-situ thereon, said hydrogel being formed from a mixture containing at least 60 percent by weight of water and a copolymer of a glycol monomethacrylate monomer selected from the group consisting of ethylene glycol monomethacrylate, diethylene glycol monomethacrylate, triethylene glycol monomethacrylate and mixtures thereof, propylene glycol monomethacrylate, and copoly-condensates thereof with ethylene glycol with up to 2 percent ethylene glycol dimethacrylate formed in the presence of a polymerization initiator, said two layers being bound together as a result of said polymerization, said film layer (A) rendered substantially insoluble by the existence of chemical bonds formed by cross-linking during polymerization of the monomer mixture for said spongy hydrogel with said film layer (A).

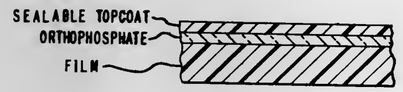
3,885,079
PHOSPHATE COATED POLYMERIC SHAPED OBJECTS

Vernon C. Haskell, and James L. Hecht, both of Richmond, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 273,301, July 19, 1972, Pat. No. 3,821,014, which is a continuation-in-part of Ser. No. 182,641, Sept. 22, 1971, abandoned. This application Mar. 28, 1974, Ser. No. 455,805

Int. Cl. C01b *25/36*; **B32b** *23/04*

U.S. Cl. 428—346 **6 Claims**



1. A cellophane film having a substantially continuous, gasimpermeable coating on at least one surface thereof, the coating comprising aluminum orthophosphate wherein the atom ratio of aluminum to phosphorus is about from 2.3 to 0.5

3,885,080
CELLULOSIC FILM BASE ASSEMBLY

Frank Percy Lambert, Homchuck, and Edward William Lee, Romford, both of England, assignors to Ilford Limited, England

Filed Oct. 12, 1972, Ser. No. 297,086

Claims priority, application United Kingdom, Nov. 3, 1971, 51157/71

Int. Cl. B44d *1/16*

U.S. Cl. 428—336 **9 Claims**

1. A cellulosic film base assembly which comprises a nitrocellulose cell pse triacetate or cellulose acetate-butyrate film base bearing in order on at least one side thereof a protective layer not more than 1 μ thick which layer comprises a mixture of a cellulosic polymer and a polyester-based polyurethane which contains no free isocyanate groups and which is soluble in ethyl alcohol or acetone or a mixture of ethyl alcohol and acetone and, coated on said protective layer, a lacquer layer, the range of polyurethane to cellulosic polymer to be used in the layer on the cellulosic film base being from 2 parts by weight of the polyurethane to 1 part by weight of the cellulosic polymer to 1 part by weight of the polyurethane to 2 parts by weight of the cellulosic polymer.

3,885,081
SHEET MATERIAL

August Jean Van Paesschen, Antwerpen; Lucien Janbaptist Van Gossum, Kontich, and Jan Jozef Priem, Mortsel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Division of Ser. No. 165,312, July 23, 1971, Pat. No. 3,788,856, which is a division of Ser. No. 763,382, Sept. 27, 1968, Pat. No. 3,649,336. This application Feb. 12, 1973, Ser. No. 331,349

Claims priority, application United Kingdom, Aug. 12, 1968, 44114/68

Int. Cl. B44d *1/18*; **G03c** *1/80*

U.S. Cl. 428—474 **1 Claim**

1. Sheet material comprising a hydrophobic film support, a first layer directly adherent to said hydrophobic film support and comprising a copolymer formed from 45 to 99.5percent by weight of at least one vinylidene chloride or vinyl chloride monomer, from 0.5 to 10percent by weight of an ethylenically unsaturated hydrophilic monomer, and from 0 to 54.5percent by weight of at least one other copolymerizable ethylenically unsaturated monomer; a second layer adjacent said first layer comprising in a ratio of 1:3 to 1:0:5percent by weight a mixture of gelatin and a copolymer of 30 to 70percent by weight of butadiene with at least one copolymerizable ethylenically unsaturated monomer; and in exterior relation to said second layer in successive order a hydrophilic electroconductive layer and electrically insulating layer.

3,885,082
ELECTRIC ARC FURNACE SIDE-WALL PROTECTION ARRANGEMENT

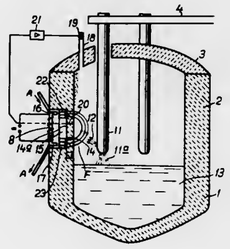
Bertil Hanas, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Apr. 17, 1974, Ser. No. 461,693

Claims priority, application Sweden, Apr. 19, 1973, 7305609

Int. Cl. F27d *1/00*

U.S. Cl. 13—35 **6 Claims**



1. An electric arc furnace comprising at least one electrode having an end forming an arc producing an arc flare, a side wall lining having at least one portion having an inside positioned to be bombarded by said flare, said portion having an outside, a magnet having pole-piece ends on said outside forming a magnet flux field traveling through said portion and beyond said inside and on said inside holding ferro-magnetic particles forming a flare shield until the particles are heated to their Curie point temperatutes, and a feeder for feeding said field with replacement ferro-magnetic particles at temperatures lower than their Curie point temperatures; wherein the improvement comprises said lining having an outer surface in which a recess is formed at said portion so that said portion has a reduced wall thickness through which said flux field must travel, and means between said magnet and recess for water-cooling said portion of reduced wall thickness, said water-cooling means including magnetic pole piece extensions extending substantially from said pole piece ends to said inside of said portion.

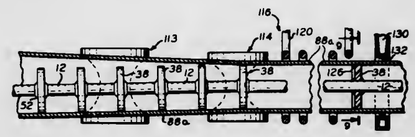
3,885,083
PRESSURE FUSED WATERTIGHT DISC COAXIAL CABLE

Ludwik Jachimowicz, Elizabeth, and Jerzy A. Olszewski, Edison, both of N.J., assignors to General Cable Corporation, Greenwich, Conn.

Division of Ser. No. 321,641, Jan. 8, 1973, Pat. No. 3,807,031. This application Dec. 14, 1973, Ser. No. 424,904

Int. Cl. H01b *9/04*, *11/18*

U.S. Cl. 174—28 **9 Claims**



1. A coaxial cable comprising a center conductor and an outer conductor of substantially larger diameter than the center conductor and spaced therefrom, discs on the center conductor holding the outer conductor in spaced relation to the inner conductor including imperforate discs of dielectric material bonded to both the inner and outer conductors at spaced regions along the cable and forming separate watertight compartments therealong, and other discs of dielectric material having better attenuation characteristics than the first discs and located between the first discs in positions for providing additional mechanical support for the outer conductor at regions between the discs that form the watertight compartments.

3,885,084
STRUCTURE FOR SEALING A JOINT IN AN ELECTROMAGNETIC SCREENING ENCLOSURE

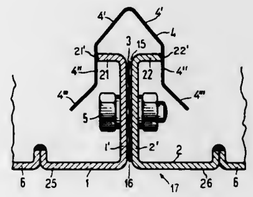
Hans-Peter Kaiserswerth, Regensburg; Klaus Kowalkowski, Munich, and Siegfried H. Benedikter, Taufkirchen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 11, 1973, Ser. No. 405,395

Claims priority, application Germany, Oct. 16, 1972, 2250639

Int. Cl. H05k *9/00*

U.S. Cl. 174—35 MS **7 Claims**



1. A structure sealing a joint in an electro-magnetic screening enclosure, the joint being between a pair of wall members with each member having a first flange extending the length of the member and at an angle to said member, each of said first flanges terminating in a second flange extending at an angle to said first flange and having a free edge, said members being held together by threaded fasteners with said first flanges of the members being in facing relationship and said second flanges being adjacent each other and on opposite sides of the residual gap of the joint with their free edges facing in opposite directions, said structure comprising an electrically conductive cover member of a resilient metal, said cover member having a pair of spaced portions and being detachably mounted on said wall members with the spaced portions of the cover member engaging the free edges of the adjacent second flanges, electrically interconnecting the wall members and covering the gap.

3,885,085
HIGH VOLTAGE SOLID EXTRUDED INSULATED POWER CABLES

George Bahder, Edison; George S. Eager, Jr., Upper Montclair, and David A. Silver, Livingston, all of N.J., assignors to General Cable Corporation, Greenwich, Conn.

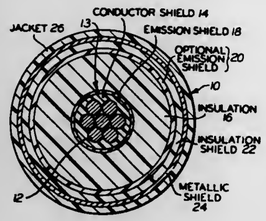
Filed June 11, 1974, Ser. No. 478,329

Int. Cl. H01b *9/02*

U.S. Cl. 174—36 **14 Claims**

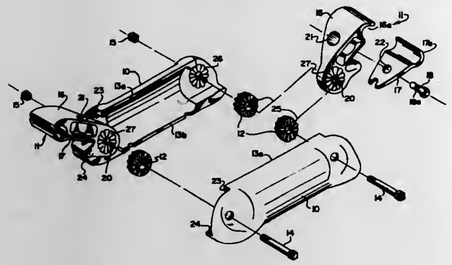
1. An electric power cable including in combination a conductor, a conductor shield surrounding the conductor, insulation around the conductor shield, the shield including an inner

layer made of semi-conducting material and the shield having an outer layer of material that prevents emission of electrons



into the insulation from regions of high electrical stress in the semi-conducting inner layer.

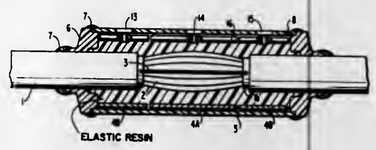
3,885,086
SPACER-DAMPER ASSEMBLY
Herbert James Houston, 1453 Segram Ave., Oakville, Ontario; Kenneth Dale Bolt, 827 Francis Rd., Burlington, Ontario; Adolf Gretzinger, 138 Fallingbrook Dr., Ancaster, Ontario, and Robert Gordon Baird, 310 N. Shore Blvd., Burlington, Ontario, all of Canada
Continuation of Ser. No. 182,327, Sept. 21, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 394,110
Claims priority, application Canada, July 22, 1971, 118839
Int. Cl. H02g *7/14, 7/12*
U.S. Cl. 174—42 **32 Claims**



29. A cable damper for an aerially suspended conductor in bundled configuration, comprising a rigid metallic body having a plurality of metallic clamping arms adapted to engage respective sub-conductors of the conductor bundle, said clamping arms being pivotally connected to the main body by pivot mountings adapted to permit pivotal movement of the clamping arms about predetermined axes parallel to the sub-conductors, said pivot mountings including resilient energy absorbing means adapted to damp vibrational movements of the clamping arms, and each said energy absorbing means comprising a replaceable element of semi-conducting synthetic polyisoprene which is frictionally engaged between relatively movable surfaces of a clamping arm and the main body.

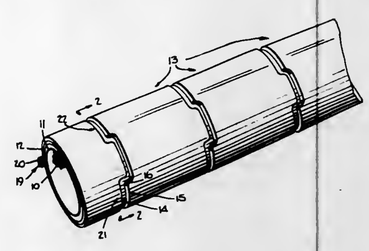
30. A cable damper for an aerially suspended conductor in bundled configuration comprising a rigid main body having a plurality of clamping arms pivotally connected thereto with resilient energy absorbing means adapted to damp vibrational movements of the clamping arms, characterized in that the main body consists of a pair of complementary half shells clamped together in edge abutting relation by clamping bolts.

3,885,087
AIR TIGHT RESIN FILLED CONNECTION POINT DAM FOR COMMUNICATION CABLES
Toshihisa Takada, and Yukio Matsui, both of Tokyo, Japan, assignors to Fujikura Cable Works, Ltd., Tokyo, Japan
Filed July 17, 1973, Ser. No. 380,025
Int. Cl. H02g *15/24, 15/08*
U.S. Cl. 174—93 **7 Claims**



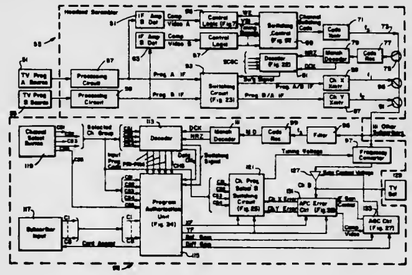
1. A connecting zone connecting two insulated communication cables, each of said cables comprising an electrically insulating sheath surrounding a bundle of electrically insulated conductor wires, and providing an air tight connecting zone around the connection of the cables which comprises a polyethylene outer sleeve surrounding said connecting zone and fixed to each of said electrically insulating sheaths by a pair of spacer means welded to said insulating sheaths and to said outer sleeve, and inner spring sleeve means disposed inwardly of said polyethylene outer sleeve and surrounding the connection zone of the communication cables, said connecting zone being filled with a synthetic resin having a rubber-like elasticity.

3,885,088
FULLY-FILLED TELEPHONE CABLE WITH IMPROVED SCREEN
Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy
Filed May 2, 1974, Ser. No. 466,177
Claims priority, application Italy, May 23, 1973, 24440/73
Int. Cl. H01b *7/18*
U.S. Cl. 174—102 D **5 Claims**



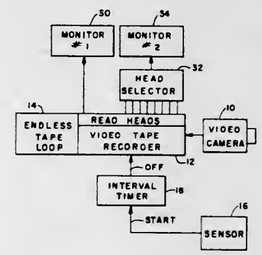
1. A telephone cable comprising a core including a plurality of insulated conductors surrounded by a composite tape folded longitudinally around said core to thereby form a tube of said tape around said core, said tape comprising a layer of metal having a layer of synthetic resin on and bonded to at least the outwardly facing surface of said layer of metal, said tube being indented at each of a plurality of longitudinally spaced positions with a plurality of indentations extending circumferentially of said core, the sum of the circumferential lengths of said indentations being at least equal to the circumference of said core, each of said indentations having an inner surface conforming to the exterior surface of said core and having a circumferential length less than the circumference of said core, at least one of said indentations at each of said positions being longitudinally and circumferentially displaced with respect to, but longitudinally adjacent, at least one other of said indentations at said last-mentioned position and said indentations at each position being disposed around said core with each so-displaced indentation overlapping at least one other indentation and with the inner surface of each so-displaced indentation forming a continuation of the inner surface of the adjacent indentation to provide substantially circumferentially continuous engagement of the inner surfaces of said indentations with the exterior surface of said core at each said position whereby said core is encircled at longitudinally spaced positions by a circumferentially extending, reentrant tube inner surface portion which is in substantially continuous engagement with said core.

3,885,089
TELEVISION SCRAMBLING SYSTEM
Richard T. Callais, Northridge, and D. Paul Warther, Playa Del Rey, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Feb. 16, 1973, Ser. No. 333,231
Int. Cl. H04n *1/44*
U.S. Cl. 178—5.1 **12 Claims**



1. A subscription television scrambling and unscrambling system for selectively transmitting a plurality of television programs on a plurality of transmission channels from a central station to each of a plurality of subscriber sites; said system comprising:
central station equipment comprising:
first means for deriving a first signal from a first television program signal;
second means for deriving timing signals from a second television program signal;
third means coupled to said first and second means for developing a channel switching code in response to the first signal and timing signals;
fourth means coupled to said third means for enabling the channel switching code to be transmitted to the subscriber sites in the system;
fifth means having first and second output circuits, said fifth means being coupled to said fourth means for selectively alternating the first and second television program signals between said first and second output circuits at preselected times determined by a sequence of channel switching codes in order to respectively develop third and fourth scrambled television program signals at said first and second output circuits;
first and second transmitting means respectively coupled to said first and second output circuits for transmitting to each of the subscriber sites the third and fourth television program signals within the first and second transmission channels, respectively; and
equipment at each subscriber site comprising:
a frequency converter responsive to the plurality of transmission channels for converting any selected transmission channel to a predesignated transmission channel;
sixth means for developing signal information in response to each channel switching code received from the central station;
seventh means coupled to said sixth means for utilizing the signal information therefrom to generate first and second switching signals when a subscriber is authorized to receive a scrambled television program on a transmission channel selected by the subscriber; and
switching means coupled between said seventh means and said frequency converter for selectively developing and applying first and second tuning voltages to said frequency converter in response to said first and second switching signals, said frequency converter being responsive to the selective application of the first and second tuning voltages for causing the desired one of the first and second television programs to be developed within the predesignated transmission channel.

3,885,090
CONTINUOUS AUTOMATIC SURVEILLANCE SYSTEM
Richard W. Rosenbaum, 2618 Colonial Way, Bloomfield Hills, Mich. 48013
Filed Mar. 20, 1973, Ser. No. 343,041
Int. Cl. H04n *5/78*
U.S. Cl. 178—6.6 A **14 Claims**

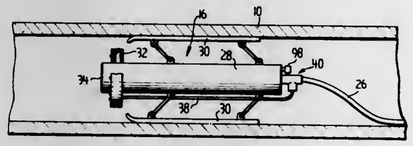


1. A surveillance system for providing a recorded video image of a guarded area, comprising video camera means producing a video output signal representing an image of the area under surveillance, an endless magnetic tape loop on which video signals can be stored, video recorder means normally continuously on operatively connected to said video camera means for continuously recording said video signals on said endless tape loop, said recorder means including an endless tape loop transport system including a plurality of center-feeding reels, means for feeding said tape from one reel to the next in a closed path including all of said reels, and means for maintaining the amount of tape wound on at least one of said reels different from the amount of tape wound on other ones of said reels, said video recorder means further providing write head means and a plurality of read head means between a plurality of adjacent ones of said reels, interval timing means operatively connected to said video recorder means for turning said recorder means off following a predetermined interval of time after said timing means is started, and sensor means responsive to a predetermined disturbance in said guarded area for issuing a signal to said interval timing means to start said timing means, whereby upon the sensing of a disturbance, said video recorder means is turned off after a predetermined interval of time.

3,885,091
METHOD AND APPARATUS FOR PIPELINE INSPECTION
Harold D. Fish, and Karl H. Kalberer, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Oct. 24, 1973, Ser. No. 409,159
Int. Cl. H04n *7/18*
U.S. Cl. 178—6 **15 Claims**

1. A method for inspecting underground pipelines wherein a camera is transported through the pipeline comprising:
illuminating with radiation having a wavelength in the range of about 750 to 1,000 nanometers the pipeline sidewall surface area closest to and within the viewing angle of

said camera as said camera moves through the pipeline; viewing the pipeline sidewall surface area with said camera; and



sensing the image viewed by said camera responsive to the range of radiation illuminating said pipeline sidewall surface area.

3,885,092

CINEMATOGRAPHIC FILM PROJECTOR

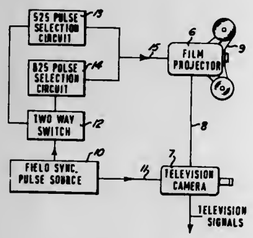
John David Millward, Hitchin, England, assignor to Decca Limited, London, England

Filed Apr. 5, 1973, Ser. No. 348,205

Claims priority, application United Kingdom, Apr. 28, 1972, 19932/72

Int. Cl. H04n *5/38*

U.S. Cl. 178—7.2 **1 Claim**



1. A system for deriving signals for reproducing video information from cinematographic film in television systems, comprising: a film projector including an intermittently operable film traversing mechanism; a television camera; a source of regular field synchronizing pulses for the television camera; means for operating the film traversing mechanism in response to some of the pulses; two pulse selection circuits for passing some of said field synchronizing pulses to the operating means; a selectively operable two-way switch having two alternative outputs; a first one of said pulse selection circuits comprising a first divide-by-two logic unit, whose input is connected to one of the two alternative outputs of the two-way switch, thereby to pass to said operating means every alternate field synchronizing pulse, whereby each film frame is scanned twice; the other pulse selection circuit comprising a second two-way switch which has an input connected to the other of the said two alternative outputs of the first two-way switch, and two outputs, one of said outputs being connected to an input of a divide-by-three logic unit for producing an output pulse in response to three pulses from the second two-way switch, the other of said outputs being connected to the input of a second divide-by-two logic unit for producing an output pulse in response to two pulses from the second two-way switch, an "OR" gate having two inputs, each input being connected to an output of one of the logic units, and a switch actuating device responsive to each pulse at the output of the "OR" gate for switching the input of the second two-way switch from one to the other of its outputs thereby to pass to said operating means selected field synchronizing pulses, the selected pulses being separated alternately by one and two non-selected pulses, whereby alternate film frames are scanned twice and three times, the outputs of the "OR" gate and of the first divide-by-two logic unit being connected to the operating means; said selectively operable first two-way switch being operative for selectively switching the field pulses to one or other of said pulse selection circuits.

3,885,093

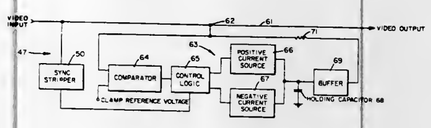
FAST ACTING DIRECT CURRENT CLAMPING CIRCUIT

Daniel L. Mooney, Marcola, Oreg., assignor to Ampex Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 240,729, April 3, 1972, Pat. No. 3,748,386. This application June 14, 1973, Ser. No. 370,138

Int. Cl. H04n *5/18*; **H03k** *5/08*

U.S. Cl. 178—7.3 DC **4 Claims**



1. A circuit for clamping a circuit point in a signal path to a particular reference voltage, comprising:

a storage means for holding voltage;

buffer means coupling said storage means to said circuit point such that the voltage thereat assumes a value determined by the instantaneous amount of voltage held by said storage means;

current source means responsive to first and second successive commands to pass current to said storage means to charge same to a voltage, said current source means responsive to the first of said successive commands to pass current to said storage means to charge same in a first direction to a voltage different than a voltage corresponding to said particular reference voltage, said current source means responsive to the sound of said successive commands to pass current to said storage means to charge same in a second direction opposite the first direction until the stored voltage reaches said voltage corresponding to said particular reference voltage;

command generator means responsive to each one of periodically occurring pulse signals to generate said first and second successive commands;

impedance isolation means connected to said circuit point; and

means including a comparator having a first input coupled to said impedance isolation means to receive a signal representative of the voltage level at said circuit point and a second input coupled to receive a signal representative of the reference voltage, said comparator responsive to the voltage level at said circuit point obtaining said particular reference voltage while said currrent sources means passes current to said storage means in response to the second of said successive commands to terminate the passage of current to said storage means until the next pulse signal is received by said command generator means.

3,885,094

OPTICAL SCANNER

James T. Russell, Richland, Wash., assignor to Battelle Development Corporation, Columbus, Ohio

Division of Ser. No. 202,471, Nov. 26, 1971, Pat. No. 3,806,643, which is a continuation-in-part of Ser. No. 857,474, Sept. 12, 1969, Pat. No. 3,624,284, which is a division of Ser. No. 576,580, Sept. 1, 1966, Pat. No. 3,501,586. This application Oct. 12, 1973, Ser. No. 405,770

Int. Cl. H04n *1/24*

U.S. Cl. 178—7.6 **5 Claims**

1. Optical scanner apparatus comprising:

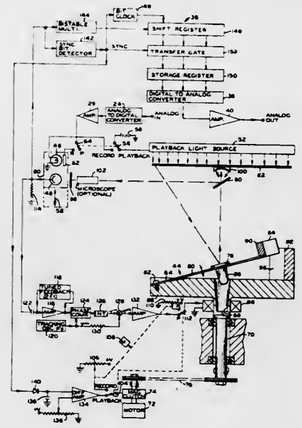
a rotatable support,

a resilient arm member fixed at one end to said support,

a mirror attached to said arm member,

motor means for rotating said support,

deflection means for bending said arm member in response to an electrical control signal to radially move said mirror during rotation of said support in order to provide the



mirror with a spiral-shaped scan track on an image plane, and

compensation means for moving said mirror away from the image plane as said mirror is deflected radially inward along said scan track in order to maintain the optical path length between the mirror and the image plane substantially constant during scanning.

3,885,095

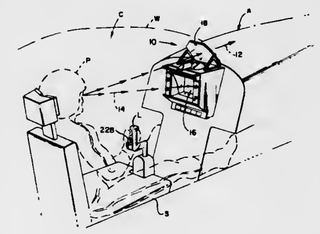
COMBINED HEAD-UP MULTISENSOR DISPLAY

Gerald Wolfson, and Eric R. Fehr, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 30, 1973, Ser. No. 357,125

Int. Cl. H04n *7/18*

U.S. Cl. 178—7.88 **10 Claims**



5. A display system for an aircraft comprising:

a display device having a face on which images are formed;

first mirror means in front of said face, said first mirror means for reflecting light from the face of the display device and for transmitting light;

second semi-reflecting mirror means positioned above the first mirror means mounted in the field of view of an aviator in the aircraft for displaying an external scene of view and the images from said display device; and

collimating means positioned between said first and second mirror means for collimating light from the face of the display device so that the collimated image on the face of the display device is reflected from the second mirror means toward the aviator;

the face of said display device positioned to be viewable through said first mirror means, so that the aviator can see the uncollimated image on the face of the display device by looking downwardly from the position of the second mirror means.

3,885,096

OPTICAL DISPLAY DEVICE

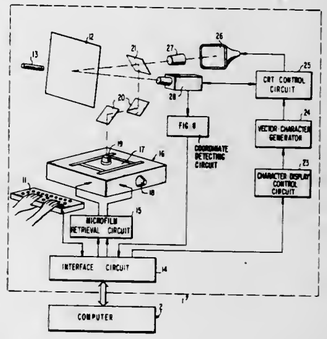
Masafumi Inuiya, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 13, 1973, Ser. No. 378,861

Claims priority, application Japan, July 15, 1972, 47-70942

Int. Cl. G08b *5/00*

U.S. Cl. 178—15 **12 Claims**



1. An optical display device comprising a screen for optically displaying an image record, means for making a light spot impinge on the screen at a desired position on said image record, means for photoelectrically converting said position of the light spot into an electric control signal which is fed to a computer, and an information retrieval device in which a new image recorded on a film corresponding to said position is projected on the screen under the control of an output signal from the computer.

3,885,097

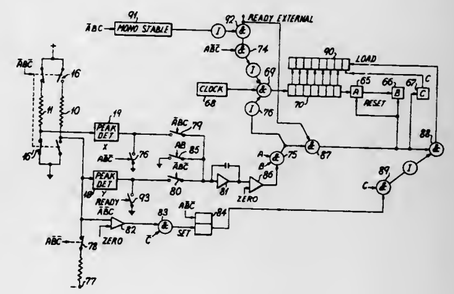
GRAPHICAL INPUT APPARATUS FOR ELECTRICAL APPARATUS

Peter John Pobgee, Surbiton, England, assignor to National Research Development Corporation, London, England

Filed Aug. 11, 1972, Ser. No. 279,774

Int. Cl. G08c *21/00*

U.S. Cl. 178—18 **24 Claims**



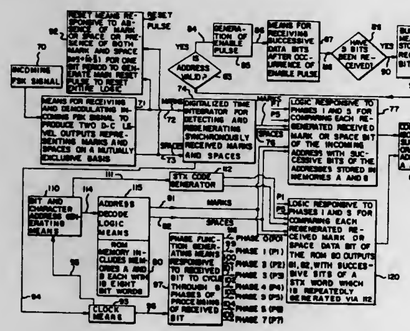
1. Apparatus for obtaining signals indicative of the coordinates of a point indicated on a surface, including a continuous sheet held parallel and adjacent to, but not in contact with the continuous planar surface of a member, the sheet and

the member comprising electrically resistive material, the sheet being of such material and so mounted that it is able to make contact temporarily with the planar surface over a relatively small area when pressed towards the surface by means for indicating the position of a point, means positioned between the sheet and the planar surface to prevent contact between the sheet and the surface over relatively large areas, change-over means for causing current supplied to the apparatus to flow alternately in two paths; a first path in which the current flows in a substantially single direction through the sheet, and a second path in which the current flows in a substantially single direction, at an angle to the other current direction, through the resistive member, and means for deriving a first signal giving the value of the voltage of the resistive member when current flows in the sheet and a second signal giving the value of the voltage of the sheet when current flows through the resistive member, the first and second signals being representative of first and second co-ordinates of the point, respectively.

3,885,098
DIGITALIZED FSK RECEIVER

Edward Camp Dowling, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 29, 1973, Ser. No. 410,931
Int. Cl. H04l 27/14; H04b 1/16
U.S. Cl. 178—88 **13 Claims**



1. A digitalized means for reproducing mark and space representing pulses from an FSK signal, having first segments thereof at a first frequency and representing binary 1's, and second segments thereof at a second frequency and representing binary 0's, and further having a nominal bit rate R_b, and comprising:

first and second data channels;

demodulating means responsive to said first and second segments of said FSK signal to produce first and second two level signals, respectively, in said first and second data channels, respectively;

first gating means responsive to the simultaneous presence of a first level of said first two level signal and the absence of the first level of said second two level signal to produce a first output signal in said first data channel;

second gating means responsive to the simultaneous presence of the first level of said second two level signal and the absence of the first level of said first two level signal to produce a second output signal in said second data channel;

first digitalized time measuring means for determining if the duration of said first output signal exceeds a certain time interval;

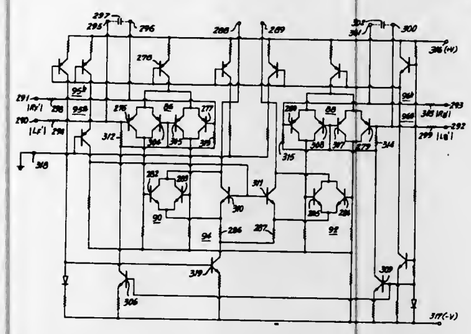
second digitalized time measuring means for determining if the duration of said second output signal exceeds a certain time interval; and

first and second storage means responsive to the determination by said first or second time measuring means, respectively, that said first or second output signal has exceeded said certain time intervals, to assume a state indicative of the reception of a mark or a space, respectively.

3,885,099
INTEGRATED LOGIC CIRCUIT FOR THE DECODER OF A MULTI-CHANNEL STEREO APPARATUS

Katsuaki Tsurushima, Kawasaki; Yoshio Ota, Fujisawa, and Masashi Takeda, Isehara, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 29, 1973, Ser. No. 419,933
Claims priority, application Japan, Dec. 1, 1972, 47-121039
Int. Cl. H04r 5/00
U.S. Cl. 179—1 GQ **9 Claims**



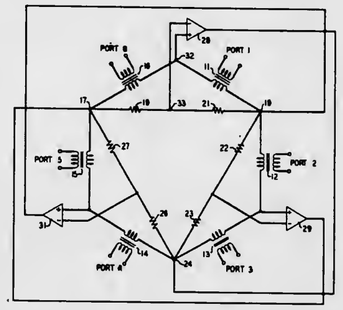
1. In a multi-channel stereo apparatus which has decoder means for decoding two composite signals into at least first, second, third and fourth decoding output signals each containing a dominant signal component and at least one subdominant signal component, logic means for detecting the dominant signal component contained in each of said decoding output signals and producing first and second control signals, and variable transmission means for varying the transmitting conditions for said decoding output signals in response to said control signals; said logic means being in the form of an integrated circuit comprising first, second, third, fourth, fifth, sixth, seventh and eighth transistors each having a base, emitter and collector, said first and second transistors constituting a first differential amplifier, said third and fourth transistors constituting a second different amplifier, means for applying said first, second, third and fourth decoding output signals to the bases of said first, second, third and fourth transistors, respectively, the bases of said fifth, sixth, seventh and eighth transistors being respectively connected to the collectors of said first, second, third and fourth transistors, the collectors of said fifth and sixth transistors being connected to each other and to a first output terminal, the collectors of said seventh and eighth transistors being connected to each other and to a second output terminal, and means for connecting together the emitters of said fifth, sixth, seventh and eighth transistors so that said fifth, sixth, seventh and eighth transistors constitute a third differential amplifier and said first and second control signals are respectively obtained at said first and second output terminals.

3,885,100
SIX-PORT CONFERENCE AMPLIFIER CIRCUIT

James Richard Stidham, Broomfield, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 31, 1974, Ser. No. 474,879
Int. Cl. H04m 3/56, 3/40
U.S. Cl. 179—1 CN **6 Claims**

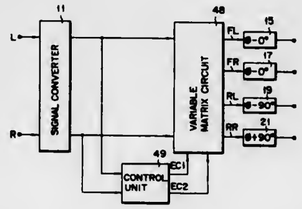
1. A telephone conference amplifier circuit comprising six coupling means each one of which is associated with an external port, all of said coupling means internally connected in a hexagonal ring, three pairs of substantially equal value resistors, each said pair being respectively connected to the coupling means of adjacent pairs of ports to form three balanced bridge circuits, a differential amplifier means connected to each bridge circuit for detecting and amplifying signals originating in that bridge, and means for coupling the output of each amplifier means to the common point between the other two bridges, thus coupling a signal from one port into the other ports of the amplifier.



3,885,101
SIGNAL CONVERTING SYSTEMS FOR USE IN STEREO REPRODUCING SYSTEMS

Ryosuke Ito, and Susumu Takahashi, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 315,928
Claims priority, application Japan, Dec. 21, 1971, 46-103970
Int. Cl. H04r 5/00
U.S. Cl. 179—1 GQ **20 Claims**



1. A signal converting system for reproducing stereophonically related first and second channel signals from a two-channel signal source by means of a four-channel stereo reproducing system, said system comprising a combination of:

first signal converting means connected to receive the first and second channel signals for producing first and second composite signals by combining the first and second channel signals;

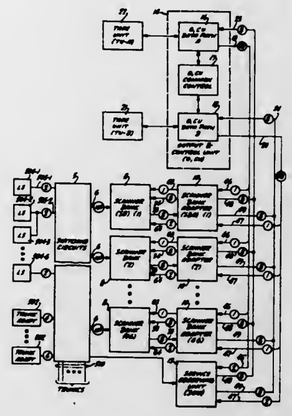
a control unit responsive to the phase relationship between the first and second composite signals for producing first and second control outputs, the levels of which vary in opposite relationship; and

second signal converting means connected to receive the first and second channel signals for producing four-channel output signals by combining the first and second channel signals, said second signal converting means including means for controlling at least a relative amplitude ratio between the first and second channel signals contained in each of a pair of output signals in accordance with the level of said first control output and means for controlling at least a relative amplitude ratio between the first and second channel signals contained in each of another pair of output signals in accordance with the level of said second control output.

3,885,102
MESSAGE METERING SYSTEM HAVING MULTI-LEVEL SIGNALS AND PARTY DISCRIMINATION

Gary C. Henrickson, Palo Alto, and John C. McDonald, Los Altos, both of Calif., assignors to Vidar Corporation, Calif.

Filed Sept. 10, 1973, Ser. No. 396,092
Int. Cl. H04m 15/10
U.S. Cl. 179—7 R **20 Claims**



1. A message metering apparatus for metering subscriber usage of a telephone system, said telephone system including a plurality of subscribers having associated subscribed lines, including a plurality of trunk circuits having associated trunk lines, and including switching circuits for connecting the subscriber lines to the trunk lines, the improvement comprising, multi-level signal generator means connected to said trunk circuits for generating multi-level subscriber signals associated with each calling subscriber where the multi-level signals represent information about subscriber usage of the telephone system, and

metering means connected to the subscriber lines for periodically addressing a subscriber line for each subscriber and for sensing the associated multi-level signals for each calling subscriber for metering subscriber usage of the telephone system.

3,885,103
AUTOMATIC BRANCH EXCHANGE USING TIME DIVISION SWITCHING

William Ralph Smith, and Herman Deutsch, both of Raleigh, N.C., assignors to Tele/Resources, Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 291,960, Sept. 25, 1972, Pat. No. 3,825,693. This application July 2, 1973, Ser. No. 375,741
Int. Cl. H04q 3/54
U.S. Cl. 179—15 AT **23 Claims**

1. A time division multiplex automatic branch exchange for a telephony system comprising:

a time division switch for gating signals between discrete audio paths during selected periodically recurring time slots;

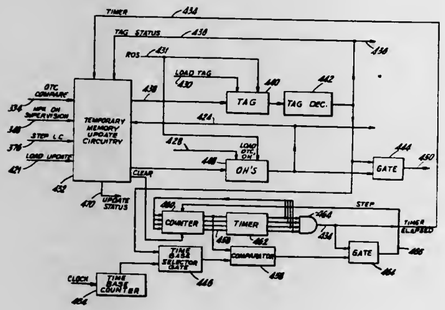
a temporary memory for recording information relating to each recurring time slot defined by the switch;

decoder means for reading in sequence from the temporary memory information relating to each time slot of the system and providing inputs to said time division switch identifying the paths to be gated together during that time slot;

a permament memory having recorded therein a series of coded operating instructions for establishing connections via the time division switch; and

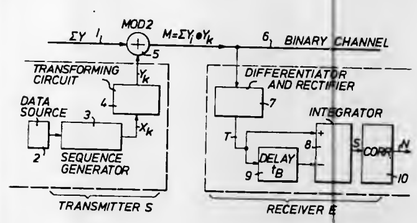
update circuit means responsive to said permanent memory for recording in the temporary memory equipment addresses corresponding to equipment within the system to be interconnected through the time division switch.

3,885,104
TEMPORARY MEMORY FOR TIME DIVISION MULTIPLEX TELEPHONY SYSTEM EXCHANGES
William Ralph Smith, and Herman Deutsch, both of Raleigh, N.C., assignors to Tele/Resources, Inc., White Plains, N.Y.
Continuation-in-part of Ser. No. 291,960, Sept. 25, 1972, Pat. No. 3,825,693. This application July 2, 1973, Ser. No. 375,790
Int. Cl. H04g *3/54*
U.S. Cl. 179—15 AT **7 Claims**



1. In a time division switching private automatic branch exchange, a temporary memory for providing constantly updated information concerning the connection established within each time slot comprising a plurality of equal length recirculating shift registers each having at least one bit position for each recurring time slot and a common clock pulse source connected to each shift register to advance all such shift registers in synchronization, a first group of said shift registers defining at least two address fields for recording binary information identifying the equipment interconnected through each time slot, and a second group of shift registers including at least one storage element associated with each address field for recording therein the on-hook or off-hook status of equipment identified by that field.

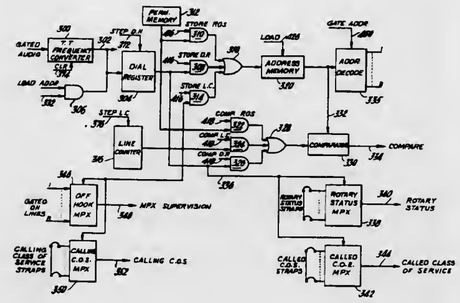
3,885,105
CODE MULTIPLEX METHOD USING A BINARY CHANNEL
Rupert Hildenbrand, Ulm, Danube, Germany, assignor to Liicentia-Pantent-Verwaltungs-G.m.b.H, Frankfurt am Main, Germany
Filed Oct. 23, 1973, Ser. No. 408,639
Claims priority, application Germany, Oct. 26, 1972, 2252540
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 BA **6 Claims**



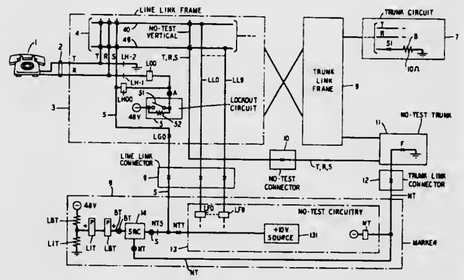
1. A method of transmitting data via a binary transmission channel between a plurality of data sources and a plurality of receivers according to the code multiplex method comprising the steps of:
providing the data to be transmitted from each of the data sources in the form of a receiver-specific coded binary sequence (X_k) per data bit;
transforming each of the coded binary sequences (X_k) to a respective transformed binary sequence (Y_k) which changes its polarity per bit clock pulse whenever a bit of the original binary sequence (X_k) is present;
adding the transformed binary sequences (Y_k) of the individual data sources in mod 2 with a shift in phase to form a binary sequence (M) which corresponds to the mod 2 sum of all of the transformed binary sequences (Y_k);
feeding the sum signal (M) to the binary data channel as a binary sequence for transmission to the receivers; and
at each of the receivers, detecting the specific coded binary sequence associated with the respective receiver and regenerating the data bits associated with the specific coded binary sequence.

3,885,106
TELEPHONE EXCHANGE HAVING PERMANENT MEMORY FOR OPERATING INSTRUCTIONS
Herman Deutsch, Raleigh, N.C., assignor to Tele/Resources, Inc., White Plains, N.Y.
Continuation-in-part of Ser. No. 291,960, Sept. 25, 1972, Pat. No. 3,825,693. This application July 2, 1973, Ser. No. 375,740
Int. Cl. H04q *3/54*
U.S. Cl. 179—18 J **8 Claims**

1. A branch exchange for a telephony system comprising a plurality of interconnectable equipments each forming a source of audio signals, temporary memory means for recording equipment addresses and status information relating to each recurring time slot within the system, a read only memory having recorded therein a multiplicity of binary coded words forming instructions for the automatic establishment and disestablishment of time division connections within the system, each instruction including one or more words and all words of each instruction occupying sequential address positions within the memory, a source of clock pulses occurring at predetermined intervals, address register means responsive to said clock pulses for accessing sequential instructions within said memory, data register means for receiving the output of the memory, decoder means for identifying instructions which require more than one clock cycle for execution, clock pulse gating means for blocking clock pulses from reaching the address register, and search frame counter means responsive to the decoder means for activating the clock pulse gate means for an interval equal in duration to one complete frame of time slots.

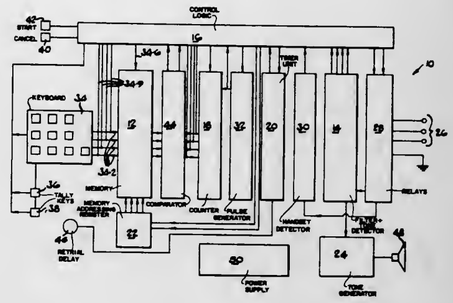


3,885,107
PERMANENT SIGNAL LOCKOUT INTERFACE CIRCUIT
Mark Charles Stern, New York, N.Y., assignor to American Telephone and Telegraph, New York, N.Y.
Filed May 6, 1974, Ser. No. 467,101
Int. Cl. H04m *3/00*
U.S. Cl. 179—18 FA **11 Claims**



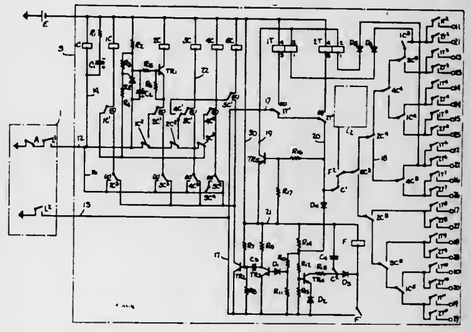
1. For use in a telephone switching system having circuitry which produces a low impedance ground on the sleeve lead during a normal busy condition and a high impedance ground on said sleeve lead during a permanent signal busy condition, a marker having no-test circuitry for accessing lines to check for trouble conditions thereof, a line busy relay to determine whether said lines are busy or idle, and a source of potential, the combination comprising:
an impedance connected to said sleeve lead,
latch switch means,
means responsive to a no-test call for enabling said latch switch means,
means responsive to a busy ground on said sleeve lead for triggering said enabled latch switch means and connecting said impedance to said source of potential, and
output means for forwarding a normal busy signal to said marker when said busy ground is a normal low impedance busy ground, but for switching said normal busy signal to an idle signal in a time insufficient to operate said line busy relay when said busy ground is a high impedance permanent signal ground.

3,885,108
TELEPHONE DIALING SYSTEM
Joseph Zock, St. Kilda Residential Hotel, Abel Rd., Berea, Johannesburg, South Africa
Filed Apr. 16, 1973, Ser. No. 351,451
Int. Cl. H04m *1/44*
U.S. Cl. 179—90 B **10 Claims**



6. A device as claimed in claim 4, which includes indicating means operable to give a visual indication of the number stored.

3,885,109
RELAY TELEPHONE DIAL PULSE REGISTER
Kengo Sudoh, Kawasaki, and Fumio Tsutsumi, Yokohama, both of Japan, assignors to Nippon Tsu Shin Kogyo K.K., Kanagawa, Japan and TIE/Communications, Inc., Stamford, Conn., part interest to each
Filed Mar. 23, 1973, Ser. No. 344,199
Claims priority, application Japan, Jan. 13, 1973, 48-12511
Int. Cl. H04m *1/26*
U.S. Cl. 179—99 **3 Claims**



1. In a relay operated telephone dial pulse register circuit having an input from a telephone line circuit and multiple output terminals, a C position relay, which operates, and is held operated, upon the application of the first dial impulse input to the register, and releases in response to a minimum predetermined interdigital pause in the dial impulses at the end of the impulse train, a plurality of counting relays, including a first and second counting relay with contacts to connect the register output terminals to the telephone line circuit, and a final connecting relay for connecting the register output terminal to the key telephone extension corresponding to the number dialled into the register, the register additionally comprising;
a first semiconductor control circuit means connected to the second counting relay for controlling the operation of the second counting relay to prevent the operation of the

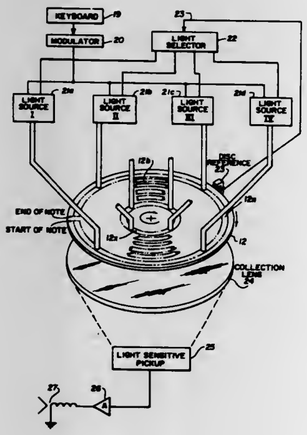
second counting relay during the occurrence of a pulse which operates the first counting relay, said pulse occurring in a pulse train dialed into the register and said control circuit means operating the second counting relay during a subsequent pulse of the pulse train corresponding to the dialed number;

a second semiconductor control circuit means connected to the counting relays for controlling the release of the counting relays upon the occurrence of a predetermined time interval in the pulse train of the dial impulses; and a third semiconductor control circuit connected to the final connecting relay for controlling the connection of the register output contact corresponding to the called key telephone extension to a signal source circuit means after completion of the pulse train of dial impulses produced by the dialing of the number.

3,885,110
APPARATUS AND METHOD FOR ARTIFICIALLY REPRODUCING AT WILL SOUNDS FROM UNIQUE SOURCES

Paul Di Matteo, Dix Hills, N.Y., assignor to Dynell Electronics Corporation, Melville, N.Y.

Continuation-in-part of Ser. No. 245,484, April 19, 1972, abandoned. This application Oct. 15, 1973, Ser. No. 406,236
Int. Cl. G11b *7/00, 31/02, 27/24*
U.S. Cl. 179—100.3 B **8 Claims**

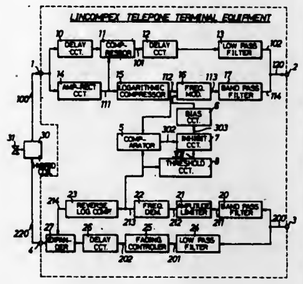


1. In a method for reproducing instantaneously on command recorded sound generated by a unique source including musical notes, vocal phonemes, words and the like, in which the recorded sound envelope highest frequency, as represented by f_h, is low as compared to the recorded sound carrier fundamental frequency f_s the steps of commanding the pickup of the desired sound, picking up a signal representing the recorded sound substantially instantaneously by beginning at any random point in the record within the range from the actual beginning of the sound to a subsequent point substantially proximate to an interval defined by the expression $1/f_h$ where f_h is the highest frequency component in the frequency spectrum in the recorded sound envelope, and converting the signal to an audible sound.

3,885,111
TERMINAL EQUIPMENT FOR LINCOMPEX TELEPHONE SYSTEM

Hikoichi Ishigami; Akira Sato; Seishi Kitayama, and Kouhei Kobayashi, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed May 14, 1973, Ser. No. 359,878
Claims priority, application Japan, May 15, 1972, 47-47905
Int. Cl. H04b *3/20*
U.S. Cl. 179—170.8 **2 Claims**



1. A terminal equipment for a lincompex telephone system comprising:

first input terminal means for receiving a first voice signal from a near-end subscriber;

first level means connected to the first input terminal means for producing a first level signal representative of the instantaneous level changes of the first voice signal and having a different frequency range than said first voice signal;

compressor means connected to the first input signal terminal means and said first level means for compressing said first voice signal in response to said first level signal to produce a first constant-level voice signal;

first output terminal means electrically coupled to the first compressor means and the first level means for sending out the first constant-level voice signal and the first level signal to the far-end subscriber;

second input terminal means for receiving a second constant-level voice signal and a second level signal from a far-end subscriber, the second constant-level voice corresponding to a constant-level compressed signal of a second voice signal from the far-end subscriber, the second constant-level signal being representative of the instantaneous level changes of the second voice signal;

second level means connected to the second input terminal means for detecting the second level signal;

expander means connected to the second input terminal means and the second level means for reproducing the second voice signal from the second constant-level voice signal and the detected second level signal;

second output terminal means electrically coupled to the expander means for sending out the reproduced second voice signal to the near-end subscriber;

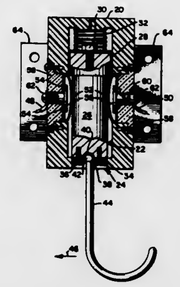
comparator means electrically coupled to said second level means for producing a second control output when the second level signal exceeds a first threshold level;

control means connected to the comparator means and the threshold means for fixing the first level signal to a second threshold level sufficiently lower than the first level signal in response to only the simultaneous existance of the first control signal and the second control signal; and said control means comprising an inhibit circuit for inhibiting the second control signal in response to the first control signal, and a bias circuit connected to the output of the inhibit circuit and the first level means for fixing the first level signal to the second threshold level in response to the output of the inhibit circuit.

3,885,112
VEHICLE CARRIED ENGINE TILT SHUT-OFF SWITCH

Vinal Duncan, 35 Lindsley Dr., Wolcott, Conn. 06716

Filed Nov. 15, 1973, Ser. No. 416,290
Int. Cl. H01h *3/16, 15/14*
U.S. Cl. 200—61.44 **10 Claims**



1. An engine tilt shut-off device comprising:

a housing of electrically non-conductive material adapted for mounting approximately centrally on a vehicle and having a lower portion thereof exposed downwardly;

a linearly movable drag member depending from said lower portion of said housing and engaging at its lower end portion the surface beneath the vehicle;

a vertically and linearly slidable member supported within said housing and connected with and carrying said drag member;

resilient means connected between said housing and slidable member and urging said vertically slidable member downwardly whereby to maintain said lower end portion of said drag member in engagement with said subadjacent surface;

said slidable member having an upper and operative position and being urged downwardly therefrom by said resilient means to inoperative positions when the vehicle carrying the device is tilted beyond a predetermined angle causing a release of upward pressure by said subadjacent surface against said drag member;

and electrically conductive means connected with an engine electrical power supply circuit and with said vertically slidable member, said slidable member and conductive means serving cooperatively to close and open said circuit respectively in said upper position and said lower positions of said member whereby automatically to effect engine shut-off operation in response to said predetermined angle of vehicle tilt.

3,885,113
CONTROL FOR AN ELECTRIC CIRCUIT BREAKER WITH VALVE AND PISTON OPERATING MEANS

Philip Barkan, Media, and John A. Oppel, Aldan, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Oct. 19, 1973, Ser. No. 408,013
Int. Cl. H01h *35/38*
U.S. Cl. 200—82 B **10 Claims**

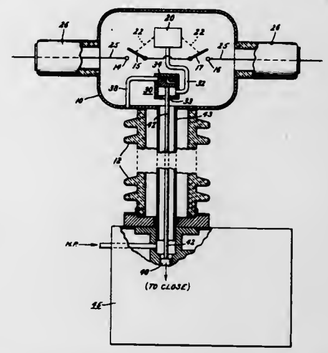
1. In a control for the control-valve mechanism of an electric circuit breaker, said mechanism comprising a movable control-valve member, an operating piston therefor, and an elongated rod interconnecting said valve member and said operating piston,

a. means biasing said operating piston in a direction to effect a circuit-breaker-closing operation of said valve member,

b. latch means for restraining said operating piston in a circuit-breaker-open position against said bias,

c. a closing-control operator for said latch means operable to release said latch means and thus render the latch means incapable of continuing to restrain said piston in its circuit-breaker-open position, thereby allowing said biasing means to operate said piston in a circuit-breaker-closing direction,

d. an opening-control operator effective when operated to develop an opening-control force for use in driving said operating piston through circuit-breaker-opening control motion,



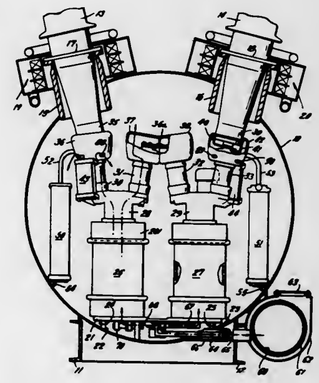
e. force-transmitting means effective when said latch means is reset, but ineffective when said latch means is not reset, for transmitting said opening-control force from said opening-control operator to said operating piston,

f. and latch-resetting means for effectively resetting said latch means following and in response to a release of said latch means.

3,885,114
GAS CIRCUIT BREAKER STATIONARY INTERRUPTER TUBE AND CONTACT SUPPORT

Giovanni Paolo Guaglione, Irvine, Calif., and Hansruedi Aumayer, Harleysville, Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Sept. 19, 1973, Ser. No. 398,874
Int. Cl. H01h *33/82*
U.S. Cl. 200—148 R **11 Claims**



1. In a gas blast circuit breaker; in combination:

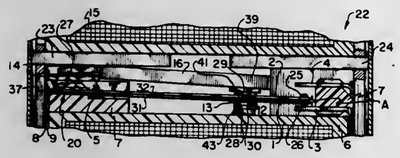
a plurality of series connected interrupter structures; each of said interrupter structures comprising an elongated insulation tube, a stationary contact fixed at one end thereof, and a movable contact, movable within said tube between an engaged and disengaged position relative to said stationary contact;

a gas blast valve housing for each of said plurality of interrupter structures;
a metallic tank enclosure for said circuit breaker;
support insulation means secured to and extending upwardly from the bottom of said tank;
terminal bushing means extending into the top of said tank; said gas blast valve housing being connected to the top of said support insulation means;
said plurality of interrupter structures being physically mounted and supported at the end opposite said one end of said insulation tube means on said gas blast valve housing;
and connection means connecting said stationary contacts of at least one of said interrupter structures to said terminal bushing means.

3,885,115
SWITCH-OVER CONTACT

Wolfgang Adalbert Schrotter, Unterhaching, Germany, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Nov. 14, 1973, Ser. No. 415,652
Claims priority, application Germany, Nov. 15, 1972, 2256044
Int. Cl. H01h *1/50*
U.S. Cl. 200—245 **7 Claims**



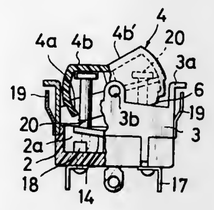
1. In an electrical switching device, the combination of a first and a second fixed contact member in spaced oppositely facing relation to each other, a movable contact element for making contact alternatively to said first or to said second fixed contact member, said movable contact element comprising two contact arms, each arcuately curved when in free state, each having a contacting surface at one end thereof, the other ends of said contact arms being mounted to a fixed support so that their contacting surfaces are in the space between said first and second fixed contact members, and actuating means for moving said movable contact element, including a member engaging both contact arms, the improvement constituted by the sides of said contact arms which are concavely curved in free state facing outwardly from a common line a symmetry between said contact arms as mounted, and the location of said fixed contact members with respect to said contact arms being such that when the contacting surface of one of said contact arms engages one of said fixed contacts, said one of said contact arms has a curvature substantially less than that of its free state conformation.

3,885,116
SWITCH WITH AN INDICATOR

Yasuo Kodaira, c/o Nihon Kaiheki Kogyo Kabushiki Kaisha, 5-14, Minamimagome 1-chome, Ota-ku, Tokyo, Japan

Filed June 18, 1973, Ser. No. 371,072
Int. Cl. H01h *9/16*
U.S. Cl. 200—308 **3 Claims**

1. A switch in which the opening or closing of the switch is performed by inclining an actuator leftward and rightward, said switch comprising:
an actuator formed with the interior thereof being visible from the exterior;
an indicating piece provided within a cavity located below said actuator;
a coil spring interposed between a supporting cylinder of said indicating piece and a supporting member of an indicating plate inserted into said supporting cylinder to bring an upper surface of said indicating plate and an inside upper surface of said actuator into contact with each other when said actuator is inclined;
a pin secured to said supporting member through an elongated hole provided in said supporting cylinder;

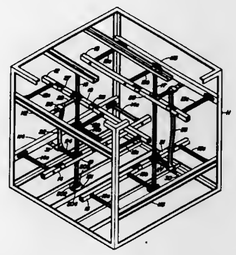


whereby the indication on said indicating piece is indicated on the surface of said actuator by bringing said indicating plate and the inside of said actuator into contact with each other.

3,885,117
BALANCED LINE SWITCH SYSTEM

Kenneth Owen, 6201 Hibling Ave., Springfield, Va. 22150

Filed Apr. 3, 1974, Ser. No. 457,615
Int. Cl. H01h *21/18*
U.S. Cl. 200—153 S **15 Claims**



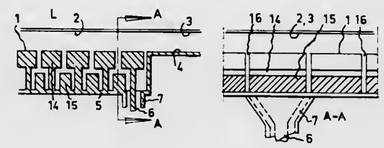
1. A switch system for interconnecting a plurality of balanced input lines to a plurality of balanced output lines, said switch system comprising:
a. a plurality of switch modules, each of said modules having a pair of balanced input line conductors and a pair of balanced output line conductors, said modules being interconnected with adjacent balanced line conductors interconnected to thereby define a crossbar matrix,
b. each module also defining a pair of rotatable means for rotation between a first through position and a second cross connect position, each of said means defining an input line through connect portion, an output line through connect portion, and a cross connect portion,
c. each pair of cross connect portions being of equal length and defining parallel helix portions having substantially 90° of rotation.

3,885,118
MICROWAVE OVEN HAVING CONTROLLED WAVE PROPAGATING MEANS

Bo Valtersson Valtersson, Hagersten, Sweden, assignor to Husqvarna Vapenfabriks AB, Huskvarna, Sweden

Continuation of Ser. No. 184,169, Sept. 27, 1971, abandoned.
This application May 4, 1973, Ser. No. 357,279
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 F **2 Claims**

1. A microwave oven comprising: means for generating microwave energy within a given frequency range; a cavity for receiving material to be treated with microwave energy, said cavity having conducting walls and openings therethrough, through which openings said material to be treated is fed in and withdrawn; a plurality of devices for attenuating and restricting microwave energy to prevent leakage through said openings, at least one of said plurality of devices being positioned within the cavity at each of said openings, each said device including: a base, and a plurality of parallel spaced apart electrically conducting elements conductively disposed on and supported by said base, said spaced elements being

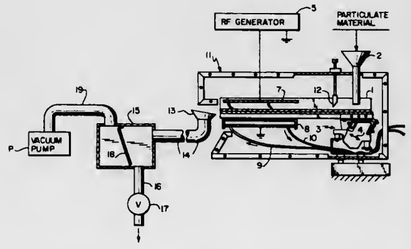


arranged in groups and defining a structure which is periodic in the direction of wave propagation, said electrical conducting elements being shaped and oriented with respect to one another so as to constitute a predetermined mutual capacitance and inductance defining a high-pass filter means which propagates incoming microwave energy within the given frequency range with counter-directional phase velocity and group velocity, the phase velocity of the waves in said high-pass filter means being at least as great as the phase velocity at which the microwave energy is propagated in the vicinity of said device within the cavity.

3,885,119
APPARATUS FOR AGGLOMERATING AND/OR DRYING AND STERILIZING PARTICULATE MATERIAL

Ralph G. Sargeant, 408 W. Windsor St., Lakeland, Fla. 33803

Filed Apr. 18, 1974, Ser. No. 461,963
Int. Cl. H05b *9/04*
U.S. Cl. 219—10.81 **10 Claims**



1. In an apparatus for accomplishing thermal treatment, as in agglomerating, drying and sterilizing, of particulate solid materials having a significant moisture content, the combination of
two elongated electrodes of substantial width arranged one above the other and spaced apart by a significant distance to define a treating zone;
at least one of said electrodes being hollow and equipped with inlet and outlet means for the flow of a cooling liquid therethrough;
means for operatively connecting the electrodes to a radio frequency generator;
conveyor means extending between said electrodes and through said treating zone in a direction lengthwise of the electrodes,
said conveyor means having a supporting surface which has an input end and a discharge end and is at least substantially as long and wide as the electrodes and is capable of receiving and supporting a relatively thin bed of the particulate material,
said conveyor means comprising vibrating means connected to vibrate said surface to both agitate the particulate material and cause the particulate material to move from the input end to the discharge end of said supporting surface,
there being a substantial free space between said supporting surface and the upper one of said two electrodes, which space can be occupied by a gaseous atmosphere of predetermined temperature and humidity,
said vibrating means being constructed and arranged to impart to said surface vibratory motion having components directed respectively toward and away from said upper electrode; and
means for supplying particulate material to the input end of said supporting surface.

3,885,120
ELECTRODE AND FLUX COMBINATION FOR SUBMERGED ARC WELDING

Joseph Ropitzky, Waterford, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 3, 1973, Ser. No. 376,259
Int. Cl. B23k *9/18*
U.S. Cl. 219—73 **2 Claims**

2. In a submerged arc method of welding a medium carbon, nickel-chromium-molybdenum-vanadium steel to produce a weld deposit having the following composition by weight: 0.22 percent carbon, 0.34 percent manganese, 0.20 percent silicon, 3.25 percent nickel, 0.83 percent chromium, 0.65 percent molybdenum, 0.08 percent vanadium, 0.08 percent maximum copper, 0.04 percent aluminum, 0.008 percent maximum phosphorus, 0.008 percent sulfur, and the balance of iron, the weld deposit being heat-treatable to a room temperature yield strength of 162 ksi, a ductility as measured by a reduction in area of 56 percent, and a Charpy V-notch impact resistance of 25 ft/lbs at −40°F, the improvement of tailoring the compositions of the electrode wire and the neutral silicate-base flux utilized therewith to provide the desired percentages of silicon and the manganese in the weld deposit, comprising the steps of,
limiting the wire to a silicon content of about 0.03 percent by weight and a manganese content of about 0.48 percent by weight, and
limiting the flux to a silicon content of about 2.25 percent by weight and a manganese content of about 0.04 percent by weight.

3,885,121
METHOD FOR ELECTROSLAG WELDING OF COPPER BLANKS

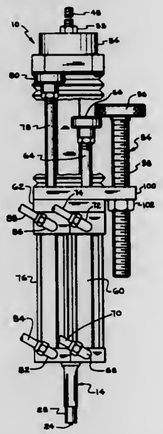
Daniil Andreevich Dudko, per. Mechnikova, 3, kv. 7, Kiev; Alexei Pavlovich Alexeenko, Brovarskogo raiona, ul. Chapaeva, 50, Vigurovschina Kievskoi oblasti; Ivan Ivanovich Lychko, ul. Sapernoe pole, 28, kv. 11, Kiev; Valentin Mikhailovich Iljushenko, ul. Vladimirskaya, 98/3, kv. 38, Kiev; Igor Ivanovich Suschuk-Sljusarenko, ul. Vyborskaya, 80/17, kv. 94, Kiev; Alexandr Grigorievich Tarnovsky, Teplichny per., 5, kv. 14, Moscow; Dmitry Nikolaevich Kostevich, kvartal 2, dom 20a, kv. 1, Shelekhov Irkutskoi oblasti; Jury Iosifovich Andrusenko, ul. Kurchatova, 13, kv. 66; Samuil Markovich Gurevich, bulvar Lesi Ukrainki, 2, kv. 2, both of Kiev, and Gennady Nikolaevich Strakhov, ul. Petrozavodskaya, 32, korpus 2, kv. 216, Moscow, all of U.S.S.R.

Continuation of Ser. No. 260,730, June 8, 1972, abandoned.
This application Mar. 4, 1974, Ser. No. 448,051
Int. Cl. B23k *25/00*
U.S. Cl. 219—73 **4 Claims**

1. A method for electroslag welding of copper blanks employing a slag bath contained in a pocket formed by a base plate, supporting blocks under the copper blanks, the copper

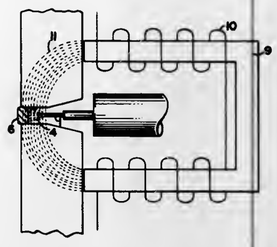
blank surfaces to be welded, covering blocks resting on top of the copper blanks and back-up plates covering the sides of the gap between the copper blanks, said method comprising the steps of pouring a molten flux comprising alkali metal and alkaline earth metal fluorides into said pocket to form a slag bath, immersing a non-consumable electrode into said slag bath, applying voltage across said non-consumable electrode to heat the slag bath until the blank edges being welded start melting, replacing the nonconsumable electrode by a consumable, laminated copper electrode to establish a molten metal bath, directing a stream of coolant on said molten metal bath as it emerges into the gap between the blank surfaces to be welded in order to cool the weld below its crystallization front, wherein said base plate, supporting blocks, covering blocks and back-up plates are formed of a heat-insulating material being a more active oxygen absorbent than copper and having a thermal conductivity lower than copper, so that the heat of the slag bath is retained and complete fusing of the weld metal and copper blank metal occurs.

3,885,122
WELDING APPARATUS
James C. Morris, Elyria, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Aug. 28, 1973, Ser. No. 392,204
Int. Cl. B23k *9/20*
U.S. Cl. 219—98 **18 Claims**



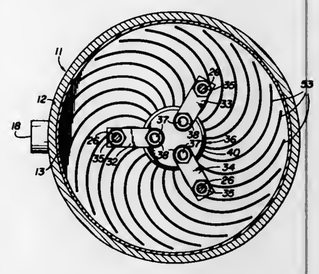
1. Stud welding apparatus comprising a plunger member mounted for movement among an upper position, an intermediate position, and a lower position; chuck means attached to said plunger member for movement therewith and for holding a weldable stud with one end thereof extending out of the chuck means; first means including first support means mounted for longitudinal movement with respect to said plunger member, for holding said plunger member at said intermediate position and for enabling said plunger member and said chuck means to drop to said lower position to enable the one end of said stud to strike a workpiece; second means including second support means mounted for longitudinal movement with respect to said plunger member, for moving said plunger member and said chuck means from said lower position in a straight line to said upper position above the workpiece, for holding said plunger member and said chuck means in said upper position, and for enabling said plunger member and said chuck means to move downwardly in a straight line from said upper position to said intermediate position; and means for producing an electrical potential between the stud and the workpiece to cause the stud to be fused to the workpiece when they come in contact.

3,885,123
METHOD AND MEANS FOR CONTROLLING ADJACENT ARCS
Albert M. Sciaky, Palos Park, and Richard W. Reynolds, Hazel Crest, both of Ill., assignors to Welding Research, Inc., Chicago, Ill.
Filed Aug. 20, 1973, Ser. No. 390,066
Int. Cl. B23k *9/08*
U.S. Cl. 219—123 **10 Claims**



1. A method of electric arc welding along the line between two adjacent or adjoining work-pieces using two separate arcs in close proximity to one another which are formed between the said workpieces and separate conductive materials supported by or passing through separate welding torches, comprising the steps of causing electric currents to flow through each of the said electrically conductive materials and across the said electric arcs, generating a separate magnetic field in association with each of said arcs, causing the said magnetic fields to flow along paths transverse to the line of weld and across each of the said arcs in such a direction as to create forces which act upon each of said arcs to counteract the magnetic force between the two arcs caused by the current flowing in each of the arcs.

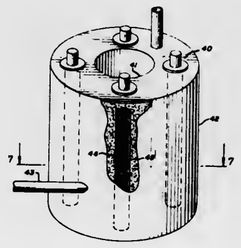
3,885,124
ELECTROLYTIC STEAM GENERATOR
Orest Kozinczuk, Chicago, Ill., assignor to Innovative Process Equipment, Inc., Bensenville, Ill.
Filed Feb. 25, 1974, Ser. No. 445,562
Int. Cl. H05b *3/60;* **F22b** *1/30*
U.S. Cl. 219—288 **7 Claims**

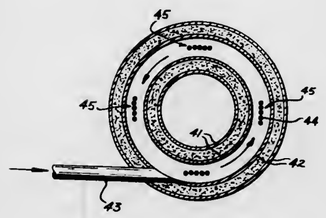


1. An electrolytic steam generator, comprising
a tank enclosing a steam generating chamber,
an electrode support in the form of a vertically disposed post,
a plurality of electrodes of substantially the same size and shape mounted in mutually spaced apart relationship within said chamber,
said electrodes radiating outwardly from said post and being equally spaced apart throughout the mutually facing areas thereof,

said electrodes each being in horizontal cross-section in the shape of the involute of a circle,
means connecting said electrodes to a source of electric power to provide a voltage differential between adjacent ones of said electrodes,
a water inlet to said tank,
a drain outlet from said tank, and
a steam outlet from the top of said tank.

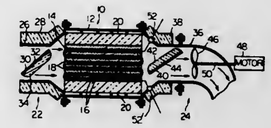
3,885,125
METHOD FOR ELECTRICALLY HEATING A HEAT TRANSFER FLUID
Lewis J. Palm, and Ronald B. Palm, both of Pulaski, N.Y., assignors to Fulton Boiler Works, Inc., Pulaski, N.Y.
Division of Ser. No. 77,820, Oct. 5, 1970, Pat. No. 3,747,670.
This application July 23, 1973, Ser. No. 381,373
Int. Cl. H05b *1/00;* **F24h** *1/10*
U.S. Cl. 219—298 **5 Claims**

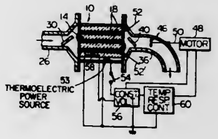




1. A method of indirectly exchanging heat with a thermal liquid having a boiling point higher than that of water along a substantially axially unobstructed elongated annular chamber that is bounded by inner and outer chamber walls that encircle a central axis, said method comprising the steps of: producing in a closed system a continuous bodily flow of said liquid continuously swirling about the central axis in a path of predetermined width and characterized by rotary and axial flow components cooperatively determining a flow that continuously fills and sweeps the entire chamber by introducing adjacent one end of the chamber a stream of said liquid along a direction that is tangent to the chamber periphery; electrically generating heat in axially elongated elements that are disposed within said annular chamber and that are sufficiently small relative to the width of said annular chamber to accommodate said continuously swirling bodily flow without turbulence, conducting heat through said elements to said liquid as it sweeps said annular chamber; and withdrawing the liquid from adjacent the other end.

3,885,126
ELECTRIC HEAT ACCUMULATOR UNIT
Hiroshi Sugiyama, Hiratsuka, and Kiyoshi Numagami, Yokohama, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan
Filed June 6, 1973, Ser. No. 367,383
Claims priority, application Japan, July 13, 1972, 47-83187; June 7, 1972, 47-67686; Oct. 4, 1972, 47-115558; July 13, 1972, 47-83188
Int. Cl. H05b *1/02;* **F24h** *7/04*
U.S. Cl. 219—365 **2 Claims**



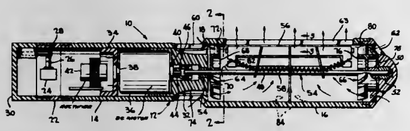


1. Heating equipment of the accumulator type installed in a motor vehicle which includes air inlet means, air outlet means, a heat accumulator having passage means for providing communication between said air inlet and outlet means, an electric heating means in heat exchange relation with said accumulator, said heat accumulator being operative to store therein heat from said heating means, valve means for regulating the area of air passage of said inlet and outlet means, and an electric blower for forcibly passing air from said air inlet means through said passage means to said air outlet means, which is characterized by:
a thermoelectric device in heat exchange with said heat accumulator for converting thermal energy in said heat accumulator into a d-c power;
a constant voltage regulator connected to said thermoelectric device and supplying said d-c power to said blower, while maintaining the voltage of said power constant; and temperature-responsive current control means responsive to the temperature of said heat accumulator, said control means being connected in the circuit between said voltage regulator and said blower for regulating the magnitude of current flowing through said blower and thereby the blower speed in inversely proportionate relation to the temperature of said heat accumulator whereby a substantially constant thermal output is maintained from the accumulator.

3,885,127
HAND HELD HAIR DRYING APPLIANCE
Henry J. Walter, Wilton, and Eugene T. Fleischhauer, Stamford, both of Conn., assignors to Clairol Incorporated, New York, N.Y.
Filed Feb. 28, 1973, Ser. No. 336,562
Int. Cl. H05b *1/00;* **A45d** *20/10;* **F24h** *3/04*
U.S. Cl. 219—367 **13 Claims**

1. A hand held hair drying appliance comprising a tubular housing having first inlet means therein, second inlet means therein spaced from said first inlet means, outlet means in the peripheral wall of said housing and disposed between said first and second inlet means and a tubular handle portion formed by said housing; heating means disposed in said housing between said first and second inlet means; first and second fans arranged in said housing to force air from said first and second

inlet means toward said outlet means; said first and second fans each having blades extending radially from the axis of rotation thereof, said blades of said first fan having a pitch opposite the pitch of said blades of said second fan such that said first and second fans form oppositely directed currents of



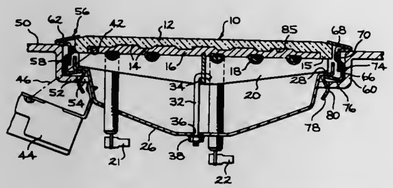
air when rotated in the same direction; and motor means disposed in said handle for driving said first and second fans whereby air is drawn into said housing through said first and second inlet means, moved past said heating means and expelled through said outlet means to provide heated air for drying hair.

3,885,128

GLASS-CERAMIC PLATE HEATING UNIT CAST-IN HEAT SPREADER

Raymond L. Dills, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed July 1, 1974, Ser. No. 484,421
Int. Cl. H05b *3/68*
U.S. Cl. 219—462 **3 Claims**



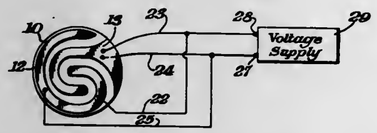
1. A surface heating unit comprising a glass-ceramic plate having recess means formed on the underside thereof, the recess means substantially covering a large area of the plate and being substantially filled with a metal casting of high thermal conductivity such as aluminum or copper that is formed in place, a metal sheathed electrical resistance heating element with a reinforcing member of open framework fastened across the underside of the heating element, the heating element and reinforcing member being partially embedded in the said metal casting, whereby the metal casting serves as both a mechanical and thermal coupling means between the heating element and the glass-ceramic plate as well as the heat spreader means across the plate.

3,885,129

POSITIVE TEMPERATURE COEFFICIENT RESISTOR HEATER

John H. Fabricius, Stamford, Vt., assignor to Sprague Electric Company, North Adams, Mass.

Filed Feb. 28, 1974, Ser. No. 446,858
Int. Cl. H05b *3/10*
U.S. Cl. 219—553 **9 Claims**



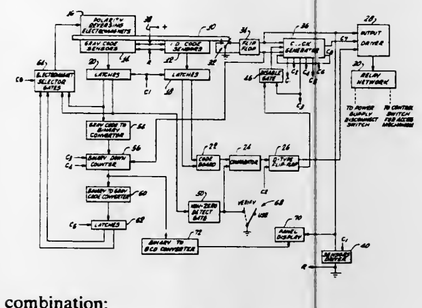
1. A PTCR heater comprising a disc of PTCR material, said disc having two opposed flat surfaces and a perimeter face, a first pair of arcuate interdigitated metal film electrodes bonded to one of said surfaces, said electrodes each having a finger-like shape, the separation between adjacent portions of said electrodes being substantially constant, an electrical connective means for connecting the alternative of said electrodes to one lead and the remained of said electrodes to another lead, said leads being capable of connection to an electrical energy source such that said adjacent electrodes are oppositively polarized and the heating electric currents in said disc flow predominantly near said one of said surfaces.

3,885,130

VALUE/USE CONTROL AND IDENTIFICATION SYSTEM FOR MAGNETIC CARDS

Eric W. Moulton, Santa Monica, and Waldo I. Rogers, Arcadia, both of Calif., assignors to Rusco Industries, Inc., Los Angeles, Calif.

Filed Sept. 4, 1973, Ser. No. 394,265
Int. Cl. G06k *7/08*; **G11b** *5/02*
U.S. Cl. 235—61.11 D **6 Claims**



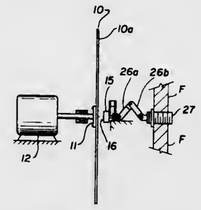
1. In combination:
first and second groups of like stationary electromagnet sensors with which respective magnetized spots of a card are aligned in a stationary position of the card, wherein each spot is magnetized perpendicular to the card faces, wherein the spots associated with the first group of sensors have polarities distributed in accordance with an identification code and the spots associated with the second group of sensors have polarities distributed in accordance with a value/use code that represents a number of uses for the card;
respective stationary polarity reversing electromagnets for the value/use code spots,
the value/use code spots being aligned with respective polarity reversing electromagnets in the stationary position of the card;
first means coupled to the sensors of the the first group for developing signals representing the identification code;
second means coupled to the sensors of the second group for developing signals representing the value/use code;
third means coupled to said second signal developing means for developing signals representing a predetermined smaller number of uses for the card;
means for coupling said polarity reversing electromagnets to said third signal developing means for operating said polarity reversing electromagnets to change the polarity distribution of the associated spots so they represent the predetermined smaller number of uses for the card;
a switch operable by the card when it is placed in its stationary position;
control means to which said switch is connected to be rendered operable when the switch is operated by a card,
said control means including means for simultaneously rendering said first and second signal developing means operable;
and means for inhibiting operation of said coupling means when said first signal developing means develops signals that do not represent the identification code and for inhibiting operation of said coupling means when said second signal developing means develops signals that represent a zero value/use code.

3,885,131

AIR-BEARING DATA TRANSFER SYSTEM

John B. Franceschini, Centerport, and Leonard Meltzer, Little Neck, both of N.Y., assignors to Dynell Electronics Corporation, Melville, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,084
Int. Cl. G06k *7/10*
U.S. Cl. 235—61.11 E **8 Claims**



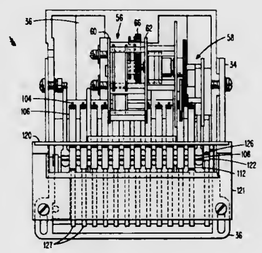
1. In an air-bearing data-transfer system, a rotary member having a data-storage face and having an inherent run-out error in rotation causing recurrent reciprocating movement in a direction perpendicular to said face with each rotation, said member being resiliently deformable in a direction perpendicular to said face, a data-transfer head having an air-bearing surface opposing the storage face and having a geometry compatible therewith to establish an air bearing therebetween, control means to move the record and data-transfer head into close proximity to establish the air bearing between the surfaces when rotary motion obtains and to establish further movement in the perpendicular direction to deform the record opposite the air bearing by an amount exceeding the run-out error, and anchoring means having a resilience less than that of the data-storage face to maintain the data-transfer head continuously in said record-deforming position, whereby a fixed predetermined spacing is established between the data-transfer head and the data-storage face.

3,885,132

DOCUMENT CARD READER

Richard William Luoma, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1973, Ser. No. 365,363
Int. Cl. G06k *7/04, 13/02*; **B41l** *45/00*; **G07f** *1/06*; **G06k** *21/04*
U.S. Cl. 235—61.11 R **6 Claims**



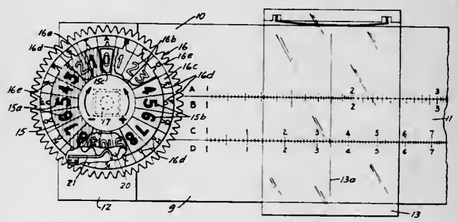
1. A machine for reading document cards having data indicative holes therethrough located at the intersections of rows and columns,
a frame,
a carriage slideably mounted with respect to said frame so as to have a linear movement with respect to the frame in a certain path and adapted to carry a document card so that the card moves in the direction of its said columns along with movement of the carriage,
a row of detectors extending transversely of said path each adapted to detect the holes in one of said columns of a document card carried by said carriage as the carriage moves along its said path,
spring means effective on said carriage and yielding to allow said carriage and a document card carried thereby to be moved from initial positions at one end of said path to pre-read positions at the other end of said path and applying a spring force in a direction to return the carriage and a document card carried thereby back to their initial positions from their said pre-read positions, and
speed limiting governor mechanism acting on said carriage and against the spring force from said spring means and limiting the speed of the carriage in returning back to its initial position from its pre-read position to a predetermined speed so that the document card carried by said carriage passes across said detectors at a constant speed and each of said detectors is effective to detect the holes in successive rows after equal time intervals for dependable hole detecting action.

3,885,133

METHOD AND APPARATUS FOR CALCULATING EXPONENT CHARACTERISTICS

Rudolph Zemanek, and Elena Zemanek, both of 516 S. Orlando Way, Vancouver, Wash. 98664

Filed Feb. 7, 1974, Ser. No. 440,298
Int. Cl. G06c *19/02*
U.S. Cl. 235—64.3 **2 Claims**

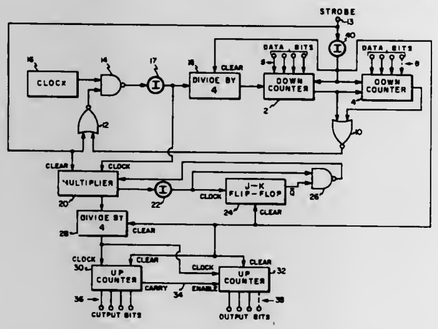


1. An exponent characteristic calculator for use with slide rule computations, said calculator comprisng,
a. a first stationary disc having numbered scale divisions thereon and a window therein forming a fixed reference point,
b. a second disc mounted for rotation about its center point as an axis in underlying concentric relation to the first stationary disc and carrying a second scale having similar numbered divisions to said first scale positioned for selective registration of the scale numbers with the window of said first overlying disc,
said second disc having outer peripheral portion surrounding said first disc and of larger diameter than the first disc and having a third scale including reference indicia carried by said outer peripheral disc portion with the indicia thereof respectively registered with the numbers on said second scale and selectively registrable with the numbers on the first scale,
whereby the increment of rotation of the second disc will be indicated by the specific scale indicium on said third scale in registration with each specific exponent number identified on the first scale and the calculated exponent number will thus be indicated by the number on the second scale in registration with the window in the first disc.

3,885,134
BINARY-TO-PERCENT CONVERTER

William P. Bergin, Churchville, and Charles C. Farmer, North Wales, both of Pa., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed May 22, 1973, Ser. No. 362,768
Int. Cl. G06f 7/38
U.S. Cl. 235—92 DM 6 Claims



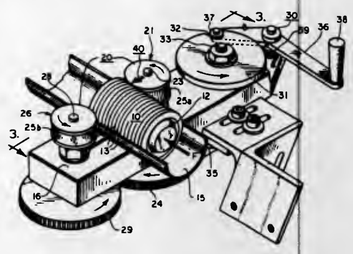
1. A converter circuit comprising:
a counter means for storing an input data signal and responsive to a clock signal for counting from said data signal to a predetermined count,
clock signal generating means,
gate means connected between said clock signal generating means and said counter means to apply clock signals from said clock signal generating means to said counter means until said predetermined count is reached in said counter means,
multiplier means for multiplying an input signal to said multiplier means by a predetermined factor, and
means for applying said clock signals from said gate means as an input signal to said multiplier means to be multiplied by said predetermined factor to produce an output signal from said multiplier means having a predetermined relationship with respect to said input data signal to said counter means,
said predetermined factor used by said multiplier means being $50/2^{n-1}$ where n is the number of bits in the input signal and said multiplier means including pulse adding means for adding one pulse for every other multiplication cycle of said multiplier means and averaging means for averaging four cycles of said multiplier means to produce an average multipling factor of $101/2^n$.

3,885,135
APPARATUS FOR COUNTING CAN ENDS

Bruce Leslie Elmer, St. Peters, Mo., assignor to Lianco Container Corporation, Bridgeton, Mo.

Filed Jan. 15, 1974, Ser. No. 442,750
Int. Cl. G06m 9/00
U.S. Cl. 235—98 R 6 Claims

1. An apparatus for segregating nested articles into discrete stacks, each stack containing an equal number of articles, comprising:
a trough for carrying a plurality of nested articles in edgewise alignment;
first and second rotatable counting gears secured to first and second shafts, respectively, said counting gears being aligned on opposite sides of said trough and having a plurality of teeth adapted to engage successive edges of said nested articles;
a first synchronizing gear secured to said first shaft;
a second synchronizing gear secured to said second shaft and mechanically cooperating with said first synchronizing gear for maintaining said first and second counting gears in synchronous rotation as said nested articles move along said trough;
a rotatable cam mechanically coupled to said first synchronizing gear; and

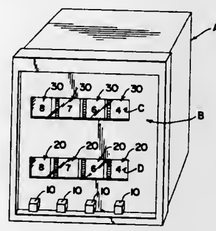


cam stop means for simultaneously stopping the rotation of said cam, said synchronizing gears, and said counting gears when said number of articles have been counted, thereby preventing said articles from being moved along said trough between said counting gears.

3,885,136
RESET TIMER/COUNTER UNIT

Frederick E. Erickson, Silvis, Ill., assignor to Gulf and Western Industries, Inc., New York, N.Y.

Filed Feb. 25, 1974, Ser. No. 445,137
Int. Cl. G06c 15/42; G06f 15/18
U.S. Cl. 235—144 ME 28 Claims



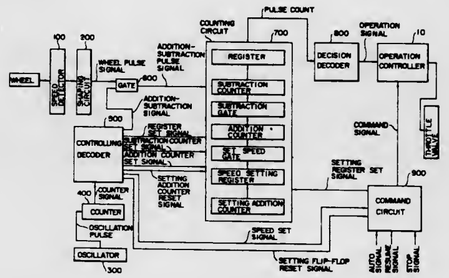
24. In a reset wheel assembly for a reset counter, said wheel assembly including first and second subwheels journalled about a shaft; said first subwheel including means for holding said first subwheel in a selected angular position with respect to said shaft; said second subwheel including drive means for driving said second subwheel with respect to said first subwheel; and biasing means for rotating said second subwheel to a selected position with respect to said first subwheel when said drive means is deactivated, the improvement comprising: said biasing means includes a first permanent magnet carried by said first subwheel and a second permanent magnet carried by said second subwheel, said permanent magnets being mutually balanced when said second subwheel is in said selected position.

3,885,137
METHOD AND SYSTEM FOR CONSTANT-SPEED RUNNING OF VEHICLES

Junichiro Ooya; Naoji Sakakibara; Yasuhiro Kawabata; Hideo Nawa; Takashi Hida; Akira Tarao; Korehiko Tsukuba, and Kazutaka Kuwana, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed May 8, 1972, Ser. No. 184,111
Int. Cl. B60k 31/00; G05d 13/00
U.S. Cl. 235—150.2 10 Claims

2. A system for constantly adjusting the speed of a motor vehicle to a set speed, comprising means for sensing the rotational state of the wheels of the motor vehicle, a shaping circuit for translating an output signal from said sensing means into pulses of desired characteristics, a control circuit for producing control signals from clock pulses of a predetermined frequency, manually operable means for setting a speed at which the motor vehicle is desired to run constantly, a counting circuit for counting the output pulses from said shaping circuit as dictated by said control signals to obtain a pulse number in binary notation which represents a set speed of the motor vehicle and pulse numbers representing its actual speed at specified instants and for further counting a pulse number in binary notation substantially representing the sum of a difference between the set speed and the actual speed of the motor vehicle and a rate of change in its actual speed, a decision circuit for deciding an operation required on the basis of the final pulse number obtained in said counting circuit, and operation controller means for adjusting the speed of the motor vehicle according to an output signal from said decision circuit.

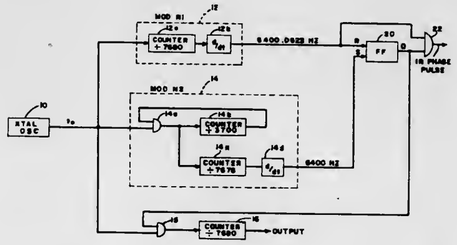


1. A sweep frequency generator comprising:
oscillator means for producing clock pulses;
first means responsive to said clock pulses for producing a first output signal with a first repetition rate;
second means responsive to said clock pulses for producing a second output signal with a second repetition rate;
third means responsive to the output signals of said first and second means for producing a third output signal representing the phase difference between said first and second output signals; and
fourth means responsive to the output signal of said third means and to said clock pulses for producing a fourth output signal having a repetition rate proportional to the output signal of said third means.

3,885,138
ULTRA LINEAR FREQUENCY SWEEP GENERATOR

Norman F. Bates, Dana Point, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 18, 1974, Ser. No. 489,683
Int. Cl. H03b 23/00
U.S. Cl. 235—150.53 17 Claims

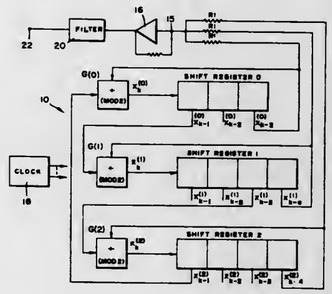


1. A sweep frequency generator comprising:
oscillator means for producing clock pulses;
first means responsive to said clock pulses for producing a first output signal with a first repetition rate;
second means responsive to said clock pulses for producing a second output signal with a second repetition rate;
third means responsive to the output signals of said first and second means for producing a third output signal representing the phase difference between said first and second output signals; and
fourth means responsive to the output signal of said third means and to said clock pulses for producing a fourth output signal having a repetition rate proportional to the output signal of said third means.

3,885,139
WIDEBAND DIGITAL PSEUDO-GAUSSIAN NOISE GENERATOR

William J. Hurd, LaCanada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed July 27, 1973, Ser. No. 383,386
Int. Cl. G06f 7/00
U.S. Cl. 235—152 24 Claims

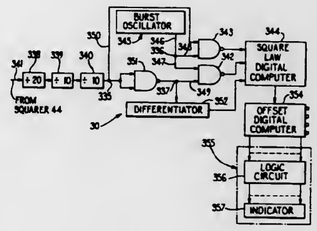


1. In a digital noise generator, an arrangement comprising:
a multiregister network including N binary shift registers, N being not less than 2, each shift register including not less than one stage, the total number of stages of said N shift registers being equal to n, where N and n are integers;
input means for providing an input to each register which is the exclusive-OR function of the outputs of at least two stages of said registers, at least one of which is from a different register, with said input means being connected to said registers, so that the last stage of each of said registers is responded to by the input means providing an input to at least one register, and the characteristic polynomial of said multiregister network is primitive whereby the sequence of states of each stage of any of said registers is a maximal length sequence period of 2^n-1, regardless of the register's number of stages;
clock means for clocking said shift registers at a preselected frequency; and
output means coupled to N of said stages, one stage from each of said N registers for providing a pseudo-gaussian noise output as a function of the outputs of said N stages.

3,885,140
DENSITOMETER

Gerald Lance Schlatter, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 423,409, Dec. 10, 1973. This application Aug. 12, 1974, Ser. No. 496,341
Int. Cl. G06f 7/38
U.S. Cl. 235—152 1 Claim



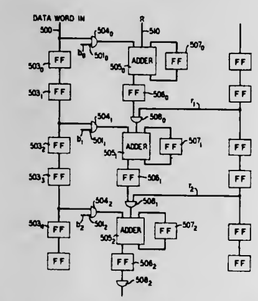
1. Apparatus for producing serial groups of serial pulses wherein the number of pulses in a group is directly propor-

tional to the square of the reciprocal of the fundamental frequency of a periodic wave, said apparatus comprising: a terminal junction; first means having an output lead, said first means supplying a square wave on said output lead thereof, said square wave having a variable pulse repetition frequency and a mark-to-space ratio of unity, said first means output lead being connected to said terminal junction; first and second NAND gates, each of said NAND gates having first and second input leads and an output lead; a burst oscillator having a constant pulse repetition frequency large in comparison to that of said square wave; an inverter having an input lead connected from said terminal junction, and an output lead connected to said second gate first input lead, said first gate first lead being connected from said terminal junction, said burst oscillator having an output lead connected to the second lead of each of said first and second gates; a divider having at least a first input lead, and a plurality of output leads, said divider acting as a counter and having a storage register with a constant count entered therein during alternate half periods of said square wave, pulses counted by said divider being supplied over said first input lead thereof thereto, said divider first input lead being connected from one of said gate output leads; and a rate multiplier having a plurality of setting input leads connected from respective bits in said divider register, said rate multiplier having a serial pulse input lead connected from the other of said gate output leads and a serial pulse output lead, said rate multiplier producing serial groups of serial pulses, the number of pulses in a group being directly proportional to the square of the reciprocal of the pulse repetition frequency of said square wave.

3,885,141
MODULAR PIPELINE MULTIPLIER TO GENERATE A ROUNDED PRODUCT

Robert Bruce Kieburtz, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 6, 1974, Ser. No. 440,067
Int. Cl. G06f *7/54*
U.S. Cl. 235—164 **7 Claims**



1. A pipeline digital multiplier circuit for forming the rounded product of an *n*-bit data word and an *m*-bit coefficient word comprising

a. *m* identical stages, each comprising

i. first, second and third input terminals and an output terminal,

ii. means for applying a uniquely associated bit of said coefficient word to said first input terminal,

iii. means for forming during the *i*th time interval the bit product of said bit applied at said first input terminal with a data bit applied at said second input terminal,

iv. means for generating a sum signal by adding said bit product to a bit representative of a partial product generated during the $(i-1)$th time interval and a bit representative of carry signals from previous additions,

v. means for selectively inhibiting said sum signal to eliminate those sum signals which contribute only to one of the bits of the truncated portion of the product of said data word and said coefficient word,

vi. means for applying said selectively inhibited sum signal to said output terminal,

b. means for connecting the output terminal of each stage but the last to the third input terminal of the next succeeding stage,

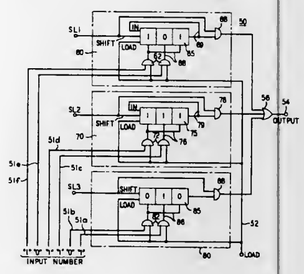
c. means for sequentially applying said *n*-bit data word to the second input terminal of the first of said stages, and

d. means for applying a logic 1 signal to said means for generating a sum signal in said first stage.

3,885,142
BINARY RATE MULTIPLIERS

William Herbert Ninke, Holmdel, and George Ray Ritchie, Freehold, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 15, 1974, Ser. No. 470,220
Int. Cl. G06f *7/52*
U.S. Cl. 235—164 **19 Claims**



1. In combination,

circuit means operative in response to a selected input number for generating a hierarchy of individual binary rate unit vectors substantially concurrently, each of said unit vectors being generated in response to a respective associated bit group of said input number, the position of each of said unit vectors in said hierarchy corresponding to the positional significance in said input number of the bit group associated therewith, and

means for successively repeating individual unit vectors of said hierarchy and for interposing each bit of each of said unit vectors, except the highest order unit vector, substantially halfway between successive repetitions of the entire next higher order unit vector of said hierarchy, said repeating and interposing means including an output terminal and means for extending selected bits of said unit vectors to said output terminal.

3,885,143
OPTICAL INFORMATION RETRIEVAL APPARATUS

Akira Ishii, Kawasaki, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

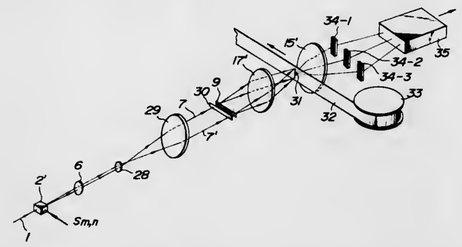
Filed Nov. 15, 1973, Ser. No. 416,306
Claims priority, application Japan, Nov. 17, 1972, 47-114748
Int. Cl. G06g *9/00;* **G11c** *11/42*
U.S. Cl. 235—181 **6 Claims**

1. An optical information retrieval apparatus comprising a first optical system for checking character coincidence matching and a second optical system for reading out characters detected by coincidence checking at the first optical system so that coincidence matching between an interrogation signal and a hologram memory information character to be retrieved, both represented in the form of an M-out-of-N code, is checked by utilizing the correlation detection function of a hologram, said character coincidence checking optical system comprising in combination:

a. a laser light source for generating a laser light beam;

b. modulator means for coding the laser light beam generated by said laser light source into an M-out-of-N coded interrogation beam pattern including M light beams with different frequencies;

c. optical means responsive to the coded interrogation beam pattern produced by said modulator means for projecting the coded interrogation beam pattern onto hologram memory arrays storing information to be retrieved in the form of the M-out-of-N code used for coding the laser light beam generated by said laser light source;



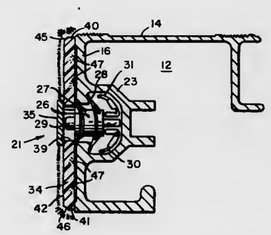
d. photo-detector array means for producing an electrical output corresponding to the light output resulting from the projection of the coded interrogation beam patterns onto hologram memory arrays; and

e. electric circuit means responsive to the electrical output produced by said photo-detector array means for detecting an A.C. component in the electrical output produced by said photo-detector means, whereby the presence of coincidence matching between the code interrogation signal and the coded hologram memory information may be detected.

3,885,144
AISLE LIGHT

Robert E. Lewis, and Robert S. Walworth, both of Champaign, Ill., assignors to American Seating Company, Grand Rapids, Mich.

Filed Feb. 19, 1974, Ser. No. 443,420
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 R **5 Claims**

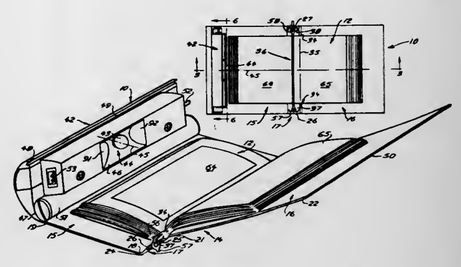


1. An aisle light for providing guidance illumination for a step having a tread and a riser comprising: a light-piping shatterproof plastic faceplate panel extending substantially the entire height of said riser and having an upper edge immediately adjacent and parallel to the upper edge of said riser, the forward part of said panel edge being beveled, the outer surface of said faceplate being stippled; means for securing said faceplate to said riser; a source of light carried by said riser and radiating light into the body of said faceplate panel whereby said light travels through said panel and illuminates said upper edge thereof, said light source including a low-voltage, shock-resistant, replaceable bulb; and a metal cover strip having a height less than the height of said panel and extending across said panel and located directly in front of said bulb to shield the filament of said bulb from direct vision.

3,885,145
COMBINATION BOOK ENCLOSURE AND READING LAMP

Norman Dudley Wise, 1260 Chartwell Dr., West Vancouver, British Columbia, Canada

Filed Feb. 5, 1974, Ser. No. 440,064
Int. Cl. F21 *27/00*
U.S. Cl. 240—6.4 B **12 Claims**



1. A combination book enclosure and reading lamp adapted to retain a book therein to provide protection for the book when not in use, and to provide illumination for reading the book, the combination including:

a. a cover assembly to form the enclosure, the assembly being characterized by:

first and second cover portions having respective inner and outer edges;

a spine portion having spaced parallel first and second edges and spaced ends, space between the edges of the spine portion defining width of the spine portion, the first edge of the spine portion being adjacent the inner edge of the first cover portion so as to be essentially integral therewith, the spine portion being inclined at a fixed obtuse angle to the first cover portion;

a hinge portion provided adjacent the second edge of the spine portion to hinge the second cover portion to the spine portion, the hinge having a hinge axis;

a link attachment means provided adjacent each end of the spine portion, the attachment means being spaced sufficiently to accept a spine of a book therebetween;

b. a lamp housing provided adjacent the outer edges of the cover portions, the housing being characterized by:

a lower edge of the housing adjacent the outer edge of the first cover portion to hold the housing rigidly relative to the first cover portion;

an upper edge of the housing spaced upwards from the lower edge of the housing;

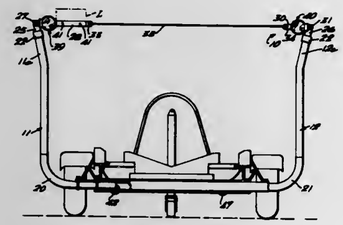
cooperating releaseable latch means adjacent the upper edge of the housing to accept and retain the outer edge of the second cover portion when the second cover portion is closed for protecting the book;

an elongated reflector fitted within the housing and positioned facing the spine portion;

an electrically powered lamp fitted within the reflector and positioned therein to direct light on to the pages for reading;

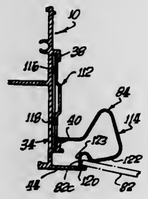
c. a flexible link extending under tension between the link attachment means so as to be generally parallel to the hinge axis, the link passing between the pages of the book adjacent the spine of the book so that the spine of the book is urged against the spine portion of the assembly so as to retain the book firmly within the enclosure.

3,885,146
DETACHABLE TAIL LIGHT ASSEMBLY FOR BOAT TRAILERS
William P. Whitley, Jr., 4525 E. 10th La., Hialeah, Fla. 33013
Filed Feb. 22, 1974, Ser. No. 444,808
Int. Cl. B60g *1/26*
U.S. Cl. 240—7.1 R **7 Claims**



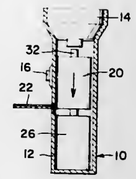
1. In a detachable tail light assembly for boat trailers of the type comprising a trailer framework having chock means along its length for supporting a boat to be trailered thereon, a trailer hitch means at the front end of the framework for hitching to a transporting vehicle, an upstanding tubular guide post at each side of the trailer framework at the rear end thereof and serving as means for guiding a boat to be loaded for trailering, and an electrical energization cable running from the front to the rear of the trailer for interconnection with the electrical circuitry of a vehicle to which the trailer is attached for pulling, the combination comprising; a pair of electrical vehicle signal light units, means for removably securing one side of one of said signal light units to the upper end of one of said upstanding guide posts, means for removably securing one side of the other of said signal light units to the upper end of the other of said upstanding guide posts, and elastic means interconnecting the other sides of said signal light units for yieldingly urging said signal light units towards one another, said signal light units each comprising an electrical energization cable terminating in an electrical connector member adapted for electrical interconnection with the electrical energization cable of the trailer.

3,885,147
MULTIPLE LIGHTING FIXTURE DISPLAY SYSTEM
Julian Chacon, San Gabriel, Calif., assignor to Lightcraft of California, Los Angeles, Calif.
Filed Jan. 17, 1974, Ser. No. 434,265
Int. Cl. F21s ; F21v *21/10*; **B42f** *13/00*
U.S. Cl. 240—9 R **4 Claims**



1. A light fixture display installation comprising:
an elongated channel with a base wall and a pair of side walls extending therefrom, and having a plurality of electrical outlets spaced along its length, each of said side walls having a pair of mounting flanges extending towards each other, and the end of each side wall having an outturned flange;
a plurality of support brackets for supporting the channel to a supporting wall;
a plurality of decorative wall panels; and
a plurality of panel clips for holding the edges of a wall panel securely in place immediately behind an outturned flange of the channel, each clip being formed of a sheet of resilient material with a base portion lying substantially against one of said channel side walls and extending between the mounting flanges thereof, and a projecting portion extending in a reverse curve to an end thereof which is resiliently biased against an outturned flange, said projecting portion having an intermediate part for pressing against the rear surface of the decorative wall panel, said intermediate part lying slightly behind the outturned flange to press the panel against the out-turned flange.

3,885,148
FLASHLIGHT
Nicholas Di Benedetto, Brooklyn, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Aug. 3, 1973, Ser. No. 385,455
Int. Cl. F21l *7/00*
U.S. Cl. 240—10.66 **5 Claims**

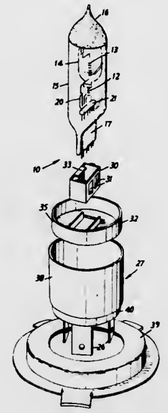


1. A flashlight employing at least one cylindrical battery of the dry cell type, said flashlight comprising a head having a socket in which a bulb is mounted; a cylindrically shaped case capable of holding at least two batteries, said case having a transverse slot partially cut through a midpoint of said case at a point approximately adjacent to a rear of a first battery in contact with said bulb; a plate pivotally mounted on said case and insertable through said transverse slot; said plate having a conductive surface facing the head and a non-conducting rear surface facing a second battery, and a switch mounted on said case and conductively connected to said plate and said socket.

3,885,149
LAMP PINCH SEALS
Kenneth Roy Wolfe, and Clive Arthur Evander Underwood, both of London, England, assignors to Thorn Electrical Industries Limited, London, England
Filed Apr. 4, 1973, Ser. No. 347,825
Claims priority, application United Kingdom, Apr. 14, 1972, 17392/72
Int. Cl. F21m *3/00*
U.S. Cl. 240—41 BM **9 Claims**

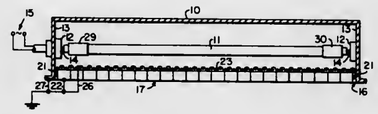
1. An electric lamp comprising:
an envelope,
support means within said envelope,
a filament carried by said support means,
said support means including means for electrically connecting said filament to an external supply,
said connecting means comprising: at least two inner conductors, two externally-accessible outer conductors and a separate conductive foil joining each of said inner conductors to an outer conductor,
said envelope having at least one pinch seal for sealing the envelope to said foils so that each of said foils is embedded in a pinch seal and equal thicknesses of envelope material are in contact with the opposite surfaces of each of said foils,

a portion of said pinch seal within at least one of which said foils is embedded being displaced laterally with respect to the remainder of said seal, and



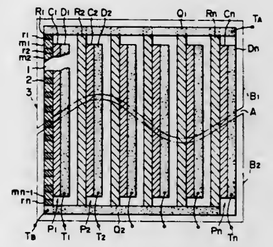
each of said inner conductors leading into the interior of said envelope from its associated foil in a direction parallel to a central longitudinal axis through said lamp, said foils being laterally displaced from said axis.

3,885,150
SHIELDED LUMINAIRE
John Nash Ott, Sarasota, Fla., assignor to John Ott Laboratories, Sarasota, Fla.
Filed Dec. 3, 1973, Ser. No. 421,253
Int. Cl. F21v *11/06*
U.S. Cl. 240—46.39 **5 Claims**



1. A shielded luminaire comprising:
a housing formed of conductive material having a light-emitting opening therein,
a gas discharge type lamp mounted within said housing so as to project light through said opening,
a light shielding louver assembly extending over said opening, said assembly comprising a plurality of crossed fins formed of conductive material which form cells through which light from said lamp passes,
a mesh screen formed of crossed conductive strands extending across said opening between said lamp and said louver assembly, and
connecting means electrically connecting to ground potential said housing, louver assembly and screen,
the area of the screen mesh being sufficient to permit passage of light therethrough but smaller than the cell area of the louver assembly whereby RF radiation from said lamp is attenuated over an extended frequency range by action of the grounded screen and louver assembly while permitting passage of light from said lamp through the screen mesh and louver cells into the area illuminated by said lamp.

3,885,151
PHOTOCONDUCTIVE WAVEFORM MEMORY
Tadao Tokushima, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Nov. 5, 1973, Ser. No. 412,799
Claims priority, application Japan, Nov. 9, 1972, 47-128464
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 R **5 Claims**



1. In a waveform memory which comprises, in combination;
a. means for forming a light pattern representative of a memorized waveform, said light pattern having an extent in a first direction representative of time and having an extent in a second direction representative of the amplitude of the memorized waveform at each value of time represented along said first direction; and
b. a photoelectric converter comprising a substrate for receiving the image of the waveform on a surface of the substrate and a plurality of elongated photoelectric potentiometers arranged in parrallel on the surface of the substrate and extending in said second direction, whereby an electric signal developed by each of said photoelectric potentiometers corresponds to a value of the waveform at a discrete point along the first direction representative of time,
the improvement wherein each of said photoelectric potentiometers comprises:
1. an elongated resistance element comprising a plurality of resistive pieces connected in series, and a plurality of electrically conductive layers interposed alternately therebetween;
2. an elongated electrically conductive element disposed in parallel with said elongated resistance element; and
3. a strip of photoconductive substance interposed between said resistance element and said conductive element and continuously contacting said resistance and said conductive elements along their respective lengths.

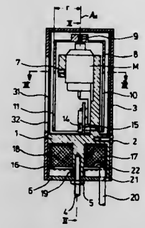
3,885,152
METHOD OF AND APPARATUS FOR DETECTING LIGHT AND CONTROLLING JALOUSIES OR THE LIKE
Leopold Anetseder, Sr., and Leopold Anetseder, Jr., both of Munich, Germany, assignors to Sun-Sor GmbH, Augsburg, Germany
Filed Sept. 24, 1973, Ser. No. 400,057
Claims priority, application Germany, June 1, 1973, 2327837
Int. Cl. H01j *3/14*
U.S. Cl. 250—235 **12 Claims**

1. The combination with a load comprising a motor and a sun shield of the jalousie, window blind, awning and like type driven by said motor, of a sunlight detector for controlling said load and comprising:
sensing means having a photosensitive surface for emitting an electrical output on irradiation of said surface by light;
a housing surrounding said surface and having an annular displaceable wall formed parallel to said surface with a generally vertically elongated slit-like window constituting the only light entrance into said housing;

means for angularly displacing said wall and thereby dis-

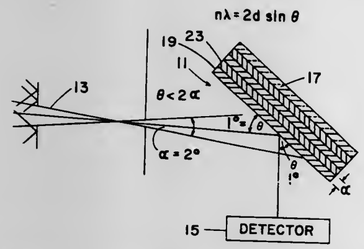
neutrons; and

means for angularly displacing said wall and thereby displacing said slit transversely to itself about an upright axis and at a constant distance from said surface through an angle of at least 150°; and



means connecting said sensing means and said load for operating said load according to said output.

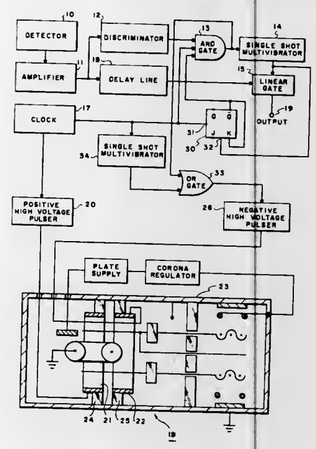
3,885,153
MULTI-LAYER MONOCHROMATOR
Benno P. Schoenborn, Calverton, N.Y., and Donald L. D. Caspar, Brookline, Mass., assignors to The United States Energy Research and Development Administration, Washington, D.C.
Filed June 20, 1974, Ser. No. 481,421
Int. Cl. G01t *1/36*
U.S. Cl. 250—251 **10 Claims**



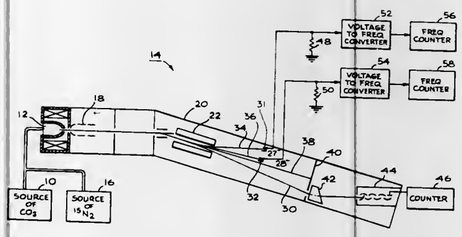
1. A monochromator for efficiently selecting a narrow band of neutron wavelengths from an input beam having a Maxwellian wavelength distribution of neutrons comprising:
a. a flat substrate;
b. a plurality of parallel, flat, uniform, selectively tailored thickness, amorphous germanium layers uniformly deposited over the entire surface of said substrate; and
c. a plurality of amorphous layers that alternate periodically with said germanium layers, are interposed therebetween to form bilayers and are parallel therewith selected from the group consisting of tantulum and mangenese having a selectively tailored thickness.

3,885,154
METHOD AND APPARATUS FOR REDUCING BACKGROUND IN INELASTIC GAMMA RAY LOGGING SYSTEMS
Richard B. Culver, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 26, 1973, Ser. No. 410,071
Int. Cl. G01t *1/30*
U.S. Cl. 250—267 **3 Claims**

1. A method for providing a radioactivity log of a formation surrounding a borehole, comprising:
irradiating said formation with at least one discrete burst of fast neutrons during a variable time period;
detecting radiation occasioned in said formation by said fast neutrons; and
limiting the number of fast neutrons generated in said at least one burst by shortening said time period as a function of said detected radiation.



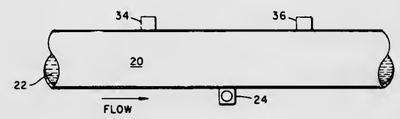
3,885,155
MASS SPECTROMETRIC DETERMINATION OF CARBON 14
Michael Anbar, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.
Filed Nov. 1, 1973, Ser. No. 411,801
Int. Cl. H01j *39/28*
U.S. Cl. 250—283 **4 Claims**



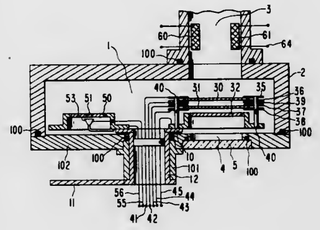
1. A method of measuring carbon 14 content in a sample comprising
converting carbon in said sample to CO_2,
mixing said CO_2 with $^{15}N_2$,
converting said mixture of CO^2 and $^{15}N_2$ into CN^- ions having different masses including mass 29,
separating said mass 29 CN^- ions from the ions having other masses, and
counting the number of mass 29 ions which have been separated from which count the concentration of carbon 14 in said sample can be determined.

3,885,156
NEUTRONIC FLOW METER
Alvin Radkowsky, Tel Aviv, Israel, assignor to The United States of America as represented by the Energy Research and Development Administration, Washington, D.C.
Filed May 23, 1974, Ser. No. 472,931
Int. Cl. G01t *1/16*
U.S. Cl. 250—303 **7 Claims**

1. An apparatus for measuring the mass flow rate of a fluid comprising a neutron source embedded within a moderator, said moderator being in contact with a cryogenic cooler disposed to lower the temperature of said moderator to at least 4° Kelvin, and a pair of neutron detectors spaced up stream and down stream of the neutron source, whereby a neutron difference reading between the detectors can be utilized for determining the flow rate of a fluid.

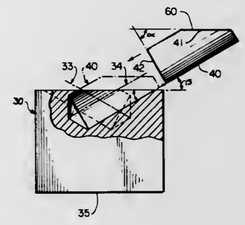


3,885,157
ELECTRON BEAM IMAGE PROCESSING DEVICE
Klaus Heinemann, Sunnyvale, Calif., assignor to Electron Optical Research and Technology Corporation, Fremont, Calif.
Filed Dec. 12, 1973, Ser. No. 424,159
Int. Cl. G01n *21/26, 23/12*
U.S. Cl. 250—311 **18 Claims**



1. Device for analysis of corpuscular rays, such as an electron beam after the beam has left the specimen stage of a transmission electron microscope, the device comprising:
a chamber having walls enclosing a space relatively devoid of matter, a portion of the chamber adapted to admit incoming corpuscular rays, such as an electron beam;
a plurality of spaced electron-beam processing units located within the chamber, the units comprising:
a first processing unit comprising:
a phosphor screen having a relatively small hole extending through a portion thereof; and,
a single channel electron multiplier aligned with the hole, with the screen located in front of the multiplier relative to an incoming electron beam;
a second processing unit comprising:
a plurality of spaced multichannel electron multipliers; and
a phosphor screen, with the multipliers located in front of the screen relative to an incoming electron beam;
a third processing unit comprising a phosphor screen:
means for selecting a processing unit and aligning said unit with an electron beam in the chamber; and
means for selectively applying voltage potentials to a selected processing unit.

3,885,158
SPECIMEN BLOCK AND SPECIMEN BLOCK HOLDER
Richard Edward Flutie, Melbourne Beach, and Richard William Belcher, Indialantic, both of Fla., assignors to Harris Corporation, Cleveland, Ohio
Filed Oct. 23, 1973, Ser. No. 408,836
Int. Cl. H01j *37/20*
U.S. Cl. 250—440 **11 Claims**



1. A specimen block holder and a specimen block for holding a specimen in a selected plane for use in optical microscopes and for use in specimen coating operations comprising:
a block holder having a first planar base surface for resting said holder on a supporting surface;
at least one cavity extending downward into a portion of said holder, said cavity having a linear axis which forms a first acute angle with respect to said first planar base surface and;
a cylindrical specimen block having a second planar base surface, and a third planar specimen mounting surface inclined at a second acute angle with respect to said second planar base surface to form said selected plane said cylindrical block extending into said cavity and resting therein in such a manner that said third planar specimen mounting surface is substantially parallel to said first planar base surface.

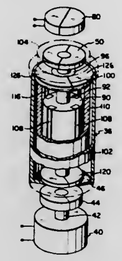
3,885,159
MEASURING ELEMENT FOR THE DETECTION AND DETERMINATION OF RADIATION DOSES OF GAMMA RADIATION AND NEUTRONS
Walter Jahn, Ingelheim, and Ernst Piesch, Leopoldshafen, both of Germany, assignors to Gesellschaft fur Kernforschung mbH, Karlsruhe and Jenaer Glaswerk Schott & Gen., Mainz, both of, Germany
Filed Feb. 27, 1973, Ser. No. 336,217
Claims priority, application Germany, June 20, 1972, 2229662
Int. Cl. G01t *1/06*
U.S. Cl. 250—472 **7 Claims**

1. Measuring element for proving and determining radiation does of gamma radiation and neutrons,, the proof and determination of the gamma radiation being proportional to the gamma radiation dose and the proof of the neutrons being proportional to the effective neutron dose, it being additionally possible to determine the curve of the neutron sepctrum, characterized in that the measuring element is a body of a photoluminescent material which stores gamma radiation by changing its chemical and physical properties and which emits a measurable luminescent light when excited by a read-out radiation, the photoluminescent material containing homogeneous particles of arsenic and phosphorus embedded therein which particles can be excited by neutron radiation and then produce beta particles, or protons, or beta particles and protons which generate a measurable Cerenkov radiation in the photoluminescent material.

3,885,160
PULSED NEUTRON SOURCE WELL LOGGING SYSTEM

Mat E. Dillingham, Fort Worth, Tex., assignor to The Western Company of North America, Fort Worth, Tex.

Continuation of Ser. No. 194,423, Nov. 1, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,539
Int. Cl. G01t *3/00*
U.S. Cl. 250—499 **10 Claims**



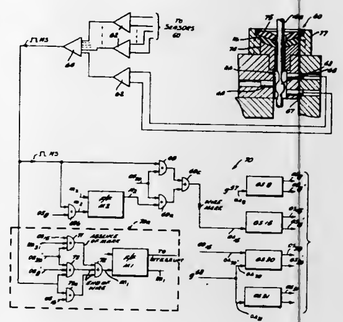
1. A pulsed radiation system comprising a sealed chamber, means defining a plurality of elongated source areas within said chamber, each of said source areas comprising a material which continuously emits charged particles, means defining a plurality of elongated target areas within said chamber, each of said target areas comprising a material which emits primary radiation when bombarded with charged particles emitted by one of said source material areas, means for positioning said target areas so that the exposed surfaces thereof lie in the surface of a first cylinder, means for positioning said source areas so that the surfaces thereof lie in the surface of a second cylinder which has the same axis as the first cylinder, control means for periodically and simultaneously exposing said target areas to charged particles emitted from said source areas, thereby periodically to develop bursts of primary radiation which have an intensity proportional to the length of said target areas which is exposed to said charged particles, said control means including a rotatable shaft within said sealed chamber, a permanent magnet secured to said shaft, electromagnetic locking means adapted to be positioned outside said chamber and arranged when energized to control the position of said permanent magnet, and means independent of said control means for energizing said electromagnetic locking means, said electromagnetic means being oriented relative to said chamber so that when said locking means is energized said permanent magnet is moved thereby to a position in which said source and target areas are positioned in face-to-face relationship.

3,885,161
STRAND DETECTION ARRANGEMENT

John W. Tarbox, Oceanside; Walter E. Hinds, Beverly Hills; Rodolfo Castro, La Palma, and Raymond C. Bell, Fallbrook, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 103,233, Dec. 31, 1970, Pat. No. 3,699,630. This application Oct. 17, 1972, Ser. No. 298,189
Int. Cl. G01b *7/12*
U.S. Cl. 250—571 **11 Claims**

5. A strand material detection arrangement comprising:
means for passing said strand material, said strand material including portions deformed in a predetermined manner marking predetermined sections along the length of the strand;
a triangular detection area for axially passing a length of strand material for scanning the profile thereof, said area being located between oppositely disposed detection elements including a source of light disposed on one side and a plurality of photodetectors disposed opposite thereto in opposing relation thereto to receive light passing around a portion of the strand material passing through the area, a plurality of said photodetectors being disposed along a line parallel to the axis of the portion of strand material in the area;
said plurality of said photodetectors disposed along a line and being spaced to received light around adjacent segments of said portion of strand material in the area;

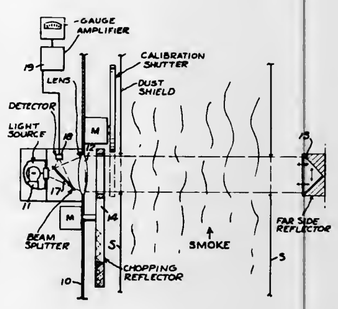


differential means coupled to said spaced photodetectors to be responsive to detected different levels of received light by said spaced photodetectors to produce an output signal indicating a change in profile of the portion of strand material located in said area.

3,885,162
OPTICAL MEASURING APPARATUS

Lloyd M. Geertz, Monroeville, Pa., assignor to Contraves-Goerz Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 411,420, Oct. 31, 1973, abandoned. This application July 1, 1974, Ser. No. 484,798
Int. Cl. G01n *21/12*
U.S. Cl. 250—573 **12 Claims**



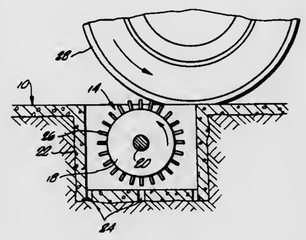
1. In a measuring apparatus for measuring smoke density and the like, the combination comprising
a stack or duct;
a light source for emitting a beam of radiant energy through a portion of the stack;
first retro-reflector means in the path of said beam for redirecting said beam after it passes through the stack;
chopping means in the stack movable periodically into the path of the beam for interrupting the passage of the beam to the first reflector means;
second retro-reflector means on the chopping means movable in the path of the beam when the beam is interrupted by said chopping means;
light sensitive means externally of the stack; and

means for directing the light reflected by said first reflector means and said second reflector means to said light sensitive means.

3,885,163
EXPRESSWAY POWER GENERATING SYSTEM

Charles E. Toberman, 1717 No. Highland Ave., P.O. Box 3268, Hollywood, Calif. 90028

Filed Aug. 28, 1973, Ser. No. 392,269
Int. Cl. H02p *9/04*
U.S. Cl. 290—1 **1 Claim**

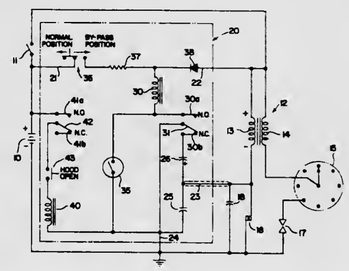


1. An electric power generating system of a type adapted for use in conjunction with a motor vehicle expressway upon which there are from time to time a plurality of moving vehicles, the system comprising:
an expressway surface, motion converting means mounted beneath said expressway surface for converting the motion of the vehicles thereon into rotational motion, said converting means comprising one or more rollers mounted perpendicular to the direction of motion of said vehicles, friction means mounted upon said rollers, said friction means extending into the path of motion of said vehicles; and
generator means coupled to said rollers for producing an electrical power outlet in response to rotational motion of said rollers.

3,885,164
ANTI-THEFT SYSTEM FOR AUTOMOTIVE VEHICLES

Gary W. Vest, 4480 Broadview Rd., Cleveland, Ohio 44109

Filed June 24, 1974, Ser. No. 482,750
Int. Cl. B60r *25/00*
U.S. Cl. 307—10 AT **8 Claims**

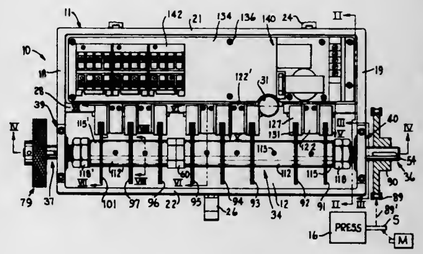


1. In an ignition circuit including an ignition key switch, a distributor having a set of contacts, a plurality of spark plugs operatively connected to said distributor, a voltage supply source and at least one electrical component operatively connected between said voltage supply source and said distributor for causing a sparking voltage for said spark plugs sufficient to cause and maintain engine firing, a theft prevention device comprising:
an impedance component,
a relay adapted when de-energized by said voltage supply source to switch said impedance component into operating condition in said ignition circuit to limit the level of any transient surge of sparking voltage developed across said ignition circuit electrical component sufficiently to prevent said spark plugs from maintaining engine firing
magnetic proximity switch means adapted when activated to energize said relay coil,
separate magnetic means adapted to be carried by a vehicle operator for activating said proximity switch when placed in the vicinity thereof,
holding circuit means operatively connected to said relay for holding said relay energized after said proximity switch closes whereby said relay is energized until said ignition key switch is open.

3,885,165
PRESS CONTROL SWITCH

Lawrence A. Franks, 609 E. Chicago Rd., and James E. Perry, 1401 W. Rishel Rd., both of Sturgis, Mich. 49091

Filed Oct. 5, 1973, Ser. No. 403,848
Int. Cl. H01h *19/14*
U.S. Cl. 307—115 **12 Claims**

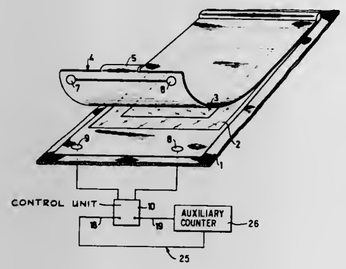


1. Control switch apparatus for a multifunction machine, comprising in combination:
means defining a housing mountable on the machine to be controlled;
rotatably driveable shaft means rotatably supported on said housing;
disk means including a plurality of disk pairs on said shaft means, said disk pairs each including similar relatively circumferentially adjustable first and second slim wafer-like disks of insulative material, each said disk having a coaxial flat semicircular layer of electrically conducting material on one radial face thereof and adjacent and within the periphery thereof, the total circumferential extent of such layers corresponding to their electrically effective extent and being variable by relative rotation of said disks;
proximity pickup means axially and noncontactingly adjacent the rotational path of said layers of a disk pair for sensing the total circumferential extent of said disk pair occupied by both overlapping and non-overlapping portions of said layers opposed to said pickup means;
spacer means on said shaft means and disposed between said disk pairs for determining the axial location of said disk pairs on said shaft means and frictionally preventing unintended circumferential displacement of said disks with respect to said shaft means.

3,885,166
INTERLOCK DEVICE FOR AUXILIARY COUNTING CIRCUIT IN REPRODUCTION APPARATUS

Hermann Moser, Darmstadt, and Walter Pils, Bremthal, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 9, 1973, Ser. No. 404,785
Claims priority, application Germany, Oct. 9, 1972, 2249408
Int. Cl. H01h *36/00*
U.S. Cl. 307—116 **13 Claims**



1. An interlock assembly for an auxiliary copy-counting circuit in a reproduction apparatus having a body and a movable cover for an original to be copied, comprising means to generate an electrical signal, at least one pair of induction coils on the body of the apparatus, at least one pair of induction coils on the cover of the apparatus, each coil of each pair on the cover being located over the position of a corresponding coil of each pair on the body to thereby form at least a first and a second transformer when the cover is closed over the original, each of said transformers having a primary and secondary coil, means for coupling the primary coil of said first transformer with said signal generating means, means for coupling the secondary coil of said first transformer with the primary coil of the second transformer, and control means electrically coupled with the secondary coil of the second transformer to control an auxiliary counting circuit in response to said signal from said signal generating means being coupled through said first and second transformers, whereby said control means is disabled when the cover is opened.

3,885,167
APPARATUS AND METHOD FOR CONNECTING BETWEEN SERIES AND PARALLEL DATA STREAMS

Carl Neil Berglund, Ottawa, Ontario, Canada, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

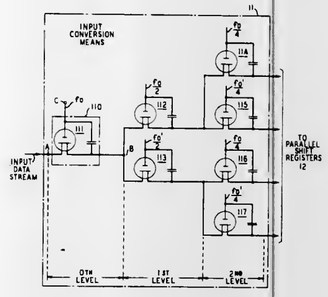
Filed Aug. 8, 1973, Ser. No. 386,774
Int. Cl. G11c *19/00*; **H03k** *17/00*
U.S. Cl. 307—221 C **25 Claims**

1. A charge transfer device shift register comprising 2^M (M is an integer greater than one) parallel intermediate shift registers each register having an input node to receive an input data stream and an output node to provide an output data stream, and conversion means for applying data from an input data stream to the register input nodes,

wherein the improvement comprises:

charge transfer device input means included in the conversion means and connected as an M-level input logic tree, and

means included in the conversion means for providing shift control of the charge transfer device input means thereby successively dividing alternate bits of data from the input data stream between two data streams until there are 2^M data streams each stream being applied to a different

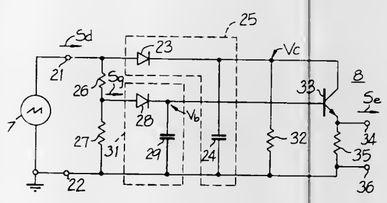


register input node, the shift control having a different repetition rate at different levels of the input logic tree.

3,885,168
PEAK DETECTOR

Atsushi Matsuzaki, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 427,567
Claims priority, application Japan, Dec. 26, 1973, 48-836[U]
Int. Cl. H03k *5/18*, *5/20*
U.S. Cl. 307—235 A **4 Claims**



1. A circuit to respond to peak values of an applied pulsating voltage, said circuit comprising:

A. a first rectifier;

B. a first time constant circuit connected in series with said first rectifier to receive the pulsating voltage;

C. a second rectifier;

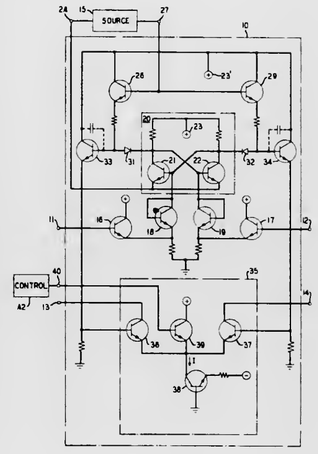
D. a second time constant circuit having a larger time constant than said first time constant circuit and being connected in series with said second rectifier to a source of a lower amplitude of said voltage; and

E. a transistor having a collector electrode connected to said first time constant circuit and a base electrode connected to said second time constant circuit for connecting said second time constant circuit to said first time constant circuit via the collector-base circuit of said transistor said transistor further including an emitter electrode connected to an output terminal and being further connected through an emitter impedance such that said transistor is operable as an emitter-follower.

3,885,169
STORAGE-PROCESSOR ELEMENT INCLUDING A BISTABLE CIRCUIT AND A STEERING CIRCUIT

John Donnell Heightley, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 120,834, March 4, 1971, Pat. No. 3,720,821. This application Nov. 15, 1972, Ser. No. 306,804
Int. Cl. H03k *17/00*, *3/12*
U.S. Cl. 307—246 **10 Claims**



1. A storage-processor element comprising

a flip-flop circuit having first and second input terminals and first and second output terminals,

first and second input circuit means respectively for coupling double-rail input signals to the first and second input terminals, the flip-flop circuit being constrained to one of two stable states in response to the input signals and indicating the assumed state at the first and second output terminals,

first and second charge storage devices retaining previously determined charge conditions independent of the state to which the flip-flop circuit is being constrained by the input signals,

first and second asymmetrically conducting devices respectively coupling signals representing the assumed state of the flip-flop from the first and second output terminals to the first and second charge storage means for storing the assumed state of the flip-flop circuit as quantities of charge,

first and second busses, and

means for converting the charge stored in the first and second charge storage means into a predetermined magnitude of current that is steered to one or the other of the busses.

3,885,170
METHOD FOR MOTOR CONTROL

Roman Kuzyk, 436 Schiller Ave., Trenton, N.J. 08610

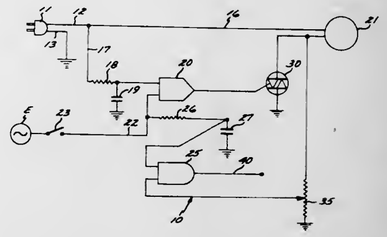
Filed May 25, 1973, Ser. No. 363,977
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 UA **6 Claims**

1. Apparatus for providing electrical signals indicative of the loading on an inductive device comprising:

switch means for selectively producing an enabling signal;

means for switching the inductive device at a predetermined phase angle relative the zero crossings of an A.C. electrical input signal, upon concurrent receipt of said enabling signal;

resistive means connected across said means for switching producing voltage signals indicative of the current lag thereacross; and

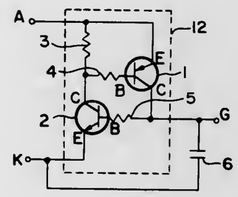


gate means connected to receive said voltage signals and said enabling signal for producing an output signal when said voltage signals are above a predetermined magnitude concurrent with the presence of said enabling signal.

3,885,171
THYRISTOR ELEMENT AND CIRCUIT

Akira Hirono, and Masayoshi Miyajima, both of Kyoto, Japan, assignors to Blackwell Electronics Ind. Co., Limited, Kyoto, Japan

Filed Nov. 3, 1971, Ser. No. 195,356
Claims priority, application Japan, Sept. 7, 1971, 46-69390
Int. Cl. H03k *17/72*
U.S. Cl. 307—252 A **4 Claims**

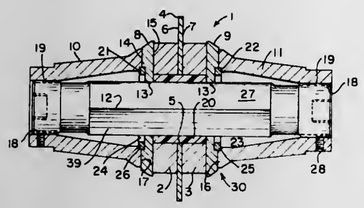


1. A semi-conductor circuit comprising: a thyristor having a gate electrode, an anode electrode, and a cathode electrode; and circuit means comprising a condenser connected between said gate electrode and said cathode electrode for preventing abrupt build-up of current flow through said thyristor and thereby reducing the generation of radio noise upon turn-on of said thyristor by extending the turn-on time of said thyristor, said thyristor being so constructed that it has an equivalent circuit including an NPN transistor and a PNP transistor, the collector of said NPN transistor being connected to the emitter of said PNP transistor through a first equivalent resistor, the collector of said NPN transistor being connected through a second equivalent resistor to the base electrode of said PNP transistor, the collector of said PNP transistor being connected to the base of said NPN transistor through a third equivalent resistor, said emitter of said PNP transistor serving as said anode electrode, said collector of said PNP transistor serving as said gate electrode, and said emitter of said NPN transistor serving as said cathode electrode, and said condenser and said first, second, and third equivalent resistors establishing a time constant which causes substantial delay in the turn-on time of said thyristor.

3,885,172
SONIC TRANSDUCER

Donald E. Miller, Mt. Prospect, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation of Ser. No. 203,587, Dec. 1, 1971, abandoned. This application Dec. 21, 1973, Ser. No. 427,144
Int. Cl. H04r 17/00
U.S. Cl. 310—8.7 12 Claims

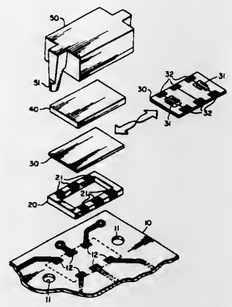


1. A transducer assembly comprising:
a force generating assembly comprising;
a first tubular means including a sleeve means at a first end and having an internal threaded portion at said first end and a flat portion at a second end;
a first annular electrostrictive element mounted adjacent said flat portion of said first tubular means and having an outside diameter about equal to the outside diameter of said first tubular means and an inside diameter greater than the least internal diameter of said first tubular means, dimensioned so that the cross-sectional area of said element multiplied by the modulus of elasticity of the element about equals the cross-sectional area of said sleeve means multiplied by the modulus of elasticity of said sleeve means;
a flat electrically conductive disk having an outside diameter greater than that of said electrostrictive element and an inside diameter about that of the inside diameter of said electrostrictive element;
a second annular electrostrictive element mounted adjacent said flat electrically conductive disk and constructed nearly identical to said first annular electrostrictive element, and
a second tubular means including a sleeve means at a first end and having an internal threaded portion at said first end and a flat portion at a second end adjacent said second electrostrictive element, dimensioned so that the cross-sectional area of said element multiplied by the modulus of elasticity of the element about equals the cross-sectional area of said sleeve means multiplied by the modulus of elasticity of said sleeve means; and
a tensioning stud of about the same material and cross-sectional area as said first and second tubular means and having a first threaded end and a seconded threaded end and fitting through said first and second force transmitting sleeve, said first and second electrostrictive elements and said flat electrically conductive disk with its first end threaded into said first end of said first sleeve and its second end threaded into said second end of said second sleeve whereby said first and second tubular means, said first and second annular spacer, said first and second electrostrictive element and said conductive disk are pressed against each other and placed in compressive strain whereby the resonant frequencies, phases and amplitudes of the stud and force generating assemblies are matched.

3,885,173
APPARATUS AND METHOD FOR COUPLING AN ACOUSTICAL SURFACE WAVE DEVICE TO AN ELECTRONIC CIRCUIT

Lawrence L. Lee, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Oct. 9, 1973, Ser. No. 404,456
Int. Cl. H01v 7/00
U.S. Cl. 310—9.4 14 Claims

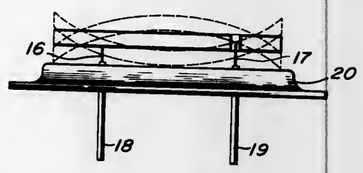


1. Apparatus for coupling an acoustic surface wave device to an electronic circuit, wherein said electronic circuit and said surface wave device have exposed conducting regions, comprising:
a gasket disposed between said surface wave device and said electronic circuit, said gasket comprised of an acoustic surface wave absorbing material, said gasket including a plurality of conducting regions;
a housing for containing said gasket and said surface wave device, said housing locating preselected conducting regions of said gasket adjacent to preselected exposed conducting regions of said surface wave device, said gasket being disposed about a region of said surface wave device containing active elements, said gasket damping acoustic surface waves propagated in a vicinity of said gasket; and
means for coupling said housing to said electronic circuit, said coupling means locating predetermined conducting regions of said gasket adjacent to preselected exposed conducting regions of said electronic circuit.

3,885,174
X-T FLEXURE PIEZOELECTRIC DEVICE

George A. Schoenfelder, Naperville, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Jan. 16, 1974, Ser. No. 433,640
Int. Cl. H04r 17/00
U.S. Cl. 310—9.5 6 Claims

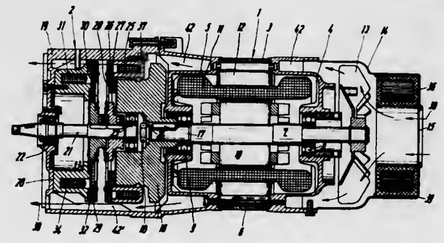


1. An improved piezoelectric crystal operative in a flexural mode comprising:
a. an elongated piezoelectric bar having a generally rectangular cross section with four major side surfaces and two end surfaces;
b. said bar having first or width and second or thickness transverse axes lying generally along the X crystallographic axis or frequency dependent transverse dimension and the Z crystallographic axis or frequency independent transverse dimension, respectively, and a longitudinal axis, one of said first and second transverse and said longitudinal axes being rotated, relative to a crystallographic axis of the piezoelectric material, and the other two of said first and second transverse and said longitudinal axes being substantially unrotated relative to the remaining crystallographic axes;
c. said bar further having a greater width than thickness;
d. an electrode fixedly positioned on each of said four major surfaces for producing flexures of said bar in a plane through the first transverse axis and the longitudinal axis of the bar upon proper energization of said electrodes; and
e. crystal mounting and connecting means connected to said electrodes for physically mounting said crystal and providing an electrical connection to said electrodes.

3,885,175
ELECTRIC MOTOR VARIABLE SPEED AND CONTROL DRIVE

Herbert Palloch, Schwetzingen, Germany, assignor to Frankl and Kirchner, Schwetzingen, Germany

Filed Dec. 26, 1973, Ser. No. 428,194
Claims priority, application Germany, Dec. 23, 1972, 2263259
Int. Cl. H02k 11/00
U.S. Cl. 310—68 D 6 Claims



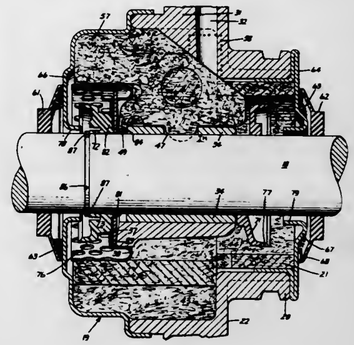
1. In an electric motor variable speed and control drive comprising a housing, a motor within said housing and including a drive shaft disposed within said housing and extending therefrom, a clutch and brake unit means within said housing for connecting said drive shaft to said motor and for braking said drive shaft, and a control unit means connected to said housing for operating said clutch and brake unit means in a predetermined sequence, wherein said control unit means includes a transformer, the improvement wherein said transformer is made in the form of a ring-core transformer and is mounted within said housing coaxially with respect to the axis of said motor and said clutch and brake unit means.

3,885,176
DYNAMOELECTRIC MACHINE WITH IMPROVED BEARING LUBRICATION SYSTEM

Eldon R. Cunningham, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sept. 25, 1972, Ser. No. 292,175
Int. Cl. H02k 5/10, 5/16; F16c 1/24, 13/02
U.S. Cl. 310—88 12 Claims

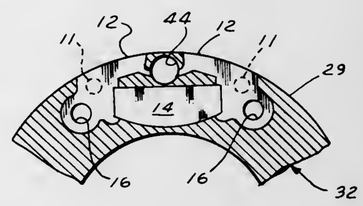
1. A dynamoelectric machine including a shaft, a rotor mounted on the shaft for rotation therewith; bearing means including at least one sleeve type bearing rotatably supporting the shaft; and a lubrication system for the bearing means including a lubricant reservoir with lubricant retaining material disposed therein; said bearing having a lubricant admitting passage for permitting a flow of lubricant from the lubricant reservoir to a bearing surface of the bearing; and a feed wick for transferring lubricant from the lubricant reservoir to said bearing surface; said feed wick including a projection in the lubricant admitting passage of said bearing and in engagement with the shaft, said feed wick being compressively retained between the shaft and a wall portion of the lubricant reservoir to prevent inadvertent displacement of said projection from engaging relation with the shaft; the material forming said feed wick defining at least one cut out region along a line extending in generally normal relation to the shaft and through said projection, whereby excessive contact pressures between the shaft and projection are prevented.



3,885,177
POLE-SHOE MAGNET GROUP FOR A MAGNETOMOTIVE DEVICE

Russell D. Phelon, Longmeadow, and John C. Van Amsterdam, Wilbraham, both of Mass., assignors to R. E. Phelon Company, Incorporated, East Longmeadow, Mass.

Division of Ser. No. 318,521, Dec. 26, 1972. This application June 7, 1974, Ser. No. 477,335
Int. Cl. H02k 21/22
U.S. Cl. 310—153 3 Claims

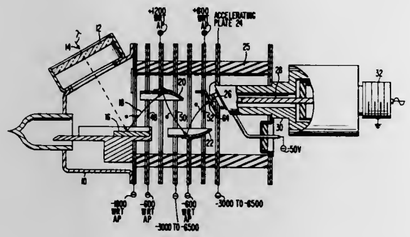


1. In combination with a flywheel having a rim of nonmagnetic material, a magneto comprising a permanent magnet, a plurality of stacked ferromagnetic laminations fastened together in clamped relation about said magnet and forming a unitary assembly embedded in said nonmagnetic material, said laminations including pole-shoe portions having a pole-shoe radius to provide surfaces of flux emanation for said group, said surfaces being generally flush with a cylindrical surface of said rim, each lamination being integral and including a web portion interconnecting the pole-shoe portions thereof and being disposed inwardly of said surfaces of flux emanation and embedded in said nonmagnetic material forming the rim of said flywheel.

3,885,178
PHOTOMULTIPLIER TUBE HAVING IMPACT IONIZATION DIODE COLLECTOR

Ronald H. Goehner, Wayne, N.J., assignor to Varian Associates, Palo Alto, Calif.

Filed July 11, 1974, Ser. No. 487,704
Int. Cl. H01j *39/02, 43/22, 43/18*
U.S. Cl. 313—1 **8 Claims**

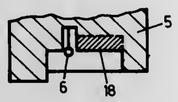


1. A photomultiplier tube comprising a hermetically sealable enclosure having a transparent area for admission of light, a photocathode positioned in said enclosure for receiving said light and converting same to free electrons, at least one dynode positioned in said enclosure for receiving said free electrons from said photocathode and multiplying same, and means positioned to receive free electrons from said dynode for simultaneously providing multiplication of received electrons and collection of same on a conductor to provide an output signal on said conductor, said means positioned to receive free electrons comprising a diode capable of multiplying and collecting received free electrons by impact ionization.

3,885,179
X-RAY TUBE

Rudolf Friedel, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 19, 1974, Ser. No. 443,864
Claims priority, application Germany, Feb. 28, 1973, 2310061
Int. Cl. H01j *35/06*
U.S. Cl. 313—60 **5 Claims**



1. An X-ray tube comprising an anode body, a cathode body and at least one incandescent cathode coil located on said cathode body to project a cathode ray beam forming a focal spot on said anode body and located out of the area onto which said focal spot is projected in rectangular direction from its surface and which area is shaped to absorb ions, said area being furnished with a heat-conducting body of refractory material.

3,885,180
MICROCHANNEL IMAGING DISPLAY DEVICE

Stanley L. Carts, Jr., Alexandria, Va., assignor to The United States Government Secretary of the Army, Washington, D.C.

Filed July 10, 1973, Ser. No. 377,987
Int. Cl. H01j *43/00, 31/26*
U.S. Cl. 313—103 **2 Claims**

1. An image display device comprising:

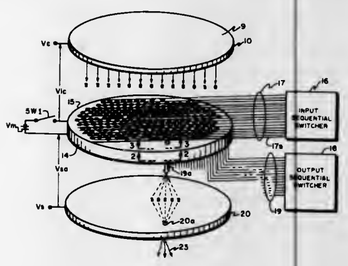
an electron producing means for producing a uniform flow of electrons;

a microchannel plate electron multiplier positioned adjacent said electron producing means;

means for selectively sequentially switching electron accelerating voltages across said microchannel plate electron multiplier, said means for selectively sequentially switching electron accelerating voltage further comprising:

a set of thin parallel input electrodes on the input side of said microchannel plate that are attached to an input sequential switcher for cyclically sweeping instantaneous input sequential voltages across each of said input electrodes;

a set of thin parallel output electrodes on the output side of said microchannel plate that are perpendicular to said input electrodes and are attached to an output sequential switcher for cyclically sweeping instantaneous output sequential voltage across each of said output electrodes wherein said cyclically sweeping instantaneous input and output sequential voltages cyclically produce a sweep of cross-over voltage points over the entire face of said microchannel plate; and



a common input electrode connected to all of said set of thin parallel input electrodes;

a common output electrode connected to all of said set of thin parallel output electrodes;

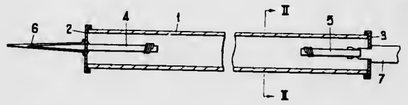
a regular bias voltage connected in series with said cyclically sweeping instantaneous input and output sequential voltages through a switch across said microchannel plate wherein said regular bias voltage is connected between said common input electrode and said common output electrode to serially add said regular bias voltage to said cyclically sweeping instantaneous input and output side of said microchannel plate at said crossover point of said input and output sequential voltages and whereby said regular bias voltage is repeatedly switched on within one complete cycle of said cyclically sweeping instantaneous input and output sequential voltages to selectively provide said high electron density area in a desired pattern i and, A means for converting electronic energy into visible energy at said output side of said microchannel plate for producing an image display according to said sequentially switched electron accelerating voltages.

3,885,181
ELECTRIC DISCHARGE LAMPS

Evan Herbert Nelson, Twickenham, and Sydney Alfred Richard Rigden, Hemel Hempstead, both of England, assignors to The General Electric Company Limited, London, England

Filed Apr. 9, 1973, Ser. No. 349,003
Claims priority, application United Kingdom, Apr. 19, 1972, 18095/72
Int. Cl. H01j *5/16, 17/16*
U.S. Cl. 313—110 **10 Claims**

1. A high pressure electric discharge lamp comprising a tubular discharge envelope formed of transparent crystalline corundum, with a pair of electrodes disposed coaxially within said envelope and carried respectively by closure means closing each end of the envelope, wherein at least one of the interior and exterior longitudinal surfaces of the tubular discharge envelope wall is of nonuniform conformation around the circumference such that in any cross-section of the envelope the distance of said surface from the longitudinal axis of

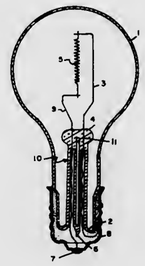


the envelope is less in at least one region of the cross-section than in the remainder of the cross-section, the cross-sectional conformation of the envelope wall being uniform throughout the length of the envelope, whereby the polar distribution of light emitted from the lamp as a whole, in operation of the lamp, is non-uniform around the circumference of the envelope.

3,885,182
LAMP HAVING LIGHT DIFFUSING ENVELOPE

Gordon P. K. Chu, Danvers, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Sept. 20, 1973, Ser. No. 399,100
Int. Cl. H01k *1/26, 1/28*
U.S. Cl. 313—116 **1 Claim**



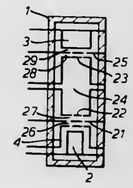
1. An incandescent lamp comprising a filament disposed within a light diffusing uniformly crystallized glass envelope, the entire envelope being crystallized, which is sealed at its lower end to the flare of a stem press glass mount, the envelope having a high efficiency of light transmission, the glass composition of said envelope being as follows:

LiO_2	8 to 20%
Na_2O and/or K_2O	1 to 7%
SiO_2	45 to 72%
Al_2O_3	4 to 20%
CaO and/or SrO and/or BaO and/or MgO	0.6 to 7%
B_2O_3	1 to 4%
As_2O_3 and/or Sb_2O_3 and/or P_2O_5 and/or MoO_3	2 to 7%.

3,885,183
THYRATRONS

Hugh Menown, Writtle, and Eric Jones, Chelmsford, both of England, assignors to English Electric Valve Company Limited, Chelmsford, Essex, England

Filed Jan. 2, 1974, Ser. No. 430,251
Claims priority, application United Kingdom, Jan. 9, 1973, 1164/73
Int. Cl. H01j *17/12*
U.S. Cl. 313—195 **11 Claims**

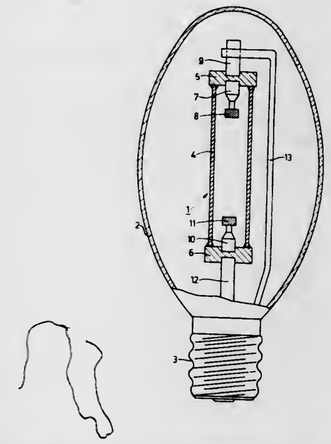


1. A multi-gap gradient-grid thyratron comprising an envelope, an anode and a cathode within the envelope, a control grid between the anode and the cathode and a succession of gradient-grids between the control grid and the anode, the gradient-grids being alternately of the short and long type.

3,885,184
HIGH-PRESSURE DISCHARGE LAMP

Bralt Renze Schat, and Abraham Timmermans, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1973, Ser. No. 332,117
Claims priority, application Netherlands, Feb. 21, 1972, 7202269
Int. Cl. H01j *61/30, 61/82*
U.S. Cl. 313—220 **8 Claims**

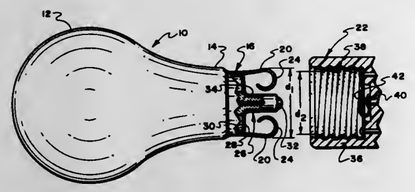


1. A high-pressure discharge lamp for use with an associated ballast comprising a discharge tube which includes at least one internal electrode and a current lead-through conductor connected to said electrode, the electrical resistance of the path of the current through said lead-through conductor between the outer wall and the inner wall of the discharge tube being so large that in the operating condition of the lamp, the product of said resistance (in ohms) and the current (in amperes) through said lead-through conductor is more than 1.0.

3,885,185
INCANDESCENT LAMP

Ralph E. Tilley, 336 E. South Temple, Salt Lake City, Utah 84111

Filed Mar. 29, 1974, Ser. No. 456,097
Int. Cl. H01j 5/48, 5/50
U.S. Cl. 313—318 4 Claims

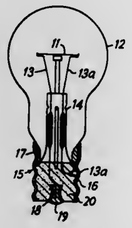


1. An incandescent lamp for rectilinear insertion into press-fit conducting relation with a conventional threaded electrical socket comprising:
a bulb having an axis, the bulb containing a filament and having a necked down trailing end;
first conductor means connected to one end of the filament and mounted to the necked down trailing end of the bulb, said first conductor means comprising a plurality of axially extending, rearwardly directed, and outwardly radially biased resilient conductive fingers with memory, each finger being initially resiliently biased a predetermined radial distance from the axis of the bulb to form an initial composite diameter greater than the diameter of said threaded socket;
second conductor means carried in exposed relation at the trailing end of the bulb and connected to the other end of the filament; and
electrical insulating means disposed between the first and second conductor means;
whereby the resilient fingers are inwardly deflected reducing said composite diameter to one equal to the socket diameter upon rectilinear insertion of the trailing end of the lamp into the socket, the memory of the resilient fingers insuring electrical conduction with a conductor at the socket threads.

3,885,186
LAMP CAP CONNECTIONS USING SUPERPLASTIC ALLOY

Arthur Samuel Vause, London, England, assignor to Thorn Electrical Industries Limited, London, England

Division of Ser. No. 366,739, June 4, 1973, Pat. No. 3,818,558. This application Apr. 1, 1974, Ser. No. 457,064
Int. Cl. H01j 5/54; B23k 35/24
U.S. Cl. 313—318 9 Claims

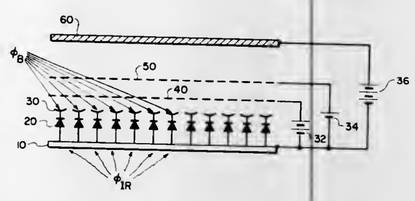


1. An electric lamp having an hermetically-sealed envelope through which a lead-in conductor is sealed, said conductor terminating outside said envelope and said conductor being embedded in a mass of an alloy which is capable of exhibiting superplastic properties, said alloy forming an electrical terminal.

3,885,187
PHOTODIODE CONTROLLED ELECTRON VELOCITY SELECTOR IMAGE TUBE

Alvin D. Schnitzler, Camp Springs, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 11, 1973, Ser. No. 405,731
Int. Cl. H01j 31/12
U.S. Cl. 313—368 8 Claims

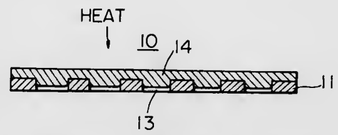


1. A photodiode controlled electron velocity selector image tube in a vacuum envelope comprising:
a P-type material substrate having a plurality of electrically isolated photosensitive junctions comprising a plurality of evenly spaced N-type material islands on a front side of said P-type material substrate and a layer of electrical insulation contiguous with the entire front side of said P-type material substrate but only around the periphery of said N-type material islands;
a solid antireflection coating contiguous with a back side of said P-type material substrate;
a plurality of discrete thin metal islands contiguous with said N-type material islands and said layer of electrical insulation wherein said thin metal islands are spread over said layer of electrical insulation in close proximity to but electrically isolated from each other;
a plurality of discrete electrically isolated photoemitters contiguous with and covering the entire lateral surface of said plurality of discrete thin metal islands wherein said plurality of electrically isolated photoemitters are serially connected to said plurality of electrically isolated photosensitive junctions through said plurality of thin metal islands with each related photosensitive junction and photoemitter forming a plurality of discrete photocathode elements;
an electroluminescent screen;
a plurality of fine mesh grids positioned between said plurality of discrete electrically isolated photoemitters and said electroluminescent screen;
a voltage divider source having voltage taps therefrom connected in step up voltage from said antireflection coating through said plurality of fine mesh grids to said electroluminescent screen for velocity controlling the electrons emitted from said discrete electrically isolated photoemitters to said electroluminescent screen;
a bias light source for uniform illumination of the front surface of said plurality of discrete electrically isolated photoemitters for producing electron current saturation therefrom; and
an infrared image radiation source for projecting an image on said antireflection coating such that the resistance across each of said plurality of electrically isolated photosensitive junctions is in direct relation to the intensity of said radiation source image to cause a change in velocity of electrons emitted from each of said plurality of photoemitters with relation to the fixed voltages on said plurality of fine mesh grids, and wherein said plurality of discrete thin metal islands inhibits said bias light illumination from entering said plurality of N-type material islands yet allows easy movement of electrons from said N-type material islands into said photoemitters.

3,885,188
TARGET ASSEMBLY FOR STORAGE TUBES AND A METHOD OF MAKING THE SAME

Yujiro Koike; Haruo Maeda; Tsutomu Nishino; Akimitu Aoyama, and Yuji Mogi, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company Limited, Osaka, Japan

Filed Mar. 16, 1973, Ser. No. 341,898
Claims priority, application Japan, Mar. 17, 1972, 47-27766
Int. Cl. H01j 1/53
U.S. Cl. 313—394 3 Claims

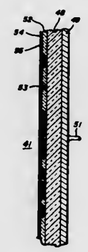


1. A target assembly for use with charge storage tubes, comprising a screen having interstices therein and a film of an organic compound of a resistivity of at least 10^{15} ohm-cm deposited on said screen, wherein said organic compound is selected from the group consisting of polyimide and polyamideimide, and wherein said compound has a uniform thickness over the entire target surface, whereby said organic compound is capable of storing electrostatic charges for an extended period of time.

3,885,189
CATHODE RAY TUBE MONOSCOPE WITH SEMICONDUCTOR TARGET

Amos Picker, Sharon, and Wolfgang Feist, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 283,126, Aug. 23, 1972, which is a division of Ser. No. 76,920, Sept. 30, 1970, abandoned. This application Dec. 6, 1973, Ser. No. 422,449
Int. Cl. H01j 31/58, 31/08
U.S. Cl. 313—401 5 Claims

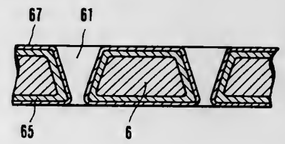


1. In combination:
a cathode ray tube display device;
a signal generating device comprising:
a source of electrons;
a target comprising:
a supporting plate;
a wafer of semiconductor material having first and second surfaces, said second surface being coupled to said supporting plate;
a layer of insulating oxide material disposed upon said first surface of said wafer, said layer having apertures formed therein in predetermined character patterns;
a plurality of regions of dielectric material upon said first surface of said semiconductor wafer, said dielectric material having a conduction band close to that of said wafer, said regions of dielectric material being disposed through said apertures in said layer of insulating oxide material;
a layer of conductive material covering said dielectric material;
means for providing a bias voltage between said regions of dielectric material and said semiconductor wafer;
means for directing electrons from said source to said target to produce multiplications of said electrons in said semiconductor layer; and
means for feeding signals from said signal generating device to said display device.

3,885,190
SHADOW MASK HAVING ALL SURFACES METAL-COATED

Masao Taniguchi; Hiromi Kanai, both of Mobara, and Elichi Yamazaki, Ichihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 11, 1973, Ser. No. 350,067
Claims priority, application Japan, Apr. 12, 1972, 47-42437[U]
Int. Cl. H01j 29/06, 29/08, 31/20
U.S. Cl. 313—402 10 Claims

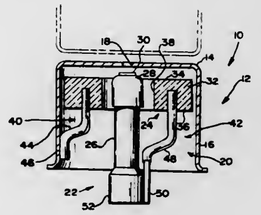


1. A colour picture tube of the class comprising a neck, a funnel, an electron gun assembly contained in the neck, a fluorescent screen of colour display type coated on the inner surface of the panel in triads and a colour selection electrode, made of iron and having a plurality of perforations, adjacent to the fluorescent screen for transmitting the electron beams emanated by the electron gun assembly to predetermined portions of the fluorescent screen, and a metal layer applied onto all surface areas of the colour selection electrode for increasing the strength of said colour selection electrode.

3,885,191
CATHODE-GRID ASSEMBLY FOR A CATHODE RAY TUBE

Donald R. Kerstetter, Emporium, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 6, 1974, Ser. No. 448,681
Int. Cl. H01j 29/02, 29/48
U.S. Cl. 313—447 7 Claims



1. A cathode-grid assembly for a cathode ray tube comprising:
a substantially cup-shaped grid having a closed end containing a substantially centrally located aperture and a projecting contiguous side wall, said closed end and said side wall defining a hollow interior; and
a cathode and a cathode support positioned within said hollow interior;

said cathode comprising a hollow metallic sleeve closed at one end by a cathode cap the outermost surface of which contains an electron emissive material;

said cathode support comprising an electrically insulating member of a size to fit within said hollow interior and having upper and lower surfaces;

a substantially centrally located cathode aperture interconnecting said upper and lower surfaces and first and second means extending from said lower surface for respectively mounting said support within said hollow interior and for mounting said cathode.

3,885,192
FUNDAMENTAL COUPLED TRAVELLING WAVE TUBE HAVING A PERIODIC PERMANENT MAGNETIC FOCUSSING STRUCTURE

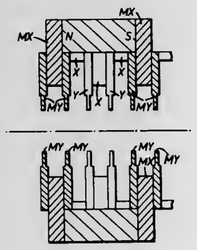
Maurice Esterson; Robin Charles Moorehouse King, and John Frederick Gregory, all of Essex, England, assignors to English Electric Valve Company Limited, Chelmsford, Essex, England

Filed Feb. 15, 1974, Ser. No. 442,884

Claims priority, application United Kingdom, Feb. 16, 1973, 7682/73

Int. Cl. H01j *26/34*

U.S. Cl. 315—3.5 **7 Claims**



1. A coupled cavity travelling wave tube including a stack of alternately slotted and apertured plates assembled to provide a plurality of successive coupled cavities coupled for the fundamental mode of operation; a magnetic pole piece provided at each *n*th cavity (where *n* is an integer greater than 2) which pole piece consists of an apertured plate made of ferromagnetic material and positioned between a pair of thinner slotted plates which also consist of ferromagnetic material and which have regions extending the ferromagnetic path, provided by the first mentioned apertured plate, close to the electron beam path of the tube, each pair of said thinner slotted plates being spaced apart from each other by the thickness of the first mentioned apertured plate to define a cavity between them; a periodic permanent magnetic focussing structure surrounding said stack and consisting of ring shaped magnets which provide permanent magnetic fields through said pole pieces to said electron beam path.

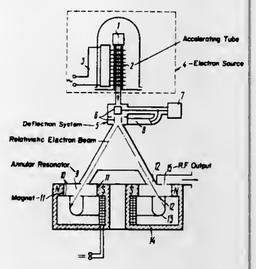
3,885,193
MICROWAVE ELECTRON DISCHARGE DEVICE

Gersh Itskovich Budker, ulitsa Maltseva, 6; Marlen Moiseevich Karliner, Morskoi prospekt, 60, kv. 14; Ivan Grigorievich Makarov, Zhemchuzhnaya, 24, kv. 15; Sergei Nikolaevich Morozov, ulitsa Zolotodolinskaya 27, kv. 30; Oleg Alexandrovich Nezhevenko, ulitsa Tereshkovoi, 7, kv. 1; Gennady Nikolaevich Ostreiko, Morskoi prospekt, 60, kv. 24, and Isai Abramovich Shekhtman, ulitsa Ilicha, 15, kv. 68, all of Novosibirsk, U.S.S.R.

Filed Aug. 24, 1973, Ser. No. 391,314

Int. Cl. H01j *25/22*

U.S. Cl. 315—5.25 **4 Claims**



1. A microwave electron discharge device, comprising beam-producing means for forming a charged particle beam; an accelerating tube positioned at the output of said beam-producing means for imparting to particles of said beam a velocity close to the velocity of light; a deflection system for circular scanning of said beam at a predetermined input signal frequency, said deflection system being mounted subsequent to said accelerating tube in the direction of beam travel along the axis of said accelerating means; a hollow annular resonator disposed subsequent to said deflection system in the direction of beam travel along the axis of the deflection system, said resonator having circular slots in its walls to permit the ingress of a circularly scanned beam and egress of the beam out of the resonator, said resonator being internally dimensioned and shaped to support the traveling along an annulus of an electromagnetic wave at a frequency comprising a multiple of the frequency of said beam scanning, said electromagnetic wave having its electric field substantially parallel to the direction of the motion of said beam particles; a collector mounted after said annular resonator in the direction of beam travel for receiving the charged particle beam upon exiting the resonator.

3,885,194
TEMPERATURE CONTROL FOR AN INDIRECTLY HEATED CATHODE FOR A HIGH POWER ELECTRON BEAM GUN

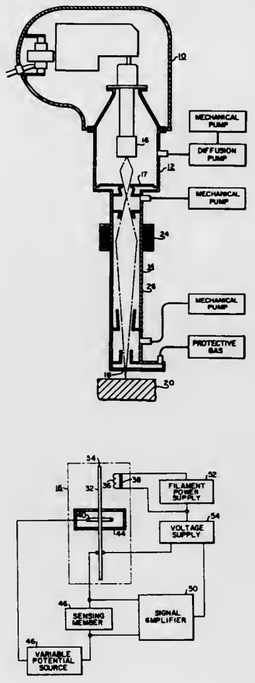
Berthold W. Schumacher, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1973, Ser. No. 356,018

Int. Cl. H05b *39/04*

U.S. Cl. 315—107 **3 Claims**

1. In combination with an electron gun for generating a high power electron beam, which electron gun includes an elongated cathode member and cathode heater means associated therewith for electron bombardment heating of the cathode member, with the electron beam being drawn from one end of said cathode member, and wherein the temperature of the cathode member significantly affects the electron beam emission, the improvement comprising a ring conductive electrode disposed about the cathode member at a location spaced from the electron beam emission end portion of the cathode member, with a secondary emitted electron current flow produced between said cathode member and said ring conductive electrode, a shielding enclosure disposed about the ring conductive electrode with the cathode member passing through the shielding enclosure, and sensing means electrically connected to the ring conductive electrode for measuring the secondary emitted electron current and indicating the temperature of the cathode member as a function of said secondary emitted electron current.



3,885,195
FLAT PANEL DISPLAY APPARATUS HAVING ELECTRODES ALIGNED WITH ISOLATING BARRIER RIBS

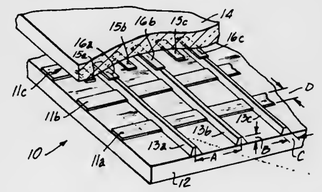
Yoshifumi Amano, Zushi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 14, 1973, Ser. No. 424,692

Claims priority, application Japan, Dec. 21, 1972, 47-128450

Int. Cl. H05b *41/00*

U.S. Cl. 315—169 TV **5 Claims**



1. A flat panel display apparatus comprising: a first insulator plate, a second insulator plate, a plurality of first parallel electrodes attached to said first plate, a plurality of insulating parallel barrier ribs mounted on said first plate so as to cross over said plurality of first electrodes, said barrier ribs intersecting said first electrodes and projecting toward said second plate, a plurality of second parallel electrodes attached to said second plate, said second electrodes parallel with said barrier ribs and positioned between said barrier ribs, the edges of said first and second plates sealed and a gas capable of glowing mounted between said plates, a plurality of barrier electrodes attached to said second plate, and said barrier electrodes positioned between said second electrodes and aligned with said insulating barrier ribs.

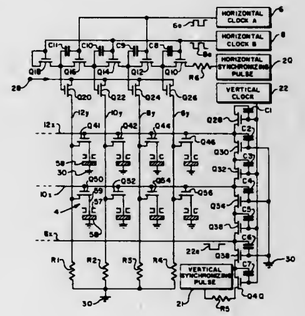
3,885,196
POCKETABLE DIRECT CURRENT ELECTROLUMINESCENT DISPLAY DEVICE ADDRESSED BY MOS OR MNOS CIRCUITRY

Albert G. Fischer, Pittsburgh, Pa., assignor to The United States Government Secretary of the Army, Washington, D.C.

Division of Ser. No. 310,737, Nov. 30, 1972, Pat. No. 3,807,037. This application Nov. 28, 1973, Ser. No. 419,829

Int. Cl. H05b *41/02*

U.S. Cl. 315—169 TV **3 Claims**



1. An electroluminescent display panel comprising:

an insulating substrate having a matrix of feedthrough holes therethrough;

a matrix of metallic oxide semiconductors having a gate, a drain, and a source electrode, said metallic oxide semiconductors positioned on a back side of said substrate; and

a matrix of electroluminescent elements on a front side of said substrate wherein each of said drain electrodes is connected directly to one of said matrix of electroluminescent elements and said source electrodes are connected to column leads and said gate electrodes are connected to row leads whereby the outputs from shift registers trigger video information into said metallic oxide semiconductors according to information fed into said shift registers.

3,885,197
LIGHT DIMMER

Adrian Moses, Newhall, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Feb. 1, 1974, Ser. No. 438,687

Int. Cl. H05b *39/02*

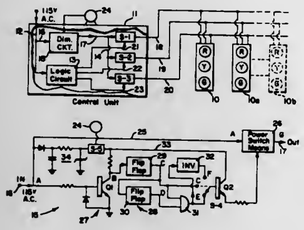
U.S. Cl. 315—194 **6 Claims**

2. A dimmer circuit for dimming traffic lights wherein the lights are controlled by a logic circuit requiring a given source of alternating voltage for operation, and wherein the traffic lights are connected to said source through switches controlled by said logic circuit, said dimmer circuit including, in combination:

a. input and output terminals for interposition between said source and said switches;

b. detecting means connected to said input terminal to provide clock signals having a frequency determined by the frequency of alternating voltage;

c. divider means connected to receive said clock signals and provide a control output pulse responsive to the reception of N clock signals, said output pulse having a time duration corresponding to the time for *n* clock signals to be received where *n* N; and



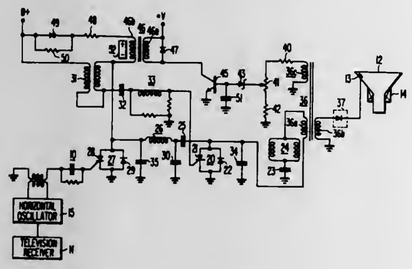
d. a power switch means connected between said input terminal and output terminal and having a gate control terminal connected to receive said output pulse whereby said power switch is opened for a period corresponding to the width of said output pulse so that *n*/N of the power is not passed to said lights as a result of the blockage of *n* whole wave form cycles by said power switch.

3,885,198

HIGH VOLTAGE REGULATOR

Dalton Harold Pritchard, Princeton, N.J., and Alfred Christian Schroeder, Southampton, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 6, 1973, Ser. No. 385,777
Int. Cl. H01j *29/70*
U.S. Cl. 315—411 **5 Claims**



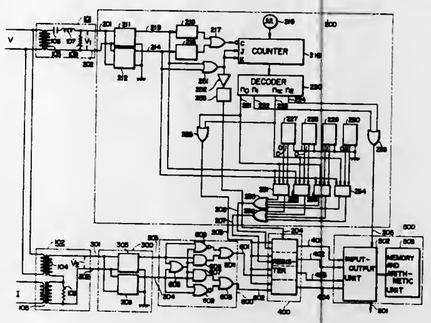
1. In a deflection system, a voltage regulator, comprising:
a terminal supplying operating current;
variable inductance means coupled to said terminal;
switching means coupled to said variable inductance means for receiving operating current therefrom and operable from a first to a second state during each deflection cycle; output circuit means including a deflection winding and a transformer coupled to said switching means for receiving alternating current energy therefrom during each deflection cycle;
regulating means coupled to said output circuit and to said variable inductance means and responsive to the amplitude of energy in said output circuit means for controlling the inductance of said variable inductance means;
said variable inductance means including biasing means for providing a fixed magnitude magnetic field component in said variable inductance means for limiting the peak current supplied to said switching means independent of the operation of said regulating means.

3,885,199

PROTECTIVE RELAYING DEVICE

Haruo Nohara; Junichi Makino, and Manabu Masuda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed July 2, 1973, Ser. No. 375,731
Int. Cl. H02h *3/26*
U.S. Cl. 317—27 R **8 Claims**



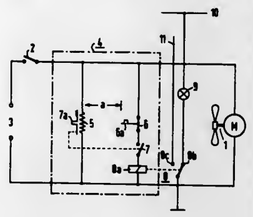
1. A protective relaying device comprising:
a first means for producing, from the voltage and current of the transmission line to be protected, two voltages essential for the protection of said line, one of said two voltages being a reference voltage;
a second means for producing first timing signals indicative of the respective instants when said reference voltage changes from negative to positive polarity, when said reference voltage reaches its positive peak, when said reference voltage changes from positive to negative polarity and when said reference voltage reaches its negative peak and for producing first sign signals corresponding to the states of said reference voltage at said respective instants;
a third means for producing second sign signals corresponding to the states of the other of said two voltages;
a fourth means for renewing and holding said first and second sign signals each time said first timing signals are generated; and
a fifth means for receiving said first and second sign signals to judge the necessity of protection on the basis of the combination of said first and second sign signals.

3,885,200

MONITORING ARRANGEMENT FOR A BLOWER

Peter Burkle, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 26, 1973, Ser. No. 418,981
Claims priority, application Germany, Nov. 28, 1972, 2258252
Int. Cl. H02h *5/04*
U.S. Cl. 317—40 R **5 Claims**



1. A monitoring arrangement for a blower comprising:

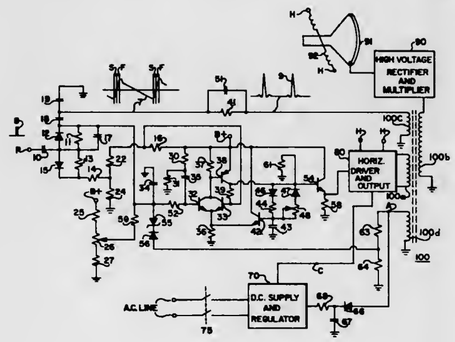
a. a current carrying resistor in parallel with the blower motor and physically arranged in the air stream of the blower;
b. first means for sensing temperature spaced from said resistor said means including a first switch, said first means adapted to operate said first switch when the temperature exceeds a first predetermined limit;
c. second means for sensing temperature said means being placed in the immediate vicinity of said resistor and including a second switch adapted to operate if the temperature of said resistor falls below a second predetermined limit; and
d. indicator means supplied by said first and second switches in series.

3,885,201

FAIL-SAFE HIGH VOLTAGE PROTECTION CIRCUIT

Ronald Eugene Fernsler, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 28, 1974, Ser. No. 473,860
Int. Cl. H04n *5/44*
U.S. Cl. 317—51 **6 Claims**



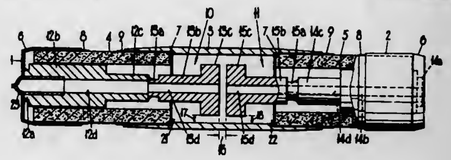
1. A high voltage protection circuit for rendering a display on a kinescope unviewable when excessive high voltage is coupled thereto, comprising:
a deflection generator;
high voltage supply means coupled to said deflection generator for generating said high voltage;
means coupled to said deflection generator for producing voltage variations representative of said generated high voltage variations;
power supply and regulating means coupled to said deflection generator and to said means for producing voltage variations and responsive to said voltage variations for regulating direct current operating voltage supplied to said deflection generator for maintaining said generated high voltage substantially constant;
oscillator means coupled to said deflection generator;
automatic frequency control means coupled to said deflection generator and to said oscillator for producing a first direct current control voltage for controlling the frequency of said oscillator; and
means coupled to said means for producing voltage variations representative of said high voltage variations and to said automatic frequency control means for providing a second direct current control voltage thereto, said first and second control voltages being combined for controlling said oscillator at a desired frequency and said second direct current control voltage being related in amplitude to said voltage variations for rendering the display on said kinescope unviewable when said amplitude becomes excessive corresponding to excessive high voltage.

3,885,202

EXCESS VOLTAGE ARRESTERS

Basil Offor Baker, Rickmansworth, and John William Ellis Ross, Sidcup, both of England, assignors to The M-O Valve Company Limited, London, England

Filed Mar. 21, 1974, Ser. No. 453,323
Claims priority, application United Kingdom, Mar. 23, 1973, 14139/73
Int. Cl. H02h *9/04*
U.S. Cl. 317—61 **4 Claims**



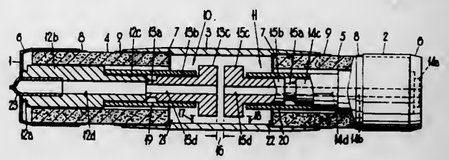
1. An excess voltage arrester comprising: a hollow cylindrical gas-filled enclosure comprising a tubular electrically conductive central portion, a pair of electrically conductive end portions, and a pair of tubular electrically insulating portions by means of which said end portions are respectively sealed to and spaced from said central portion; a pair of spaced electrodes housed within the enclosure for which said end portions serve as respective terminals, said electrodes extending towards one another through said insulating portions of the enclosure so that the gap between the electrodes lies within the central portion of the enclosure; and means for restricting the cathode spot formed in operation on the inner end of either electrode to a region adjacent the inner end of that electrode; the dimensions of the gaps, via the gas-filling, between the electrodes and the central portion of the enclosure, and between the electrodes and the internal surfaces of the insulating portions of the enclosure being such that the d.c. ignition voltage across the gap between the inner end of each electrode and the adjacent part of the central portion of the enclosure is less than the breakdown voltage across any gap between a point on the surface of that electrode and a conductive coating which may be produced in operation on the internal surface of the insulating portion of the enclosure through which that electrode extends.

3,885,203

EXCESS VOLTAGE ARRESTERS

Basil Offor Baker, Richmansworth, and John William Ellis Ross, Sidcup, both of England, assignors to The M-O Valve Company Limited, London, England

Filed Mar. 21, 1974, Ser. No. 453,322
Claims priority, application United Kingdom, Mar. 23, 1973, 14138/73
Int. Cl. H02h *9/04*
U.S. Cl. 317—61 **5 Claims**



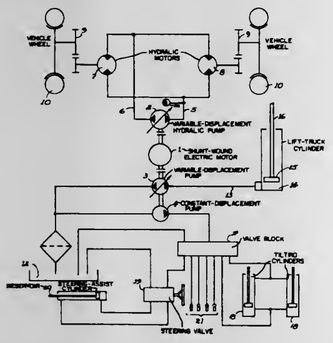
1. An excess voltage arrester comprising: a hollow cylindrical gas filled enclosure comprising a tubular electrically conductive central portion, a pair of electrically conductive end portions, and a pair of tubular electrically insulating portions by means of which said end portions are respectively sealed to and spaced from said central portion; a pair of spaced electrodes housed within the enclosure for which said end portions serve as respective terminals, said electrodes extending to-

wards one another through said insulating portion of the enclosure so that the gap between the electrodes lies within the central portion of the enclosure; and a pair of sleeves of electrically insulating material carried on said electrodes respectively, each sleeve extending from a point near the inner end of the associated electrode to a point within the insulating portion of the enclosure through which the associated electrode extends.

3,885,204
DRIVE ARRANGEMENT USING ELECTRIC MOTOR WITH VARIABLE HYDRAULIC TRANSMISSION SET IN PREDETERMINED RELATIONSHIP TO MINIMIZE BATTERY DRAIN

Theodore Abels, Aschaffenburg-Nilkheim, and Siegfried Puschel, Aschaffenburg, both of Germany, assignors to Linde Aktiengesellschaft, Hollriegelkreuth, Germany

Filed Apr. 26, 1973, Ser. No. 354,862
Claims priority, application Germany, Apr. 26, 1972, 2220570
Int. Cl. H02p *5/06*
U.S. Cl. 318—139 **22 Claims**



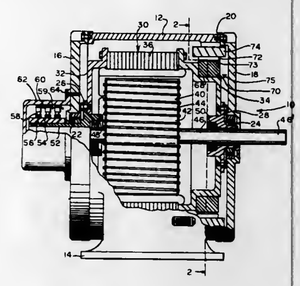
1. A drive system comprising, in combination a storage battery; a shunt-wound electric motor having a field-excitation coil connected in shunt with an armature across said battery; a stepless variable hydraulic transmission including a hydraulic pump drivingly connected to said electric motor and a hydraulic motor operatively connected to a load and in fluid communication with said pump; and control means for varying the excitation current of said field coil, said transmission comprising a transmission control element for varying the speed ratio between said pump and said hydraulic motor, said control means for varying the current through said field coil including a current-control element for joint and simultaneous regulation of the current through said field coil and said ratio in a predetermined relationship to minimize battery drain.

3,885,205
CONTROLLED ROTOR MOTOR

Robert Helmer, Setauket, N.Y., assignor to The Enercon Corporation, Setauket, N.Y.

Filed Nov. 16, 1972, Ser. No. 307,013
Int. Cl. H02k *17/00*
U.S. Cl. 318—302 **12 Claims**

1. An electric motor for driving a mechanical load comprising: a stationary housing; a first rotatable means wholly comprising the secondary of said motor extending axially of said housing and being rotatable in a selected direction for driving said load; a second rotatable means having slotted laminations and field coil windings therein surrounding said first rotatable means and extending axially in said housing for magnetically rotating said first rotatable means in one direction when said first rotatable means coupled to said load, a hardened high hysteresis steel ring being mounted on said second rotatable means for rotation therewith; said second rotatable means being rotatable in a direction opposite to that of said first rotatable means; control means comprising a plurality of

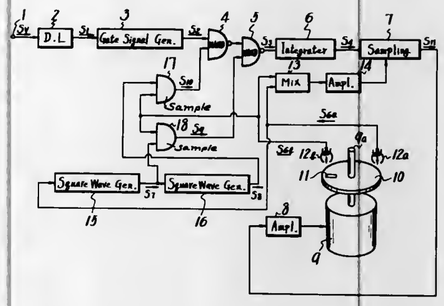


electromagnets mounted on said stationary housing for retarding the rotation of said second rotatable means to vary the speed of rotation of said first rotatable means in said selected direction.

3,885,206
PHASE CONTROL SYSTEM FOR ROTARY MEANS

Takeshi Hort, Chigosaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 12, 1973, Ser. No. 424,073
Claims priority, application Japan, Dec. 18, 1972, 47-126865
Int. Cl. H02p *5/16*
U.S. Cl. 318—314 **8 Claims**



1. A phase control system for a rotary member comprising: reference signal generating means for generating a reference signal representing a predetermined rotary phase relationship for said rotary member; position signal generating means disposed to sense when said rotary member rotates to predetermined angular positions and to generate first and second position signals in response thereto;

square-wave signal generating means for generating a square-wave signal which has a predetermined phase relation with respect to the first position signal generated by said position signal generating means;

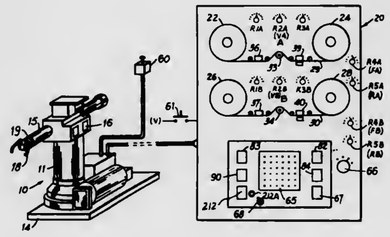
comparator means for comparing the second position signal generated by said position signal generating means with the square-wave signal, said comparator means exhibiting a first condition when the second position signal is in phase leading relationship with respect to said square-wave signal, a second condition when the second position signal is in phase lagging relationship with respect to said square-wave signal, and a third condition when the second position signal is in a predetermined phase range with respect to said square-wave signal; and

control signal generating means for generating a control signal to control the rotation of said rotary member in accordance with the phase relationship between said reference signal and at least one of said first and second position signals and further in accordance with the condition exhibited by said comparator means.

3,885,207
OPTIMIZED EDITING SYSTEM FOR A SERVO CONTROLLED PROGRAM RECORDING SYSTEM

Clayton Du Bosque, Jr., New Canaan, Conn., and Jeffrey Lowenson, Annandale, Va., assignors to AMF Incorporated, White Plains, N.Y.

Filed Jan. 17, 1973, Ser. No. 324,409
Int. Cl. G05b *19/42*
U.S. Cl. 318—568 **23 Claims**



1. Work performing apparatus having a control system for providing signals that control the movements of a work performing unit wherein said control system includes first and second recording mechanisms each having means for recording and for sensing signals on a respective movable recording medium associated therewith and having means for coupling sensed signals from said first or second mechanisms to said work performing unit thereby to control its movements in response to the sensed signals, and means for operating the recording mechanisms of the apparatus to sense a recorded cycle of signals on a recording medium associated with the first recording mechanism and to record the sensed signals onto the recording medium associated with the second recording mechanism; the improvement in said control system comprising:

mode selector means constraining said work performing unit to execute movements corresponding to a playback of said recorded cycle of signals on said first recording medium while transcribing said signals on said second recording medium; and

control means for selectively modulating the playback of said recorded cycle of signals on said first recording medium to selectively optimize the movements of said work performing unit and correspondingly modulate said transcribed cycle of signals on said second recording medium to provide a recorded program of said optimized movements of said work performing unit on said second recording medium.

3,885,208
DEVICE FOR AUTOMATIC THERMOCHEMICAL ANALYSIS

Guy Berthelot, Ivry; Philippe Guillot, Versailles, and Jean-Jacques Perez, Chatillon, all of France, assignors to Commissarariat a L'Energie Atomique, Paris, France

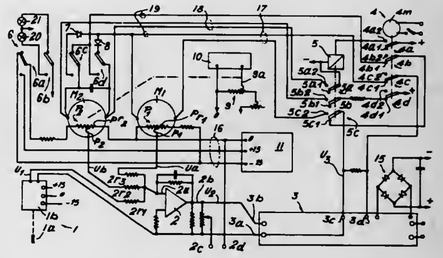
Filed Sept. 17, 1973, Ser. No. 397,728
Claims priority, application France, Oct. 2, 1972, 72.34888
Int. Cl. G05b *11/32*
U.S. Cl. 318—625 **6 Claims**

1. A device for the automatic thermochemical analysis of the concentration of chemical substances in solution, wherein said device comprises in combination:

a temperature detector which delivers a linear voltage as a function of the temperature of the solution,

an elctronic summation device controlled by the linear voltage of the detector,

two servomechanisms, the first servomechanism being employed for the initial zero-resetting of the summation device and the second servomechanism being employed for zero-resetting the unbalance voltage which is measured at absolute value at the output of the summation device,



an amplifier which amplifies the output voltage of the summation device, said voltage being applied to the servomechanisms,

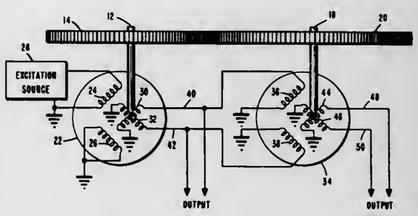
a programmer for the sequential starting of the servomechanisms,

a reverser for controlling the direction of the thermochemical reaction of the solution, said reverser being inserted in the second servomechanism.

3,885,209
TWO SPEED CONTROL SYSTEMS

Howard Lazarus, Syosset, N.Y., assignor to Astrosystems, Inc., Lake Success, N.Y.

Filed Dec. 27, 1973, Ser. No. 428,772
Int. Cl. G05b *11/12*
U.S. Cl. 318—692 **7 Claims**



1. In a two-speed control system, apparatus for generating two-speed position signals, comprising:

a. first and second rotatable shafts;

b. mechanical means coupling said second shaft to said first shaft and causing the angle of rotation of said second shaft to be linearly proportional but unequal to the angle of rotation of said first shaft;

c. a first transducer mechanically coupled to said first shaft and producing a plurality of first output voltages indicative of the angle of rotation of said first shaft;

d. a second transducer mechanically coupled to said second shaft and having its input electrically coupled to the output of said first transducer, said second transducer being excited by said first output voltages and producing a plurality of second output voltages indicative of the difference between the respective angles of rotation of said first and second shafts.

3,885,210
DRIVE CIRCUITS FOR STEPPING MOTORS

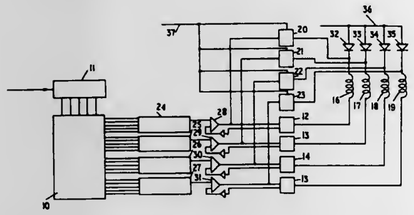
Alan Burnett, Coventry, England, assignor to Wickman Machine Tool Sales Limited, Coventry, Warwickshire, England

Filed Nov. 21, 1973, Ser. No. 418,064

Claims priority, application United Kingdom, Dec. 6, 1972, 56204/72

Int. Cl. H02k *37/00*

U.S. Cl. 318—696 **4 Claims**



1. A drive circuit and a stepping motor of the kind incorporating a plurality of windings which are energized in sequence to effect the required stepping movement of the motor, said drive circuit comprising means for selectively varying the current flowing in each winding in unequal incremental steps between zero and a maximum value, and means permitting selection of the magnitude of each incremental step independently of the other incremental steps, so as to enable the incremental steps to be set independently to match the non-linear characteristic of the motor to obtain equal incremental steps of the motor.

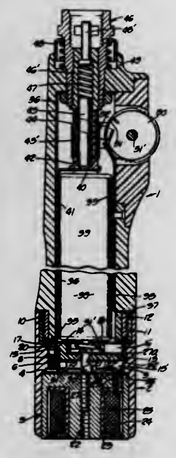
3,885,211
RECHARGEABLE BATTERY-OPERATED ILLUMINATING DEVICE

Jeno B. Gutai, Thousand Oaks, Calif., assignor to Statham Instruments, Inc., Oxnard, Calif.

Filed Sept. 16, 1974, Ser. No. 506,104

Int. Cl. F21l *7/00*; **H02m** *45/04*

U.S. Cl. 320—2 **7 Claims**



1. A rechargeable battery-operated device, comprising a tubular housing, a secondary electromagnetic coil including a metallic core, a first terminal and a second terminal connected to said coil, a coil spring positioned in said tubular housing adjacent to said secondary coil, an electrical connection between said spring and the first terminal, a first electrical conduit connected to said first terminal and to said spring and extending along the interior of said housing, a rectifier positioned adjacent to said secondary and connected to the said second terminal, a second electrical conduit connected to said rectifier and extending along the said housing, a third electrical conduit electrically connected to said second electrical conduit, a power takeoff comprising a first power takeoff terminal and a second power takeoff terminal, said takeoff including an insulating tubular member, a first plunger and a second plunger in said tubular member, a second coil spring in said tubular member positioned between said first and second plungers, said first plunger extending through one end of said insulating tubular member and the second plunger extending through the other end of said tubular member, an insulating cap mounted on the extending end of said second plunger, the first plunger constituting one terminal of a power takeoff, a coil rheostat mounted on the exterior of said last-named tubular member, one end of said rheostat coil extending through said last-named tubular member and electrically connected to said second plunger, a rheostat wheel rotatably mounted in said housing adjacent to said rheostat, an electrical contact on said wheel, said first conduit making electrical contact with said contact on said wheel, a rheostat wiper mounted on said wheel and making electrical contact with said contact on said wheel and said rheostat coil, said third electrical conduit electrically connected to said second electrical conduit and positioned adjacent to said cap, said second electrical conduit connected to a second power takeoff terminal.

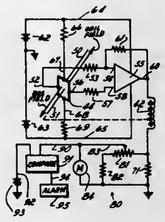
3,885,212
SECTOR FLUX NULL CURRENT MEASURING APPARATUS AND METHOD

William L. Herbert, Columbus, Ohio, assignor to Halmar Electronics, Inc., Columbus, Ohio

Filed Apr. 5, 1973, Ser. No. 348,272

Int. Cl. G01r *19/00*, *33/06*

U.S. Cl. 324—117 H **5 Claims**



4. An apparatus for measuring current in a bus comprising, in combination:

a field-sensing element for sensing the field at one point in space and producing a signal having a magnitude proportional to the field which passes therethrough and produced by the current being measured, said field-sensing element being fixedly located in the field produced by the current being measured at a point where fields produced by other conducting buses are substantially perpendicular to the field produced by the current being measured;

a pair of unconnected non-annular field-concentrating members located on opposite sides of said field-sensing means for concentrating only a sector of the field produced by the current being measured;

an electrical conducting coil wound around said field-concentrating members, said coil surrounding said field-sensing element and field-concentrating members on both sides of said field-sensing element;

an amplifier means electrically responsive to said signal from said field-sensing element for producing an amplified signal at the output of said amplifier;

means for connecting said amplifier output to said coil to produce a field in said field-concentrating members in a direction opposite the field produced by the current being measured; and

means to measure said amplified signal, the magnitude thereof being proportional to the current being measured.

3,885,213
MEASURING PROBE FOR INTENSE AND VARIABLE ELECTRIC CURRENTS

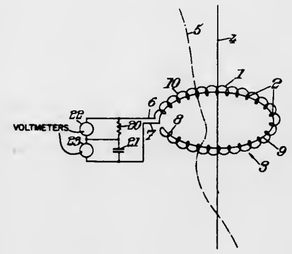
Françoise Rioux, and Christian Rioux, both of Cachan, France, assignors to Agence Nationale de Valorisation de la Recherche, Paris, France

Filed Jan. 9, 1973, Ser. No. 322,177

Claims priority, application France, Jan. 14, 1972, 72.01226

Int. Cl. G01r *1/22*

U.S. Cl. 324—127 **12 Claims**



1. Probe for measuring intense and variable electric currents in a conductor, said probe comprising a metallic wire coil having an insulating core and being arranged so as to form a plurality of turns of the same cross-section which are distributed regularly along an axis adapted to surround the conductor traversed by the variable current to be measured so that the variable current induces a measuring signal in said turns, said metallic wire coil comprising first and second end terminals, and a measuring impedance being directly arranged between said terminals, said measuring impedance comprises a resistor and a capacitor connected in series, a first volt meter means being connected across said resistor and a second volt meter means being connected across said capacitor, the value of the resistance of said metallic wire being at least ten times greater than the value of said measuring impedance.

3,885,214
MOVING COIL SYSTEM FOR LIGHT-BEAM GALVANOMETERS, LIGHT-BEAM OSCILLOGRAPHS AND THE LIKE

Gerd Kuligowski, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

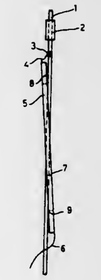
Filed Aug. 27, 1973, Ser. No. 391,584

Claims priority, application Germany, Aug. 29, 1972, 2242957

Int. Cl. G01r *5/02*, *1/00*

U.S. Cl. 324—154 R **3 Claims**

1. A moving coil system for a light-beam galvanometer, light-beam oscillograph and the like comprising a suspending element defining a longitudinal axis; a mirror securely attached to said suspending element; and, a single undivided rotating coil defining a window, said rotating coil being securely mounted on said suspending element in a position inclined with respect thereto so as to cause said suspending element to extend through said window to conjointly define an acute angle therewith and to cause the composite of said



suspending element and said rotating coil to be balanced with respect to said longitudinal axis.

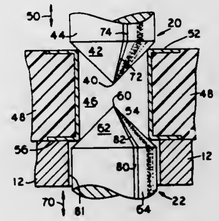
3,885,215
ELECTRODE ASSEMBLY FOR MEASURING THE EFFECTIVE THICKNESS OF THRU-HOLE PLATING IN CIRCUIT BOARD WORKPIECES OR THE LIKE

Jacques J. Weinstock, Flushing, N.Y., assignor to Unit Process Assemblies Inc., Syosset, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,396

Int. Cl. G01r *1/06*, *27/14*

U.S. Cl. 324—158 P **5 Claims**



1. An electrode construction for use in apparatus for measuring the conductivity of a plated coating in a thru-hole in a circuit board workpiece,

a first electrode assembly compositely constituted of a first generally conically shaped electrode contact element of circumferential extent intermediate its apex and base sufficient to engage the principal portion of one of the defining marginal perimetric edges of a plated thru-hole in essentially line contact therewith and a second electrode contact element electrically isolated from said first electrode element and longitudinally extending intermediate the apex and base of said first conically shaped electrode element, said second electrode contact element having an exposed circumferential extent sufficient to engage substantially all of the remaining portion of said defining marginal perimetric edge of said plated thru-hole,

a second electrode assembly selectively disposed in longitudinal coalignment with the first electrode assembly and compositely constituted of a third generally conically shaped electrode contact element of circumferential extent intermediate its apex and base sufficient to engage the principal portion of the other defining marginal perimetric edge of said plated thru-hole in essentially line contact therewith and a fourth electrode contact element electrically isolated from said third electrode element and longitudinally extending intermediate the apex and base of said third conically shaped electrode element, said

fourth electrode contact element having an exposed circumferential extent sufficient to engage substantially all of the remaining portion of said other defining marginal perimetric edge of said plated thru-hole,

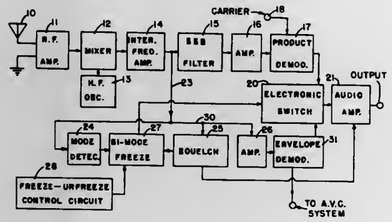
and means for selectively positioning said first and second electrode assemblies in electrically conductive relation with said defining marginal perimetric edges of a plated thruhole in a circuit board workpiece interposed therebetween.

3,885,216

BIMODE COMMUNICATION SYSTEM WITH FREEZE CIRCUIT

Leonard R. Kahn, 70 N. Grove St., Freeport, N.Y. 11520

Filed Oct. 19, 1973, Ser. No. 407,891
Int. Cl. H04b *1/40*
U.S. Cl. 325—22 **7 Claims**



1. A switching control circuit for switching a transmit-receive circuit into a latching condition in one of two modulation modes responsive to the sensed mode of the received signal comprising:

a. a first normally conducting gate circuit for receiving the sensed mode signal and for delivering a signal when the amplitude modulation wave is sensed;

b. a storage capacitor connected to the first gate circuit for collecting and holding a charge when a signal is passed by the first gate circuit;

c. a comparison circuit coupled to the storage capacitor for comparing the voltage it produces with a reference voltage;

d. a second normally conducting gate connected to the comparison circuit for transmitting the sensed mode signal; and,

e. switching means including a bistable multivibrator coupled to the comparison circuit in series with the second gate circuit for latching the multivibrator into a conductance condition which applies a signal to the transmit-receive circuit to cause the transmit portion to operate in the mode of the received signal.

3,885,217

DATA TRANSMISSION SYSTEM

Roberto Cintron, Bronx, N.Y., assignor to Computer Specifics Corporation, New York, N.Y.

Filed July 11, 1973, Ser. No. 378,190
Int. Cl. H04l *9/00*
U.S. Cl. 325—26 **43 Claims**

1. A data transmission system for transmitting data in conjunction with a program source material signal comprising:

means for repetitively superposing the same data signal on the program source material signal to form a combined signal, said data signal being synchronous with a given frequency and having an amplitude level within the amplitude range of the ambient noise appearing in said program source material signal;

means for transmitting said combined signal;

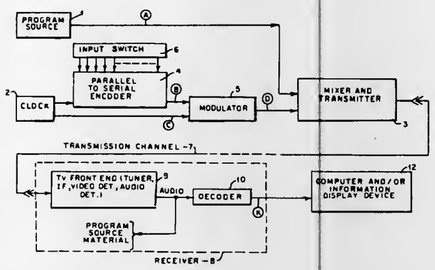
means for receiving and operating on said combined signal to extract said data signal from said combined signal, said receiving means comprising:

synchronous sampling means for amplitude sampling said combined signal in synchronism with the synchronous frequency of said data signal;

generating means coupled to said synchronous sampling means for generating signals corresponding to the amplitude values of respective samples of said data signal;

storage means;

arithmetic means coupled to said storage means and to said generating means for adding the amplitude value of a sample corresponding to a given portion of the data signal



received from said generating means with the algebraic sum of the sample amplitude values corresponding to the previous occurrences of said given portion of the data signal during the previous repetitive occurrences of said data signal, said algebraic sum being received from said storage means, and for storing the resulting algebraic sum values of said samples in said storage means;

means coupled to said storage means and responsive to said sum values of said data signal samples reaching a predetermined level for indicating the presence of valid data; and

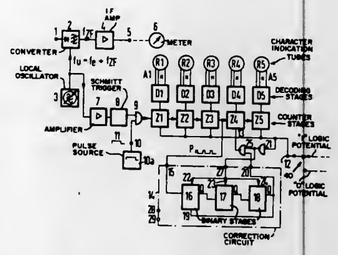
output utilization means for generating a representation corresponding to said valid data.

3,885,218

SUPERHETERODYNE RECEIVER HAVING A DIGITAL INDICATION OF THE RECEIVED FREQUENCY

Diethard Pfab, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 6, 1973, Ser. No. 348,684
Claims priority, application Germany, Apr. 10, 1972, 2217210
Int. Cl. H04b *1/16*; **G01r** *23/10*
U.S. Cl. 325—455 **8 Claims**



7. A superheterodyne receiver which provides a digital indication of the receiving frequency by correcting the count of the local oscillator frequency to reflect the frequency offset of the local oscillator frequency with respect to the receiving frequency, said receiver comprising: a local oscillator; a multi-

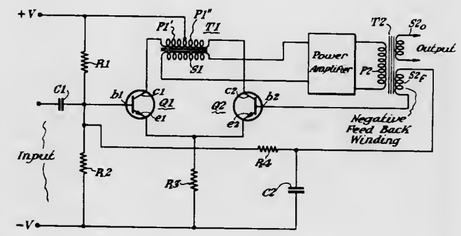
stage counter; means connecting said oscillator and said multi-stage counter and deriving a pulse train from the oscillations of said oscillator for operating said counter; means connected to said multi-stage counter for decoding and displaying the count thereof; and a correction circuit connected to first and second stages of any two adjacent stages of said multi-stage counter and operable in response to the occurrence of the first output pulse of said first stage to provide a number of counting pulses which is proportional to the frequency offset to subsequent stages of said multi-stage counter.

3,885,219

FAIL-SAFE ELECTRONIC AMPLIFYING CIRCUIT

Thomas C. Vaughn, Plum Borough, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Jan. 22, 1973, Ser. No. 325,651
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **8 Claims**



1. An electronic circuit comprising, a first and a second transistor each having an emitter, a collector and a base electrode and interconnected as a differential amplifier, a source of a.c. signals applied to the input of said first transistor of said differential amplifier, said emitter electrodes of said transistors are coupled to a first source of biasing voltage by a common resistor, said collector electrodes of said transistors are coupled to a second source of biasing voltage by a transformer, said base electrodes of said transistors are respectively coupled to said a.c. signals and to negative feedback signals by impedance means, a difference signal derived from the output of said first and said second transistors of said differential amplifier and applied to the input of a power amplifier, a feedback circuit applying d.c. operating potential to said second transistor of said differential amplifier, and the output of said power amplifier supplies said negative feedback signals over said feedback circuit to the input of said second transistor of said differential amplifier and provides an a.c. output signal which is the maximum gain times the difference between said a.c. input signals and said negative feedback signal plus the gain of said power amplifier to a load when and only when each critical circuit or component is functioning properly in a safe manner.

3,885,220

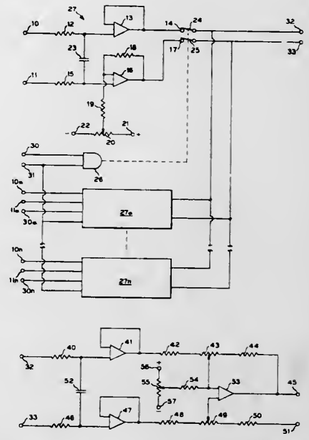
BUFFERED MULTIPLEXER WITH DIFFERENTIAL AMPLIFIER

Dale A. Fluegal, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 4, 1973, Ser. No. 421,508
Int. Cl. H03f *3/68*; **H03k** *17/00*
U.S. Cl. 330—30 R **5 Claims**

1. A multiplexer comprising:

an output circuit comprising first and second buffer amplifiers, first and second output terminals, a differential amplifier having first and second inputs and an output, means connecting the output of said differential amplifier to said first output terminal, a first potentiometer connected between the output of said first amplifier and said first output terminal, a second potentiometer connected between the output of said second amplifier and said second output terminal, and means connecting the first and second inputs of said differential amplifier to the contactors of said first and second potentiometers, respectively; and



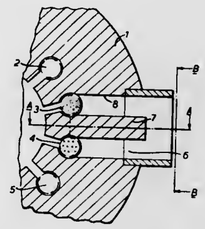
a plurality of input circuits, each comprising first and second input terminals, third and fourth buffer amplifiers, means connecting said first input terminal to the input of said third amplifier and said second input terminal to the input of said fourth amplifier, and circuit means including switching means to connect the outputs of said third and fourth amplifiers selectively to the inputs of said first and second amplifiers, respectively, of said output circuit.

3,885,221

COUPLING ARRANGEMENTS IN RESONANT DEVICES

Peter Frederick Lewis, Chelmsford, England, assignor to English Electric Valve Company Limited, Chelmsford, Essex, England

Filed Sept. 13, 1973, Ser. No. 396,859
Claims priority, application United Kingdom, Mar. 2, 1973, 10337/73
Int. Cl. H01j *23/32*, *23/20*
U.S. Cl. 333—83 R **10 Claims**



1. A resonant device having a plurality of resonant cavities in a common block at least two adjacent ones of which exhibit in operation magnetic fields of opposing phase, and a co-axial transmission line formed by an annular hole of at least substantially constant cross-sectional dimensions throughout its length extending into said block only to such depth that a portion only of the annular hole to one side of the inner wall forming member breaks into one of said two cavities and a portion only of the annular hole to the opposite side of said inner wall forming member breaks into the other of said two cavities to effect coupling to or from said device while leaving

said inner wall forming member integrally joined with said block.

3,885,222

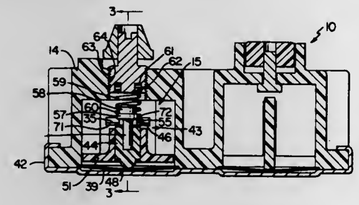
THERMOSTAT CONSTRUCTION

Siegfried E. Manecke, Indiana, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation-in-part of Ser. No. 260,107, June 6, 1972. This application Oct. 23, 1973, Ser. No. 408,678

Int. Cl. H01h *37/52*

U.S. Cl. 337—338 **20 Claims**



1. A control device having a housing, a pair of thermostatically operated electrical switch means carried by said housing in spaced apart side-by-side relation, said housing having external terminals respectively for said pair of switch means, and a rigid lead means carried internally in said housing and electrically interconnecting said pair of switch means in series, said rigid lead means having opposed ends and being secured to said housing intermediate said ends thereof to dispose said ends in cantilever fashion with said ends respectively forming part of said switch means.

3,885,223

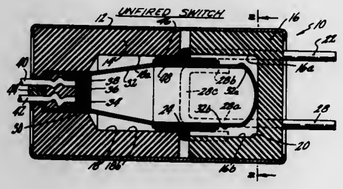
EXPLOSIVELY OPERATED MULTI-CIRCUIT BAND SWITCH INCLUDING FLEXIABLE DIAPHRAGM BAG CONTACT

Alan N. Green, Cochranville, Pa., assignor to Colt Industries Operating Corp., Hartford, Conn.

Filed Apr. 11, 1974, Ser. No. 460,016

Int. Cl. H01h *37/76*; **F42b** *5/08*

U.S. Cl. 337—406 **4 Claims**



1. A switch comprising:

a housing having a cavity therein;

a tube mounted in the housing so as to be positioned within the cavity, the tube having a collapsed portion in the cavity with an oblong transverse cross section and diametrically opposed ridges extending in the direction of the tube's axis;

at least one band, made of an electrically conductive material, at least partially encircling the collapsed portion of the tube transverse to the tube's axis;

a pair of diametrically opposed electrical contact members mounted in the housing so as to protrude into the cavity in respective contact with the band adjacent the ridges; and

means to inflate the tube for causing the collapsed portion to assume a cylindrical shape, whereby the band will radially withdraw from and disconnect the contact members.

3,885,224

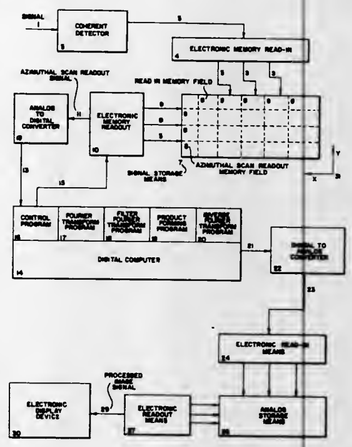
SIGNAL PROCESSING APPARATUS FOR IMAGING SCANNER

Carl N. Klahr, Lawrence, N.Y.

Continuation-in-part of Ser. No. 228,805, Feb. 24, 1972, Pat. No. 3,805,596. This application Sept. 13, 1973, Ser. No. 396,774

Int. Cl. G01s *9/66*

U.S. Cl. 340—5 MP **18 Claims**



1. An ultrasonic imaging scanner wherein a reflecting body in an ultrasonic propagation medium is scanned along a predetermined path or aperture by ultrasonic pulses to produce a processed image signal time function for high resolution imaging of said reflecting body with specified azimuthal resolved width, comprising in combination

a. at least one ultrasonic sensing transducer whose width in the azimuthal direction is less than the specified azimuthal resolved width

b. means for replication of said ultrasonic sensing transducer at a sequence of positions across said aperture, wherein the aperture length measured in units of the ultrasonic wavelength, must exceed the ratio of the maximum range of said reflecting body, to the specified azimuthal resolved width

c. at least one ultrasonic radiation transducer

d. means for successively pulsing said ultrasonic transducer wherein successive pulses have a determined phase relation to one another

e. means for detection of a sequence of ultrasonic pulse signal time functions, back reflected from said reflecting body and incident at said replicated sequence of sensing transducer positions, wherein the phase of said reflected pulse functions is preserved by said detection means

f. means for storage of said detected sequence of reflected ultrasonic pulse signal time functions in a doubly indexed memory array indexed by pulse transit time in one indexing dimension and by the sensing transducer position in the other indexing dimension

g. means for reading back said stored signal time function values in transposed order as a sequence of sets indexed by pulse transit time, wherein each set of signal amplitudes is arranged in serial order according to the sensing transducer azimuthal position coordinate

h. means for mathematical processing of said sequence of sets indexed by pulse transit time, by convolution calculation of said sequence of azimuthal position-dependent sets of reflected signal amplitudes with a prescribed filter function which is mathematically inverse to the filter function characterising a unit amplitude reflecting point return signal from said radiation transducer to said replicated sensing transducer positions in said ultrasonic propagation medium; said means including means for producing the fourier transform of the azimuthal position-dependent variation of each said set at each range corresponding to each pulse transit time, means for generating a fourier transform signal of said prescribed filter function at each range, means for forming the product function of said fourier transforms, and means for inverse fourier analysis of said product function at each range, said inverse fourier analysed function comprising said processed image signal time function for high resolution imaging.

3,885,225

BROAD LINE SEISMIC PROFILING

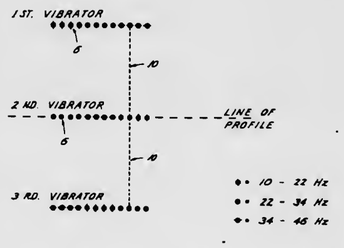
Nigel A. Anstey, Sevenoaks, Kent, England, and M. Turhan Taner, Houston, Tex., assignors to Seiscom Delta Inc.

Filed July 19, 1973, Ser. No. 380,682

Claims priority, application United Kingdom, July 21, 1972, 34164/72

Int. Cl. G01v *1/22*

U.S. Cl. 340—15.5 CP **28 Claims**



1. A method of obtaining cross-dip information in seismic reflection profiling by the simultaneous radiation, from a plurality of points spaced at different distances from the line of profile, of swept frequency seismic signals from each of the spaced points differing in frequency from the seismic signals of the other spaced points so that the signals, after transmission and reception along different laterally spaced travel paths, may be identified as to their particular sources and travel paths on the basis of a frequency discrimination so that the signals can be processed to obtain cross dip information.

3,885,226

AIRCRAFT MULTIPLE ANTICOLLISON LIGHT SYSTEM

William J. Lang, New Port Beach; Gerald K. Brewer, Anaheim; Richard B. Fritz, Laguna Hills, and Frederick W. Eggers, Huntington Beach, all of Calif., assignors to Symbolic Displays, Inc., Irvine, Calif.

Filed Oct. 15, 1973, Ser. No. 406,592

Int. Cl. G08g *5/00*

U.S. Cl. 340—27 R **20 Claims**

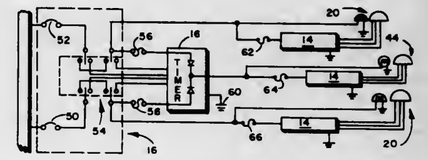
1. Apparatus for providing a warning light system to an aircraft having electrical power, comprising:

at least one position indicator light and high intensity light mounted on the aircraft;

wires internally located within said aircraft leading to the respective wing tip areas for electrical connection to the position indicator lights and the high intensity light;

means connected to said wires to generate a signal of a pre-established frequency thereon;

means to connect said wires to the power of the aircraft for powering said position indicator lights and said high intensity lights while said pre-established frequency signal is being generated; and,



frequency detection means connected to said wires and said high intensity light for responding to said signal which is generated to cause said high intensity light to be lit at the same time said position indicator light is lit.

3,885,227

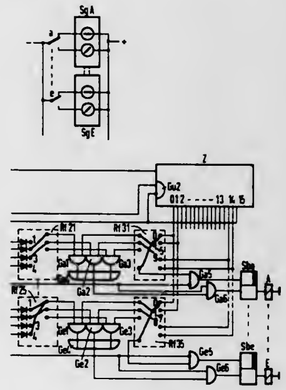
STREET TRAFFIC SIGNALLING SYSTEM

Friedrich-Gerhard Moissl, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 20, 1972, Ser. No. 245,791

Int. Cl. G08g *1/07*

U.S. Cl. 340—41 R **16 Claims**



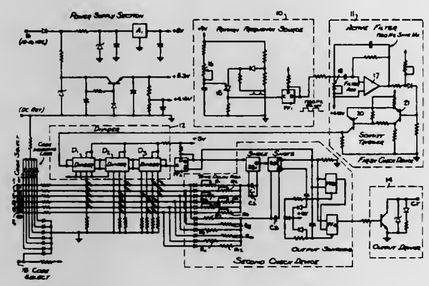
1. A street traffic signalling system having a plurality of mutually independently selectable signal phases for traffic control at an intersection, particularly a traffic-dependent selection, comprising a plurality of traffic signal units, each for a respective traffic direction, means for each signal unit for actuating respective signal lights thereof to provide the respective desired phases therefor, timing means having a plurality of timing outputs, a plurality of logical linkages for each selectable signal phase, operatively connecting predetermined timing outputs of said timing means with the cooperable actuating means for such signal phase, for providing respective protective periods prior to actuation of the go light associated therewith, phase-responsive switch means for each respective selectable phase, operative upon selection of such phase to determine the go light thereof to be actuated, and to initiate termination of the signal phase immediately preceding such new phase, and second phase responsive switch means for each respective selectable phase, operatively connected to logical linkages of other signal phases for effecting a selection of the timing outputs and connecting linkages therefor associated with such other signal phases, in the event of a transition from the associated phase to a new phase, whereby a predetermined time period is provided between termination of such immediately preceding signal phase and actuation of the se-

lected go light of the new phase, in dependence upon the said immediately preceding phase so terminated.

3,885,228
FAIL-SAFE ELECTRONIC ENCODER FOR SELECTIVELY OPERATING RAILWAY SIGNAL INDICATOR

Martin J. Katz, 30 East Dr., Old Bethpage, N.Y. 11714, and William A. Gesualdi, 17 Smithtown Cres., Smithtown, N.Y. 11787

Filed June 5, 1973, Ser. No. 367,109
Int. Cl. B611 *7/08*
U.S. Cl. 340—47 **10 Claims**



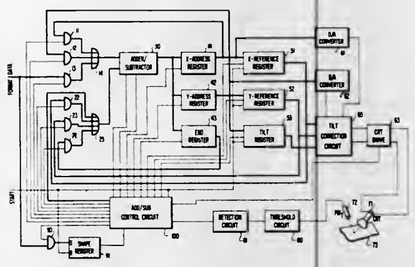
1. A fail-safe electronic encoder system adapted to selectively produce code tones of different frequency for operating a frequency-responsive railway signal indicator, said indicator displaying signals whose aspect is determined by the frequency of the applied code tone except for the most restrictive aspect which is presented only in the absence of a code tone, said system comprising:
   A. a high-frequency primary source;
   B. a programmable frequency divider coupled to the output of said source and including means to select one of several operating ratios whereby the divider yields any one of a plurality of low-frequency code tones each having a different frequency, said code tones having normal frequency values;
   C. a drive stage coupled to the output of said divider to supply the selected code tone to said indicator, and
   D. fail-safe check means to inhibit the output of said system in the event the frequency of said source deviates beyond a narrow tolerance range or the frequency or the selected code tone yielded by said divider departs from its normal value, whereby no code tone is supplied to said indicator in either event, said fail-safe check means yielding an output only if the input thereto is correct and the check means is functioning properly, the output being inhibited in the event of an incorrect input to the check means or a malfunction of the check means.

3,885,229
DOCUMENT SCANNING APPARATUS

Michihiko Negita, and Yoshiyasu Kikuchi, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Oct. 25, 1973, Ser. No. 409,540
Claims priority, application Japan, Oct. 28, 1972, 47-108189; Oct. 28, 1972, 47-108190
Int. Cl. G06k *9/04*
U.S. Cl. 340—146.3 H **7 Claims**

1. A document scanning apparatus comprising:
means for receiving control data such as positional data including a scanning position coordinate used for scanning information on a document, and storing the control data as present positional data for scanning the document, said means for storing the control data including an X-address register and a Y-address register for storing X and Y coordinate positional data;
means for scanning information on the document according to said present positional data;
arithmetic means responsive to said means for scanning for periodically adding or subtracting a fixed quantity from the contents of said X-address register until the X-coordinate of said reference mark is detected and for periodically adding or subtracting a fixed quantity from the contents of said Y-address register until the Y-coordinate of said reference mark is detected;

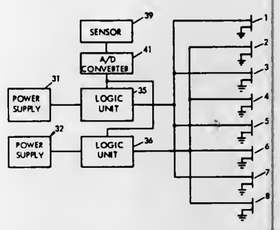


means for storing as a detected positional data the present positional data used when the reference mark is detected, said means for storing the detected positional data including an X-reference register and a Y-reference register for storing X and Y present coordinate positional data, said data being transferred into said X-reference register and said Y-reference register upon the detection of the X-coordinate and the Y-coordinate, respectively, of said reference mark; and
means for correcting the document stopping position error depending on the detection of said reference mark to carry out the document scanning.

3,885,230
SYSTEM FOR IMPROVING THE RELIABILITY OF INDICATOR ARRANGEMENTS

Paul Joseph Merk, Chomedey, Quebec, Canada, assignor to Canadian Marconi Company, Montreal, Quebec, Canada

Filed May 24, 1973, Ser. No. 363,555
Int. Cl. H04q *1/28*
U.S. Cl. 340—166 EL **9 Claims**



1. A system for improving the reliability of indicators;
each indicator comprising an illuminable path;
each illuminable path comprising a series of light sources sequentially arranged and adapted to be turned on and off in sequence;
said system comprising;
a plurality of n separate power supplies for continuously energizing said light sources;
the number of light sources in each series being greater than *n;*

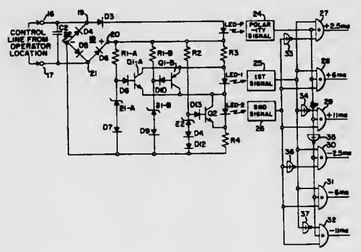
the 1st, 2nd, 3rd, . . . *n*th power supplies being respectively adapted to energize the 1st, 2nd, 3rd . . . *n*th sources in each series;
the 1st power supply being further adapted to energize the *n*+1st, 2*n*+1st, 3*n*+1st . . . sources in each series;
the 2nd power supply being further adapted to energize the *n*+2nd, 2*n*+2nd, 3*n*+2nd . . . sources in each series;
the 3rd power supply being further adapted to energize the *n*+3rd, 2*n*+3rd, 3*n*+3rd . . . sources in each series;

the *n*th power supply being further adapted to energize the 2*n*th, 3*n*th, 4*n*th . . . sources in each series.

3,885,231
REMOTE CONTROL CIRCUIT HAVING LIGHT COUPLING

Thomas W. Gaddy, Florence, S.C., and Larry H. Wohlford, Rustburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Oct. 19, 1973, Ser. No. 407,905
Int. Cl. H03k *17/60*
U.S. Cl. 340—172 **7 Claims**

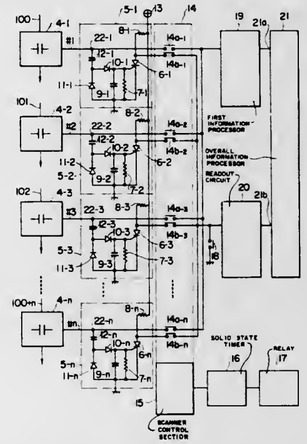


1. An improved control circuit for responding to a direct current of selected magnitude and polarity applied to a control line from a remote operator location, said improved control circuit comprising:
   a. first and second input terminals adapted to be connected to said line;
   b. a rectifier bridge having input terminals connected to said first and second input terminals and having positive and negative output terminals;
   c. a first current responsive, light producing device connected between one of said bridge input terminals and one of said bridge output terminals for producing light in response to current flow of a selected polarity;
   d. a first resistor having one end connected to said positive bridge output terminal;
   e. a second current responsive, light producing device having one end connected to the other end of said first resistor;
   f. a second resistor connected between the other end of said second light producing device and said negative bridge output terminal;
   g. a first transistor having an emitter, a base, and a collector;
   h. means connecting said transistor emitter and collector respectively to said ends of said second light producing device;
   i. a first reference circuit connected between said positive and negative bridge output terminals for providing a reference voltage;
   j. means connected between a point of said reference circuit and said transistor base for causing said transistor to have a first conductive state in response to current at said bridge output terminals below a selected magnitude, and for causing said transistor to have a second conductive state in response to current at said bridge output terminals above said selected magnitude;
   k. said second light producing device having first and second states depending upon the conductive state of said transistor;
   l. a first light sensitive device positioned in operative relation to said first light producing device for producing control signals in response to the presence and absence of light from said first light producing device;
   m. a second light sensitive device positioned in operative relation to said second light producing device for producing control signals in response to the presence and absence of light from said second light producing device;
   n. and a utilization circuit coupled to said light sensitive devices.

3,885,232
APPARATUS FOR THE TREATMENT OF YARN THICKNESS VARIATION SIGNALS

Tsugio Goto, Nobeoka, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1973, Ser. No. 343,980
Claims priority, application Japan, Mar. 24, 1972, 47-29893
Int. Cl. G11c *11/24;* **G06h** *3/05*
U.S. Cl. 340—173 R **4 Claims**



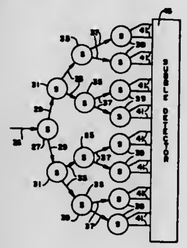
1. An apparatus for processing defect signals from a plurality of yarns wherein said signals may be applied to a digital processor, said apparatus comprising:
   a. a plurality of sensor means, each sensor means associated with one of said yarns for detecting a defect in said yarns;
   b. a plurality of memory means, each of said memory means coupled to a corresponding one of said sensor means for storing a defect signal produced by its corresponding sensor means;
   c. scanner means coupled to said plurality of memory means for cyclically sequentially sampling the signals stored in said memory means for subseqeunt output to said digital processor; and
   d. reset means for periodically resetting said memory means at the beginning of each sampling cycle; wherein each said memory means includes
   a thyristor, the anode thereof being coupled to said scanner means;
   a capacitor having one electrode connected to its corresponding sensor means;
   diode means coupled between the other electrode of said capacitor and the gate electrode of said thyristor, wherein said sensor means applies a pulse to the gate

of said thyristor through said capacitor and diode means, turning said thyristor on and thereby changing the potential on the anode thereof when a defect signal is sensed by said sensor means; wherein said thyristor remains on until reset by said reset means.

3,885,233
BUBBLE DETECTION SYSTEMS AND MULTIPLIERS USED THEREIN

Robert C. Minnick, Houston, Tex.; Paul T. Bailey, Creve Coeur; Robert M. Sandfort, St. Charles, both of Mo., and Warren L. Semon, Dewitt, N.Y., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 283,267, Aug. 24, 1972. This application Mar. 8, 1974, Ser. No. 449,500
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 ZA **11 Claims**

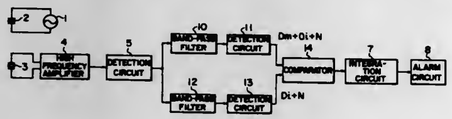


1. A magnetic bubble readout system comprising a field accessed input channel for receiving and transmitting magnetic data bubbles, a bubble multiplier connected to receive magnetic bubbles transmitted through said input channel and producing a plurality of simultaneous magnetic bubbles on different field accessed output bubble channels in responses to each data bubble received on said input channel, and bubble detection means connected to receive bubbles transmitted through said output channels and responsive to the bubbles received simultaneously through each of said output channels to generate a signal indication representing the presence or absence of each data bubble on said input channel and having a signal level dependent on the number of bubbles detected on said output channels.

3,885,234
ULTRASONIC WAVE TYPE ALARM DEVICE FOR DEPICTING A MOVING OBJECT

Yukio Fujimoto, Yachiyo, Japan, assignor to Uro Electronics Industries Co., Ltd., Tokyo-to, Japan

Filed Mar. 13, 1973, Ser. No. 340,743
Claims priority, application Japan, Mar. 17, 1972, 47-32111
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 A **3 Claims**

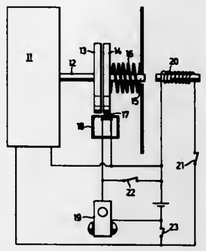


1. In an alarm apparatus wherein an ultrasonic wave is transmitted through the air and reflected by a moving person to create a Doppler effect signal falling within a given range of frequencies corresponding to the Doppler effect signal components of a moving person, and wherein an alarm is normally triggered in response to the presence of a received Doppler effect signal falling within said given range of frequencies, the improvement enabling said apparatus to reject (1) received Doppler effect signals caused by noise and having frequency components falling both within and beyond said given range of frequencies, and (2) received Doppler effect signals caused by an object other than a moving person and having frequency components substantially co-extensive with said first range of frequencies, said improvement comprising:
a first band-pass filter means operable upon a received Doppler effect signal for passing only a first band of relatively low frequency components within said given frequency range corresponding to the Doppler effect signal components of a person moving at a speed of approximately .4 to 1 meters per second;
a second band-pass filter means operable upon a received Doppler effect signal for passing a second band of frequency components different than and relatively higher than said first band and falling within said given frequency range;
means responsive to the difference between the outputs of said first and second band-pass filters for generating a difference signal representative thereof; and
means responsive to said difference signal for triggering an alarm.

3,885,235
RESETTABLE TIMER-ALARM DEVICE USED IN MONITORING GERIATRIC PATIENTS

Sten R. Bergstrom, Uppsala; Ake Dahlgren, Lidingo, and Kjell Roos, Uppsala, all of Sweden, assignors to Konsult AB Gerontologia, Lidingo, Sweden

Filed Feb. 9, 1973, Ser. No. 331,253
Claims priority, application Sweden, June 5, 1972, 7323/72
Int. Cl. G08b *21/00*
U.S. Cl. 340—279 **7 Claims**

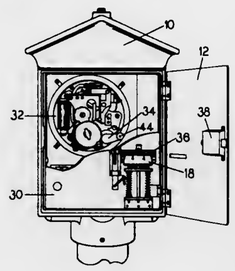


1. A device for use in geriatrics, medical care, and the like for the emission of a signal, for instance when a person not under continuous surveillance, hereinafter referred to as the patient, has suffered a reduction in his normal functional capabilities, for instance his mobility, comprising:
a. a timing device for continuous operation through a time cycle of a predetermined length,
b. an alarm device operatively connected with said timing device,
c. means releasably coupled to said timing device and having an initial position, for triggering an alarm by the alarm device at the end of said length of time,
d. a plurality of switch means for releasing the coupling of said triggering means to said timing device,
e. means for restoring the coupling between the triggering means and the timing device, including means for automatically resetting the triggering means into the initial position,
f. each of said switch means being connected to an object in the surroundings of the patient, said object being in daily routine use by the patient, and said switch means being unattached to the person of said patient, and
g. wherein said device is used for surveillance, for instance during the night, of industries, military installations or other installations where a watchman checks certain points along his patrol route, wherein each point comprises said switch means connected to the timing device in parallel, causing the triggering means to return to the initial position when the watchman performs the checking operation.

3,885,236
FIRE ALARM BOX

Robert Bruce McNair, 42 Hayward Ave., and Raymond J. Gallagher, 731 Oregon Ave., both of San Mateo, Calif. 94401

Filed Oct. 2, 1973, Ser. No. 402,873
Int. Cl. G08b *25/00*
U.S. Cl. 340—304 **5 Claims**



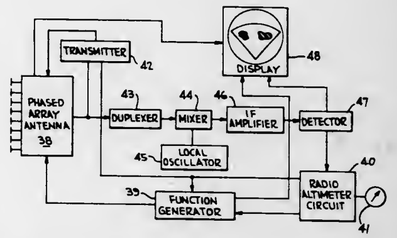
1. In an alarm box for signaling an alarm at a fire station or other remote location, said alarm box having a lever actuated signaling mechanism enclosed within the box, an inner door enclosing the signaling mechanism with the lever projecting through said inner door, and a generally locked outer door enclosing the lever, means for actuating the lever which comprises:
a card having a preselected magnetic pattern formed therein;
a slot formed through the outer door and adapted to allow passage of the card through said outer door;
a magnetic lock interior to the outer door and projecting through the inner door, said lock having a card receptacle designed to be solely fully engageable by the card having the preselected magnetic pattern;
means for actuating the lever to activate the signaling mechanism responsive to fully engagement of the card receptacle by the card; and
means for capturing the card upon full engagement of the card receptacle, said capture means being manually operable to release the captured card, said capture means located within the outer door to necessitate unlocking and opening of said outer door to manually release said card.

3,885,237
PHASED ARRAY SEQUENTIAL SWITCHING BETWEEN SHORT AND LONG DISTANCE TARGETS

George M. Kirkpatrick, 202 David Dr., Syracuse, N.Y. 13212

Division of Ser. No. 167,134, July 29, 1971, Pat. No. 3,781,878. This application Dec. 26, 1973, Ser. No. 427,684
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 W **5 Claims**

1. A phased array radar system carried aloft by aircraft for detecting long range and short range elevated targets, while suppressing ground clutter, the system comprising:
a phased array antenna;
transmitter means having its output connected to the antenna for radiating a beam outwardly;
function generating means having first input connected to altimeter means, the generating means being provided for generating a beam steering signal to the antenna, dependent upon the altitude of the antenna;
an output of the generating means connected to a second input of the antenna for steering the transmitted beam between at least two elevational angles, namely, a high beam and a low beam;
receiving means connected to the output of the antenna for processing an incoming signal;
recording means connected to the output of the receiving means for recording the processed signal;

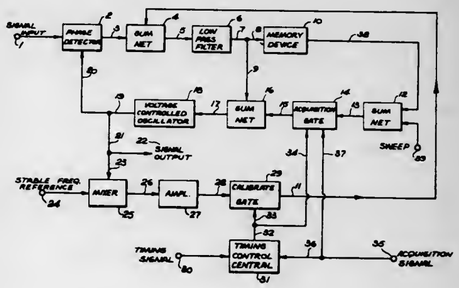


means connecting a second output of the function generating means to the recording means for blanking noise and signals, at relatively long range from a signal fed to the recording means from the receiving means, while the antenna transmits and receives on the high beam;
the function generating means further sequentially blanking the short range ground return from the recording means while the antenna transmits and receives on the low beam; and
whereby the sequential blanking prevents recording of false targets.

3,885,238
PHASE LOCKED LOOP RECEIVING SYSTEM WITH IMPROVED SIGNAL ACQUISITION

Albert M. Klein, Chatsworth, and Masaaki Fujita, Los Angeles, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,414
Int. Cl. G01s *7/40, 9/02*
U.S. Cl. 343—7 A **5 Claims**

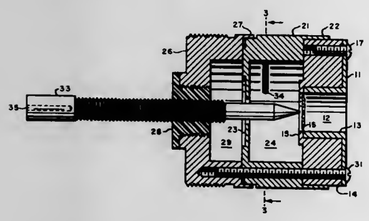


1. In a phase-locked loop receiving system having a tracking mode of operation for tracking a variable frequency received signal including an analog signal-controlled oscillator, means for comparing the phase of received signals with the phase of the output of said controlled oscillator to generate a first error signal, and means responsive to said first error signal for generating and applying a tuning signal which is a function of said first error signal to said controlled oscillator to form a closed tracking loop, the combination comprising:
a reference frequency source operating at a predetermined reference frequency within the range of expected fre-

quency variation of said variable frequency received

quency variation of said variable frequency received signal;
means for comparing said reference frequency with said output of said signal-controlled oscillator to produce a second error signal;
switching means arranged to substitute said second error signal in place of said first error signal to generate said tuning signal during a first predetermined time interval, thereby to establish a calibrating mode of operation;
a periodic wave generator and means for superimposing the output of said periodic wave generator on said tuning signal beginning at the outset of a second time interval to initiate a corresponding searching mode of operation;
and second switching means responsive to a predetermined condition of said first error signal during said second time interval, said predetermined condition corresponding to phase lock-on within said tracking loop, to remove said periodic wave from said tuning signal thereby to permit said loop to operate in phase lock.

3,885,239
PASSIVE MODULATING COMPONENT
John F. Zaleski, Pleasantville, N.Y., assignor to The Singer Company, Little Falls, N.J.
Filed Aug. 19, 1960, Ser. No. 50,805
Int. Cl. G01s *9/02*
U.S. Cl. 343—7.6 **12 Claims**

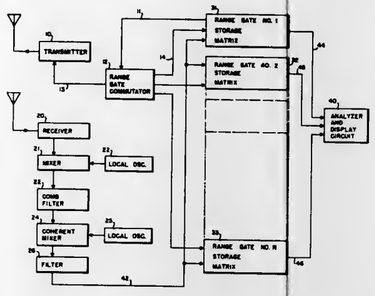


1. A passive modulating component comprising, a hollow conductive body, the interior surface of said body defining a cavity in the shape of a figure of revolution, a flexible conductive diaphragm mounted to constitute a portion of said body and positioned on the axis of said figure, a conductive septum perpendicular to said axis fastened to said body and having an axial aperture, and a conductive member positioned on said axis extending through but insulated from said body at a point opposite said diaphragm, and passing through said aperture in said septum.

3,885,240
STORAGE RADAR SYSTEM
Garold K. Jensen, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 27, 1967, Ser. No. 649,791
Int. Cl. G01s *9/44*
U.S. Cl. 343—9 **11 Claims**

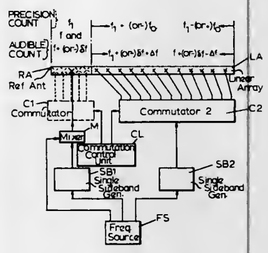
1. In a moving target detection apparatus, a system for storing a sequence of pulses whose amplitudes vary with the doppler information derived from the moving target, said system comprising:
a plurality of stationary storage elements equal in number to the number of pulses to be stored,
write-in means for sequentially gating in said sequence of pulses to be individually stored in said plurality of storage elements, said write-in means comprising a matrix of gating lines requiring simultaneous gating inputs on at least two of said lines to write into a given storage element, and
read-out means for sequentially reading out said stored pulses.

11. A phase-coherent pulse-doppler radar system comprising:
means to transmit a coherent, pulse r-f signal;
means to receive a doppler shifted pulse echo of said originally transmitted pulse signal;
means to mix said echo signal with an unshifted local signal to produce video pulse signals whose amplitudes vary with the doppler frequency;
a plurality of stationary storage elements equal in number



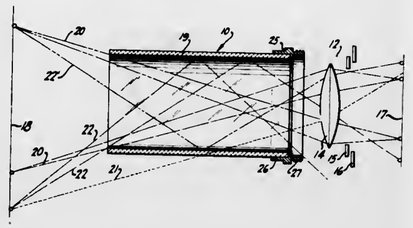
to the number of said video pulses to be stored and inter-connected to form a preselected number of groups equal in number to the number of ranges to be sampled;
write-in means for gating information into a selected number of said elements of each of said groups during each interpulse period;
read-out means for gating out information stored in each of said groups separately and successively; and
means to analyze said read-out pulses to determine radial velocity and acceleration of a target detected.

3,885,241
DOPPLER RADIO NAVIGATION BEACON SYSTEM ADAPTED FOR ANGLE DETERMINATION USING UNMODIFIED COMMUNICATION RECEIVER
Francis Giles Overbury, Cuffley, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Nov. 14, 1973, Ser. No. 415,809
Claims priority, application United Kingdom, Nov. 16, 1972, 528861/72
Int. Cl. G01s *1/38*
U.S. Cl. 343—106 D **9 Claims**



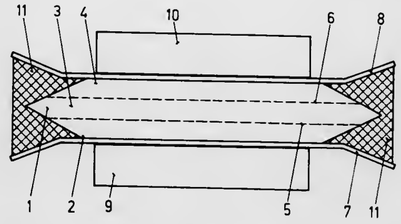
4. A radio navigation beacon comprising:
first means for radiating radio-frequency energy of a first frequency and a second frequency differing from said first frequency by δf where δf is an audio frequency;
and second means for simulating constant velocity linear scanning motion of a radiating source of radio-frequency energy of a third frequency differing from said second frequency by Δf, where Δf is a sub-audio frequency.

3,885,242
METHOD OF AND APPARATUS FOR PRODUCING PHOTOGRAPHIC VIGNETTES
Jack Duran, 25226 Soto Rd., Hayward, Calif. 94544
Filed Nov. 12, 1973, Ser. No. 414,663
Int. Cl. G03b *11/06*
U.S. Cl. 354—296 **12 Claims**



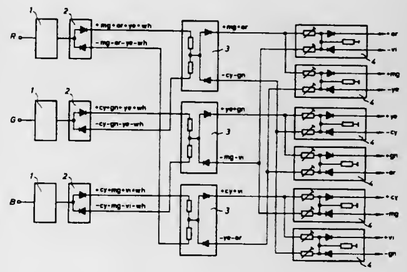
1. A method of taking photographic vignettes with a camera having an image-forming aperture and a focal plane, comprising the steps of: focusing the camera on a subject so that incident light therefrom enters said aperture and is directed thereby toward said focal plane to expose a photographic film disposed thereat; dividing incident light traveling directly from the vicinity of such subject toward said aperture into primary and secondary fields; concurrently refracting and reflecting the incident light forming said secondary field prior to its reaching said aperture to change the original character of the incident light forming said secondary field; and producing a vignette-type background generally about the subject on a photographic film disposed along the focal plane of such camera by directing said secondary field to the focal plane of such camera.

3,885,243
SEMICONDUCTOR DEVICE
Erich Weisshaar; Dieter Spickenbreuther, both of Baden, and Bernd Sitte, Magenwil, all of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland
Continuation-in-part of Ser. No. 265,521, June 23, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 399,738
Claims priority, application Switzerland, June 25, 1971, 9331/71
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 357—79 **15 Claims**



1. A semiconductor device comprising:
a pair of semiconductor diodes connected in series opposition, said diodes formed in a single monocrystalline silicon semiconductor wafer having three layers of alternating conductivity types including an inner layer and a pair of outer layers, said semiconductor wafer bevelled around its periphery on both sides thereof, and having non-metalized end surfaces, wherein said end surfaces of said semiconductor wafer have an edge doping concentration of at least 10^{19} atoms/cm^3, said wafer has a doping gradient at its end surfaces such that the doping concentration at a depth of 35 microns is greater than 10^{16} atoms/cm^3, the doping concentration of said inner layer is less than 10^{17} atoms/cm^3, preferably less than 10^{16} atoms/cm^3, and the thickness of said outer layers of said semiconductor device is less than 100 microns;
a pressure contact structure juxtaposed to each face of said semiconductor wafer, each pressure contact structure including a thin, dish-shaped element of a highly ductile and highly conductive metal one side of which engages one of said non-metalized end surfaces of said semiconductor wafer, and a thicker, disk-shaped conductive element abutting the exposed side of each dish-shaped element; and,
a band of flexible insulative material surrounding the periphery of said semiconductor wafer, said insulative material adhering said thin, dish-shaped elements to said semiconductor wafer.

3,885,244
METHOD OF PRODUCING COLOR CORRECTION SIGNALS AND COLOR SEPARATION SIGNALS
Hans Keller, Kiel-Wik, Germany, assignor to Dr. Ing. Rudolf Hell, Germany
Continuation of Ser. No. 99,011, Dec. 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 744,720, July 15, 1968, abandoned. This application Sept. 17, 1973, Ser. No. 398,197
Int. Cl. H04n *1/46*
U.S. Cl. 358—80 **7 Claims**



1. A method for producing at least one color signal useful in multi-color printing, comprising the steps of generating trichromatic primary color separation signals, forming difference signals between pairs of the trichromatic primary color separation signals, separating the difference signals according to their polarity such that each of the separated difference signals predominantly represents two of the six basic colors of the color space to thereby produce partial signals, inverting the partial signals to form inverted partial signals with the same amplitude but of opposite polarity from the existing partial signals, selecting a pair of signals from said partial signals and said inverted partial signals which in part represent the same basic color with the same polarity, and comparing the amplitudes of the signals within the selected pair to select the signal having the smaller amplitude of the pair, which signal substantially represents a single basic color useful in multi-color printing.

3,885,245

SCANNING DEVICE

Mitsuo Nakatani, Gibu, Japan, assignor to Sanyo Electric Company, Ltd., Osaka, Japan

Filed Sept. 11, 1972, Ser. No. 287,610

Claims priority, application Japan, Sept. 14, 1971, 46-72326; May 12, 1972, 47-47426

Int. Cl. G11b *21/02, 5/82*

U.S. Cl. 360—101 20 Claims

1. A scanning device for a magnetic recording or reproducing apparatus comprising:

a. a support member,

b. a rotary disc rotatably mounted on said support member,

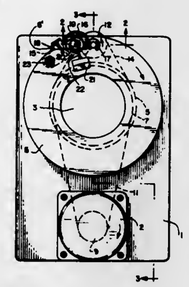
c. a motor means mounted on said support means for driving said rotary disc,

d. a radially-movable magnetic head mounted on said rotary disc,

e. an engaging member, fixedly attached to said support member, said support member having a circular surface with a center coinciding with the center of rotation of said rotary disc,

f. a planetary wheel means rotatably mounted on said rotary disc,

g. connecting means operatively coupling said engaging member and said planetary wheel means for rotating said planetary wheel means about its axis upon the rotation of said rotary disc, and



h. motive means operatively coupling said planetary wheel means and said magnetic head to translate the rotational movement of said planetary wheel means into the radial movement of said magnetic head, whereby the locus of movement of said magnetic head is a spiral.

DESIGN PATENTS

GRANTED MAY 20, 1975

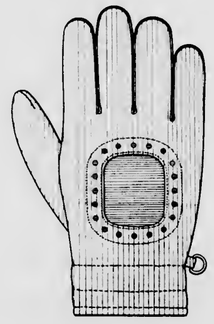
ERRATA

For CLASS	See PATENT NO.
D019-064	235,146

DESIGNS

MAY 20, 1975

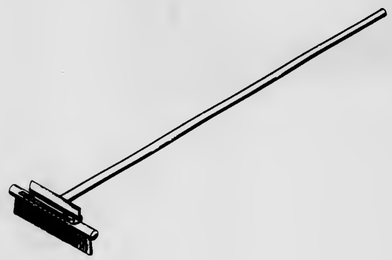
235,118
GLOVE
Warren L. Andrews, Chicago, Ill., assignor to Wells Lamont Corporation, Chicago, Ill.
Continuation-in-part of abandoned design application Ser. No. 361,789, May 18, 1973. This application Feb. 19, 1974, Ser. No. 443,705
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—276



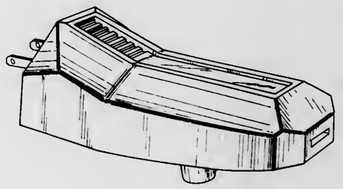
235,120
CHAIR
George Mergenov, Closter, N.J., assignor to Mohasco Corporation, Amsterdam, N.Y.
Filed Sept. 18, 1973, Ser. No. 398,498
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



235.119
COMBINATION BRUSH, SCRAPER AND WIPER
Delbert R. Gode, 1200 W. Burnsville Crosstown, Burnsville, Minn.
Filed Nov. 8, 1973, Ser. No. 414,528
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—6



235,121
SHAVING LATHER HEATER AND DISPENSER
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.
Filed Aug. 5, 1974, Ser. No. 494,487
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D6—95



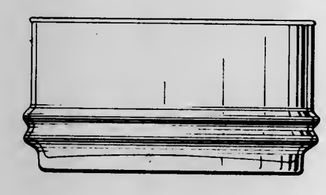
235,122

235,125

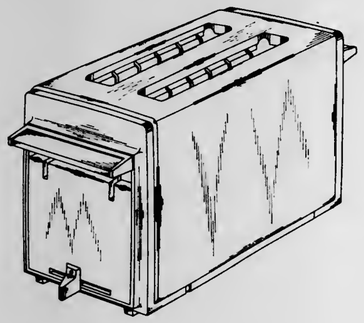
235,122
FOOD STORAGE CONTAINER
Joseph R. Neri, Brooklyn, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 16, 1973, Ser. No. 388,874
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—23



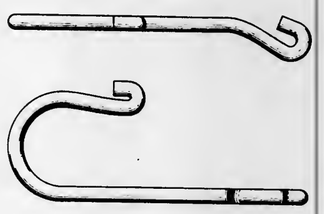
235,123
CANISTER OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Oct. 23, 1973, Ser. No. 408,826
Term of patent 14 years
Int. Cl. D9—*02*; D7—*07*
U.S. Cl. D7—79



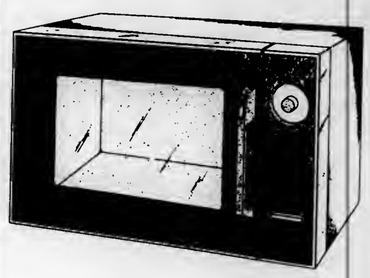
235,124
BREAD TOASTER
John E. Jolliffe, Manlius, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Sept. 24, 1973, Ser. No. 400,309
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—93



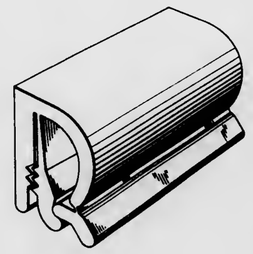
235,125
POT COVER HOLDER HOOK OR THE LIKE
Ruth C. Schlachter, Wheaton, Ill. (406 Lincoln, Downers Grove, Ill. 60515)
Filed Mar. 5, 1973, Ser. No. 337,905
Term of patent 3½ years
Int. Cl. D7—*99*; D8—*08*
U.S. Cl. D7—129



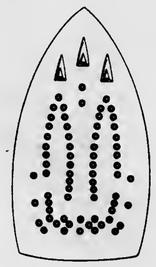
235,126
PORTABLE MICROWAVE OVEN OR SIMILAR ARTICLE
Thomas J. Binzer and Charles H. Schmitt, Louisville, Ky., assignors to General Electric Company
Filed Dec. 20, 1972, Ser. No. 316,894
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



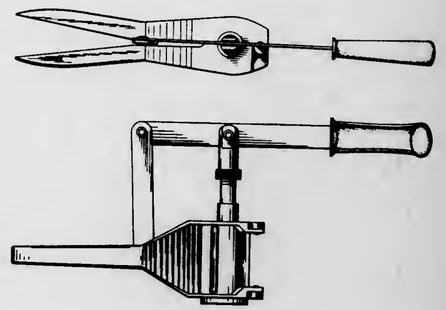
235,127
HANGER FOR LITTER BAGS AND THE LIKE
Ethan C. Grant, P.O. Box 2091, Salem, Oreg. 97308
Filed July 23, 1973, Ser. No. 381,526
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D7—193



235,128
ELECTRIC IRON SOLEPLATE
John L. Eaton, Jr., Delanco, N.J., and Roger V. Eeckhout, Warminster, Pa., assignors to SCM Corporation, New York, N.Y.
Filed Sept. 17, 1973, Ser. No. 398,113
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—204



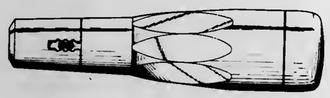
235,129
BOTTLE-CORKING APPARATUS
Gilbert Tabard, Villemomble, France, assignor to Societe d'Exploitation des Ateliers Mecaniques A. Tabard, Villemomble, France
Filed July 13, 1973, Ser. No. 378,912
Claims priority, application France Jan. 15, 1973
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



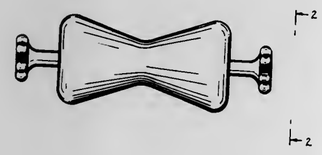
235,130
HAND HELD PICK-UP IMPLEMENT
Dorsey L. Helm, 9732 Dayton Ave. N., Seattle, Wash. 98103
Filed Apr. 4, 1974, Ser. No. 457,992
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



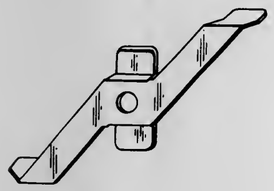
235,131
HANDLE FOR A SCREWDRIVER
Laird Fortune Covey, Easton, Conn. (% The Stanley Works, 195 Lake St., New Britain, Conn. 06050)
Filed Aug. 6, 1973, Ser. No. 386,004
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—83



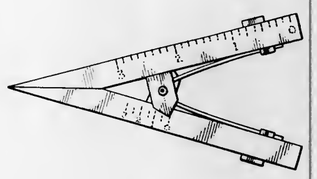
235,132
KITE REEL
Chia C. Huang, 10123 Kemp Forest, Houston, Tex. 77055
Filed Apr. 5, 1974, Ser. No. 458,224
Term of patent 14 years
Int. Cl. D8—*05, 99*
U.S. Cl. D8—220



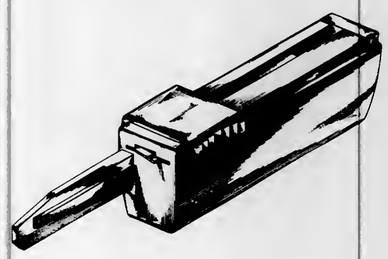
235,133
LIGHT TRACK SUPPORTING CLIP
William M. Armstrong, El Cerrito, Calif., assignor to Lektra Lighting, Inc., San Francisco, Calif.
Filed Mar. 18, 1974, Ser. No. 452,787
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—259



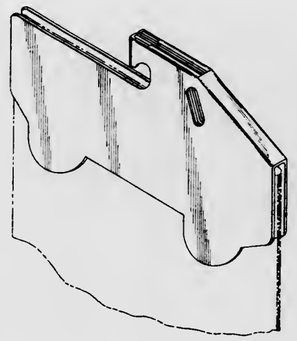
235,134
MULTI-PURPOSE CLAMP FOR HOLDING WITHIN ITS TUBULAR ELEMENTS PENCILS, WIRES OR SIMILAR ARTICLES
James J. A. Sartore, 128 Morris St., Albany, N.N.Y. 12208
Filed Dec. 5, 1972, Ser. No. 312,376
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—259



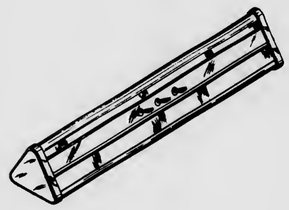
235,135
RAZOR BLADE DISPENSER
Norman D. Poisson, Andover, Mass., assignor to The Gillette Company, Boston, Mass.
Filed June 4, 1973, Ser. No. 366,559
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D9—224



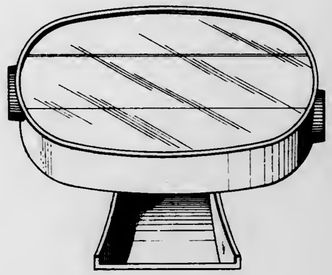
235,136
COMBINED PACKAGING CARD AND HANGER FOR AN ARTICLE OF MERCHANDISE
Charles A. Wells, Coshocton, Ohio, and Robert A. O'Neil and Michael C. Wilson, Wheaton, Ill., assignors to Pretty Products, Inc.
Filed Nov. 15, 1972, Ser. No. 306,848
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—191



235,137
DIGITAL CLOCK
James Hampson Muir, Indialantic, Fla., assignor to Monsanto Company
Filed July 12, 1973, Ser. No. 378,723
Term of patent 14 years
Int. Cl. D10—*15*
U.S. Cl. D10—15



235,138
CLOCK HOUSING
Rudolf W. Blessing, Waldkirch im Breisgau, Germany, assignor to Blessing-Werke KG, Waldkirch im Breisgau, Germany
Filed Jan. 4, 1973, Ser. No. 321,041
Claims priority, application Germany Oct. 20, 1972
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—23



235,139
DISENGAGEABLE CONNECTOR FOR A PRESSURE TESTER
Thure Ekman, Slalomvagen 12, S–541 00, Skovde, Sweden
Filed Sept. 11, 1972, Ser. No. 287,911
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—103



235,140
GOLF CART

235,142
INFLATABLE AMUSEMENT STRU

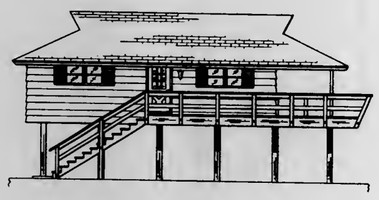
235,144
LIQUID CHEMICAL SPRAYER

235,146
EDUCATIONAL CLOCK TOY

235,140
GOLF CART
Frank O. Knight, Modesto, Calif.
(627 SW. Normandy Road, Seattle, Wash. 98166)
Filed Apr. 4, 1974, Ser. No. 457,702
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—23



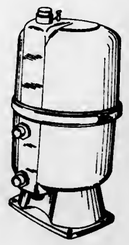
235,141
BUILDING
Ralph J. Ramer, 702 Pearl Circle, Brandon, Fla. 33505
Filed Aug. 11, 1972, Ser. No. 274,379
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



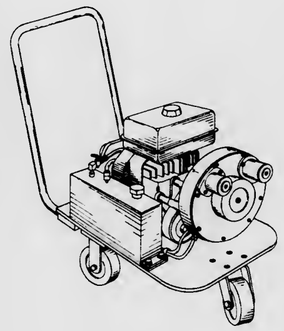
235,142
INFLATABLE AMUSEMENT STRUCTURE
Sebastian F. Nucci, 289 Fall St.,
Seneca Falls, N.Y. 13148
Filed July 16, 1973, Ser. No. 379,559
Term of patent 14 years
Int. Cl. D25—*03*; D21—*03*
U.S. Cl. D13—1 E



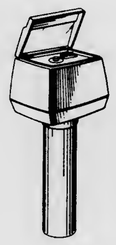
235,143
FILTER
Gordon F. Ehret, Alhambra, Calif., assignor to Swimquip Division, Weil-McLain Company, Inc., El Monte, Calif.
Filed June 11, 1973, Ser. No. 368,819
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



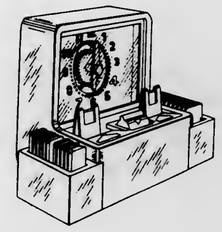
235,144
LIQUID CHEMICAL SPRAYER
James G. Parke and C. Richard Gerlach, San Antonio, Tex., assignors to Micro-Gen Equipment Corporation, San Antonio, Tex.
Filed Apr. 27, 1973, Ser. No. 354,957
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18



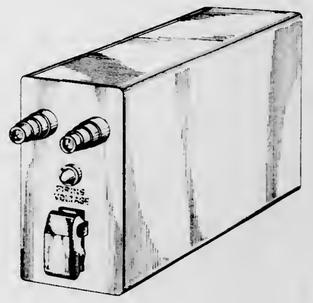
235,145
WATER SPRINKLER CONTROL HOUSING
Mario F. Fernandez, Minneapolis, Minn., assignor to The Toro Company, Minneapolis, Minn.
Filed Sept. 29, 1972, Ser. No. 293,423
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—38



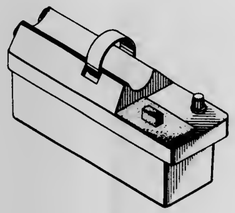
235,146
EDUCATIONAL CLOCK TOY
Michael Langieri, Butler, N.J., assignor to Questor Corporation, Toledo, Ohio
Filed Oct. 2, 1972, Ser. No. 294,446
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—64



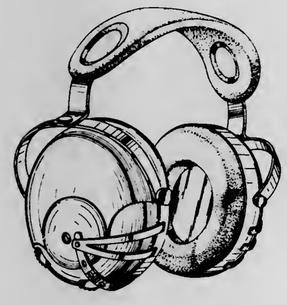
235,147
BLASTING CONTROL
Richard N. Snyder, Springfield, Va., assignor to Safety Devices, Inc., Springfield, Va.
Filed Mar. 20, 1973, Ser. No. 342,950
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



235,148
COMBINATION BATTERY HOLDER AND BATTERY
Francis W. Rowbottam, Santa Barbara, Calif., assignor to Elpower Corporation, Santa Ana, Calif.
Filed Mar. 21, 1974, Ser. No. 444,261
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—6



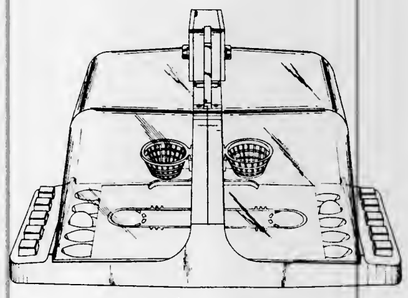
235,149
COMBINATION HEADSET AND RADIO RECEIVER
Charles Dascal, Miami, Fla., assignor to Dyn Electronics Inc., Miami, Fla.
Continuation-in-part of abandoned design application Ser. No. 329,016, Feb. 2, 1973. This application May 13, 1974, Ser. No. 469,245
Claims priority, application United Kingdom Jan. 17, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 H



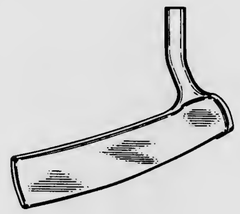
235,150
INTRAVENOUS FLUID CYLINDER
David S. Terman, 3741 S. Narcissus St., Denver, Colo. 80237
Filed Oct. 29, 1973, Ser. No. 410,602
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D32—1



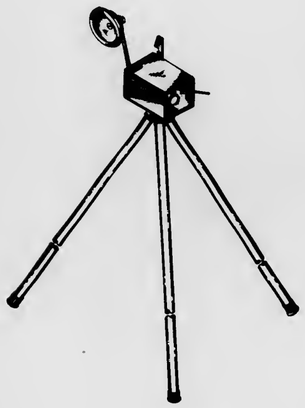
235,151
BASKETBALL GAME BOARD
Kazuyuki Hashimoto, Tokyo, Japan, assignor to Toytown Corporation, Tokyo, Japan
Filed Sept. 25, 1973, Ser. No. 400,660
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



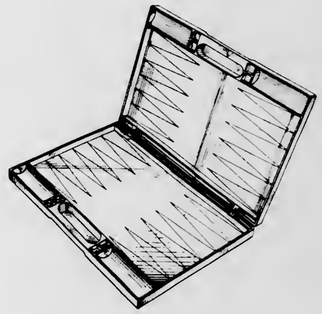
235,152
GOLF PUTTER HEAD
Truett P. Mills, Tuscaloosa, Ala., assignor to Questor Corporation, Toledo, Ohio
Filed Sept. 17, 1973, Ser. No. 397,775
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



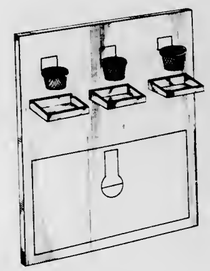
235,153
TENNIS BALL THROWER
Hector O. Conde, 6637 Cutting Blvd., El Cerrito, Calif. 94530
Filed Aug. 31, 1973, Ser. No. 393,323
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 N



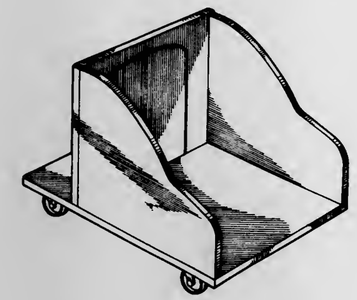
235,154
GAMEBOARD
Eraldo Sansoni, Via Amendola 40, Conegliano Veneto, Treviso, Italy
Filed Nov. 2, 1973, Ser. No. 412,465
Claims priority, application Italy May 11, 1973
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



235,155
GAME TARGET
Peter J. Perkins, 1629 S. Pointview St., Los Angeles, Calif. 90035
Filed Dec. 21, 1972, Ser. No. 303,530
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 PP



235,156
TOY PLAY VEHICLE
Bonnie H. Baylor, 7701 Willowbrook Road, Fairfax Station, Va. 22039
Filed Nov. 5, 1973, Ser. No. 412,815
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



235,157
TOY BLOCK
Eugene J. Echterling, Woodland Hills, Calif., assignor to Questor Corporation, Toledo, Ohio
Filed Jan. 24, 1973, Ser. No. 326,368
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 FF



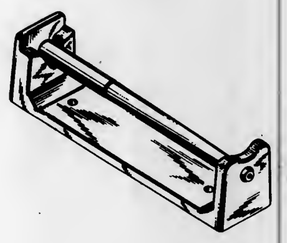
235,158
KNITTING NEEDLE OR SIMILAR ARTICLE
Ottis Daniel Pearson, 516 1st St., Rodeo, Calif. 94532
Filed Jan. 18, 1974, Ser. No. 434,505
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D47—5



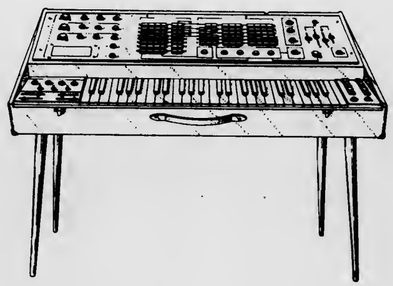
235,159
CANDLE HOLDER
Robert F. Ball, Willow Grove, Pa., assignor to Country Store Products, Inc., Warrington, Pa.
Filed May 7, 1973, Ser. No. 357,692
Term of patent 14 years
Int. Cl. D26—*01*; D7—*01*
U.S. Cl. D48—2



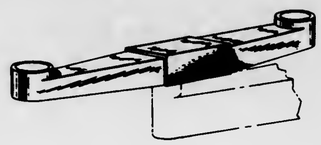
235,160
MANDRIL AND MANDRIL HOLDER
Ed Levin, % Ed Levin Arts Workshop, Bennington, Vt. 05201
Filed Aug. 31, 1973, Ser. No. 393,673
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D54—13 R



235,161
PERFORMER KEYBOARD CONSOLE
Alfred Mayer, Morristown, N.J., and George Ipolyi, Plainview, N.Y., assignors to Ionic Industries Incorporated, Morristown, N.J.
Filed Dec. 14, 1972, Ser. No. 315,178
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—2



235,162
OPHTHALMIC INSTRUMENT ARM
John H. Beverage, Eggertsville, N.Y., assignor to American Optical Corporation, Southbridge, Mass.
Filed Aug. 27, 1973, Ser. No. 391,704
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D57—1 E



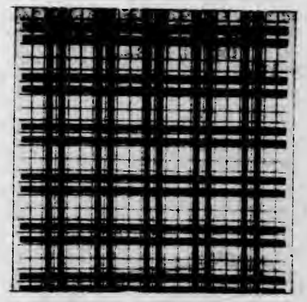
235,163
SPECTACLE FRONT
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Nov. 30, 1973, Ser. No. 420,752
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F



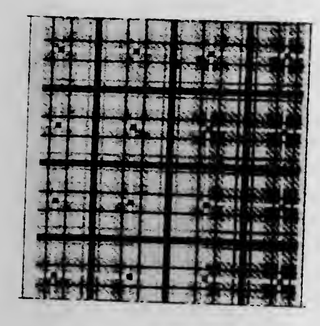
235,164
SPECTACLE TEMPLE
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Dec. 26, 1973, Ser. No. 428,160
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 A



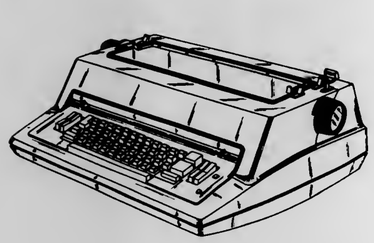
235,165
PAPER TOWELING
Mary Ellen Wassenberg, Green Bay, Wis., assignor to Fort Howard Paper Company, Green Bay, Wis.
Filed Feb. 25, 1974, Ser. No. 445,553
Term of patent 14 years
Int. Cl. D5—*03*
U.S. Cl. D59—2 A



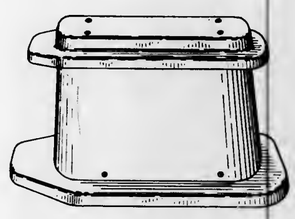
235,166
PAPER TOWELING
Mary Ellen Wassenberg, Green Bay, Wis., assignor to Fort Howard Paper Company, Green Bay, Wis.
Filed Feb. 25, 1974, Ser. No. 445,554
Term of patent 14 years
Int. Cl. D5—*03*
U.S. Cl. D59—2 A



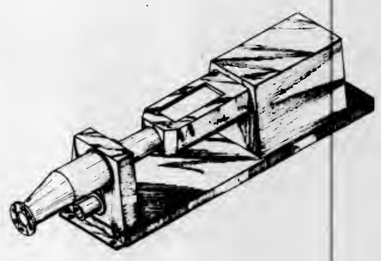
235,167
TYPEWRITER
Toshihiko Sakow, Teaneck, N.J., assignor to Litton Business Systems, Inc.
Filed Dec. 11, 1972, Ser. No. 314,249
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



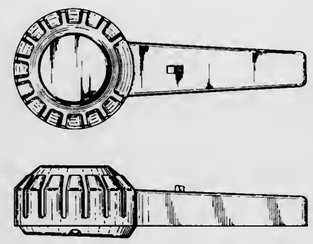
235,168
PUMP HOUSING
Gerald E. Boyer, Shawnee Mission, Kans., and Drake L. Koch, Kansas City, Mo., assignors to Boyer Industries, Inc., Kansas City, Kans.
Filed Aug. 15, 1974, Ser. No. 497,561
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R



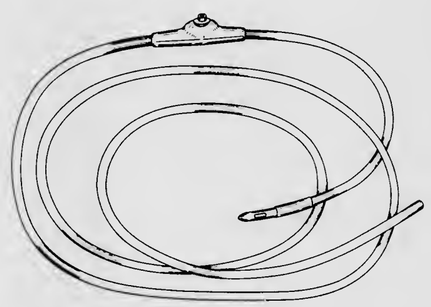
235,169
PUMP
Billy B. Lovejoy, Littleton, Colo., assignor to Industries International, Inc., Littleton, Colo.
Filed May 14, 1973, Ser. No. 359,971
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R



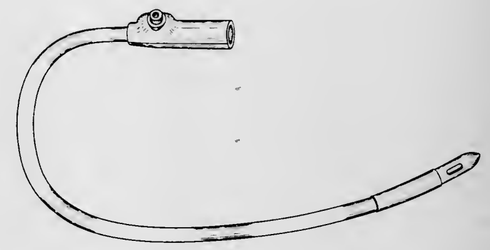
235,170
COMBINED HEATING AND MASSAGING UNIT
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.
Filed Nov. 19, 1973, Ser. No. 416,863
Term of patent 14 years
Int. Cl. D28—*03;* D24—*99*
U.S. Cl. D83—1 T



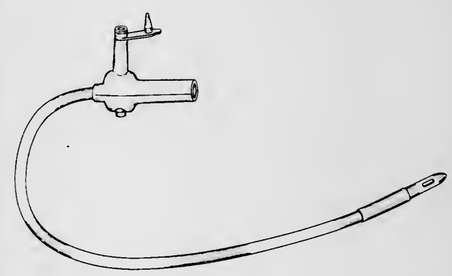
235,171
CATHETER
Jack L. Boone, Larkin Township, Midland County, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Mar. 12, 1973, Ser. No. 340,489
Term of patent 14 years
Int. Cl. D24—*02, 04*
U.S. Cl. D83—12 A



235,172
CATHETER
Jack L. Boone, Larkin Township, Midland County, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Mar. 12, 1973, Ser. No. 340,487
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—12 A



235,173
CATHETER
Jack L. Boone, Larkin Township, Midland County, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Mar. 12, 1973, Ser. No. 340,488
Term of patent 14 years
Int. Cl. D24—*02, 04*
U.S. Cl. D83—12 A



LIST OF PATENTEES

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF MAY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See—*
Zimmerman, Jerrel L., 3,884,853.
AAI Corporation: *See—*
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AB Bofors: *See—*
Blomback, Gustaf Erik Birger; Blomback, Margareta; Claeson, Karl Goran; and Svendsen, Lars-Gundro, 3,884,896.
AB Carbox: *See—*
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AB Linde International: *See—*
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AB Motala Verkstad: *See—*
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AB R. W. Nissen: *See—*
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Jones, Peter Hadley; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Perun, Thomas John, 3,884,904.
ABE Engineering & Development Co. Ltd.: *See—*
Tanno, Yuji, 3,884,565.
Abe, Toshihiro; and Tokaiwa, Kiyoshi, to Jidosha Kiki Kabushiki Kaisha. Fluid pressure regulator valve and safety valve assembly. 3,884,533, Cl. 303-84.00A.
Abels, Theodor; and Puschel, Siegfried, to Linde Aktiengesellschaft. Electric-powered vehicle with time-delay switch circuitry, especially for electrical vehicles. 3,884,318, Cl. 180-65.00R.
Abels, Theodore; and Puschel, Siegfried, to Linde Aktiengesellschaft. Drive arrangement using electric motor with variable hydraulic transmission set in predetermined relationship to minimize battery drain. 3,885,204, Cl. 318-139.000.
Abendroth, Paul, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Device for fastening flexible printing plates. 3,884,147, Cl. 101-415.100.
ACF Chemiefarma N.V.: *See—*
van der Meer, Samuel; and van Alphen, Hendrikus Matheus, 3,884,906.
Ackley, Edward M., to R. W. Hartnett Company. Conveyor link for tablet printing apparatus. 3,884,143, Cl. 101-37.000.
Acme Visible Records, Inc.: *See—*
Tomlinson, Charles W., 3,884,369.
Adamovske strojirny, narodni podnik: *See—*
Jiruse, Jaroslav, 3,884,460.
Adams, John Howard, to Chevron Research Company. Aromatic esters of anthranilic acid. 3,884,959, Cl. 260-471.00R.
Adams, Sidney George William; and Galliford, Edgar Horace, to James Burn Bindings Limited. Machines for binding packets of perforated sheets. 3,883,916, Cl. 11-1.00A.
Addressograph Multigraph Corporation: *See—*
Jesensky, Alexander; and Meller, Frederick D., 3,884,567.
Adelhed, Terje, to Siemens Aktiengesellschaft. Passage for patients. 3,883,991, Cl. 49-70.000.
Advance Enterprises, Inc.: *See—*
Faltin, Hans G., 3,884,102.
Affenzeller, Josef: *See—*
List, Hans; Affenzeller, Josef; and Kirchweger, Karl, 3,884,209.
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Agence Nationale de Valorisation de la Recherche: *See—*
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Nagase, Shunji; Baba, Hajime; Kodaira, Kazuo; and Okazaki, Kooshi, 3,884,775.
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De Pauw, Alfons Jozef; and Carpentier, Jan Albert, 3,884,701.
Van Paesschen, August Jean; Van Gossum, Lucien Janbaptist; and Priem, Jan Jozef, 3,885,081.
Agius, Frank P. Key cutter. 3,884,121, Cl. 90-13.050.
Ahle, James L., to Gulf Research & Development Company. Synergistic chemical control of nutsedge with combination of a 1-methyl-4-phenyl-pyridinium salt and a cyclopropylamino-triazine herbicide. 3,884,672, Cl. 71-93.000.
Aikawa, Hiroshi: *See—*
Ito, Naganori; and Aikawa, Hiroshi, 3,884,496.
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Aisin Seiki Kabushiki Kaisha: *See—*
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Ooya, Junichiro; Sakakibara, Naoji; Kawabata, Yasuhiro; Nawa, Hideo; Hida, Takashi; Tarao, Akira; Tsukuba, Korehiko; and Kuwana, Kazutaka, 3,885,137.
Aizawa, Tsuneo, to Amada Company, Ltd. Adjustable saw. 3,884,106, Cl. 83-453.000.
Ajlouny, Nadim S., to Bendix Corporation, The. Programmable universal transfer device. 3,884,363, Cl. 214-1.0BB.
Aktiebolaget Ifoverken: *See—*
Johansson, Sten Gunnar, 3,884,350.
Aktiebolaget Svenska Precisionsvertyg: *See—*
Eriksson, Alf A. A., 3,884,334.
Alberto-Culver Company: *See—*
Cella, John A.; and Schmitt, William H., 3,885,028.
Albright, James A.; and Dorschner, Kenneth P., to SCM Corporation. Herbicidal N-haloacyl (2-alkylated) oxazolidines. 3,884,671, Cl. 71-88.000.
Albright & Wilson Limited: *See—*
Palmer, Malcolm George; and Ball, Anthony Donald, 3,884,734.
Alcan Research and Development Limited: *See—*
McCubbin, John Gordon, 3,884,290.
Aldrian, Adolf Florian: *See—*
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Grant, Richard John, 3,884,830.

California Institute of Technology: *See—*
Griffith, George A., 3,884,081.
Hurd, William J., 3,885,139.

Callais, Richard T.; and Warther, D. Paul, to Hughes Aircraft Company. Television scrambling system. 3,885,089, Cl. 178-5.100.

Callaway, Mel, to Yamaha International Corporation. Snowmobile ski suspension system. 3,884,314, Cl. 180-9.540.

Camara, Elias Humberto: *See—*
Fleming, Donald Kingsley; Randhava, Sarabjit Singh; and Camara, Elias Humberto, 3,884,838.

Cambridge Chemical Products, Inc.: *See—*
Mauthner, Thomas, 3,884,579.

Cammarata, Peter S.: *See—*
Aspinall, Richard L.; and Cammarata, Peter S., 3,885,041.

Campbell, Eldo L. Slack adjuster hitch for motor vehicles. 3,884,504, Cl. 280-446.00R.

Campbell, Leonard Earl, Jr. Work-shift indicator. 3,883,970, Cl. 40-110.000.

Campbell, Robert T.; Ritter, Laurence B.; and Land, Joseph G., Jr., to International Paper Company. Single vessel wood pulp bleaching with chlorine dioxide followed by sodium hypochlorite or alkaline extraction. 3,884,752, Cl. 162-89.000.

Campbell, Robert W.: *See—*
Scoggins, Lacey E.; and Campbell, Robert W., 3,884,884.

Camprubi, Anselmo Bolea. Devices for the actuation of lances in looms without shuttles. 3,884,275, Cl. 139-123.000.

Canadian Marconi Company: *See—*
Merk, Paul Joseph, 3,885,230.

Canadian Patents and Development Limited: *See—*
Chapman, Ronald, 3,884,080.

Canon Kabushiki Kaisha: *See—*
Inoue, Eiichi; and Nakazawa, Mitsunobu, 3,884,697.
Suwa, Michiharu; Tajima, Akira; Shimazaki, Mamoru; and Hirata, Noritsugu, 3,884,555.
Tsunekawa, Tokuichi; and Uchiyama, Takashi, 3,884,584.

Capulli, Giuseppe; DeSant, Gasparino Jose; DeCarvalho, Theodoro; and Beltrao, Helio Marcos Penna. System for purification of gases. 3,884,653, Cl. 55-223.000.

Carborundum Company, The: *See—*
Cottis, Steve G.; Economy, James; and Wosilait, Arnold A., 3,884,876.

Carlson, Richard W.; and Nesty, Glenn A., to International Paper Company. Carton handle. 3,884,411, Cl. 229-17.00G.

Carlstrom, Borge Ingmar: *See—*
Schetty, Rudolf; and Carlstrom, Borge Ingmar, 3,884,269.

Carman, Alva G. Apparatus for producing patterned objects out of plastic material. 3,884,104, Cl. 83-171.000.

Carpentier, Jan Albert: *See—*
De Pauw, Alfons Jozef; and Carpentier, Jan Albert, 3,884,701.

Carpentier, Richard A.; Di Matteo, Paul L.; Stern, Howard K.; and Wittke, Ernest C. Methods and apparatus for object reproduction. 3,884,577, Cl. 355-77.000.

Carre, Christian: *See—*
Rebours, Albert; and Carre, Christian, 3,884,657.

Carts, Stanley L., Jr., to United States of America, Army. Microchannel imaging display device. 3,885,180, Cl. 313-103.000.

Cascade Pacific Rim Co., Inc.: *See—*
Anderson, Thomas R.; and Fortner, Edwin E., 3,884,042.

Caspar, Donald L. D.: *See—*
Schoenborn, Benno P.; and Caspar, Donald L. D., 3,885,153.

Castoldi, Fabrizio; Cattaneo, Serrio; and Niccolai, Adriano, to Honeywell Information Systems Italia. Asynchronous serial printer. 3,884,339, Cl. 197-53.000.

Castro, Rodolfo: *See—*
Tarbox, John W.; Hinds, Walter E.; Castro, Rodolfo; and Bell, Raymond C., 3,885,161.

Catallo, Frank; and Foreman, Donald. Spreader for use with compressive shrinking machines for tubular knit fabrics. 3,883,935, Cl. 26-55.00R.

Caterpillar Tractor Co.: *See—*
Muellner, Donald R.; and Piercy, Richard J., 3,884,378.
Schneider, Marvin L., 3,884,048.

Caton, Michael Peter Lear; Coffee, Edward Charles John; and Watkins, Gordon Leonard, to May & Baker Limited. Process for the preparation of cyclopentane. 3,884,942, Cl. 260-348.00A.

Cattaneo, Serrio: *See—*
Castoldi, Fabrizio; Cattaneo, Serrio; and Niccolai, Adriano, 3,884,339.

Cavallo, Elio; and Furlan, Fulvio, to Minnesota Mining and Manufacturing Company. Photographic materials having reduced static chargeability and method for their production. 3,884,699, Cl. 96-87.00A.

Caywood, Stanley William, Jr., to du Pont de Nemours, E. I., and Company. Certain EPDM copolymer/maleic anhydride adducts and thermoplastic elastomers therefrom. 3,884,882, Cl. 260-78.40D.

Cecil Equipment Co., Inc.: *See—*
Zeewy, Abraham; and Geringer, Donald, 3,883,956.

Celanese Corp.: *See—*
Dodson, Keith D.; and Squires, Thomas G., 3,884,870.

Cella, John A.; and Schmitt, William H., to Alberto-Culver Company. Fluoride-containing toothpaste. 3,885,028, Cl. 424-52.000.

Celmer, Walter D.; Cullen, Walter P.; and Routien, John B., to Pfizer Inc. Production of rifamycin S and rifamycin SV by micromonospora chalcea. 3,884,763, Cl. 195-96.000.

Censoni, Giustino: *See—*
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Center For New Product Development: *See—*
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Centre d'Etude de l Energie Nucleaire, C.E.N.: *See—*
Wurm, Joseph Gerard; Van Impe, Jean; De Coninck, Antoine; Heylen, Paul Raymond; and Rombaux, Jean-Pierre, 3,884,784.

Centre National d'Etudes Spatiales: *See—*
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Centre National pour l'Exploitation des Oceans: *See—*
Lepetit, Marcel; Charles, Christian; Nonnet, Jean; and LeFoll, Francois, 3,884,518.

Certain-teed Products Corporation: *See—*
Rivat-Lahousse, Andre, 3,885,009.

Ceskoslovenska akademie ved: *See—*
Wichterle, Otto; and Kliment, Karel, 3,885,078.

Chacon, Julian, to Lightcraft of California. Multiple lighting fixture display system. 3,885,147, Cl. 240-9.00R.

Chailer, John D. Wall outlet and switch box hole cutter. 3,884,280, Cl. 144-73.000.

Chalabian, Jack S., to K-Jack Engineering Company, Inc. Coin operated vending apparatus with door operated coin return & pawls therefore. 3,884,330, Cl. 194-59.000.

Chalton Electronic Services Limited: *See—*
Massie, Kenneth Herbert; and Chalton, Gordon Alfred, 3,884,187.

Chalton, Gordon Alfred: *See—*
Massie, Kenneth Herbert; and Chalton, Gordon Alfred, 3,884,187.

Champeaux, Albert. Puppet like dummy. 3,883,984, Cl. 46-22.000.

Chandler, Edmond A., to Breveteam S.A. Thermoplastic net. 3,885,074, Cl. 428-136.000.

Chandross, Edwin Arthur: *See—*
Bowden, Murrae John Stanley; and Chandross, Edwin Arthur, 3,884,696.

Channel Creasing Matrix, Inc.: *See—*
Snodgrass, Frank M., 3,884,132.

Chao, Kwei C.: *See—*
Ridgway, John A., Jr.; and Chao, Kwei C., 3,885,050.

Chaplin, Merle P. Harvesting marine growths and packaging the treated product. 3,884,018, Cl. 56-9.000.

Chapman, John C., to Avery Products Corporation. Self-adhesive closure. 3,885,070, Cl. 428-42.000.

Chapman, Ronald, to Canadian Patents and Development Limited. Vacuum gage. 3,884,080, Cl. 73-399.000.

Charles, Christian: *See—*
Lepetit, Marcel; Charles, Christian; Nonnet, Jean; and LeFoll, Francois, 3,884,518.

Charles, Hickel, to Compagnie Industrielle des Piles Electroniques "CIPEL". Convertible display device and packing-box for articles. 3,884,349, Cl. 206-44.00R.

Chas. Taylor's Sons Company, The: *See—*
Downing, Howard Leroy; and Roudabush, Ned Wright, 3,885,005.

Chattaway, George Anthony; and Pearson-Coleman, Arthur James, to Vortex (Fishery Equipment) Ltd. Filter. 3,884,811, Cl. 210-169.000.

Check, Donald R., to Olin Corporation. Ski boot with adjustable instep plate. 3,883,964, Cl. 36-2.5AL.

Chemplex Company: *See—*
Pullukat, Thomas J.; Shida, Mitsuzo; and Gillilan, Robert L., 3,884,832.

Cheng, Shu-Sing, to Kendall Company, The. Flow measuring apparatus having a colorimetric urine indicator. 3,884,072, Cl. 73-215.000.

Chernov, Evgeny Alexandrovich; Poletaev, Arkady Nikolaevich; Golod, Saul Vulfovich; Petrov, Evgeny Vasilievich; Vasiliev, Dmitry Timofeevich; and Tofpenets, Vitold Antonovich. Metal-cutting machine for machining locating surfaces. 3,884,122, Cl. 90-58.00C.

Chevron Research Company: *See—*
Adams, John Howard, 3,884,959.
Magee, Philip S., 3,885,032.

Childers, Warren, to Graphic Arts Mfg. Co., Inc. Process camera monotoring apparatus. 3,884,575, Cl. 355-68.000.

Chioffi, Mario: *See—*
Bertozzi, Marcello; and Chioffi, Mario, 3,884,088.

Christ, Alfred; and Lehmann, Rolf, to Escher Wyss Limited. Calendar having adjustable brake means. 3,884,140, Cl. 100-163.00R.

Christoffer, Virgil F. Apparatus for drilling aligned holes. 3,884,593, Cl. 408-16.000.

Christoph, Rudolf: *See—*
Tschesche, Harald; Fritz, Hans; and Christoph, Rudolf, 3,885,012.

Christy, Marcia E., to Merck & Co., Inc. 12-Cyano-5,6,7,12-tetrahydrodibenzo[a,d]cyclooctenes. 3,884,954, Cl. 260-465.00R.

Chrysler Corporation: *See—*
Davis, Royal E.; Roy, Amedee; Belleau, Claude; and Allardyee, Gordon E., 3,883,944.

Chu, David C., to Hewlett-Packard Company. Spectrum shaping with parity sequences. 3,884,546, Cl. 350-3.500.

Chu, Gordon P. K., to GTE Sylvania Incorporated. Lamp having light diffusing envelope. 3,885,182, Cl. 313-116.000.

Ciba-Geigy AG: *See—*
Beriger, Ernst; and Martin, Henry, 3,885,000.
Hoster, Hansruedi; and Milicevic, Branimir, 3,884,626.
Karrer, Friedrich, 3,884,941.
Schlunke, Hans-Peter; and Egli, Christian, 3,884,918.

Ciba-Geigy Corporation: *See—*
Eicke, Hans; Arnold, Vladimir; and L'Eplattenier, Francois, 3,884,949.
Kleiner, Edward Karl; and Knell, Martin, 3,884,879.
Kristiansen, Odd, 3,884,998.
Langley, Robert; Robertson, George Heddle; and Bridge, Christopher James, 3,884,713.
Morawetz, Gottfried, 3,884,858.
Renner, Alfred; and Hugi, Rolf, 3,884,944.
Rosenberger, Siegfried; and Schmidt, Andreas, 3,884,874.
Spivack, John J.; and Luzzi, John J., 3,884,960.
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Cincinnati Milacron Chemicals, Inc.: *See—*
Stapfer, Christian H.; and D'Andrea, Richard W., 3,884,980.

Cintron, Roberto, to Computer Specifics Corporation. Data transmission system. 3,885,217, Cl. 325-26.000.

Ciosek, Stanley J.: *See—*
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Cities Service Oil Service Company: *See—*
Badin, Elmer J.; Kerschner, Paul M.; and Cresti, Aldo, 3,884,947.

Citizen Watch Co., Ltd.: *See—*
Kanazawa, Toyoji; and Yoshida, Makoto, 3,884,032.

Claeson, Karl Goran: *See—*
Blomback, Gustaf Erik Birger; Blomback, Margareta; Claeson, Karl Goran; and Svendsen, Lars-Gundro, 3,884,896.

Clairol Incorporated: *See—*
Brody, Frederick; and Pohl, Stanley, 3,884,627.
Walter, Henry J.; and Fleischhauer, Eugene T., 3,885,127.

Clary, Henry James. Cast spoke wheel. 3,884,527, Cl. 301-65.000.

Clendenen, Ronald L.; Olson, Eugene E.; and Schlaudt, Charles M., to Shell Oil Company. Ceramic permanent magnet. 3,884,823, Cl. 252-62.630.

Cliffgard, Arnie L. Engine RPM control system. 3,884,203, Cl. 123-118.000.

Clipper, Donald W.: *See—*
Norfleet, James; and Clipper, Donald W., 3,885,029.

Closmann, Philip J., to Shell Oil Company. Vertically expanded structure-biased horizontal fracturing. 3,884,303, Cl. 166-308.000.

Cloyd, Harold S., to Nosco Plastics, Incorporated. Container. 3,884,384, Cl. 220-94.00A.

Cluchat, Jacques: *See—*
Pruvost, Pierre; and Cluchat, Jacques, 3,884,847.

Clynch, Frank. Remotely activated valve. 3,884,261, Cl. 137-488.000.

Coffee, Edward Charles John: *See—*
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Cohen, Georges: *See—*
Mikitenko, Paul; Cohen, Georges; and Asselineau, Lionel, 3,884,769.

Cohly, Mauj A., to Tee-Pak, Inc. Edible collagen casing cross-linked by bisulfite addition. 3,885,054, Cl. 426-277.000.

Coia, Pasco A.: *See—*
Turtle, Quentin C.; Coia, Pasco A.; and Silva, John R., 3,884,079.

Coil, Frederick J. Universal-type, pillow-block bearing puller. 3,883,941, Cl. 29-259.000.

Coira Castro, Patricio. Mechanism for varying the distance between cages movable in an endless path. 3,884,371, Cl. 214-16.1BB.

Cole, Edward L.: *See—*
Hess, Howard V.; Cole, Edward L.; and Franz, William F., 3,884,751.

Colgate-Palmolive Company: *See—*
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Taylor, Glenn N., 3,884,234.

Collette, John Wilfred; Ro, Rolland Shih-Yuan; and Sonnenberg, Fred Max, to du Pont de Nemours, E. I., and Company. Functionally substituted terpolymers and tetrapolymers of α-olefins and process for manufacturing functional substituted copolymers. 3,884,888, Cl. 260-80.780.

Colt Industries Operating Corp.: *See—*
Green, Alan N., 3,885,223.

Combustion Engineering, Inc.: *See—*
Andrea, Christo, 3,884,624.
Jacobs, Louis John, 3,884,727.

Commissarariat a L'Energie Atomique: *See—*
Berthelot, Guy; Guillot, Philippe; and Perez, Jean-Jacques, 3,885,208.

Commonwealth Scientific & Industrial Research Organization: *See—*
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Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
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Compagnie Industrielle des Piles Electroniques "CIPEL": *See—*
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Computer Specifics Corporation: *See—*
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Computervision Corporation, The: *See—*
Franklin, David M., 3,884,573.
Comtelco (U.K.) Limited: *See—*
Hill, John; and Turczanski, Henryk, 3,883,949.
Concast Incorporated: *See—*
Tuschak, George; and Backhaus, Karl L., 3,884,400.
Conger, Joseph Clyde, Sr., to American Cyanamid Company. Coloring system for thermosetting plastic compositions. 3,884,869, Cl. 260-38.000.
Container Corporation of America: *See—*
Pilz, William M., III.; and Gardner, Jeffrey M., 3,884,352.
Continental Can Company, Inc.: *See—*
Miller, Donald E., 3,885,172.
Continental Oil Company: *See—*
Sweeney, William T.; and Harris, Gary R., 3,884,257.
Contraves-Goerz Corporation: *See—*
Geertz, Lloyd M., 3,885,162.
Cook, Edward H., Jr.; and Grotheer, Morris P., to Hooker Chemicals & Plastics Corporation. Absorption of gaseous cell product in cell liquor. 3,884,780, Cl. 204-95.000.
Cook, Francis W., Jr., to Litton Industrial Products, Inc. Automatic hydraulic tool slide cam assist for a machine tool. 3,884,591, Cl. 408-11.000.
Cook, Raymon W., to Ray Cook Golf Putters, Inc. Golf club. 3,884,468, Cl. 273-78.000.
Coop, Jeffrey W. Spark arrester and silencer. 3,884,655, Cl. 55-276.000.
Cooper, Keith A.: *See—*
Gordon, Robert L.; Cooper, Keith A.; and Siegele, John C., 3,884,396.
Copolymer Rubber & Chemical Corporation: *See—*
Gros, Harold J., 3,884,993.
Coquard, Jean; Sedivy, Pierre; Verrier, Jean; and Ruaud, Michel, to Rhone-Poulenc, S.A. Method of replacing or repairing the body with bioresorbable surgical articles. 3,883,901, Cl. 3-1.000.
Corboy, John Francis; Cullen, Glenn Wherry; and Pastal, Nicholas, to RCA Corporation. Dual growth rate method of depositing epitaxial crystalline layers. 3,885,061, Cl. 117-201.000.
Cordora, Michael L.: *See—*
Ricciardi, Michael A.; Cordora, Michael L.; and Smudin, David, 3,884,848.
Corlet, Gabriel, to Application des Gaz. Portable apparatus using gas under pressure. 3,884,256, Cl. 137-322.000.
Cornelissen, Jan, to Shell Oil Company. Oil interceptors for separating oil from water by gravity. 3,884,815, Cl. 210-521.000.
Cornelius Company, The: *See—*
Holcomb, Donald E., 3,884,388.
Corning Glass Works: *See—*
Maurer, Robert D.; and Schultz, Peter C., 3,884,550.
Cornwell, Charles E.: *See—*
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Corsan Engineering, Inc.: *See—*
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Coster, Ora. Toy adapter assembly. 3,883,983, Cl. 46-17.000.
Costerousse, Germain: *See—*
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Cote, Louis P., Jr. Snowmobile trail sweep. 3,884,498, Cl. 280-150.00R.
Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, to Rhone-Poulenc, S.A. Isoindoline derivatives. 3,884,921, Cl. 260-268.0BQ.
Cottam, Stephen M.: *See—*
Griffith, William A.; Day, Howard E.; Lefler, Clarence A.; and Cottam, Stephen M., 3,884,682.
Cottis, Steve G.; Economy, James; and Wosilait, Arnold A., to Carborundum Company, The. Partially crosslinked linear aromatic polyesters. 3,884,876, Cl. 260-47.00C.
Coughlin, Robert W.; and Polek, Joseph R., to Coughlin, Robert W. Method and apparatus for centrifugally regenerative filtration. 3,884,806, Cl. 210-78.000.
Coulter Information Systems, Inc.: *See—*
Kuehnle, Manfred R., 3,884,787.
Cowles, Christopher S., to Shell Oil Company. Circuit for energizing piezoelectric crystal and detecting peak amplitude of a reflected signal. 3,884,325, Cl. 181-139.000.
Cowling, David Thomas, to Koch-Light Laboratories Limited. Bonding of enzymes, enzyme derivatives and other compounds to polymeric materials. 3,884,761, Cl. 195-68.000.
Craig, John L.: *See—*
Avramidis, Stellios Antony; and Craig, John L., 3,884,097.
Cramer, Charles H., to du Pont de Nemours, E. I., and Company. Explosive composition. 3,884,735, Cl. 149-11.000.
Cranda Corp.: *See—*
Ritzenthaler, Richard L.; and Wilcox, Thomas J., 3,884,418.
Cregan, James D., to American Challenger Corporation. Marine engine. 3,884,201, Cl. 123-119.00B.
Cresti, Aldo: *See—*
Badin, Elmer J.; Kerschner, Paul M.; and Cresti, Aldo, 3,884,947.
Critchfield, Frank E.; and Koleske, Joseph V., to Union Carbide Corporation. Graft copolymers of lactone polyesters. 3,884,994, Cl. 260-899.000.
Crosby, Edward K., deceased: *See—*
Kightlinger, Adrian P.; Crosby, Edward K., deceased; and Speakman, Edwin L., 3,884,909.
Crosby, Lovice Vivian, executrix: *See—*
Kightlinger, Adrian P.; Crosby, Edward K., deceased; and Speakman, Edwin L., 3,884,909.
Crouch, William B., to Texaco Inc. Process for making a reducing gas. 3,884,648, Cl. 48-197.00R.
Crown Cork & Seal Co. Inc.: *See—*
Leenaards, Antoine Joseph, 3,884,366.
Croy, William J.; and Mederer, Andreas, to Messenschmitt-Bolkow-Blohm GmbH. Method for the control of a jet aircraft and apparatus for performing the method. 3,884,435, Cl. 244-76.00J.
Cryogenic Technology Inc.: *See—*
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Cullen, Walter P.: *See—*
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Culver, Richard B., to Dresser Industries, Inc. Method and apparatus for reducing background in inelastic gamma ray logging systems. 3,885,154, Cl. 250-267.000.
Cunningham, Eldon R., to General Electric Company. Dynamoelectric machine with improved bearing lubrication system. 3,885,176, Cl. 310-88.000.
Cunningham, Hugh: *See—*
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Cywinski, Jozef, to Corsan Engineering, Inc. Implantable heart pacer or the like with internal cell electrode. 3,884,243, Cl. 128-419.00P.
Czubak, Albin S., to Ex-Cell-O Corporation. Apparatus for finishing trochoidal surfaces. 3,884,789, Cl. 204-224.00R.
Dahl, Einar S.; and Kidd, Earl H., to Outboard Marine Corporation. Leaf shredding means for rotary mowers. 3,884,020, Cl. 56-320.200.
Dahlgren, Ake: *See—*
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Dai Nippon Insatsu Kabushiki Kaisha: *See—*
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Daigle, Donald J.: *See—*
Vigo, Tyron L.; Daigle, Donald J.; and Welch, Clark M., 3,884,631.
Dale, John Robert, to U.S. Philips Corporation. Methods of securing a semiconductor body to a substrate. 3,883,946, Cl. 228-121.000.
Dalibout, Georges: *See—*
Dubois, Claude; and Dalibout, Georges, 3,884,333.
Damm, Sverre. Device for the interconnection of pulling vehicles and semitrailer. 3,884,503, Cl. 280-440.000.
Damon Corporation: *See—*
Dixon, Cheryl; and Alpert, Arnold, 3,884,638.
D'Andrea, Richard W.: *See—*
Stapfer, Christian H.; and D'Andrea, Richard W., 3,884,980.
Daniher, Francis A.; and Oswald, Alexis A., to Exxon Research & Engineering Company. Addition of N,N-dichloro-N-acyl compounds to dienes. 3,884,963, Cl. 260-482.00C.
Danks, Ronald D.: *See—*
Fichter, Arthur A., Jr.; Danks, Ronald D.; Larsen, Farrell G.; and Throner, Guy C., Jr., 3,883,942.
Dart Industries Inc.: *See—*
Arrandale, Roy S.; Cady, James H.; and Hartman, Leroy C., 3,884,184.
Dashew, Stephen S., to Interform Inc. Concrete form liner. 3,884,444, Cl. 249-112.000.
Datwyler, Max, to Max Datwyler & Co. Doctor blade for photogravure printing machine. 3,884,145, Cl. 101-169.000.
David Brown Tractors Limited: *See—*
Ashfield, Herbert Edward; and Eastwood, Thomas, 3,884,335.
Davidson, Spydell. Safety bumper for trucks. 3,884,517, Cl. 293-76.000.
Davis, Royal E.; Roy, Amedee; Belleau, Claude; and Allardyee, Gordon E., to Chrysler Corporation. Method of preparing oxidation resistant materials and structures. 3,883,944, Cl. 29-460.000.
Davy-Ashmore Aktiengesellschaft: *See—*
Baumann, Reinhold; Lauerbach-Lemeier, Robert; Kunze, Ernst-Gunter; Striebich, Alfred; and Rothe, Hans-Joachim, 3,884,855.
Dawson, Edwin A., Jr. Diablo with sliding pin clutch and radial bearing surfaces. 3,883,985, Cl. 46-60.000.
Day, Howard E.: *See—*
Griffith, William A.; Day, Howard E.; Lefler, Clarence A.; and Cottam, Stephen M., 3,884,682.
Dayco Corporation: *See—*
Wagner, William T., 3,883,940.
Dayton-Walther Corporation: *See—*
Walther, William D.; and Fannin, Chester N., 3,884,332.
Deane, Clifford T. Recirculating air cleaner. 3,884,656, Cl. 55-257.000.
Deaton, Ronald L.; and Silver, Gary L., to United States of America, America as represented by the Energy Research and Development Administration. Radioactive battery. 3,884,718, Cl. 136-83.00R.
De Bie, Edouard, to Metallurgie Hoboken-Overpelt. Automatically controlling the oxygen content in copper and copper alloys. 3,884,680, Cl. 75-72.000.

DeCarvalho, Theodoro: *See—*
Capulli, Giuseppe; DeSant, Gasparino Jose; DeCarvalho, Theodoro; and Beltrao, Helio Marcos Penna, 3,884,653.
Decca Limited: *See—*
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de Crevoisier, Philippe; and Stockholm, John George, to Tunzini-Ameliorair. Devices for forming a homogeneous sheet of a flowing substance. 3,884,654, Cl. 55-225.000.
Deere & Company: *See—*
Francis, Robert Charles, 3,883,927.
Dellinger, Charles L. Profile grinding apparatus. 3,883,994, Cl. 51-34.00C.
DeMarinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. 7-Alkylmercaptoacetamido cephalosporins. 3,884,915, Cl. 260-243.00C.
Denki Onkyo Company, Limited: *See—*
Sugimizu, Masayuki, 3,884,407.
De Pauw, Alfons Jozef; and Carpentier, Jan Albert, to Agfa-Gevaert, N.V. Method of preparing silver halide emulsions. 3,884,701, Cl. 96-114.800.
DeRijke, David: *See—*
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Deschenes, Roger, to WABCO Westinghouse GmbH. Vehicle load-weighing apparatus and valve means operable responsively thereto. 3,884,532, Cl. 303-22.00R.
Deutsch, Herman, to Tele/Resources, Inc. Telephone exchange having permanent memory for operating instructions. 3,885,106, Cl. 179-18.00J.
Deutsch, Herman: *See—*
Smith, William Ralph; and Deutsch, Herman, 3,885,103.
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Deutsch, Ralph, to Nippon Gakki Seizo Kabushiki Kaisha. Production of ensemble in a computor organ. 3,884,108, Cl. 84-1.240.
DeVita, Fosco L.; and Simak, Frank J., to International Harvester Company. Flow sensitive hydraulic control valve. 3,884,123, Cl. 91-447.000.
Di Benedetto, Nicholas, to Lawrence Peska Associates, Inc., a part interest. Flashlight. 3,885,148, Cl. 240-10.660.
Dick, Franklin A.; Miller, Donald W.; and Miller, Charles J., to Beatrice Foods Co. Printing ink and process. 3,884,707, Cl. 106-24.000.
Dickey, Frank Angelo: *See—*
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Dietlein, Robert W. Sandwich panel insert. 3,884,006, Cl. 52-617.000.
Dietrich, Paul; and Sundt, Erling, to Firmenich S.A. Tobacco compositions employing flavoring agents comprising unsaturated butyrolactone derivatives and precursors thereof. 3,884,247, Cl. 131-17.00R.
Dietsch, Jacques J. G., to Societe Anonyme des Etablissements Leon Hatot. Quartz synchronised clockwork. 3,884,034, Cl. 58-28.00A.
Dietzen, William Hugh, to Black and Decker Manufacturing Company, The. Process of manufacturing drill chucks. 3,883,943, Cl. 29-413.000.
Diferdinando, Frank L., to Gorham Tool Company. Milling machine cutter adaptor. 3,884,120, Cl. 90-11.00A.
Dillingham, Mat E., to Western Company of North America, The. Pulsed neutron source well logging system. 3,885,160, Cl. 250-499.000.
Dills, Raymond L., to General Electric Company. Glass-ceramic plate heating unit cast-in heat spreader. 3,885,128, Cl. 219-462.000.
Di Matteo, Paul, to Dynell Electronics Corporation. Apparatus and method for artificially reproducing at will sounds from unique sources. 3,885,110, Cl. 179-100.30B.
Di Matteo, Paul L.: *See—*
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Disque, Donny R.; and Koerner, Ernest C., to Phelps Dodge Magnet Wire Corporation. Modified amide-imide resins and method of making the same. 3,884,880, Cl. 260-77.5AM.
Distillers Company (Yeast) Limited, The: *See—*
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Dixon, Cheryl; and Alpert, Arnold, to Damon Corporation. Method of determining cholesterol. 3,884,638, Cl. 23-230.00B.
Do-It Corporation: *See—*
McMaster, Samuel B., 3,884,443.
Dobrosielski, Stephen Stanley. Screwdriver with integral magnetic screw starter. 3,884,282, Cl. 145-50.0DA.
Dock, Lars Ingmar, to SKF Industrial Trading and Development Company B.V. Roller screw mechanism. 3,884,090, Cl. 74-424.80C.
Dodson, Keith D.; and Squires, Thomas G., to Celanese Corp. Polyethylene terephthalate film. 3,884,870, Cl. 260-40.00R.
Doi, Yasuhiko; and Ikeda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Plural magnification copying apparatus. 3,884,574, Cl. 355-66.000.
Doi, Yasuo: *See—*
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Domine, Joseph Dominic; and Schaufelberger, Roy Henry, to Union Carbide Corporation. Hot melt compositions produced by irradiating ethylene copolymers in the presence of wax. 3,884,786, Cl. 204-159.140.
Dominion Engineering Works Limited: *See—*
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Donovan, James; and Bagdasarian, Alex, to Artisan Industries Inc. Solids concentrator with a rotor having ploughs thereon. 3,884,813, Cl. 210-297.000.
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Ens, Lawrence A., 3,884,982.
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Kim, Yung Ki; and Pierce, Ogden R., 3,884,875.
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Dowling, Edward Camp, to AMP Incorporated. Digitalized FSK receiver. 3,885,098, Cl. 178-88.000.
Downing, Howard Leroy; and Roudabush, Ned Wright, to Chas. Taylor's Sons Company, The. Production of refractory articles by a freezecast process. 3,885,005, Cl. 264-28.000.
Draiswerke GmbH: *See—*
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Drake, Ronald; and Smith, Kenneth, to Joshua Shaw & Sons Limited. Load handling vehicles having adjustable cab. 3,884,321, Cl. 180-89.00R.
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Dudko, Daniil Andreevich; Alexeenko, Alexei Pavlovich; Lychko, Ivan Ivanovich; Iljushenko, Valentin Mikhailovich; Suschuk-Sljusarenko, Igor Ivanovich; Tarnovsky, Alexandr Grigorievich; Kostevich, Dmitry Nikolaevich; Andrusenko, Jury Iosifovich; Gurevich, Samuil Markovich; and Strakhov, Gennady Nikolaevich. Method for electroslag welding of copper blanks. 3,885,121, Cl. 219-73.000.
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Duffy, James J.; and Golborn, Peter, to Hooker Chemicals & Plastics Corporation. N-Phosphonomethyl acrylamides as flame retarding agents for textiles. 3,884,628, Cl. 8-116.00P.
Duffy, James J., to Hooker Chemicals & Plastics Corporation. Method of rendering textiles flame retardant and the product. 3,884,629, Cl. 8-116.00P.
Duncan, John A. Charcoal starter and grill. 3,884,214, Cl. 126-25.00B.
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Dundua, Rusudan Georgievna: *See—*
Gogorishvili, Platon Vladimirovich; Geleishvili, Tengiz Pavlovich; Zarkua, Nina Porfirievna; Nikolishvili, Georgy Alexeevich; Dundua, Rusudan Georgievna; Svintidze, Nadezhda Georgievna; Onuchkina, Nina Ivanovna; Kasradze, Gaioz Grigorievich; and Kuperman, Genrikh Moiseevich, 3,883,908.
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du Pont de Nemours, E. I., and Company: *See—*
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Dura Corporation: *See—*
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Duran, Jack. Method of and apparatus for producing photographic vignettes. 3,885,242, Cl. 354-296.000.

Duy, Thuoc Nguyen; and Palz, Wolfgang, to Societe Anonyme de Telecommunications. Method for the controlled formation of the layer of copper sulphide of a cadmium sulphide photocell. 3,884,779, Cl. 204-92.000.

Duy, Thuoc Nguyen; Palz, Wolfgang; and Vedel, Jacques, to United States of America, Navy. Method of manufacturing cadmium sulphide photocells. 3,885,058, Cl. 427-10.000.

Dybel, Frank R., to International Measurement & Control Co. Load sensing device. 3,884,068, Cl. 73-88.50R.

Dykstra, Jerald P.: *See—*
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Dynamit Nobel AG: *See—*
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Dynamit Nobel Aktiengesellschaft: *See—*
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E. F. Industries, Inc.: *See—*
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E/M Lubricants, Inc.: *See—*
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Eager, George S., Jr.: *See—*
Bahder, George; Eager, George S., Jr.; and Silver, David A., 3,885,085.

Eager, William A., to Star Expansion Industries Corporation. Drilling and tapping screw formation. 3,884,117, Cl. 85-47.000.

Eagle Shirtmakers, Inc.: *See—*
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East, Ora V.: *See—*
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East, Vern A.; and East, Ora V. Lock for sliding doors. 3,884,056, Cl. 70-100.000.

Eastman, George. Method for the construction and diagnosis of three dimensional ectocariagrams. 3,884,221, Cl. 128-2.06V.

Eastman Kodak Company: *See—*
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Eastwood, Thomas: *See—*
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Eberle, Gunter F., to Vecta Group, Inc., The. Cantilevered seating means. 3,884,524, Cl. 297-160.000.

Eberly, Paul E.; Cull, Neville L.; Buchmann, Fred J., deceased; and Buchmann, Cordelia Atkeson, legal representative, to Exxon Research & Engineering Company. Process catalyst. 3,884,834, Cl. 252-439.000.

Eckert, Charles F.; and Pinkowski, Norman J., to Uniroyal, Inc. Bonding EPDM rubber to general purpose butadiene polymer rubber. 3,884,895, Cl. 260-94.20R.

Economy, James: *See—*
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Ecothermia, Inc.: *See—*
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Eddy, Kenneth Harmon, to Dresser Industries, Inc. Vertical connecting hose support. 3,884,311, Cl. 173-57.000.

Eddy, Robert T., to Reliance Electric Company. Hydraulic device. 3,884,124, Cl. 91-487.000.

Edge, Charles K.; and Kunkle, Gerald E., to PPG Industries, Inc. Flat glass manufacturing apparatus and method. 3,884,665, Cl. 65-99.00A.

Edo-Aire Mitchell Industries, Inc.: *See—*
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Edwards, Thomas C., to Rovac Corporation, The. Throttle valve arrangement for noise control in compressor-expander. 3,884,664, Cl. 62-296.000.

Eggers, Frederick W.: *See—*
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Eicke, Hans; Arnold, Vladimir; and L'Eplattenier, Francois, to Ciba-Geigy Corporation. Process for the manufacture of metal complexes in a pure form. 3,884,949, Cl. 260-429.300.

Eiglmeier, Kurt; and Lubbers, Henning, to Hoechst Aktiengesellschaft. Process for the preparation of acenaphthene-5,6-dicarboxylic acid imide. 3,884,924, Cl. 260-281.000.

Eisemann, Kurt, to U.S. Philips Corporation. Device for lifting and lowering a pick-up arm of a record player. 3,884,481, Cl. 274-23.00R.

Electron Optical Research and Technology Corporation: *See—*
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Elias, Jack J.; and Tieri, Joseph C., to Leisure Dynamics, Inc. Foot-operated juvenile vehicle. 3,884,501, Cl. 280-251.000.

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Elmer, Bruce Leslie, to Lianco Container Corporation. Apparatus for counting can ends. 3,885,135, Cl. 235-98.00R.

Eltra Corporation: *See—*
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Emeriat, Raymond, to Regie Autonome des Transports Parisiens. Element for a transporter having a variable speed. 3,884,152, Cl. 104-25.000.

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Endo, Tomio: *See—*
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Eng, Jeffrey D.; and Harke, Cyril J., to Hooker Chemicals & Plastics Corp. Electrolytic production of hydrogen peroxide and alkali metal hydroxide. 3,884,778, Cl. 204-84.000.

Eng, Jeffrey D.: *See—*
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Engel, Stewart L. Tire chain. 3,884,283, Cl. 152-213.00A.

Engels, Kaspar, to Draiswerke GmbH. Continuously operating measuring device for pourable materials. 3,884,313, Cl. 177-119.000.

England, Harold H. Appliance and furniture floor skis. 3,883,923, Cl. 16-42.000.

English Electric Valve Company Limited: *See—*
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Ereo Industries Limited: *See—*
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Erickson, Frederick E., to Gulf and Western Industries, Inc. Reset timer/counter unit. 3,885,136, Cl. 235-144.0ME.

Erickson, Linwood P., to G. W. Dahl Co., Inc. Low profile control valve actuator. 3,884,446, Cl. 251-61.400.

Eriksson, Alf A. A., to Aktiebolaget Svenska Precisionsvertyg. Screw thread cutting apparatus. 3,884,334, Cl. 192-56.00R.

Eriksson, Bengt Herman, to AB R. W. Nissen. Protective seat cover of thin plastics film or sheet, a package for the protective seat cover and like thin plastics articles, and a process of making the package. 3,884,355, Cl. 206-494.000.

Ernst, Max. Coupling-uncoupling means using a lever operated by an axle-mounted disc. 3,884,360, Cl. 213-75.0TC.

Ernstsson, Georg E.; and Martensson, Kjell H., to Tetra Pak Developpement SA. Method and apparatus for the packing under aseptic conditions of sterile goods into containers. 3,884,012, Cl. 53-22.00A.

ESB Incorporated: *See—*
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Escher Wyss Limited: *See—*
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Etablissements Genoud & Cie: *See—*
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Esterson, Maurice; King, Robin Charles Moorehouse; and Gregory, John Frederick, to English Electric Valve Company Limited. Fundamental coupled travelling wave tube having a periodic permanent magnetic focussing structure. 3,885,192, Cl. 315-3.500.

Estradier, Francoise: *See—*
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Ethyl Corporation: *See—*
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Evangelos, George D. Exerciser. 3,884,464, Cl. 272-79.00R.

Evans, James King; and Mills, Roy, to Fox, John C., a part interest. Microtome with rotating knife. 3,884,563, Cl. 352-131.000.

Evans, Richard C.; Heine, Murray A.; and Ciosek, Stanley J., to Olin Mathieson Chemical Corporation. Battery. 3,884,719, Cl. 136-90.000.

Ex-Cell-O Corporation: *See—*
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Exxon Nuclear Company Inc.: *See—*
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Fabricius, John H., to Sprague Electric Company. Positive temperature coefficient resistor heater. 3,885,129, Cl. 219-553.000.

Fabula, Andrew G., to United States of America, Navy. Suppression of cable strumming vibration by a ridged cable jacket. 3,884,173, Cl. 114-235.00F.

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Falbo, Richard R.: *See—*
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Falconio, Robert R., to Firestone Tire & Rubber Company, The. Inorganic zinc salts as color stabilizers for acrylonitrile vinyl chloride dyesite containing copolymers. 3,884,872, Cl. 260-45.75W.

Faleii, Karl Erik. Device for the fixation of joint sealing strips. 3,884,000, Cl. 52-127.000.

Faltin, Hans G., to Advance Enterprises, Inc. Three knife trimming machine. 3,884,102, Cl. 83-155.000.

Fanelli, Anthony Joseph; and Rauch, Francis Clyde, to American Cyanamid Company. Rhodium catalyst for hydration of acrylonitrile. 3,884,975, Cl. 260-561.00N.

Fannin, Chester N.: *See—*
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Faria, Carmen V. Folding table. 3,884,159, Cl. 108-112.000.

Fariss, Robert H.; and Snelgrove, James A., to Monsanto Company. Plasticized polyvinyl butyral interlayers. 3,884,865, Cl. 260-31.80R.

Farmer, Charles C.: *See—*
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Fegraus, Clark E.; and Sundahl, Jimmy G., to Automotive Environmental Systems, Inc. Annular flow heat exchanger. 3,884,297, Cl. 165-145.000.

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Fengler, Werner H.; and Fengler, Richard R. Annular seal for coaxial tubular members. 3,884,483, Cl. 277-208.000.

Ferch, Alois. Valve stem guide for internal combustion engines. 3,884,210, Cl. 123-188.0GC.

Fernsler, Ronald Eugene, to RCA Corporation. Fail-safe high voltage protection circuit. 3,885,201, Cl. 317-51.000.

Ferrante, Elmer A., to Ferrante, Elmer A.; LaBarba, Frank; and Ricci, Alexander D., part interest to each. Composite slate structure. 3,885,075, Cl. 428-150.000.

Ferrentino, Antonio, to Industrie Pirelli Societa per Azioni. Fully-filled telephone cable with improved screen. 3,885,088, Cl. 174-102.00D.

Fessler, Andreas; and Fessler, Ewald, to Hochland, Reich, Summer & Co. High-duty cheese-slicing machine. 3,884,105, Cl. 83-419.000.

Fessler, Ewald: *See—*
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Fiber Industries, Inc.: *See—*
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Fichter, Arthur A., Jr.; Danks, Ronald D.; Larsen, Farrell G.; and Throner, Guy C., Jr., to FMC Corporation. Method of providing a fluid tight seal between a thin walled tube and a piston. 3,883,942, Cl. 29-446.000.

Fideldy, William C. Pipe tongs. 3,884,100, Cl. 81-367.000.

Fields, John G. Magnetically Operated Amusement Device. 3,883,988, Cl. 46-239.000.

Filipe, Antonio Domingos. Method and apparatus for accelerated freeze drying. 3,883,958, Cl. 34-5.000.

Findlay, Peter Michael; Shelton, William Ewart Alan; and Klee, John Michael, to Bentley Engineering Co., Ltd., The. Tubular knitted fabrics. 3,884,052, Cl. 66-187.000.

Fiori, Bart J.: *See—*
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Firestone Tire & Rubber Company, The: *See—*
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Fish, Donald D.: *See—*
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Flatt, Richard P., to RTE Corporation. Pressure actuated electrical bypass circuit for a high voltage bushing. 3,884,542, Cl. 339-111.000.

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Forster, Heinz: *See—*
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Foxbower, Jacob S.; and Foxbower, Gerald J. Metal beehive liner. 3,883,907, Cl. 6-1.000.
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Gallaro, Anthony V.; and Hedler, Robert A., to GTE Sylvania Incorporated. Process for forming a color cathode ray tube screen structure having optical filter elements therein. 3,884,694, Cl. 96-30.000.
Gallaro, Anthony V.; and Hedler, Robert A., to GTE Sylvania Incorporated. Process for fabricating a color cathode ray tube screen structure having superimposed optical filter means therein. 3,884,695, Cl. 96-30.000.
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Gandon, Louis, to Le Nickel. Process for the production of high-purity metals from nickeliferous mattes. 3,884,681, Cl. 204-113.000.
Gankin, Viktor Judkovich; Rybakov, Vyacheslav Alexeevich; Rudkovsky, David Moiseevich, deceased; and Rudkovskaya, Galina Davydovna, administrator. Method of producing individual higher branched carboxylic acids. 3,884,948, Cl. 260-413.000.
Ganz, Rudolph V., to Affiliated Hospital Products, Inc. Glove. 3,883,899, Cl. 2-168.000.
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Gay, Eddie C.; Shimotake, Hiroshi; Cairns, Elton J.; and Walsh, William J., to United States of America, America as represented by the Energy Research and Development Administration. Secondary electrochemical power-producing cells having mixed cathode composition. 3,884,715, Cl. 136-6.00F.
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Geiger, Rolf; Wissmann, Hans; and Langner, Dietrich, to Hoechst Aktiengesellschaft. Process for the manufacture of insulin, analogs and derivatives thereof. 3,884,897, Cl. 260-112.700.
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Gordos, Ambrose. Disintegrating golf tee. 3,884,479, Cl. 273-212.000.
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Green, Derek, to United Kingdom Atomic Energy Authority. Forming of materials. 3,884,062, Cl. 72-60.000.
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Gutierrez, Julian. Folding table center leg structure. 3,884,160, Cl. 108-113.000.
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Honeywell, Inc.: *See—*
Bergin, William P.; and Farmer, Charles C., 3,885,134.
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Hoppe, Peter; Drouven, Gustav; Leyer, Helmut; and Muller, Johann, to Bayer Aktiengesellschaft. Marginal zone reinforcing system for the production of heavy duty foam resin constructions. 3,884,169, Cl. 112-420.000.

Hopper, Inc.: *See—*
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Horn, Herwig Reinholder; and Aldrian, Adolf Florian. Apparatus for Thermal Vapor Coating an Article. 3,884,178, Cl. 118-49.000.

Hort, Takeshi, to Sony Corporation. Phase control system for rotary means. 3,885,206, Cl. 318-314.000.

Hortlik, Frantisek: *See—*
Ripka, Josef; Junek, Jan; Vobornik, Vaclav; Lihtarova, Ludmila; Hortlik, Frantisek; Brynda, Vaclav; Ohlidal, Vladimir; Korbar, Zdenek; and Vecera, Milos, 3,884,029.

Hosmer, Thomas P.; and Johnson, Robert W., to Cryogenic Technology Inc. Three-way valve for controlling the flow of fluids at cryogenic temperature and at widely different pressures. 3,884,259, Cl. 137-375.000.

Hoster, Hansruedi; and Milicevic, Branimir, to Ciba-Geigy AG. Process for the dyeing of textile material containing amino or amide groups. 3,884,626, Cl. 8-54.000.

Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. Bis-(substituted benzyl) malonic acid esters. 3,884,961, Cl. 260-475.0SC.

Houston, Herbert James; Bolt, Kenneth Dale; Gretzinger, Adolf; and Baird, Robert Gordon. Spacer-damper assembly. 3,885,086, Cl. 174-42.000.

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Howeth, Calvin Richard; and Dickey, Frank Angelo, to Howeth, Calvin Richard. Electronic ton-mile indicator. 3,884,071, Cl. 73-151.000.

Hsieh, Henry L., to Phillips Petroleum Company. Cyclic triene coupling agents. 3,884,889, Cl. 260-83.700.

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Richardson, Philip C.; Hudspeth, Emmett L.; Boger, Allen D., Jr.; and Dykstra, Jerald P., 3,884,219.

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Hurst, Robert L., to Ball Corporation. Article conveying system. 3,884,344, Cl. 198-31.0AA.

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Iannazzi, Fred D., to Arthur D. Little, Inc. Method of recovering separate fiber fractions from corrugated board. 3,884,750, Cl. 162-4.000.

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INTERX Research Corporation: *See—*
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Irimajiri, Shoichiro; and Kumada, Masayuki, to Honda Giken Kogyo Kabushiki Kaisha. Engine valve operating system. 3,884,199, Cl. 123-90.610.

Ishibashi, Masato: *See—*
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Ishida, Hiroaki; Maruyama, Koji; and Katsushima, Kenzi, to Yokohama Rubber Co. Ltd., The. Method for treating a polyester synthetic fiber for use as a rubber-reinforcing material. 3,885,067, Cl. 427-381.000.

Ishida, Kinyu; and Minaka, Eiji. Apparatus for packaging and packing packages of yarn. 3,884,014, Cl. 53-55.000.

Ishigami, Hikoichi; Sato, Akira; Kitayama, Seishi; and Kobayashi, Kouhei, to Kokusai Denshin Denwa Kabushiki Kaisha. Terminal equipment for lincompex telephone system. 3,885,111, Cl. 179-170.800.

Ishii, Akira, to Nippon Telegraph and Telephone Public Corporation. Optical information retrieval apparatus. 3,885,143, Cl. 235-181.000.

Ishizuka, Tatsuhiro: *See—*
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Ito, Kazuichi. Reciprocating pump. 3,884,597, Cl. 417-284.000.

Ito, Naganori; and Aikawa, Hiroshi, to Nissan Motor Company Limited. Vehicle suspension system. 3,884,496, Cl. 280-124.00F.

Ito, Ryosuke; and Takahashi, Susumu, to Sansui Electric Co., Ltd. Signal converting systems for use in stereo reproducing systems. 3,885,101, Cl. 179-1.0GQ.

Ito, Takashi, to Mitsui Shipbuilding & Engineering Co., Ltd. Cam shafts for four cycle reversible internal combustion engines. 3,884,198, Cl. 123-90.180.

Ito, Toshio: *See—*
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ITT Industries, Inc.: *See—*
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Iwai, Shinji: *See—*
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J. I. Case Company: *See—*
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Jachimowicz, Ludwik; and Olszewski, Jerzy A., to General Cable Corporation. Pressure fused watertight disc coaxial cable. 3,885,083, Cl. 174-28.000.

Jackson, Albert Edward; and Williams, Ernest Wynne, to British Steel Corporation. Method of providing an aluminum coating on a steel substrate. 3,884,729, Cl. 148-11.50A.

Jackson, John Harry: *See—*
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Jacobs, Louis John, to Combustion Engineering, Inc. Method of coating wire screen cloth. 3,884,727, Cl. 148-6.200.

Jaenke, Hans-Jurgen: *See—*
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Jahn, Walter; and Piesch, Ernst, to Gesellschaft fur Kernforschung mbH; and Jenaer Glaswerk Schott & Gen. Measuring element for the detection and determination of radiation doses of gamma radiation and neutrons. 3,885,159, Cl. 250-472.000.

Jain, Prabhat Kumar: *See—*
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James Burn Bindings Limited: *See—*
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James, Joseph W. Drawing case for architects and the like. 3,884,351, Cl. 206-225.000.

Janssen, Paul Adriaan Jan; Niemegeers, Carlos Jan Ernest Josef; Stokbroekx, Raymond Antoine; and Vandenberk, Jan, to Janssen Pharmaceutica N.V. 2,2-Diaryl-4-(4-aryl-4-hydroxy-piperidino)-butyramides. 3,884,916, Cl. 260-247.70G.

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Jansson, Birger F., to J. I. Case Company. Fluid translating device with improved vane support. 3,884,603, Cl. 418-177.000.

Japan Exlan Company Limited: *See—*
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Jeanmart, Claude: *See—*
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Jeannet, Pierre Maurice; and Girardin, Michel, to Societe Suisse pour l'Industrie Horlogere Management Services, S.A. Chronograph watch. 3,884,035, Cl. 58-39.500.

Jen, Timothy Yu-Wen: *See—*
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Jeninga, John, to Atlantic Products Corporation. Golf bag cradle-bracket. 3,884,439, Cl. 248-96.000.

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Jensen, Garold K., to United States of America, Navy. Storage radar system. 3,885,240, Cl. 343-9.000.

Jensen, Harvey M., to United States of America, Navy. Control system for torpedoes. 3,884,170, Cl. 114-20.00R.

Jeram, Edward M.; and Striker, Richard A., to General Electric Company. High strength organopolysiloxane compositions. 3,884,866, Cl. 260-32.8SB.

Jerard, Robert B.; and Ohlenbusch, Cord W., to Liberty Mutual Insurance Company. Bioelectrically controlled prosthetic member. 3,883,900, Cl. 3-1.100.

Jesensky, Alexander; and Meller, Frederick D., to Addressograph Multigraph Corporation. Film loading assembly. 3,884,567, Cl. 353-23.000.

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Jidosha Kiki Kabushiki Kaisha: *See—*
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Jiffy Products International Ltd.: *See—*
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Jilbert, Phillip Harvey, to National Research Development Corporation. Ionization chamber. 3,884,817, Cl. 250-385.000.

Jiruse, Jaroslav, to Adamovske strojirny, narodni podnik. Air distributing device for a pneumatic sheet-feeding device. 3,884,460, Cl. 271-98.000.

Johansson, Sten Gunnar, to Aktiebolaget Ifoverken. Packaging carton. 3,884,350, Cl. 206-44.120.

John Ott Laboratories: *See—*
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Johns Hopkins University, The: *See—*
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Johnson, Charles S. Method for improving the resonances of stringed instruments. 3,884,109, Cl. 84-275.000.

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Johnson, Wayne F.; and Walker, William A., to United States of America, Energy Research and Development Administration. Programmable positive displacement pump. 3,884,126, Cl. 92-13.700.

Johnson, William S.; Morton, Douglas R.; and Gravestock, Michael B., to Leland Stanford Junior University, The Board of Trustees of. Synthesis of steroids by cyclization in nitro solvents. 3,884,945, Cl. 260-397.300.

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Jones, Peter Charles. Fluidised bed apparatus. 3,884,182, Cl. 118-308.000.

Jones, Peter Hadley; Martin, Jerry Roy; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Tadanier, John Soloman, to Abbott Laboratories. 4''-Deoxy-4''-oxoerythromycin B derivatives. 3,884,903, Cl. 260-210.00E.

Jones, Peter Hadley; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Perun, Thomas John, to Abbott Laboratories. 11-Substituted erythromycin B derivatives. 3,884,904, Cl. 260-210.00E.

Jonsson, Finn Lennart, to AB Carbox. Machine frame, having a biased wire girdle, and a method for biasing such a girdle. 3,884,142, Cl. 100-214.000.

Jordan, Edward J., to Jet Aeration Company. Air vent. 3,884,134, Cl. 98-64.000.

Jordan, Heinz: *See—*
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Jorgensen, George N.: *See—*
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Joshi, Madhusudan; Nielsen, Edwin A.; and Ventura, Frank D., to Ideal Toy Corporation. Toy vehicle turntable. 3,883,987, Cl. 46-202.000.

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Junek, Jan: *See—*
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Kabushiki Kaisha Oji Yuka Goseishi: *See—*
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Kabushiki Kaisha Sugiawa-Gen Iriki: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Komatsu, Noboru; Arai, Tohru; Sugimoto, Yoshihiko; and Mizutani, Masayoshi, 3,885,064.

Kahn, Leonard R. Bimode communication system with freeze circuit. 3,885,216, Cl. 325-22.000.

Kaiserswerth, Hans-Peter; Kowalkowski, Klaus; and Benedikter, Siegfried H., to Siemens Aktiengesellschaft. Structure for sealing a joint in an electromagnetic screening enclosure. 3,885,084, Cl. 174-35.0MS.

Kakihama, Sanehiko; and Stoneham, Edward B., to Hewlett-Packard Company. Method for achieving uniform exposure in a photosensitive material on a semiconductor wafer. 3,884,698, Cl. 117-217.000.

Kalberer, Karl H.: *See—*
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Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to Societe Anonyne dite: L'Oreal. Indophenols dyes for coloring keratin fibers. 3,884,625, Cl. 8-10.000.

Kanai, Hiromi: *See—*
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Kanazawa, Toyoji; and Yoshida, Makoto, to Citizen Watch Co., Ltd. Driving circuits for electronic clocks and watches. 3,884,032, Cl. 58-23.00A.

Kanebo, Ltd.: *See—*
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Karliner, Marlen Moiseevich: *See—*
Budker, Gersh Itskovich; Karliner, Marlen Moiseevich; Makarov, Ivan Grigorievich; Morozov, Sergei Nikolaevich; Nezhevenko, Oleg Alexandrovich; Ostreiko, Gennady Nikolaevich; and Shekhtman, Isai Abramovich, 3,885,193.

Karrer, Friedrich, to Ciba-Geigy AG. Epoxy containing acylated terpenoid amines. 3,884,941, Cl. 260-348.00A.

Kasahara, Tadashi; Kimura, Yoshiaki; and Kawai, Masanori, to Konishiroku Photo Industry Co., Ltd. Method of eliminating gaps between the exit pupils of superimposed focused-image holograms. 3,884,545, Cl. 350-3.500.

Kasradze, Gaioz Grigorievich: *See—*
Gogorishvili, Platon Vladimirovich; Geleishvili, Tengiz Pavlovich; Zarkua, Nina Porfirievna; Nikolishvili, Georgy Alexeevich; Dundua, Rusudan Georgievna; Svintidze, Nadezhda Georgievna; Onuchkina, Nina Ivanovna; Kasradze, Gaioz Grigorievich; and Kuperman, Genrikh Moiseevich, 3,883,908.

Katanosaka, Akisato: *See—*
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Katayama, Shinya: *See—*
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Katsushima, Kenzi: *See—*
Ishida, Hiroaki; Maruyama, Koji; and Katsushima, Kenzi, 3,885,067.

Katz, Martin J.; and Gesualdi, William A. Fail-safe electronic encoder for selectively operating railway signal indicator. 3,885,228, Cl. 340-47.000.

Katzschner, Wolfgang: *See—*
Oestreich, Ulrich; and Katzschner, Wolfgang, 3,884,024.

Kaufman, Harry. Hand operated desoldering device. 3,884,409, Cl. 228-20.000.

Kaupert, Gunther. Nestable compartmentalized trays. 3,884,381, Cl. 220-23.600.

Kawabata, Yasuhiro: *See—*
Ooya, Junichiro; Sakakibara, Naoji; Kawabata, Yasuhiro; Nawa, Hideo; Hida, Takashi; Tarao, Akira; Tsukuba, Korehiko; and Kuwana, Kazutaka, 3,885,137.

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Kawai, Masanori: *See—*
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Kawajiri, Kiyoshi: *See—*
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Keenan, George R., to R. E. Corporation. Asphalt spreader. 3,884,395, Cl. 222-176.000.

Kehm, Paul H., to Teleflex Incorporated. Transmission assembly. 3,884,449, Cl. 251-294.000.

Keidel, Frederick Andrew, to du Pont de Nemours, E. I., and Company. Preparation of hydrouquinone. 3,884,776, Cl. 204-73.00R.

Keindl, John, to Lawrence Peska Associates, Inc. Nasal filter. 3,884,223, Cl. 128-140.00N.

Keller, Hans, to Hell, Ing. Rudolf, Dr. Method of producing color correction signals and color separation signals. 3,885,244, Cl. 358-80.000.

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Brandli, Gerold; and Keller, Pierre, 3,884,075.

Kelly, John L., Jr., to GTE Sylvania Incorporated. Process for cleaning halophosphate furnaces. 3,884,249, Cl. 134-2.000.

Kemp, Woodrow E., to Koppers Company, Inc. Primer for treating metal surfaces. 3,884,851, Cl. 260-3.300.

Kempelmann, Reinhold: *See—*
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Kendall Company, The: *See—*
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Kenney, James T. Structural panel and method of fabrication thereof. 3,884,646, Cl. 29-191.400.

Kerala State Industrial Development Corporation: *See—*
Pullukattu, Joseph Thomas; and Pulimoottil, Mathew Mathew, 3,884,675.

Kerschner, Paul M.: *See—*
Badin, Elmer J.; Kerschner, Paul M.; and Cresti, Aldo, 3,884,947.

Kerstetter, Donald R., to GTE Sylvania Incorporated. Cathode-grid assembly for a cathode ray tube. 3,885,191, Cl. 313-447.000.

Kessler, Richard B., to Lea-Ronal, Inc. Electrolytic deposition of zinc. 3,884,774, Cl. 204-55.00Y.

Kesting, Robert Emil, to United States of America, Interior. Preparation of reverse osmosis membranes by complete evaporation of the solvent system. 3,884,801, Cl. 210-23.000.

Kidd, Earl H.: *See—*
Dahl, Einar S.; and Kidd, Earl H., 3,884,020.

Kieburtz, Robert Bruce, to Bell Telephone Laboratories, Incorporated. Modular pipeline multiplier to generate a rounded product. 3,885,141, Cl. 235-164.000.

Kiff, Ben W., to Union Carbide Corporation. Vapor phase hydrogenolysis dehydrogenation process. 3,884,981, Cl. 260-595.000.

Kightlinger, Adrian P.; Crosby, Edward K., deceased (by Crosby, Lovice Vivian, executrix); and Speakman, Edwin L., to Standard Brands Incorporated. Gelatinizable crosslinked cationic starch and method for its manufacture. 3,884,909, Cl. 260-233.30R.

Kightlinger, Neal B.; and Woodall, Rufus W., to Gainesville Manufacturing Co., Inc. Locking apparel clamp. 3,883,933, Cl. 24-250.00R.

Kikuchi, Tom T., to General Motors Corporation. Method and apparatus for magnetically modulated resonance analysis of gas. 3,884,583, Cl. 356-201.000.

Kikuchi, Yoshiyasu: *See—*
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Kim, Yung Ki; and Pierce, Ogden R., to Dow Corning Corporation. Fluorocarbon triazine compounds. 3,884,875, Cl. 260-46.50E.

Kimura, Isao; and Koyama, Hiroaki, to Kanebo, Ltd.; and Nippon Kynol Inc. Hollow filaments and process for producing same. 3,884,754, Cl. 161-178.000.

Kimura, Yoshiaki: *See—*
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King, Earl H., to Sund-Borg Machines Corporation. Injection molding machine with shot size regulation. 3,884,608, Cl. 425-145.000.

King, Kenneth Francis, to du Pont de Nemours, E. I., and Company. Adhesive composition and method of making same. 3,884,862, Cl. 260-29.300.

King, Michael L., to Norton, Paul D., a part interest. Device for distributing irrigation water. 3,884,416, Cl. 239-97.000.

King, Robin Charles Moorehouse: *See—*
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Kinne, Walter E., to Stauffer Chemical Company. Production of anhydrous sodium metasilicate in a fluidized bed. 3,884,645, Cl. 23-313.000.

Kinzel, Augustus B. Electrically powered cycle. 3,884,317, Cl. 180-34.000.

Kirchweger, Karl: *See—*
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Kirkpatrick, George M. Phased array sequential switching between short and long distance targets. 3,885,237, Cl. 343-5.00W.

Kirsch, Maurice: *See—*
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Kitayama, Seishi: *See—*
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Klahr, Carl N. Signal processing apparatus for imaging scanner. 3,885,224, Cl. 340-5.0MP.

Klar, Erhard: *See—*
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Klauk, Bernhard: *See—*
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Klauke, Erich: *See—*
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Klee, John Michael: *See—*
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Klein, Albert M.; and Fujita, Masaaki, to International Telephone and Telegraph Corporation. Phase locked loop receiving system with improved signal acquisition. 3,885,238, Cl. 343-7.00A.

Kleiner, Edward Karl; and Knell, Martin, to Ciba-Geigy Corporation. Perfluoroalkyl-thioether alcohols, esters and polymers thereof. 3,884,879, Cl. 260-609.00R.

Kleinewefers Industrie-Companie GmbH: *See—*
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Klemm, Waldemar A.: *See—*
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Kliment, Karel: *See—*
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Kline, John P. Boat hull with a bottom of a portion of the surface of a hyperboloid. 3,884,171, Cl. 114-62.000.

Knabe, Uwe: *See—*
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Knapp, Frank. Animal-operated sprayer. 3,884,192, Cl. 119-159.000.

Knappe, Heinrich; Nolte, Karl-Heinz; and Kempelmann, Reinhold, to Herbert Kannegiesser Kommanditgesellschaft. Apparatus for folding shirts or similar articles of clothing for packing. 3,884,402, Cl. 223-37.000.

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Kleiner, Edward Karl; and Knell, Martin, 3,884,879.

Knight, Houston W., to FMC Corporation. Cylinder-operated valve. 3,884,251, Cl. 137-615.000.

Knoblauch, Willi; and Baranowski, Hans-Peter. Steam sterilizing apparatus. 3,884,636, Cl. 21-94.000.

Kobayashi, Kazuaki; Okuno, Tatsujiro; Katayama, Shinya; and Kita, Takehiko, to Nissan Motor Company Limited. Intake system for an internal combustion engine. 3,885,003, Cl. 261-23.00A.

Kobayashi, Kazuhiko; Takawashi, Tamio; and Arai, Shinji, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for electrolytically etching. 3,884,790, Cl. 204-224.00M.

Kobayashi, Kouhei: *See—*
Ishigami, Hikoichi; Sato, Akira; Kitayama, Seishi; and Kobayashi, Kouhei, 3,885,111.

Kobayashi, Teruaki: *See—*
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Kober, Ehrenfried H.; Martin, Richard H.; and Raymond, Maurice A., to Olin Corporation. Vapor phase process for preparing halogenated isocyanates. 3,884,952, Cl. 260-453.0PC.

Koch-Light Laboratories Limited: *See—*
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Koch, Paolo; and Perrotti, Emilio, to Snamprogetti S.p.A. Process for the preparation of pyrosulphates. 3,885,024, Cl. 423-512.000.

Koch, Richard C.; and Richards, Hugh C., to Pfizer Inc. Phenylcarbamates. 3,884,962, Cl. 260-479.00C.

Kochs Adler AG: *See—*
Bernewasser, Horst; and Scholl, Hans, 3,884,167.

Koda, Yoshinobu; Sasaki, Shosaku; and Koda, Yoshiyuki, to Toray Silicone Company, Ltd. Organopolysiloxane composition having improved heat stability. 3,884,950, Cl. 260-448.20S.

Koda, Yoshiyuki: *See—*
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Kodaira, Kazuo: *See—*
Nagase, Shunji; Baba, Hajime; Kodaira, Kazuo; and Okazaki, Kooshi, 3,884,775.

Kodaira, Yasuo. Switch with an indicator. 3,885,116, Cl. 200-308.000.

Kodys, Edmund, to Foster Grant Co., Inc. Lens holding groove means. 3,884,561, Cl. 351-83.000.

Koenig, Horst; Thieme, Peter; and Amann, August, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Mesoionic 2,3-substituted 5-acylimino-1,3,4-thiadiazoles. 3,884,930, Cl. 260-306.80D.

Koerner, Ernest C.: *See—*
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Kogure, Tsuneo, to Amada Company, Ltd. Reducing valve. 3,884,254, Cl. 137-102.000.

Koike, Yujiro; Maeda, Haruo; Nishino, Tsutomu; Aoyama, Akimitu; and Mogi, Yuji, to Matsushita Electric Industrial Company Limited. Target assembly for storage tubes and a method of making the same. 3,885,188, Cl. 313-394.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Ishigami, Hikoichi; Sato, Akira; Kitayama, Seishi; and Kobayashi, Kouhei, 3,885,111.

Kolb, Gunter, to Bayer Aktiengesellschaft. Chlorinated polypentenamer. 3,884,893, Cl. 260-93.100.

Kolb, Robert E., to Minnesota Mining and Manufacturing Company. Fluoroelastomer compositions with triorganophosphorus oxide. 3,884,877, Cl. 260-47.0UA.

Koleske, Joseph V.: *See—*
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Kollar, John, to Halcon International, Inc. Vicinal glycol ester purification process. 3,884,965, Cl. 260-499.000.

Koller, Rudolf, to Siemens Aktiengesellschaft. Device for adjustment and line-by-line movement of a type body in a type printing device. 3,884,338, Cl. 197-49.000.

Komatsu, Noboru; Arai, Tohru; Sugimoto, Yoshihiko; and Mizutani, Masayoshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for forming a carbide layer of a IV-b group element of the periodic table on the surface of a cemented carbide article. 3,885,059, Cl. 427-12.000.

Komatsu, Noboru; Arai, Tohru; Sugimoto, Yoshihiko; and Mizutani, Masayoshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for forming a chromium carbide layer on the surface of an iron, ferrous alloy or cemented carbide article. 3,885,064, Cl. 427-228.000.

Komorowski, Klaus; and Kurtz, Peter, to Bayer Aktiengesellschaft. Process for the manufacture of 2,4-dicyano-3,5-dimethylaniline. 3,884,956, Cl. 260-465.00E.

Kondo, Shigeji. Directional-control valve. 3,884,266, Cl. 137-625.270.

Konishiroku Photo Industry Co., Ltd.: *See—*
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Konsult AB Gerontologia: *See—*
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Kopp, Erich. Method and apparatus for polymerizing molded dental pieces. 3,884,622, Cl. 432-24.000.

Koppen & Lethem Trading Co. A.G.: *See—*
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Koppers Company, Inc.: *See—*
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Kops, Lucian, to Dominion Engineering Works Limited. Trunnion bearing support system. 3,884,420, Cl. 241-176.000.

Korbar, Zdenek: *See—*
Ripka, Josef; Junek, Jan; Vobornik, Vaclav; Lihtarova, Ludmila; Hortlik, Frantisek; Brynda, Vaclav; Ohlidal, Vladimir; Korbar, Zdenek; and Vecera, Milos, 3,884,029.

Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., to Upjohn Company, The. Aminoalkyl esters of di- and trihalopyrazole-1-alkanoic and -1-alkenoic acids. 3,884,934, Cl. 260-310.00R.

Korte, Friedrich W. A. G. K.: *See—*
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Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka; Suzuki, Yuji; and Takamoto, Kunio, to Toyo Soda Manufacturing Co., Ltd. Graft-polymer of vinyl chloride and producing process thereof. 3,884,991, Cl. 260-878.00R.

Koshimo, Akio; Tomita, Kosuke; Takagi, Kunihiko; Mitsui, Minoru; and Isikawa, Kunihiro, to Unitika, Ltd. Photosensitive polyamide composition. 3,884,702, Cl. 96-115.00P.

Kostevich, Dmitry Nikolaevich: *See—*
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Koyama, Hiroaki: *See—*
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Kozinczuk, Orest, to Innovative Process Equipment, Inc. Electrolytic steam generator. 3,885,124, Cl. 219-288.000.

Krafftczyk, Friedrich; and Helger, Roland, to Merck Patent Gesellschaft mit beschraenkter Haftung. Reaction chamber unit for test strips. 3,884,641, Cl. 23-253.00R.

Krasnov, Mikhail M. Method of glaucoma treatment. 3,884,236, Cl. 128-303.100.

Krautwurst, Homer V.; and Schulitz, Cristian F., to General Motors Corporation. Tank fill vapor control. 3,884,204, Cl. 123-136.000.

Kristiansen, Odd, to Ciba-Geigy Corporation. S-diphenylmethyl-dithiophosphates. 3,884,998, Cl. 260-948.000.

Kruger, Gunter; Baum, Helmut; and Widmaier, Manfred, to Robert Bosch G.m.b.H. Method of making a thin film electronic circuit unit. 3,883,947, Cl. 29-578.000.

Kruka, Vitold R., to Shell Oil Company. Friction reduction. 3,884,252, Cl. 137-13.000.

Krupa, Vernon: *See—*
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Kudo, Mitsuhiro: *See—*
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Kuehn, Andrew, III, to Systematics, Inc. Magneto-generator ignition system. 3,884,207, Cl. 123-148.00R.

Kuehnle, Manfred R., to Coulter Information Systems, Inc. Sputtering method for thin film deposition on a substrate. 3,884,787, Cl. 204-192.000.

Kuhl, Dieter; and Marchetto, Manfredo, to Siemens Aktiengesellschaft. Composition for catalytic decomposition of hydrogen. 3,884,836, Cl. 252-455.00R.

Kuligowski, Gerd, to Siemens Aktiengesellschaft. Moving coil system for light-beam galvanometers, light-beam oscillographs and the like. 3,885,214, Cl. 324-154.00R.

Kulka, Kurt; and Zazula, Teodosij, to Fritzsche Dodge & Olcott Inc. Alkyl monomethyl-ringsubstituted-diacetoxy-benzoate perfume compositions. 3,884,843, Cl. 252-522.000.

Kumada, Masayuki: *See—*
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Kunak, Anthony F.; and Falatok, Andrew, to Atteny, Inc. Process for producing decorative pile fabrics. 3,884,743, Cl. 156-304.000.

Kunig, Horst. Detection of absence of concentration and coherence in a subject. 3,883,962, Cl. 35-22.00R.

Kunii, Takehiko. Refuse loader. 3,884,372, Cl. 214-83.300.

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Kuno, Mitsuzo: *See—*
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Kunz, Walter George, Jr., to du Pont de Nemours, E. I., and Company. Device for gas-exit ducts to convert vortical gas flow to sound-attenuated axial gas flow. 3,884,323, Cl. 181-41.000.

Kunze, Ernst-Gunter: *See—*
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Kurtz, Arthur L. Inside pipecutter. 3,883,950, Cl. 30-106.000.

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Kuzyk, Roman. Method for motor control. 3,885,170, Cl. 307-252.0UA.

Kyburz, Emilio; and Spiegelberg, Hans, to Hoffmann-LaRoche Inc. Tricyclic amines and processes for the preparation thereof. 3,884,967, Cl. 260-501.100.

L. & C. Steinmuller GmbH: *See—*
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Laing, Ian Burnett: *See—*
Romanski, Andrezej Antoni Florian; Allen, Michael John; Fletcher, John Malcolm; Laing, Ian Burnett; and Markham, Harry, 3,884,840.

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Laing, Nikolaus; and Laing, Ingeborg. Electric storage air heater. 3,884,295, Cl. 165-96.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes George Claude: *See—*
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Lakritz, Julian: *See—*
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Lambert, Frank Percy; and Lee, Edward William, to Ilford Limited. Cellulosic film base assembly. 3,885,080, Cl. 428-336.000.

Land, Edwin H., to Polaroid Corporation. Viewer providing automatic cassette latching and ejection. 3,884,562, Cl. 352-74.000.

Land, Joseph G., Jr.: *See—*
Campbell, Robert T.; Ritter, Laurence B.; and Land, Joseph G., Jr., 3,884,752.

Landecker, Kurt. Thermoelectric element. 3,884,726, Cl. 136-203.000.

Landen, William James, to Eyelet Specialty Co., Incorporated. Bottle safety closure. 3,884,379, Cl. 215-221.000.

Landolt, Joseph G. Means for windrow maintenance. 3,884,022, Cl. 56-364.000.

Landwehrkamp, Hans: *See—*
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Lane, Robert E.: *See—*
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Lang, William J.; Brewer, Gerald K.; Fritz, Richard B.; and Eggers, Frederick W., to Symbolic Displays, Inc. Aircraft multiple anticollison light system. 3,885,226, Cl. 340-27.00R.

Langen & Co.: *See—*
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Langley, Robert; Robertson, George Heddle; and Bridge, Christopher James, to Ciba-Geigy Corporation. Pigment dispersions. 3,884,713, Cl. 106-308.00N.

Langner, Dietrich: *See—*
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Larikka, Leo. Automatic flanging drill apparatus. 3,884,060, Cl. 72-23.000.

Larsen, Farrell G.: *See—*
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Larsen, Robert T., to Outboard Marine Corporation. Marine noise and vibration isolation system. 3,884,174, Cl. 115-17.000.

Lauerbach-Lemeier, Robert: *See—*
Baumann, Reinhold; Lauerbach-Lemeier, Robert; Kunze, Ernst-Gunter; Striebich, Alfred; and Rothe, Hans-Joachim, 3,884,855.

Laurance, Dale Roderic; Roe, Richard Dale; and Sheppard, Robert Gene, to du Pont de Nemours, E. I., and Company. Regenerated cellulose recovery process using a humid gas to remove coating solvent. 3,884,907, Cl. 260-212.000.

Lawrence Peska Associates, Inc.: *See—*
Di Benedetto, Nicholas, 3,885,148.
Farrell, Theodore, 3,883,951.
Keindl, John, 3,884,223.

Lazarus, Howard, to Astrosystems, Inc. Two speed control systems. 3,885,209, Cl. 318-692.000.

Lazzarotti, S. James: *See—*
Bradshaw, Robert S.; Greene, Alfred A.; Hunter, James R.; Lazzarotti, S. James; Mann, Abe; and Rosenblatt, Herbert L., 3,884,370.

Le Nickel: *See—*
Gandon, Louis, 3,884,681.
Lepetit, Marcel; Charles, Christian; Nonnet, Jean; and LeFoll, Francois, 3,884,518.

Lea-Ronal, Inc.: *See—*
Kessler, Richard B., 3,884,774.

Lear Siegler, Inc.: *See—*
Moses, Adrian, 3,885,197.
Passmore, David G., 3,884,454.
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Lebduska, Robert L., to United States of America, Navy. Fiber break detection methods for cables using multi-fiber optical bundles. 3,884,585, Cl. 356-239.000.

Lederman, Jack M., to Goodyear Tire & Rubber Company, The. Floatable rubberized fabric. 3,885,077, Cl. 428-265.000.

Lee, Edward William: *See—*
Lambert, Frank Percy; and Lee, Edward William, 3,885,080.

Lee, Lawrence L., to Magnavox Company, The. Apparatus and method for coupling an acoustical surface wave device to an electronic circuit. 3,885,173, Cl. 310-9.400.

Leenaards, Antoine Joseph, to Crown Cork & Seal Co. Inc. Palletising or depalletising magazine. 3,884,366, Cl. 214-6.0BA.

Leesona Corporation: *See—*
Anderson, John W.; Barney, John J.; Flanagan, James J.; and Krupa, Vernon, 3,884,611.

Lefkowitz, Saul; and Spector, George. Painting glove. 3,883,897, Cl. 2-161.00R.

Lefler, Clarence A.: *See—*
Griffith, William A.; Day, Howard E.; Lefler, Clarence A.; and Cottam, Stephen M., 3,884,682.

LeFoll, Francois: *See—*
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Lefort, Marcel: *See—*
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Lehara Equipment Co., Inc.: *See—*
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Lehmann, Rolf, to Escher Wyss Limited. Calendar having a displaceable support cylinder. 3,884,141, Cl. 100-163.00R.

Lehmann, Rolf: *See—*
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Leigh Products Inc.: *See—*
Herr, Theodore Z.; and McClure, Daniel J., 3,884,003.

Leisure Dynamics, Inc.: *See—*
Elias, Jack J.; and Tieri, Joseph C., 3,884,501.

Leiter, Larry L.; Wright, Gerard C.; and Bowman, David G., to Xerox Corporation. Apparatus for ejecting a stapled set of sheets sidewise from the collating bins. 3,884,408, Cl. 227-100.000.

Leko, Toma D. Spring in the form of stacked sheet metal plates. 3,884,457, Cl. 267-162.000.

Leland Stanford Junior University, The Board of Trustees of: *See—*
Johnson, William S.; Morton, Douglas R.; and Gravestock, Michael B., 3,884,945.

Lemelson, Jerome H. Display sheet material and method. 3,884,554, Cl. 350-164.000.

Leng, John Lindley; and Newton, David Frederick, to Imperial Chemical Industries Limited. Water soluble quaternized benzthiazole phenylazopyridine dyestuffs. 3,884,899, Cl. 260-146.00R.

Leonard, Verna M. Musical cycle differentiation aid. 3,884,110, Cl. 84-471.000.

Leonard, Verna M. Inversion maker and chord matcher. 3,884,111, Cl. 84-471.000.

Leonard, Verna M. Key signature structure teaching aid. 3,884,112, Cl. 84-471.000.

Leonard, Verna M. Slide rule chord indicator. 3,884,113, Cl. 84-471.000.

Leonard, Verna M. Major and minor chord organizor. 3,884,114, Cl. 84-471.000.

Leonard, Verna M. Interval teaching aid. 3,884,115, Cl. 84-471.000.

Lepetit, Marcel; Charles, Christian; Nonnet, Jean; and LeFoll, Francois, to Le Nickel; and Centre National pour l'Exploitation des Oceans. Casting-off device. 3,884,518, Cl. 294-83.00R.

L'Eplattenier, Francois: *See—*
Eicke, Hans; Arnold, Vladimir; and L'Eplattenier, Francois, 3,884,949.

Leroy, Billy J.: *See—*
Gray, Peter R.; and Leroy, Billy J., 3,885,023.

Lever Brothers Company: *See—*
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Grelon, Pierre, 3,884,605.

Levy, Ira S., to Exxon Nuclear Company Inc. Thermo-mechanical treatment of zirconium alloys. 3,884,728, Cl. 148-11.50F.

Lew, Hyok Sang. Self-attaching coupling spring for the coupled chopsticks. 3,884,456, Cl. 267-156.000.

Lewis, Peter Frederick, to English Electric Valve Company Limited. Coupling arrangements in resonant devices. 3,885,221, Cl. 333-83.00R.

Lewis, Robert E.; and Walworth, Robert S., to American Seating Company. Aisle light. 3,885,144, Cl. 240-2.00R.

Leyer, Helmut: *See—*
Hoppe, Peter; Drouven, Gustav; Leyer, Helmut; and Muller, Johann, 3,884,169.

Lianco Container Corporation: *See—*
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Liberty Mutual Insurance Company: *See—*
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Licentia-Patent-Verwaltungs-G.m.b.H.: *See—*
Hildenbrand, Rupert, 3,885,105.

Lidgard, Edward J. Packaging method and construction. 3,884,356, Cl. 206-521.000.

Liebman, Alan J., to Xerox Corporation. Coated wire developer brush. 3,884,185, Cl. 118-637.000.

Liedholm, Per, to Stabilator AB. Locking joint for concrete piles having joined sections. 3,884,589, Cl. 403-316.000.

Liggett, James J. Method for preparing simulated meat, fish and dairy products. 3,885,048, Cl. 426-18.000.

Lightcraft of California: *See—*
Chacon, Julian, 3,885,147.

Lihtarova, Ludmila: *See—*
Ripka, Josef; Junek, Jan; Vobornik, Vaclav; Lihtarova, Ludmila; Hortlik, Frantisek; Brynda, Vaclav; Ohlidal, Vladimir; Korbar, Zdenek; and Vecera, Milos, 3,884,029.

Limburg, William W., to Xerox Corporation. Polycyclic aromatic polymer as a photoconductor or overlayer. 3,884,689, Cl. 96-1.500.

Limouze, Charles A., to United States of America, Navy. Guidance and control systems demonstrator for a guided missile. 3,883,961, Cl. 35-10.400.

Lind, Per Ingemar Arnold, to Svenska Utvecklings AB (SUAB), Swedish National Development Co. Transducer for a flow gauge. 3,884,069, Cl. 73-194.00C.

Lindblad, Nero R.; Johnson, Gordon E.; and Sharp, James H., to Xerox Corporation. Imaging composition. 3,884,825, Cl. 352-62.100.

Linde Aktiengesellschaft: *See—*
Abels, Theodor; and Puschel, Siegfried, 3,884,318.
Abels, Theodore; and Puschel, Siegfried, 3,885,204.
Forster, Franz; and Stuhr, Hans-Waldemar, 3,884,038.

Linder, Solomon L., to McDonnell Douglas Corporation. Variable optical wedge for image stabilization and other purposes. 3,884,548, Cl. 350-16.000.

Linderman, William J., to Westinghouse Air Brake Company. Train control system for transit vehicles. 3,884,437, Cl. 246-63.00C.

Lindquist, Hans, to ITT Industries, Inc. Liquid treatment apparatus. 3,884,812, Cl. 210-220.000.

Liquid Controls Corporation: *See—*
Siebold, Howard E., 3,884,073.

List, Hans; Affenzeller, Josef; and Kirchweger, Karl, to Hans List. Inlet port for internal combustion engines. 3,884,209, Cl. 123-188.00M.

Little, David C., to GAF Corporation. Algicidal roofing granules. 3,884,706, Cl. 106-15.00R.

Litton Industrial Products, Inc.: *See—*
Cook, Francis W., Jr., 3,884,591.

Livingston, William L., to Factory Mutual Research Corporation. Fire extinguishing system having a variable extinguishant discharge rate. 3,884,305, Cl. 169-37.000.

Lock, Richard G.; and Wilfore, John F., to General Electric Company. Apparatus to analyze fluids. 3,884,640, Cl. 23-253.00R.

Locke, John Michael: *See—*
Amass, Allan John; Butcher, Anthony Vincent; Duck, Edward William; and Locke, John Michael, 3,884,894.

Lockheed Aircraft Corporation: *See—*
Blad, Leiv H.; and Warkow, Robert F., 3,885,071.

Lodige, Fritz: *See—*
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Lodige, Wilhelm; Lodige, Fritz; and Lucke, Josef. Liquid cooled mixing tool for machines for applying glue to shavings. 3,884,294, Cl. 165-92.000.

Logie, Charles F., to American Store Equipment Corporation. Partition system. 3,884,002, Cl. 52-285.000.

Logsdon, Duane D. Plumbing structure. 3,884,438, Cl. 248-59.000.

Logsdon, Duane D. Scupper drain structure. 3,884,809, Cl. 210-163.000.

Lohr, Alfred; Tschek, Wolfgang; Forster, Heinz; Klauk, Bernhard; and Schwan, Wolfgang, to F. Kuppersbusch & Sohne Aktiengesellschaft. Cooking appliance. 3,884,135, Cl. 99-348.000.

Loliger, Willi; and Schmied, Rudolf, to Alpura Koreco A.G. Welding apparatus for a packaging machine. 3,884,746, Cl. 156-466.000.

Lorenz, Walter; Jautelat, Manfred; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. O,O-dialkyl-1-cyanoalkyl-ketonoxime-thionophosphoric acid esters. 3,884,996, Cl. 260-940.000.

Lowell, Seymour. Surface area determination by direct read-out. 3,884,083, Cl. 73-432.0PS.

Lowenson, Jeffrey: *See—*
Du Bosque, Clayton, Jr.; and Lowenson, Jeffrey, 3,885,207.

Lowrance, Byron R., to Ethyl Corporation. Preparation of beryllium hydride. 3,885,025, Cl. 423-645.000.

Lubbers, Henning: *See—*
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Lucca, Salvatore: *See—*
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Lucke, Josef: *See—*
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Ludwig, Vernon A., to Valmat Signs & Signals Ltd. Visual display apparatus. 3,883,966, Cl. 40-36.000.

Luker, John P.: *See—*
Allen, Joseph H.; Klemm, Waldemar A.; and Luker, John P., 3,884,710.

Lundergan, Robert Graham; and Huntzinger, Paul J., to AMP Incorporated. Connector for circuit boards or the like. 3,884,544, Cl. 339-198.00G.

Luoma, Richard William, to International Business Machines Corporation. Document card reader. 3,885,132, Cl. 235-61.11R.

Luria Brothers & Co., Inc.: *See—*
Burlingame, Richard D., 3,883,997.

Lutz, William A.; and Zipf, Frederick W., III, to Blessings Products, Incorporated. Disposable surgical mask. 3,884,227, Cl. 128-146.200.

Lux, Adalbert A. Leakage developer recirculation assembly. 3,884,571, Cl. 355-3.000.

Luzzi, John J.: *See—*
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Lychko, Ivan Ivanovich: *See—*
Dudko, Daniil Andreevich; Alexeenko, Alexei Pavlovich; Lychko, Ivan Ivanovich; Iljushenko, Valentin Mikhailovich; Suschuk-Sljusarenko, Igor Ivanovich; Tarnovsky, Alexandr Grigorievich; Kostevich, Dmitry Nikolaevich; Andrusenko, Jury Iosifovich; Gurevich, Samuil Markovich; and Strakhov, Gennady Nikolaevich, 3,885,121.

Lynch, Henry W., to Medical Engineering Corporation. Variable volume prosthetic assembly. 3,883,902, Cl. 3-36.000.

Lynkeus Corporation, The: *See—*
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M & I Chemicals Inc.: *See—*
Pinkowski, Norman J.; Freiman, Aaron; and Beiter, Charles B., 3,885,039.

M-O Valve Company Limited, The: *See—*
Baker, Basil Offor; and Ross, John William Ellis, 3,885,202.
Baker, Basil Offor; and Ross, John William Ellis, 3,885,203.

M & T Chemicals Inc.: *See—*
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MacBean, Donald G.: *See—*
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MacClaren, Robert H.: *See—*
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Macco Oil Tool Co., Inc.: *See—*
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MacDermid Incorporated: *See—*
Rantell, Alan; and Holtzman, Abraham, 3,884,704.

MacDonald, James A.: *See—*
MacDonald, Richard A.; MacDonald, James A.; and Andrews, Joseph J., 3,884,466.

MacDonald, Richard A.; MacDonald, James A.; and Andrews, Joseph J., to Thingamajig Corporation. Game ball. 3,884,466, Cl. 273-65.0EC.

MacFarlane, Eseni Gogo: *See—*
Stephens, Derek James; MacFarlane, Eseni Gogo; and Turner, Owen James, 3,884,343.

Machu, Bohumil: *See—*
Ranocha, Jaromir; Repka, Dusan; and Machu, Bohumil, 3,884,744.

Maciolek, Ralph B.; Skogman, Richard A.; and Speerschneider, Charles J., to Honeywell, Inc. Substrate preparation for liquid phase epitaxy of mercury cadmium telluride. 3,884,788, Cl. 204-192.000.

Madlener, Paul; and Pecksen, Otto, to Industrie-Werke Karlsruhe Augsburg Akt. Detonator for land mines. 3,884,151, Cl. 102-19.200.

Maeda, Haruo: *See—*
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Maeda, Hiroaki: *See—*
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Maender, Otto William: *See—*
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Maessen, Jan Th. M. F.; and DeRijke, David, to Naarden International, N.V. 2-n-Butyl 4,4,6-trimethyl-1,3 dioxane perfume. 3,884,841, Cl. 252-522.000.

Magee, Philip S., to Chevron Research Company. Insecticidal N-aralkanoyl and N-aralkenoyl derivatives of O,S-dihydrocarbylphosphoroamidothioates and S,S-dihydrocarbylphosphoroamidodithioates. 3,885,032, Cl. 424-212.000.

Magill, John W. Telescopic connection for the proximate end of an airport passenger bridge. 3,883,918, Cl. 14-71.000.

Magnavox Company, The: *See—*
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Mahoney, John A.; and Hensley, Albert L., Jr., to Standard Oil Company. Reforming with platinum-rhenium-selenium catalysts. 3,884,799, Cl. 208-139.000.

Maillard, Jacques Georges, to Laboratoires Jacques Logeais. Therapeutic composition containing 1-(2-hydroxy-2-indanyl)-propylamine. 3,885,045, Cl. 424-330.000.

Makarov, Ivan Grigorievich: *See—*
Budker, Gersh Itskovich; Karliner, Marlen Moiseevich; Makarov, Ivan Grigorievich; Morozov, Sergei Nikolaevich; Nezhevenko, Oleg Alexandrovich; Ostreiko, Gennady Nikolaevich; and Shekhtman, Isai Abramovich, 3,885,193.

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Malatesta, Roger J. Pneumatic collapsible exercising device of the according type. 3,884,463, Cl. 272-79.00C.

Malcik, Frank J.: *See—*
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Manbritt Industries, Inc.: *See—*
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Britten, George C., 3,884,609.

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Mancuso, Arion: *See—*
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Manecke, Siegfried E., to Robertshaw Controls Company. Thermostat construction. 3,885,222, Cl. 337-338.000.

Mann, Abe: *See—*
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Mansei Kogyo Kabushiki Kaishya: *See—*
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Robinson, Charles W.; and Merklin, Kenneth E., 3,885,017.

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Marketing and Research Services, Inc.: *See—*
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Markham, Harry: *See—*
Romanski, Andrezej Antoni Florian; Allen, Michael John; Fletcher, John Malcolm; Laing, Ian Burnett; and Markham, Harry, 3,884,840.

Marler Haley ExpoSystems Limited: *See—*
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Marlin Firearms Company, The: *See—*
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Maroshick, Max, to Boeing Company, The. Articulate railway vehicle stabilizing linkage apparatus. 3,884,155, Cl. 105-4.00R.

Marschak, Howard J. Shelving and/or display unit. 3,884,358, Cl. 211-148.000.

Marsee, Frederick J., to Ethyl Corporation. High velocity carburetor. 3,885,004, Cl. 261-23.00A.

Marsh, Richard O., Jr. Pipe coupling devices. 3,884,509, Cl. 285-37.000.

Martel, Jacques; and Costerousse, Germain, to Rousell Uclaf. Process for the preparation of vincamine. 3,884,927, Cl. 260-293.530.

Marten, Fritz, to Siemens Aktiengesellschaft. Propulsion arrangement equipped with a linear motor. 3,884,154, Cl. 104-148.0MS.

Martensson, Kjell H.: *See—*
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Martin, Ernest Newell, to Arrowhead Puritas Water, Inc. Water supply for vending machines. 3,884,389, Cl. 222-146.0HE.

Martin, Henry: *See—*
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Martin, Jerry Roy: *See—*
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Jones, Peter Hadley; Martin, Jerry Roy; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Tadanier, John Soloman, 3,884,903.

Martin, Peter G., to Arthur D. Little, Inc. Tape cassette. 3,884,430, Cl. 242-199.000.

Martin, Richard H.: *See—*
Kober, Ehrenfried H.; Martin, Richard H.; and Raymond, Maurice A., 3,884,952.

Martin, Robert E. Method for producing prefabricated wall section with molded panels. 3,885,008, Cl. 264-45.300.

Martin, Thomas B.: *See—*
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Maruyama, Koji: *See—*
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Marvin Glass Associates: *See—*
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Mason, Cecil George Willmot. End cap for the fluid impregnation of timber. 3,884,634, Cl. 21-72.000.

Massachusetts Institute of Technology: *See—*
Green, Howard, 3,884,758.

Massengill, Roy H.; and Buff, Ernest D., to Allied Chemical Corporation. Inflation differential control for multiple bag restraint system. 3,884,497, Cl. 280-150.0AB.

Massie, Kenneth Herbert; and Chalton, Gordon Alfred, to Chalton Electronic Services Limited. Mastitis detector. 3,884,187, Cl. 119-14.140.

Massie, Philip E. Variable displacement sealed pump. 3,884,125, Cl. 92-13.500.

Masuda, Manabu: *See—*
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Matejcic, Leonard S.: *See—*
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Matern, Jean-Jacques. Attachment for Varying Spray from Pressurized Containers. 3,884,399, Cl. 222-402.130.

Matsuda, Hideaki; Yamauchi, Fujio; and Mori, Hisakazu, to Okura Kogyo Kabushiki Kaisha. Process for preparation of nonflammable water-containing polymer material from basic salts of polymerizable mixtures of ethylenically unsaturated phosphates. 3,884,864, Cl. 260-29.7NR.

Matsui, Katsuaki: *See—*
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Matsuo, Kazunori; Suzuki, Kohji; and Endo, Katutsohi, to Ricoh Co., Ltd. Method and composition of mixed $BaSO_4$ and $SrSO_4$ for polishing a photoconductor surface. 3,884,824, Cl. 252-164.000.

Matsushita Electric Industrial Company Limited: *See—*
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Matsuzaki, Atsushi, to Sony Corporation. Peak detector. 3,885,168, Cl. 307-235.00A.

Mattel, Inc.: *See—*
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Matthews, Charles W., to Institute of Gas Technology. Coal pretreater and ash agglomerating coal gasifier. 3,884,649, Cl. 48-202.000.

Maudlin, Wendell E., to Borg-Warner Corporation. Refrigerant charging method and apparatus. 3,884,047, Cl. 62-77.000.

Maurer, Donald J.; and Sims, Dermot F., to Mattel, Inc. Pneumatic projector and pneumatically responsive targets. 3,884,471, Cl. 273-101.200.

Maurer, Donald L. Lock protection apparatus. 3,884,057, Cl. 70-259.000.

Maurer, Robert D.; and Schultz, Peter C., to Corning Glass Works. Germania containing optical waveguide. 3,884,550, Cl. 350-96.0WG.

Mauthner, Thomas, to Cambridge Chemical Products, Inc. Method for counting blood platelets. 3,884,579, Cl. 356-39.000.

Mauvernay, Roland-Yves; Bush, Norbert; Moleyre, Jacques; Monteil, Andre; and Simond, Jacques. 1-[3-(1-Ethynlcyclohexyloxy)-2-hydroxy]-propyl-[4-phenyl, or 4-(2-phenyl-2-alkoxy)-]ethyl-piperzines. 3,884,923, Cl. 260-268.0PH.

Max Datwyler & Co.: *See—*
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May & Baker Limited: *See—*
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May, Fred: *See—*
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Jones, Peter Hadley; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Perun, Thomas John, 3,884,904.

McBerty, Ford H. Coating apparatus. 3,884,180, Cl. 118-122.000.

McCachren, Gary S., to General Electric Company. Appliance cord anchor. 3,884,543, Cl. 339-105.000.

McCarter, Arol B.; and Van Os, Seymour, Jr., to Blount, R. E., a part interest. Well pump for fluids and vapors. 3,884,299, Cl. 166-68.000.

McCarthy, John Felix: *See—*
Harrison, Ian Robert; McCarthy, John Felix; and Palmer, Bryan Harper, 3,884,968.

McCartney, Joseph F., to United States of America, Navy. Electrochemical energy source for diver suit heating. 3,884,216, Cl. 126-204.000.

McClary, Joseph Michael, to Kusan, Inc. Kazoo and Face Mask Combination. 3,883,982, Cl. 46-1.00F.

McCloskey, Albert R., to Rockwell International Corporation. Ball bearing assembly. 3,884,537, Cl. 308-6.00C.

McClure, Daniel J.: *See—*
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McClure, Samuel A., to Raymond Lee Organization, Inc., The, a part interest. Rifle. 3,883,977, Cl. 42-75.00B.

McCord Corporation: *See—*
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McCubbin, John Gordon, to Alcan Research and Development Limited. Method of direct chill continuous casting. 3,884,290, Cl. 164-82.000.

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McCully, William Clair: *See—*
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Linder, Solomon L., 3,884,548.
Olsen, Larry C.; and Scott, Howard W., 3,885,007.

McFadden, Edward Joseph, to Byron Jackson Inc. Safety latch for well pipe elevators. 3,884,519, Cl. 294-90.000.

McGilvery, James D., to Erco Industries Limited. Bipolar electrodes. 3,884,792, Cl. 204-290.00F.

McGovern, Terrence P.; Beroza, Morton; and Fiori, Bart J., to United States of America, Agriculture. Esters of 1,4-benzodioxan-2-carboxylic acid as attractants for the european chafer. 3,884,937, Cl. 260-340.300.

McGraw-Edison Company: *See—*
Payet, George L.; and Brummet, Berthal D., 3,884,632.
Schmidt, Jacob E., 3,884,725.

McKee, Raymond J. Twin lock key tag. 3,884,059, Cl. 70-456.00R.

McLaughlin, James Hugh, to Center For New Product Development. Actuation overcap for aerosol can. 3,884,398, Cl. 222-402.130.

McLeod, Gordon D.: *See—*
Trice, Robert T.; McLeod, Gordon D.; Anderson, Amos R.; and Wilson, Dennis C., 3,884,868.

McMaster, Samuel B., to Do-It Corporation. Peel-resistant pressure-sensitive hangers. 3,884,443, Cl. 248-467.000.

McNair, Robert Bruce; and Gallagher, Raymond J. Fire alarm box. 3,885,236, Cl. 340-304.000.

Mead Corporation, The: *See—*
Robinson, James V.; and Hill, Larry O., 3,884,804.

Mead Johnson & Company: *See—*
Seidehamel, Richard J.; and Dungan, Kendrick W., 3,885,047.

Mechanical Technology Incorporated: *See—*
Winn, Leo W., 3,884,534.

Medendorp, Roger L.: *See—*
Burch, Charles H.; and Medendorp, Roger L., 3,884,383.

Mederer, Andreas: *See—*
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Medical Engineering Corporation: *See—*
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Medical Monitor Systems, Inc.: *See—*
Richardson, Philip C.; Hudspeth, Emmett L.; Boger, Allen D., Jr.; and Dykstra, Jerald P., 3,884,219.

Mehnert, Johannes S. Blow-molding apparatus. 3,884,610, Cl. 425-387.00B.

Mehta, Nariman B., to Burroughs Wellcome Co. Meta chloro or fluoro substituted alpha-T-butylaminopropionphenones in the treatment of depression. 3,885,046, Cl. 424-330.000.

Meiller, Hermann; and Hocke, Horst, to Grammer, Willibad. Push button fastening device for safety belt portions. 3,883,932, Cl. 24-230.00A.

Meller, Frederick D.: *See—*
Jesensky, Alexander; and Meller, Frederick D., 3,884,567.

Melton, Kenneth W., to Seymour Foods, Inc. Carton cover closing machine. 3,884,015, Cl. 53-131.000.

Meltzer, Leonard: *See—*
Franceschini, John B.; and Meltzer, Leonard, 3,885,131.

Melvold, Odd S., to Jiffy Products International Ltd. Expandable shape-retaining peat moss briquettes and method of producing same. 3,883,989, Cl. 47-37.000.

Menasha Corporation: *See—*
Riviere, Donald L.; and Thomsen, Paul M., 3,884,287.

Mendelson, George R.; and Garcia, Isaura A., to Revlon, Inc. Adjustable wigs. 3,884,248, Cl. 132-53.000.

Menown, Hugh; and Jones, Eric, to English Electric Valve Company Limited. Thyratrons. 3,885,183, Cl. 313-195.000.

Mentken, Robert. Picture frame strip. 3,883,975, Cl. 40-155.000.

Merciadis, Gregory C., to Shell Oil Company. Vacuum distillation sampling apparatus. 3,884,082, Cl. 73-422.0TC.

Mercier, Bernard; and Serrano, Francisco, to Subsea Equipment Associates Limited (SEAL). Apparatus for connecting underwater installations. 3,884,364, Cl. 214-1.00R.

Mercier, Loic: *See—*
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Merck & Co., Inc.: *See—*
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Merck Patent Gesellschaft mit beschraenkter Haftung: *See—*
Kraffczyk, Friedrich; and Helger, Roland, 3,884,641.

Merk, Paul Joseph, to Canadian Marconi Company. System for improving the reliability of indicator arrangements. 3,885,230, Cl. 340-166.0EL.

Merker, Reuven; and Lucca, Salvatore, to Metalux Corporation, The. Electrodeposition of nickel. 3,884,773, Cl. 204-49.000.

Merkle, Ralph H., to General Motors Corporation. Dual tank fuel system. 3,884,255, Cl. 137-265.000.

Merklin, Kenneth E.: *See—*
Robinson, Charles W.; and Merklin, Kenneth E., 3,885,017.

Merz, Herbert: *See—*
Schlamann, Wilhelm; and Merz, Herbert, 3,884,529.

Mesinger, Robert H. Bicycle seat structure. 3,884,525, Cl. 297-212.000.

Messenger, Joseph U., to Mobil Oil Corporation. Well cementing process. 3,884,302, Cl. 166-291.000.

Messenschmitt-Bolkow-Blohm GmbH: *See—*
Croy, William J.; and Mederer, Andreas, 3,884,435.

Messer, Mayer Naoum: *See—*
Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, 3,884,921.

Messerschmidt, Robert P.; and Montag, Lloyd D. Fire safety systems. 3,884,304, Cl. 340-418.000.

Mesta Machine Company: *See—*
Petros, Andrew J.; and Pizzedaz, Ronald D., 3,884,064.

Metafab Industries, Inc.: *See—*
Apple, Charles N., Sr., 3,884,588.

Metal Box Company Limited, The: *See—*
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Metal Box Limited: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
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Metallurgie Hoboken-Overpelt: *See—*
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Metalux Corporation, The: *See—*
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Meyer, Burton C., to Marvin Glass Associates. Game apparatus. 3,884,472, Cl. 273-121.00R.

Michaelis, Jack H.; and Malcik, Frank J., to Swingline, Inc. Safety lock loose-leaf ring binder mechanism. 3,884,586, Cl. 402-38.000.

Midwest Chrome Process Company: *See—*
Hage, Jacob M., 3,884,116.

Mikitenko, Paul; Cohen, Georges; and Asselineau, Lionel, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for purifying benzene and toluene by extractive azeotropic distillation. 3,884,769, Cl. 203-53.000.

Mikule, Jiri: *See—*
Schneider, Hans-Georg; and Mikule, Jiri, 3,884,714.

Milicevic, Branimir: *See—*
Hoster, Hansruedi; and Milicevic, Branimir, 3,884,626.

Millar, James S.; and Henderson, Glenn W., to Parker-Hannifin Corporation. Coupler. 3,884,448, Cl. 251-149.900.

Miller, Charles J.: *See—*
Dick, Franklin A.; Miller, Donald W.; and Miller, Charles J., 3,884,707.

Miller, Donald E., to Continental Can Company, Inc. Sonic transducer. 3,885,172, Cl. 310-8.700.

Miller, Donald W.: *See—*
Dick, Franklin A.; Miller, Donald W.; and Miller, Charles J., 3,884,707.

Miller, Edward F.; and Hellmuth, Walter W., to Texaco Inc. Polybutenyl-alkylene polyamine-polyalkanol lubricant additive and lubricating compositions containing same. 3,884,821, Cl. 252-51.50R.

Miller, Edward J. Fire control system for multi-zone buildings. 3,884,133, Cl. 98-33.00R.

Miller, Glenn E.: *See—*
Burkholder, Ward J.; Miller, Glenn E.; and Hays, Ronald C., 3,884,983.

Miller, Herman C. Concrete insert. 3,884,008, Cl. 52-699.000.

Miller, James A., to Morgan Adhesives Company. Marking film. 3,884,505, Cl. 282-27.500.

Miller, James E.; and Swenson, Reuben A., to Standard Oil Company. Grease composition. 3,884,820, Cl. 252-41.000.

Mills, Roy: *See—*
Evans, James King; and Mills, Roy, 3,884,563.

Mills, Stacey M.: *See—*
Wilkins, Judd R.; and Mills, Stacey M., 3,884,765.

Miltward, John David, to Decca Limited. Cinematographic film projector. 3,885,092, Cl. 178-7.200.

Milsner, Leon S. Weight for bowling balls. 3,884,465, Cl. 273-54.00B.

Minagawa, Nobuhiko, to Fuji Photo Film Co., Ltd. Photographic support. 3,884,692, Cl. 96-85.000.

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Minnesota Mining and Manufacturing Company: *See—*
Cavallo, Elio; and Furlan, Fulvio, 3,884,699.
Dosser, Dale M., 3,883,998.
Kolb, Robert E., 3,884,877.
Quaglia, Andrea, 3,884,700.

Minnick, Robert C.; Bailey, Paul T.; Sandfort, Robert M.; and Semon, Warren L., to Monsanto Company. Bubble detection systems and multipliers used therein. 3,885,233, Cl. 340-174.0ZA.

Minolta Camera Kabushiki Kaisha: *See—*
Doi, Yasuhiko; and Ikeda, Hiroshi, 3,884,574.

Minowa, Isamu: *See—*
Yagi, Shizuo; Sakurai, Yoshitoshi; and Minowa, Isamu, 3,884,211.

Misselhorn, Klaus. Process for obtaining purified alcohol from fermented mash. 3,884,770, Cl. 203-82.000.

Mitsubishi Chemical Industries, Ltd.: *See—*
Matsushita, Kunichi; Sakurada, Hikaru; and Onuma, Kazuhiko, 3,885,019.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Mitsubishi Petrochemical Company Limited: *See—*
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Mitsubishi Rayon Co., Ltd.: *See—*
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Mitsui, Minoru: *See—*
Koshimo, Akio; Tomita, Kosuke; Takagi, Kunihiko; Mitsui, Minoru; and Isikawa, Kunihiro, 3,884,702.

Mitsui Shipbuilding & Engineering Co., Ltd.: *See—*
Ito, Takashi, 3,884,198.

Mitteldorf, Rudolf; Pfluger, Erich; and Steinicke, Werner, to Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft. Method of preparing a stable mixture of calcium with a compound yielding water at elevated temperature. 3,884,679, Cl. 75-53.000.

Miyajima, Masayoshi: *See—*
Hirono, Akira; and Miyajima, Masayoshi, 3,885,171.

Miyaki, Kiyoshi; Okubo, Akira; and Arai, Sakuji, to Honda Giken Kogyo Kabushiki Kaisha. Internal combustion engine. 3,884,197, Cl. 123-75.00B.

Miyanohara, Isao: *See—*
Otsuki, Susumu; Miyanohara, Isao; Mizui, Norimasa; and Kawamura, Hideo, 3,884,846.

Miyao, Kunioki: *See—*
Hanabusa, Takayoshi; Isozuka, Hiroshi; Miyao, Kunioki; and Gaku, Morio, 3,884,771.

Miyao, Takayuki; Maeda, Hiroaki; and Sato, Masanori, to Aisin Seiki Kabushiki Kaisha. Damper mechanism for hydrostatic transmission. 3,884,095, Cl. 74-687.000.

Miyazawa, Yoshihide: *See—*
Ozutsumi, Minoru; Miyazawa, Yoshihide; Motohashi, Katsuichi; Kiritani, Masatake; and Watanabe, Akio, 3,884,506.

Mizui, Norimasa: *See—*
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Mizuno, Hironaga: *See—*
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Mizutani, Masayoshi: *See—*
Komatsu, Noboru; Arai, Tohru; Sugimoto, Yoshihiko; and Mizutani, Masayoshi, 3,885,059.
Komatsu, Noboru; Arai, Tohru; Sugimoto, Yoshihiko; and Mizutani, Masayoshi, 3,885,064.

Moberly, Charles W., to Phillips Petroleum Company. Arylene sulfide polymers. 3,884,883, Cl. 260-79.100.

Mobil Oil Corporation: *See—*
Andress, Harry J., Jr., 3,884,932.
Gemmill, Robert M., Jr., 3,884,822.
Goldstein, Theodore P., 3,884,971.
Messenger, Joseph U., 3,884,302.

Mochimaru, Hideaki; Suzuki, Shigeru; Ikezu, Yohei; Yaeshima, Masao; and Ukai, Takeshi, to Ricoh Co., Ltd. Exposure unit for a copying machine having a variable magnification. 3,884,576, Cl. 355-69.000.

Mogi, Yuji: *See—*
Koike, Yujiro; Maeda, Haruo; Nishino, Tsutomu; Aoyama, Akimitu; and Mogi, Yuji, 3,885,188.

Mohnach, Michael G.: *See—*
Harbison, William H.; Plisky, John J.; and Mohnach, Michael G., 3,883,920.

Moissl, Friedrich-Gerhard, to Siemens Aktiengesellschaft. Street traffic signalling system. 3,885,227, Cl. 340-41.00R.

Molbert, Robert A., to General Tire & Rubber Company, The. Flame retardant flexible urethane foams. 3,884,849, Cl. 260-2.5BB.

Moleyre, Jacques: *See—*
Mauvernay, Roland-Yves; Bush, Norbert; Moleyre, Jacques; Monteil, Andre; and Simond, Jacques, 3,884,923.

Molnar, Nicholas M. Antibacterial quaternary ammonium salts and method of preparing the same. 3,884,977, Cl. 260-567.60P.

Monahan, Thomas J., to G. T. Schjeldahl Company. Intermittent web drive mechanism employing unidirectional clutches. 3,884,129, Cl. 97-8.00R.

Monarch Marking Systems, Inc.: *See—*
Mulholland, Robert P., 3,884,342.

Monastyrsky, Viktor Nikolaevich: *See—*
Samoilov, Sergei Mikhailovich; Monastyrsky, Viktor Nikolaevich; Pudovik, Svetlana Tikhonovna; and Kuznetsov, Evgeny Vasilievich, 3,884,891.

Monroe Industries, Inc.: *See—*
Monroe, Robert A., 3,884,218.

Monroe, Robert A., to Monroe Industries, Inc. Method of inducing and maintaining various stages of sleep in the human being. 3,884,218, Cl. 128-1.00C.

Monsanto Chemicals Limited: *See—*
Baxter, Samuel; and Gilbert, John Harold, 3,884,030.

Monsanto Company: *See—*
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Fariss, Robert H.; and Snelgrove, James A., 3,884,865.
Graves, Donald Burrell; and Maender, Otto William, 3,885,001.
Minnick, Robert C.; Bailey, Paul T.; Sandfort, Robert M.; and Semon, Warren L., 3,885,233.
Olin, John F., 3,884,673.
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Montag, Lloyd D.: *See—*
Messerschmidt, Robert P.; and Montag, Lloyd D., 3,884,304.

Montavon, Marc: *See—*
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Monteil, Andre: *See—*
Mauvernay, Roland-Yves; Bush, Norbert; Moleyre, Jacques; Monteil, Andre; and Simond, Jacques, 3,884,923.

Montgomery, Donald R., to Union Carbide Corporation. Vinyl copolymers and processes for making them. 3,884,887, Cl. 260-80.750.

Montgomery, Ronald Eugene; and Incho, Harry Hobart, to FMC Corporation. Insecticidal compositions and methods of combatting insects using cyclopropane carboxylate insecticides with a synergistic compound of mono (alkyl and alkenyl) mono omega-alkynyl arylphosphonates. 3,885,031, Cl. 424-192.000.

Moog Inc.: *See—*
Grouwinkel, George F.; and Hager, James W., 3,884,267.

Moolenaar, Robert J.: *See—*
Bon, Charles K.; and Moolenaar, Robert J., 3,884,839.

Mooney, Daniel L., to Ampex Corporation. Fast acting direct current clamping circuit. 3,885,093, Cl. 178-7.3DC.

Moore, Alvin Edward. Insulated, tube-framed boat or the like. 3,883,911, Cl. 9-6.000.

Moore, Alvin Edward. Light-weight, durable, land-traversing vehicle. 3,884,521, Cl. 296-31.00P.

Moore, George Paul. Laryngoscope. 3,884,222, Cl. 128-11.000.

Morawetz, Gottfried, to Ciba-Geigy Corporation. Processing of thermoplastic polyesters. 3,884,858, Cl. 260-29.15B.

Morgan Adhesives Company: *See—*
Miller, James A., 3,884,505.

Morgan Construction Company: *See—*
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Mori, Hisakazu: *See—*
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Mori, Shoichiro: *See—*
Uchiyama, Masao; and Mori, Shoichiro, 3,884,987.

Moriya, Nobuyoshi, to Mansei Kogyo Kabushiki Kaishya. Gas lighter. 3,884,614, Cl. 431-88.000.

Morozov, Sergei Nikolaevich: *See—*
Budker, Gersh Itskovich; Karliner, Marlen Moiseevich; Makarov, Ivan Grigorievich; Morozov, Sergei Nikolaevich; Nezhevenko, Oleg Alexandrovich; Ostreiko, Gennady Nikolaevich; and Shekhtman, Isai Abramovich, 3,885,193.

Morris, James C., to TRW Inc. Welding apparatus. 3,885,122, Cl. 219-98.000.

Morton, Douglas R.: *See—*
Johnson, William S.; Morton, Douglas R.; and Gravestock, Michael B., 3,884,945.

Morton, Hershel D. Portable table-top miniature golf game provided with rearrangeable hole modules and separate green putting board. 3,884,469, Cl. 273-87.200.

Moser, Hermann; and Pils, Walter, to Hoechst Aktiengesellschaft. Interlock device for auxiliary counting circuit in reproduction apparatus. 3,885,166, Cl. 307-116.000.

Moses, Adrian, to Lear Siegler, Inc. Light dimmer. 3,885,197, Cl. 315-194.000.

Motier, John F.; and Marion, Donald L., to Atlantic Richfield Company. Electrocoating composition containing styrene-maleic anhydride copolymer and epoxy ester resin exhibiting high throwing power. 3,884,856, Cl. 260-23.0EP.

Motohashi, Katsuichi: *See—*
Ozutsumi, Minoru; Miyazawa, Yoshihide; Motohashi, Katsuichi; Kiritani, Masatake; and Watanabe, Akio, 3,884,506.

Motorola, Inc.: *See—*
Schoenfelder, George A., 3,885,174.

Mottes, Yaacov. Tensiometer. 3,884,067, Cl. 73-73.000.

Moulton, Eric W.; and Rogers, Waldo I., to Rusco Industries, Inc. Value/use control and identification system for magnetic cards. 3,885,130, Cl. 235-61.11D.

Moyer, James L., to Great Canadian Oil Sands, Ltd. Methods and compositions for refining bituminous froth recovered from tar sands. 3,884,829, Cl. 252-331.000.

Moyle, Clarence L., to Dow Chemical Company, The. Antimicrobial thienyliodonium salt methods and compositions. 3,885,036, Cl. 424-275.000.

MPC/Kurgisil: *See—*
Bazell, Seymour; Ostensen, Ralph G.; Goldberg, Edward M.; and Walker, Robert D., 3,884,242.

Muellner, Donald R.; and Piercy, Richard J., to Caterpillar Tractor Co. Lift arm assembly for loader vehicles. 3,884,378, Cl. 214-769.000.

Mulder, Rudolf; and Handele, Martin Jacob, to U.S. Philips Corporation. Benzylidenesemicarbazide compounds having insecticidal activity. 3,885,042, Cl. 424-323.000.

Mulholland, Robert P., to Monarch Marking Systems, Inc. Portable data set. 3,884,342, Cl. 197-186.00R.

Mull, Leonard E. Retractable bathroom fixture. 3,884,258, Cl. 137-360.000.

Muller, Johann: *See—*
Hoppe, Peter; Drouven, Gustav; Leyer, Helmut; and Muller, Johann, 3,884,169.

Muller, Johannes, to Handtmann, Albert; and Metallgubwerk, Armaturen-und Fleischereimaschinen Fabrik. Apparatus for filling tubular casings. 3,883,925, Cl. 17-33.000.

Muller, Rolf: *See—*
Staudt, Heinrich; Ritter, Ernst; Jaenke, Hans-Jurgen; and Muller, Rolf, 3,884,205.

Multifastener Corporation: *See—*
Steward, Joseph H., 3,883,915.

Munakata, Tomohiko: *See—*
Nakanishi, Michio; Munakata, Tomohiko; Maruyama, Yutaka; and Setoguchi, Shinro, 3,884,922.

Munro, James M.; and Gill, Donald. Railroad board game. 3,884,475, Cl. 273-134.00G.

Munzer, Horst: *See—*
Gallion, Georg A.; Weichsler, Klaus; Hullmann, Horst; and Munzer, Horst, 3,884,516.

Murata, Hikaru; Umeda, Yasuji; Sakurai, Yasusada; and Doi, Yasuo, to Kayabakogyokabushikikaisha. Hydraulic control valve. 3,884,253, Cl. 137-110.000.

Murayama, Keisuke; Higashida, Susumu; and Matsui, Katsuaki, to Sankyo Company Limited. 4-Piperidone derivatives, their preparation and their use as stabilizers. 3,884,912, Cl. 260-240.00F.

Murtin, Fernand R. C.; and Mercier, Loic, to Societe Industrielle d'Electronique et d'Informatique. Electronic control system for internal combustion engine. 3,884,195, Cl. 123-32.0EA.

Mussinan, Cynthia J.; Vock, Manfred; Shuster, Edward Joseph; and Quinn, Alton Dewitt, to International Flavors & Fragrances Inc. Flavoring and aromatising with 3-acetyl-2,5-dialkyl furans or thiophenes. 3,885,051, Cl. 426-535.000.

Myers-Sherman Company: *See—*
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N. F. Doweave, Inc.: *See—*
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N L Industries, Inc.: *See—*
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Naarden International, N.V.: *See—*
Maessen, Jan Th. M. F.; and DeRijke, David, 3,884,841.

Nadelson, Jeffrey: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 3,884,961.

Nadkarni, Anil V.; and Klar, Erhard, to SCM Corporation. Dispersion strengthening of metals by in-can processing. 3,884,676, Cl. 75-.5BC.

Nagai, Shoichi: *See—*
Ono, Michikaze; Ito, Toshio; Nagai, Shoichi; and Mizuno, Hironaga, 3,885,015.

Nagase, Shunji; Baba, Hajime; Kodaira, Kazuo; and Okazaki, Kooshi, to Agency of Industrial Science & Technology. Electrolytic process for production of chlorofluorinated ethers. 3,884,775, Cl. 204-59.00F.

Nagy, Lajos: *See—*
Wack, Geza; Nagy, Lajos; Szekely, Denes; Szolnoky, Jozsef; Udvardy-Nagy, Eva; and Zsoka, Erzsebet, 3,884,762.

Najmann, Knut K.: *See—*
Baitinger, Utz G.; and Najmann, Knut K., 3,884,732.

Nakagawa, Jihei, to Olympus Optical Co., Ltd. Retrofocus wide-angle lens system. 3,884,556, Cl. 350-214.000.

Nakaguchi, Glenn M., to Union Oil Company of California. Detergent automotive fuel composition. 3,884,647, Cl. 44-72.000.

Nakamura, Shirozi, to Tokyo Juki Kobyo Kabushiki Kaisha. Cloth-presser mechanism in a sewing machine. 3,884,164, Cl. 112-70.000.

Nakamura, Sumio, to Olympus Optical Co., Ltd. Macrolens. 3,884,557, Cl. 350-221.000.

Nakanishi, Michio; Munakata, Tomohiko; Maruyama, Yutaka; and Setoguchi, Shinro, to Yoshitomi Pharmaceutical Industry, Ltd. 11-(4-pyridylalkyl-piperazino)-dibenzothiepines. 3,884,922, Cl. 260-268.0TR.

Nakao, Yoshio; Kuno, Mitsuzo; and Suzuki, Masaru, to Takeda Chemical Industries, Ltd. Method for producing ergosterol and its esters. 3,884,759, Cl. 195-28.00R.

Nakashima, Shigeo. Automatic bag feeding device equipped with an automatic charging device. 3,884,278, Cl. 141-67.000.

Nakatani, Mitsuo, to Sanyo Electric Company, Ltd. Scanning device. 3,885,245, Cl. 360-101.000.

Nakazawa, Mitsunobu: *See—*
Inoue, Eiichi; and Nakazawa, Mitsunobu, 3,884,697.

Nalle, George S., Jr. Open tube with net overlay. 3,884,753, Cl. 428-36.000.

Namba, Yoshiharu, to Fuji Xerox Co., Ltd. Paper feeding device for a duplicating machine. 3,884,103, Cl. 83-156.000.

Nard Institute, Ltd.: *See—*
Arakawa, Morimasa; Katanosaka, Akisato; Hanamoto, Manabu; and Ohtsubo, Jyunichiro, 3,884,970.

National Research Development Corporation: *See—*
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Pobgee, Peter John, 3,885,097.

National Steel Corporation: *See—*
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Smith, Robert B., 3,885,018.

Nawa, Hideo: *See—*
Ooya, Junichiro; Sakakibara, Naoji; Kawabata, Yasuhiro; Nawa, Hideo; Hida, Takashi; Tarao, Akira; Tsukuba, Korehiko; and Kuwana, Kazutaka, 3,885,137.

Naylor, Bertram L., III. Boat for scuba divers and the like. 3,883,910, Cl. 9-6.000.

Negita, Michihiko; and Kikuchi, Yoshiyasu, to Nippon Electric Company Limited. Document scanning apparatus. 3,885,229, Cl. 340-146.30H.

Nelson, Evan Herbert; and Rigden, Sydney Alfred Richard, to General Electric Company Limited, The. Electric discharge lamps. 3,885,181, Cl. 313-110.000.

Nemschoff, Mark S., to FMC Corporation. Noise controlling housing. 3,884,322, Cl. 181-33.00K.

Nesty, Glenn A.: *See—*
Carlson, Richard W.; and Nesty, Glenn A., 3,884,411.

Neville, Richard E. G., to AMF Incorporated. Gas heated rotary drier. 3,883,959, Cl. 34-48.000.

Newton, David Frederick: *See—*
Leng, John Lindley; and Newton, David Frederick, 3,884,899.

Neylan, William J.; and Blomberg, Harvey. Package and reflector assembly for a light source. 3,884,560, Cl. 350-293.000.

Neyret, Guy, to Etablissements Genoud & Cie Societe Anonyme. Lighter with head rotatable for flame adjustment. 3,884,616, Cl. 431-142.000.

Neyret, Guy, to Etablissements Genoud & Cie. Gas lighters. 3,884,618, Cl. 431-254.000.

Nezhevenko, Oleg Alexandrovich: *See—*
Budker, Gersh Itskovich; Karliner, Marlen Moiseevich; Makarov, Ivan Grigorievich; Morozov, Sergei Nikolaevich; Nezhevenko, Oleg Alexandrovich; Ostreiko, Gennady Nikolaevich; and Shekhtman, Isai Abramovich, 3,885,193.

Niccolai, Adriano: *See—*
Castoldi, Fabrizio; Cattaneo, Serrio; and Niccolai, Adriano, 3,884,339.

Nichols, Richard A. Vapor recovery with ambient cooling. 3,884,652, Cl. 55-88.000.

Nichols, Richard P. Helicopter hydraulic oil system. 3,884,434, Cl. 244-53.00R.

Nicoll, Frank S., Jr. Building formed of precut, foldable site erected paper board. 3,883,999, Cl. 52-90.000.

Nidy, Eldon George: *See—*
Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., 3,884,934.

Niederer, Kurt W., to W. Schlafhorst & Co. Knit fabric incorporating a weft stitch weave. 3,884,053, Cl. 66-192.000.

Niederer, Kurt W., to W. Schlafhorst & Co. Knit fabric incorporating a warp stitch weave. 3,884,054, Cl. 66-193.000.

Nielsen, Edwin A.: *See—*
Joshi, Madhusudan; Nielsen, Edwin A.; and Ventura, Frank D., 3,883,987.

Niemegeers, Carlos Jan Ernest Josef: *See—*
Janssen, Paul Adriaan Jan; Niemegeers, Carlos Jan Ernest Josef; Stokbroekx, Raymond Antoine; and Vandenberk, Jan, 3,884,916.

Nihon Denshi Kabushiki Kaisha: *See—*
Takahashi, Kanjiro, 3,884,816.

Nikolishvili, Georgy Alexeevich: *See—*
Gogorishvili, Platon Vladimirovich; Geleishvili, Tengiz Pavlovich; Zarkua, Nina Porfirievna; Nikolishvili, Georgy Alexeevich; Dundua, Rusudan Georgievna; Svintidze, Nadezhda Georgievna; Onuchkina, Nina Ivanovna; Kasradze, Gaioz Grigorievich; and Kuperman, Genrikh Moiseevich, 3,883,908.

Nikolov, Ivan Dimov: *See—*
Balevski, Angel Tontchev; and Nikolov, Ivan Dimov, 3,884,291.

Nilsson, Rune, to AB Linde International. Apparatus for regulating the control current to the electric brake system of a trailer. 3,884,530, Cl. 303-7.000.

Ninke, William Herbert; and Ritchie, George Ray, to Bell Telephone Laboratories, Incorporated. Binary rate multipliers. 3,885,142, Cl. 235-164.000.

Nippon Electric Company Limited: *See—*
Negita, Michihiko; and Kikuchi, Yoshiyasu, 3,885,229.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Deutsch, Ralph, 3,884,108.
Tokushima, Tadao, 3,885,151.

Nippon Kogaku K.K.: *See—*
Yamada, Munesato; and Yoshida, Shuji, 3,884,564.

Nippon Kokan Kabushiki Kaisha: *See—*
Wenzel, Werner; Gudenau, Heinrich Wilhelm; and Fukushima, Tsutomu, 3,884,677.

Nippon Kynol Inc.: *See—*
Kimura, Isao; and Koyama, Hiroaki, 3,884,754.

Nippon Steel Glass Co. Ltd.: *See—*
Baba, Yuji, 3,884,559.

Nippon Telegraph and Telephone Public Corporation: *See—*
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Nippon Tsu Shin Kogyo K.K.: *See—*
Sudoh, Kengo; and Tsutsumi, Fumio, 3,885,109.

Nippon Zeon Co., Ltd.: *See—*
Go, Tadahiro; Yaginuma, Hiroshi; and Inoue, Masaaki, 3,884,712.

Nishimura Seisakusho Co., Ltd.: *See—*
Hashimoto, Kenzo; and Wada, Kimihiro, 3,884,427.

Nishino, Tsutomu: *See—*
Koike, Yujiro; Maeda, Haruo; Nishino, Tsutomu; Aoyama, Akimitu; and Mogi, Yuji, 3,885,188.

Nissan Motor Company Limited: *See—*
Ito, Naganori; and Aikawa, Hiroshi, 3,884,496.
Kobayashi, Kazuaki; Okuno, Tatsujiro; Katayama, Shinya; and Kita, Takehiko, 3,885,003.
Oka, Takashi; and Sato, Kazuma, 3,884,499.
Sakaki, Yoshihiro, 3,884,087.
Sugiyama, Hiroshi; and Numagami, Kiyoshi, 3,885,126.
Takeuchi, Yasuhisa; and Iizuka, Haruhiko, 3,884,531.

Nite, Rebecca F.: *See—*
Phares, Russell E., Jr.; and Nite, Rebecca F., 3,884,826.

Nohara, Haruo; Makino, Junichi; and Masuda, Manabu, to Hitachi, Ltd. Protective relaying device. 3,885,199, Cl. 317-27.00R.

Nolte, Karl-Heinz: *See—*
Knappe, Heinrich; Nolte, Karl-Heinz; and Kempelmann, Reinhold, 3,884,402.

Nonnet, Jean: *See—*
Lepetit, Marcel; Charles, Christian; Nonnet, Jean; and LeFoll, Francois, 3,884,518.

Nonogaki, Saburo: *See—*
Hirai, Takako; Hatano, Yoshio; Nonogaki, Saburo; and Kobayashi, Teruaki, 3,885,060.

Norfleet, James; and Clipper, Donald W., to Colgate-Palmolive Company. Dentifrice preparation. 3,885,029, Cl. 424-57.000.

Norman, Gerald F.; and Osborne, William E., to Marlin Firearms Company, The. Safe quick-release lock of cartridge feed unit to magazine of firearm. 3,883,976, Cl. 42-49.00R.

Norton Company: *See—*
Hay, John, 3,884,709.

Norton, Paul D.: *See—*
King, Michael L., 3,884,416.

Nosco Plastics, Incorporated: *See—*
Cloyd, Harold S., 3,884,384.

Novack, Joseph: *See—*
Bir, Wallace G.; and Novack, Joseph, 3,884,766.

Numagami, Kiyoshi: *See—*
Sugiyama, Hiroshi; and Numagami, Kiyoshi, 3,885,126.

Oba, Yoichi; and Tsunoda, Teruo, to Hitachi, Ltd. Bisazide sensitized photoresistor composition with diacetone acrylamide. 3,884,703, Cl. 96-115.00R.

Oberender, Heinz; and Vogelsberg, Dieter, to Siemens Aktiengesellschaft. Method and apparatus for making SZ-twisted communications cable. 3,884,025, Cl. 57-34.0AT.

Oelze, Carl O.: *See—*
Woerner, Rudolph C.; Tschopp, Lloyd D.; and Oelze, Carl O., 3,884,650.

Oestreich, Ulrich; and Katzschner, Wolfgang, to Siemens Aktiengesellschaft. Twisting device for the SZ twisting of electrical cables. 3,884,024, Cl. 57-34.0AT.

Ohashi, Taro. Automatic sharpening device. 3,883,995, Cl. 51-91.0BS.

Ohlenbusch, Cord W.: *See—*
Jerard, Robert B.; and Ohlenbusch, Cord W., 3,883,900.

Ohlidal, Vladimir: *See—*
Ripka, Josef; Junek, Jan; Vobornik, Vaclav; Lihtarova, Ludmila; Hortlik, Frantisek; Brynda, Vaclav; Ohlidal, Vladimir; Korbar, Zdenek; and Vecera, Milos, 3,884,029.

Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Device for mounting fishing reels to fishing tackle. 3,883,978, Cl. 43-22.000.

Ohno, Genji; and Inoue, Eiichi, to Research and Development Laboratories of Ohno Co., Ltd. Electrostatic developing process employing a porous photoconductive member. 3,884,684, Cl. 96-1.0LY.

Ohtsubo, Jyunichiro: *See—*
Arakawa, Morimasa; Katanosaka, Akisato; Hanamoto, Manabu; and Ohtsubo, Jyunichiro, 3,884,970.

Oilgear Company, The: *See—*
Pourian, Reza, 3,884,039.

Oka, Takashi; and Sato, Kazuma, to Nissan Motor Company Limited. Discharge valve for vehicle safety apparatus. 3,884,499, Cl. 280-150.0AB.

Okazaki, Kooshi: *See—*
Nagase, Shunji; Baba, Hajime; Kodaira, Kazuo; and Okazaki, Kooshi, 3,884,775.

Okazaki, Yoshimi: *See—*
Shimada, Fumitaka; Ikekawa, Tetsuro; Endo, Tomio; Kuroda, Hideo; Ikeda, Yoshiaki; Tachibana, Kooichi; and Okazaki, Yoshimi, 3,884,911.

Okubo, Akira: *See—*
Miyaki, Kiyoshi; Okubo, Akira; and Arai, Sakuji, 3,884,197.

Okuno, Tatsujiro: *See—*
Kobayashi, Kazuaki; Okuno, Tatsujiro; Katayama, Shinya; and Kita, Takehiko, 3,885,003.

Okura Kogyo Kabushiki Kaisha: *See—*
Matsuda, Hideaki; Yamauchi, Fujio; and Mori, Hisakazu, 3,884,864.

Olcutt, Eugene L., to Atlantic Research Corporation. Pre-stressed pyrolytic graphite-refractory carbide microcomposites. 3,885,073, Cl. 428-112.000.

Olin Corporation: *See—*
Check, Donald R., 3,883,964.
Kober, Ehrenfried H.; Martin, Richard H.; and Raymond, Maurice A., 3,884,952.

Olin, John F., to Monsanto Company. Herbicidal 2-halo-n-(acyloxyalkylene) acetanilides. 3,884,673, Cl. 71-106.000.

Olin Mathieson Chemical Corporation: *See—*
Evans, Richard C.; Heine, Murray A.; and Ciosek, Stanley J., 3,884,719.

Oliver Tire & Rubber Company: *See—*
Hindin, Herbert B.; Johnson, Alfred E.; and Knapp, Donald P., 3,884,739.

Olsen, Larry C.; and Scott, Howard W., to McDonnell Douglas Corporation. Process for expanding pyrolytic graphite. 3,885,007, Cl. 264-42.000.

Olson, Eugene E.: *See—*
Clendenen, Ronald L.; Olson, Eugene E.; and Schlaudt, Charles M., 3,884,823.

Olson, Paul E., to American Standard Incorporated. Tool for notching the edge of frangible sheet material. 3,884,405, Cl. 225-102.000.

Olszewski, Jerzy A.: *See—*
Jachimowicz, Ludwik; and Olszewski, Jerzy A., 3,885,083.

Olympus Optical Co., Ltd.: *See—*
Nakagawa, Jihei, 3,884,556.
Nakamura, Sumio, 3,884,557.

O'Malley, Conor C.; and Heintz, Ralph M., Sr. Apparatus for intraocular surgery. 3,884,237, Cl. 128-303.140.

O'Malley, Conor C.; and Heintz, Ralph M., Sr. Apparatus for intraocular surgery. 3,884,238, Cl. 128-305.000.

O'Nan, Glenn S.; Slicer, Allan E.; and Jorgensen, George N., to Square D Company. Assembly for connecting a current take-off unit to a plurality of bus bars. 3,884,541, Cl. 339-22.00B.

Onderwater, Adrianus: *See—*
Spaans, Johannes; and Onderwater, Adrianus, 3,884,802.

O'Neill, Patrick; and Douglas, Patrick Joseph, to Powerscreen International Limited. Conveyor unit. 3,884,346, Cl. 198-99.000.

Ono, Michikaze; Ito, Toshio; Nagai, Shoichi; and Mizuno, Hironaga, to Mitsubishi Rayon Co., Ltd. Method of processing a heat-shrinkable sheet-like material. 3,885,015, Cl. 264-230.000.

Onuchkina, Nina Ivanovna: *See—*
Gogorishvili, Platon Vladimirovich; Geleishvili, Tengiz Pavlovich; Zarkua, Nina Porfirievna; Nikolishvili, Georgy Alexeevich; Dundua, Rusudan Georgievna; Svintidze, Nadezhda Georgievna; Onuchkina, Nina Ivanovna; Kasradze, Gaioz Grigorievich; and Kuperman, Genrikh Moiseevich, 3,883,908.

Onuma, Kazuhiko: *See—*
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Ooya, Junichiro; Sakakibara, Naoji; Kawabata, Yasuhiro; Nawa, Hideo; Hida, Takashi; Tarao, Akira; Tsukuba, Korehiko; and Kuwana, Kazutaka, to Aisin Seiki Kabushiki Kaisha. Method and system for constant-speed running of vehicles. 3,885,137, Cl. 235-150.200.

Oppel, John A.: *See—*
Barkan, Philip; and Oppel, John A., 3,885,113.

Opti-Holding AG: *See—*
Heimberger, Helmut, 3,884,168.

Orisek, Timothy R. Loudspeaker and enclosure assembly. 3,884,326, Cl. 181-155.000.

Osborne, William E.: *See—*
Norman, Gerald F.; and Osborne, William E., 3,883,976.

Ostensen, Ralph G.: *See—*
Bazell, Seymour; Ostensen, Ralph G.; Goldberg, Edward M.; and Walker, Robert D., 3,884,242.

Ostreiko, Gennady Nikolaevich: *See—*
Budker, Gersh Itskovich; Karliner, Marlen Moiseevich; Makarov, Ivan Grigorievich; Morozov, Sergei Nikolaevich; Nezhevenko, Oleg Alexandrovich; Ostreiko, Gennady Nikolaevich; and Shekhtman, Isai Abramovich, 3,885,193.

Ostrowski, Henry S., to Fiber Industries, Inc. Continuous atmospheric depolymerization of polyester. 3,884,850, Cl. 260-2.300.

Oswald, Alexis A., to Exxon Research & Engineering Company. Thioether isocyanate adducts. 3,884,951, Cl. 260-453.00A.

Oswald, Alexis A.: *See—*
Daniher, Francis A.; and Oswald, Alexis A., 3,884,963.

Ota, Yoshio: *See—*
Tsurushima, Katsuaki; Ota, Yoshio; and Takeda, Masashi, 3,885,099.

Otrhalek, Joseph V.; and Elfers, Gunther H., to BASF Wyandotte Corporation. Pigment dispersant in aqueous slurries. 3,884,964, Cl. 260-486.00R.

Otsuki, Susumu; Miyanohara, Isao; Mizui, Norimasa; and Kawamura, Hideo, to Toyo Soda Manufacturing Co., Ltd. Process for producing materials which complex heavy metals in liquid. 3,884,846, Cl. 260-2.20R.

Ott, John Nash, to John Ott Laboratories. Shielded luminaire. 3,885,150, Cl. 240-46.390.

Outboard Marine Corporation: *See—*
Dahl, Einar S.; and Kidd, Earl H., 3,884,020.
Larsen, Robert T., 3,884,174.

Ovalstrapping, Inc.: *See—*
Pasic, James A., 3,884,139.

Overbury, Francis Giles, to International Standard Electric Corporation. Doppler radio navigation beacon system adapted for angle determination using unmodified communication receiver. 3,885,241, Cl. 343-106.00D.

Owen, Kenneth. Balanced line switch system. 3,885,117, Cl. 200-153.00S.

Ozone Incorporated: *See—*
Schultz, Ronald A.; and Tenney, Robert I., 3,884,819.

Ozutsumi, Minoru; Miyazawa, Yoshihide; Motohashi, Katsuichi; Kiritani, Masatake; and Watanabe, Akio, to Fuji Photo Film Co., Ltd.; and Hodogaya Chemical Co., Ltd. Pressure-sensitive copying papers containing fluoran compounds. 3,884,506, Cl. 282-27.500.

P. R. Mallory & Co. Inc.: *See—*
Bertozzi, Marcello; and Chioffi, Mario, 3,884,088.
Wallis, George, 3,883,945.

Packard Becker BV: *See—*
Spaans, Johannes; and Onderwater, Adrianus, 3,884,802.

Pall Corporation: *See—*
Roach, Charles J., 3,884,658.

Palloch, Herbert, to Frankl and Kirchner. Electric motor variable speed and control drive. 3,885,175, Cl. 310-68.00D.

Palm, Lewis J.; and Palm, Ronald B., to Fulton Boiler Works, Inc. Method for electrically heating a heat transfer fluid. 3,885,125, Cl. 219-298.000.

Palm, Ronald B.: *See—*
Palm, Lewis J.; and Palm, Ronald B., 3,885,125.

Palmer, Bryan Harper: *See—*
Harrison, Ian Robert; McCarthy, John Felix; and Palmer, Bryan Harper, 3,884,968.

Palmer, Malcolm George; and Ball, Anthony Donald, to Albright & Wilson Limited. Phosphorus-containing compositions. 3,884,734, Cl. 149-6.000.

Palsson, Jan F., to Tetra Pak Developement S.A. Method of, and means for folding a container blank into a tubular body. 3,884,131, Cl. 93-49.00M.

Palz, Wolfgang: *See—*
Duy, Thuoc Nguyen; and Palz, Wolfgang, 3,884,779.
Duy, Thuoc Nguyen; Palz, Wolfgang; and Vedel, Jacques, 3,885,058.

Pander, Hans Joachim: *See—*
Zeeh, Bernd; Jung, Johann; and Pander, Hans Joachim, 3,884,670.

Pankoke, Christa. Machine for the manufacture of wood fibre panels in continuous lengths. 3,884,749, Cl. 156-501.000.

Paquette, Elmer G.: *See—*
Guenther, Karl R.; and Paquette, Elmer G., 3,884,354.

Parker-Hannifin Corporation: *See—*
Millar, James S.; and Henderson, Glenn W., 3,884,448.

Parmann, Gunnar. Apparatus for bending thermoplastic pipes. 3,884,612, Cl. 425-384.000.

Parrino, George. Kaleidoscope. 3,884,547, Cl. 350-5.000.

Parsons, Donald S.: *See—*
Harris, Geoffrey Lyall; and Parsons, Donald S., 3,885,022.

Pasic, James A., to Ovalstrapping, Inc. Wire feeding and tensioning apparatus. 3,884,139, Cl. 100-26.000.

Passmore, David G., to Lear Siegler, Inc. Air spring system and damped air valve therefor. 3,884,454, Cl. 263-65.00D.

Pastal, Nicholas: *See—*
Corboy, John Francis; Cullen, Glenn Wherry; and Pastal, Nicholas, 3,885,061.

Pastor, Gerald R.: *See—*
Bull, Willard C.; Wright, Charles H.; and Pastor, Gerald R., 3,884,794.
Wright, Charles H.; and Pastor, Gerald R., 3,884,795.

Patton, William L., to Affiliated Hospital Products, Inc. Method of assembly of catheter package. 3,884,011, Cl. 53-21.000.

Pauli, Ernest H., to Hilliard Corporation, The. Drive coupling. 3,884,049, Cl. 64-14.000.

Pauliukonis, Richard S. Automatic bar. 3,884,391, Cl. 222-129.400.

Paulson, Peter O. Frangible target. 3,884,470, Cl. 273-105.400.

Pauvlik, Jeanne Marie: *See—*
Jones, Peter Hadley; Martin, Jerry Roy; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Tadanier, John Soloman, 3,884,903.
Jones, Peter Hadley; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Perun, Thomas John, 3,884,904.

Pavlica, Zdenek, to Elitex, Zavody textilniho strojirenstvi generalni reditelstvi. Dobby. 3,884,273, Cl. 139-71.000.

Payet, George L.; and Brummet, Berthal D., to McGraw-Edison Company. Continuous durable-press processing of fabric and garments. 3,884,632, Cl. 8-116.400.

Pearce, Jai K.; and Eichinger, Frithjof, to Pennsylvania Engineering Corporation. Bottom blown steel converter and means for controlling injection of powdered material with process gasses therein. 3,884,453, Cl. 266-35.000.

Pearson-Coleman, Arthur James: *See—*
Chattaway, George Anthony; and Pearson-Coleman, Arthur James, 3,884,811.

Pease, Lionel. Salvage machine and harvester. 3,884,281, Cl. 144-218.000.

Pecksen, Otto: *See—*
Madlener, Paul; and Pecksen, Otto, 3,884,151.

Pedersen, Kristen I., to Sofec, Inc. Submerged hose arm stabilizing means for single point mooring systems. 3,883,912, Cl. 9-8.00P.

Pelabon, Andre E., to ANF-Frangeco S.A. Railway car bogie. 3,884,157, Cl. 105-199.00R.

Penfold, Alan S.; and Thornton, John A., to Telic Corporation. Electrode type glow discharge apparatus. 3,884,793, Cl. 204-298.000.

Pennsylvania Engineering Corporation: *See—*
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Perez, Jean-Jacques: *See—*
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Perrotti, Emilio: *See—*
Koch, Paolo; and Perrotti, Emilio, 3,885,024.

Perrussel, Russell E.: *See—*
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Perry Equipment Corporation: *See—*
Perry, Marney Dunman, Jr.; and Graff, Robert A., 3,884,660.

Perry, James E.: *See—*
Franks, Lawrence A.; and Perry, James E., 3,885,165.

Perry, Marney Dunman, Jr.; and Graff, Robert A., to Perry Equipment Corporation. Gas-liquid separator. 3,884,660, Cl. 55-396.000.

Personal Communications, Inc.: *See—*
Waly, Adnan, 3,884,570.

Perun, Thomas John: *See—*
Jones, Peter Hadley; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Perun, Thomas John, 3,884,904.

Pessolano, Richard L.; and Rhodes, Robin B., to Isothermics, Inc. Air-o-space heater means for recovering heat from a fluid steam. 3,884,292, Cl. 165-39.000.

Pessolano, Richard L.; and Rhodes, Robin B., to Isothermics, Inc. Cooling means. 3,884,293, Cl. 165-51.000.

Peters, Clas. Syringe having pivotable nozzle portion. 3,884,231, Cl. 128-235.000.

Peterson, Everett A., to Peterson, Everett A. Zipper structure. 3,883,931, Cl. 24-205.11R.

Peterson, Wilbur E., to Harmony Enterprises, Inc. Drive mechanism for collapsible camping vehicles. 3,884,520, Cl. 296-27.000.

Petock, Michael F. Walker. 3,884,495, Cl. 280-87.02W.

Petro-Tex Chemical Corporation: *See—*
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Petros, Andrew J.; and Pizzedaz, Ronald D., to Mesta Machine Company. Roll positioning mechanism for rolling mills. 3,884,064, Cl. 72-245.000.

Petrov, Evgeny Vasilievich: *See—*
Chernov, Evgeny Alexandrovich; Poletaev, Arkady Nikolaevich; Golod, Saul Vulfovich; Petrov, Evgeny Vasilievich; Vasiliev, Dmitry Timofeevich; and Tofpenets, Vitold Antonovich, 3,884,122.

Pfab, Diethard, to Siemens Aktiengesellschaft. Superheterodyne receiver having a digital indication of the received frequency. 3,885,218, Cl. 325-455.000.

Pfeiffer and Langen: *See—*
Schneider, Hans-Georg; and Mikule, Jiri, 3,884,714.

Pfenninger, Hans, to BBC Brown Boveri & Company Limited. Steam plant with pressure-fired boiler. 3,884,036, Cl. 60-39.18B.

Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc. Method of using substituted xanthone carboxylic acid. 3,885,038, Cl. 424-283.000.

Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; and Routien, John B., 3,884,763.
Koch, Richard C.; and Richards, Hugh C., 3,884,962.

Pfluger, Erich: *See—*
Mitteldorf, Rudolf; Pfluger, Erich; and Steinicke, Werner, 3,884,679.

Phares, Russell E., Jr.; and Nite, Rebecca F., to Barnes-Hind Pharmaceuticals, Inc. Thixotropic cleaning agent for hard contact lenses. 3,884,826, Cl. 252-106.000.

Phelon, Russell D.; and Van Amsterdam, John C., to R. E. Phelon Company, Incorporated. Pole-shoe magnet group for a magnetomotive device. 3,885,177, Cl. 310-153.000.

Phelps Dodge Industries, Inc.: *See—*
Trice, Robert T.; McLeod, Gordon D.; Anderson, Amos R.; and Wilson, Dennis C., 3,884,868.

Phelps Dodge Magnet Wire Corporation: *See—*
Disque, Donny R.; and Koerner, Ernest C., 3,884,880.

Phillips Petroleum Company: *See—*
Barber, F. Taylor, 3,885,002.
Bresson, Clarence R.; and Spaulding, Forrest D., 3,885,068.
Fluegal, Dale A., 3,885,220.
Gray, Peter R.; and Leroy, Billy J., 3,885,023.
Hsieh, Henry L., 3,884,889.
Moberly, Charles W., 3,884,883.
Scoggins, Lacey E.; and Campbell, Robert W., 3,884,884.
Short, James N., 3,884,873.
Windle, Tom J., 3,884,070.

Phillips, Ronald L., to General Motors Corporation. Rotary engine oil seal assembly. 3,884,602, Cl. 418-142.000.

Picker, Amos; and Feist, Wolfgang, to Raytheon Company. Cathode ray tube monoscope with semiconductor target. 3,885,189, Cl. 313-401.000.

Pierce Chemical Company: *See—*
Gindler, E. Melvin, 3,884,637.

Pierce, Ogden R.: *See—*
Kim, Yung Ki; and Pierce, Ogden R., 3,884,875.

Piercy, Richard J.: *See—*
Muellner, Donald R.; and Piercy, Richard J., 3,884,378.

Piesch, Ernst: *See—*
Jahn, Walter; and Piesch, Ernst, 3,885,159.

Pike, Ian Holden, to Imperial Chemical Industries Limited. Method of conserving forage with formalin and acid mixture. 3,885,055, Cl. 426-335.000.

Pilgram, Kurt H. G., to Shell Oil Company. Triazolinones. 3,884,910, Cl. 260-240.00G.

Pilkington Brothers Limited: *See—*
Friend, Harry Frederick, 3,884,669.

Pils, Walter: *See—*
Moser, Hermann; and Pils, Walter, 3,885,166.

Pilz, William M., III.; and Gardner, Jeffrey M., to Container Corporation of America. Book mailer. 3,884,352, Cl. 206-424.000.

Pinkowski, Norman J.; Freiman, Aaron; and Beiter, Charles B., to M & I Chemicals Inc. Antifouling compositions. 3,885,039, Cl. 424-288.000.

Pinkowski, Norman J.: *See—*
Eckert, Charles F.; and Pinkowski, Norman J., 3,884,895.

Pitney-Bowes, Inc.: *See—*
Ryland, Peter M., 3,884,458.
Sette, Paul R.; and Storace, Anthony, 3,884,745.
Tramposch, Herbert; and Hubbard, David W., 3,884,340.

Pittman, Tobe A.; and Woods, Jack L. Electrolytic copper recovery method and electrolyte. 3,884,782, Cl. 204-108.000.

Pivar, Stewart, to Rototron Corporation. Process for molding hollow thermoplastic articles and resulting articles. 3,885,016, Cl. 264-269.000.

Pizzedaz, Ronald D.: *See—*
Petros, Andrew J.; and Pizzedaz, Ronald D., 3,884,064.

Planet Corporation: *See—*
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Plessey Handel und Investments A.G.: *See—*
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Plisky, John J.: *See—*
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Plueddemann, Edwin P., to Dow Corning Corporation. Cationic unsaturated amine-functional silane coupling agents. 3,884,886, Cl. 260-80.0PS.

Plunguian, Mark; and Cornwell, Charles E. Process for forming foamed polyester resins. 3,884,844, Cl. 260-2.50N.

Pobgee, Peter John, to National Research Development Corporation. Graphical input apparatus for electrical apparatus. 3,885,097, Cl. 178-18.000.

Poehlmann, Paul W., to H. Koch and Sons, Inc. Gas-actuated emergency pilot release system. 3,884,436, Cl. 244-122.00A.

Pohl, Stanley: *See—*
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Poirier, Real J., Jr.: *See—*
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Poirier, Real J., Sr.; and Poirier, Real J., Jr. Snow plow frame. 3,883,965, Cl. 37-42.00R.

Polaroid Corporation: *See—*
Land, Edwin H., 3,884,562.

Polek, Joseph R.: *See—*
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Poletaev, Arkady Nikolaevich: *See—*
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Poletto, John Frank: *See—*
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Poplaski, Daniel Eugene, to AMP Incorporated. Method and apparatus for forming paired leads having an intermediate twisted portion and untwisted end portions and for applying terminals or the like to the end portions. 3,884,276, Cl. 140-115.000.

Pottharst, John E., Jr. Multi-effect flash evaporator. 3,884,767, Cl. 202-174.000.

Pourian, Reza, to Oilgear Company, The. Hydraulic pump with horsepower limiter. 3,884,039, Cl. 60-445.000.

Powerscreen International Limited: *See—*
O'Neill, Patrick; and Douglas, Patrick Joseph, 3,884,346.

PPG Industries, Inc.: *See—*
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Raetzsch, Carl W.; and Cunningham, Hugh, 3,884,791.
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Praska, George J., to Wright Products, Inc. Door latch mechanism. 3,884,514, Cl. 292-11.000.

Price, Nellie Peck. Clear view thread or yarn holder. 3,884,412, Cl. 229-69.000.

Priem, Jan Jozef: *See—*
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Priest, John Ricks: *See—*
Ballard, Edward Cooper; and Priest, John Ricks, 3,884,857.

Pritchard, Dalton Harold; and Schroeder, Alfred Christian, to RCA Corporation. High voltage regulator. 3,885,198, Cl. 315-411.000.

Pritulsky, Leo J. Peg board game having player piece dislodging means. 3,884,473, Cl. 273-130.00D.

Prochnow, Claus; and Berger, Hans-Jurgen, to Rollei-Werke Franke & Heidecke. Container for high power generators of electronic photoflash apparatus. 3,884,380, Cl. 220-9.00F.

Propst, Robert L.; Stumpf, William E.; and Wodka, Michael A., to Herman Miller, Inc. Universal mounting for various signage. 3,883,972, Cl. 40-128.000.

Pruvost, Pierre; and Cluchat, Jacques, to Rhone-Poulenc, S.A. Process for the preparation of so-called cold-cured flexible polyurethane. 3,884,847, Cl. 260-2.5AH.

Pryor, Timothy R. Diffractographic and other sensors utilizing diffraction waves. 3,884,581, Cl. 356-109.000.

Pudovik, Svetlana Tikhonovna: *See—*
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Pulimoottil, Mathew Mathew: *See—*
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Pullan, Ronald Ernest, to Schlegel (UK) Limited. Edge protector strip and sealing strip. 3,883,993, Cl. 49-490.000.

Pullukat, Thomas J.; Shida, Mitsuzo; and Gillilan, Robert L., to Chemplex Company. Organotin chromate polymerization catalyst. 3,884,832, Cl. 252-429.00C.

Pullukattu, Joseph Thomas; and Pulimoottil, Mathew Mathew, to Kerala State Industrial Development Corporation. Production of titanium compounds from ores containing oxides of titanium and iron. 3,884,675, Cl. 75-1.000.

Pungs, Wolfgang: *See—*
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Quest, Karl: *See—*
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Rabenhorst, David W., to Johns Hopkins University, The. Spoked disc flywheel. 3,884,093, Cl. 74-572.000.

Rademacher, Friedrich; Quest, Karl; Knabe, Uwe; Unger, Dieter; Jordan, Heinz; Heckmann, Werner; and Plock, Karl, to Holstein & Kappert Maschinenfabrik Phonix GmbH. Apparatus for filling beer cans or the like. 3,884,277, Cl. 141-59.000.

Radkowsky, Alvin, to United States of America, America as represented by the Energy Research and Development Administration. Neutronic flow meter. 3,885,156, Cl. 250-303.000.

Radler, Richard W., Jr., to Xerox Corporation. Polyester photoconductors and matrix materials. 3,884,690, Cl. 96-1.500.

Raether, Wolfgang: *See—*
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Raetzsch, Carl W.; and Cunningham, Hugh, to PPG Industries, Inc. Alkali metal chlorate cell having metal electrodes. 3,884,791, Cl. 204-268.000.

Raines, Kenneth; and Burke, George K., to Burron Medical Products, Inc. Hypodermic syringe and needle assembly. 3,884,229, Cl. 128-218.00N.

Rakestraw, Lawrence F., to Monsanto Company. Inviscid spinning of silicon steel. 3,884,289, Cl. 164-66.000.

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Ranco Incorporated: *See—*
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Randhava, Sarabjit Singh: *See—*
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Ranocha, Jaromir; Repka, Dusan; and Machu, Bohumil, to Zavody elektrotepelnych zarizchi, hardoni podnik. Apparatus for welding shoe parts. 3,884,744, Cl. 156-351.000.

Rantell, Alan; and Holtzman, Abraham, to MacDermid Incorporated. Catalyst system for activating surfaces prior to electroless deposition. 3,884,704, Cl. 106-1.000.

Rasmussen, Jerome Jordan Michael; and Vou, David, to Union Carbide Corporation. Method for producing flexible regenerated cellulosic tubing and the tubing obtained therefrom. 3,884,270, Cl. 138-177.000.

Rauch, Francis Clyde: *See—*
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Raudebaugh, Stanley E. Steering wheel arm rest attachment. 3,884,092, Cl. 74-558.000.

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Ray Cook Golf Putters, Inc.: *See—*
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Ray, Frank M., to Flex-Kleen Corporation. Filter bag assembly for pulse jet collector. 3,884,659, Cl. 55-379.000.

Raybeck, Ralph M.; and Hines, Charles R., to Jones & Laughlin Steel Corporation. Method for determination of oil coating weights on non-oil absorbing surfaces. 3,884,084, Cl. 73-432.00R.

Raymond Lee Organization, Inc., The: *See—*
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Rebajes, Francis. Mobile geometrical form. 3,884,462, Cl. 272-8.00R.

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Regan Offshore International, Inc.: *See—*
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Regents of the University of California: *See—*
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Remeika, Joseph Peter; and Voorhoeve, Rudolf Johannes H., to Bell Telephone Laboratories, Incorporated. Catalyst containing a perovskite-like manganite. 3,884,837, Cl. 252-462.000.

Renfrew, Edgar Earl; and Zanella, Dominic Andrew, to American Aniline Products, Incorporated. O-(benzyl or benzoyl)-benzoic acid-azo-phenyl compounds. 3,884,901, Cl. 260-207.000.

Rengo Co., Ltd: *See—*
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Renner, Alfred; and Hugi, Rolf, to Ciba-Geigy Corporation. Cyclic acetals containing epoxide groups. 3,884,944, Cl. 260-340.700.

Renoux, Gerard; and Renoux, Micheline, to Janssen Pharmaceutica N.V. Vaccine adjuvants. 3,885,011, Cl. 424-92.000.

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Ricciardi, Michael A.; Cordora, Michael L.; and Smudin, David, to Tenneco Chemicals, Inc. Manufacture of membrane-free nonlustrous polyurethane foam. 3,884,848, Cl. 260-2.5BD.
Rice, Jerry M. Twine cutting apparatus for a hay baler. 3,884,138, Cl. 100-5.000.
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Riddle, Lavis Albert Henry, to British Hovercraft Corporation Limited. Propulsive force generating means for marine vehicles. 3,884,176, Cl. 115-49.000.
Ridgway, John A., Jr.; and Chao, Kwei C., to Standard Oil Company. Treatment of protein - containing microbial cells to remove undesirable flavor and odor substances. 3,885,050, Cl. 426-60.000.
Riedel, Tilo Herbert. Runaway guard device for skis. 3,884,488, Cl. 280-11.35N.
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Risse, Klaus Heinz; Horlein, Ulrich; and Wirth, Wolfgang, to Bayer Aktiengesellschaft. Phenothiazine derivatives in the treatment of psychotic persons. 3,885,034, Cl. 424-247.000.
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Rivat-Lahousse, Andre, to Certain-teed Products Corporation. Method and apparatus for production of stratified sheets and articles of expanded thermoplastic materials. 3,885,009, Cl. 264-45.400.
Rivers, Charles F. Dumper. 3,884,376, Cl. 214-314.000.
Riviere, Donald L.; and Thomsen, Paul M., to Menasha Corporation. Temporary load retaining barricade for the doorway of a freight carrier. 3,884,287, Cl. 160-368.00G.
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Roach, Charles J., to Pall Corporation. Air cleaner for supercharged engines. 3,884,658, Cl. 55-315.000.
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Roberts, Earl J.; Brannan, Mary Ann F.; and Rowland, Stanley P., to United States of America, Agriculture. Tris (2-chloroethyl)phosphoramide— a crosslinking agent for cellulosic compositions. 3,884,972, Cl. 260-551.00P.
Roberts, Earl J.; and Rowland, Stanley P., to United States of America, Agriculture. Preparation of crosslinked polyethylenimine and impregnation of cellulosic material with in situ crosslink-polymerized ethylenimine. 3,885,069, Cl. 117-143.00A.
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Robinson, Melvin P. Self-cleaning rake. 3,884,023, Cl. 56-400.100.
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Roosen, Raymond Albert. Photographic copying apparatus. 3,884,578, Cl. 355-100.000.

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Rosenbaum, Richard W. Continuous automatic surveillance system. 3,885,090, Cl. 178-6.60A.
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Smith, Steven Collyer: *See—*
Birchall, George Richard; Hepworth, Walter; and Smith, Steven Collyer, 3,884,919.
Smith, William Ralph; and Deutsch, Herman, to Tele/Resources, Inc. Automatic branch exchange using time division switching. 3,885,103, Cl. 179-15.0AT.
Smith, William Ralph; and Deutsch, Herman, to Tele/Resources, Inc. Temporary memory for time division multiplex telephony system exchanges. 3,885,104, Cl. 179-15.0AT.
SmithKline Corporation: *See—*
DeMarinis, Robert M.; and Hoover, John R. E., 3,884,915.
Frazee, James S.; and Jen, Timothy Yu-Wen, 3,884,914.
Holden, Kenneth G.; and Yim, Nelson C. F., 3,884,958.
Smudin, David: *See—*
Ricciardi, Michael A.; Cordora, Michael L.; and Smudin, David, 3,884,848.
Smyrnow, Wassily. Anti pollution waterway device and process. 3,884,810, Cl. 210-170.000.
Snamprogetti S.p.A.: *See—*
Girotti, Pierleone; Tesei, Renato; and Floris, Telemaco, 3,884,988.
Koch, Paolo; and Perrotti, Emilio, 3,885,024.
Snelgrove, James A.: *See—*
Fariss, Robert H.; and Snelgrove, James A., 3,884,865.
Snodgrass, Frank M., to Channel Creasing Matrix, Inc. Magnetically located scoring die matrix. 3,884,132, Cl. 93-59.0MT.
Snoke, Roy E.: *See—*
Goodhue, Charles T.; Risley, Hugh A.; and Snoke, Roy E., 3,884,764.
Sobieski, John C., to General Electric Company. Flash Lamp Mount Construction. 3,884,615, Cl. 431-95.000.
Societe Anonyme Automobiles Citroen: *See—*
Grosseau, Albert, 3,884,194.
Societe Anonyme de Telecommunications: *See—*
Duy, Thuoc Nguyen; and Palz, Wolfgang, 3,884,779.
Societe Anonyme des Establissements Leon Hatot: *See—*
Dietsch, Jacques J. G., 3,884,034.
Societe Anonyne dite: L'Oreal: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,884,625.
Societe d'Etudes Scientifiques et Industrielles de L'Ile-de-France: *See—*
Thominet, Michel Leon, 3,885,033.
Societe Industrielle d'Electronique et d'Informatique: *See—*
Murtin, Fernand R. C.; and Mercier, Loic, 3,884,195.
Societe Legris France, S.A.: *See—*
Gassert, Willy, 3,884,513.

Societe Suisse pour l'Industrie Horlogere Management Services, S.A.: *See—*
Stang, Hans. Drying machine for textile fabric webs. 3,883,960, Cl. 34-153.000.

Stuart, Alexander: *See—*
Suzuki, Shigeru: *See—*

Societe Suisse pour l'Industrie Horlogere Management Services, S.A.: *See—*
Jeannet, Pierre Maurice; and Girardin, Michel, 3,884,035.

Sofec, Inc.: *See—*
Pedersen, Kristen I., 3,883,912.

Soloman, John: *See—*
Hallas, Robert; Martin, Jerry Roy; and Soloman, John, 3,884,902.

Solomon, Arieh, to British and Foreign Tobacco Company, Ltd. Method of assembling and filling hinged containers. 3,884,013, Cl. 53-37.000.

Sommer, Alfred Hermann, to RCA Corporation. Method of making a multialkali electron emissive layer. 3,884,539, Cl. 316-6.000.

Sommer, Reinhold. Device for hitting a ball, shuttlecock or the like. 3,884,467, Cl. 273-73.00D.

Sonnenberg, Fred Max: *See—*
Collette, John Wilfred; Ro, Rolland Shih-Yuan; and Sonnenberg, Fred Max, 3,884,888.

Sony Corporation: *See—*
Amano, Yoshifumi, 3,885,195.
Hort, Takeshi, 3,885,206.
Matsuzaki, Atsushi, 3,885,168.
Tsurushima, Katsuaki; Ota, Yoshio; and Takeda, Masashi, 3,885,099.

Soto, Enrique. Machine for sizing and processing drapery material. 3,884,747, Cl. 156-467.000.

Soucek, Josef; Brazda, Zdenek; and Grecenko, Alexandr, to Vyzkumny ustav zemedelskych stroju. Working aggregate, more particularly for soil cultivation. 3,884,310, Cl. 172-292.000.

Southwestern Manufacturing Co.: *See—*
Athy, Lawrence F., Jr., 3,884,077.

Southwire Company: *See—*
Berry, Milton E., 3,884,288.

Spaans, Johannes; and Onderwater, Adrianus, to Packard Becker BV. Liquid chromatography injection system. 3,884,802, Cl. 210-31.00C.

Spademan, Richard G. Overcenter ski binding mechanism. 3,884,492, Cl. 280-11.35R.

Spaulding, Forrest D.: *See—*
Bresson, Clarence R.; and Spaulding, Forrest D., 3,885,068.

Speakman, Edwin L.: *See—*
Kightlinger, Adrian P.; Crosby, Edward K., deceased; and Speakman, Edwin L., 3,884,909.

Spector, George: *See—*
Lefkowitz, Saul; and Spector, George, 3,883,897.

Speerschneider, Charles J.: *See—*
Maciolek, Ralph B.; Skogman, Richard A.; and Speerschneider, Charles J., 3,884,788.

Spencer, Frederick: *See—*
Fullalove, Richard; and Spencer, Frederick, 3,884,421.

Sperry Rand Corporation: *See—*
Butler, Gene R.; and Butler, Lee D., 3,884,021.
Butler, Lee D.; Fisher, Raymond E.; and Fontrier, Albert D., 3,884,367.

Spickenbreuther, Dieter: *See—*
Weisshaar, Erich; Spickenbreuther, Dieter; and Sitte, Bernd, 3,885,243.

Spiegelberg, Hans: *See—*
Kyburz, Emilio; and Spiegelberg, Hans, 3,884,967.

Spivack, John J.; and Luzzi, John J., to Ciba-Geigy Corporation. Polyol esters of alkyl substituted hydroxy-benzoyloxybenzoic acids. 3,884,960, Cl. 260-473.00S.

SPOFA, United Pharmaceutical Works: *See—*
Fucik, Karel, 3,884,940.

Sprague Electric Company: *See—*
Fabricius, John H., 3,885,129.

Sprung, Ralph D., Jr. Liquid dispensing system. 3,884,183, Cl. 118-324.000.

Square D Company: *See—*
O'Nan, Glenn S.; Slicer, Allan E.; and Jorgensen, George N., 3,884,541.

Squires, Thomas G.: *See—*
Dodson, Keith D.; and Squires, Thomas G., 3,884,870.

Staar, Marcel Jules Helene. Transparency projector having a device to allow the playback of sound recordings. 3,884,566, Cl. 353-19.000.

Stabilator AB: *See—*
Liedholm, Per, 3,884,589.

Stack, Joseph S., to United States of America, Army. Double-base propellant containing an aromatic hydroxy compound. 3,884,736, Cl. 149-100.000.

Stahlecker, Fritz; and Stahlecker, Hans. Apparatus for removing impurities from fibers. 3,884,028, Cl. 57-56.000.

Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Stahlecker, Hans, 3,884,028.

Stamicarbon B.V.,: *See—*
Bonnema, Jentje; and Simon, Henri J. H., 3,884,644.

Stamicarbon, N.V.: *See—*
Van Oosterhout, Johannes T., 3,884,890.

Standard Brands Incorporated: *See—*
Kightlinger, Adrian P.; Crosby, Edward K., deceased; and Speakman, Edwin L., 3,884,909.

Standard Oil Company: *See—*
Mahoney, John A.; and Hensley, Albert L., Jr., 3,884,799.
Miller, James E.; and Swenson, Reuben A., 3,884,820.
Ridgway, John A., Jr.; and Chao, Kwei C., 3,885,050.

Stanford Research Institute: *See—*
Anbar, Michael, 3,885,155.

Stang, Hans. Drying machine for textile fabric webs. 3,883,960, Cl. 34-153.000.

Stangl, Georg: *See—*
Andersen, Heinz-Erhardt; and Stangl, Georg, 3,884,748.

Stanley, Robert K. Draw-crimping textile film strands. 3,883,936, Cl. 28-72.140.

Stapfer, Christian H.; and D'Andrea, Richard W., to Cincinnati Milacron Chemicals, Inc. Aldol condensation using cobalt II halide hydrazine complexes. 3,884,980, Cl. 260-586.00C.

Star Expansion Industries Corporation: *See—*
Eager, William A., 3,884,117.

Stark, Thomas M.; and Bodnick, Sheldon, to Exxon Research & Engineering Company. Mixed refrigerant cycle. 3,884,045, Cl. 62-9.000.

Stark, Thomas M.: *See—*
Bodnick, Sheldon; and Stark, Thomas M., 3,884,044.

Starr, Robert P., to Ralston Purina Company. Process of producing a soy product having improved sorption. 3,885,052, Cl. 426-250.000.

Statham Instruments, Inc.: *See—*
Gutai, Jeno B., 3,885,211.

Staudt, Heinrich; Ritter, Ernst; Jaenke, Hans-Jurgen; and Muller, Rolf, to Robert Bosch G.m.b.H. Centrifugal RPM governor for fuel injected internal combustion engines. 3,884,205, Cl. 123-140.00R.

Stauffer Chemical Company: *See—*
Baker, Don R.; and Gutman, Arnold D., 3,885,043.
Hoffman, Kenneth P., 3,884,985.
Kinne, Walter E., 3,884,645.

Steffen, Henry W. Speedometer cable lubricating device. 3,884,329, Cl. 184-1.00R.

Steger, James O., to Ball Corporation. Audio dosimeter. 3,884,086, Cl. 73-558.000.

Steinhards, Arnolds: *See—*
Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., 3,884,934.

Steinicke, Werner: *See—*
Mitteldorf, Rudolf; Pfluger, Erich; and Steinicke, Werner, 3,884,679.

Stenmark, Donald G.; and Heinrich, Raymond L., to Exxon Research and Engineering Company. Mixing apparatus and method. 3,884,451, Cl. 259-191.000.

Stephens, Derek James; MacFarlane, Eseni Gogo; and Turner, Owen James, to Cadbury Limited. Transfer apparatus. 3,884,343, Cl. 198-23.000.

Stern, Howard K.: *See—*
Carpentier, Richard A.; Di Matteo, Paul L.; Stern, Howard K.; and Wittke, Ernest C., 3,884,577.

Stern, Mark Charles, to American Telephone and Telegraph. Permanent signal lockout interface circuit. 3,885,107, Cl. 179-18.0FA.

Steward, David L.; and Tong, Wen-Hong, to Dow Chemical Company, The. Polycationic interferon inducer. 3,884,845, Cl. 260-2.0EN.

Steward, Joseph H., to Multifastener Corporation. Method of forming a nut. 3,883,915, Cl. 10-86.0CL.

Stidham, James Richard, to Bell Telephone Laboratories, Incorporated. Six-port conference amplifier circuit. 3,885,100, Cl. 179-1.0CN.

Stidolph, David L. Method and apparatus for packing, shipping and marketing of perishable products such as cut flowers. 3,883,990, Cl. 47-58.000.

Stockholm, John George: *See—*
de Crevoisier, Philippe; and Stockholm, John George, 3,884,654.

Stokbroekx, Raymond Antoine: *See—*
Janssen, Paul Adriaan Jan; Niemegeers, Carlos Jan Ernest Josef; Stokbroekx, Raymond Antoine; and Vandenberk, Jan, 3,884,916.

Stolkin, Walter J.; Riley, William A.; and Sejda, Henry J., to Stolmar Corporation. Apparatus for producing cartons. 3,884,130, Cl. 93-49.00R.

Stolmar Corporation: *See—*
Stolkin, Walter J.; Riley, William A.; and Sejda, Henry J., 3,884,130.

Stoneham, Edward B.: *See—*
Kakihama, Sanehiko; and Stoneham, Edward B., 3,884,698.

Storace, Anthony: *See—*
Sette, Paul R.; and Storace, Anthony, 3,884,745.

Stout, Pansy M. Animal bathing and drying apparatus. 3,884,191, Cl. 119-158.000.

Strakhov, Gennady Nikolaevich: *See—*
Dudko, Daniil Andreevich; Alexeenko, Alexei Pavlovich; Lychko, Ivan Ivanovich; Iljushenko, Valentin Mikhailovich; Suschuk-Sljusarenko, Igor Ivanovich; Tarnovsky, Alexandr Grigorievich; Kostevich, Dmitry Nikolaevich; Andrusenko, Jury Iosifovich; Gurevich, Samuil Markovich; and Strakhov, Gennady Nikolaevich, 3,885,121.

Strauff, Gunter, to Langen & Co. Hydraulic servo-steering system. 3,884,319, Cl. 180-79.20R.

Strebel, Siegfried: *See—*
Winkler, Heinz; Bergmeister, Eduard; and Strebel, Siegfried, 3,884,892.

Striebich, Alfred: *See—*
Baumann, Reinhold; Lauerbach-Lemeier, Robert; Kunze, Ernst-Gunter; Striebich, Alfred; and Rothe, Hans-Joachim, 3,884,855.

Striker, Richard A.: *See—*
Jeram, Edward M.; and Striker, Richard A., 3,884,866.

Strovas, Blaz, to Raymond Lee Organization, Inc., The, a part interest. Hide splitting and gutting device. 3,883,952, Cl. 30-299.000.

Stuart, Alexander: *See—*
Wood, Hamish Christopher Swan; and Stuart, Alexander, 3,884,973.

Studdert, George M.: *See—*
Hatch, Donald M.; Studdert, George M.; Williamson, John B.; and Wycinowski, Roger W., 3,885,006.

Studer, Urs Peter, to Zumbach Electronic-Automatic. Measuring device. 3,884,076, Cl. 73-37.600.

Studiengesellschaft Kohle m.b.H.: *See—*
Wilke, Guenther; and Heimbach, Paul, 3,884,833.

Stuhr, Hans-Waldemar: *See—*
Forster, Franz; and Stuhr, Hans-Waldemar, 3,884,038.

Stumpf, William E.: *See—*
Propst, Robert L.; Stumpf, William E.; and Wodka, Michael A., 3,883,972.

Subsea Equipment Associates Limited (SEAL): *See—*
Mercier, Bernard; and Serrano, Francisco, 3,884,364.

Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft: *See—*
Mitteldorf, Rudolf; Pfluger, Erich; and Steinicke, Werner, 3,884,679.

Sudoh, Kengo; and Tsutsumi, Fumio, to Nippon Tsu Shin Kogyo K.K.; and TIE/Communications, Inc., part interest to each. Relay telephone dial pulse register. 3,885,109, Cl. 179-99.000.

Sugimizu, Masayuki, to Denki Onkyo Company, Limited. Pinch roller shifting mechanism for sequentially shifting a pinch roller in two substantially perpendicular directions toward a capstan. 3,884,407, Cl. 226-90.000.

Sugimoto, Minoru. Monorail structure. 3,884,153, Cl. 104-93.000.

Sugimoto, Yoshihiko: *See—*
Komatsu, Noboru; Arai, Tohru; Sugimoto, Yoshihiko; and Mizutani, Masayoshi, 3,885,059.
Komatsu, Noboru; Arai, Tohru; Sugimoto, Yoshihiko; and Mizutani, Masayoshi, 3,885,064.

Sugiyama, Hiroshi; and Numagami, Kiyoshi, to Nissan Motor Company Limited. Electric heat accumulator unit. 3,885,126, Cl. 219-365.000.

Sugiyama, Yunosuke, to Kabushiki Kaisha Sugiawa-Gen Iriki. Process for analyzing mercury. 3,884,639, Cl. 23-230.0PC.

Sujdak, Thomas, to Rockwell International Corporation. Loom warp beam device. 3,884,274, Cl. 139-97.000.

Sulco Basel AG: *See—*
Buchner, Stanislaw, 3,884,925.

Sulkowski, Theodore S., to American Home Products Corporation. A method of producing anorexia using imidazolinyl phenyl carbonyl compounds, their acid addition salts and related compounds. 3,885,037, Cl. 424-273.000.

Sulzer Brothers Ltd.: *See—*
Brenner, Wolfgang; Feier, Gunter; and Vinnemann, Antonius, 3,884,272.
Zerlauth, Ferdinand, 3,884,041.

Suman, George O., Jr.; Richardson, Edwin A.; and Scheuerman, Ronald F., to Shell Oil Company. Hydrated metal oxide deposition. 3,885,065, Cl. 427-230.000.

Summer, James R., to Round Rock Lime Company. Control of vertical heat treating vessels. 3,884,621, Cl. 432-19.000.

Summey, Betty Louise. Tampon and suppository combination. 3,884,233, Cl. 128-263.000.

Sumpter, Alray. Sleeping pillow with arm openings. 3,883,906, Cl. 5-338.000.

Sun Research and Development Company: *See—*
Hollstein, Elmer J., 3,884,936.

Sun-Sor GmbH: *See—*
Anetseder, Leopold, Sr.; and Anetseder, Leopold, Jr., 3,885,152.

Sun Ventures, Inc.: *See—*
Bushick, Ronald D.; and Hirschler, Alfred E., 3,884,986.

Sund-Borg Machines Corporation: *See—*
King, Earl H., 3,884,608.

Sundahl, Jimmy G.: *See—*
Fegraus, Clark E.; and Sundahl, Jimmy G., 3,884,297.

Sundt, Erling: *See—*
Dietrich, Paul; and Sundt, Erling, 3,884,247.

Sung, Eric; Umbach, Wilfried; and Baumann, Horst, to Henkel & Cie GmbH. Process for the production of alkylene glycol monoesters. 3,884,946, Cl. 260-400.000.

Superior Iron Works & Supply Company, Inc.: *See—*
Green, Lane A., 3,884,040.

Suschuk-Sljusarenko, Igor Ivanovich: *See—*
Dudko, Daniil Andreevich; Alexeenko, Alexei Pavlovich; Lychko, Ivan Ivanovich; Iljushenko, Valentin Mikhailovich; Suschuk-Sljusarenko, Igor Ivanovich; Tarnovsky, Alexandr Grigorievich; Kostevich, Dmitry Nikolaevich; Andrusenko, Jury Iosifovich; Gurevich, Samuil Markovich; and Strakhov, Gennady Nikolaevich, 3,885,121.

Suverkrop, Don, to Hopper, Inc. Level luffing crane. 3,884,359, Cl. 212-35.000.

Suwa, Michiharu; Tajima, Akira; Shimazaki, Mamoru; and Hirata, Noritsugu, to Canon Kabushiki Kaisha. Optical system capable of extreme close up photography. 3,884,555, Cl. 350-187.000.

Suzuki, Kiitiro; and Hunakawa, Minoru. Apparatus for producing glass pellets. 3,884,668, Cl. 65-142.000.

Suzuki, Kohji: *See—*
Matsuo, Kazunori; Suzuki, Kohji; and Endo, Katutoshi, 3,884,824.

Suzuki, Masaru: *See—*
Nakao, Yoshio; Kuno, Mitsuzo; and Suzuki, Masaru, 3,884,759.

Suzuki, Shigeru: *See—*
Mochimaru, Hideaki; Suzuki, Shigeru; Ikezu, Yohei; Yaeshima, Masao; and Ukai, Takeshi, 3,884,576.

Suzuki, Tomokazu, to Tamura Electric Works, Ltd. Digital display apparatus. 3,883,968, Cl. 40-77.800.

Suzuki, Yuji: *See—*
Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka; Suzuki, Yuji; and Takamoto, Kunio, 3,884,991.

Svendsen, Lars-Gundro: *See—*
Blomback, Gustaf Erik Birger; Blomback, Margareta; Claeson, Karl Goran; and Svendsen, Lars-Gundro, 3,884,896.

Svenska Utvecklings AB (SUAB), Swedish National Development Co.: *See—*
Lind, Per Ingemar Arnold, 3,884,069.

Svintidze, Nadezhda Georgievna: *See—*
Gogorishvili, Platon Vladimirovich; Geleishvili, Tengiz Pavlovich; Zarkua, Nina Porfirievna; Nikolishvili, Georgy Alexeevich; Dundua, Rusudan Georgievna; Svintidze, Nadezhda Georgievna; Onuchkina, Nina Ivanovna; Kasradze, Gaioz Grigorievich; and Kuperman, Genrikh Moiseevich, 3,883,908.

Swallow, Albert J., Jr. Truck loading system. 3,884,374, Cl. 214-84.000.

Swanson, Robert R.: *See—*
Gallagher, Ronald V.; and Swanson, Robert R., 3,884,347.

Sweeney, William T.; and Harris, Gary R., to Continental Oil Company. Linkage connection for a hose hauling vehicle. 3,884,257, Cl. 137-355.160.

Sweet, David L.: *See—*
Sweet, Phillip J.; Hamlet, Buck C.; and Sweet, David L., 3,884,526.

Sweet, Phillip J.; Hamlet, Buck C.; and Sweet, David L., to American Carrier Equipment. Unit for converting flat-bed trucks to side-dump trucks. 3,884,526, Cl. 298-1.00A.

Swenson, Reuben A.: *See—*
Miller, James E.; and Swenson, Reuben A., 3,884,820.

Swimquip Division Weil-McLain Company, Inc.: *See—*
Rowley, William N.; and Kirish, Warand R., 3,884,440.

Swingline, Inc.: *See—*
Michaelis, Jack H.; and Malcik, Frank J., 3,884,586.

Symbolic Displays, Inc.: *See—*
Lang, William J.; Brewer, Gerald K.; Fritz, Richard B.; and Eggers, Frederick W., 3,885,226.

Syntex (U.S.A.) Inc.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,885,038.

Systematics, Inc.: *See—*
Kuehn, Andrew, III, 3,884,207.

Syva Company: *See—*
Schneider, Richard S., 3,884,898.

Szczepanski, Harry. Automatic spray-painting machine. 3,884,179, Cl. 118-70.000.

Szekely, Denes: *See—*
Wack, Geza; Nagy, Lajos; Szekely, Denes; Szolnoky, Jozsef; Udvardy-Nagy, Eva; and Zsoka, Erzsebet, 3,884,762.

Szolnoky, Jozsef: *See—*
Wack, Geza; Nagy, Lajos; Szekely, Denes; Szolnoky, Jozsef; Udvardy-Nagy, Eva; and Zsoka, Erzsebet, 3,884,762.

Tachibana, Kooichi: *See—*
Shimada, Fumitaka; Ikekawa, Tetsuro; Endo, Tomio; Kuroda, Hideo; Ikeda, Yoshiaki; Tachibana, Kooichi; and Okazaki, Yoshimi, 3,884,911.

Tadanier, John Soloman: *See—*
Jones, Peter Hadley; Martin, Jerry Roy; McAlpine, James Bruce; Pauvlik, Jeanne Marie; and Tadanier, John Soloman, 3,884,903.

Tajima, Akira: *See—*
Suwa, Michiharu; Tajima, Akira; Shimazaki, Mamoru; and Hirata, Noritsugu, 3,884,555.

Tajima, Ikuo. Needle-bar and take-up lever selection apparatus for embroidery machine. 3,884,165, Cl. 112-83.000.

Takada, Toshihisa; and Matsui, Yukio, to Fujikura Cable Works, Ltd. Air tight dam for communication cables. 3,885,087, Cl. 174-93.000.

Takagi, Kunihiko: *See—*
Koshimo, Akio; Tomita, Kosuke; Takagi, Kunihiko; Mitsui, Minoru; and Isikawa, Kunihiro, 3,884,702.

Takahashi, Kanjiro, to Nihon Denshi Kabushiki Kaisha. Method and apparatus for detecting dangerous articles and/or precious metals. 3,884,816, Cl. 250-359.000.

Takahashi, Kenryu. Hydroplane boat. 3,884,172, Cl. 114-66.50R.

Takahashi, Susumu: *See—*
Ito, Ryosuke; and Takahashi, Susumu, 3,885,101.

Takamoto, Kunio: *See—*
Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka; Suzuki, Yuji; and Takamoto, Kunio, 3,884,991.

Takatoku, Kazue: *See—*
Kawabe, Ushio; Fukase, Shigeo; Ishibashi, Masato; Kudo, Mitsuhiro; and Takatoku, Kazue, 3,884,683.

Takawashi, Tamio: *See—*
Kobayashi, Kazuhiko; Takawashi, Tamio; and Arai, Shinji, 3,884,790.

Takeda Chemical Industries, Ltd.: *See—*
Nakao, Yoshio; Kuno, Mitsuzo; and Suzuki, Masaru, 3,884,759.

Takeda, Masashi: *See—*
Tsurushima, Katsuaki; Ota, Yoshio; and Takeda, Masashi, 3,885,099.

Takeuchi, Yasuhisa; and Iizuka, Haruhiko, to Nissan Motor Company Limited. Device for controlling the braking fluid pressure in the hydraulic brake system of motor vehicles. 3,884,531, Cl. 303-21.0BE.

Tamura Electric Works, Ltd.: *See—*
Suzuki, Tomokazu, 3,883,968.
Taner, M. Turhan: *See—*
Anstey, Nigel A.; and Taner, M. Turhan, 3,885,225.
Taniguchi, Masao; Kanai, Hiromi; and Yamazaki, Eiichi, to Hitachi, Ltd. Shadow mask having all surfaces metal-coated. 3,885,190, Cl. 313-402.000.
Taniguchi, Toshinori: *See—*
Yoshizawa, Toshio; Yamada, Yasuo; and Taniguchi, Toshinori, 3,884,026.
Tannenberger, Helmut: *See—*
Schachner, Herbert; Tannenberger, Helmut; and Baumberger, Bastian O., 3,885,063.
Tanno, Yuji, to ABE Engineering & Development Co. Ltd. Synchronizing device for picture-story show and cartridge tape player. 3,884,565, Cl. 353-15.000.
Tarao, Akira: *See—*
Ooya, Junichiro; Sakakibara, Naoji; Kawabata, Yasuhiro; Nawa, Hideo; Hida, Takashi; Tarao, Akira; Tsukuba, Korehiko; and Kuwana, Kazutaka, 3,885,137.
Tarbox, John W.; Hinds, Walter E.; Castro, Rodolfo; and Bell, Raymond C., to Hughes Aircraft Company. Strand detection arrangement. 3,885,161, Cl. 250-571.000.
Tarnovsky, Alexandr Grigorievich: *See—*
Dudko, Daniil Andreevich; Alexeenko, Alexei Pavlovich; Lychko, Ivan Ivanovich; Iljushenko, Valentin Mikhailovich; Suschuk-Sljusarenko, Igor Ivanovich; Tarnovsky, Alexandr Grigorievich; Kostevich, Dmitry Nikolaevich; Andrusenko, Jury Iosifovich; Gurevich, Samuil Markovich; and Strakhov, Gennady Nikolaevich, 3,885,121.
Taylor, Glenn N., to Colgate-Palmolive Company. Disposable diaper. 3,884,234, Cl. 128-287.000.
Taylor, Robert, to Distillers Company (Yeast) Limited, The. Preparation of active dry yeast. 3,885,049, Cl. 426-18.000.
Taylor, Vincent J., deceased; by Zellmer, Wayne G., executor; and Beasey, Earl E., to United States of America, Navy. Safe and arm device. 3,884,118, Cl. 89-1.814.
Technical Operations Incorporated: *See—*
Graser, Michael, Jr., 3,884,553.
Tee-Pak, Inc.: *See—*
Burke, N. I.; and Bridgeford, D. J., 3,884,908.
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Williams, Robert A. Fire extinguisher. 3,884,307, Cl. 169-59.000.
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TO WHOM

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CLASS 145
50DA 3,884,282

CLASS 148
6.2 3,884,727
11.5A 3,884,729
11.5F 3,884,728
12.4 3,884,730
127 3,884,731
175 3,884,732
3,884,733

CLASS 149
6 3,884,734
11 3,884,735
100 3,884,736

CLASS 152
210 3,884,284
213A 3,884,283
330R Re.28,424
3,884,285
375 3,884,286

CLASS 156
63 3,884,737
73.1 3,884,738
96 3,884,739
3,884,740
259 3,884,741
268 3,884,742
304 3,884,743
351 3,884,744
441.5 3,884,745
466 3,884,746
467 3,884,747
494 3,884,748
501 3,884,749

CLASS 160
368G 3,884,287

CLASS 162
4 3,884,750
31 3,884,751
89 3,884,752
190 3,884,755
299 3,884,756
374 3,884,757

CLASS 164
4 3,884,288
66 3,884,289
82 3,884,290
312 3,884,291

CLASS 165
39 3,884,292
51 3,884,293
92 3,884,294
96 3,884,295
3,884,296
145 3,884,297

CLASS 166
.5 3,884,298
68 3,884,299
133 3,884,300
278 3,884,301
291 3,884,302
308 3,884,303

CLASS 169
16 3,884,304
37 3,884,305
59 3,884,306
3,884,307
62 3,884,308

CLASS 172
240 3,884,309
292 3,884,310

CLASS 173
57 3,884,311

CLASS 174
14R Re.28,425
28 3,885,083
35MS 3,885,084
36 3,885,085
42 3,885,086
93 3,885,087
102D 3,885,088

CLASS 175
372 3,884,312

CLASS 177
119 3,884,313

CLASS 178
5.1 3,885,089
6 3,885,091
6.6A 3,885,090
7.2 3,885,092
7.3DC 3,885,093
7.6 3,885,094
7.88 3,885,095
15 3,885,096
18 3,885,097
88 3,885,098

CLASS 179
1CN 3,885,100
1GQ 3,885,099
3,885,101
7R 3,885,102
15AT 3,885,103
3,885,104
15BA 3,885,105
18FA 3,885,107
18J 3,885,106
90B 3,885,108
99 3,885,109
100.3B 3,885,110
170.8 3,885,111

CLASS 180
5R Re.28,423
9.54 3,884,314
33B 3,884,316
34 3,884,317
65R 3,884,318
79.2C 3,884,320
79.2R 3,884,319
89R 3,884,321

CLASS 181
33K 3,884,322
41 3,884,323
114 3,884,324
139 3,884,325
155 3,884,326

CLASS 182
113 3,884,327
222 3,884,328

CLASS 184
1R 3,884,329

CLASS 188
18A 3,884,331
73.4 3,884,332
153R 3,884,333

CLASS 192
56R 3,884,334
113B 3,884,335
131R 3,884,336

CLASS 194
59 3,884,330
3,884,337

CLASS 195
1.8 3,884,758
28R 3,884,759
66B 3,884,760
68 3,884,761
81 3,884,762
96 3,884,763
103.5R 3,884,764
127 3,884,765

CLASS 197
49 3,884,338
53 3,884,339
3,884,340
133R 3,884,341
186R 3,884,342

CLASS 198
23 3,884,343
31AA 3,884,344
35 3,884,345
99 3,884,346
254 3,884,347

CLASS 200
61.44 3,885,112
82B 3,885,113
148R 3,885,114
153S 3,885,117
245 3,885,115
308 3,885,116

CLASS 202
173 3,884,766
174 3,884,767

CLASS 203
11 3,884,768
53 3,884,769
82 3,884,770

CLASS 204
12 3,884,771
23 3,884,772
49 3,884,773
55Y 3,884,774
59F 3,884,775
73R 3,884,776
84 3,884,777
3,884,778
92 3,884,779
95 3,884,780
98 3,884,781
108 3,884,782
113 3,884,681
129.35 3,884,783
129.75 3,884,784
158 3,884,785
159.14 3,884,786
192 3,884,787
3,884,788
224M 3,884,790
224R 3,884,789
268 3,884,791
290F 3,884,792
298 3,884,793

CLASS 206
44R 3,884,349
44.12 3,884,350
45.12 3,884,348
225 3,884,351
322 3,884,935
424 3,884,352
426 3,884,353
427 3,884,354
494 3,884,355
521 3,884,356

CLASS 208
8 3,884,794
3,884,795
3,884,796
89 3,884,797
111 3,884,798
139 3,884,799

CLASS 209
82 3,884,800

CLASS 210
23 3,884,801
31C 3,884,802
44 3,884,803
64 3,884,804
65 3,884,805
78 3,884,806
104 3,884,807
109 3,884,808
163 3,884,809
169 3,884,810
170 3,884,811
220 3,884,812
297 3,884,813
321 3,884,814
521 3,884,815

CLASS 211
13 3,884,357
148 3,884,358

CLASS 212
35 3,884,359

CLASS 213
75TC 3,884,360

CLASS 214
1BB 3,884,363
1BT 3,884,361
1CM 3,884,365
1Q 3,884,362
1R 3,884,364
6BA 3,884,366
6B 3,884,367
8 3,884,369
8.5D 3,884,368
11R 3,884,370
16.1BB 3,884,371
83.28 3,884,373
83.3 3,884,372
84 3,884,374
305 3,884,375
314 3,884,376
767 3,884,377
769 3,884,378

CLASS 215
221 3,884,379

CLASS 219
10.55F 3,885,118
10.81 3,885,119
73 3,885,120
3,885,121
98 3,885,122
123 3,885,123
288 3,885,124
298 3,885,125
365 3,885,126
367 3,885,127
462 3,885,128
553 3,885,129

CLASS 220
9F 3,884,380
23.6 3,884,381
72 3,884,383
94A 3,884,384
272 3,884,382
309 3,884,385

CLASS 221
7 3,884,386

CLASS 222
83 3,884,387
129.4 3,884,391
132 3,884,388
146HE 3,884,389
149 3,884,390
153 3,884,392
3,884,393
3,884,394
176 3,884,395
327 3,884,396
370 3,884,397
402.13 3,884,398
3,884,399
533 3,884,400
544 3,884,401

CLASS 223
37 3,884,402

CLASS 224
5V 3,884,403
42.1B 3,884,404

CLASS 225
102 3,884,405
103 3,884,406

CLASS 226
90 3,884,407

CLASS 227
100 3,884,408

CLASS 228
20 3,884,409
121 3,883,946
176 3,883,945

CLASS 229
16D 3,884,410
17G 3,884,411
69 3,884,412

CLASS 235
61.11D 3,885,130
61.11E 3,885,131
61.11R 3,885,132
64.3 3,885,133
92DM 3,885,134
98R 3,885,135
144ME 3,885,136
150.2 3,885,137
150.53 3,885,138
152 3,885,139
3,885,140
153AM Re.28,421
164 3,885,141
3,885,142
181 3,885,143

CLASS 236
15A 3,884,413
49 3,884,414

CLASS 239
79 3,884,415
97 3,884,416
102 3,884,417
428.5 3,884,418
526 3,884,419

CLASS 240
2R 3,885,144
6.4B 3,885,145
7.1R 3,885,146
9R 3,885,147
10.66 3,885,148
41BM 3,885,149
46.39 3,885,150

CLASS 241
176 3,884,420
230 3,884,421
279 3,884,422
282.1 3,884,423

CLASS 242
7.02 3,884,424
18R 3,884,425
43.1 3,884,426
56.2 3,884,427
118.3 3,884,428
159 3,884,429
199 3,884,430

CLASS 244
7A 3,884,431
15 3,884,432
42CC 3,884,433
53R 3,884,434
76J 3,884,435
122A 3,884,436

CLASS 246
63C 3,884,437

CLASS 248
59 3,884,438
96 3,884,439
146 3,884,440
205R 3,884,441
221 3,884,442
467 3,884,443

CLASS 249
112 3,884,444
205 3,884,445

CLASS 250
211R 3,885,151
235 3,885,152
251 3,885,153
267 3,885,154
283 3,885,155
303 3,885,156
311 3,885,157
359 3,884,816
385 3,884,817
440 3,885,158
472 3,885,159
480 3,884,818
499 3,885,160
533 3,884,819
571 3,885,161
573 3,885,162

CLASS 251
61.4 3,884,446
144 3,884,447
149.9 3,884,448
294 3,884,449

CLASS 252
41 3,884,820
51.5A 3,884,822
51.5R 3,884,821
62.1 3,884,825
62.63 3,884,823
106 3,884,826
164 3,884,824
305 3,884,828
331 3,884,829
421 3,884,830
429C 3,884,832
429R 3,884,831
431N 3,884,833
439 3,884,834
451 3,884,835
455R 3,884,836
462 3,884,837
470 3,884,838
478 3,884,839
511 3,884,840
522 3,884,841
3,884,842
3,884,843

CLASS 254
164 3,884,450

CLASS 259
191 3,884,451
192 3,884,452

CLASS 260
2EN 3,884,845
2.2R 3,884,846
2.3 3,884,850
3,884,856
2.5AH 3,884,847
2.5BB 3,884,849
2.5BD 3,884,848
2.5N 3,884,844
3.3 3,884,851
17R 3,884,852
17.3 3,884,853
22CA 3,884,854
23EP 3,884,855
28.5AV 3,884,857
29.15B 3,884,858
29.2M 3,884,860
29.3 3,884,859
3,884,861
3,884,862
29.6S 3,884,863
29.7NR 3,884,864
31.8R 3,884,865
32.8SB 3,884,866
37AL 3,884,867
37N 3,884,868
38 3,884,869
40R 3,884,870
42.14 3,884,871
45.75W 3,884,872
45.85B 3,884,873
3,884,874
46.5E 3,884,875
47UA 3,884,877
47C 3,884,876
77.5AM 3,884,880
78R 3,884,881
78.4D 3,884,882
79.1 3,884,883
3,884,884
79.3R 3,884,885
80PS 3,884,886
80.75 3,884,887
80.78 3,884,888
83.7 3,884,889
87.5C 3,884,890
88.1R 3,884,891
91.3PV 3,884,892
93.1 3,884,893
93.7 3,884,894
94.2R 3,884,895
112.5 3,884,896
112.7 3,884,897
121 3,884,898
146R 3,884,899
162 3,884,900
207 3,884,901
210E 3,884,902
3,884,903
3,884,904
210.5 3,884,905
211R 3,884,906
212 3,884,907
218 3,884,908
233.3R 3,884,909
240F 3,884,912
240G 3,884,910
3,884,913
240J 3,884,911
243C 3,884,914
3,884,915
247.7G 3,884,916
248NS 3,884,917
250Q 3,884,918
252 3,884,827
256.4Q 3,884,919
268BQ 3,884,921
268PH 3,884,923
268TR 3,884,920
3,884,922
281 3,884,924
288R 3,884,925
289QP 3,884,926
293.53 3,884,927
295.5R 3,884,928
302SD 3,884,929
306.8D 3,884,930
307D 3,884,931
308B 3,884,932
309.2 3,884,933
310R 3,884,934
326.5FN 3,884,936
327P 3,885,044
340.3 3,884,937
340.5 3,884,938
340.7 3,884,944
343.2R 3,884,940

343.7 3,884,939
348A 3,884,941
3,884,942
383 3,884,943
397.3 3,884,945
400 3,884,946
404.5 3,884,947
413 3,884,948
429.3 3,884,949
448.2S 3,884,950
453PC 3,884,952
453A 3,884,951
456A 3,884,953
465B 3,884,957
465D 3,884,955
465E 3,884,956
465R 3,884,954
471C 3,884,958
471R 3,884,959
473S 3,884,960
475SC 3,884,961
479C 3,884,962
482C 3,884,963
486R 3,884,964
499 3,884,965
501.1 3,884,966
3,884,967
501.14 3,884,968
514D 3,884,969
514G 3,884,970
535R 3,884,971
545R 3,884,878
551P 3,884,972
554 3,884,973
561N 3,884,975
563P 3,884,976
564R 3,884,974
567.6P 3,884,977
586C 3,884,980
593R 3,884,978
3,884,979
595 3,884,981
609R 3,884,879
614R 3,884,982
621A 3,884,983
634 3,884,984
664 3,884,985
668F 3,884,986
672R 3,884,987
683.15D 3,884,988
837R 3,884,992
857R 3,884,989
860 3,884,990
878R 3,884,991
897A 3,884,993
899 3,884,994
900 3,884,995
940 3,884,996
948 3,884,998
956 3,884,999
3,885,000
968 3,885,001
972 3,885,002
973 3,884,997

CLASS 261
23A 3,885,003
3,885,004

CLASS 264
28 3,885,005
29 3,885,006
42 3,885,007
45.3 3,885,008
45.4 3,885,009
46.2 3,885,010
182 3,885,012
205 3,885,014
230 3,885,015
269 3,885,016

CLASS 266
35 3,884,453

CLASS 267
65D 3,884,454
140 3,884,455
156 3,884,456
162 3,884,457

CLASS 270
58 3,884,458
61R 3,884,459

CLASS 271
98 3,884,460
277 3,884,461

CLASS 272
8R 3,884,462
79C 3,884,463
79R 3,884,464

CLASS 273
54B 3,884,465
65EC 3,884,466
73D 3,884,467
78 3,884,468
87.2 3,884,469
101.2 3,884,471
105.4 3,884,470
121R 3,884,472
130AC 3,884,474
130D 3,884,473
134G 3,884,475
157R 3,884,476
183B 3,884,478
183D 3,884,477
212 3,884,479

CLASS 274
10S 3,884,480
23R 3,884,481

CLASS 277
17 3,884,482
208 3,884,483

CLASS 280
7.12 3,884,484
11.1R 3,884,485
11.13B 3,884,487
11.13K 3,884,315
11.2 3,884,486
11.35K 3,884,489
11.35N 3,884,488
11.35R 3,884,492
18 3,884,490
35 3,884,491
79.1 3,884,493
81B 3,884,494
87.02W 3,884,495
124F 3,884,496
150AB 3,884,497
3,884,499
3,884,500
150R 3,884,498
251 3,884,501
423R 3,884,502
440 3,884,503
446R 3,884,504

CLASS 282
27.5 3,884,505
3,884,506

CLASS 283
60 3,884,507

CLASS 285
31 3,884,508
37 3,884,509
39 3,884,510
93 3,884,511
133R 3,884,512
322 3,884,513

CLASS 290
1 3,885,163

CLASS 292
11 3,884,514
34 3,884,515

CLASS 293
69 3,884,516
76 3,884,517

CLASS 294
83R 3,884,518
90 3,884,519

CLASS 296
27 3,884,520
31P 3,884,521
136 3,884,523

CLASS 297
63 3,884,522
160 3,884,524
212 3,884,525

CLASS 298
1A 3,884,526

CLASS 301
65 3,884,527

CLASS 302
58 3,884,528

CLASS 303
7 3,884,529
3,884,530
21BE 3,884,531
22R 3,884,532
84A 3,884,533

CLASS 307
10AT 3,885,164
115 3,885,165
116 3,885,166
221C 3,885,167
235A 3,885,168
246 3,885,169
252UA 3,885,170
252A 3,885,171

CLASS 308
6C 3,884,537
9 3,884,534
36.1 3,884,535
37 3,884,536

CLASS 310
8.7 3,885,172
9.4 3,885,173
9.5 3,885,174
68D 3,885,175
88 3,885,176
153 3,885,177

CLASS 312
233 3,884,538

CLASS 313
1 3,885,178
60 3,885,179
103 3,885,180
110 3,885,181
116 3,885,182
195 3,885,183
220 3,885,184
318 3,885,185
3,885,186
368 3,885,187
394 3,885,188
401 3,885,189
402 3,885,190
447 3,885,191

CLASS 315
3.5 3,885,192
5.25 3,885,193
107 3,885,194
169TV 3,885,195
3,885,196
194 3,885,197
411 3,885,198

CLASS 316
6 3,884,539
19 3,884,540

CLASS 317
27R 3,885,199
40R 3,885,200
51 3,885,201
61 3,885,202
3,885,203

CLASS 318
139 3,885,204
302 3,885,205
314 3,885,206
568 3,885,207
625 3,885,208
692 3,885,209
696 3,885,210

CLASS 320
2 3,885,211

CLASS 324
65R Re.28,422
117H 3,885,212
127 3,885,213
154R 3,885,214
158P 3,885,215

CLASS 325
22 3,885,216
26 3,885,217
455 3,885,218

CLASS 330
30D 3,885,219
30R 3,885,220

CLASS 333
14 Re.28,426
83R 3,885,221

CLASS 337
338 3,885,222
406 3,885,223

CLASS 339
22B 3,884,541
105 3,884,543
111 3,884,542
198G 3,884,544

CLASS 340
5MP 3,885,224
15.5CP 3,885,225
27R 3,885,226
41R 3,885,227
47 3,885,228
146.3H 3,885,229
166EL 3,885,230
172 3,885,231
173R 3,885,232
174ZA 3,885,233
258A 3,885,234
279 3,885,235
304 3,885,236

CLASS 343
5W 3,885,237
7A 3,885,238
7.6 3,885,239
9 3,885,240
106D 3,885,241

CLASS 350
3.5 3,884,545
3,884,546
5 3,884,547
16 3,884,548
96WG 3,884,549
3,884,550
142 3,884,551
161 3,884,552
162SF 3,884,553
164 3,884,554
187 3,884,555
214 3,884,556
221 3,884,557
288 3,884,558
3,884,559
293 3,884,560

CLASS 351
83 3,884,561

CLASS 352
74 3,884,562
131 3,884,563

CLASS 353
6 3,884,564
15 3,884,565
19 3,884,566
23 3,884,567
62 3,884,568
88 3,884,569
98 3,884,570

CLASS 354
296 3,885,242

CLASS 355
3 3,884,571
15 3,884,572
51 3,884,573
66 3,884,574
68 3,884,575
69 3,884,576
77 3,884,577
100 3,884,578

CLASS 356
39 3,884,579
106R 3,884,580
109 3,884,581
173 3,884,582
201 3,884,583
226 3,884,584
239 3,884,585

CLASS 357
79 3,885,243

CLASS 358
80 3,885,244

CLASS 360
101 3,885,245

CLASS 402
38 3,884,586

CLASS 403
14 3,884,587
194 3,884,588
316 3,884,589

CLASS 408
68 3,884,590
284 3,884,597
386 3,884,598

CLASS 418
55 3,884,599
61A 3,884,600
90 3,884,601
142 3,884,602
177 3,884,603
270 3,884,604

CLASS 423
1 3,885,017
54 3,885,018
213.2 3,885,019
245 3,885,020
289 3,885,021
291 3,885,022
439 3,885,023
512 3,885,024
645 3,885,025

CLASS 424
14 3,885,026
44 3,885,027
52 3,885,028
57 3,885,029
92 3,885,011
177 3,885,012
180 3,885,030
192 3,885,031
212 3,885,032
246 3,885,033
247 3,885,034
251 3,885,035
273 3,885,037
275 3,885,036
283 3,885,038
288 3,885,039
304 3,885,040
318 3,885,041
323 3,885,042
327 3,885,043
330 3,885,045
3,885,046
3,885,047

CLASS 425
131.1 3,884,605
133.5 3,884,606
144 3,884,607
145 3,884,608
242B 3,884,609
376 3,884,611
384 3,884,612
387B 3,884,610
404 3,884,613

CLASS 426
18 3,885,048
3,885,049
60 3,885,050
250 3,885,052
276 3,885,053
277 3,885,054
335 3,885,055
441 3,885,056
519 3,885,057
535 3,885,051

CLASS 427
10 3,885,058
12 3,885,059
43 3,885,060
85 3,885,061
133 3,885,062
226 3,885,063
228 3,885,064
230 3,885,065
314 3,885,066
381 3,885,067
394 3,885,068
396 3,885,069

CLASS 428
36 3,884,753
38 3,885,072
42 3,885,070
60 3,885,071
112 3,885,073
136 3,885,074
150 3,885,075
195 3,885,076
265 3,885,077
315 3,885,078
336 3,885,080
346 3,885,079
398 3,884,754
474 3,885,081

CLASS 431
88 3,884,614
95 3,884,615
142 3,884,616
170 3,884,617
254 3,884,618

CLASS 432
2 3,884,619
15 3,884,620
19 3,884,621
24 3,884,622
60 3,884,623
227 3,884,624

CLASSIFICATION OF DESIGNS

D2—	376	235,118		204	235,128		23	235,138	D26—	6	235,148		15AJ	235,156	D59—	2A	235,165
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PATENT AND TRADEMARK OFFICE NOTICES

WIPO Vacancy

WIPO has announced its intention to fill a vacancy in the position of Director of its External Relations Division. Incumbent's duties will include: relations with WIPO member and non-member States and international organizations; representation at international meetings; implementation of the legal technical assistance program; and the preparation of working documents and reports.

The qualifications required are: a law degree; experience in international intellectual property activities; familiarity with procedures of the U.N.; ability to act as WIPO representative at international meetings; and excellent knowledge of either French or English and a working knowledge of the other language.

The candidate must be less than 55 or 60 years of age depending upon the type of appointment.

The annual salary ranges from 57,717 Swiss Francs to 66,598 Swiss Francs. Post adjustments, on an annual basis range from 30,623 Swiss Francs to 33,933 Swiss Francs, without dependents; from 45,934 Swiss Francs to 50,900 Swiss Francs, with dependents. Applications and information on WIPO Competition No. 269 can be obtained from the Director of Administrative Division, World Intellectual Property Organisation (WIPO) 32, chemin des Colombettes, 1211 Geneva 20, Switzerland. Closing date for receipt of applications is June 16, 1975.

C. MARSHALL DANN,
May 2, 1975. *Commissioner of Patents and Trademarks.*

Examination

Pursuant to the provisions of Rule 341(c), an examination for persons seeking registration before the United States Patent & Trademark Office as patent attorneys or agents will be held on Tuesday, September 9, 1975.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent & Trademark Office in patent cases must, pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent & Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

The examination will be given under the supervision of the Civil Service Commission, and may be taken in any of the cities in which the Civil Service Commission regularly conducts examinations. Application to take the examination must be filed in the Patent & Trademark Office together with a $35 fee not later than July 31, 1975.

Application blanks may be obtained from the Clerk of the Patent & Trademark Office Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents & Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,742,827, T. Marks, FULLY AUTOMATIC MACHINE FOR MAKING BRUSHES, filed Oct. 6, 1970, D.C., S.D.N.Y., Doc. 70–C–4312, *American Technical Industries, Inc.* v. *Premier Decorations, Inc. et ano.* Final judgment and order that the provisions of this final judgment shall apply to the defendants. The defendants are restrained from contesting, directly or indirectly, the validity of said patent owned by the plaintiff, Oct. 27, 1972.

2,755,623, Ferri and Schwartz, ROTATING FLOW COMBUSTOR, filed Sept. 26, 1972, D.C. Conn. (New Haven), Doc. 15567, *Antonio Ferri, Ira R. Schwartz* v. *United Aircraft Corporation et al.* Consent final judgment dismissing the complaint on the merits, entered Aug. 13, 1974.

2,857,752, Anderson, Dell and Nelson, FLASH LAMP; **2,982,119,** R. M. Anderson, same; **3,016,727,** Vanden Boom and Anderson, same; **3,064,457,** Vanden Boom and Jakubs, MULTI-LAMP UNIT; **3,123,993,** Cressman and Demchock, FLASH LAMP, filed Mar. 3, 1969, D.C., S.D.N.Y., Doc. 69–C–842, *General Electric Company* v. *Morritz Broker, individually, and doing business as Hattzlachh Photo Supply Co.* Filed final judgment and consent decree. The defendants' counterclaims are dismissed without prejudice. Defendants are jointly enjoined and severally enjoined from selling covered products, Oct. 7, 1970.

2,902,784, D. R. Sukul, ROOM SERVICE INDICATOR, filed Dec. 18, 1973, D.C. Del. (Wilmington), Doc. 4778, *Lily D'Auguiar* v. *Mariott Corporation.* Stipulation of dismissal with prejudice, Oct. 25, 1974.

2,906,875, E. T. Molinaro, STATION SAMPLING RADIO, filed Sept. 26, 1974, D.C.N.J. (Trenton), Doc. C–74–1492, *Anthony P. Cantanzaro* v. *Fannon/Courier Corp.*

2,908,831, G. Hirsch, SPIT DRIVE UNITS, filed Oct. 18, 1971, D.C., S.D.N.Y., Doc. 71–C–3119, *Brevel Products Corp.* v. *Buddy L Corporation.* Filed stipulation and order dismissing the action without prejudice, Dec. 12, 1972.

2,982,119. (See 2,857,752.)

3,002,176, R. S. Yopp, MULTIPLE-CONTACT ELECTRICAL CONNECTOR, filed Feb. 1, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c316, *Bunker Ramo Corp.* v. *AMP Inc. et al.* Stipulated order dismissing complaint with prejudice and defendants' counterclaim is dismissed without prejudice, Aug. 8, 1974.

3,016,727. (See 2,857,752.)

3,022,701, R. A. Potruch, PLASTIC ANCHOR-TYPE FASTENER AND DRIVER MEANS FOR EXPANDING SAME, filed Aug. 24, 1967, D.C., S.D.N.Y., Doc. 67–C–3251, *U.S. Expansion Bolt Company* v. *Star Expansion Industries, Inc. et ano.* Stipulation and order dismissing complaint and counterclaims with prejudice, Oct. 31, 1974.

3,040,993, E. J. Schultz, LIGHTING FIXTURE, filed June 26, 1970, D.C., S.D.N.Y., Doc. 70–C–2737, *Esco Lighting Co., Inc.* v. *Lighting Services, Inc.* Filed judgment dismissing complaint, Apr. 4, 1973.

3,063,457, Bittner and Gnass, FOOT EXERCISER SANDALS, filed Aug. 14, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2302, *Scholl, Inc.* v. *S.S. Kresge Company.*

3,064,457. (See 2,857,752.)

3,094,278, B. Kuhne, DETENT TYPE ACTUATOR FOR CALCULATING MACHINE, filed May 22, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–1417–R, *Addmaster Corp.* v. *Unitrex of America, Inc.*

3,123,993. (See 2,857,752.)

3,150,216, W. Z. Salcer, METHOD FOR MAKING PLASTIC ARTICLES, filed Sept. 28, 1964, D.C.N.J. (Newark), Doc. 905–64, *B & S Plastic Art, Inc.* v. *Efka Plastic Corporation et al.* Judgment on counterclaims in favor of defendant, Efka Plastic Corporation, Sept. 27, 1974.

3,160,671, Feigelman and Aristoff, METHOD FOR INCREASING THE YIELD OF RECOVERABLE MONOCYCLIC AROMATIC HYDROCARBONS IN THERMAL HYDRODEALKYLATION PROCESSES, filed Aug. 3, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1985, *Atlantic Richfield Company* v. *Phillips Petroleum Company.* Order cause dismissed with prejudice and without costs with leave to reinstate in sixty days, Dec. 21, 1973.

3,166,693, Haring and Taylor, DRY ELECTROLYTIC DEVICE, filed Oct. 28, 1969, D.C. Ariz. (Phoenix), Doc. C–69–467–Phx, *Western Electric Company, Inc.* v. *Dickson Electronics Corporation.* Stipulation of dismissal and order of court approving same, Jan. 17, 1975.

3,402,657, Potter, Foley and Antonucci, HIGH SPEED BELT PRINTER WITH PRINTING SLUG SUPPORTING MEANS; **Re. 26,240,** C. I. Wasserman, HIGH SPEED PRINTERS WITH COLUMN SPANNING HAMMERS, filed Mar. 8, 1974, D.C. Mass. (Boston), Doc. 74–1081, *Potter Instrument Company, Inc.* v. *Odec Computer Systems, Inc.* The order of the District Court is affirmed, June 27, 1974.

3,473,091, Morris and McDonald, GROUND LEAKAGE DIFFERENTIAL PROTECTIVE APPARATUS; **3,506,906,** D. W. Nestor, GROUND FAULT CIRCUIT INTERRUPTER WITH INADVERTENT GROUND SENSOR, filed Nov. 15, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2744, *Harvey Hubbell, Inc.* v. *Ruoker Co. et al.* Enter order, stipulation to dismiss without prejudice granted, June 15, 1973.

3,483,617, J. Krampe, TOOL FOR CUTTING AND STRIPPING CABLE, filed Jan. 8, 1974, D.C., N.D. Ill. (Chicago), Doc. 71c47, *Joseph Krampe* v. *Ideal Industries, Inc.*

3,495,629, Botsolas and Lionikis, METHOD AND DEVICE FOR COVERING PIPEFITTINGS, filed June 8, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–1266–FW, *Chris J. Botsolas* v. *Schultz Laboratories et al.* Final judgment, defendants are enjoined and restrained from infringing and contributorily infringing said patent. In particular, defendant and Mesa Plastics Company, Inc. are hereby enjoined and restrained from the sale or transfer of the molds from which the infringing pipefitting cover products were made, Aug. 22, 1974. Same, filed Mar. 22, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–770 WPG, *Johns-Manville Corporation* v. *Certain-Teed Products Corporation.* Same, filed May 3, 1974, D.C., S.D.N.Y., Doc. 74–C–1926 (CLB), *Certain-Teed Products Corp.* v. *Johns-Manville Corp.*

3,499,362, Spain, Oliver, Flora and Powell, CYLINDER LOCK, filed June 26, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1752, *Medeco Security Locks, Inc.* v. *Lock Technology Corp.*

3,499,481, W. C. Avrea, PRESSURIZED LIQUID COOLING SYSTEM; **3,601,181,** same, METHOD APPARATUS FOR PURGING AIR FROM INTERNAL COMBUSTION ENGINE COOLING SYSTEMS, filed Apr. 9, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–935–JWC, *Orion Industries, Inc.* v. *Saf-Gard Products, Inc.* Filed order granting defendant's motion dismissing plaintiff's complaint with prejudice, entered Oct. 11, 1974.

3,506,906. (See 3,473,091.)

3,517,989, C. H. Wilson, SPECTACLES, filed Mar. 27, 1973, D.C., S.D.N.Y., Doc. 73–1270, *Rayex Corporation* v. *Foster Grant Co. Inc.* Filed order of dismissal pursuant to Rule 41(a)(1), Aug. 31, 1973.

3,543,019, J. Jacobsen, EQUIPOISED LAMP, filed Sept. 17, 1974, D.C. Colo. (Denver), Doc. 74–M–852, *Luxo Lamp Corporation* v. *May D & F Company of Colorado.*

3,582,664, Ryan and Chang, DEVICE FOR REPRODUCING RECORDED SOUNDS IN TOYS, filed Oct. 18, 1971, D.C., S.D.N.Y., Doc. 71–C–4536, *Mattel, Inc.* v. *Ideal Toy Corporation.* Filed stipulation and order of dismissal without prejudice, Sept. 12, 1973.

3,601,181. (See 3,499,481.)

3,610,733, F. G. Back, VARIFOCAL LENS SYSTEM AND ACTUATING MECHANISM, filed July 31, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74–2201–IH, *Zoomar, Inc. and Frank B. Back* v. *Taisei Kogaku Kogyo Co. et al.*

3,632,879, R. Freisinger, AUTOMATIC TELEPHONE DIALER FOR EMERGENCY MESSAGES, filed June 3, 1972, D.C.N.J. (Newark), Doc. C 964–72, *Atlantic Metal Products Inc.* v. *Napco Security Systems Inc.* Consent order of dismissal of action, June 26, 1974.

3,670,611, D. J. Jarman, SHEAR DISCHARGE CONVEYING SYSTEM; **3,793,916,** same, FEEDBACK CONVEYOR SYSTEM, filed Nov. 4, 1974, D.C., N.D. Tex. (Dallas), Doc. CA3–74–1084–C, *Continental M.D.M., Inc.* v. *Spaulding Incorporated.*

3,687,467, W. B. Kosmowski, COLLET, filed Apr. 6, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–762–R, *Digital Systems, Inc.* v. *Advanced Controls Corporation.* Filed defendant's and counterclaimant's notice of dismissal with prejudice, entered Oct. 24, 1974.

3,702,701, Vaughn and Hargrave, METAL TENNIS RACKET WITH PLASTIC THROAT PIECE AND MOLDED PLASTIC HANDLE, filed July 2, 1974, D.C.N.J. (Trenton), Doc. C–74–1008, *Maark Corporation* v. *J. C. Penney.*

3,712,772, D. B. Hunkar, CONTROL SYSTEM FOR PARISON EXTRUDERS, filed Oct. 19, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2693, *Hunkar Laboratories, Inc.* v. *Bekum-Maschinenfabriken GmbH.* Filed letter from plaintiff's attorney Kenneth C. Miller which should be treated as a notice pursuant to F.R.C.P. 71(a)(1), Nov. 20, 1973.

3,793,916. (See 3,670,611.)

3,795,117, Moody, Jr. and Hamilton, INJECTION COOLING OF SCREW COMPRESSORS, filed Aug. 19, 1974, D.C., M.D. Pa. (Scranton), Doc. 74–682, *Dunham-Bush, Inc.* v. *Freezing Equipment Sales, Inc.*

3,805,724, F. W. Butler, SAILBOAT CANOPY APPARATUS, filed Nov. 1, 1974, D.C.S.C. (Columbia), Doc. 74–1699, *Frank W. Butler and Catalina Yachts, Inc.* v. *Jack A. Helms, doing business as Jack A. Helms Company.*

3,806,312, McMaster and Nitschke, ROLLER HEARTH FURNACE, filed Aug. 20, 1974, D.C. Mass. (Boston), Doc. 74–4085–T, *Glasstech, Inc. et al.* v. *Guardian Industries Corp.*

3,810,604, J. A. Reiter, TANK AGITATING AND CLEANING SYSTEM, filed Aug. 27, 1974, D.C. N. Mex. (Albuquerque), Doc. C–74–416, *Tanks, Inc.* v. *Reiter Industries, Inc.*

3,816,964, J. Catalano, WINDOW GUARD, filed Sept. 6, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2559, *Joseph Catalano* v. *Kawneer Company, Inc.*

3,832,837, Burkhart, Fell and Case, WINDROWER HAVING REAR MOUNTED OVERTOP SWINGABLE TONGUE; **D. 228,010,** same, COMBINED MOWER, CONDITIONER AND WINDROWER, filed Sept. 13, 1974, D.C. Kans. (Wichita), Doc. 74–185–C6, *Hesston Corporation* v. *Deere and Company.* Same, filed Sept. 16, 1974, D.C. Kans. (Wichita), Doc. 74–188–C6, *Hesston Corporation* v. *John Deere Company.*

Re. 25,570, J. H. Lemelson, EXTRUSION APPARATUS, filed Aug. 13, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2074, *Discovery Rights, Inc.* v. *American Can Company.* Enter order to voluntarily dismiss action without prejudice, Oct. 25, 1973.

Re. 26,240. (See 3,402,657.)

D. 207,227, K. Solheim, GOLF PUTTER, filed Apr. 12, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–982RJK, *Karsten Manufacturing Corp. and Karsten Solheim* v. *Link & Pan Enterprises Limited.* Filed stipulation and order thereon enjoining defendant from making or selling a putter which infringes said design patent. Plaintiff's cause of action against defendant is dismissed, entered Oct. 30, 1974.

D. 228,010. (See 3,832,837.)

D. 232,601, Rich and Rich, MOLDED POULTRY PRODUCT; **Reg. No. 905,938** (RICH'S CATERING), Louis Rich Foods, Inc.; **Reg. No. 927,455** (CATERING QUALITY RICH'S AND DESIGN), same, filed Oct. 31, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–3154, *Louis Rich, Inc.* v. *Harry V. Priester, doing business as Poultry Distribution Co.*

Reg. No. 905,938. (See D. 232,601.)

Reg. No. 927,455. (See D. 232,601.)

Certificates of Correction for the Week of May 27, 1975

P.P. 3,594	3,840,479	3,863,729	3,870,078
Re. 27,848	3,840,622	3,864,095	3,870,461
Re. 28,317	3,841,967	3,864,128	3,870,689
D. 234,046	3,842,160	3,864,274	3,870,828
3,537,883	3,845,028	3,864,314	3,871,115
3,647,742	3,845,636	3,864,331	3,871,140
3,650,657	3,846,532	3,864,481	3,871,209
3,662,062	3,847,544	3,864,579	3,871,413
3,679,421	3,849,396	3,864,901	3,871,436
3,736,289	3,849,833	3,865,167	3,871,494
3,736,544	3,849,918	3,865,397	3,871,863
3,749,103	3,851,844	3,866,118	3,871,882
3,770,053	3,852,018	3,866,146	3,871,903
3,783,102	3,853,757	3,866,278	3,872,387
3,785,356	3,854,458	3,866,430	3,872,438
3,785,833	3,855,285	3,866,516	3,872,547
3,799,237	3,855,628	3,866,611	3,872,599
3,802,369	3,856,061	3,866,691	3,872,645
3,807,960	3,856,139	3,866,804	3,872,685
3,809,030	3,856,637	3,866,829	3,872,940
3,810,944	3,857,429	3,867,155	3,873,239
3,815,042	3,857,728	3,867,161	3,873,333
3,815,099	3,857,851	3,867,278	3,873,417
3,816,245	3,859,243	3,867,342	3,873,475
3,816,587	3,859,250	3,867,546	3,873,503
3,816,717	3,859,617	3,867,579	3,873,504
3,816,768	3,859,733	3,867,592	3,873,581
3,818,232	3,859,951	3,867,653	3,873,745
3,819,448	3,860,360	3,867,729	3,873,858
3,820,371	3,860,499	3,867,915	3,873,889
3,823,767	3,860,580	3,868,100	3,874,090
3,824,428	3,860,697	3,868,220	3,874,403
3,824,601	3,861,272	3,868,295	3,875,098
3,825,443	3,861,796	3,868,431	3,875,122
3,831,058	3,861,902	3,868,967	3,875,225
3,837,979	3,862,119	3,869,282	3,876,147
3,838,633	3,862,483	3,869,724	3,876,617
3,839,359	3,863,272	3,869,728	
3,839,932	3,863,461	3,869,898	
3,840,074	3,863,570	3,869,920	

Dedication

2,809,651.—*Sigurd M. Moberg,* Pompton Plains, N.J. NON-REUSABLE DEVICE FOR CLOSING A FLEXIBLE TUBE. Patent dated Oct. 15, 1957. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimer and Dedication

3,406,622.—*Hans Gotz,* Backnang-Stockenhof, Germany. VENTILATION MEANS FOR PASSENGER MOTOR VEHICLES. Patent dated Oct. 22, 1968. Disclaimer and dedication filed July 28, 1972, by the assignee, *Daimler-Benz Aktiengesellschaft.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

Availability of Patent Application Drawings for Reproduction

Clients of private commercial reproduction services requesting patent application drawings to make drawing reproductions for U.S. and foreign filings have caused printing problems and delays in allowed applications in which the Base Issue Fee has been paid.

In order to prevent any delay in the printing and issuance of applications in which the Base Issue Fee has been paid, access to the drawings of patent applications which have been scheduled for printing will not be normally available. Delays in obtaining patent application drawings by commercial reproduction services, after the application has been scheduled for printing, can be avoided if requests for reproductions are made either before or promptly after receipt of the Notice of Allowance and prior to the payment of the Base Issue Fee.

WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.

May 6, 1975.

Official Gazette—Advance Announcement Notice

On June 3, 1975 a questionnaire in the form of a return Postal Card (Form PTO Temp. 218) will be placed in each copy of the OFFICIAL GAZETTE. The purpose of the questionnaire is to determine if more economic alternatives to the present OFFICIAL GAZETTE (Patents Section) subscription rate are acceptable.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Date: Apr. 30, 1975.

Disclaimers

Re. 27,492.—*Carl Franklin Wheatley, Jr.,* Somerset, N.J. TELEVISION DEFLECTION SYSTEM INCLUDING AFC CIRCUIT WITH REGENERATIVE PHASE DETECTOR. Patent dated Sept. 26, 1972. Disclaimer filed Mar. 27, 1974, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 9, 10, 11, 12, 13 and 14 of said patent.

Re. 27,533.—*Eugene B. Cox,* Fairfield, Conn. IMPREGNATED DIELECTRIC SYSTEMS. Patent dated Dec. 26, 1972. Disclaimer filed Dec. 5, 1973, by the assignee, *General Electric Company.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 9, 1985.

Design No. 200,165.—*Daniel Dorfman,* Woodbury, N.Y. COMBINE. Patent dated Jan. 26, 1965. Disclaimer filed Feb. 4, 1972, by the assignee, *Lawn-A-Mat Chemical & Equipment Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,511,464.—*Brendan L. Doll,* Patterson, N.C. CORNER PAD AND BLANK. Patent dated May 12, 1970. Disclaimer filed Oct. 3, 1972, by the assignee, *Cellu Products Company.*

Hereby enters this disclaimer to claim 6 of said patent.

3,596,071.—*George I. Doering,* Columbus, Ohio. METHOD AND APPARATUS FOR A MATERIAL TREATER. Patent dated July 27, 1971. Disclaimer filed July 12, 1974, by the assignee, *Industrial Nucleonics Corporation.*

Hereby enters this disclaimer to claims 3, 5, 7, 8, 9, 11, 12, 13, 14, 16, 25 and 26 of said patent.

3,600,705.—*Wirojana Tantraporn* and *Se Puan Yu,* Schenectady, and *Paul J. Shaver,* Scotia, N.Y. HIGHLY EFFICIENT SUBCRITICALLY DOPED ELECTRON TRANSFER EFFECT DEVICES. Patent dated Aug. 17, 1971. Disclaimer filed Aug. 29, 1974, by the assignee, *General Electric Company.*

Hereby enters this disclaimer to claims 1, 2, 6, 12 and 15 of said patent.

3,620,010.—*Richard K. Davis,* Roanoke, Va. GAS TURBINE SPEED-LOAD CONTROL. Patent dated Nov. 16, 1971. Disclaimer filed Dec. 5, 1973, by the assignee, *General Electric Company.*

Hereby enters this disclaimer to all claims of said patent.

3,643,107.—*Dennis R. Gilbreath,* New Haven, Conn. FUNCTION GENERATOR. Patent dated Feb. 15, 1972. Disclaimer filed Nov. 23, 1973, by the assignee, *United Aircraft Corporation.*

Hereby enters this disclaimer to claims 1–8, inclusive, of said patent.

3,646,346.—*Kevin J. Catt,* Melbourne, Australia. ANTIBODY-COATED TUBE SYSTEM FOR RADIOIMMUNOASSAY. Patent dated Feb. 29, 1972. Disclaimer filed Oct. 31, 1974, by the assignee, *Pharmacia AB.*

Hereby enters this disclaimer to all claims of said patent.

3,646,955.—*Jarl Rune Olde,* Uppsala, Sweden. WATER-FEEDING DEVICE. Patent dated Mar. 7, 1972. Disclaimer filed May 31, 1974, by the inventor.

Hereby enters this disclaimer to claim 1 of said patent.

3,665,403.—*John J. Igel,* Rochester, and *Myron D. Schettl,* Oronoco, Minn. DATA RECORDER AND VERIFIER. Patent dated May 23, 1972. Disclaimer filed July 1, 1974, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 5, 6, 8, 9, 10 and 12 through 15 of said patent.

3,683,991.—*Felix H. Ruhland,* Osseo, and *Raymond H. Schmidt,* Buffalo, Minn. IMPROVED TIRE BEAD SEATER. Patent dated Aug. 15, 1972. Disclaimer filed Oct. 29, 1973, by the assignee, *Solar Industries, Inc.*

Hereby enters this disclaimer to claims 1–8 of said patent.

3,702,866.—*Sigbjorn Salvesen, Leif Gunnar Haugen, Johan Haavaldsen* and *Vegard Nordal,* Oslo, Norway. NOVEL 3,5 - BIS - ACYLAMIDO - 2,4,6 - TRIIODOBENZOIC ACIDS AND 5 - ACYLAMIDO - 2,4,6 - TRIIODOISOPHTHALAMIC ACIDS. Patent dated Nov. 14, 1972. Disclaimer filed July 9, 1974, by the assignee, *Nyegaard & Co. A/S.*

Hereby enters this disclaimer to all claims of said patent.

3,774,694.—*Donovan Karnes* and *Marion F. Centliver,* Troy, Ohio. APPARATUS FOR MOVING WIRE. Patent dated July 10, 1973. Disclaimer filed Oct. 18, 1973, by the assignee, *Hobart Brothers Company.*

Hereby enters this disclaimer to claim 28 of said patent.

3,748,138.—*Vernon L. Bissonette,* Brockport, N.Y. METAL COMPLEX IN SILVER HALIDE DEVELOPMENT. Patent dated July 24, 1973. Disclaimer filed July 1, 1974, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to claims 3 through 5, 9 through 12, and 15 of said patent.

3,765,603.—*Donald E. Bean, James T. Engh, James R. Hammer,* and *John J. Igel,* Rochester, *Myron D. Schettl,* Oronoco, and *Harry J. Tashjian, Richard J. Ullmer,* and *John W. Kerr,* Rochester, Minn. DATA RECORDER AND VERIFIER. Patent dated Oct. 16, 1973. Disclaimer filed July 1, 1974, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

3,833,611.—*Raphael Mechoulam,* Jerusalem, and *Shlomo Houry,* Ramat-Gan, Israel, and *Bernard Loev,* Broomall, Pa. 3,7-METHANOBENZOXONIN COMPOUNDS. Patent dated Sept. 3, 1974. Disclaimer filed Jan. 28, 1975, by the assignee, *Yissum Research Development Company.*

Hereby enters this disclaimer to claims 1–3, inclusive, of said patent.

3,857,704.—*Michael Oliver Coulter,* near Crewe, England. MERCURY RECOVERY PROCESS. Patent dated Dec. 31, 1974. Disclaimer filed Jan. 10, 1975, by the assignee, *BP Chemicals Limited.*

Hereby disclaims the portion of the term of the patent which would extend beyond Nov. 12, 1991.

Hereby disclaims the portion of the term of the patent which would extend beyond Nov. 12, 1991.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 10, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-24-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-22-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	6-21-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-3-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-7-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	11-6-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-8-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-5-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	10-15-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-8-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	2-4-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-12-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	9-3-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-30-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	8-9-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	10-4-74

Expiration of patents: The patents within the range of numbers indicated below expire during May 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,832,959, to 2,836,825 inclusive
Plant Patents..... Numbers 1,698, to 1,713 inclusive

REISSUE PATENTS

GRANTED MAY 27, 1975

ERRATA

For CLASS	See PATENT NO.
417-295	28,428
425-169	28,430
308-235	28,431
330-207	28,432
060-632	28,434

REISSUES

MAY 27, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,428

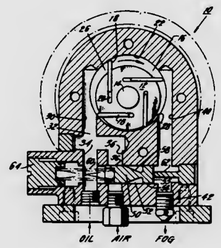
PUMP PRIMING AND FLOW CONTROL VALVE FOR PUMPING TWO DIFFERENT FLUIDS

Paul H. Reeve, River Vale, N.J., by Auto Research Corporation, Rochelle Park, N.J., assignee

Original No. 3,671,148, dated June 20, 1972, Ser. No. 110,024, Jan. 27, 1971. Application for reissue Dec. 19, 1973, Ser. No. 426,230

Int. Cl. F04b *49/00*

U.S. Cl. 417—295 **11 Claims**



14. A pump for simultaneously pumping fluids of differing viscosities, said pump comprising,

a first inlet conduit for a fluid of a relatively lower viscosity; a second inlet conduit for a fluid of a relatively higher viscosity; a junction between said first and second inlet conduits;

pumping means communicating with said junction for pumping the fluids therefrom; an outlet conduit from said pumping means for pumping the fluids to a point of use;

a fluid-flow control valve including a movable valve-member for controlling the flow through said first conduit to said junction; a guideway in said pump for controlling the path of movement of said valve member; said first conduit intersecting said guideway at a location such that said valve member moves across said first conduit;

said valve member having one position in said guideway at which it blocks flow through said first conduit and said valve member being so shaped as to block flow through said first conduit when it is at said one position;

biasing means connected with said valve member for biasing same, in opposition to the pressure in said outlet conduit, to move in said guideway in a direction toward the said one position to thus cause said valve member to block flow through said first conduit when pressure in said outlet conduit is non-existent;

said outlet conduit communicating with said guideway in a manner such that the pressure developed in said outlet conduit by operation of said pumping means is transmitted to said valve member, which is thereby moved by said pressure from its said one position to another position in which said valve member permits flow through said first conduit;

said biasing means being so designed as to have its biasing force on said valve member increased as said valve member is moved toward said biasing means under the influence of pressure in said outlet conduit.

28,429

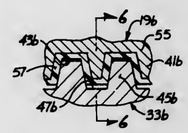
LEAD SCREW AND NUT

John W. Ballentine, Manhattan Beach, and Frank R. Chaffin, Thousand Oaks, Calif., assignors to W. S. Shamban & Co., Los Angeles, Calif.

Original No. 3,698,257, dated Oct. 17, 1972, Ser. No. 109,490, Jan. 25, 1971. Application for reissue June 10, 1974, Ser. No. 477,967

Int. Cl. F16h *1/18, 55/18*

U.S. Cl. 74—424.8 R **27 Claims**



1. An assembly comprising:

a screw member having a generally helical external rib on the exterior thereof, said rib defining a generally helical external groove;

a nut member having a passage therein, said nut member having a generally helical internal rib in said passage, said internal rib defining a generally helical internal groove;

said screw member projecting into said passage with said external rib being received in said internal groove and with said internal rib being received in said external groove whereby relative rotation between said members causes relative translation between said members;

at least a segment of said nut member being somewhat deformable;

said ribs relatively tightly engaging each other substantially without backlash; and

means for preloading said segment of said nut member both axially and radially of said nut member with sufficient force to deform said segment of said nut member to at least assist in obtaining the relatively tight engagement between the ribs.

28,430

APPARATUS FOR DETECTING BROKEN YARN IN SYNTHETIC FIBER [FILAMENT]

at least one lanced tab projecting from the free edge of the flange inwardly and axially [toward the

f. a power amplifier having at least two active elements (67 & 68) in opposed groups, and an output,

mechanism and the spool, said sleeve mechanism including a portion held out of engagement with the housing by

28,430

APPARATUS FOR DETECTING BROKEN YARN IN SYNTHETIC FIBER SPINNING

Eitaro Mukai, Yasuhiro Murase, Mitsuru Kusama, and Mitsuru Yamasaki, Matsuyama, and Takayuki Takasago, Tokyo, and Tatsumi Tanabe, Matsuyama, Japan, assignors to Teijin Ltd., Osaka, Japan

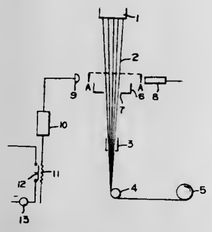
Original No. 3,618,168, dated Nov. 9, 1971, Ser. No. 811,979, Apr. 1, 1969. Application for reissue Oct. 31, 1973, Ser. No. 411,384

Claims priority, application Japan, Apr. 9, 1968, 43/23,858

Int. Cl. D01d 7/00

U.S. Cl. 425—169

2 Claims



1. Apparatus for detecting breakage of yarn in a spinning machine including a spinneret, a guide roller receiving yarn from the spinneret along a first path of travel, and [a winder] *tensioning means* receiving yarn from the guide roller along a second path of travel, said apparatus comprising yarn [receiving] *collecting* means disposed along said first path of travel, said yarn [receiving] *collecting* means having an opening through which said yarn passes and a surface surrounding said opening for collecting yarn; and photoelectric detection means disposed adjacent said yarn collecting means and including light emitting means disposed on one side of said yarn [receiving] *collecting* means, light receiving means disposed on the other side of said yarn [receiving] *collecting* means, and means connected with said light receiving means to indicate breakage of yarn when yarn collected on said surface interferes with light received by said light receiving means from said light emitting means.

28,431

LANCED TAB RACE

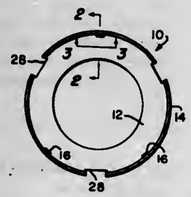
Richard L. Alling and Roger L. Iffland, Torrington, Conn., assignors to The Torrington Co., Torrington, Conn.

Original No. 3,713,713, dated Jan. 30, 1973, Ser. No. 214,260, Dec. 30, 1971. Application for reissue Apr. 8, 1974, Ser. No. 459,087

Int. Cl. F16c 33/64

U.S. Cl. 308—235

23 Claims



1. A thrust bearing race comprising a radially extending annular raceway having inner and outer diameters; a flange integral with and projecting axially from the outer diameter of the raceway; and at least one lanced tab projecting from the free edge of the flange inwardly and axially toward the raceway.

28,432

CLASS "D" LINEAR AUDIO AMPLIFIER

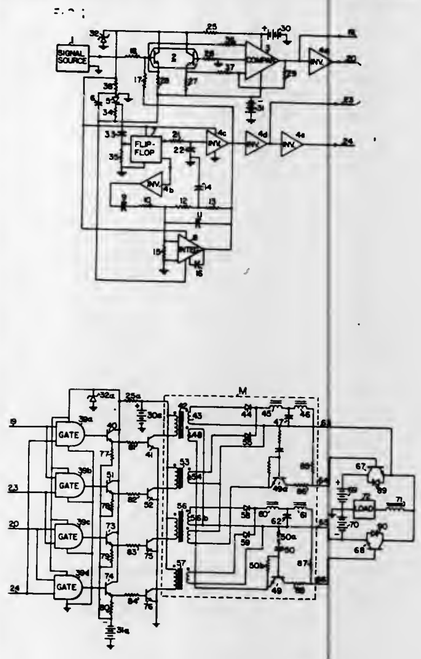
James A. Ross, La Jolla, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Original No. 3,579,132, dated May 18, 1971, Ser. No. 876,771, Nov. 14, 1969. Application for reissue Feb. 28, 1973, Ser. No. 336,853

Int. Cl. H03f 3/38

U.S. Cl. 330—207 A

27 Claims



1. An electrical amplifier comprising;

a. comparator apparatus (1 to 24) having feedback to form a pulse-width modulated signal (19') from an amplitude-varying input signal (1') and a triangular wave amplitude-varying signal (8'),

b. first and second series of gating means (39a & c; 39b & d) connected to said comparator means, each said series supplied with a square wave signal (23' or 20') time related to said triangular wave signal to alternately pass said pulse-width modulated signal in successive halves of the duration of each pulse width,

c. a first type transformer (42, 56) having a primary and plural secondaries (43 & 48), said primary connected to one of said first series of said gating means (39a),

d. a second type transformer (53, 57) having a primary and one secondary (as 54), the primary of said second type transformer connected to one of said second series of said gating means (39b),

e. a plurality of low-pass filters (45, 46, 47; 60, 61, 62) equal in number to the number of said gating means in said first series, each said filter connected to secondaries of both a first and a second type transformer,

f. a power amplifier having at least two active elements (67 & 68) in opposed groups, and an output,

g. a connection (64) from one of said plurality of low-pass filters to one (67) of said active elements,

h. a connection (66) from another of said plurality of low-pass filters to a said active element (68) that is in the group opposed to said one active element,

i. a load (72), and

j. a connection from the output of said power amplifier to said load.

28,433

POWER TAKE-OFF CONTROL VALVE

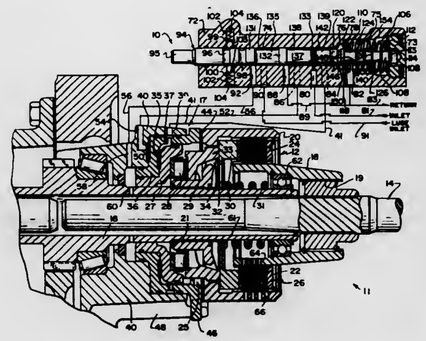
Ronald J. Ronayne, Celina, Ohio, and Edwin Ketterling, Minneapolis, Minn.

Original No. 3,669,229, dated June 13, 1972, Ser. No. 9,489, Feb. 9, 1970. Application for reissue Apr. 24, 1974, Ser. No. 463,679

Int. Cl. F16d 67/02

U.S. Cl. 192—12 C

20 Claims



3. A control valve including a valve housing having a bore therein, a fluid inlet port for admitting pressurized fluid into said bore, first and second fluid outlet ports communicating with said bore, a valve spool in said bore movable in one axial direction from a neutral position where said inlet port is closed to a first position where said inlet port is in communication with said first outlet port, and in the opposite axial direction from said neutral position to a second position where said inlet port is in communication with said second outlet port, said bore having an enlarged portion which extends between first and second spaced apart stops, a portion of said spool being received in said enlarged bore portion, a biasing spring encircling said portion of said spool, and first and second spaced apart retaining means mounted on said portion of said spool for engaging opposite ends of said spring, said spring extending between said stops and biasing said retaining means against said stops when said spool is in said neutral position, so that, when said spool is moved in one axial direction to said first position said spring is compressed between said first stop and said first retaining means to bias said spool toward said neutral position [against fluid pressure acting on said spool], and when said spool is moved in the opposite axial direction to said second position said spring is compressed between said second stop and said second retaining means to bias said spool toward said neutral position [against fluid pressure acting on said spool], *a sleeve mechanism around said spool and in fluid communication with said inlet port when the valve is in said first position, a second spring around the spool and in operative engagement with the sleeve mechanism and the spool, said sleeve mechanism including a portion held out of engagement with the housing by fluid pressure when the valve is in the first position and the pressure is above a predetermined value, said sleeve portion being biased against the housing by the second spring when pressure drops below said predetermined value,* whereby, upon a drop in fluid pressure below a predetermined value said [spring] *springs* will automatically move said spool from said first position [or said second position] to said neutral position.

8. In combination with a power take-off unit adapted for use on a tractor and comprising:

(a) a power input member adapted to be driven by a prime mover;

(b) a power output member;

(c) an hydraulically actuated clutch mechanism situated between said input and output members and adapted to operatively connect said members when pressurized fluid is delivered to said clutch mechanism for operating same;

(d) an hydraulically actuated brake mechanism for holding said output shaft against rotation;

(e) a control valve for controling the flow of said pressurized fluid either to said clutch mechanism or to said brake mechanism;

(f) said control valve including a valve housing having a bore therein, a fluid inlet port for admitting said pressurized fluid into said bore, a first fluid outlet port communicating said bore with said clutch mechanism, a second fluid outlet port communicating said bore with said brake mechanism and a valve spool;

(g) the valve spool being movable in said bore between a first inlet-port-open position wherein said inlet port is in communication with said first outlet port for delivering said pressurized fluid to said clutch mechanism to actuate the same, a second inlet-port-open position wherein said inlet port is in communication with said second outlet port for delivering said pressurized fluid to said brake mechanism to actuate the same, and an inlet-port-closed position;

(h) biasing means for biasing said valve spool toward said inlet-port-closed position from said first inlet-port-open position; and,

(i) said biasing means being operable upon a drop in the pressure of said pressurized fluid below a predetermined value to move said valve spool from said first inlet-port-open position to said inlet-port-closed position whereby when the supply of hydraulic fluid is stopped, said valve spool is automatically moved to said inlet-port-closed position so that, after hydraulic pressure is again supplied, movement of said valve spool to said first inlet-port-open position is necessary to actuate said clutch mechanism for transmitting rotary power from said input to said output member.

28,434

ACTUATOR

Charles R. Olsen, 112 Sherbrooke Ave., Hartford, Conn. 06106

Original No. 3,483,695, dated Dec. 16, 1969, Ser. No. 633,459, Apr. 25, 1967. Application for reissue Dec. 13, 1971, Ser. No. 207,015

Int. Cl. B67d 5/42; F01b 29/08

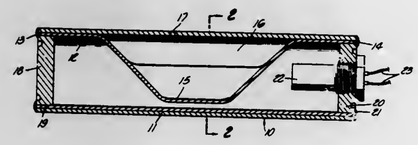
U.S. Cl. 60—632

1 Claim

3. An actuating device for pressurizing a working fluid in a fluid operated device comprising: an outer tubular member having a cylindrical tube wall defining a limited interior volume and capable of withstanding a high internal fluid pressure without substantial permanent deformation; an inner metallic, tubular member extending axially within the outer member and having a diameter at one end corresponding substantially to the inside diameter of the outer tubular member, the inner member also

having a deformable, collapsed, fluted wall portion de-

having a deformable, collapsed, fluted wall portion defined by at least one longitudinally extending indentation along a section of the member, the wall portion being collapsed upon itself to substantially reduce the interior



volume in the collapsed section and to correspondingly form a substantial fluid receiving storage space in the limited interior volume of the outer tubular member between the outer tubular member and the collapsed wall portion, the inner tubular member also being closed and sealed at one longitudinal end to prevent rupture under high explosive pressurization; a non-rupturing, sealing plug mounted in the other end of the inner tubular member opposite the closed and sealed end to form a closed, non-rupturable and deformable fluid confinement vessel from the indented, sealed inner tubular member, and an explosive squib mounted from the sealing plug in the closed, fluid confinement space defined within the vessel and having squib actuating means exposed on the exterior of the sealing plug, the squib and sealing plug also being in sealing relationship to retain highly pressurized gases resulting from the explosion of the squib in the closed, fluid confinement space whereby the pressurized gases within the space may expand the longitudinally extending identation of the inner tubular member and displace the deformable, collapsed wall portion through the substantial fluid storage space to the outer tubular member to efficiently pressurize all the working fluid received in the storage space between the inner and outer members without allowing the pressurized gases to escape from the confinement space or mix with the working fluid pressurized.

PLANT PATENTS

GRANTED MAY 27, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,722
BLACK MAPLE TREE
William R. Heard, 5355 Merle Hay Road, Des Moines, Iowa 50323
Filed Apr. 16, 1974, Ser. No. 461,401
Int. Cl. A01h 5/12
U.S. Cl. Plt—51 **1 Claim**

1. A new and distinct variety of black maple tree of the species botanically known as *Acer nigrum*, substantially as herein shown and described, characterized particularly as to novelty by its very upright, tall and substantially columnar form which terminates at its top in a rounded crown, its very straight trunk which is unusual for the species, with lateral branches which are both shorter and thicker than is normal for the species, by the mottled gray color of the bark of its trunk and which is warty and alligator-like in appearance, and by its dense and attractive foliage which ranges from dull green to rich dark green in color on its upper surface and yellow-green and softly downy, especially on the yellow veins, on its lower surface, said foliage becoming an attractive Indian yellow color on its upper surface and somewhat lighter yellow in color on its lower surface during autumn.

3,723
BEGONIA PLANT
James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens Inc., Ashtabula, Ohio
Filed Feb. 28, 1974, Ser. No. 446,784
Int. Cl. A01h 5/00
U.S. Cl. Plt—68 **1 Claim**

1. A new and distinct cultivar of *elatior* begonia characterized particularly by its sharper, more distinct orange flower color; dark spinach green leaves; vigorous growth habit; in propagation by leaf cuttings, a greater quantity of adventitious buds are produced on the base of the leaf petiole in a shorter period of time than on parent cultivar Krefeld Orange; distinctive natural placement of flowers on plant; excellent keeping qualities; 7–10 days faster flowering than parent, and by its year around flowering under controlled environment.

PATENTS

GRANTED MAY 27, 1975

ERRATA

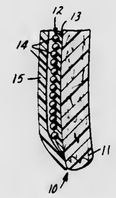
For CLASS	See PATENT NO.
235–061.6 R	3,886,325
235–061.6 E	3,886,326
235–061.7	3,886,327
235–061.11 E	3,886,328
235–092.5 B	3,886,329
235–151.21	3,886,330
235–151.3	3,886,331
235–151.21	3,886,332
235–181	3,886,333
235–184	3,886,334
313–039	3,886,384
340–003 R	3,886,487
340–005 MP	3,886,488
340–005 MP	3,886,489
340–005 MP	3,886,490
340–009	3,886,491
340–015	3,886,492
340–015.5	3,886,493
340–015.5	3,886,494
340–018	3,886,495
340–041 R	3,886,496
357–054	3,886,569

PATENTS

GRANTED MAY 27, 1975

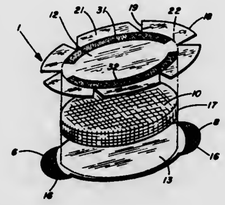
GENERAL AND MECHANICAL

3,885,246
RETROREFLECTIVE PROTECTIVE HELMET
Chi Fang Tung, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 5, 1973, Ser. No. 412,920
Int. Cl. A42b *3/02*; **G02b** *5/12*
U.S. Cl. 2—3 R **2 Claims**



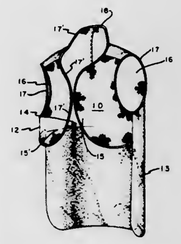
1. A protective helmet comprising a protective shell adapted to be worn on a person's head; a retroreflective layer disposed over substantially all of the outer surface of the protective shell, comprising a layer of binder material and a monolayer of transparent glass microspheres that are partially embedded in the layer of binder material and have a coating of specular reflective material on their embedded surfaces; and a transparent sheet having the shape of the protective shell disposed directly over the retroreflective layer, said sheet being in tight frictional engagement with said retroreflective layer but without optical contact to the exposed surfaces of the microspheres and being attached to the protective shell at least around the periphery of the retroreflective layer so as to provide an airtight sealed pocket between the retroreflective layer and the transparent sheet, whereby the retroreflective layer retroreflects light shined at the helmet under either wet or dry conditions.

3,885,247
SELF-ADHERING DISPOSABLE PROTECTOR
Rosemary J. Kost, 8231 Broadmoor, Mentor, Ohio 44060
Filed Sept. 12, 1974, Ser. No. 505,479
Int. Cl. A41d *27/12*
U.S. Cl. 2—55 **14 Claims**



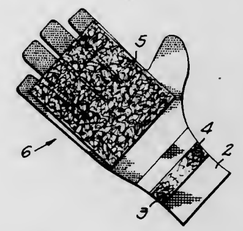
1. An absorbent protector comprising,
a flexible, resilient backing,
a pad attached to said backing for absorbing body fluid therein,
said backing including attachment portions projecting outwardly from opposite sides thereof and beyond said pad, adhesive means on said backing and said pad for securing said protector to a wearer's skin,
said adhesive means on said backing including an adhesive substance on said attachment portions spaced from said pad, and
said adhesive means on said pad including an adhesive substance extending along the peripheral edges thereof between said attachment portions for attaching said pad to the wearer's skin independent of said attachment portions such that said backing may shift relative to said pad in the applied position of said protector to accommodate movement of those portions of the wearer's body attached to said protector by said adhesive substance.

3,885,248
HUNTING VEST
Burton A. Salsby, 2428 S. Liberty Ave., Boise, Idaho 83705
Filed Mar. 7, 1974, Ser. No. 449,172
Int. Cl. A41d *1/00*
U.S. Cl. 2—94 **1 Claim**



1. A hunting vest having open-work foundation mesh which covers the upper torso from the neck to the waist having suitable armholes, said foundation mesh being fabricated of a suitable flexible polymeric mesh material; and a back panel of moisture-proof sheet material fastened to said foundation mesh extending from said collar to a point below the upper thigh and distally over the shoulders of said foundation mesh.

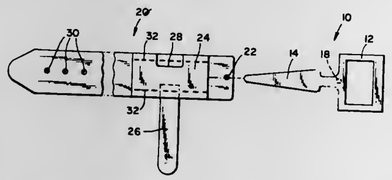
3,885,249
WORKING GLOVE
Jean L. De Brabander, Hamme, Belgium, assignor to Ferdinand Van Damme & Zonen, Hamme, Belgium
Filed Jan. 16, 1974, Ser. No. 433,784
Claims priority, application Belgium, Sept. 3, 1973, 804355
Int. Cl. A41d *19/00*
U.S. Cl. 2—161 R **5 Claims**



1. A work glove of which at least a surface portion of the palm side thereof comprises a burring fabric; and a working component comprising a sheet-like member, one side of which is provided with a cooperating burring fabric, said member being removably secured on the said surface portion of said glove by interengagement of their burring fabrics, the other side of the said member being outermost and being provided with abrasive means for performing an operation on a work-

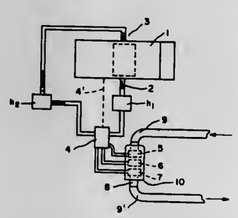
piece in response to relative movement between said member and workpiece.

3,885,250
RELEASABLE LOOP BELT
Barry Schiller, 911 Crestview, North Woodmere, N.Y. 11581
Filed Aug. 8, 1974, Ser. No. 495,881
Int. Cl. A41f *9/00*
U.S. Cl. 2—321 **8 Claims**



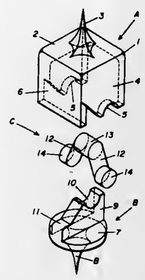
1. In a belt comprising a removable buckle having a strap receiving portion connected to a longitudinally extended appendage and provided with outwardly facing prong means, and a strap having at one end an inwardly facing sheath and prong receiving opening means, the appendage of said buckle being inserted in said sheath with said prong means projecting outwardly through said opening means, said end being further provided with an outwardly loop for retaining the other end of the strap, said other end being provided with at least one opening for receiving said prong means, the improvement wherein said loop is adapted to open readily upon outward pull on said other end of said strap.

3,885,251
ARTIFICIAL HEART PUMP OR ASSIST
Raul Ismael Pedroso, Ossining, N.Y., assignor to North American Philips Corporation, New York, N.Y.
Filed Mar. 5, 1973, Ser. No. 338,093
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **8 Claims**



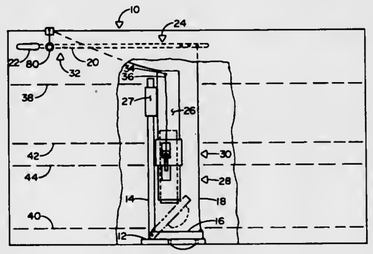
1. An implantable heart pump for pumping and controlling the flow of blood through an artery which is severable to expose two adjacent ends to accommodate the pump therebetween, this pump being operable with first and second sources of high and low pressure fluid respectively, the pump comprising a tube securable between said severed ends of said artery to form a continuous blood flow passage, at least two sleeves each having a generally cylindrical bore at least partially surrounding and contacting said tube, the sleeves being axially spaced apart but adjacent to each other, a core element formed as a rod fixedly positioned generally centrally within the bore of said tube and adjacent the inner surface thereof, the tube having a bore diameter that is variable between large and small, each sleeve being responsive to a pressure change whereby its diameter is variable between large and small corresponding to said tube bore diameters, and valve means for communicating selectively said high and low pressure sources to said sleeves, whereby each sleeve periodically has a. a small diameter for constricting the tube to have a small bore diameter at the area of the tube adjacent said sleeve, and b. a large diameter permitting a corresponding large bore diameter of said tube with the tubes inner surface at that area being urged closely against said core to prevent blood flow in that area, the valve providing a predetermined sequence of constrictions and expansions of the sleeves and therefor of the tube to produce a pumping action in one direction on the blood flow therein, said apparatus further comprising an implantable Stirling engine including a heat source for operating the engine, the engine having a working space wherein working gas experiences a cyclic pressure variation between high and low, the apparatus further comprising duct means communicating said high and low pressure gas to said valve means.

3,885,252
DEVICE FOR UNITING THE THIGH AND LOWER LEG
Hirofumi Nakajima, 75 Koazanishigaito, Ooazakizu-cho Kizu-cho, Soraku-gun, Hyoto-fu, Japan
Filed Apr. 2, 1973, Ser. No. 346,900
Claims priority, application Japan, Apr. 7, 1972, 47-35618
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **1 Claim**



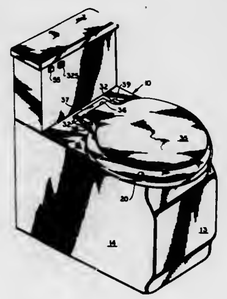
1. A device for uniting the thigh and the lower leg to one another comprising a frame element forming an upper joint member, said frame element including an upper face to be secured to the distal end of the thigh and a pair of opposite side walls, the undersurface of each wall provided with a recess having a semicircular surface to form a pair of laterally spaced pin bearing portions, a lower joint member disposed beneath said upper joint member, said lower joint member including a bottom plate having an underface which is to be secured to the proximal end of the lower leg and an upper element extending upwardly from said bottom plate, said upper element having a recess formed in its upper edge, said recess having a semicircular surface and forming a centrally positioned pin bearing portion, an intermediate joint member positioned between said upper joint member and said lower joint member, said intermediate joint member having a configuration in the form of a crank and including a pair of laterally spaced vertically disposed leg portions, an upper, horizontally disposed pin portion connecting the upper end of each leg portion to one another, a lower, horizontally disposed pin portion extending outwardly from the lower end of each of said leg portions, each of said lower pin portions being fitted in the respective formed pin bearing portions of said formed upper joint member, and the upper pin portion of said intermediate joint member being fitted in the centrally positioned pin bearing portion of said lower joint member, thereby enabling the thigh and lower leg to be united pivotally at two upper and two lower positions.

3,885,253
VARIABLE FLUSHING CONTROL UNIT ATTACHMENT FOR A TOILET
Charles A. Overbey, 16 Bougainvillea Dr., Cocoa Beach, Fla. 32931
Filed Feb. 12, 1974, Ser. No. 442,081
Int. Cl. E03d *1/34, 5/02, 5/10*
U.S. Cl. 4—67 A **3 Claims**



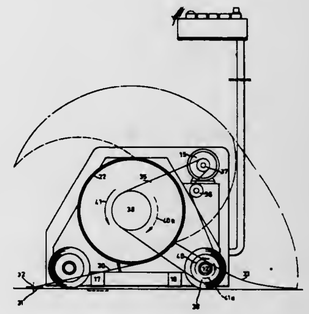
1. A water-saving attachment unit for a toilet having a water tank, an outlet valve to discharge water from said tank and a mechanism for operating said outlet valve to substantially empty the water from said tank, comprising:
A. a tubular element adapted to be located in said tank adjacent said outlet valve;
B. a buoyant energy cell slidably mounted in said tubular element and adapted to close said outlet valve;
C. a retaining device mounted adjacent said tubular element to normally prevent said buoyant energy cell from sliding within said tubular element when said mechanism is operated to substantially empty the water from said tank; and
D. a control mechanism connected to said retaining device for selectively releasing said retaining device to permit said buoyant energy cell to slide within said tubular element and thereby prematurely close said outlet valve to effectuate only a partial emptying of the water from said tank.

3,885,254
INCINERATING COMMODE
James I. West, 7856 Felder Road, Jonesboro, Ga. 30230
Continuation-in-part of Ser. No. 134,650, April 16, 1971. This application May 4, 1972, Ser. No. 250,232
Int. Cl. A47k *11/02*
U.S. Cl. 4—131 **15 Claims**



1. An incinerating commode for use in disposing of human waste comprising, in combination:
a. a commode body defining means permitting human waste to be introduced therein;
b. a combustion chamber operatively associated with said commode body, said combustion chamber including a liquid and solid waste confining combustion pot for receiving and confining said waste introduced into said commode body;
c. cylically operable heat source means operatively associated with said combustion chamber for incinerating waste contained therein, said heat source means detailed for developing an incinerating flame into and beneath said combustion pot;
d. means operatively associated with said combustion pot for reducing the particle size of waste to be incinerated, said waste reducing means includes a pair of comminuting plates reciprocally supported within said combustion pot and reciprocally operable with respect to each other for effecting a reduction of the particle size of waste supported in said pot between said plates; and,
e. means for initiating a cycle of operation of said heat source means and said waste reducing means.

3,885,255
COVERING ARRANGEMENT FOR SWIMMING POOLS
Jörg L. Vorbach, Riedlingen, and Peter Tess, Ravensburg, both of Germany, assignors to Oberschwabishche Metallwarenfabrik GmbH & Co. KG, Riedlingen, Wurtt, Germany
Filed Apr. 25, 1974, Ser. No. 463,569
Claims priority, application Germany, Sept. 13, 1973, 2346139
Int. Cl. E04l *3/19*
U.S. Cl. 4—172.14 **21 Claims**

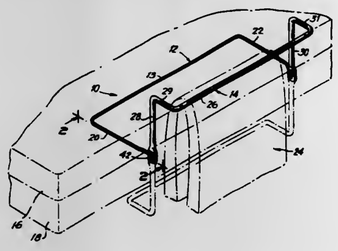


1. A covering arrangement for open areas comprising, in combination, flexible cover means; winding drum means attached to one end of said flexible cover means, said flexible cover means being windable on said drum means; reversible motor means linked to said drum means for unwinding said cover means from said drum means in one direction of said motor means, siad cover means being wound onto said drum means in the reverse direction of said motor means; wagon means for carrying said drum means and transporting said drum means; drive means on each side of said drum means; and coupling means connected between said motor means, drum means and drive means so that said motor means is connected to said drive means when said motor means rotates in said one direction, said motor means being connected through said coupling to said drum means when said motor means rotates in said reverse direction.

3,885,256
BEDSPREAD HOLDER OR THE LIKE
Philip L. Du Boff, Clifton, N.J., assignor to Shelfmaker Products Corporation, Kearny, N.J.
Filed June 14, 1973, Ser. No. 369,811
Int. Cl. A47c *21/00*
U.S. Cl. 5—319 **7 Claims**

1. A holder for holding a bedspread and the like adapted to be used with a mattress and box-spring comprising: first and

second U-shaped frame members each having a pair of legs pivotable connected to each other at the ends of said legs, and means comprising interfitting elements on each of the ends of said first and second frame members, for holding one of said frame members in a first position with respect to said other frame member, said first frame member when in use being adapted to be disposed at the end of a bed between said mattress and said box-spring, and said second frame member is free to pivot about the ends of said first frame member, the central portion of said second frame member connecting said pair of legs forming said U-shaped frame is offset by means of an angular bend in said second U-shaped frame member, said

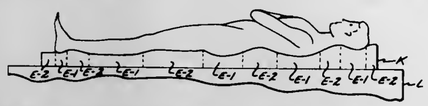


central portion of said second frame member being adapted to store said bedspread of the like by the draping of same over said central portion without interfering with the end edge of said bed or with the feet of one lying on said bed; said interfitting elements comprising, recessed means in the form of a keyhole type of recess having a generally circular recess and an intercepting rectangular recess, and including an elongated slot in said pair of legs of one of said frame elements, and boss-like means having a substantially flat-sided projection protruding from the ends of said other pair of legs of said other frame element and including an aperture centrally passing therethrough; and pin means maintaining said ends of said legs of said frame elements pivotably connected together.

3,885,257
PRESSURE CONTROLLED RESILIENT SUPPORTING STRUCTURE

John E. Rogers, La Habra, Calif., assignor to Ronald J. P. Evans, Herts, England

Continuation-in-part of Ser. No. 301,724, Oct. 30, 1972, which is a continuation of Ser. No. 24,099, March 31, 1970. This application Apr. 20, 1973, Ser. No. 352,862
Int. Cl. A47c *27/08*
U.S. Cl. 5—345 R **4 Claims**

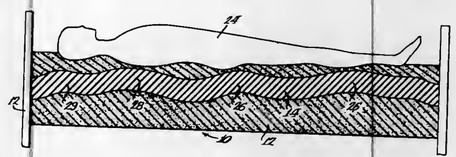


1. A resilient support for effecting full surface contact with the peaks and valleys of the portions of an irregularly shaped object resting thereon to substantially equalize the pressure distribution of said object over the surface of said support in contact with said object, said support comprising:
a. a block resilient material that has a plurality of spaced grooves extending inwardly from a first side thereon on which said object rests, which grooves cooperatively define a plurality of independently movable pads therebetween, with each of said pads having flat external first surfaces of substantially of said pads having flat external first surfaces of substantially the same area that lie in a common plane when said object is not supported on said block, with a first portion of each of said pads compressing inwardly in proportion to the transverse cross-sectional area of said pad inwardly from said first surfaces and the loading to which said pad is subjected, with first groups of said pads that are subjected to the load of said peaks of said object being of greater transverse cross-sectional area than second groups of said pads that are subjected to the valleys of said object, and with the ratio of said transverse cross-sectional areas of said first and second groups of said pads being so chosen that when said object rests on said block said peaks and valleys of said object in contact with said first side are subjected to pressures that are controlled by said cross-sectional areas of said first portions of said pads.

3,885,258
MULTI-LAYERED CONTOURED MATTRESS

John J. Regan, 2316 N. Harlem Ave., Elmwood Park, Ill. 60635

Filed Mar. 26, 1973, Ser. No. 344,594
Int. Cl. A47c *23/00, 27/00, 7/02*
U.S. Cl. 5—345 R **6 Claims**

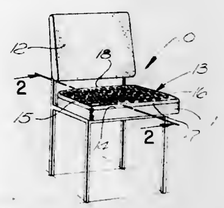


1. A mattress body support, comprising: a bottom resilient layer having a contoured upper surface;
an intermediate layer having a greater firmness than said first layer and being of lesser thickness, said intermediate layer having upper and lower contoured surfaces corresponding to contour of the first layer, said upper and lower contours undulating upwardly at the user's head, shoulders, buttocks and calves; and
a top layer having greater resilience than said intermediate layer and having a substantially flat upper surface and a lower surface having a contour corresponding to the contour of the upper surface of the intermediate layer, all of said contoured surfaces having a wave-like shape that is a physical inversion of the shape of a human body, for supporting a human body over its entire length on the upper surface of the top layer in a level condition.

3,885,259
CUSHION WITH HEAT CONDUCTIVE BUTTONS

Kim ykow 8cheong, 7537 0dunbarton 0ave., ylos 0angeles, 8calif. 90045

Filed Sept. 6, 1974, Ser. No. 503,606
Int. Cl.[2] A47C *23/00*
U.S. Cl. 5—347 **13 Claims**



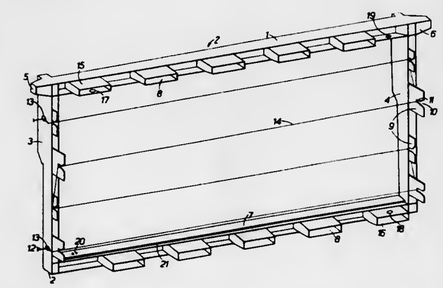
1. A cushion comprising:
a sheet of flexible material;
cushioning material at an inner side of said flexible sheet acting to cushion the deformation thereof; and

a large number of buttons carried at the outer side of said sheet of material and projecting outwardly therebeyond and having outer surfaces facing in a direction essentially away from said sheet and exposed for supporting contact with a person resting thereagainst or his clothing;
adjacent ones of said buttons having side surfaces which are spaced laterally apart in a relation defining air circulation passages between said side surfaces of adjacent buttons and inwardly of said outer surfaces of the buttons;
said flexible sheet having portions laterally between adjacent buttons spaced inwardly beyond the level of said outer surfaces and defining inner sides of said air circulation passages;
said buttons being formed of rigid nonmetallic, inorganic material having a thermal conductivity greater than that of said flexible sheet to conduct heat from said outer surfaces to said air circulation passages.

3,885,260
BEEHIVE FRAME

Neil C. Byrne, Mount Colah; John R. Cullen, North Ryde; Richard G. Parker, Camden, and Harry L. Davis, Camden, all of N.S.W., Australia, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 16, 1973, Ser. No. 416,515
Claims priority, application Australia, Nov. 24, 1972, 1356/72
Int. Cl. A01k *47/02*
U.S. Cl. 6—2 R **10 Claims**



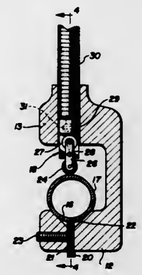
1. A beehive frame comprising two similar rectangular half-sections adapted to be secured together in a common plane of said half-sections, each said half-section comprising elongate top, bottom and wall sides, a plurality of spaced lugs extending from said top and bottom sides and through said plane, a plurality of protrusions extending from said wall sides through said plane, said protrusions being laminaly formed, each of said protrusions having a slot formed therein extending to said plane, and means to detachably secure the two sub-frames together along said plane.

3,885,261
PIPE CUTTING TOOL

John Skvarenina, 2639 W. Augusta, Chicago, Ill. 60622

Filed Apr. 24, 1974, Ser. No. 463,543
Int. Cl. B25f *1/04;* **B23b** *5/16;* **B26d** *3/16*
U.S. Cl. 7—14.1 R **6 Claims**

1. A pipe cutting tool for cutting round tubular pipe comprising: a support frame having first and second spaced apart frame members, pipe receptacle means formed in said first frame member, an adjustable member secured to said second frame member for movement toward and away from said pipe receptacle means, cutter means secured to said adjustable member for engaging the outer surface of the pipe or tubing positioned at said pipe receptacle means for cutting thereof when said support frame is rotated about the pipe or tubing and said cutter means is in contact with the outer surface thereof, abrasive means secured to said support frame to be in contact with the outer periphery of the pipe or tube for cleaning the portion of the pipe or tube immediately adjacent the

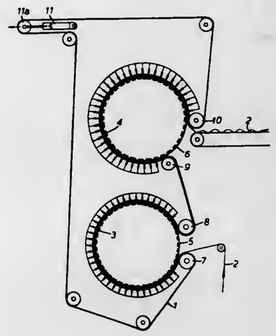


cut made therethrough by said cutting means, and means for removing said cutter means from engagement with the pipe or tubing while maintaining said abrasive means in contact with the pipe or tubing.

3,885,262
METHOD FOR THE CONTINUOUS DECATIZING OF FABRICS

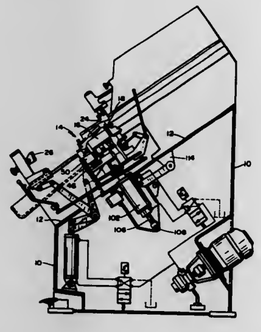
Dieter Riedel, Hausberge/Porta, Germany, assignor to Drabert Sohne, Minden, Westphalia, Germany

Filed Mar. 19, 1973, Ser. No. 342,549
Claims priority, application Germany, Mar. 20, 1972, 2213429
Int. Cl. D06c *1/08*
U.S. Cl. 8—149.3 **5 Claims**



1. A method of continuously decatizing a fabric web comprising the steps of
applying steam at a steam-applying station to the fabric web as the web traverses a cylindrical path and is subjected to pressure generated by tension applied to a length of backing cloth, and
applying suction at a suction-applying station to the fabric web as the web traverses a cylindrical path and is subjected to pressure generated by tension applied to a length of backing cloth,
the pressures in the lengths of the backing cloth at the steam-applying station and at the suction-applying station being variable independently of one another.

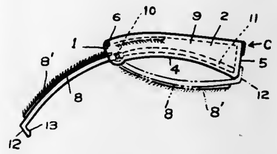
3,885,263
SHOE SUPPORT FOR LASTING MACHINE
Victor J. Gagnon, Salem, Mass., assignor to American Shoe Machinery Corp., Woburn, Mass.
Filed Dec. 14, 1973, Ser. No. 424,658
Int. Cl. A43d *21/00*
U.S. Cl. 12—142 R **14 Claims**



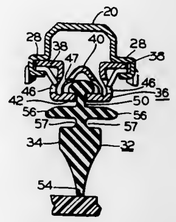
1. In a machine for pulling over and lasting a welt shoe assembly which includes a last, an insole at the bottom of the last, and an upper draped about the last, the insole having a rib secured to the bottom thereof and extending downwardly therefrom in generally horseshoe-shaped configuration, said machine having a plurality of shoe operating instrumentalities disposed about a shoe operating station, said instrumentalities including pincer jaws for gripping and pulling the upper over said last, an improved shoe support comprising:
a suppport member mounted at said shoe operating station and having a generally horseshoe-shaped periphery, said member having a heelward end and a toeward end, the bight of said horseshoe-shaped periphery being disposed at the toeward end of said member;
said pincer jaws being mounted in said machine to generally surround said periphery of said support member in a substantially horseshoe-shaped array; and
means mounting said support member in said machine for movement between a working position in which said shoe assembly disposed on said support member is located at a position in which said shoe operating instrumentalities may perform their respective operations on said shoe assembly and an idle position in which at least the toe end of said support member is disposed above said working position to an extent in which the toe region of said insole rib is disposed above at least the most toeward of said pincer jaws.

3,885,264
CLEANING BRUSH WITH DUST REMOVING AND COLLECTING MEANS
Teruya Tsuruzawa, Suita, and Muneyuki Ueda, Nishinomiya, both of Japan, assignors to Nippon Seal Co., Ltd., Osaka, Japan
Filed Sept. 7, 1973, Ser. No. 395,000
Claims priority, application Japan, Sept. 9, 1972, 47-90719
Int. Cl. A46b *9/02, 17/04, 17/06*
U.S. Cl. 15—185 **4 Claims**

1. A cleaning brush device comprising: a relatively flat casing having an opening at one end and an upper cover plate; a first brush member formed on the face of said upper cover plate within said casing; a second brush member adapted to be inserted into and pulled out of the casing through said opening; short bristles closely implanted on one surface of the first brush member to form a dust removing surface; short bristles closely implanted on one surface of the second brush member to form a cleaning brush surface, the bristles on the first brush member being inclined in a direction away from said opening, the bristles on the second brush member being inclined in the same direction as the bristles on the first brush member, the bristles of said first brush member and the second brush member being engageable with each other as the second brush member is inserted into or pulled out of the casing; and means for holding the pulled-out second brush member on the casing so that the cleaning brush surface thereon is exposed so as to be engageable with an article to be cleaned by brushing.



3,885,265
WINDSHIELD WIPER BLADE ASSEMBLY
Raymond A. Deibel, West Falls, and William F. Kuebler, East Aurora, both of N.Y., assignors to Trico Products Corporation, Buffalo, N.Y.
Filed Feb. 11, 1974, Ser. No. 441,506
Int. Cl. B60s *1/04, 1/38*
U.S. Cl. 15—250.42 **9 Claims**

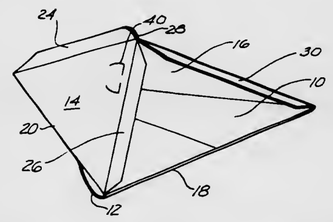


7. A refill unit for a wiper blade assembly comprising an elongate squeegee element of elastomeric material and an integrally formed backing strip of plastic material for supporting said squeegee element and means for retaining said squeegee element in assembled relationship with said backing strip; said backing strip comprising a pair of spaced apart elongate side rails, a channel-shaped body member having its open side remote from said side rails and a flexible leg depending downwardly from each of said side rails connecting said side rails to said channel-shaped body member, said squeegee element comprising a wiping lip portion, an anchoring bead and a neck portion of narrower transverse width than the wiping lip portion and the anchoring bead and connecting them together, said body portion including a pair of opposed edges to retain the anchoring bead within the channel-shaped body portion.

3,885,266
CLOSEABLE, DISPOSABLE PAPERBOARD SCOOP
Betty O. Nafziger, 157 Congress Run Rd., Cincinnati, Ohio 45215
Filed Sept. 1, 1972, Ser. No. 285,679
Int. Cl. A01k *29/00*; **A47l** *13/52*
U.S. Cl. 15—257.1 **7 Claims**

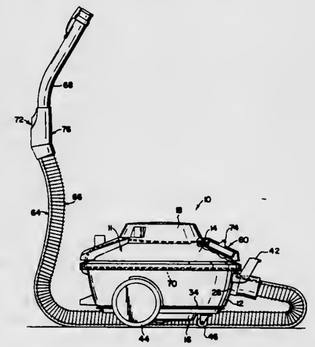
1. A closeable, disposable, collapsible scoop structure formed from a one-piece paperboard blank, said structure comprising:
a. a triangular base panel having at least two equal sides,

b. congruent triangle panels hingedly connected to the equal sides of said base panel,
c. a third triangular pannel hingedly connected to the remaining side of said base panel,
d. a straight fold line running across said base panel from the apex thereof to the apex of said third triangular panel,
e. a pair of mating handle panels hingedly connected to the free edges of said congruent triangular panels which extend outwardly from said apex of said base panel,



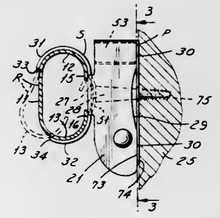
f. said congruent triangular panels being folded relative to said base panel with said mating handle panels juxtaposed and secured together to define a triangular scoop having an open mouth, said third panel being foldable relative to said base panel to close the mouth of said scoop, and
g. means for detachably securing a free edge of said third triangular panel to the adjoining congruent triangular panel to maintain said third panel in the closed position.

3,885,267
FLOOR CARE APPLIANCE HANDLE WITH A BUTTON-PERATED PISTON AND CYLINDER
Edgar A. Maurer, Canton, and Arne J. Diehl, North Canton, both of Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Sept. 13, 1973, Ser. No. 397,152
Int. Cl. A47l *9/00*
U.S. Cl. 15—339 **6 Claims**



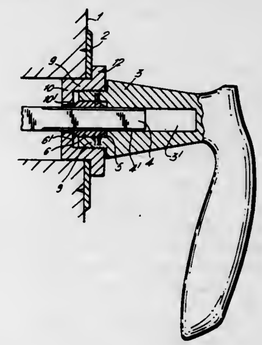
1. A handle arrangement for use with a floor care appliance including;
a. a hose extending from said floor care appliance,
b. a first handle part capturing the remote end of the hose,
c. a tubular member provided for the easy attachment of cleaning tools,
d. a second handle part capturing the end of said tubular member,
e. said first and second handle parts being telescoped together to provide an assemblage for easy operator manual manipulation,
f. said assemblage receiving nestingly therein a piston and cylinder means for providing a pressure pulse for said floor care appliance,
g. a button, integral with one of said piston and cylinder means, extending from said assemblage for easy manual manipulation, and
h. conduit means connected to said cylinder and piston means and extending within at least a part of said assemblage for conveying said pressure pulses generated by said piston and cylinder means towards a location outwardly of said assemblage.

3,885,268
MOUNTING DEVICE FOR WINDOW DRAPERIES
William E. Stieler, 6832 Marlette Rd., and Scott M. Stieler, 6048 Marlette Rd., both of Marlette, Mich. 48453
Filed Mar. 15, 1974, Ser. No. 451,441
Int. Cl. A47h *1/04*
U.S. Cl. 16—94 D **17 Claims**



1. A hardware system for hanging draperies on a wall including a rod for supporting the draperies to permit traverse thereon, brackets at each end of said rod, and means for attaching said brackets to said wall each bracket comprising a body surface parallel to said wall, a pair of clips extending outwardly from said body surface for retaining said rod against said body surface, legs projecting inwardly from said body surface for contacting said wall and spacing said rod from said wall a minimum distance to permit traverse of the draperies, said pair of clips being curved to wrap around the upper and lower portion of said rod to permit said rod to be engaged and disengaged by a snap action requiring a twisting movement.

3,885,269
DOOR HANDLE
Arvid Frimann Helland, Prof. Kohts vei 60, Stabekk, Oslo, Norway
Filed Jan. 28, 1974, Ser. No. 436,980
Claims priority, application Norway, Jan. 26, 1973, 350/73
Int. Cl. A47b *95/02*
U.S. Cl. 16—110 R **3 Claims**



1. In a door handle of the kind comprising a square bolt extending through the lock and the door and on at least one of whose protruding ends is fastened a sleeve-like inner sec-

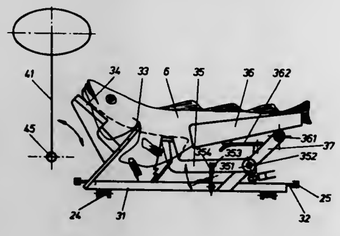
tion of the stem of the door handle, and wherein the inner end of said sleeve-like section is threaded on the outside for engagement with a locking sleeve screwed onto said inner section, the inner section of the locking sleeve having an inwardly directed flange and the outer section having a head suitable for engagement with a tool for turning of the locking sleeve, the improvement wherein the bore of the sleeve-like inner section in its inner end has an enlarged section in which is located an annular element whose inner end surface is chamfered for cooperation with said flange of the locking sleeve such that the inner edge of the flange will be forced against the sloping end surface of the annular element and clamp the element into locking friction engagement with the square bolt when the locking sleeve is tightened on the inner end of said sleeve-like section.

3,885,270

METHOD AND DEVICE FOR SEVERING THE HEADS OF FISHES

Franz Dohrendorf, Lubeck, Germany, assignor to Nordischer Maschinenbau Rud. Baader, Lubeck, Germany

Filed Apr. 6, 1972, Ser. No. 241,512
Int. Cl. A22c *25/18*
U.S. Cl. 17—52 **4 Claims**



1. A method of processing the head of gutted fish in which the gill cavity and abdominal cavity have been opened, comprising the steps of:

mounting a gutted fish belly-side-down on a support with the gill cavity spread apart and straddling an upstanding support member which holds the head between the arc of the lower jaw in a fixed position in alignment with the longitudinal direction of the fish body,

severing the fish body from the fixed head by a first wedge-shaped cut behind the collar bones, which cut extends into the gill cavity and is directed inwardly and rearwardly from the opposite sides of the fish toward the center thereof, with the angle of the wedge-shaped cut being such as to leave the portion of the fish containing the collar bones attached to the severed head,

thereafter severing the portion of the fish containing the collar bones from the fixed head by a second cut transverse to the longitudinal direction of the fish,

and finally removing from the support the head, the portion containing the collar bones, and fish body for further separate processing.

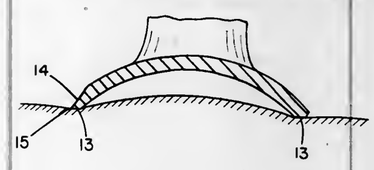
3,885,271

TOOL FOR SCRAPING AND CUTTING

Alfred A. Kollander, 314 S. Third St., Stillwater, Minn. 55082

Filed July 18, 1973, Ser. No. 380,483
Int. Cl. A22b *5/10, 5/16*
U.S. Cl. 17—69 **3 Claims**

1. A scraping and cutting tool, comprising in combination: a spoon-like device having an inverted bowl section and an upwardly angulated attached handle made out of substantially stiff inflexible material; the periphery of the bowl portion containing undulations constituting scraping teeth having sharp edges separated from each other by distinctly blunt edges; the underside of the periphery of the bowl portion being flat for providing a guiding surface for scraping; and approximately one-half of the peripheral edge of said bowl



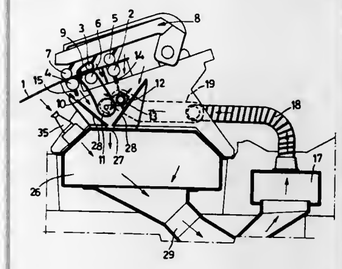
portion including a distinctly sharp cutting edge which is continuously and uniformally sharp along the entire length thereof.

3,885,272

PNEUMATIC CLEANING PLANT FOR DRAWING SYSTEMS IN SPINNING PREPARATION MACHINES AND SPINNING MACHINES

Angelo Marzoli, Bergamo, Italy, assignor to Folli Marzoli & C.S.P.A., Italy

Filed Aug. 2, 1973, Ser. No. 384,974
Claims priority, application Italy, Aug. 10, 1972, 28081/72
Int. Cl. D01h *5/66*
U.S. Cl. 19—245 **3 Claims**



1. A pneumatic cleaning plant for drawing systems in spinning preparation machines and spinning machines having drawing and belt drive rollers comprising, in combination, means for placing a drawing system zone under suction and comprising: a suction fan with outlet communicating with the atmosphere outside said drawing system zone, and a funnel-shaped intake member connected to said suction fan; and blowing means having at least one movable member separated from said drawing and belt drive rollers for feeding jets of air into said zone, said blowing means comprising at least one rotating movable member, with a plurality of holes, and motor driven fan means connected to said rotating movable member; said blowing means being a component of the drawing system; a lower belt for the drawing system; and a tensioning device for said lower belt, said component comprising a support bar for said tensioning device.

3,885,273

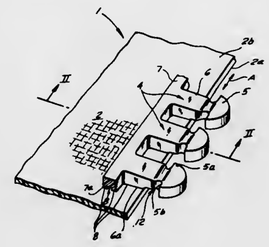
SLIDE FASTENER

Helmut Heimberger, Grenzach, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

No Drawing. Filed Jan. 25, 1974, Ser. No. 436,630
Claims priority, application Germany, Jan. 26, 1973, 2303797
Int. Cl. A44b *19/14*
U.S. Cl. 24—205.13 D **8 Claims**

1. A slide fastener stringer half comprising a textile support tape and a coupling element along an edge of said tape, said coupling element comprising a multiplicity of spaced coupling

members each having a coupling head adapted to interdigitate with the coupling heads of a similar coupling element on a mating stringer half, and at least one fastening portion unitarily with said head and secured to said tape, said coupling



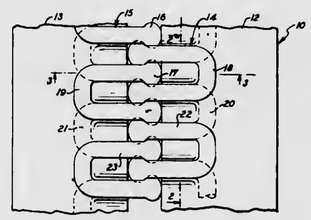
element being further provided with a connecting portion between each coupling member and adjoining coupling members, at least one of said portions being provided with an annular planar surface confronting said tape and formed with a multiplicity of humps in a surface array welded to said tape.

3,885,274

THREADLESS SLIDE FASTENER CHAINS

George B. Moertel, R.D. #3, Conneautville, Pa. 16406

Continuation-in-part of Ser. No. 64,487, Aug. 17, 1970, abandoned. This application Feb. 10, 1972, Ser. No. 225,146
Int. Cl. A44b *19/10*
U.S. Cl. 24—205.16 C **18 Claims**



1. In a threadless slide fastener chain, the combination comprising

a carrier tape,

a filamentary stringer having a plurality of head elements and a plurality of generally U-shaped heel members with leg portions interconnecting the plurality of head elements,

said filamentary stringer being disposed along a longitudinal edge of said carrier tape with a first set of the plurality of heel members on one side of the carrier tape and with a second set of the plurality of heel members on the other side of the carrier tape,

said filamentary stringer having first interstices between the leg portions of the first set of heel members and having second interstices between the leg portions of the second set of heel members,

said carrier tape adjacent the longitudinal edge being sinuous to form portions of the carrier tape projecting into the first interstices, and

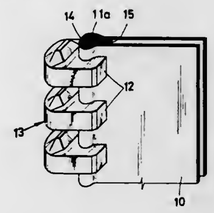
said first and second sets of heel members being threadlessly bonded with said carrier tape such that the projecting portions of the carrier tape are retained in the first interstices.

3,885,275

STRINGER STRUCTURE FOR SLIDE FASTENERS

Akira Hasegawa, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1974, Ser. No. 454,324
Claims priority, application Japan, Apr. 4, 1973, 48-40634; Apr. 4, 1973, 48-40635
Int. Cl. A44b *19/04*
U.S. Cl. 24—205.16 R **4 Claims**



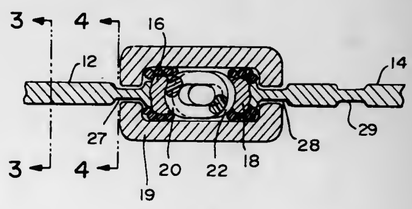
1. A stringer for a slide fastener comprising a tape of non-woven textile material folded about its central longitudinal axis, an elongated, flexible core enclosed within the folded edge portion of said tape, and a row of fastener elements anchored to the folded edge portion of said tape said fastener elements each having a pair of securing arms compressively embracing said edge portion of the tape, said core being retained within said edge portion exclusively by forces exerted thereon by the securing arms of the fastener elements, said core having an integral longitudinal ridge narrower than said core and extending throughout its length and at least to the ends of said securing arms.

3,885,276

SLIDE FASTENER AND METHOD AND APPARATUS FOR MAKING THE SAME

George B. Moertel, Conneautville, Pa., assignor to Textron Inc., Providence, R.I.

Filed Sept. 18, 1972, Ser. No. 289,852
Int. Cl. A44b *19/02*
U.S. Cl. 24—205.16 R **10 Claims**



1. In a slide fastener, the combination comprising

a pair of carrier tapes,

each tape having a textile matrix of interlaced warp and weft threads of generally circular configurations,

an edge portion on each carrier tape,

said edge portions being oppositely disposed to each other, interlocking elements on each edge portion,

the interlocking elements on one edge portion adapted to be engaged and disengaged with the interlocking elements on the other edge portion,

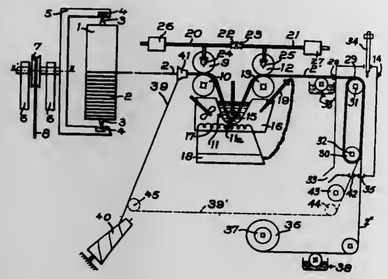
compacted portions on said carrier tapes forming channelized sections extending longitudinally with and spaced from said edge portion, and

the warp and weft threads, which define the textile matrix of said channelized sections, having non-circular configurations.

3,885,277
APPARATUS FOR SIZING TEXTILE FIBRES

Richard Adrien Schutz, 22, rue George Sand, and Pierre Elisée Exbrayat, 11, rue Jean Montavont, both of 68 Mulhouse 02, France

Division of Ser. No. 203,720, Dec. 1, 1971, Pat. No. 3,791,132.
This application Oct. 1, 1973, Ser. No. 402,031
Int. Cl. D02j *13/00*
U.S. Cl. 28—1 R 11 Claims



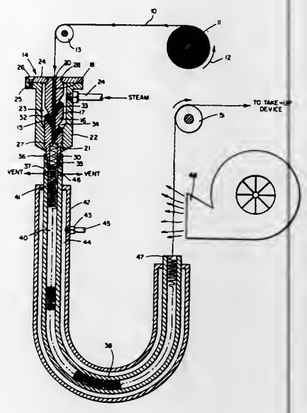
1. Apparatus for forming sized slivers or rovings, said apparatus comprising, in combination:
a. a frame;
b. a feed bobbin for slivers or rovings mounted for free rotation substantially without friction in said frame;
c. a vat of size;
d. a first pair of pressure rollers mounted between said feed bobbin and said vat;
e. a second pair of pressure rollers mounted downstream of said vat of size;
f. a drier mounted downstream of said second pair of rollers;
g. a windup bobbin positioned to receive the slivers or rovings from said drier; and
h. a drive means effective to drive at least one of the rollers of each of said pairs of pressure rollers at a controlled speed.

3,885,278
APPARATUS FOR TEXTURING YARN

Ralph Whitaker, Bala Cynwyd, Pa., assignor to Fred Whitaker Company, Bala Cynwyd, Pa.

Filed May 11, 1973, Ser. No. 359,611
Int. Cl. D02g *1/20*
U.S. Cl. 28—1.3 22 Claims

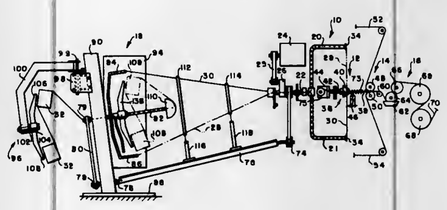
1. Apparatus for facilitating the texturing of yarn delivered thereto, comprising an elongated, enclosed yarn guide member having a yarn passageway extending therethrough between an inlet and an outlet thereof, said passageway extending to a yarn crimping chamber arranged to receive yarn from said passageway, for accommodating and crimping a wad of yarn therein, said crimping chamber having a yarn wad outlet end opening in a downstream direction relative to the travel of yarn, resistance means offering resistance to the movement of crimped yarn from said crimping chamber, and impelling means comprising a plurality of opposed and substantially parallel spaced passages angled to provide a force component in the direction of movement of the yarn and arranged at a plurality of longitudinally spaced locations along said passageway.



3,885,279
YARN FEED GUIDE ARMS

Nolan B. Darnell, Spartanburg, S.C., and Walter Engels, Tryon, N.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed June 18, 1973, Ser. No. 370,836
Int. Cl. D04h *3/05*
U.S. Cl. 28—1 CL 1 Claim

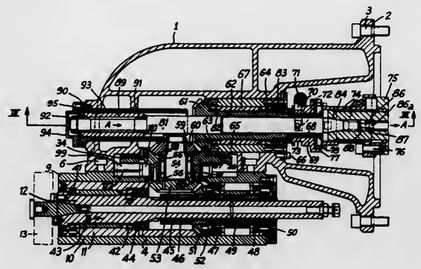


1. Apparatus for producing non-woven fabric comprising: yarn guide means including a first pair of yarn guides spaced from each other, means for supporting a plurality of yarn packages, rotable yarn guide means operably associated with said first pair of yarn guides to supply yarn simultaneously from each of said yarn package supports and to wind the yarn about said first pair of yarn guides to form reaches therebetween, said rotable yarn guide means including a radially directed yarn guide member, a portion of said yarn guide member being bent toward the axis of said first yarn guides means for combining a sheet of yarns with the yarn reaches between said first pair of spaced yarn guides to form a non-woven fabric, means to rotate said rotable yarn guide means in one direction and a portion of said radially directed yarn guide member is bent in a direction opposite to said direction of rotation of said rotable yarn guide means.

3,885,280
BI-ROTATIONAL HEADS MOUNTED ON MILLING AND BORING MACHINES

Charles William Berthiez, 5, Avenue Eglantine, Lausanne, France

Filed Dec. 26, 1972, Ser. No. 318,635
Claims priority, application France, June 1, 1972, 72.00377
Int. Cl. B23b *39/02*, *39/14*
U.S. Cl. 29—26 R 10 Claims

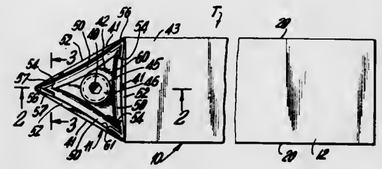


1. A bi-rotational head for milling and boring machines having a rotary spindle and a sliding member comprising
a body mounted on said machine capable of pivoting with respect to the rotary spindle of said milling and boring machine;
a casing pivotally mounted on an axis disposed at an angle to said rotary spindle for rotation on said body;
a slider positioned within said casing and connected by a first kinematic chain through said casing and said body to the sliding member of said milling and boring machine for axial translation; and
a tool-carrying spindle rotatably mounted in said slider and connected by a second kinematic chain through said casing and said body to the rotary spindle of said machine whereby said tool-carrying spindle is capable of rotation whatever the angular position of said tool-carrying spindle and whereby said slider is capable of axial translation whatever the angular position of said tool-carrying spindle.

3,885,281
CUTTING INSERT WITH CHIP CONTROL

Abraham M. Stambler, Haifa, Israel, assignor to Iscar Ltd., Nahariya, Israel

Filed June 10, 1974, Ser. No. 478,031
Int. Cl. B26d *1/00*
U.S. Cl. 29—95 R 8 Claims

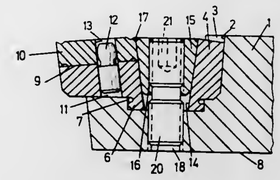


1. A cutting insert comprising a polygonal shaped piece of material for machine cutting of steel, having straight side edges meeting at the corners of said piece, said piece having a surface formed with longitudinal channels alongside said side edges, said channels merging at the corners of said piece, and said piece being formed with V-shaped grooves depressed into said channels at the corners of said piece, each V-shaped groove having legs aligned with two adjoining ends of adjacent channels, respectively, said legs merging at the apeces of said piece.

3,885,282
MACHINING TOOL

Josef Pataky, Nordliche Lohstrasse 19, D-4150 Krefeld, Germany

Filed Oct. 23, 1973, Ser. No. 408,734
Int. Cl. B26d *1/00*
U.S. Cl. 29—98 8 Claims

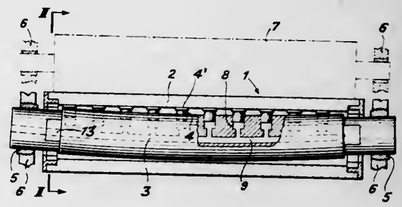


1. A machining tool, comprising a holder and an insert having a bearing surface for a tool member, said insert being adapted to be axially rotatably mounted in a recess formed in the holder and to be clamped in a desired position in the holder by means of a set screw, said insert being provided with an outwardly flared recess adjacent to said bearing surface and with a tapered clamping member adapted to fit in said flared recess to be fixed by said set screw whereby the clamping member can engage directly against one side of the tool member to be clamped and the tool member and the insert can be clamped simultaneously to the holder, said machining tool having two abutments provided to support the tool to be clamped, one of the abutments being formed by a peg or the like engaging in an aperture in the tool member and the other abutment being formed by a fixed bearing surface on the insert adjacent said tapered recess so that the region of application of the clamping member against the tool member and the fixed bearing surface face the same side of the tool member to be clamped and the peg or the like forms a point of leverage.

3,885,283
PRESS ROLL

Mario Biondetti, Schio, Italy, assignor to Escher Wyss Aktiengesellschaft, Zurich, Switzerland

Filed Oct. 25, 1973, Ser. No. 409,644
Claims priority, application Switzerland, Oct. 26, 1972, 15679
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 AD 12 Claims

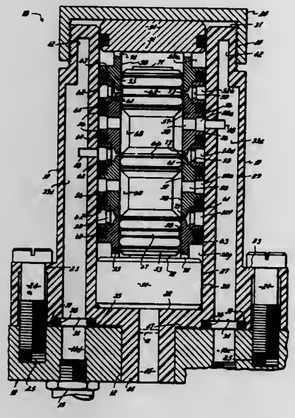


1. A press roll comprising:
a fixed axial beam;
a rotatable roll shell disposed about said beam to move in a free manner in a radial direction relative to said beam; and
a plurality of hydrostatic supporting elements guidably mounted in said beam in a predetermined supporting plane to rotatably support said shell on said beam and to follow movements of said shell, said supporting elements constituting the sole means to restrict motion of said shell with respect to said beam in said plane.

3,885,284
METHOD OF MANUFACTURING VALVES

William L. Clippard, III, Cincinnati, Ohio, assignor to Clippard Instrument Laboratory, Inc., Cincinnati, Ohio

Division of Ser. No. 206,636, Dec. 10, 1971, Pat. No. 3,766,935. This application Apr. 5, 1973, Ser. No. 348,302
Int. Cl. B23p *15/00*
U.S. Cl. 29—157.1 R 5 Claims



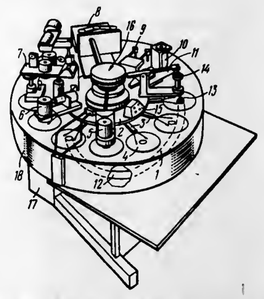
1. The method of manufacturing a valve comprising:
forming a manifold having a valve cavity,
forming a plurality of longitudinal fluid passages in said manifold around said cavity, said passages extending parallel to said cavity from an end of said manifold but spaced radially outwardly from said cavity,
forming a valve mechanism having a sleeve dimensioned to be slidably inserted into said cavity, said sleeve presenting axially spaced peripheral grooves around it,
porting the manifold to form ports between particular passages and said cavity, said porting being carried out in a single operation by removing material from said manifold only in an area between the respective passage and the cavity, by moving a port forming tool along a generally radial path connecting said cavity and the respective longitudinal passage,
the axial position of each said port corresponding to the axial position of a different one of the grooves around said sleeve,
inserting said sleeve axially into said cavity to such position that the grooves thereon are aligned. axially with the respective ports,
and securing the said sleeve within said cavity to maintain the positional relation between the respective grooves and ports.

3,885,285
INSTALLATION FOR ASSEMBLY OF MOVABLE SYSTEM OF DYNAMIC LOUDSPEAKERS

German Borisovich Panteleev, prospekt Metallistov, 82, kv. 158, Leningrad, U.S.S.R.

Filed Sept. 27, 1973, Ser. No. 401,555
Int. Cl. H05k *13/00*; B23p *19/04*
U.S. Cl. 29—203 D 7 Claims

1. An installation for assembly of the movable system of dynamic loudspeakers, comprising, in combination: a base carrying diffusers of loudspeakers; a drive for moving said base; a device for securing the diffusers of the loudspeakers to said base; a device for winding wire onto a reel of a sound coil of a loudspeaker; a device for drying the sound coil of the loudspeaker; a device for affixing one of the diffusers of the loudspeakers to the reel of the sound coil; a device for gluing the reel and winding of the sound coil; technological mandrels, each of which is a gauge for the reel and accompanies a diffuser of a loudspeaker from the moment the reel of the

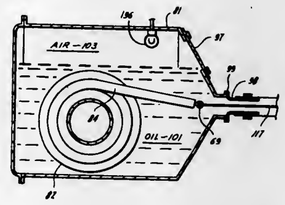


loudspeaker is fed into the neck thereof and to the moment of final assembly of the movable system of the loudspeaker; a mechanism for transporting said technological mandrels; and a distribution shaft arranged for ensuring a sequence of operations performed by said devices and mechanism.

3,885,286
STREAMER MANUFACTURE

A. C. Hill, Houston, Tex., assignor to Teledyne Exploration Company, Houston, Tex.

Filed Nov. 23, 1973, Ser. No. 418,659
Int. Cl. H01r
U.S. Cl. 29—203 D 11 Claims



1. Apparatus for assembling a seismic streamer comprising a pressure vessel containing a rotatably mounted reel adapted to have a seismic streamer harness wound thereon,
said vessel being adapted to contain oil, adapted for filling a seismic streamer sheath, and pressurized air over the oil,
said vessel having an outlet adapted to be connected to said sheath for a seismic streamer and through which a harness wound on the reel can extend, and
means for driving the reel at controlled speed to pay out the harness to such sheath.

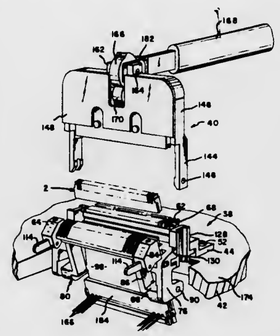
3,885,287
HARNESS MANUFACTURING APPARATUS INCORPORATING HARNESS TESTING MEANS

Robert Alvin Long, Harrisburg; Joel William Lucas, Dillsburg; William Roderick Over, Harrisburg, all of Pa., and Donald Sudson Doty, Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 8, 1974, Ser. No. 459,155
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 MW 18 Claims

1. Apparatus for inserting conductors into the conductor-receiving portions of electrical contact terminals which are contained in an electrical connector, said connector being mateable with a complementary connecting device, said apparatus comprising:

frame means,
connector holding means on said frame means for holding said connector in a predetermined position, said connector holding means comprising a complementary connecting device removably mounted on said frame means,
conductor holding means for holding conductors adjacent to, and in alignment with, said conductor receiving portions preparatory to inserting of said conductors into said conductor-receiving portions,
conductor insertion means for moving conductors in said conductor holding means from said conductor holding

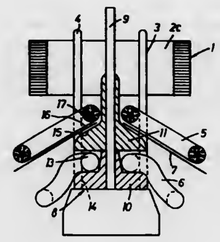


means into said conductor receiving portions of a connector mounted on said connector holding means whereby, upon mounting a connector on said connector holding means, locating conductors in said conductor holding means, and actuating said conductor insertion means, said conductors are inserted into said conductor-receiving portions of said terminals in said connector, said apparatus being adaptable to use with connectors of varying sizes upon removal of said complementary connecting device therefrom and replacement thereof with a different complementary connecting device.

3,885,288
METHOD OF DRAWING IN THE STATOR WINDING OF AN ELECTRIC MOTOR

Egon Lund, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 415,120, Nov. 12, 1973, Pat. No. 3,857,171. This application Aug. 30, 1974, Ser. No. 501,880
Claims priority, application Germany, Nov. 11, 1972, 2255345
Int. Cl. H02k *15/02*
U.S. Cl. 29—205 D 3 Claims

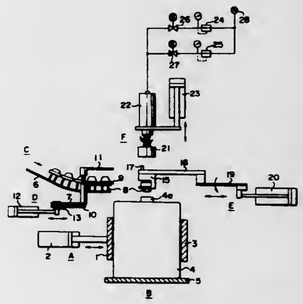


1. Apparatus for inserting stator windings into grooves in a stator of an electric motor, the apparatus comprising a ring of pins the outside periphery of which corresponds to the inside periphery of the stator, an insertion head the outer periphery of which corresponds to the inside periphery of the stator, means mounting said insertion head for movement towards and away from the stator, recesses in said insertion head for engagement with said pins to guide said insertion head during said movement, and first and second pressure surfaces on said insertion head for applying pressure to respective ones of said windings to effect insertion of said windings into said grooves while at the same time said windings are guided by said pins, said two pressure surfaces being axially offset in the direction of said movement.

3,885,289
APPARATUS FOR INSTALLING BATTERY VENT PLUG

Teruaki Tanaka, Takatsuki, Japan, assignor to Yuasa Battery Company Limited, Takatsuki, Japan

Filed May 15, 1974, Ser. No. 470,315
Claims priority, application Japan, Nov. 20, 1973, 48-130904
Int. Cl. H01m *35/18*; B23p *19/04*
U.S. Cl. 29—204 R 4 Claims

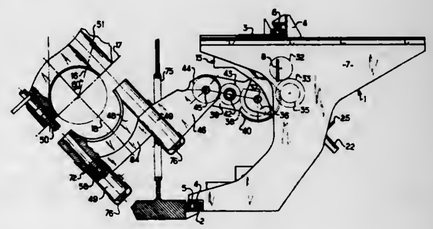


1. An apparatus for installing battery vent plug comprising a battery fixing means for fixing a battery, vent plug holding means for holding a vent plug supplied from a vent plug supplying means, vent plug catching means for catching the vent plug and bringing it to a vent of the battery, a vent plug screwing means for fitting the vent plug to the vent of the battery and a battery conveying means for conveying the battery fitted with the vent plug as operatively connected with one another.

3,885,290
DEVICE FOR INSTALLING AND REMOVING BIG-END CAPS OF CONNECTING RODS ON INTERNAL COMBUSTION ENGINES

Jean-Claude Bouquet, Pantin, France, assignor to Societe d'Etudes de Machines Thermiques, Saint-Denis, France

Filed Oct. 3, 1974, Ser. No. 511,679
Claims priority, application France, Nov. 9, 1973, 73.39988
Int. Cl. B23p *19/04*
U.S. Cl. 29—252 16 Claims



1. A device for installing and removing connecting rod big-end caps on and from an internal combustion engine,

wherein the improvement consists in that said device comprises:

a supporting frame including means for mounting the same on one side of the engine for horizontal movement along the engine over at least one portion of the length thereof;

a first carriage mounted on said supporting frame and displaceable transversely thereof in a horizontal direction perpendicular to the path of travel of said supporting frame;

a second carriage mounted on said first carriage and displaceable thereon in a direction perpendicular to the joint interface plane between said cap and said connecting rod in a predetermined position of the latter;

a toggle system movable in a substantially vertical plane and pivotally connected at one end thereof to said second carriage while comprising at the other end holding means for supporting the connecting rod big-end cap; and

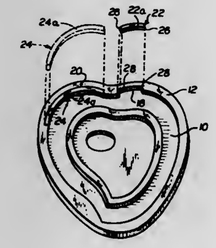
servo-control power means for operating at least said toggle system.

3,885,291

METHOD OF REBUILDING A WORN CAM SURFACE

Anthony J. DiChiara, 133-03 128th St., South Ozone Park, N.Y. 11420

Filed Dec. 7, 1973, Ser. No. 422,932
Int. Cl. B23p 7/00
U.S. Cl. 29—401 **7 Claims**



1. A method of rebuilding a worn section of a cam surface, wherein the worn section comprises less than the entire length of the cam surface, comprising the steps of:

removing the worn section of the cam surface and forming a recess in the cam surface at the location of the worn section, the recess having a predetermined length along the cam surface encompassing the portion of that surface which had been worn and the recess having a predetermined depth into the cam surface that is beneath the depth of the worn cam surface along that worn portion;

forming a replacement wear strip having a length approximately equal to the predetermined length and having a depth approximately equal to the predetermined depth and having an outward surface that is shaped to the shape of the worn section of the cam surface that section of the cam surface had been worn; said wear strip being dimensioned such that when it is emplaced in the recess, the outward surface of the wear strip forms an integral continuation of the adjacent cam surface without presenting elevational discontinuities;

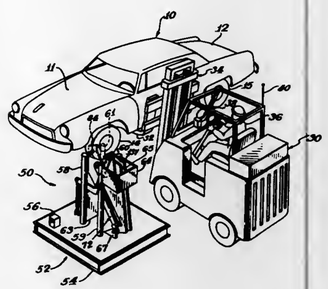
securing the replacement wear strip in the recess such that its outward surface is flush with and forms an integral continuation of the adjacent cam surface without presenting elevational discontinuities.

3,885,292

METHOD AND APPARATUS FOR CUTTING MOUNTED TIRES FROM THE WHEELS OF JUNKED VEHICLES

Allen B. Sharp, and Richard A. Hull, both of Ottumwa, Iowa, assignors to Al-jon Incorporated, Ottumwa, Iowa

Filed June 24, 1974, Ser. No. 482,520
Int. Cl. B23p 19/02
U.S. Cl. 29—403 **15 Claims**



1. Apparatus for cutting and removing a tire from a rim of a wheel on which the tire is mounted comprising:

a first member of preselected thickness forming a first cutting surface having an upper end and a lower end;

a second member forming a second cutting surface having an upper end and a lower end;

a third member forming a third cutting surface having an upper end and a lower end arranged adjacent the second member to form a slot in which the first member is movable between the second and third members in a first plane; and

operating means for moving the first member relative to the second and third members into an open position in which the upper end of the first cutting surface is displaced from the upper ends of the second and third cutting surfaces by a first space sufficiently large to receive the width of the tire to be cut and for moving the first member relative to the second and third members into a closed position in which the second and third cutting surfaces cooperate with and guide the first cutting surface to cut the tire from the rim.

12. A method of removing a tire from a rim of a wheel mounted on a vehicle to be junked by using a first cutting surface having an upper end and a lower end adapted to move within a slot formed by a second cutting surface having an upper end and a lower end and a third cutting surface having an upper end and a lower end, said method comprising the steps of:

raising the vehicle over the cutting surfaces;

moving the cutting surfaces to an open position in which the upper end of the first cutting surface is displaced from the upper ends of the second and third cutting surfaces by a first space at least as wide as the width of the tire;

lowering the vehicle so that the tire is moved into the first space between the first cutting surface and the second and third cutting surfaces; and

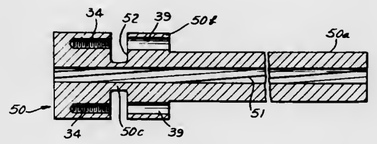
moving the first cutting surface relatively toward the second and third cutting surfaces to a closed position in which the tire is severed by the cooperation of the cutting surfaces.

3,885,293

METHOD OF MAKING VENTED TEST BARREL ASSEMBLY FOR REVOLVER AMMUNITION

Charles H. Bateman, Jr., East Haven; Allan A. Campbell, Trumbull, and James J. Capasso, Shelton, all of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Division of Ser. No. 347,381, April 3, 1973, Pat. No. 3,854,331. This application July 10, 1974, Ser. No. 487,055
Int. Cl. B23p 17/00
U.S. Cl. 29—416 **5 Claims**



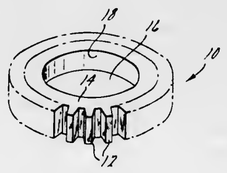
1. A method of manufacturing a test barrel assembly for testing a revolver cartridge from a metal blank, said method comprising the steps of forming a longitudinal passage through the metal blank, cutting the blank to form a barrel portion and a cylinder portion each including a section of the longitudinal passage, attaching the barrel portion to the cylinder portion with the sections of the longitudinal passage in axial alignment and with a gap of predetermined thickness between the barrel portion and the cylinder portion.

3,885,294

METHOD OF MAKING A BONDED SILICON NITRIDE ARTICLE HAVING PORTIONS OF DIFFERENT DENSITY

Gerald J. Chaundy, Livonia; Andre Ezis, Grosse Ile; Michael U. Goodyear, Plymouth; Benjamin T. Howes, Birmingham; Carl F. Johnson, Detroit, and Karsten H. Styhr, Farmington, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 3, 1974, Ser. No. 457,536
Int. Cl. B22f 7/06
U.S. Cl. 29—420 **9 Claims**



1. A method of making a duo density article of silicon nitride which comprises:

forming a first article portion of silicon nitride by shaping silicon metal particles into a suitable configuration and nitriding the same;

applying a release agent to selected surfaces of the first article portion;

applying an encapsolent which is readily formable but of relatively low strength to the selected surfaces of the first article portion;

converting the encapsolent to a high strength material;

hot press bonding a second article portion of silicon nitride to a surface of the first article portion which has no encapsolent thereon;

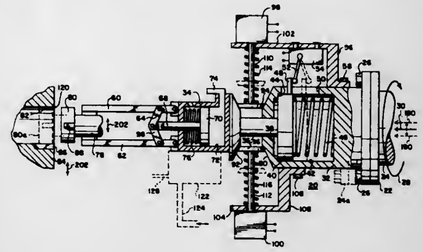
machining the encapsolent to remove portions thereof, the removal of such portions freeing other portions of the encapsolent to be removed as individual segments.

3,885,295

PROGRAMMED MANIPULATOR ARRANGEMENT FOR ASSEMBLING RANDOMLY ORIENTED PARTS

Joseph F. Engelberger, and Maurice J. Dunne, both of Newtown, Conn., assignors to Unimation, Inc., Danbury, Conn.

Continuation of Ser. No. 251,315, May 8, 1972, abandoned. This application Jan. 21, 1974, Ser. No. 434,929
Int. Cl. B23p 19/00, 19/04
U.S. Cl. 29—429 **37 Claims**



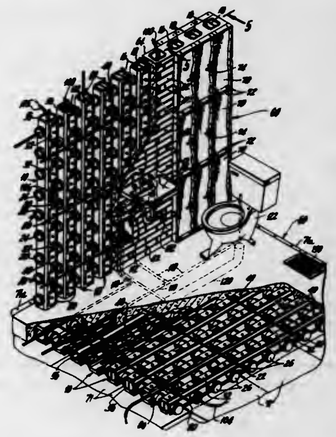
23. The method of interfitting one part with another part, said pair of parts being interfittable by movement along an insertion axis, which comprises the steps of supporting one of said parts at an insertion station, controlling a programmable manipulator arm to grasp the other of said pair of parts and move it along said insertion axis toward said one part at said insertion station, and moving one of said parts in a predetermined search area around said insertion axis, thereby to facilitate interfitting of said pair of parts.

3,885,296

METHOD FOR MAKING CAST-IN-PLACE CONCRETE STRUCTURES

Robert K. Stout, Hamburgo, num. 75, 9° piso, Mexico City, 6, D.F. Mexico

Filed July 11, 1974, Ser. No. 487,605
Int. Cl. B23p 19/04
U.S. Cl. 29—433 **17 Claims**



1. A method for making a cast-in-place concrete structure comprising the steps of:

forming an arrangement of concrete forms to define the periphery of the concrete structure;

placing a plurality of void creating devices within the confines of and spaced from said concrete forms, each device being an elongated hollow member made of frangible

material, and having at least one opposed pair of projec-

material, and having at least one opposed pair of projections intermediate its length, with the respective projections of adjacent devices abutting one another in order to enable communication between said devices, and with the ends of the devices and the non-abutting projections thereof extending to the periphery of said concrete forms; and

forming the concrete structure by pouring uncured concrete into the space defined between said concrete forms and the void creating devices thereby embedding the void creating devices therein except for said ends of the devices and the non-abutting projections thereof, and allowing the concrete to cure.

13. A method for making a cast-in-place concrete structure comprising the steps of:

forming an arrangement of concrete forms to define the periphery of the concrete structure;

placing a plurality of insulating void creating devices within the confines of and spaced from said concrete forms, each device being an elongated hollow member made of an insulative, frangible material, and having at least one opposed pair of projections intermediate its length, with the respective projections of adjacent devices abutting one another in order to enable communication between said devices, and with the ends of the devices and the non-abutting projections thereof extending to the periphery of said concrete forms;

forming the concrete structure by pouring uncured concrete into the space defined between said concrete forms and the void creating devices so as to embed the void creating devices therein except for said ends of the devices and the non-abutting projections thereof, and allowing the concrete to be cured; and

removing the concrete forms, and knocking out the exposed frangible projections of the void creating devices in order to provide access to the labyrinth of the passageways within said concrete structure.

3,885,297

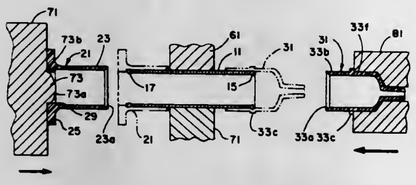
METHOD OF ASSEMBLING GLASS TUBE AND THERMOPLASTIC RESIN FINGER GRIP AND NOSE SLEEVE SYRINGE BODY

Edward A. Tischlinger, Des Plaines, Ill., assignor to MPL, Inc., Chicago, Ill.

Division of Ser. No. 197,718, Nov. 11, 1971, abandoned. This application Mar. 18, 1974, Ser. No. 451,958

Int. Cl. B23p *11/02*

U.S. Cl. 29—450 **9 Claims**



1. The method of assembly of a medicant reservoir glass tube, a non-glass finger grip member and a non-glass nose-forming member to form a unitary pharmaceutical packaging subassembly, comprising

axially aligning and effective relative axial movement of a medicant reservoir glass tube and two opposing sleeves of thermoplastic resin, one of which sleeves has a tubular sheath section and a laterally extending finger grip thereon, and the other of which sleeves is a nose-forming sleeve having a tubular sheath section and a reduced diameter dispensing section, each of said sleeves being disposed with its sheath extending toward a respective open end of said glass tube, and effecting opposing axial motion of each of said sleeves toward and relative to said respective open ends and into coaxial engagement therewith to a point where said sleeve sheaths effectively encompass a substantial longitudinal wall extent at each respective end of said tube, and lie in intimate intersurface contiguity thereabove,

said thermoplastic resin sleeve sheath sections each having an internal relaxed diameter prior to assembly and when at normal room temperatures of approximately 70°F, of less diameter than the effective outer diameter of the respective end of said glass tube,

and camming said sleeve sheath sections to a larger stretch-fit effective inner diameter through sequential incremental outward camming action on the sleeve sheaths at each successive incremental zone of axial interengagement between each said sleeve sheath and the respective end of said glass tube.

3,885,298

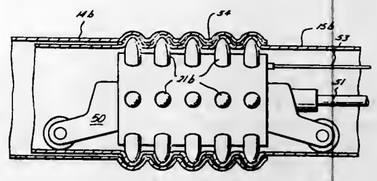
METHOD OF SEALING TWO TELESCOPIC PIPES TOGETHER

Ivo C. Pogonowski, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 247,584, April 26, 1972, Pat. No. 3,795,035. This application Sept. 28, 1973, Ser. No. 401,742

Int. Cl. B21d *39/00;* **B23p** *11/02*

U.S. Cl. 29—507 **4 Claims**



1. A method for sealing together two telescopic pipes comprising the steps of

a. rolling a swaging mechanism centrally along the inside of the pipes to adjacent an end of one of the pipes,

b. deforming a circular first row of dimples through both pipes in a plane normal to the pipe longitudinal axis in a direction radially outwardly of the pipes and

c. deforming a plurality of rows of dimples through both pipes simultaneously and parallel to the first row of dimples in a direction radially outwardly of the pipes for quickly forming an efficient high strength joint between the two pipes.

3,885,299

METHOD OF INTERLOCKING OVERLYING SHEETS

Otto P. Hafner, 1321 Paddock Way, Cherry Hill, N.J. 08034

Division of Ser. No. 384,494, Aug. 1, 1973. This application Aug. 16, 1974, Ser. No. 497,884

Int. Cl. B23p *11/00*

U.S. Cl. 29—521 **1 Claim**

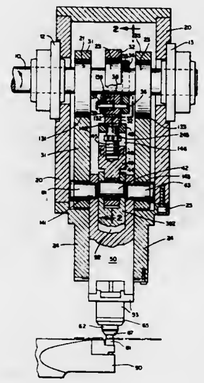
1. A method of locking together overlying sheets of deformable material, said method comprising:

a. piercing first and second overlying sheets discontinuously along a boundary line defining an area;

b. displacing the material of said first and second sheets within said area out of the planes of the non-displaced first and second sheet material until the exterior surface of the displaced first sheet material is just beyond the plane of the exterior surface of the non-displaced second sheet material; and

c. compressing together the displaced material of said first and second sheets while confining the displaced material

of the second sheet to limit its outward spread and to spread outwardly the displaced first sheet material over



the outer surface of the non-displaced second sheet material beyond the edges of the piercings therein.

3,885,300

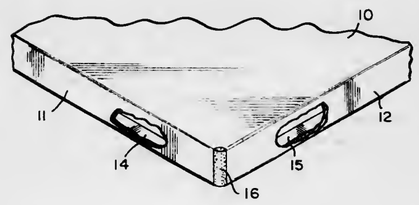
METHOD OF MAKING A PANEL CORNER

Frank A. Hoffman, and Layton L. Hinson, both of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed June 12, 1974, Ser. No. 478,636

Int. Cl. B23p *17/00*

U.S. Cl. 29—527.1 **7 Claims**



5. A method of making a corner for a panel, comprising the steps of cutting a sheet of metal to form a pair of first edges at an angle to each other and a pair of second edges extending inwardly from said first edges at points equally spaced from what would otherwise be the juncture of said first edges whereby said second edges define a cut-out portion at the corner of said sheet, said cutting operation defining an arcuate segment in said sheet interconnecting the adjacent ends of said second edges; bending said sheet along a pair of bend lines parallel to said first edges and extending longitudinally from the ends of said arc segment whereby the metal between said bend lines and first edges forms a pair of skirts whose adjacent ends are in spaced relation and are defined by said second edges; placing said metal in a mold; injecting an adhesive filler into said mold to fill the space between said second edges and bridge across the adjacent ends of said skirts; and curing said adhesive filler into a rigid state.

3,885,301

PYROELECTRIC ELEMENT OF POLYMER FILM

Naohiro Murayama, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

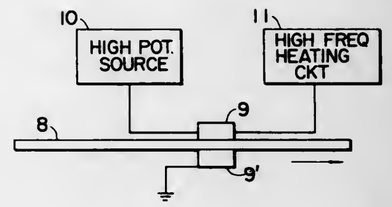
Division of Ser. No. 242,448, Apr. 10, 1972, Pat. No. 3,794,986.

Filed Nov. 9, 1972, Ser. No. 305,036

Claims priority, application Japan, Apr. 8, 1971, 46-21374; Apr. 27, 1971, 46-27159

Int. Cl. H04r *31/00*

U.S. Cl. 29—592 **11 Claims**



1. A process of producing a pyroelectric element having a nonuniform distribution of pyroelectricity along the surface thereof, which comprises polarizing desired local portions of a polymer film, which can be converted into a pyroelectric substance by applying an electric potential to said film, while varying at least one of the temperature and the electric potential at each of the local portions relative to other portions of the film.

3,885,302

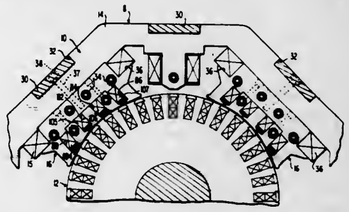
METHODS OF MAKING DYNAMOELECTRIC MACHINERY

Walter F. Boesel, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 383,174, July 27, 1973, Pat. No. 3,859,549. This application Sept. 27, 1974, Ser. No. 509,977

Int. Cl. H02k *15/02*

U.S. Cl. 29—596 **6 Claims**



1. A method of assembling a dynamoelectric machine comprising the steps of:

adjacently disposing together a plurality of yoke plates;

orienting said yoke plates such that grooves along the outer peripheries thereof are aligned to form a plurality of grooves;

inserting attachment flanges into said grooves and bonding said attachment flanges to said yoke plates;

assembling a plurality of pole shoes, each pole shoe being assembled by:

adjacently disposing and securing together a plurality of base plates to define a base section,

adjacently disposing together a plurality of tip plates,

orienting said tip plates to define a tip section having a curved pole face, with apertures in said tip plates being aligned to define at least one opening extending through said tip section remote from said pole face,

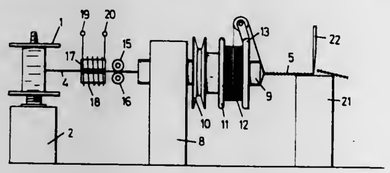
inserting a connector bar through said opening,

clamping said tip plates together by clamping elements located at the ends of said connector bar,
aligning said base and tip sections such that wall portions of said base and tip sections define a plurality of slots,
inserting compensator coil windings in said slots,
inserting a cluster of strand-like elements in each of said slots between said wall means and said compensator coil windings,
inserting liquid binder material into said slots and allowing said binder material to cure so as to bond said elements together and to said wall means to define rigid braces supporting said compensator coil windings against oscillation in said slots, and
connecting releasable fastener means between said base section and said connector bar to secure said tip section to said base section;
inserting primary current windings around said base sections; and
connecting releasable fastener means between said attachment flanges and said base sections to detachably secure said base sections to said yoke, with shoulder portions of each base section supporting said primary current windings;
the arrangement being such that said primary current windings can be released from said base section in the absence of removing said tip section from said base section.

3,885,303
METHOD OF MANUFACTURING FUSES

Gerardus J. Deelman, Eindhoven, Netherlands, assignor to Olvia Smeltzekeringen Fabriek N.V., Utrecht, Netherlands

Division of Ser. No. 180,786, Sept. 15, 1971, Pat. No. 3,845,439. This application Sept. 23, 1974, Ser. No. 508,714
Claims priority, application Netherlands, Sept. 15, 1970, 7013620
Int. Cl. H01h *69/02*
U.S. Cl. 29—623 **1 Claim**



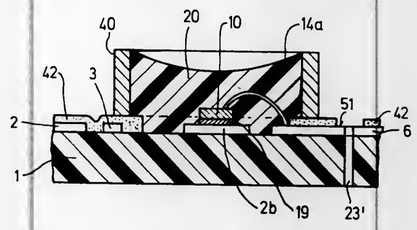
1. A method of manufacturing fuses, comprising the steps of providing a very thin wire of electrically non-conductive, heat-insulating and heat-resistive fibre material with a thin layer of thermosetting material, heating said thin wire with said layer of thermosetting material whereby to set or rigidify said thin wire, winding said set wire with extremely thin metal wire, cutting said wound wire in predetermined segments and mounting said segments in suitable fuse containers.

3,885,304
ELECTRIC CIRCUIT ARRANGEMENT AND METHOD OF MAKING THE SAME

Anton Kaiser; Helmut Keller, both of Reutlingen, and Adolf Kugelmann, Leonberg, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Division of Ser. No. 337,742, March 2, 1973. This application Dec. 27, 1973, Ser. No. 428,910
Claims priority, application Germany, Mar. 23, 1972, 2214163; May 31, 1972, 2226395
Int. Cl. H05k *3/28*
U.S. Cl. 29—627 **10 Claims**

1. A method of making an electric circuit arrangement, comprising the steps of providing an electrically insulating circuit board having opposite major surfaces and holes extending intermediate said surfaces and electrically conductive circuit strips on both of said major surfaces; mounting on one of said major surfaces a semiconductor unit having exposed electrical terminals; electrically connecting said terminals with respective ones of said strips using bond wires; mounting surround means defining a chamber around said mounted semiconductor unit on said one major surface; depositing a protective covering of polymerizable material into said surround means of sufficient quantity so as to encapsulate said



semiconductor unit and said bond wires and form a meniscus above said semiconductor unit; mounting on said one major surface a plurality of discrete electrical components having conductive leads which extend through said respective ones of said holes to said other major surface and to respective circuit strips thereof; and soldering said leads at said other major surface to the respectively associated circuit strips by contacting said leads with a surge-deposition soldering bath.

3,885,305
HAIR CUTTERS

Abram N. Spanel, 344 Stockton St., Princeton, N.J. 08540

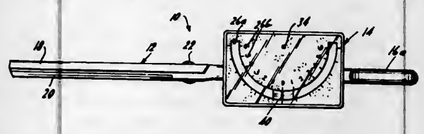
Continuation-in-part of Ser. No. 340,379, March 12, 1973, Pat. No. 3,855,696, which is a continuation-in-part of Ser. No. 321,343, Jan. 5, 1973, Pat. No. 3,855,695. This application Mar. 13, 1974, Ser. No. 450,581
Int. Cl. B26b *21/12, 21/40*
U.S. Cl. 30—30 **30 Claims**

6. A hair cutter comprising:
a cage made up of a plurality of elements,
a blade carrier for supporting a blade for lateral movement in either of two directions respectively toward and away from said plurality of elements,
driving means engaging said blade carrier for producing said lateral movement, and
means for moving said cage longitudinally with respect to said blade carrier including means adjustable from a first haircutting position to a contraining position for unobstructed removal and replacement of said blade.

3,885,306
SCISSORS AND POSITION INDICATOR

Jack J. Herman, 3 Prince St., Spring Valley, N.Y. 10977

Filed May 17, 1974, Ser. No. 470,728
Int. Cl. B26b *13/22*
U.S. Cl. 30—123 R **6 Claims**



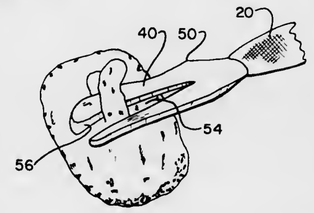
1. A combination of a scissors and position indicator comprising a scissors having a handle, an indicator housing

mounted on said handle, said housing including an indicator dial, and indicating means within said housing and movable relative to said indicator dial for indicating the position of said scissors.

3,885,307
PEELING UTENSIL

William A. Papalardo, 63 Little Neck Rd., Centerport, N.Y. 11721

Continuation-in-part of Ser. No. 249,609, May 1, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,132
Int. Cl. A47j *17/02, 17/04*
U.S. Cl. 30—123.5 **13 Claims**



1. A peeling utensil comprising an elongated handle and an elongated blade attached at one end to said handle, said blade curved downward at least in part in longitudinal section from the handle and having at least one side edge concave at least in part, a substantially convex bottom surface, and an open ended slot extending from the other end of said blade for a distance along its axis, wherein the edges of the slot are sharpened to provide cutting edges which are tapered upwardly and outwardly from said bottom surface, and said blade side edges are sharpened in a direction opposite to the direction the respective adjacent slot edges are sharpened, and said sharpened blade side edges are blended with said sharpened slot edges adjacent the open end of said slot.

3,885,308
RETRACTIBLE TOOL HOLDER

Myron K. Gordin, Oskaloosa, Iowa, assignor to G & L Industries, Inc., Oskaloosa, Iowa

Filed June 28, 1974, Ser. No. 484,099
Int. Cl. B26b *1/08*
U.S. Cl. 30—162 **4 Claims**

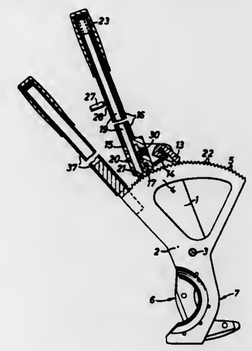


1. A retractible tool holder comprising:
a. a tubular barrel member having a front end and a rear end and a bore with a front section and rear section, said rear section of a reduced diameter relative to said front section to form an annular stop shoulder.
b. a tool carrying member having a front end and a rear end,
c. a working tool extended forwardly from the front end of the tool carrying member,
d. said tool carrying member slidably movable within said bore between an inoperative position wherein the working tool is retracted inwardly from the front end of said barrel member and an operative position wherein the working tool projects outwardly from the front end of said barrel member,
e. a manually operable actuating member located within and movable longitudinally of the bore rear section,
f. a lost motion means connecting together the forward end of said actuating member with the rear end of the tool carrying member,
g. means within the bore front section yieldably urging the tool carrying member rearwardly toward said actuating member, and
h. means coacting with said lost motion means and movable in response to a forward movement of said actuating member into releasable locking engagement with said stop shoulder to lock the tool carrying member in the operating position therefor, and movable in response to a rearward movement of said actuating member to release said tool carrying member for movement to the inoperative position therefor.

3,885,309
CABLE CUTTERS

Alfred Ernest Lund, Reading, and Kenneth Harry Holbrook, Aldermaston, both of England, assignors to The Post Office, London, England

Filed Feb. 13, 1974, Ser. No. 442,229
Claims priority, application United Kingdom, Feb. 19, 1973, 7968/73
Int. Cl. B26b *13/04*
U.S. Cl. 30—250 **15 Claims**



1. Apparatus for severing cables and the like comprising first and second co-operating severing jaws formed respectively at one end of each of first and second pivotally connected first-order levers, said first first-order lever having integral therewith a fulcrum member having notches directly engageable by one end of a second-order lever, said second-order lever being pivotally mounted relative to said second first-order lever at a point spaced from the end of said second-order lever to provide a drive transfer pivot at said point, and wherein said notches provide successive fulcrums for said second-order lever during oscillatory movement thereof so that during pivotal movement in a first direction of said second order lever, relative rotation is effected between said first-order levers in a jaw closing direction and during pivotal movement of the second-order lever in the opposite direction.

retaining means interengageable between said second first-

3,885,312

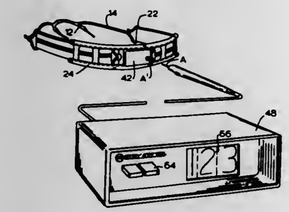
retaining means interengageable between said second first-order lever and said fulcrum member prevents relative rotation of the first-order levers in a jaw opening direction and actuating means associated with the second-order lever effects relocation of the end of the second-order lever in the next adjacent notch.

3,885,310

ORTHODONTIC APPLIANCE

Michael E. Northcutt, 1704 Miramonte, Mount View, Calif. 94040

Continuation-in-part of Ser. No. 302,734, Nov. 1, 1972, abandoned. This application June 15, 1973, Ser. No. 370,445
Int. Cl. A61c 7/00
U.S. Cl. 32—14 D **18 Claims**



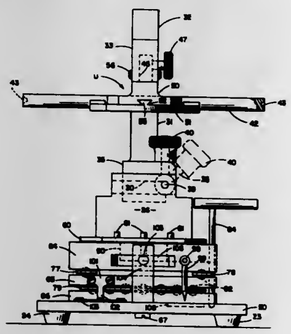
1. A removable orthodontic appliance comprising means for exerting corrective forces on teeth, said appliance also including means for sensing when the appliance is being used and means responsive to said sensing means for recording the amount of time the appliance is in use on the patient.

3,885,311

DENTAL ARTICULATOR

John K. Lawler, 1740 W. Gardena Blvd., and John W. Mitchell, Sr., 1701 W. 168th St., both of Los Angeles, Calif. 90247

Filed Sept. 17, 1973, Ser. No. 398,258
Int. Cl. A61c 11/00
U.S. Cl. 32—32 **20 Claims**



1. A dental articulator characterized by opposing mounts adapted to dispose respective upper and lower dentures in functional positions of mutual engagement, one of which mounts may be secured against lateral displacement while the opposing mount is held upon a plate which is adapted for transverse linear displacement within an area encompassed by a closed path lying along the plane of mutual engagement,

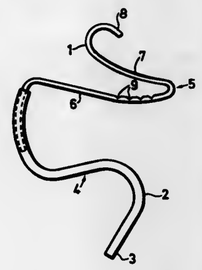
and means for self-aligning upright oscillation of said plate by tilting transverse to a generally central axis through said dentures perpendicular to said plane of mutual engagement, in response to said lateral displacement, which displacement causes said oscillation by movement of one denture transverse to the cusps of the other.

3,885,312

SALIVA EXTRACTOR

Elling Harald Nordin, Villa Svedia en Tortiguet 12, Villeneuve, Vaud, Switzerland

Filed Aug. 30, 1973, Ser. No. 392,905
Int. Cl. N61c 11/00
U.S. Cl. 32—33 **1 Claim**



1. A two-part saliva extractor device which is characterized by:

a. a first tube that is primarily intended to be positioned on the outside of the mouth of a dental patient,
b. a second tube that is primarily intended to be positioned on the inside of the mouth of a dental patient,
c. said first tube having a first end that is adapted to be connected to a suction line,
d. said first tube having a curvature somewhat similar to the letter S, one portion of which is adapted to fit against the front outside portion and the exterior underside of a dental patient's chin,
e. said second tube having a curvature which resembles the combination of an L section and a J section joined together at the upper ends of their "long leg" portions so as to form a V therebetween,
f. the short leg portion of the L section of said second tube fitting telescopically within the outer end of said first tube so that the combined shape of said L section and said first tube is a generally U-shaped clamp that fits around the chin and lower mouth portion of a dental patient,
g. said second tube having suction holes therein,
h. said J section of said second tube being shaped to hold a piece of cotton,
i. the portions of said first and second tubes that telescope together being in the form of moderate arcs, and
j. said section holes being in the long leg portion of the L section of said second tube.

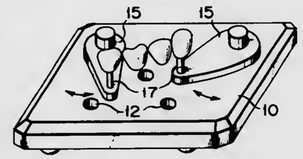
3,885,313

ARTIFICIAL TOOTH SUPPORTER FOR HEAT TREATMENT

Zenichi Kikuchi; Keijyo Yamada, and Tatuo Kimura, all of Tokyo, Japan, assignors to Fujishiken Ltd., Tokyo, Japan

Filed July 18, 1973, Ser. No. 380,235
Claims priority, application Japan, July 20, 1972, 47-72050; Dec. 7, 1972, 47-139949
Int. Cl. A61c 3/00
U.S. Cl. 32—40 R **11 Claims**

1. An artificial tooth supporter for supporting artificial teeth when they are subjected to heat treating comprising a base plate formed with at least one recess in its upper surface, at lease one cylindrical column vertically upwardly projecting from the upper surface of the base plate, at least one movable member formed with a circular hole to be complementarily and detachably engaged with the column so that the movable member can be rotated about the column on the upper surface of the base plate, and first and second artificial tooth supporting pins for supporting the artificial teeth on their upper ends, said first supporting pin being upwardly projecting from the movable member and spaced from the circular hole, and said second supporting pin having at its lower end a fitting portion



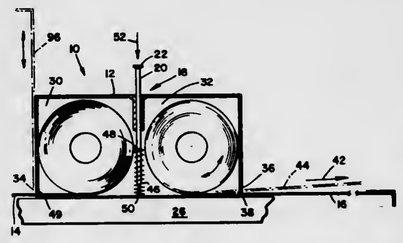
to be frictionally and detachably inserted into the recess of the base plate.

3,885,314

TWO-WAY TAPE AND CENTERING DEVICE

Andrew J. Banas, Sr., 250 Taraval St., San Francisco, Calif. 94116

Filed Dec. 6, 1973, Ser. No. 422,291
Int. Cl. B43l 9/04; G01b 3/10
U.S. Cl. 33—27 C **5 Claims**



1. A two-way measuring and centering device comprising:
a housing having first and second mutually aligned compartments, said housing having oppositely directed complementary openings in the respective compartments;

first tape measure means located within the first compartment and having a first tape extensible through the opening in said first compartment in a first direction;

second tape measure means located within the second compartment and having a second tape extensible through the opening in the second compartment in a second opposite direction independently of the first tape measure means; and

scribe means projecting through the housing intermediate the first and the second tape measure means, said scribe means including an elongate shaft having a first sharply pointed end and a second opposite generally flat end so that the shaft can be depressed at the flat end to inscribe a mark with the pointed end.

3,885,315

CURB MARKING GAGE

Luigi Polselli, 230 Parkway Blvd., and Rudolph T. Polselli, 213 Croft Ridge Dr., both of Broomall, Pa. 19008

Filed Aug. 31, 1973, Ser. No. 393,423
Int. Cl. B43l 13/02
U.S. Cl. 33—42 **2 Claims**

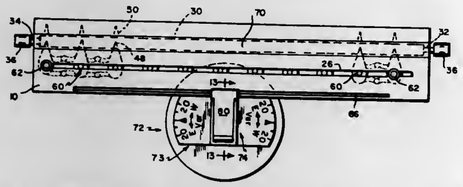
1. In a curb marking gage for use with a curb having a horizontal surface and a vertical surface, the combination of
A. a frame;
B. a plurality of curb contacting members attached to the frame to permit horizontal movement of the frame relative to the curb,
1. a first portion of said curb contacting members rolling over the vertical surface,
2. said first portion having inner extremeties which contact the vertical surface,
a. the inner extremeties defining a vertical plane;
C. a socket affixed in pivotal relation to the frame
1. said socket being provided with a vertically disposed opening,
2. said socket having no vertical movement relative to the frame;
3. the socket having pivotal movement relative to the frame from an initial position to a curb marking position,
D. curb marking means carried by said socket in a vertically adjustable manner relative to the frame to place a mark upon the vertical surface of the curb,
1. said curb marking means including a circular brush, a paint reservoir, a spring, a strut and bracket assembly comprising a strut and a bracket, said assembly being pivotally connected and an affixed gage rod,
2. a portion of the periphery of said circular brush being positioned inwardly of the vertical plane when the socket is in its initial position,
3. the periphery of said circular brush being forced against the vertical surface when the socket is urged to its curb marking position,

4. the spring continuously biasing said socket and said circular brush into contact with the vertical surface when the curb contacting members are positioned in contact with the curb,
5. the gage rod being vertically movable within the socket to a plurality of vertical positions relative to the frame to vary the height of the brush relative to the frame,
a. means to retain the gage rod in any of the vertical positions to maintain the circular brush at a desired elevation relative to the vertical curb surface,
6. the gage rod terminating downwardly in a strut connection end,
a. a strut rigidly connected to said end and extending therefrom to provide an extension, the said circular brush being connected to said extension in a rotatable junction whereby the circular brush freely rotates for curb marking purposes when the circular brush is biased into contact with the vertical surface and when the curb marking gage is moved longitudinally relative to the curb,
7. the paint reservoir feeding paint to the circular brush,
a. said paint reservoir and said circular brush being affixed to the strut in spaced relationship from the gage rod,
b. said paint reservoir being provided with paint flow control means to regulate the volume of paint flow to the said circular brush.

3,885,316
NAVIGATIONAL INSTRUMENT

Ray J. Casten, 143 Walnut St., Natick, Mass. 01760

Filed Apr. 19, 1973, Ser. No. 352,523
Int. Cl. G06g 1/02
U.S. Cl. 33—75 R 18 Claims

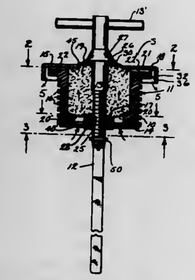


1. A navigational instrument comprising an elongate top wall along the long sides and ends of which there are side and end walls, the side walls being parallel and in conjunction with the end walls defining an elongate cavity at the underside of the top wall, said top wall containing lengthwise thereof and parallel to said side walls a slot of predetermined width, a rigid rod mounted within the cavity at the underside of the top wall with its opposite ends journaled in the end walls, a scale bar mounted within the cavity at the underside of the top wall parallel to the rigid rod with its ends journaled in the end walls, said scale bar being rotatable to present a selected scale uppermost, a series of pointer mounting blocks, transversely spaced bearing elements on each block containing aligned openings slidingly engaged with the rigid rod, links of equal length between each pair of pointer blocks pivotally connected at one end to each other and to the block midway between the bearing elements and at their other ends to each other midway between the adjacent pointer blocks, and pairs of pointers mounted to each pointer block, said pointers extending forwardly from the rigid rod in spaced parallel relation and comprising a scale pointer above the scale bar and a chart pointer below the scale bar in the plane of the bottom side of the instrument, said chart pointer extending beyond the end of the scale pointer so as to be visible on the surface of the chart, and means extending upwardly from the endmost pointer blocks through the slot in the top wall for extending and contracting the scale pointers along said scale bar and the chart pointers correspondingly along the chart.

3,885,317
OIL LEVEL TESTING DIP STICK AND CLOSURE

Albert J. Karis, Greenville, Miss., assignor to Moeller Mfg. Co., Inc., Greenville, Miss.

Filed Sept. 25, 1967, Ser. No. 670,180
Int. Cl. G01f 23/04
U.S. Cl. 33—126.7 1 Claim

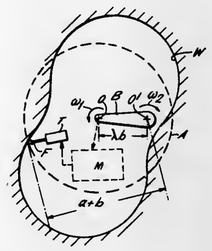


1. An oil level testing dip stick and closure for sealing the entrance throat of an oil filler spout of an internal combustion engine including, a resilient expandable and compressible stopper body having a bottom wall and an enlarged axial chamber opening out on the upper end of the body, the upper end of said body having an extended circumferential peripheral lip, said bottom wall being provided with a series of spaced apertures in open communication with said chamber and an axial bore therethrough, a filtering plug of a size and configuration to fit within said enlarged axial chamber, said filtering plug being of a porous nature and having an axial bore, inner and outer compression plates, engaging the opposite ends of said stopper body, the inner compression plate engaging the bottom wall of said body and being provided with an axial opening in alignment with said bottom wall and said filtering plug, said inner compression plate also being provided with a series of spaced apertures so constructed and arranged that regardless of the relative position of the inner compression plate relative to the bottom wall one or more of the respective apertures will be in open registration, said outer compression plate engaging the upper surface of the expandable body adjacent said lip and being provided at its axial center with an opening, the outer end of said outer compression plate extending beyond said circumferential lip and having a depending flange spaced therefrom, a rod rotatably mounted in the opening of the outer compression plate and having a reduced threaded portion extending through the opening of said bottom wall of said body, a threaded nut secured in the opening of said inner compression plate and engaging said reduced threaded portion of said rod, the upper surface of said circumferential lip being provided with a series of grooves communicating with the enlarged chamber of said body, whereby rotation of said rotatable rod in one direction will draw the inner compression plate toward the outer compression plate to expand said resilient compressible body against the walls of the oil filler pipe to firmly hold the closure and rod in position and provide for the venting of the crankcase.

3,885,318
SURFACE PROFILE TESTING INSTRUMENT

David John Whitehouse; Melton Mowbray, and Robert Claude Spragg, Leicester, all of, England, assignors to The Rank Organisation Limited, London, England

Filed July 12, 1973, Ser. No. 378,667
Claims priority, application United Kingdom, Aug. 17, 1972, 38415/72
Int. Cl. G01b 5/20, 7/28
U.S. Cl. 33—174 L 9 Claims

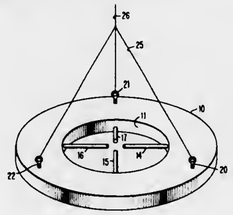


1. An instrument for testing the profile of a surface of an object having a nominal shape which is non-circular, said instrument comprising:
- a surface transducer having a feeler adapted to engage the surface of the object;
- mounting means for the object under test, rotatable about a first axis;
- support means carrying said mounting means, said support means being rotatable about a second axis spaced from and parallel to the first axis;
- means supporting the transducer at a fixed position relative to said second axis,
- and drive means for effecting rotation of the mounting means about the first axis and rotation of the support means about the second axis to cause the feeler to move over the surface of the object,
- wherein the resultant path traced by the feeler relative to said surface of the object under the action of said drive means conforms to said nominal shape, the transducer being responsive to departures of said surface from said nominal shape.

3,885,319
PLUMMET

Ernest J. Rollband, Green Acres Mobile Home Park, 3415 Slaterville Rd., R.D. No. 1, Brooktondale, N.Y. 14817

Continuation-in-part of Ser. No. 153,282, June 15, 1971, abandoned. This application June 25, 1973, Ser. No. 373,499
Int. Cl. G01c 15/10, 15/08
U.S. Cl. 33—392 3 Claims



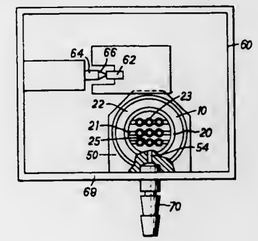
1. A plummet assembly including a suspendable plummet comprising a disc-shaped body with at least the lower surface of said body being substantially flat, an inner wall of said body defining a central aperture, a plurality of pointers on said inner wall extending toward the center of said aperture defining the center of gravity of said disc-shaped body, said pointers indicating the center at the intersection of the imaginary lines drawn therethrough; and suspension means for said disc-shaped body on the upper surface thereof for holding said body in position parallel to the work surface, the flat lower surface of said body being adapted for stable seating upon a substantially planar support surface; and an accessory plummet disc comprising a disc-shaped body having substantially flat upper and lower surfaces and substantially of the same diameter as the disc-shaped body of said suspendable plummet said suspendable plummet being alignable with said accessory plummet disc disposed upon a reference surface and functioning as a target therefor.

3,885,320
METHOD FOR TRANSFER OF FREEZE-DRIED SPECIMENS

Stuart Arthur Hodson, 24 Westgate St., Glamorgan, Wales, and John Marshall, The White House, Frimley Rd., Ash Vale, Surrey, England

Filed May 31, 1973, Ser. No. 365,607
Claims priority, application United Kingdom, June 1, 1972, 25634/72
Int. Cl. F26b 5/06
U.S. Cl. 34—5 4 Claims

1. The method of transferring freeze-dried specimens from a first apparatus to an evacuated chamber of a second apparatus comprising:
- placing in communication with the casing of a first apparatus an air-tight transfer container separable from and movable independently of said first and second apparatus, said first apparatus including a casing, a specimen holder and a microtome having a knife operable to cut thin sections from a frozen specimen of biological material held in said specimen holder, said casing surrounding said knife and specimen holder;
- cutting thin sections from said frozen specimen of biological material;
- cooling the interior of the transfer container;
- inserting into the transfer container sections of said frozen specimen from said first apparatus;
- evacuating the interior of said transfer container;

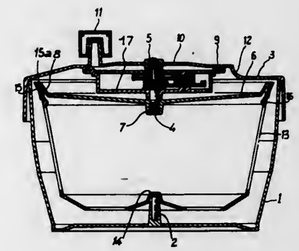


- sealing the transfer container;
- removing the transfer container from the first apparatus; and
- transferring the transfer container to the second apparatus and effecting communication between the interior of the transfer container and the evacuated chamber of the second apparatus.

3,885,321
DOMESTIC APPLIANCE FOR DRYING VEGETABLES

Gilberte Fouineteau, Avenue Francois Devosge, 70100-Gray, France

Filed Oct. 25, 1973, Ser. No. 409,457
Int. Cl. F26b 17/24
U.S. Cl. 34—58 11 Claims



1. A lightweight manually stabilized domestic appliance for drying vegetables comprising:
- a container having a solid bottom and a solid side wall,
- a vertical pivot placed at the center of the bottom,
- a cover for closing the container and completely manually removable readily therefrom by merely lifting off said cover,
- a manually operated rotatable crank mounted on the cover and disposed to circumscribe only part of the top of said cover when rotated to provide a non-crank interfering area in another part of the top of said cover for manually immobilizing said container during crank rotations,
- rotation coupling means connected to said crank and suspended horizontally inside the cover and removable therewith by said lifting,
- a removable vegetable basket which has a bottom provided with a recess to receive said pivot from which it is readily manually liftable when said cover is removed,
- said basket having a perforated side wall terminating in an upper edge,
- said upper edge of the side wall of the basket providing, during rotation, a second coupling means complementary

to the said rotation coupling means suspended in the cover,

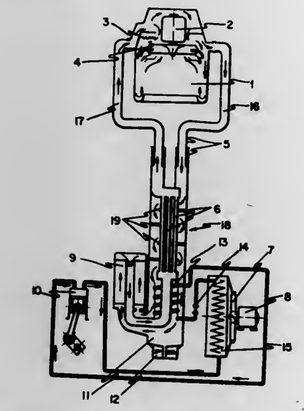
said two coupling means fitting one with the other when the cover is placed on the container so that said basket is rotated when said crank is rotated and said container is held immobile.

3,885,322

HAIRDRYERS

Salvador Gali Mallofre, Calle Londres 29-1°-2ª, Barcelona, Spain

Filed Apr. 22, 1974, Ser. No. 463,174
Int. Cl. A45d *20/24*
U.S. Cl. 34—100 **3 Claims**



1. In a hairdryer of the type comprising a hood; a conventional cooling unit including drying means comprising an evaporator; a first passage from said hood to said drying means; a second passage from said drying means to said hood; blower means including a motor located in said hood for forcing moist air from said hood through said first passage to said drying means to cool and remove the moisture from said moist air and to thus form dry air, and for forcing said dry air through said second passage back to said hood; and heating means for heating said dry air; the improvement wherein:

a portion of said first passage, upstream of said drying means, and a portion of said second passage, downstream of said drying means, comprise heat exchange means between said moist air and said dry air for precooling said moist air and for preheating said dry air to a temperature capable of cooling said blower motor; and wherein said heating means is positioned to heat said dry air after cooling contact thereof with said blower motor.

3,885,323

SIGNAL CONVERSION SYSTEM

Frederick C. Kaase, Sunnyvale, and Wilson C. Selden, San Jose, both of Calif., assignors to The Singer Company, New York, N.Y.

Filed Mar. 1, 1973, Ser. No. 337,225
Int. Cl. G09b *9/00*
U.S. Cl. 35—10.4 **26 Claims**

26. A system for converting a first video signal which varies in accordance with radar ground range into a second video signal which varies in accordance with radar slant range, said system comprising:

a. an analog-to-digital converter for periodically sampling said first video signal, and for converting said first video signal into digital numbers;

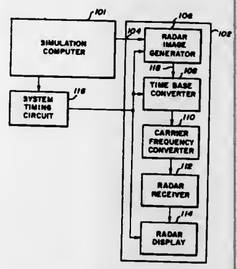
b. a random access memory having a data input coupled to the output of said converter and disposed for storing said digital numbers;

c. means for generating a first digital number representative of the instantaneous differences between a first signal proportional to radar ground range and a second signal proportional to radar slant range;

d. first means for producing a second number uniformly increasing in value;

e. means for combining said first number with said second number;

f. means coupling the output of said combining means to the address input of said memory during a first time interval, wherein said combined first and second numbers are utilized for addressing the memory for storing said digital numbers in said memory;



g. second means for producing a third number uniformly increasing in value;

h. means coupling the output of said second producing means to the address input of said memory during a second time interval, wherein said third number is utilized for addressing said memory for retrieving said digital numbers from said memory; and

i. a digital-to-analog converter for converting the digital numbers retrieved from said memory into an analog form, wherein said analog form is said second video signal which varies in accordance with said second mathematical function.

3,885,324

METHOD AND DEVICE FOR TEACHING SAFE DRIVING

Alvan F. Davenport, 41 Rancho Vista, El Sobrante, Calif. 94803; Ralph F. Gerken, 5549 Sapunor Way, Carmichael, Calif. 95608, and Jacob H. Wiens, 130 Crest Rd., Woodside, Calif. 94062

Filed Jan. 2, 1974, Ser. No. 430,232
Int. Cl. G09b *9/04;* **G01p** *15/08*
U.S. Cl. 35—11 **8 Claims**



1. A device for sensing acceleration and decelaration of a vehicle comprising:

a. a closed tubular system having:

1. a pair of spaced vertical tubes;

2. a first generally horizontal tube connecting the lower ends of said spaced vertical tubes and extending outwardly therefrom;

3. a second generally horizontal tube connecting the upper ends of said spaced vertical tubes;

4. first and second connecting tubes each connecting an end of said first horizontal tube with one of said vertical tubes adjacent the lower end of said vertical tubes;

b. a plurality of height gradient indicia marks spaced at ascending intervals on said vertical members for indicating the height of said fluid in said vertical tubes during acceleration or deceleration of said vehicle; and

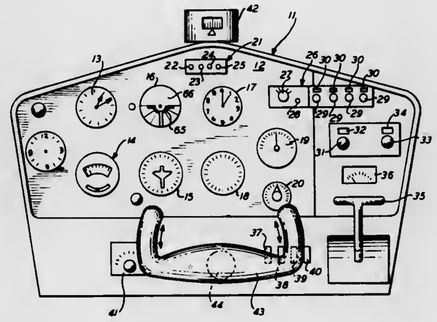
c. said tube system containing sufficient fluid to fill a portion of said first horizontal tube, all of one of said connecting tubes and a portion of said vertical tube to a height as great as the highest indicia marks on each of said vertical tubes.

3,885,325

FLIGHT SIMULATOR

Joseph E. Sidoti, Red Bank, N.J., assignor to Electronic Associates, Inc., Long Branch, N.J.

Filed Aug. 3, 1971, Ser. No. 168,718
Int. Cl. G09b *9/08*
U.S. Cl. 35—12 F **12 Claims**



1. Flight simulator for simulating actual flight conditions of an aircraft having a nose and wings, comprising:

a. a shaft mounted rotatably and axially movable;

b. a manually operable yoke secured to said shaft and for rotating and moving said shaft axially;

c. air speed indicator means operatively interconnected to said shaft and responsive to axial movement thereof to provide a change in indication of air speed;

d. altimeter means operatively connected to said shaft and responsive to axial movement thereof to provide a change in indication of altitude;

e. artificial horizon means including a rotatable artificial horizon disc divided into two hemispheres by a dividing line corresponding to the horizon, one hemisphere indicating the sky and the other the ground, and said disc being operatively connected to said shaft and being rotatable continuously through 360° in either direction in response to the rotation of said shaft, and further including a T-bar operatively interconnected to said shaft and being moved upwardly and downwardly in response to axial movement thereof, and upon being moved upwardly and downwardly said T-bar indicating the position of said nose of said aircraft relative to the horizon, and upon said artificial horizon disc being rotated relative to said T-bar said T-bar and said disc cooperatively indicating the relative inclination of said aircraft wings with respect to the horizon;

f. magnetic compass means operatively interconnected to said shaft and operable in response to the rotation of said shaft to provide an indication of change of direction of flight of said aircraft;

g. gyro compass means operatively interconnected to said shaft and operable in response to rotation of said shaft to provide an indication of change of direction of flight of said aircraft;

h. turn and bank indicator means including a rate of turn indicator and a bank indicator operatively interconnected to said shaft and operable upon rotation of said shaft to provide an indication of the rate of turn and degree of banking of said aircraft; and

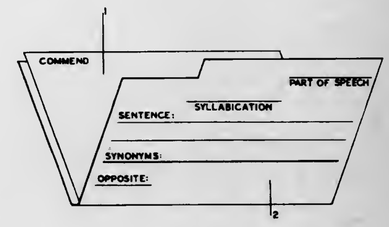
i. rate of climb indicator means operatively interconnected to said shaft and operable in response to axial movement of said shaft to provide an indication of rate of climb of said aircraft.

3,885,326

EDUCATIONAL METHOD AND APPARATUS

Madeleine O. Robinson, 80 Chestnut Ave., Cranston, R.I. 02910, and Paul F. Burton, 14 Wolcott Ave., Andover, Mass. 01810

Substitute for Ser. No. 753,019, Aug. 13, 1968, abandoned. This application Oct. 9, 1973, Ser. No. 404,348
Int. Cl. G09b *17/00, 1/06*
U.S. Cl. 35—35 J **3 Claims**



1. A system for vacabulary self-instruction, comprising

a. a word-bearing card color coded according to the part of speech of said word,

b. said card bearing information with respect to said word,

c. a holder for said card and bearing spaces for written student responses,

d. said holder being formed with an aperture to expose said word on said card and mask said information,

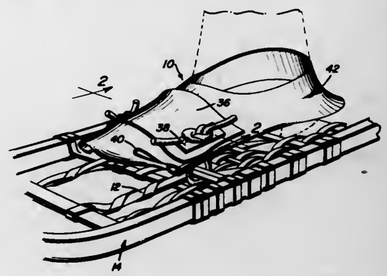
e. said holder being a transversely folded panel apertured at diagonally opposite corners and formed with a cleanable writing surface.

3,885,327

SNOWSHOE BINDER

Robert E. Maki, P.O. Box 105, Painesdale, Mich. 49955

Filed July 11, 1974, Ser. No. 487,678
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AB **8 Claims**



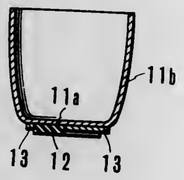
1. A snow shoe binder comprising a pannel of resilient flexible material, said panel having a forward toe portion and rear boot receiving portion, said forward portion including a pair of opposed side extensions folded downward and under the front forward portion, and a front extension folded downward and rearward under the forward portion, said rear boot receiving portion including an enlarged opening defined therethrough for the reception of the boot.

3,885,328

3,885,328
INFANT CHILDREN'S SHOE

Yaichiro Hirasawa, Tokyo, Japan, assignor to Fujidai Rubber Industry Company, Ltd., Japan

Filed Mar. 22, 1974, Ser. No. 453,719
Int. Cl. A43b 00/00
U.S. Cl. 36—2.5 E 5 Claims

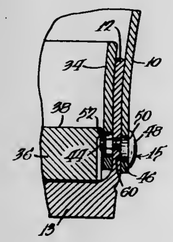


1. A shoe construction, comprising an upper, an outsole secured to said upper having rear, outer side, inner side and front edges and having a slot defined through said outsole at the heel spaced inwardly from each side and rear edge and which extends substantially one half way down the outer side edge of the shoe from the rear edge and only about one quarter of the way down from the opposite inner side edge from the rear edge, the front edge of the slot being concavely arcuate from the outer side edge to the inner side edge, and a heel of the same configuration and substantially the same size as the slot extending through the slot and having an inner portion with an interior face secured to said upper.

3,885,329
SKI BOOT WITH CANTABLE UPPER

Charles S. French, Sun Valley, Idaho, assignor to Scott USA, Sun Valley, Idaho

Filed May 15, 1974, Ser. No. 470,208
Int. Cl. A43b 00/00
U.S. Cl. 36—2.5 AL 21 Claims

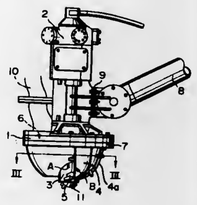


1. A ski boot having an upper section which can be canted relative to a lower section, comprising:
- an eccentric member mounted within one of said sections and rotatable about a connecting member associated with the other of said sections, the axis of the eccentric member being offset from the axis of the connecting member, and
- adjustment means for allowing rotation of the eccentric member to change the position of the one section relative to the other section and for locking said eccentric member against rotation to thereby maintain a selected cant.

3,885,330
EXCAVATOR FOR DIGGING A HOLE BENEATH THE WATER

Toshinobu Araoka, 1308-1, Orio, Yahata-ku, Kitakyushu, Japan

Filed Mar. 7, 1973, Ser. No. 339,017
Int. Cl. E02f 3/92, 3/94
U.S. Cl. 37—57 3 Claims

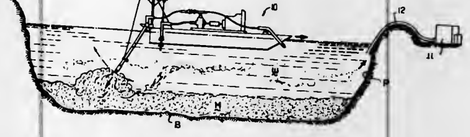


1. Apparatus for digging a hole beneath a body of water, said apparatus comprising a machine body, a cover mounted at the bottom of the body, a motor in said body connected to drive a shaft passing through the center of said cover, a circular frame having substantially the same diameter as said cover and attached to said drive shaft, said frame carrying cross bars and a screen positioned beneath said cover, metal claws mounted on said cross bars and the lower end of said drive shaft, and a suction pipe, having one end which is connected to a hole in said cover eccentrically of said drive shaft.

3,885,331
DREDGING BARGE HAVING DIGGING JETS AND STEERING JETS

Thomas A. Mathieu, 2204 Justice St., Suite A, Monroe, La. 71201

Filed June 25, 1973, Ser. No. 373,140
Int. Cl. E02f 3/92, 5/28
U.S. Cl. 37—63 4 Claims

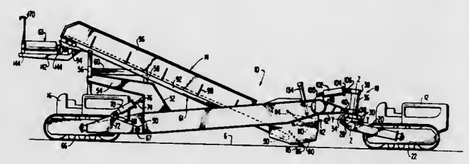


1. A barge for removing material from the bed of a pond, lake or like body of water comprising a floating hull, said hull having opposite sides and opposite ends, means for drawing water from the pond, lake or like body of water, means for forcefully returning the water to the pond, lake or like body of water at each end of said hull, the water returning means at a first end of said hull including a manifold, a plurality of tubular pipes connected to said manifold, means mounting said manifold for pivoting movement about a horizontal axis whereby ends of said tubular pipes may be positioned variably vertically relative to the material upon said bed thereby creating a material-water admixture as well as providing forwarding propulsion to said hull, means for controlling the flow of liquid to said manifold and said pair of tubular pipes, said water return means includes a pump, said hull carries an internal combustion engine for driving said pump, means for varying the angle of said first mentioned tubular pipes to the horizontal, water returning means at a second end of said hull including at least a pair of tubular pipes, said pair of tubular pipes being directed generally forwardly in the direction of forward propulsion and inclined relative to the horizontal, and means mounting said pair of tubular pipes each for pivoting movement about a vertical axis whereby said tubular pipes may be pivoted to steer the barge.

3,885,332
ELEVATING BELT LOADER AND EXCAVATION APPARATUS WITH MATERIAL FLOW CONTROL

Francis H. Holland, 32nd St. West & Hesper Rd., Billings, Mont. 59102

Filed Apr. 26, 1974, Ser. No. 464,292
Int. Cl. E02f 5/00
U.S. Cl. 37—102 13 Claims



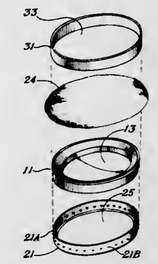
1. In an excavation and conveying apparatus which includes a horizontal loader platform movable relative to a stationary earth formation and supported between leading and trailing prime movers with said platform having fixedly secured thereto at its leading end, a rearwardly and upwardly inclined, rectangular, excavation blade defining a horizontal cutting edge with the blade extending generally transverse to the longitudinal axis of the platform, the improvement comprising:
- a first upwardly and rearwardly inclined, longitudinal endless conveyor belt mounted for rotation on said platform with its leading end underlying the trailing edge of the horizontal cutting excavation blade,
- a second transverse endless conveyor belt mounted for rotation below and to the rear of the raised trailing end of the first endless conveyor belt for receiving excavated material and for transporting said material transversely to a position to one side of the platform and above an underlying haul unit,
- paired booms extending forwardly of, and being mounted to said trailing prime mover for pivoting about a horizontal axis passing through the prime mover track center and being loosely coupled respectively, at their forward ends, to the sides of the platform, and
- a hydraulic cylinder operatively coupled to the boom on the same side of the platform as the discharge end of the transverse endless conveyor belt, and to the same side of the platform at a point above the coupling connection of that boom to said platform,
- whereby; extension of the hydraulic cylinder piston rod causes pivoting of said platform about a horizontal axis extending through the boom on the opposite side of the platform to effectively swing the discharge end of the transverse conveyor in a relatively large arc to allow the apparatus to adapt itself to haul units of varying height.

3,885,333
CANVAS STRETCHER

La Wanda M. Zachary, 111 Kevin Ln., Arlington, Tex. 76014

Filed June 5, 1974, Ser. No. 476,422
Int. Cl. D05c 1/04; D06c 3/08
U.S. Cl. 38—102.2 5 Claims

1. A canvas stretcher and frame for pictures or the like comprising:
- a frame member having a front edge, a rear end to be located against a wall, and a surrounding outward facing side edge,
- a thin walled member having an opening corresponding in shape to the shape of said frame member and adapted to be fitted closely around the side edge of said frame member,
- said frame member being adapted to have a canvas stretched over its front edge and around said thin walled member when fitted in place,
- said thin walled member having a plurality of spaced bendable tangs located around its periphery and adapated to extend outward therefrom for piercing the canvas when stretched in place,
- said tangs being bendable inward in the rearward directions for securing the canvas tightly around said frame, and

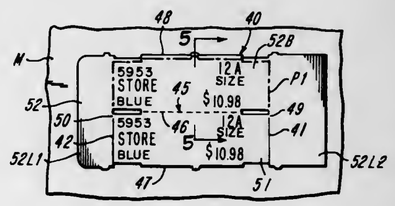


- an outer member having an opoening corresponding in space to the shape of said frame member and to the shape of the thin walled member when fitted in place and adapted to be fitted closely around said outward facing side edge of said frame member and around said thin walled member when a canvas has been stretched and secured to said tangs.

3,885,334
RECORD ASSEMBLY

Paul J. Banks, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Aug. 17, 1972, Ser. No. 281,591
Int. Cl. A44c 3/00
U.S. Cl. 40—2 R 5 Claims



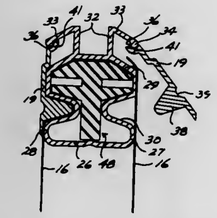
2. A record assembly, comprising: a record composed of a relatively stiff material, a pair of elongated through-cuts in the record, the one ends of the through-cuts extending to the same edge of the record, means partially severing the record between the other ends of the through-cuts, thereby dividing the record into a generally rectangular first record part and a generally U-shaped second record part, a frangible portion between the other end of at least one of the through-cuts and the partial severing means which tends to keep the first and second record parts in the same plane, the first record part being pivotal about the partial severing means and being removable from the second record part by tearing along the partial severing means, the second record part having pressure-sensitive adhesive on its underside, the first record part being free of adhesive, and backing material releasably adhered to the adhesive on the underside of the second record part.

3,885,335

3,885,335
SIGN HOLDING AND FRAMING ASSEMBLY

George W. Egermayer, 1417 Pine Rd., Omaha, Nebr. 68144

Filed Oct. 23, 1973, Ser. No. 408,473
Int. Cl. G09f 1/12
U.S. Cl. 40—125 G 5 Claims



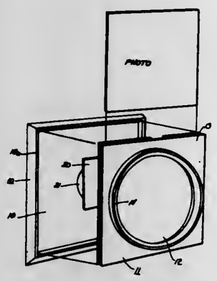
1. A sign holding and framing assembly for holding at least one sign, the sign holding and framing assembly comprising: frame means comprising a plurality of sides enclosing an open area, at least one of said sides having a pivot seat formed therein and a groove spaced inwardly from said pivot seat, said groove extending the full peripheral length of said frame means, said groove provided to receive the edge of the sign; an elongated slat, said slat having a protuberance projecting laterally from adjacent one side edge of said slot, said protuberance being shaped to conform to said groove and an arcuate trough formed in the other side edge of said slot, said trough pivotally mounted on said pivot seat said slat being pivotal from an open position to a closed position wherein said protuberance seats in said groove; and

clip means releasably secured to said frame means and said slat for locking said slat in a said closed position.

3,885,336
PHOTO FRAME AND THE LIKE

Daniel H. Olsen, Toledo, Ohio, assignor to Midland Insta-Change Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 321,134, Jan. 5, 1973, abandoned. This application Nov. 5, 1973, Ser. No. 412,832
Int. Cl. G09f 1/12
U.S. Cl. 40—152 18 Claims



1. A photo frame and the like, comprising:

a. a rigid rear frame member having a flat-bottomed recess in its front face defined by an upstanding bezel,

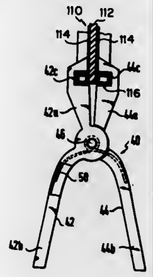
b. a rigid front frame member configured to fit loosely in said recess substantially within said bezel with a distinct peripheral clearance, for ready insertion thereinto, and removal therefrom, and having spaced front and rear faces providing a slot for the insertion of a photo therebetween, said front face having a photo aperture, and

c. cooperating permanent magnetic, and metallic elements, one secured substantially centrally of the bottom of said recess and the other secured substantially centrally of the rear surface of said front frame member, to hold said front frame member releasably within said recess, one of said elements projecting above the surface to which it is secured, whereby pressure on said front frame member adjacent an edge thereof causes said front frame member to tilt with respect to said recess to raise the opposite edge above said bezel so that it may be grasped for easy removal.

3,885,337
DISPLAY DEVICE

Max Bubb, Chur, Switzerland, assignor to Designa GmbH, Chur, Switzerland

Filed Aug. 30, 1973, Ser. No. 393,042
Claims priority, application Germany, Sept. 7, 1972, 2243973; Oct. 17, 1972, 2250888; Nov. 13, 1972, 2255491
Int. Cl. G09f 1/12
U.S. Cl. 40—152.1 9 Claims



1. A display device comprising, in combination:

a. a panel member having two major faces and a circumferential face portion connecting said major faces and extending in a continuous, convexly arcuate, closed loop; and

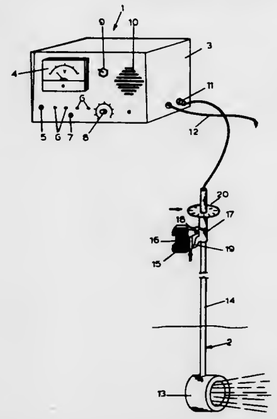
b. an annular frame of yieldably resilient, synthetic resin composition, said frame being of approximately C-shaped, uniform cross section and including an elongated web portion having one concave and one convex longitudinal face, two elongated flange portions projecting from said concave face in transversely spaced relationship, an elongated re-entrant portion on each flange portion remote from said web portion and directed toward the re-entrant portion on the other flange portion, and an edge portion on a part of each re-entrant portion remote from the associated flange portion, said edge portion extending from said re-entrant portion to said web portion and being integrally connected to said re-entrant and web portions, each edge portion jointly with the associated re-entrant and flange portions and with a part of said web portion bounding a longitudinally open bore in said frame, said circumferential face portion of said panel member being received between the edge portions of said frame.

3,885,338
METHOD OF CONTROLLING THE MOVEMENT OF PELAGIC FISH AND/OR SIGNALING APPARATUS USE THEREFOR

Albert Garnett York, Wellington, New Zealand, assignor to New Zealand Inventions Development Authority, Wellington, New Zealand

Filed Nov. 6, 1972, Ser. No. 303,720
Claims priority, application New Zealand, Nov. 5, 1971, 165386
Int. Cl. A01k 79/00
U.S. Cl. 43—17.1 8 Claims

1. A signalling apparatus for selectively producing an underwater acoustic signal detectable by pelagic fish, said apparatus comprising an amplifier, multi-channel transcribable storage means for storing information corresponding to natural signals which the fish normally associate with feeding and natural signals which the fish normally associate with danger, a transcription unit operable on said transcribable storage means to produce an input signal to said amplifier, selection means for selecting the desired stored information, and a transducer

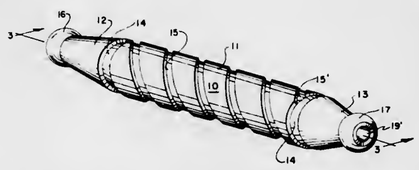


supplied by said amplifier to emit the underwater acoustic signal which may be selected at will either to attract the fish towards the signal source by producing the natural signals which the fish normally associate with feeding or to repel the fish away from the signal source by producing the natural signals which the fish normally associate with danger.

3,885,339
FISHING LURE BODY

Edward C. Herkner, 4407 Plum St., Boise, Idaho 83703

Filed May 11, 1973, Ser. No. 359,296
Int. Cl. A01k 85/00
U.S. Cl. 43—42.05 2 Claims



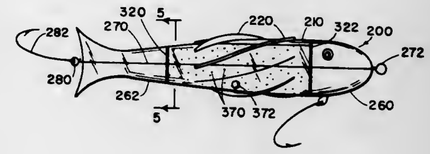
1. A fishing lure body comprising a cylindrical portion, a pair of cone-like portions disposed with their bases at said terminal ends of said cylindrical portion, a spiralling groove cut into said cylindrical portion, and said body and portions being bored along the central rectilinear axis to include a wide diameter bore disposed from one end of one of said cone-like portions more than half way through said cylindrical portion and a narrower bore disposed from the end of the other cone-like portion to intersect and axially align with said wide bore portion, each of the terminal ends of said exterior cylindrical walls being provided with a transverse circumferential groove.

3,885,340
FISHING LURE

Donald C. Volenec, 4533 S. 39th St., Omaha, Nebr. 68107

Filed Nov. 5, 1973, Ser. No. 413,033
Int. Cl. A01k 85/00
U.S. Cl. 43—42.16 10 Claims

1. A fishing lure comprising a closed hollow body, a fluid in said hollow body, a plurality of particles in said fluid so that when said fluid moves such movement causes said particles to move, said particles being of a highly light-reflective nature,

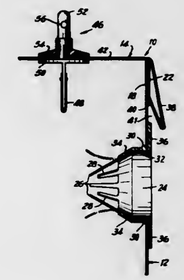


hook means attached to said body, said body having a fishing line attachment means on the exterior thereof.

3,885,341
GYPSY MOTH TRAP

Morris William Kuchenbecker, and Walter John Oppermann, both of Neenah, Wis., assignors to American Can Company, Greenwich, Conn.

Filed Mar. 28, 1974, Ser. No. 455,860
Int. Cl. A01m 1/10, 23/08
U.S. Cl. 43—65 8 Claims

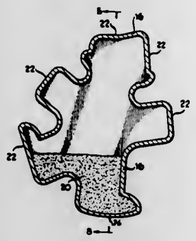


1. A trap for flying insects comprising: a housing, including a base having an upstanding sidewall with at least two apertures to the interior of said housing, said apertures being oppositely disposed on said sidewall; a one-way gate member mounted on said sidewall within each of said apertures thereof, said gate member including means for mounting on said sidewall, a generally frustoconical, inwardly tapered inner portion comprised of a multiplicity of resiliently deformable fingers projecting into said housing, and a short, generally circular wall portion coaxially positioned between said mounting means and said inner portion, said fingers permitting ready entry of insects into said housing and impeding their egress therefrom, and said circular wall portion providing a crawling surface on which such insects may conveniently alight and from which they may readily proceed through said frustoconical portion into said housing; a scent-producing attractant disposed within said housing on a path substantially between said oppositely disposed apertures, so that air currents flowing along said path may readily carry the scent of said attractant to the outside of said housing; and covering means engaged adjacent the upper end of said sidewall and substantially closing said base.

3,885,342
BALANCING TOY SET

Howard J. Morrison, Deerfield, and Donald F. Nix, Hanover Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sept. 26, 1973, Ser. No. 400,982
Int. Cl. A63h 15/06
U.S. Cl. 46—22 7 Claims

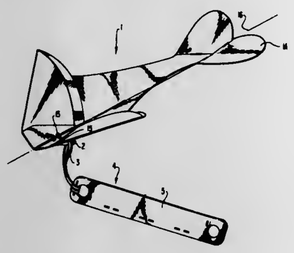


1. A balancing toy set, comprising: a plurality of substantially hollow rigid playing pieces only partially filled with fluent material so as to be shiftable within the playing pieces and, therefore, the playing pieces being capable of being stacked one on top of another in various positions and sequences by shifting the center of gravity of the playing pieces to maintain equilibrium.

3,885,343
TOY AIRPLANE OF FOLDABLE SHEET MATERIAL AND LAUNCHING MEANS FOR AND METHOD OF MAKING SAME

Irvin L. Fields, 708 Center Ave., Holly Hill, Fla. 32017

Continuation-in-part of Ser. No. 277,237, Aug. 2, 1972, Pat. No. 3,768,198. This application June 28, 1973, Ser. No. 374,327
Int. Cl. A63h 27/14
U.S. Cl. 46—79 34 Claims

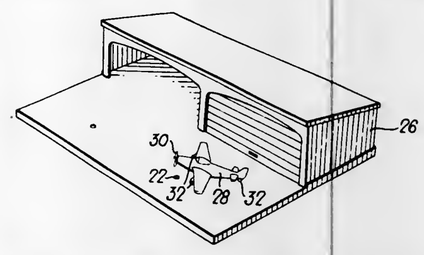


1. A toy airplane comprising: a plurality of sheets of normally flat sheet material folded into an airplane configuration having a body section and a wing section, and launch accommodating means fixedly connected with said wing and body section, both of said body section and said wing section being substantially symmetrically disposed with respect to a longitudinal airplane axis, said body section and wing section being constructed so as to fly through the air upon being released in the air above a predetermined starting velocity, wherein a first of said sheets includes a slot through which a portion of a second of said sheets protrudes in the assembled condition of the airplane, wherein said launch accommodating means is engageable with launching means for accelerating said airplane to above said predetermined starting velocity, and wherein said launch accommodating means includes a third sheet of normally flat sheet material.

3,885,344
STANDS FOR MODEL AIRCRAFT

Duncan Tong, Hong Kong, Hong Kong, assignor to Playart Limited, Hong Kong, Hong Kong

Filed Feb. 27, 1973, Ser. No. 336,206
Claims priority, application United Kingdom, May 10, 1972, 21987/72
Int. Cl. A63h 29/16
U.S. Cl. 46—44 5 Claims

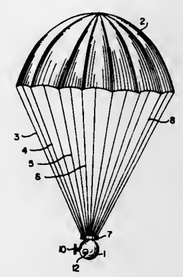


1. A stand for a model aircraft having an airscrew comprising:
a base;
a motor fixed to said base;
an air outlet in said base;
a fan drivably connected to said motor; and
a duct connecting said fan to said air outlet in said base, said outlet having dimensions such that a stream of air can be directed through said outlet against substantially only said airscrew; and
locating means on said base for so positioning said aircraft on said base that only said airscrew is positioned in said stream of air.

3,885,345
TOY PARACHUTE

Gerald O'Neill, Stratford, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 18, 1973, Ser. No. 398,224
Int. Cl. A63b 33/20
U.S. Cl. 46—86 R 3 Claims

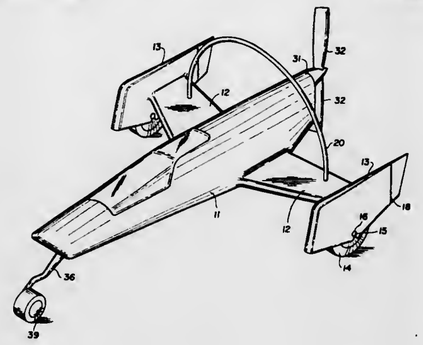


1. A toy parachute, comprising
a hollow ball;
a parachute canopy having a plurality of shroud lines affixed thereto at one end and affixed to the ball at the other end;
a ring around the canopy at the open end thereof for holding the canopy closed during upward flight when the ball is thrown in the air;
a control cord affixed at one end to the ring; and
control means in the ball affixed to the other end of the control cord for drawing the control cord into the ball at a selected time after the ball is thrown into the air thereby pulling the ring off the canopy and permitting the canopy to mushroom out and float the ball to earth.

3,885,346
TOY VEHICLE

Burton C. Trattner, Hempstead, N.Y., assignor to Albert C. Nolte, Jr., Jericho, N.Y., a part interest

Continuation of Ser. No. 159,332, July 2, 1971, abandoned. This application June 11, 1973, Ser. No. 368,572
Int. Cl. A63h 17/00
U.S. Cl. 46—206 4 Claims

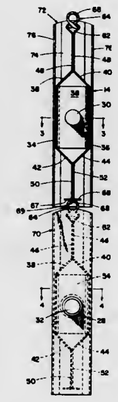


1. A toy vehicle comprising a body and ground engaging wheels, a propeller and an elastic band motor drivingly connected to said propeller, said propeller being a pusher propeller and being inclined to the horizontal to hold the front of the vehicle in a downward position, one of said ground engaging wheels being a front ground engaging wheel located forwardly of the remaining parts of the vehicle and mounted upon a pivoted strut and said elastic band motor being connected to said strut to absorb shock as said front ground engaging wheel strikes an obstacle.

3,885,347
DAMPER WIND STOP AND BLADE SEAL DESIGN

Shizuo R. Adachi, Glendale, and Robert G. O'Neal, La Puente, both of Calif., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 4, 1974, Ser. No. 430,848
Int. Cl. F24f 13/08; E06b 7/08
U.S. Cl. 49—92 2 Claims

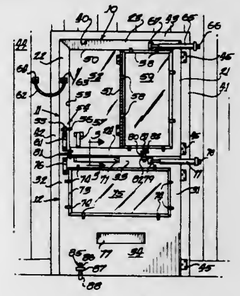


1. A damper assembly comprising: a frame including two pairs of opposed, substantially parallel frame members; a plurality of spaced-apart substantially parallel rigid blades extending longitudinally between one pair of frame members; pivot means fixed to said blades and connecting said blades to said one pair frame members for rotation of said blades about spaced parallel axes between open and closed positions, said axes being disposed in a common plane; means on said pivot means for applying torque thereto to rotate said blades; a resilient sealing member fixed to each blade at one longitudinal-extending edge thereof, said sealing member having a tubular portion extending beyond said edge, the other longitudinally-extending edge of each blade having a generally flat surface disposed substantially transversely of said common plane and adapted to be contacted by the sealing member of an adjacent blade in the closed position of said blades; said contacting portions of said sealing members and said surfaces lying in said common plane for the application of straight-line force to said blades by the pressure of said sealing members exerted on said blades thereby operatively to maintain said blades in closed position while relieving the application of torque of any substantial magnitude on said pivot means to hold said blades in closed position.

3,885,348
PROTECTIVE STORM DOOR

Edith Swearingen, 1174 Lakewood Dr., Lexington, Ky. 40502

Filed Nov. 16, 1973, Ser. No. 416,626
Int. Cl.² E06B 7/28
U.S. Cl. 49—171 7 Claims



1. A security storm door for use in a door opening of a home and the like in a door casing provided therein defining a rectangularly shaped opening having a top horizontal casing member and opposed vertical side casing members, the storm door being of a size to fit in the door opening, the storm door comprising a door divided horizontally into a top door section and a bottom door section, the top door section including a pair of spaced apart vertically extending inner and outer side frame members which are interconnected at their opposite ends by a pair of horizontally extending top and bottom frame members, the bottom door section including a pair of spaced apart vertically extending inner and outer frame members which are interconnected by a pair of spaced apart top and bottom frame members, hinge means associated with each of the inner frame members of each of the top and bottom door sections and connected at one end to the associated frame members with the opposite ends of said hinge means each connected to the respective casing side frame of the door opening for supporting the top and bottom door sections for swinging movement in and out of the door opening about a vertical axis, means for releasably locking the top door section in the door opening closed position, means for releasably locking the bottom door section in the door opening closed position, the frame members of the top door section defining an opening, a vertically extending member extending between the top and bottom frame members of the top door section to divide the opening in the top door section into first and second opening portions, the first opening portion being of a size and configuration adapted to receive small packages and the like

therethrough, a closure member hingedly connected along one edge to the vertically extending member for swinging movement thereabout into and out of a position closing the first opening portion, means for releasably locking the closure member in its closing position to the top door section, a removable transparent member adapted to be disposed within the second opening portion to close the second opening portion, means to removably secure the transparent member to the top door section so that the transparent member is removable without any movement of said closure member, the top door section, or the bottom door section, the transparent member being interchangeable with a screen unit of the general same size and configuration in a manner to adapt the second opening portion to climatic conditions, a shelf mounted to the top frame member of the bottom door section immediately below the first opening portion of the top door section and adapted for the resting of packages and articles thereon, and means for detachably attaching the top and bottom door sections together for simultaneous swinging movement into and out of the door opening.

3,885,349

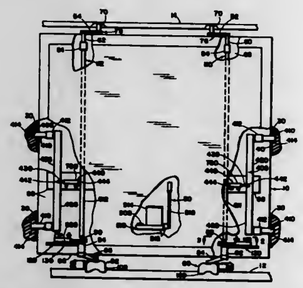
HYDRAULICALLY CONTROLLED DOOR WITH TANDEM CRANK ARMS AND LATCHES

Robert E. Owen, 4522 Manor Circle, Sioux City, Iowa 51104

Continuation of Ser. No. 261,199, June 9, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,155

Int. Cl. E05d *15/10*

U.S. Cl. 49—220 **5 Claims**



1. A laterally movable, sliding door for operation in upper and lower parallel guiding and supporting door tracks and for movement laterally into and out of a door opening and for sliding longitudinally along said tracks to a position uncovering said door opening, an actuation mechanism for laterally moving the door comprising: two generally horizontally extending upper crank arms each rotatably journalled at one end portion of each to an upper section of said door, each of said upper crank arms having an upwardly extending track engaging means at its other end portion making sliding and guiding engagement with the upper door track; at least two horizontally extending lower crank arms rotatably journalled at one end portion of each to the lower end of the door, and each lower crank arm having a downwardly depending track engaging means at its other end portion making sliding and guiding engagement with said lower door track; said upper and lower crank arms each being independently journalled by means respectively comprising upper and lower vertical shaft means to which they are respectively attached whereby said four arms and said shaft means form two upper and two lower crank arm and shaft means assemblies, said door having at least four of said crank arm and shaft means assemblies comprising right side top and bottom and left side top and bottom crank arm and shaft means assemblies, two door control hydraulic cylinder assembly means each having a first portion attached to said door and a second portion movably and reciprocally mounted on said first portion, means operably connecting said second portions of said door control hydraulic cylinder assembly means to said right and left crank arm and shaft means assemblies respectively so that movements of said second portions in said two opposite directions respectively causes door opening and closing operations respectively of said crank arm and shaft means assemblies, controllable hydraulic means attached to said door and operably connected to said door control hydraulic cylinder assembly means for selectively causing movement of said second portions in a selected one of two opposite directions, said door having door latching assembly means mounted thereon, door latching control hydraulic cylinder assembly means operating said door latching assembly means, said hydraulic means having a latching cylinder assembly means control portion which latter is operably connected to said door latching control hydraulic cylinder assembly means and which is provided with a sequencing valve in it which latter when in one position permits flow of hydraulic fluid to said door latching control hydraulic cylinder assembly means causing said latter means to be operated causing said door latching assembly to latch, at least one of said door control hydraulic cylinder assembly means having a controllable valve part engaging means mounted thereon, said sequencing valve being mounted on said door and having a controlling portion engaged by said controllable valve part engaging means to cause said sequencing valve to be in its said one position only at times when said latter second portion has reached a position reached only when said crank arm and shaft means assemblies are in door closed positions.

3,885,350

LIFTING MECHANISM FOR THE WINDOW OF A VEHICLE

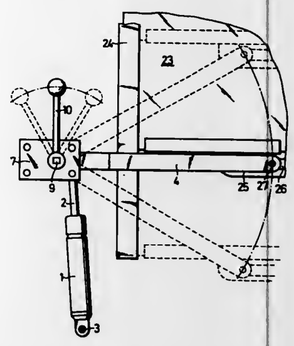
Hans Scheben, Koblenz-Rubenach, Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Germany

Filed Jan. 21, 1974, Ser. No. 435,116

Claims priority, application Germany, Jan. 30, 1973, 2304335

Int. Cl. E05f *11/38*

U.S. Cl. 49—348 **13 Claims**



1. An operating mechanism for lifting a load comprising, in combination:
   a. a support;
   b. a lifting lever pivotally mounted on said support;
   c. means for connecting the load to be lifted to said lever;
   d. spring means operatively interposed between said support and said lever for counteracting the weight of said load, said spring means including
      1. a cylinder member,
      2. a piston assembly received in said cylinder member and projecting therefrom,
      3. a body of gas under pressure in said cylinder member and biasing said piston assembly outward of said cylinder member, and
      4. blocking means for blocking relative movement of said cylinder member and of said piston assembly;
   e. control means for releasing said blocking means;
   f. a manual operating member movably mounted on said support; and
   g. motion transmitting means operatively interposed between said lifting lever, said control means, and said operating member for actuating said control means and for transmitting motion between said operating member and said lever when said operating member is moved on said support.

3,885,351

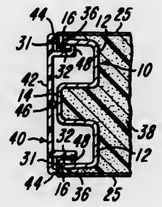
METAL DOOR ASSEMBLY

Raymond E. Imperial; Edward G. Schultz, Jr., and George Scott Hull, all of Richmond, Ind., assignors to Johnson Sheet Metal Works Corp., Richmond, Ind.

Filed Nov. 19, 1973, Ser. No. 416,883

Int. Cl. E06b *3/16;* **E04c** *2/34*

U.S. Cl. 49—501 **12 Claims**



1. An improved metal door assembly comprising a rectangular-shaped metal frame including longitudinally extending parallel metal frame members each having two longitudinally extending parallel spaced channel portions integrally connected by a web portion, said channel portions of each said longitudinal frame member defining two outwardly facing longitudinally extending cavities, each of said channel portions including an inwardly and laterally projected lip portion extending generally flush with said web portion, a set of generally parallel rectangular sheet metal side panels each having outer edge portions formed inwardly and projecting into said cavities for connecting said side panels to said frame, thermal insulation material disposed within said frame between said side panels, a set of elongated trim members extending adjacent said frame members and covering said cavities, and each of said trim members includes a set of longitudinally extending hook-shaped leg portions projecting into said cavities under the corresponding said lip portions for securing said trim members to said frame and said side panels.

3,885,352

SHARPENING MACHINE

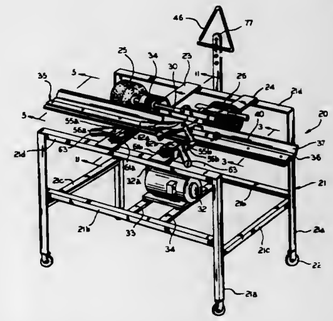
John R. Juranitch, 932 S. Layton Blvd., Milwaukee, Wis. 53215

Filed July 19, 1974, Ser. No. 490,184

Int. Cl. B24b *7/00, 9/00, 3/52, 19/00*

U.S. Cl. 51—3 **18 Claims**

1. A sharpening machine for guiding an edge of a cutting instrument uniformly across a hone to sharpen said edge comprising, a rigid frame, a plurality of power driven honing wheels mounted on said frame, instrument holding means and guide means, said instrument holding means securing said cutting instrument and coacting with said guide means, and said guide means being attached to said frame in spatial relation to said honing wheels and having a plurality of positioning means located thereon coacting with said instrument holding means to position said cutting instrument edge at a plurality of different angles of contact with said honing wheels, whereby said cutting instrument is guided across one of said honing wheels at one angle to form a relief surface thereon and is thereafter guided across another of said honing wheels at another angle forming a finished edge at the extremity of said relief surface.



3,885,353

GRINDING MACHINE

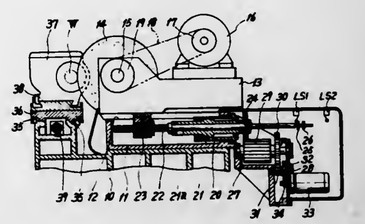
Hiroshi Ota, Kariya, and Tetsuo Matsuzaki, Nishio, both of Japan, assignors to Toyoda-Koki Kabushiki Kaisha, Japan

Filed Oct. 29, 1973, Ser. No. 410,555

Claims priority, application Japan, Oct. 28, 1972, 47-108218

Int. Cl. B24b *51/00*

U.S. Cl. 51—5 D **11 Claims**



1. A grinding machine comprising:
a bed;
workpiece supporting means mounted on said bed;
a wheel slide slidably mounted on said bed and rotatably supporting a grinding wheel driven by a motor thereon;
a hydraulic cylinder provided on said bed and serving to rapidly move said wheel slide toward and away from a workpiece on said workpiece supporting means;
a stepping motor mounted on said bed and serving to feed said wheel slide toward and away from the workpiece for grinding the same;
dressing means mounted on said wheel slide and being movable toward and away from said grinding wheel for dressing the same;
first feed means mounted on said wheel slide for feeding said dressing means toward said grinding wheel by a predetermined dressing amount whenever a dressing operation on said grinding wheel is performed;
second feed means mounted on said wheel slide for actuating said dressing means so as to perform a dressing operation on said grinding wheel;
said stepping motor further serving to move said wheel slide toward the workpiece by a distance corresponding to said predetermined dressing amount whenever the dressing operation is performed; and

original position determination means, having shiftable

original position determination means, having shiftable means slidably supported on said wheel slide, drive means connected to said first feed means for shifting said shiftable means by a distance corresponding to said predetermined dressing amount in a direction of retraction of said wheel slide whenever the dressing operation is performed, and detecting means mounted on said bed for detecting an original retracted position of said wheel side in cooperation with said shiftable means and generating a signal for serving to stop the retraction movement of said wheel slide when said wheel slide is retracted from said workpiece,

whereby said wheel slide can be accurately positioned at the original retracted position thereof which must be varied in accordance with a reduction of said grinding wheel caused by dressing operations thereon.

3,885,354

AUTOMATIC RECIPRO FINISHING MACHINE

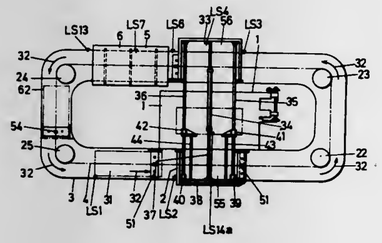
Hisamine Kobayashi, Nagoya, Japan, assignor to Shikishima Tipton Mfg. Co., Ltd., Nagoya, Japan

Filed Aug. 20, 1973, Ser. No. 389,515

Claims priority, application Japan, Dec. 20, 1972, 47-128425; Aug. 18, 1972, 47-96539; Aug. 23, 1972, 47-98219

Int. Cl. B24b *31/00, 51/00*

U.S. Cl. 51—7 **6 Claims**



1. An automatic reciprocating finishing machine for finishing surfaces of workpieces, said machine comprising:

an endless conveyor guide having two parallel passage sections;

an endless chain movably mounted around said conveyor guide;

at least two workpiece carriers for positioning thereon a workpiece, said carriers being mounted for movement about said conveyor guide;

a finishing apparatus positioned between said two parallel passage sections, said finishing apparatus including a trough filled with finishing material, said trough being vertically movable from a lower inoperative position to an upper finishing position, said means to reciprocate workpieces positioned in said finishing apparatus in a horizontal direction within said trough when said trough is in said upper finishing position;

means for automatically operatively connecting said workpiece carriers to said endless chain, whereby said workpiece carriers are moved along said conveyor guide by said endless chain, and for automatically interrupting such connection at predetermined locations about said conveyor guide; and

means for automatically transferring workpieces from one of said workpiece carriers to said finishing apparatus and from said finishing apparatus to another of said workpiece carriers at at least two of said predetermined locations about said conveyor guide.

3,885,355

PNEUMATICALLY DRIVEN GRINDER

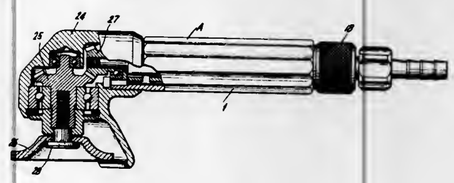
Masakazu Kakimoto, Aichi-gun, Japan, assignor to Ushio Co., Ltd., Japan

Division of Ser. No. 274,905, July 25, 1972. This application July 19, 1973, Ser. No. 380,618

Claims priority, application Japan, Feb. 19, 1972, 47-17424

Int. Cl. B24b *23/02*

U.S. Cl. 51—170 T **2 Claims**



1. A grinder driven by an air motor comprising, in combination, a tubular extrusion defining a relatively elongated tubular casing having a circular cross-section inner surface which is eccentric to the axis of said casing and which is formed with angularly spaced longitudinal grooves extending through at least a portion of the length of said casing and defining air supply and exhaust passage means; means dividing the interior of said casing into a front motor chamber having said grooves therein and a rear air supply and control chamber, a tubular motor cylinder in said motor chamber having a smooth cylindrical outer surface engaging the circular cross-section inner surface of said casing and having radial ports communicating with said air supply and exhaust passage means; an air pressure rotated cylindrical rotor rotatably mounted in said motor cylinder; a shaft projecting from the front end of said rotor for connection to a tool to be driven by said motor; said dividing means having ports connecting said supply and control chamber to said air supply passage means; exhaust port means connecting said exhaust passage means to atmosphere; a connection at the rear of said casing for connecting said air motor to a source of air under pressure, a manually operable control valve controlling communication between said connection and said supply and control chamber; the front end of said casing being externally threaded; a grinder housing threaded onto the front end of said casing; a first bevel gear secured to said shaft and disposed in said grinder housing; a second bevel gear meshing with said first bevel gear; anti-friction means rotatably mounting said second bevel gear in said grinder housing for rotation about an axis perpendicular to the axis of said first-mentioned shaft; and means securing a grinder to said second bevel gear.

3,885,356

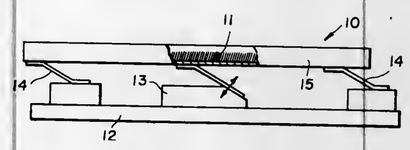
VIBRATORY CONVEYOR AND ABRADER

Jack W. Armstrong, Baldwinsville, N.Y., assignor to Lipe Rollway Corporation, Syracuse, N.Y.

Filed June 20, 1974, Ser. No. 481,124

Int. Cl. B24b *7/02*

U.S. Cl. 51—59 R **11 Claims**



1. A vibratory conveyor and abrader comprising:

a. a support element extending along a direction of feed;

b. means for vibrating said support element in a vertical plane in said direction of feed;

c. pile material on the upper surface of said support element, said pile material having resilient bristles of uniform length inclined from the vertical, the tips of said bristles supporting objects to be fed, and said bristles flexing under said objects as said support element vibrates to move said objects in said direction of feed;

d. said pile material including resilient abrasive bristles of uniform length having particles of an abrasive material extending to said tips of said abrasive bristles; and

e. means for urging said objects into abrasive engagement with said abrasive bristles as said objects move in said direction of feed for evenly abrading said objects.

3,885,357

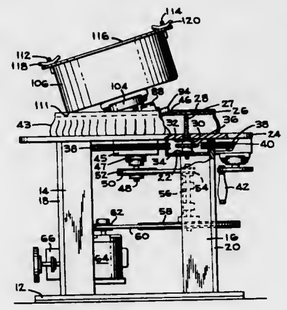
ORBITAL AGITATING APPARATUS

Harvey C. Hoyt, 22744 Alcalde, Cupertino, Calif. 95014

Filed Nov. 19, 1973, Ser. No. 416,752

Int. Cl. B24b *31/04*

U.S. Cl. 51—163 **13 Claims**



1. A machine for agitating an article comprising means defining a generally horizontal substantially planar nonrotatable surface, said surface defining means having an opening therein, flexible torque transmission means extending through said opening, an article supporting platform and means for attaching said platform to said torque transmission means above said surface, said attaching means including means for affording rotation of said platform relative said torque transmission means, said platform having a generally circular rim generally concentric with said rotation affording means, said flexible torque transmission means flexing to permit a peripheral region of said circular rim to bear on said surface, means below said surface for driving said torque transmission means so that said peripheral region of said circular rim describes a closed path on said surface around said opening, and means for securing the article to said platform.

3,885,358

ABRASIVE TOOL AND METHODS OF PRODUCING SAME

Edwin Enzian, Munden, Germany, assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Feb. 19, 1974, Ser. No. 443,538

Claims priority, application Germany, Feb. 20, 1973, 2308258

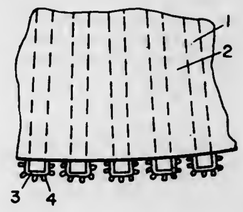
Int. Cl. B24b *5/00, 11/00;* **C08g** *51/12*

U.S. Cl. 51—206 R **20 Claims**

1. An abrasive brush tool, comprising:

a. a plurality of brush bristles;

b. an embedding mass surrounding the bases of the brush bristles, but leaving free ends of the brush bristles nonembedded; and



c. abrasive grain bonded to the free, nonembedded ends of the brush bristles.

3,885,359

HAND TOOLS

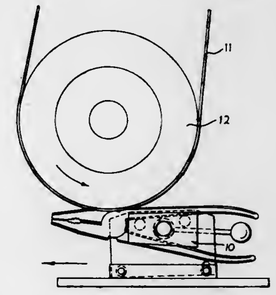
James Thomas Reekes, Cannock, and Neville Lucas Elliott, Sutton Coldfield, both of England, assignors to Elliott-Lucas Limited, Cannock, England

Filed Nov. 29, 1973, Ser. No. 420,314

Claims priority, application United Kingdom, Jan. 5, 1973, 00721/73

Int. Cl. B24b *1/00*

U.S. Cl. 51—328 **3 Claims**



1. A method of making a hand tool of the kind comprising a pair of lever handles pivoted together and extending beyond the pivot to form a pair of jaws, comprising the steps of producing a tool each handle of which is straight over the major part of its length from a point near the free end thereof to a point near the pivot, a substantial portion of the outer side of each jaw being co-linear with the outer side of the handle which is pivoted thereto, mounting the tool in a clamp which is translatable relative to a profiling grinder, and grinding the co-linear outer portions of a jaw and handle to a uniform profile by translating the tool and the clamp, relative to the grinder, in a direction parallel to such co-linear portions.

3,885,360

REINFORCES INFLATABLE

Donato M. Fraioli, Mamaroneck, N.Y., assignor to Air-Tech Industries Inc., Clifton, N.J.

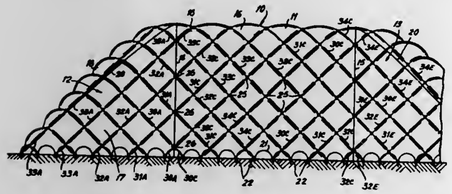
Continuation of Ser. No. 376,137, July 3, 1973, abandoned. This application Oct. 2, 1974, Ser. No. 511,281

Int. Cl. E04b *1/345;* **E04g** *11/04*

U.S. Cl. 52—2 **10 Claims**

1. A reinforced inflatable building comprising in combination an inflatable fabric skin anchored to the ground at its periphery and adapted to be self-supporting upon filling of the interior of the building with air under pressure, a cable network overlying the outer surface of said skin including a plurality of cables lying along first and second intersecting sets of

parallel cable lines, each of said cable lines extending between peripheral ground anchors, means for rigidly clamping the intersecting cables together at the points of intersection, said cable network comprising a number of sections interconnected at connection points, and connectors provided at said connection points for interconnecting the cables in adjacent



cable sections, said sections comprising a number of cables which extend along a cable line in one of said sets through a connector at a connection point and turn to extend along a cable line in the other of said sets, each end of the cables in each of said sections terminating at ground anchors at the edge of the section positioned at the periphery of the building.

3,885,361

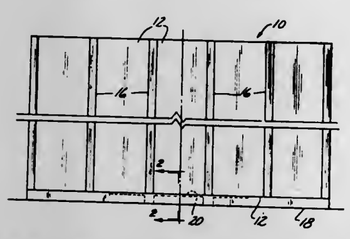
BUILDING WALL PANEL LEVELER DEVICE

Camiel R. De Schutter, St. Clair Shores, Mich., assignor to Perfect Module Systems, Inc., St. Clair Shores, Mich.

Continuation-in-part of Ser. No. 91,083, Nov. 19, 1970, Pat. No. 3,805,471. This application Dec. 11, 1972, Ser. No. 313,941

Int. Cl. E04b 2/74

U.S. Cl. 52—122 **2 Claims**



1. A leveler device for use within a building wall panel, said leveler device comprising:

a first longitudinally disposed support plate having a lower surface thereof adapted to abut the floor on which said wall panel is disposed;

a second longitudinally disposed support plate vertically spaced above said first support plate, said second support plate having an upper surface adapted to abut a portion of said wall;

said first support plate having a spherical cavity on the upper surface thereof;

a connecting member having a spherical end permanently engaged within said spherical cavity of said first support plate forming a universal joint between said connecting member and said first support plate, said connecting member having an upper threaded section engaging a threaded aperture in said second support plate for maintaining said first and second support plates in said vertically spaced relationship, said connecting member having a multi-sided surface thereon forming a wrench engaging means for rotating said connecting member with respect to said first and second support plates while one of said support plates is restrained from rotating motion with respect to said floor such that said second support plate is raised and lowered with respect to said first support plate;

housing means having an upper wall and downwardly depending side walls the bottom surface of said upper wall being in abutment with the upper surface of said second support plate the opposing inner surfaces of said side walls being in an abutting relationship with the side surfaces of said second support plate to restrain said second support plate from relative rotational movement the longitudinal axes of said first and second support plates being disposed along the longitudinal axis of said wall panel when the same is assembled;

said housing means being disposed within said wall panel at a predetermined central location with the upper wall of said housing means having an aperture disposed at the center line of said wall panel, said threaded section of said connecting member being received in said aperture when said leveler device is disposed in said housing means to properly locate said leveler device with respect to said wall panel.

3,885,362

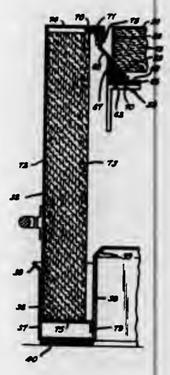
MODULAR NOISE ABATEMENT ENCLOSURE AND JOINT SEAL

Gordon J. Pollock, 24451 Lakeshore Dr., Cleveland, Ohio 44123

Filed Apr. 19, 1973, Ser. No. 352,735

Int. Cl. E04b 1/348; E04g 21/10; E04b 1/88

U.S. Cl. 52—122 **25 Claims**



1. In a modular noise abatement enclosure, the combination of a free-standing open skeletal frame having a ground-engaging channel member with upstanding spaced legs, an upper support rail, posts interconnecting said channel member and support rail in coextensive vertically spaced relationship, height-adjusting means provided on said posts for positioning said upper support rail in a horizontal plane independently of the positional plane of said ground-engaging channel member, and a plurality of side wall panels detachably mounted in co-planar abutting relationship on each side of said frame to form a continuous enclosure, each of said panels having a sound-insulating interior face, each of said side wall panels having a lower edge slidably engaging the legs of said channel member in sealing engagement and having an upper edge detachably engaging said rail and suspended thereby to provide the sole vertical support for said panel and maintain said lower edge out of direct downward load-bearing engagement with said channel member, whereby any one of said panels can be bodily displaced and detached from said frame by relative upward movement thereof to provide interior access to a selected portion of the enclosure.

3,885,363

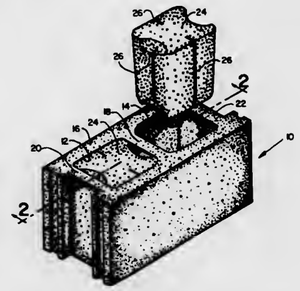
INSULATED BLOCK

Richard W. Whittey, Longmeadow, Mass., assignor to Korfil, Incorporated, Chicopee, Mass.

Continuation of Ser. No. 134,163, April 15, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 398,142

Int. Cl. E04b 1/88

U.S. Cl. 52—125 **14 Claims**



1. The combination comprising a preformed building block of concrete and a preformed insulating insert therefor, said block having an external surface and at least one cavity opening through said surface and extending downwardly a substantial distance therefrom, the cross sectional configuration and dimensions of said cavity being subject to variation within a significant range, said insulating insert being of a light weight foraminous heat insulating and fire retardant material and having an external configuration adapted to enter and substantially fit said cavity in said block, said insert configuration being such that at least a part of an upper portion of the insert adjacent said external surface of the block at a marginal wall of the cavity is disposed substantially downwardly from said surface with the insert entered in said cavity whereby to provide for downward finger access to said marginal wall, and said insert having at least one vertically extending opening so as to be cross sectionally compressible to a degree accommodating said cross sectional variation in said cavity and providing for a slight compression and sufficiently firm engagement of the insert external surface with said cavity wall irrespective of said dimensional variations whereby to frictionally retain the insert in the cavity.

3,885,364

WALL SHELL CONSTRUCTION

Jay A. Lankheet, 579 Ottawa Ave., Holland, Mich. 49423

Filed June 18, 1973, Ser. No. 370,602

Int. Cl. E04h 3/16; E02d 29/02

U.S. Cl. 52—169 **7 Claims**

1. A wall construction for a swimming pool, comprising:

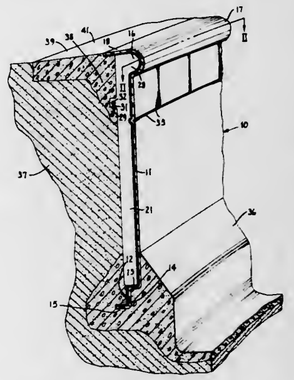
a molded plastic and fiberglass wall section having an open boxlike configuration, said wall section having an enlarged bottom panel which is normally disposed in a substantially vertical orientation, the outer surface of said bottom panel comprising the front side of said wall section;

said wall section including a coping integrally formed with and extending along the upper edge of said panel, said wall section also including an anchoring flange integral with and extending along the lower edge of said panel, said coping and said anchoring flange each projecting rearwardly of said panel;

said wall section further including a pair of end walls integral with and extending along the opposite vertical edges of said panel, said end walls projecting rearwardly from said panel and extending vertically between said coping and said anchoring flange;

a plurality of upright and substantially parallel reinforcing ribs fixedly secured to said wall section, said ribs being laterally spaced from one another and fixedly secured to the rear surface of said panel, each of said ribs being relatively narrow and occupying a relatively minor part of said rear surface;

each of said ribs having an opening extending therethrough perpendicular to the elongated length of said rib, said opening extending in a direction substantially parallel with said rear surface, the openings as formed in said plurality of ribs being substantially aligned; and



elongated rigid rod means received within said plurality of openings and extending between said plurality of ribs, said rod means being spaced rearwardly of said rear surface, whereby said rod means is adapted to be embedded within concrete or the like when said wall construction is installed.

3,885,365

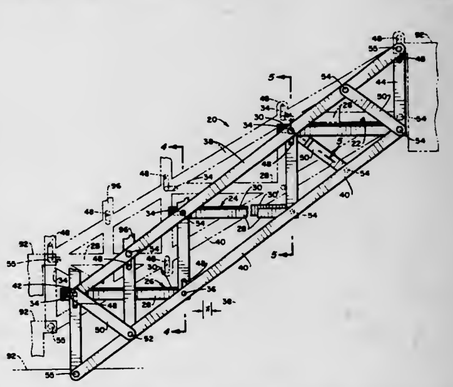
SELF-ADJUSTING STAIR

Joe Warren Cox, 504 Ranch Rd., Thousand Oaks, Calif. 91360

Filed June 6, 1974, Ser. No. 476,873

Int. Cl. E04f 11/06

U.S. Cl. 52—183 **12 Claims**



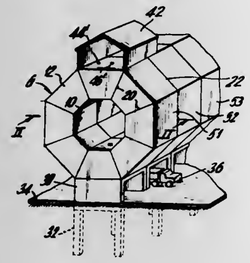
1. A self-adjusting stair framework formed of a plurality of interconnected linkage members, said framework comprising:

a plurality of treads positionable in a substantially horizontal relationship, each of said treads having a front side and a rear side and a pair of lateral sides, each of said treads supported by a pair of tread carriers, a said tread carrier located at each said lateral side of each of said treads;

a pair of upper stringers, each said upper stringer pivotally connected to said tread carriers;

a pair of lower stringers, each said lower stringer pivotally connected to said tread carriers;
a vertical tread spacer located between and pivotally connected to each adjacent pair of said treads; and
at least one longitudinal slot means formed within one of said linkage members, said slot means located at the pivotal interconnection between a pair of said members, said slot means permitting adjustment of said framework between a minimum rise adjustment position and a maximum rise adjustment position, said maximum adjustment position being displaced horizontally and vertically from said minimum adjustment position throughout the adjusting movement.

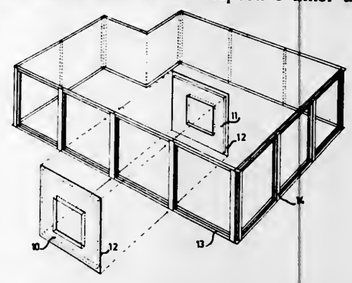
3,885,366
SILO CONSTRUCTION
Mordechai Kedar, 5 Peretz Hayuth St., Tel Aviv, Israel
Filed Nov. 9, 1973, Ser. No. 414,452
Claims priority, application Israel, Nov. 16, 1972, 40862
Int. Cl. E04h *7/22*
U.S. Cl. 52—194 **12 Claims**



1. A silo or like structure having a polygonal external shape comprising a central storage compartment and at least one annular compartment surrounding said central storage compartment and each said central storage compartment and annular compartment having a horizontal central axis; said silo being made up of at least one group of separate hollow structural units each having at least one first pair of opposed parallel sides, one second pair of opposed parallel sides and open opposed ends; said open ends extending in planes defining an angle therebetween, said units being joined together in the form of an annular array about and spaced from the central axis of the silo with said open ends of adjacent said units being contiguous to each other, whereby the first and second pairs of sides define the walls of said annular storage compartment and the space enclosed by the units of all said groups define said central storage compartment.

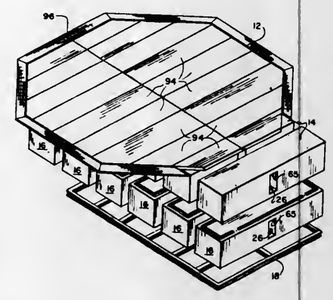
3,885,367
BUILDING WITH A SUPPORTING WALL FRAME STRUCTURE AND WALL PLATES DETACHABLY SECURED THERETO
Svante Thunberg, Slussgatan 1, S-151 36 Sodertalje, Sweden
Filed Oct. 18, 1972, Ser. No. 298,541
Claims priority, application Sweden, Oct. 21, 1971, 13370/71
Int. Cl. E04b *2/74*
U.S. Cl. 52—204 **4 Claims**

1. A supporting wall frame structure in a building, comprising a number of interconnected rectangular main frames having vertical and horizontal main frame members, a number of mutually spaced inner and outer wall panels mounted in the main frames to form inner and outer sides of a wall of a building, each frame comprising an inner and outer sub-frame located opposite each other to form a pair of sub-frames spaced from each other and interconnected by distance members to provide a free interspace between the inner and outer wall panels and sub-frames, respectively, the panels being detachably inserted from opposite sides of the respective main frame into and secured to the respective inner and outer



sub-frame, adjacent main frames having a common vertical frame member comprising two spaced vertical inner and outer vertical frame members to provide an opening therebetween.

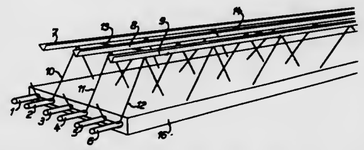
3,885,368
PREFABRICATED BUILDING STRUCTURE
Merrill A. King, Arvada, and Daniel Bargas, Lakewood, both of Colo., assignors to Levingston-Armadillo, Inc., Arvada, Colo.
Filed Mar. 7, 1973, Ser. No. 338,876
Int. Cl. E04h *1/00*
U.S. Cl. 52—79 **6 Claims**



1. An offshore prefabricated building structure comprising:
a preassembled elongated rectangular base gridwork;
a plurality of modular units arranged with a plurality of upper units superimposed on and coextensive with an equal number of lower units, said lower modular units anchored directly to said base gridwork;
each modular unit containing spaced elongated side panels, spaced end panels, spaced inner panels substantially normal to said side panels and defining a hallway therebetween, a top panel interconnecting said side and end panels;
a floor panel interconnecting the side and end panels, said floor panel being vertically spaced from the lower edges of said side and end panels so as to define living quarters above the floor panel and a raceway for utilities below the floor panel, said lower and upper modular units being assembled in side-by-side relation with the side walls of adjoining said units being positively connected in flush relationship to establish a plurality of vertical reinforced supports, said upper and lower units extending transversely across the full width of said base gridwork to form an elongated assemblage of transversely extending modular units along the full length of said structure, said hallways in the upper units and in the lower units opening through the side panels and being aligned with the hallway in an adjacent unit so that a continuous hallway

through the units on each level of the structure is established; and
each said lower modular unit having guide means on the upper surface of its top panel for aligning and positioning each upper unit upon the top panel of a lower unit, said guide means comprising a raised curb extending peripherally around the upper surface of a lower unit and including a beveled surface for guiding the end and side panels of each upper unit into alignment with the end and side panels of each unit, and fastening means co-operating with said guide curbs to secure said upper units in coextensive aligned relation to said lower units.

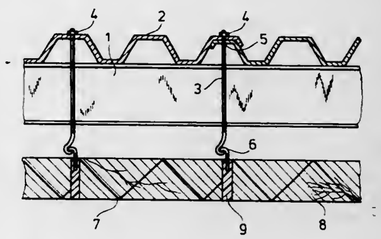
3,885,369
STRUCTURAL ELEMENT
Jean-Pierre Ott, Geneva, Switzerland, assignor to Etablissement Vigarex, Liechtenstein
Filed Mar. 8, 1973, Ser. No. 339,092
Int. Cl. E04c *3/20*
U.S. Cl. 52—340 **7 Claims**



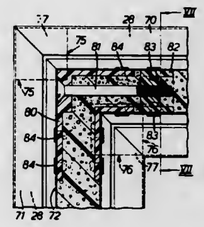
1. A concrete reinforcement and supporting beam structure comprising, at least one bottom pair of metallic longitudinal members disposed parallel longitudinally and spaced laterally from each other, an upper longitudinal metallic member spaced upwardly from said pair of parallel longitudinal members parallel therewith, said upper longitudinal member being disposed in a plane intermediate the bottom pair of longitudinal members reinforcement rod configured zig-zag as triangles having upper apices substantially aligned on and joined to the upper longitudinal member with the sides of the individual triangles joined at the bottom to individual alternate ones of the bottom longitudinal members, said bottom longitudinal member's being spaced from each other a space greater than the thickness of said reinforcement rod, said reinforcement rod having continuations of the sides of said triangles extending transversely of a space between the bottom longitudinal members defining cross members joining the triangles and the bottom longitudinal members, and a prestressed slab of concrete within which said bottom longitudinal members and the transverse cross bars are embedded, said bottom longitudinal members extending axially outwardly from said concrete slab at opposite ends thereof.

3,885,370
CEILING STRUCTURE
Erkki Olli Yrjana Hirvensalo, Helsinki, Finland, assignor to Kaarina Hirvensalo, Helsinki, Finland
Continuation-in-part of Ser. No. 257,812, May 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 32,034, April 27, 1970, abandoned. This application Mar. 22, 1974, Ser. No. 454,014
Claims priority, application Finland, Apr. 25, 1969, 1220/69; Apr. 16, 1970, 1055/70
Int. Cl. E04b *5/52*
U.S. Cl. 52—434 **19 Claims**

1. A heat and sound-insulating ceiling structure suspended from a supporting structure, comprising a slab constituted of mineral wool boards which are heat and sound insulative and composed of fibrous material which is heat-resistant and flameproof, and means forming joints binding the boards to each other at their edges, said means consisting essentially of a heatresistant bonding agent extending substantially from the upper to the lower surfaces of adjacent boards, the bonding agent penetrating into the boards at said edges to rigidify the same and provide bending continuity of the slab at the joint, and supporting means embedded in said bonding agent, said slab being suspended from the supporting structure solely through the intermediary of said supporting means, said supporting means having upper margins which extend above the slab, and lower margins extending into the respective joints to a distance above the lower surface of the boards, said lower margins of said supporting means being covered by said bonding agent, only the bonding agent in said joints being exposed at the lower surfaces of the boards.



3,885,371
ARCHITECTURAL FRAMES
Thomas Francis Oakes, Cheltenham, England, assignor to Martin Bridgewater, Charlton Kings Cheltenham, Gloucestershire, England, a part interest
Continuation of Ser. No. 119,590, March 1, 1971, abandoned. This application July 19, 1973, Ser. No. 380,916
Int. Cl. E04c *3/30;* **F16b** *7/18*
U.S. Cl. 52—475 **5 Claims**



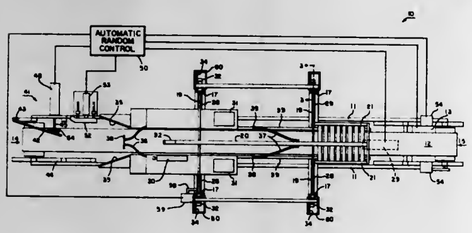
1. A rectangular architectural frame comprising a plurality of elongated hollow structural members rigidly connected together at their ends to provide corners for said frame, each said member being formed from two elongated thin sheet metal parts shaped to define an internal cavity having two laterally projecting flanges extending outwardly from two corners of said cavity, said two sheet metal parts being spaced from one another and being connected together by two seam joints which extend along the longitudinal edges of said sheet metal parts and which are located respectively within said flanges in spaced relation to said cavity, each said seam joint including a layer of thermal insulating material located between the adjacent edges of said two metal parts to keep said edges spaced from one another and to provide a thermal barrier therebetween, each edge of each said sheet metal part being folded over at each said seam and being indirectly interlocked with the adjacent folded edge of said other part through said layer of thermal insulating material which includes portions interleaved respectively between said folded over edges of said sheet metal parts, the extreme edges of both said sheet metal parts being concealed within said seam joints, and a completely concealed hollow L-shaped internal connecting piece at each corner of said frame, said connecting

piece being fabricated of a synthetic plastic thermal insulating material and having two hollow limbs corresponding in shape to the interiors of said hollow structural members and communicating with one another, said limbs respectively fitting into and concealed within the open ends of the respective two hollow structural members at said corner, means connecting each of said hollow limbs to its respective structural member, the said internal cavity of said frame being filled with a rigid synthetic foam material which extends continuously around the interior of the frame and through said hollow internal connecting pieces at the corners of the frame.

3,885,372
AUTOMATIC RANDOM CASE SEALER

Anthony R. Peres, Bristol, N.Y., assignor to Peres Electronic Machines, Inc., Bristol, N.Y.

Filed June 7, 1974, Ser. No. 477,509
Int. Cl. B65b *57/02, 7/20*
U.S. Cl. 53—75 **10 Claims**



1. In an automatic random case sealer having devices including guide rails, flap opening and closing means, glue appliers, and means for pressing glued flaps into sealed engagement, the improvement comprising:

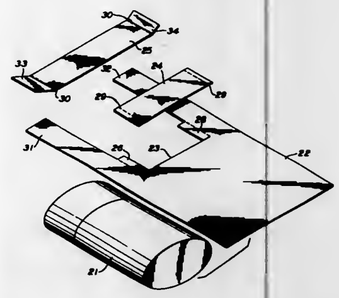
a. switch means in an input region of said sealer for sensing the size of each one of said cases entering said sealer;
b. brake means responsive to said switch means for stopping any one of said cases differing in size from a preceding one of said cases;
c. means responsive to said switch means for clearing said sealer of all of said cases preceding said different size case;
d. an axially movable adjusting shaft;
e. means responsive to said clearing means for positioning said shaft;
f. a vertically adjustable frame supporting said devices;
g. first cam and follower means positioned by said shaft for adjusting said frame to fit the height of said different size case;
h. a pair of horizontally adjustable members supported on said frame and carrying said glue appliers and said guide rails for said cases;
i. second cam and follower means positioned by said frame for adjusting the horizontal separation of said members to fit the width of said different size case; and
j. means responsive to said positioning of said shaft for releasing said brake means after said positioning of said shaft.

3,885,373
APPARATUS FOR SECURING ARTICLES TO A DISPLAY BOARD

Osmund V. Place, Hudson; Philip C. Hungerford, Jr., Cleveland Heights, and John L. Gereby, Wickliffe, all of Ohio, assignors to Cardpak Incorporated, Cleveland, Ohio

Filed Nov. 5, 1973, Ser. No. 412,907
Int. Cl. B65b *61/00*
U.S. Cl. 53—196 **20 Claims**

1. Apparatus for the preparation of display packages having an article secured to a card and at least one joining means for fastening said article to said card, said apparatus comprising: an endless belt carrying said articles along a predetermined path so that the operations for forming the display package

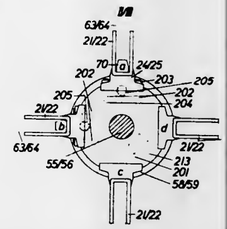


may be performed thereon, transfer means for depositing said card in juxtaposition to said article, means for periodically interrupting movement of said endless belt, and means for applying said joining means to said article and said card.

3,885,374
DEVICE FOR USE IN FOLDING A SHEET OF PACKAGING MATERIAL

Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsberg, Germany

Filed Nov. 1, 1973, Ser. No. 411,875
Claims priority, application United Kingdom, Nov. 17, 1972, 53141/72
Int. Cl. B65b *11/36*
U.S. Cl. 53—234 **4 Claims**



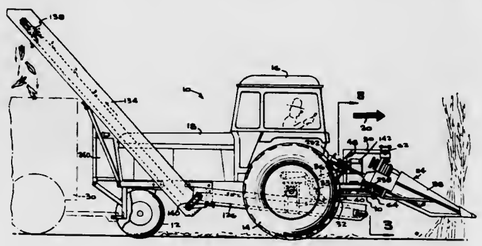
1. A device for use in folding a sheet of packaging material comprising, in combination:

a frame,
first support means rotatably mounted on said frame to be rotatable about a predetermined axis of rotation;
two further support means extending substantially perpendicularly of one another, each said further support means being slidably mounted on said first support means and being rotatable therewith;
two pairs of elongate folder members, said folder members of each said pair being interconnected by a respective one of said further support means and being supported thereby to project radially in mutually opposite directions with respect to said axis of rotation;
stationary cam means connected to said frame to define a first camming surface encompassing said axis and a second camming surface encompassing said axis and located in spaced relationship with said first camming surface;
two roller followers, said roller followers being angularly spaced apart to define an angle of 90° therebetween at said axis of rotation, each roller follower contacting said first and second camming surfaces to follow a displacement path defined therebetween and being rotatably mounted on a respective one of said further support means to impart reciprocatory motion thereto on each rotation of said first support means about said axis, a first portion of said roller follower displacement path describing an arc of constant radius of a first value, a second portion of said path describing an arcuate path of a radius progressively decreasing from said first value to a second value, a third portion of said path describing an arc of constant radius of said second value, and a fourth portion of said path describing an arcuate path of a radius progressively increasing from said second value to said first value, whereby each said folder member is displaced between a radially outer operative position and a radially inner inoperative position on each rotation of said first support means about said axis.

3,885,375
TRACTOR MOUNTED CORN HARVESTER

Ward W. Solterbeck, Payette, Idaho, assignor to American Fine Foods, Inc., Payette, Ind.

Filed Oct. 23, 1973, Ser. No. 408,176
Int. Cl. A01d *35/12*
U.S. Cl. 56—15.6 **20 Claims**



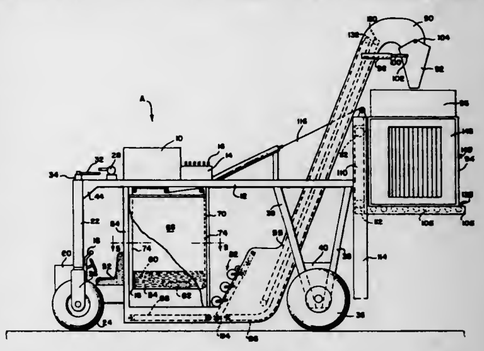
1. A corn harvester assembly for use on a conventional tractor being driven rearwardly with respect to its normal direction of movement and having steering wheels on one end of an engine housing, a transverse drive wheel axle housing adjacent the other end of said engine housing, a power takeoff shaft and hitch means adjacent said drive wheel axle housing at the rear portion of the tractor during its normal direction of movement, said harvester assembly comprising a supporting frame, connector means on said supporting frame dimensioned and structured for enabling connection of said supporting frame to said hitch means to be supported by said hitch means, a plurality of individual row corn harvester units mounted on said supporting frame and facing rearwardly with respect to the normal direction of operation of said tractor when said supporting frame is mounted on said hitch and power transmission means positioned to be connectable to said power takeoff shaft for providing driving power to said corn row harvester units when said supporting frame is mounted on said hitch whereby said harvester assembly can be employed for harvesting closely spaced corn rows when said tractor is operated in a direction of movement opposite its normal forward direction of movement.

3,885,376
TOBACCO PROCESSING SYSTEM AND METHOD

William H. Johnson, Raleigh, N.C., assignor to Research Corporation, New York, N.Y.

Filed Feb. 13, 1973, Ser. No. 332,210
Int. Cl. A01d *45/16*
U.S. Cl. 56—27.5 **10 Claims**

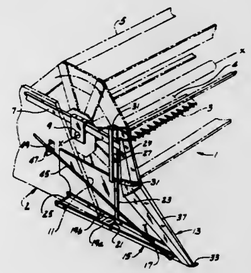
1. A tobacco processing machine comprising a tobacco leaf defoliating means; means for transporting the defoliated leaves from said leaf defoliating means to an elevated position, first and second leaf cutters, means mounting said first and second leaf cutters in structural association with said leaf transporting means for cutting the leaves along mutually perpendicular planes as said defoliated leaves are being transported; and means for directing the cut leaves to bulk container filling means.



3,885,377
CROP DIVIDER FOR HARVESTER

Ralph D. Jones, Pana, Ill., assignor to Nor-Lo Engineering Co., Assumption, Ill.

Filed Mar. 8, 1974, Ser. No. 449,215
Int. Cl. A01d *63/00*
U.S. Cl. 56—314 **5 Claims**



1. A crop divider adapted for attachment to a harvester or the like for dividing crops to be harvested from crops immediately adjacent and entangled with the crops to be harvested as the harvester moves through a field so as to insure uniform feed of crop to the harvester and to prevent entanglement of the crop in the harvester, said harvester having a cutter for cutting the crop to be harvested and a reel for directing the crop toward the cutter and into the harvester, said reel being rotary about a generally horizontal axis extending transversely of the direction of travel of the harvester forward of said cutter, said divider comprising a generally vertically disposed member adapted for securement to the harvester adjacent the ends of the cutter and reel and extending forwardly of the cutter and said axis and above said axis, said member having a bottom edge adapted either to ride on the ground or to be spaced somewhat thereabove, said bottom edge extending substantially forwardly of said cutter, a first portion having a first crop dividing edge angling upwardly and rearwardly from the forward end of said bottom edge for engaging the crop to be untangled and separated and for lifting said crop as the harvester moves forwardly thereby to at least partially untangle uncut crops to be harvested from adjacent uncut crops, a second generally vertical portion positioned above said first portion having a second crop dividing edge continuous with and extending upwardly from the upper end of said first dividing edge, said first and second dividing edges meeting at a junction substantially forward of and generally at the elevation

of said axis with said second dividing edge being inclined to the horizontal at a much steeper slope than the first dividing edge so that the entangled crop is caused to abruptly move forwardly with and/or upwardly along the second dividing edge as the harvester moves forward thereby to insure separation of the crop to be harvested from the crops immediately adjacent thereto, said second dividing edge extending above said junction to insure separation of the crop prior to the crop being cut, and means adapted for connection of the divider to the harvester adjacent one end of said reel for enabling generally vertical swinging movement of the divider relative to the harvester about a generally horizontal axis extending transverse to the divider in response to changing ground contours thereby to prevent the forward end of the divider from digging into the ground upon encountering changes in ground contour.

3,885,378

FALSE TWISTING APPARATUS

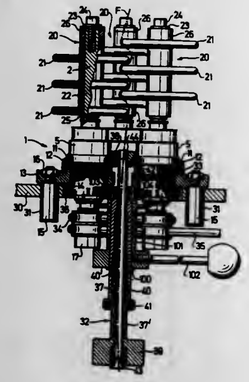
Friedrich Schuster, Hammelburg, Germany, assignor to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

Filed Apr. 12, 1974, Ser. No. 460,459

Claims priority, application Germany, Apr. 16, 1973, 2319153

Int. Cl. D02g *1/04, 1/00*

U.S. Cl. 57—77.45 **10 Claims**



1. Apparatus for false-twisting threads by means of friction elements, comprising:

three spindles disposed to form the corners of an equilateral triangle in plan view;

means for rotatably mounting said spindles;

at least one rotationally symmetrical friction element on each spindle;

means for guiding thread in a path of travel past said friction elements;

said rotationally symmetrical friction elements mutually overlapping to cause thread in said path of travel to follow a zig-zag path;

means for simultaneously adjusting the position of said spindles with respect to both said path of travel of said thread and the distance between said corners of said equilateral triangle; and

means to move said mutually overlapping spindles to thereby move said friction elements into and out of mutually overlapping relationship to facilitate threading of the apparatus when said friction elements are out of mutually overlapping relationship.

3,885,379

SYSTEM FOR MOUNTING SPINDLE BEARING HOUSINGS

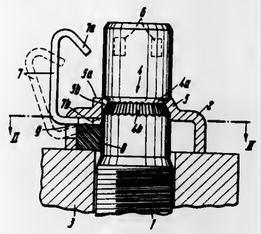
Karl Ellinger, Reichenberg, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed Oct. 3, 1973, Ser. No. 403,332

Claims priority, application Germany, Oct. 14, 1972, 2250472

Int. Cl. D01h *7/14, 7/22*

U.S. Cl. 57—132 **8 Claims**



1. A system for mounting a spindle bearing housing to a spindle bank comprising a tapered annular groove formed within the outer surface of said housing, a bell shaped flange adapted to rest on said spindle bank and to surround said housing, said flange having a collar adapted to be beaded and inserted within said groove, said beaded collar conforming to the taper and inclination of said annular groove.

3,885,380

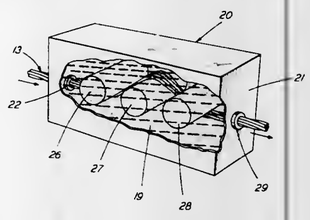
MANUFACTURING FILLED CABLE

Joseph Michael Hacker, Fallston, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 15, 1973, Ser. No. 388,694

Int. Cl. D02g *3/36*

U.S. Cl. 57—162 **8 Claims**



1. A method of making a stranded core having the interstices thereof filled with a composition, which includes the steps of:

stranding a plurality of elongated members about a longitudinal center line to form a core, each of the elongated members having at least a predetermined yield strength;

advancing the stranded core through a bath of a composition;

applying forces to the core to first cause the configuration of the core to be changed to expose portions of the elongated members which in the original configuration of the core are not exposed to the composition and then to permit the elongated members because of the elastic properties associated with the yield strength thereof to be reformed into a stranded core and cause the interstices between the elongated members to be filled substantially with the composition; and

removing excess composition from the reformed core to form a generally regularly shaped contour of the composition about the core.

3,885,381

BATTERY-POWERED TIMEPIECE WITH EXTERNALLY ACCESSIBLE CIRCUITRY

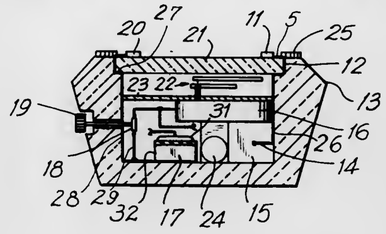
Masami Kasai, and Yoshio Morita, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 296,410, Oct. 10, 1972, abandoned. This application Sept. 25, 1974, Ser. No. 509,156

Claims priority, application Japan, Oct. 7, 1971, 46-79043

Int. Cl. G04c *3/00*

U.S. Cl. 58—23 BA **10 Claims**



1. In a quartz-crystal oscillator timepiece driven by a battery, and having a transparent cover, the improvement comprising a plurality of adherent conductive elements on the exterior of said cover, said elements being electrically connected to the circuitry of said timepiece so that the voltage of said battery may be monitored by making contact with selected conductive elements.

3,885,382

REDUCED FRICTION WATCH CANNON SHAFTS

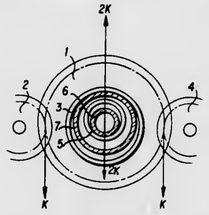
Max Hetzel, Bienne, and Hans Kocher, Buren, both of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Apr. 8, 1974, Ser. No. 458,813

Claims priority, application Switzerland, Apr. 18, 1973, 005839/73

Int. Cl. G04b *13/02*

U.S. Cl. 58—138 **6 Claims**



1. In a watch having at least approximately coaxial minute and hour tubes respectively which rotate with different speeds in the same direction and from which one carries the minute hand and the other the hour hand, the improvement comprising a bearing element for preventing friction between said tubes.

3,885,383

EXPANDABLE BAND

Shoichi Tanaka, No. 24, 3-chome, Tokyo, Japan

Division of Ser. No. 206,746, Dec. 10, 1971, Pat. No. 3,798,729. This application Nov. 9, 1973, Ser. No. 414,361

Claims priority, application Japan, Dec. 26, 1970, 45-119124

Int. Cl. F16g *13/24*

U.S. Cl. 59—79 R **3 Claims**

1. In an elastic, flexible band for a bracelet, wristwatch, or the like, which is capable of expanding and contracting, a single continuous wire extending along the entire length of the band and having successive portions of coiled configuration forming a plurality of successive coils which have parallel axes and which are arranged in a zig-zag pattern to form a series of outer coils which alternate with a series of inner coils, and the wire portions at the ends of each coil of one series extending



in opposite directions to the next adjacent coils of the other series, a plurality of said wires being situated with their coils coaxially arranged, and a plurality of retaining pins extending through at least some of the coaxially arranged coils for holding them together, at least some of said retaining pins being in the form of permanent magnets.

3,885,384

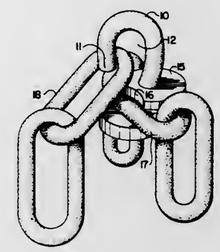
HOOK CONNECTOR ASSEMBLY

Roger L. Gower, Suite 302, 1911 Jefferson Davis Hwy., Arlington, Va. 22202

Filed Jan. 4, 1974, Ser. No. 430,752

Int. Cl. F16g *15/00*

U.S. Cl. 59—93 **2 Claims**



1. Apparatus for detachable connection of a link to a hook or the like comprising:

a hook having a tip, a throat, a curved shank, and a base plate integrally connected with the shank,

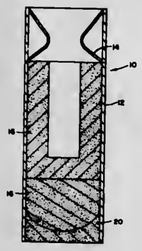
a safety ring being slidable along and rotatable about said shank,

the curvature of said shank being such as to move said safety ring in translation away from said tip as said ring is moved along said shank away from the location of said base plate,

said safety ring defining therein a recess at its edge,

said safety ring in its position adjacent said base plate restricting entry of the link into the throat of the hook and permitting entry thereof only as said safety ring is moved along said shank away from base plate and concurrently is rotated about said shank to move said recess into position directly opposite said tip of said hook.

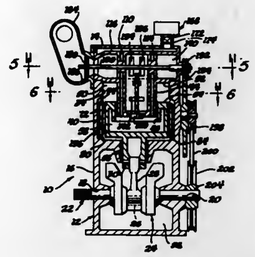
3,885,385
BASE DRAG REDUCTION
Lawrence N. Nicastro, and John R. Munger, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 22, 1972, Ser. No. 316,601
Int. Cl. F02k 9/06
U.S. Cl. 60—250 1 Claim



1. In combination with a solid propellant rocket motor having a propellant grain configuration selected from an end-burning grain configuration, a star-perforated grain configuration, or a cylindrical grain configuration contained within a solid propellant rocket motor case, said motor case having a head-end and an aft-end; and an exhaust nozzle affixed to said motor case at the aft-end thereof; a drag reducing propellant having a predetermined configuration positioned within said case, said drag reducing propellant having the predetermined configuration for use with said propellant grain configuration selected, said drag reducing propellant being a fuel rich, slow burning propellant that is burned a coast period of an in-flight solid propellant rocket motor to provide gases for ejecting rearward of said exhaust nozzle to relieve a partial vacuum formed by air passing by the non-streamlined surfaces of said exhaust nozzle and to thereby eliminate the base drag of said in-flight rocket motor during said coast period, said drag reducing propellant selected from the composite propellant comprised of polybutadiene acrylic acid in amounts from about 65 to about 89 percent by weight; an oxidizer selected from ammonium perchlorate and ammonium nitrate in amounts from about 10 to about 25 percent by weight; and a burning rate depressant selected from an organic or inorganic phosphate compound in amounts from about 1 to about 10 percent by weight and the cellulose base propellant comprised of cellulose acetate in amounts from about 50 to about 75 percent by weight; an inert plasticizer selected from phthalate esters, adipate esters, sebacate esters, and aryl phosphate in amounts from about 15 to about 45 percent by weight; and oxidizer-energetic plasticizer selected from nitrate esters of trihydric alcohols in amounts from about 5 to about 10 percent by weight.

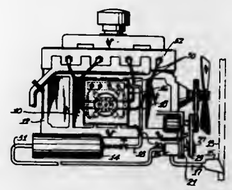
3,885,386
ANNULAR PISTON ENGINE WITH AFTERBURNER AND SEPARABLE POWER TURBINE
William V. Bachmann, 22517 Ten Mile Rd., St. Clair Shores, Mich. 48080
Continuation-in-part of Ser. No. 363,247, May 23, 1973, Pat. No. 3,807,168, which is a continuation of Ser. No. 116,892, Feb. 19, 1971, abandoned. This application Apr. 22, 1974, Ser. No. 462,790
Int. Cl. F02b 37/02
U.S. Cl. 60—307 24 Claims

1. An internal combustion engine, comprising engine housing means, an annular cylinder formed in said housing means, said annular cylinder comprising a first radially inner annular wall and a second radially outer annular wall, combustion chamber means communicating with said annular cylinder, ring piston means received in said annular cylinder for reciprocating movement therein, motion transmitting means operatively connected to said ring piston means for transmitting the reciprocating movement of said ring piston means to associated power output means, afterburner means situated generally radially inwardly of said first inner annular wall and in communication with the ambient atmosphere, exhaust passage means communicating between said combustion chamber means and said radially inwardly situated afterburner means, said afterburner means being effective to receive said exhaust gases from said exhaust passage means and to enable



further continued combustion of said exhaust gases within said afterburner means before discharging said exhaust gases to said ambient atmosphere, and power turbine means situated generally in the path of flow of said exhaust gases so as to extract therefrom additional power as said exhaust gases flow from said afterburner means to said ambient atmosphere, said power turbine means being carried by a separable engine housing portion of said engine housing means permitting said power turbine means to be readily disassembled from said engine.

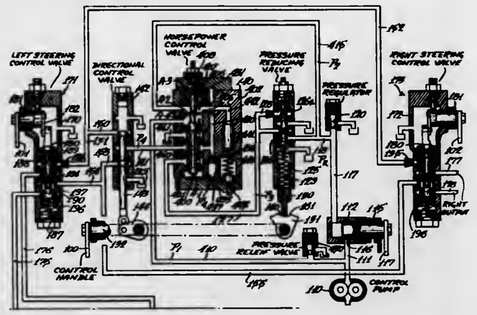
3,885,387
AIR DRIVE ADAPTOR
Garnet J. Simington, General Delivery, Lethbridge, Alberta, Canada
Continuation-in-part of Ser. No. 182,387, Sept. 21, 1971, abandoned. This application June 22, 1973, Ser. No. 372,559
Int. Cl. F15b 1/20
U.S. Cl. 60—370 3 Claims



1. Apparatus removably adaptable to an internal combustion engine having at least one cylinder containing a piston reciprocable therein, an intake valve, an exhaust valve and a hole for reception of a spark plug, said apparatus comprising a source of compressed, non-combustible gas, valving means including a manifold and at least one gas distribution valve, said gas distribution valve being connected to said cylinder at said hole and to said manifold, said manifold also being connected to said source of compressed gas, and valve actuation means connected to said gas distribution valve, said gas distribution valve upon actuation by said valve actuation means permitting introduction of said compressed gas through said spark plug hole from said manifold into said cylinder when

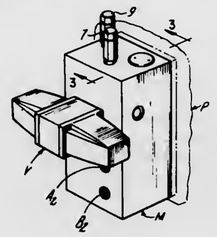
said intake and exhaust valves are closed and said piston is in a position to provide a power stroke in said engine.

3,885,388
CONTROL FOR A HYDROSTATIC TRANSMISSION
Stanley W. Crull, Ames, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.
Filed Feb. 13, 1974, Ser. No. 442,191
Int. Cl. F16h 39/46
U.S. Cl. 60—444 12 Claims



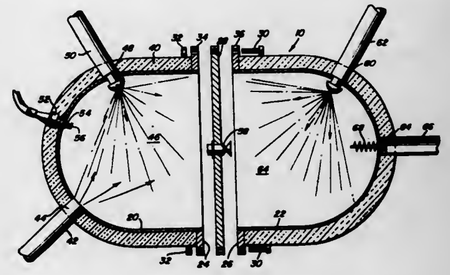
1. A control for a hydrostatic transmission having a pump, a motor, a charge pump drivable by a prime mover and a displacement control associated with one of the pump and motor and including means subjected to a control pressure for setting the transmission speed, a circuit for establishing the control pressure of a control hydraulic fluid including a control pump drivable by the prime mover and with a pressure output corresponding to the speed of the prime mover, and means for modifying the operation of the hydrostatic transmission in response to load imposed on the prime mover to maintain the prime mover at nearly constant speed including a valve in said circuit positionable in response to the pressure output of the control pump for controlling the value of the control pressure uniformly regardless of uncontrollable variables such as viscosity and temperature of the hydraulic fluid.

3,885,389
MANIFOLD WITH INTERNAL FILTER
James S. Hull, Waterford, Mich., assignor to Melvin Corporation, Bay City, Mich.
Filed Sept. 26, 1973, Ser. No. 400,784
Int. Cl. F15b 15/18
U.S. Cl. 60—453 4 Claims



1. A manifold assembly for connecting a hydraulic pump with a hydraulic actuator for driving the same in one direction or the other as determined by a four way valve, said manifold having a first set of ports adapted to be connected to the pump for receiving fluid under pressure from the pump and returning fluid to the pump, a second set of ports adapted to be connected to the actuator to direct fluid under pressure to the actuator and receive fluid from the actuator, first and second sets of valve ports adapted to be connected to the four-way valve, a plurality of passages in the manifold for connecting the first set of ports with the first pair of valve ports and for connecting the second set of ports with the second pair of valve ports, a bore in said manifold interposed in one of the plurality of passages connecting the four-way valve with one of the first set of ports so as to return fluid to the pump, and a removable filter cartridge in said bore located so as to filter fluid flowing from said four-way valve to pump.

3,885,390
INTERNAL COMBUSTION AND STEAM PRESSURE GENERATOR WITH POWERED EXPANSION ENGINE
Glen R. Evans, Rt. 1, Box 145, Isanti, Minn. 55040
Filed Feb. 12, 1974, Ser. No. 441,841
Int. Cl. F03g 7/06
U.S. Cl. 60—531 5 Claims

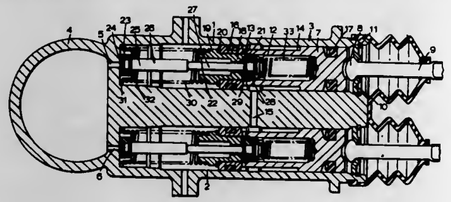


1. A pressure generator comprising a closed bulbous pressure vessel including an internal transverse partition dividing the interior of the vessel into at least first and second chambers, first pump driven supply means for pumping air and fluid fuel, under pressure, into said first chamber, said generator including restricted flow passage means communicating said first and second chambers, said generator further including second pump driven supply means for injecting a spray of vaporizable liquid under pressure into said second chamber for substantially flashing into gas upon being subject to the heat of combustion gases entering said second chamber from said first chamber through said passage means, gas pressure outlet means opening outwardly from the second chamber of said vessel for discharging gas under pressure from said generator, said pressure vessel including a pair of vessel end sections having closed remote ends and open adjacent ends opening toward each other, said partition including outer peripheral edges clamped between and sealed relative to the open ends of said vessel sections and said passage means defining a passage through a central portion of said partition, said pressure vessel further including ignition means operatively associated with the interior of said first chamber for at least initiating the combustion of a combustible mixture therein, and pressure controlling valve means operatively associated with said steam pressure outlet operative to maintain at least a minimum pressure within said second chamber.

3,885,391
HYDRAULIC BRAKING SYSTEM
Roy Campbell, Lickey Rock near Bromsgrove, and Anthony George Price, Birmingham, both of England, assignors to Girling Limited, Brimingham, England
Filed June 25, 1973, Ser. No. 372,957
Claims priority, application United Kingdom, July 7, 1972, 31847/72
Int. Cl. F15b 7/08
U.S. Cl. 60—581 11 Claims

1. An hydraulic master cylinder assembly for a vehicle braking system comprising first and second separate master cylinders, each comprising a piston adapted to work in a bore, a pressure space in said bore in front of said piston, means

defining a transfer chamber, and a transfer valve which is normally closed and which is opened by movement of said piston in a direction to pressurise hydraulic fluid in said pressure space, wherein said transfer chambers are connected by a transfer passage and at least one of said master cylinders incorporates pressure relief means defining, at least when said

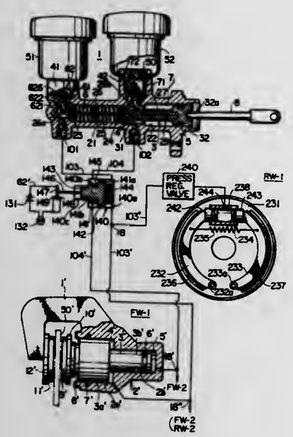


transfer valve of said one master cylinder is closed, a leak path between said transfer chamber of that master cylinder and a recuperation port for connection to a reservoir for fluid to permit fluid seepage therebetween to compensate for increase in volume of fluid within said transfer chambers due to thermal expansion of hydraulic fluid.

3,885,392
DUAL BRAKE SYSTEM

Tetsuo Haraikawa, 5-44-26, Narashinodai, Funabashi-shi, Chiba-ken, Japan

Continuation-in-part of Ser. No. 141,316, May 7, 1971, abandoned. This application July 30, 1973, Ser. No. 383,645
Claims priority, application Japan, May 9, 1970, 45-39456; May 26, 1970, 45-45063
Int. Cl. F15b 7/08
U.S. Cl. 60—581 **3 Claims**

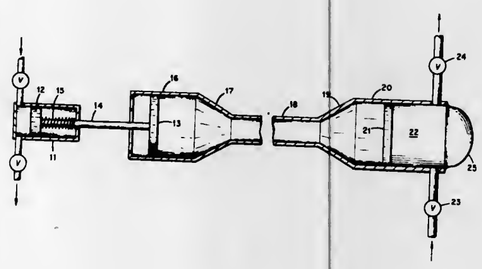


1. A dual hydraulic brake system for a powered vehicle having two front wheels and two rear wheels, said system comprising first and second mutually independent hydraulic brake systems operable by a single manual braking means, said system comprising:
- a master cylinder having a stepped bore defining a larger diameter bore portion and a smaller diameter bore portion and a stepped piston slidably mounted in said bore defining mutually and hydraulically independent larger and smaller working chambers within the stepped bore having a relative cross-sectional ratio of 1: 1.6 – 1:2.2;
- a pressure compensator having a stepped bore defining a larger diameter bore portion and a smaller diameter bore portion and a stepped piston normally resiliently balanced and slidably mounted in said stepped bore defining mutually and hydraulically independent larger and smaller working chambers having different effective cross-sectional areas, the relative ratio therebetween being 1 : 1.2 – 1:1.6;
- a front wheel brake cylinder for each of said front wheels, having mutually and hydraulically independent larger and smaller working chambers, the relative ratio between their effective cross-sectional areas being 1 : 1.4 – 1 : 2;
- a rear wheel brake cylinder for each of said rear wheels, having a sole working chamber;
- said first hydraulic brake system including said larger working chambers of said master cylinder, said compensator and front brake cylinders and the working chambers of said rear wheel brake cylinders; and
- said second hydraulic brake system element including said smaller working chambers of said master cylinder, said compensator and said front wheel brake cylinders, whereby the working hydraulic pressure prevailing in said first system element being lower than that prevailing in said second system element under normal braking conditions.

3,885,393
HYDRAULIC LOAD MATCHING DEVICE

John P. Hanson, McKeesport, Pa., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Sept. 7, 1973, Ser. No. 395,219
Int. Cl. F15b 7/00
U.S. Cl. 60—583 **3 Claims**

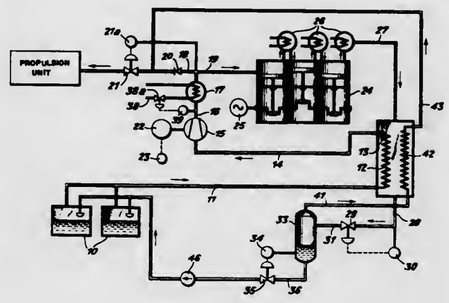


1. A device for matching load characteristics to engine characteristics comprising:
- an input shaft from an associated engine cylinder;
- a first piston at the end of said shaft;
- a master cylinder containing said shaft and said piston;
- a nozzle at one end of said master cylinder;
- a cylindrical transmission tube at the converging end of said nozzle;
- a conical diffuser at the opposite end of said transmission tube;
- a slave cylinder connected to said diffuser at the divergent end of said diffuser;
- a second piston contained within said slave cylinder; and
- an incompressible fluid contained within said master cylinder, said nozzle, said transmission tube, said diffuser, and said slave cylinder for transmission of motion between said first piston and second piston.

3,885,394
PROCESS AND APPARATUS FOR TREATING AND UTILIZING VAPORIZED GAS IN A SHIP FOR TRANSPORTING LIQUIFIED GAS

Karel Witt, Volketswil, and Christian Trepp, Winterthur, both of Switzerland, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Dec. 10, 1973, Ser. No. 423,122
Claims priority, application Switzerland, Dec. 11, 1972, 17958/72
Int. Cl. F01k 25/08
U.S. Cl. 60—651 **9 Claims**



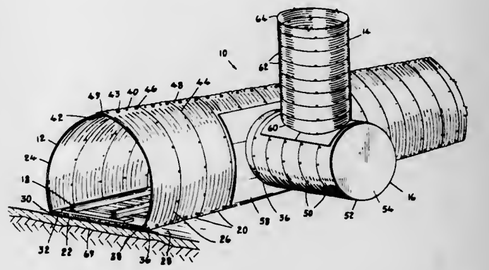
1. A process of treating and utilizing vaporized gas from a liquified gas tank of a ship for transporting liquified combustible gas comprising the steps of
- drawing off a flow of vaporized gas from at least one gas tank;
- compressing said flow of vaporized gas;
- dividing the compressed flow of gas into at least two component flows;
- feeding one of said gas component flows to a propulsion unit of the ship;
- compressing a second of said gas component flows;
- passing said compressed second gas component flow into heat exchange relation with a continued flow of said flow of vaporized gas to heat said continued flow of vaporized gas prior to compressing of said continued flow of vaporized gas; and
- thereafter reducing the pressure of said second gas component flow and feeding a liquid part of the reduced pressure gas component flow to at least one gas tank.

3,885,395
UNDERGROUND MINING ARCH GATEWAY SYSTEM

Jens Hilligso Madsen, 60 Brentwood Dr., Guelph, Ontario, Canada

Filed Mar. 26, 1973, Ser. No. 344,926
Claims priority, application Canada, Dec. 29, 1972, 161720
Int. Cl. E21d 19/00
U.S. Cl. 61—45 R **10 Claims**

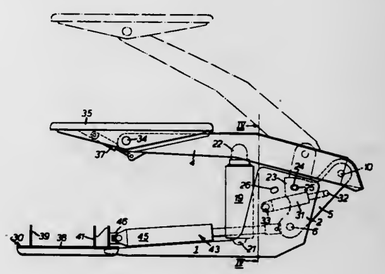
1. A gangway system manually erectable within confined underground openings excavated during backfill mining to provide a horizontal network for the progressive excavation of ore, comprising a plurality of interconnected elongated horizontal portions erectable underground in a confined space in communication with a plurality of first and second vertical portions, said horizontal portion being formed of a plurality of over-lappingly connected arch shaped sections comprising:
- a. a flat corrugated steel base member having first and second ends and adapted to support mine cars on tracks,
- b. a first corrugated steel curved wall member having upper and lower ends, said lower end adapted to be securely connected to said first end of said base member, and
- c. a second corrugated steel curved wall member having upper and lower ends, said lower end adapted to first be securely connected to said second end of said base member, said upper end adapted to then be securely connected to said upper end of said first wall member,
- said horizontal portions being adapted to be buried in a first layer of backfill after erection with said vertical portions projecting upward therefrom through said first layer of backfill to an upward horizontal ore layer, said vertical portions being upwardly extendible to project through successive upward horizontal backfill layers to successive upward horizontal ore layers, said vertical portions being spaced to provide access to said successive ore layers and for economical removal of ore downwardly therethrough to said horizontal network.



3,885,396
MINE ROOF SUPPORTS

Eric McIvor Snowden, and John Hirst Walker, both of Cheltenham, England, assignors to Dowty Mining Equipment Limited, Gloucestershire, England

Filed Apr. 23, 1973, Ser. No. 354,159
Claims priority, application United Kingdom, Apr. 27, 1972, 19505/72
Int. Cl. E21d 15/44
U.S. Cl. 61—45 D **6 Claims**

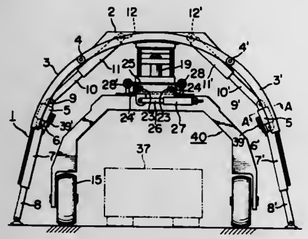


1. A mine roof support comprising a floor beam, a roof lever, a link pivotally secured to the floor beam and pivotally secured to the roof lever, the pivot axes being parallel and spaced apart the one from the other along the link, a variable length strut such as a hydraulic jack engaging pivotally between the floor beam and the roof lever at positions spaced from the link to vary the inclination of the roof lever relative to the floor beam over an angular range whereby to vary the spacing between the free ends of the beam and the lever remote from the link, and locking means capable of fixing the link mechanically in anyone of at least two alternative positions relative to the floor beam providing alternative mechanically fixed positions for the roof lever pivot axis.

3,885,397
MINING SHIELD-SUPPORTER

Masao Fujimori, Tokyo, Japan, assignor to Taiheiyo Coal Mining Co., Ltd., Japan

Filed Nov. 23, 1973, Ser. No. 418,766
Int. Cl. E21d *15/02*, *15/58*
U.S. Cl. 61—45 R **1 Claim**

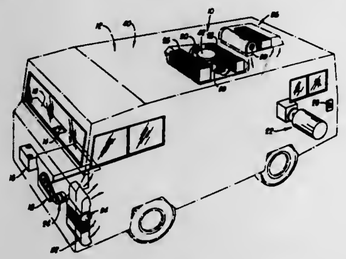


1. A shield supporter for a mining tunnel for use in the cutting of a workface in a tunnel said shield supporter comprising:
   a. a central semi-ellipse member (2) with connecting ends;
   b. side semi-ellipse members (3) with inner walls connected by coupling members to said opposite connecting ends of said central semi-ellipse member;
   c. sliding blocks (5) with upper and lower ends mounted on inner wall of each side semi-ellipse member and adapted to slide freely;
   d. shifter including cylinders (11) and piston rods (10) each having one end journaled on an upper end of each sliding block and the other end journaled on the said central semi-ellipse member; and,
   e. lower cylinders and rods (7, 8) having one end journaled on the lower end of each of said sliding block, and adapted to be vertically movable.

3,885,398
AIR CONDITIONING SYSTEM FOR A MOTOR HOME VEHICLE OR THE LIKE

Claude W. Dawkins, 4900 N.W. 30 St., Oklahoma City, Okla. 73122

Filed Dec. 10, 1973, Ser. No. 423,280
Int. Cl. F25d *17/06*
U.S. Cl. 62—89 **11 Claims**

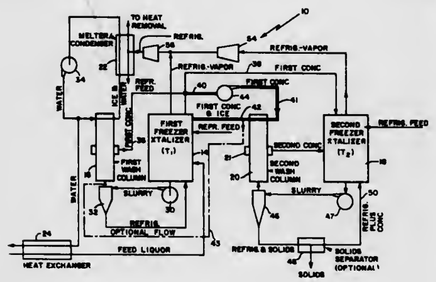


1. A refrigeration type air conditioning assembly employing a heat transfer medium for use in a motor home vehicle or the like having a front passenger area and a rear living area, and which is equipped with an engine, a source of d-c voltage, and an electrical outlet for connecting the motor vehicle or the like to a source of a-c line voltage, comprising:
   a first compressor means, having a suction port and a discharge port, for compressing the gaseous heat transfer medium passing therethrough;
   means for drivingly connecting said first compressor to the engine of the vehicle;
   a second compressor means having a suction port and a discharge port, for compressing the gaseous heat transfer medium passing therethrough;
   an electric drive motor drivingly connected to said second compressor and mounted on the vehicle;
   electrical conductor means connected to said electric drive motor for electrically connecting said electric drive motor to the electrical outlet of the motor vehicle to provide a-c line voltage to said electric drive motor;
   a first condenser coil means, having an inlet port and an outlet port and mounted on the motor vehicle, for condensing the gaseous heat transfer medium passing therethrough into the liquid state;
   a second condenser coil means, having an inlet port and an outlet port and mounted on the motor vehicle, for condensing the gaseous heat transfer medium passing therethrough into the liquid state;
   a first evaporator coil means, having an inlet port and an outlet port and mounted on the motor vehicle proximate to the front passenger area, for evaporating the liquid heat transfer medium passing therethrough into the gaseous state;
   a second evaporator coil means, having an inlet port and an outlet port and mounted on the motor vehicle proximate to the rear living area, for evaporating the liquid heat transfer medium passing therethrough into the gaseous state;
   first discharge conduit means interconnecting the discharge port of said first compressor means and the inlet ports of said first and second condensor coil means, for conducting gaseous heat transfer medium from said first compressor means to said first and second condensor coil means;
   second discharge conduit means interconnecting the discharge port of said second compressor means and the inlet ports of said first and second condensor coil means for conducting gaseous heat transfer medium from said second compressor means to said first and second condensor coil means;
   first liquid conduit means interconnecting the outlet port of said first condensor coil means and the inlet port of said first evaporator coil means for conducting liquid heat transfer medium from said first condensor coil means to said first evaporator coil means;
   second liquid conduit means interconnecting the outlet port of said second condensor coil means and the inlet port of said second evaporator coil means for conducting liquid heat transfer medium from said second condensor coil means to said second evaporator coil means;
   first suction conduit means interconnecting the outlet port of said first evaporator coil means and the suction port of said first compressor means for conducting gaseous heat transfer medium from said first evaporator coil means to said first compressor means;
   second suction conduit means interconnecting the outlet port of said second evaporator coil means and the suction port of said second compressor means for conducting gaseous heat transfer medium from said second evaporator coil means to said second compressor means;
   third suction conduit means interconnecting the outlet ports of said first and second evaporator coil means;
   first blower means disposed adjacent to said first evaporator coil means for moving air over said first evaporator coil means and into the front passenger area; and
   second blower means disposed adjacent to said first evaporator coil means for moving air over said second evaporator coil means and into the rear living area;
   air circulating means mounted on the vehicle for moving air over said first and second condensor coil means;
   a first expansion valve means connected to said first liquid conduit means and disposed adjacent to the inlet port of said first evaporator coil means; and
   a second expansion valve means connected to said second liquid conduit means and disposed adjacent to the inlet port of said second evaporator coil means.

3,885,399
MEANS FOR AND METHOD OF PURIFYING CONTAMINATED WATER

Robert J. Campbell, Salem, N.H.

Filed Mar. 27, 1973, Ser. No. 345,427
Int. Cl. B01d *9/04*
U.S. Cl. 62—123 **13 Claims**



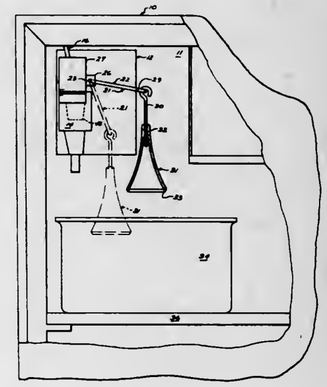
1. An apparatus for purifying contaminated water by freeze crystallization comprising:
   a. a first stage including a first freezer-crystallizer and wash column subassembly for treating contaminated water and producing a first concentrate;
   b. a second freezer-crystallizer and wash column subassembly for treating said first concentrate and producing pure ice crystals and a second concentrate in the second wash column, said second freezer-crystallizer being coupled to said first wash column to receive first concentrate, and to said second wash column to receive second concentrate, said second wash column being coupled to said first wash column for receiving and utilizing said first concentrate to wash said ice crystals in said second wash column to form a mixture of first concentrate and ice crystals; and
   c. means for returning at least a portion of said mixture of ice crystals and first concentrate from said second wash column to said first stage.

3,885,400
SENSING ARRANGEMENT FOR ICE MAKER

William M. Webb, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 20, 1973, Ser. No. 417,584
Int. Cl. F25c *5/18*
U.S. Cl. 62—137 **4 Claims**

1. In an ice maker having an ice mold in which ice pieces are formed and from which the ice pieces are ejected during a harvesting cycle and a receptacle to receive the ejected ice pieces and disposed beneath the ice mold, the improvement comprising:
   a member rotatable from a first position to a second position during an ice harvesting cycle and from the second position to the first position after the ice pieces are received in the receptacle;
   a second member pivotally supported on said first member and including a hollow and bell-shaped sensing element having an enlarged lower annular end forming the ice engaging surface of said sensing element;
   said pivotally supported member and said sensing element having a combined fixed length to enable said ice engaging surface of said sensing element to engage ice pieces at a predetermined level when said first member is above its first position and to cause said ice engaging surface of said sensing element to be disposed above said level when said first member is in its second position, said ice engaging surface of said sensing element being adapted to overlie at least one of the ice pieces when the ice pieces in the receptacle are at the predetermined level to prevent return of said first member to its first position to stop the supply of ice pieces from the ice maker to the receptacle; and

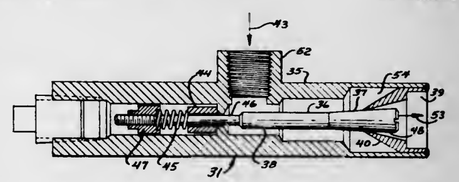


   means to vary the position of said sensing element on said pivotally supported member to adjust the combined operative length of said pivotally supported member and said sensing element.

3,885,401
REFRIGERATING APPARATUS

Ronald A. Banike, Orland Park, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Continuation-in-part of Ser. No. 293,408, Sept. 29, 1972, Pat. No. 3,848,624. This application Feb. 27, 1974, Ser. No. 446,324
Int. Cl. F28g *1/08*
U.S. Cl. 62—303 **21 Claims**



11. Apparatus for refrigerating articles, comprising: means defining a thermally isolated chamber having an entrance and an exit for passage of said articles through said chamber; means for passing said articles through said chamber; means for introducing a fluid refrigerant including flowable vaporizable solid particles and gaseous fluid into contact with said articles at an intermediate section of said chamber between said entrance and exit during said passage, said means for introducing comprising guide means spanning substantially the full width of said passage of said articles for providing a plurality of flow paths distributing said fluid substantially uniformly through said width; and a self-cleaning valve in said flow path for a liquid refrigerant that also exists as a solid comprising a valve movable part having a valve closing surface, an annular valve seat part having a seal surface sealingly engaging said closing surface, one of said surfaces comprising a scraping portion engaging the other said surface, and means for moving said movable part relative to said seat part for simultaneously opening and closing said valve and scraping solid refrigerant from the other said surface with said scraping portion, said movable part being movable in one direction for

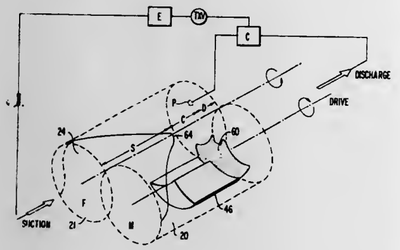
said opening and the seat part being annularly arranged around the movable part and extending in the opposite direction, said seat part comprising a knife edged scraping portion.

3,885,402

OPTIMIZED POINT OF INJECTION OF LIQUID REFRIGERANT IN A HELICAL SCREW ROTARY COMPRESSOR FOR REFRIGERATION USE

Harold W. Moody, Jr., and Donald D. Schaefer, both of Farmington, Conn., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed Jan. 14, 1974, Ser. No. 433,418
Int. Cl. F25b *31/00*; F01c *21/06*, *1/16*
U.S. Cl. 62—505 4 Claims



1. A method of determining the optimum point of injection of liquid refrigerant into a compressor working space of a helical screw rotary compressor forming a component of a refrigeration system including a condenser coupled to the discharge side of said compressor, and wherein said compressor includes a housing forming a working space comprising two intersecting bores, a suction port at one end of said housing opening to said space for admitting gaseous refrigerant as the compressor working fluid thereto and a discharge port within said housing opening to said space for discharging compressed working fluid for passage to said condenser, two intermeshing helical screw rotors rotatably mounted in said bore for determining compressor capacity and a shiftable slide valve for returning a variable portion of the working fluid back to compressor suction prior to compression thereof, and wherein said compressor discharges a compressed refrigerant gas into the condenser of the refrigeration system and said system includes means for bleeding off a portion of said refrigerant in liquid form from said condenser and injects said bled liquid refrigerant via an injection port into one of said bores for cooling the gaseous working fluid during compression thereof, said method comprising the steps of:

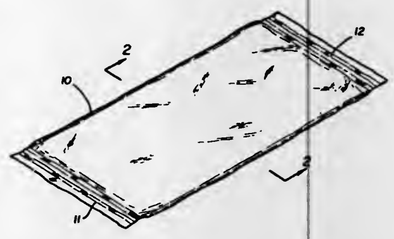
1. determining the minimum built-in volume ratio of the compressor;
2. determining within which bore injection is to take place;
3. determining the minimum operating compression ratio and maximum operating compression ratio of the compressor;
4. determining the pressure versus wrap angle plot for the rotor of the compressor both selected from step (2);
5. superimposing the determined parameters from step (1) and step (3) on the plot of step (4); and
6. ascertaining from the plot of step (5) subsequent to step (4) an acceptable injection point for said injection port in terms of wrap angle from suction of the screw rotor for the bore as determined from step (2) which results in continuous injection of liquid refrigerant within said working space regardless of undercompression or overcompression of the working fluid and the position of the slide valve within the limits of the parameters determined by steps (1), (2) and (3), without significantly compromising compressor efficiency.

3,885,403

DEVICE FOR USE AS A HOT AND COLD COMPRESS

Jacob J. Spencer, Woodbury, N.Y., assignor to Nortech Laboratories, Inc., North Bellmore, N.Y.

Continuation-in-part of Ser. No. 164,368, July 20, 1971, Pat. No. 3,780,537. This application Aug. 16, 1973, Ser. No. 388,865The portion of the term of this patent subsequent to Dec. 25, 1990, has been disclaimed.
Int. Cl. F25d *3/08*
U.S. Cl. 62—530 10 Claims



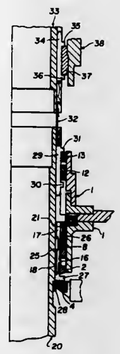
1. A hot and cold compress comprising a tough, flexible, sealed envelope and a neutral gel within said envelope, said gel being comprised of a mixture of water, a freezing point depressant selected from the group consisting of glycerine, propylene glycol and mixtures thereof and a thickening agent, the relative proportions of the water to the freezing point depressant by weight being about 1:1 to about 7:3, said gel maintaining its gel-like consistency over a temperature range of about 0° to about 212°F.

3,885,404

APPARATUS FOR PATTERNING KNITTING MACHINES

Pavel Zahradka, Trebic; Jiri Hrabanek, Nova Ves, and Milan Petranek, Starec u Trebice, all of Czechoslovakia, assignors to ELITEX, Zavody textilniho strojirenstvi, generalni reditelstvi, Liberec, Czechoslovakia

Filed June 16, 1972, Ser. No. 263,650
Claims priority, application Czechoslovakia, June 21, 1971, 4576-71
Int. Cl. D04b *15/78*
U.S. Cl. 66—50 R 5 Claims



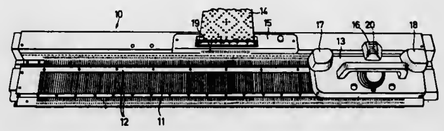
1. Apparatus for selecting needles of a circular knitting machine for patterning according to a predetermined patterning program, said knitting machine including at least one rotatable needle cylinder provided with circumferentially spaced axially parallel longitudinal grooves in which are located said needles and control means slidable within said grooves and adapted to effect movement of said needles according to said patterning program at a predetermined selection point, said selecting apparatus comprising a control means in each of said grooves having separate upper and lower parts, said upper and lower parts being independently slidable axially within the associated groove with respect to each other and capable of limited pivotal movement within said groove with respect to each other about an intermediate portion of each of said parts, at least one of the parts of said control means being provided with a control butt adapted to be actuated by a cam system radially spaced about said needle cylinder to axially raise said one part, spring means pivotally urging the upper portion of said upper part towards said needle cylinder to normally bias said control butt into engagement with said cam system, and an electromagnet arranged adjacent the needle cylinder at the selection point below the level of the lower part of said control means said electromagnet being selectively operable to retain certain ones of the lower portions of said control means in the lower region of said groove when said needle cylinder has been rotated so as to position said control means at the predetermined selection point to overcome said bias and prevent actuation of control butt by said cam system.

3,885,405

SYSTEM FOR SELECTING THE NEEDLES OF A KNITTING MACHINE ACCORDING TO A PROGRAM

Bartels, Manfred, Cologne, Germany, assignor to Empisal Knitmaster Luxembourg S.A., Luxembourg

Filed July 8, 1974, Ser. No. 486,698
Claims priority, application Germany, July 7, 1973, 2334654; May 11, 1974, 2422880
Int. Cl. D04b *7/00*
U.S. Cl. 66—75 10 Claims



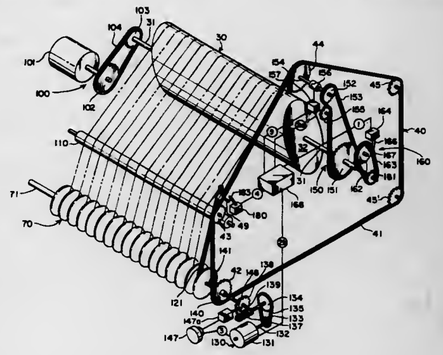
1. A system for selecting needles of a knitting machine of the type including a needle bed supporting a plurality of needles disposed in side-by-side relation and a carriage mounted on said needle bed for movement transversing said needle, a mechanical data storage dial carried by said carriage and including a plurality of arms settable to actuate the needles in a pattern, a data carrier associated with said needle bed for traversing by said carriage, and control means responsive to said data carrier for automatically setting said arms, said control means including a reading head carried by said carriage for scanning said data carrier, pulse generator means carried by said carriage for generating an interval pulse when said carriage traverses a distance equal to the spacing of adjacent needles, and circuit means including a gating circuit connected to said reading head and said pulse generator means for transmitting a signal generated by said reading head only in the simultaneous presence of an interval pulse from said pulse generator means, and arm setting means operable in response to said signal to set a corresponding arm of said data storage dial.

3,885,406

APPARATUS AND METHOD FOR FLUID TREATMENT OF TEXTILE FABRIC IN ROPE FORM

Edward Stanway, Prestbury near Macclesfield, England, assignor to United Merchants and Manufacturers, Inc., New York, N.Y.

Division of Ser. No. 294,914, Oct. 4, 1972. This application Oct. 25, 1973, Ser. No. 409,377
Int. Cl. B05c *3/132*; G11b *15/28*; B65h *75/02*
U.S. Cl. 68—176 10 Claims



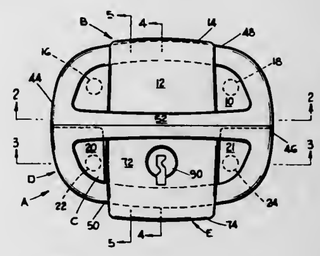
1. Apparatus for liquid treatment of textile fabric in rope form comprising tank means containing a liquid treatment bath, a rotatively driven main roller adopted to have said fabric rope engaged upon the peripheral surface thereof to move said rope with a winding motion through said bath, a rotatively driven guide member including recess means within which said fabric rope is engaged for guiding said fabric rope through said liquid bath in a convoluted spiral path, conveyor means engaging one end of said fabric rope and operable to rotatively wind said rope end about said guide member to within said recess means and about said main roller, means for energizing and deenergizing rotation of said conveyor means, means for energizing and deenergizing rotation of said guide member, and control means sensing rotational movement of said main roller and emitting in response thereto a pair of control signals for simultaneously energizing respectively, rotation of said conveyor means and of said guide member, said control signal for energizing said conveyor means being separate and independent from said control signal for energizing said guide member.

3,885,407

DRAW BOLT

Irving Feinberg, 45 Taggart Way, Saddle Brook, N.J. 07662

Filed Nov. 20, 1973, Ser. No. 417,643
Int. Cl. E05b *65/62*
U.S. Cl. 70—76 11 Claims



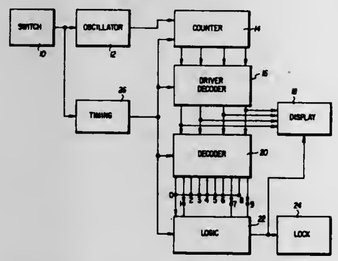
1. A draw bolt cooperable with a hasp, the draw bolt comprising:

a mounting plate having rail means with a substantially planar first portion and a second portion sloping from the first portion toward the hasp side of the mounting plate; a manually operable latch member;
means pivotally connecting one end of the latch member to the mounting plate;
a loop member adapted to embrace a hasp; and
means slidably connecting the loop member to the rail means, the latch member being cooperable with the loop member and being movable to a lowered position wherein the loop member is cooperable with the first portion of the rail means to move the loop member to latched position, and the latch member being movable to a raised position wherein the loop member is cooperable with the second portion of the rail means to move the loop member to unlatched position.

3,885,408
FINGER OPERATED ELECTRO-OPTICAL LOCK AND METHOD

Charles T. Clark, Jr., 2339 N.E. 26th St., Lighthouse Point, Fla. 33064

Filed Oct. 29, 1973, Ser. No. 410,397
Int. Cl. E05b *49/00*
U.S. Cl. 70—278 **10 Claims**



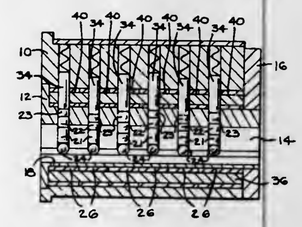
1. A lock system for an enclosure entrance comprising:
manually operable electro-optical switch means internal of the enclosure;
pulse means responsive to said switch means for providing a series of pulses at a predetermined repetition rate;
display means for providing a visual indicia internal of the enclosure related to the number of pulses provided by said pulse means, said display means being positioned for viewing by the operator of said switch means external of the enclosure so that the operation of said switch means may be selectively terminated to effect the display of predetermined visual indicia by said display means to the operator external of the enclosure;
lock means; and,
circuit means internal of the enclosure and responsive to the effecting of the display of predetermined visual indicia by said pulse means for effecting the operation of said lock means.

3,885,409
PIN TUMBLER LOCK

Joseph M. Genakis, 948 W. Boylston St., Worcester, Mass. 01605

Filed Feb. 19, 1974, Ser. No. 443,328
Int. Cl. E05b *9/04*
U.S. Cl. 70—364 A **8 Claims**

1. A pin tumbler lock comprising an enclosure, a plug therein, a keyway in the plug, a set of pinways, a set of multiple part bottom pins in the pinways, a set of independently rotational rings on the plug, one ring for each pinway,
a solid cylindrical sleeve surrounding the plug rings, an aperture in the sleeve for each pinway, a set of independently rotational rings on the sleeve, one ring for each pinway,
an aperture in each ring for the respective pin, means limiting the rotational motion of each ring, and

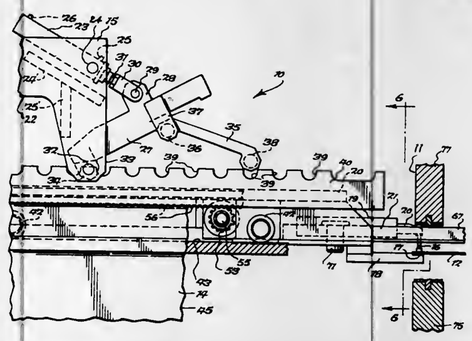


a set of top and bottom pins in the enclosure and a plug for each pinway for interlocking the plug, rings, and sleeve to the cylinder.

3,885,410
FEED MECHANISM FOR BENDING MACHINE

John F. Kopczynski, 1671 Sweeney St., North Tonawanda, N.Y. 14120

Filed June 26, 1974, Ser. No. 483,455
Int. Cl. B21d *43/10*
U.S. Cl. 72—307 **5 Claims**



1. A feed mechanism for advancing an elongated member having a longitudinal axis through a bending machine comprising attachment means for attachment to said member, advancing means coupled to said attachment means for intermittently advancing said member through said bending machine in predetermined increments in the direction of said longitudinal axis, said advancing means being spaced from said bending machine along said longitudinal axis so that a portion of said member which is not engaged by said attachment means or said bending machine lies between said attachment means and said bending machine, and reinforcement means connecting said advancing means and said bending machine for absorbing the pulling force exerted on said elongated member by said bending machine during bending thereby preventing such pulling force from being transmitted to said advancing means through said elongated member.

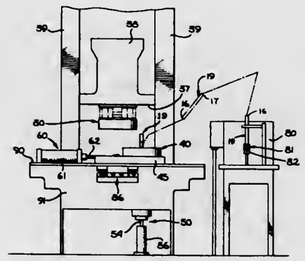
3,885,411
MACHINE PRESS FOR FORGING BOLTS AND THE LIKE

Robert Szeliga, Los Angeles, Calif., assignor to Culver Tool & Die Co., Venice, Calif.

Filed Mar. 8, 1974, Ser. No. 449,535
Int. Cl. B21j *1/06, 13/02*
U.S. Cl. 72—342 **4 Claims**

1. In a forging press having a stationary platen and a first and second set of die blocks, said press for forging from stock a formed object having a first and second end in which said first end is hot forged and said second end is cold forged, the improvements comprising:

a. a positioning means for moving said first die block into a first and second position on said platen, in said first position said stock being disposed in said first die block and in said second position said first die block being aligned with said second die block;
b. aligning means for aligning said first and second die block in a first and second position, said means comprised of a plurality of stops disposed on said platen;

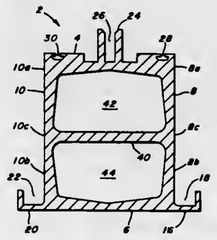


c. securing means for holding said stock in alignment with said first and second die block until said first and second die block contact said stock;
d. driving means for driving said press such that said forging is accomplished by a power stroke;
e. withdrawing means for withdrawing said securing means from contact with said stock during said power stroke;
f. ejecting means for ejecting said formed object from said first and second die block; and
g. heating means for heating one end of said stock prior to said stock being disposed in said first die block.

3,885,412
METHOD OF FABRICATING CURVED TUBING AND PRODUCT THEREOF

Lawrence T. Vance, 1429 Little Whale Neck Rd., Merrick, N.Y. 11566

Filed Nov. 21, 1973, Ser. No. 417,890
Int. Cl. B21d *7/00*
U.S. Cl. 72—369 **10 Claims**

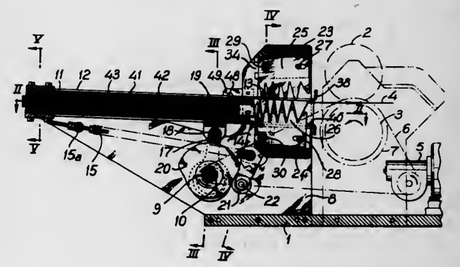


1. A method of bending a metal tube comprising
providing an elongated unitary multiwalled seamless metal tube,
providing said elongated metal tube with an internally disposed elongated web having transverse ends connected to generally opposed walls of said tube and dividing the internal hollow into two generally equal sections, and
bending said tube in a direction generally perpendicular to said elongated web to establish a predetermined tube curvature.

3,885,413
METHOD AND MACHINE FOR FASHIONING SHEET MATERIALS

Wolf Maria Auer, Schmiden bei Stuttgart, Germany, assignor to Bremsen-und-Filter-Handelsgesellschaft mbH, Stuttgart, Germany

Filed May 7, 1973, Ser. No. 357,916
Claims priority, application France, May 19, 1972, 72.18019
Int. Cl. B21d *13/02*
U.S. Cl. 72—385 **16 Claims**

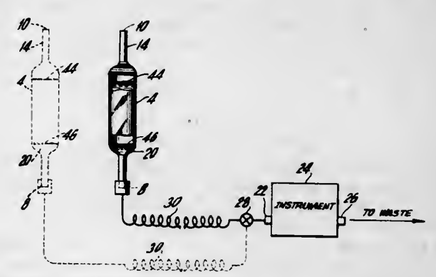


1. A method for pleating or forming chevron patterns on strip sheet material comprising the steps of continually pushing an elongated strip between a pair of opposed forming heads, each having a rake shaping member, cyclically moving said rake shaping members on opposite sides of said strip to engage said strip and form transverse pleats, the rakes of said shaping members having a plurality teeth to engage said strip arranged in alternate opposition to each other and progressively decreasing in pitch in the direction of movement of said strip, withdrawing the lead end of said strip from said rake shaping members and simultaneously moving said strip cyclically toward and away from each of said rake shaping members causing the engagement of said strip into the teeth of one of the opposed shaping members immediately succeeding disengagement from the immediately preceding teeth of the other rake shaping member so as to progressively form said strip into tighter pleats.

3,885,414
PACKAGE FOR CALIBRATION FLUIDS AND PROCESS

John J. Reville, Scotia, N.Y., assignor to General Electric Company, Milwaukee, Wis.

Filed Oct. 24, 1972, Ser. No. 299,844
Int. Cl. G01c *25/00*
U.S. Cl. 73—1 R **10 Claims**



1. A process for calibrating a testing instrument with a fluid calibrated at a pre-selected temperature, said fluid being normally subject to permanent, unpredictable interaction with its surrounding environment due to permeation, diffusion and chemical reaction during the packaging process, shelf storage,

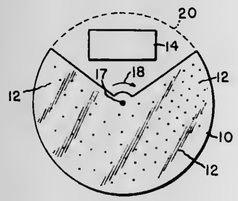
the dispensing process or the use cycle, said process comprising:

a. providing a sealed package maintained at the said pre-selected temperature, said package comprising a rigid hollow vessel of non-permeable material, at least one end of said vessel terminating in a sealed port and a calibration fluid partially or completely filling said vessel and having the characteristics recited hereinabove;
b. opening said sealed port and affixing the opened port to the instrument being calibrated; and
c. delivering said calibration fluid into the instrument to yield the pre-determined calibrating points at the pre-selected temperature, the rate of delivery of said calibration fluid being at least sufficient to preclude substantial deviation in the temperature of the vessel and the fluid from said pre-selected temperature.

3,885,415
CALIBRATION OF PARTICLE VELOCITY MEASURING INSTRUMENT

Richard H. Burns, Webster; Roger E. Button, Rochester; Alexander E. Martens, Fairport, and Roger R. Morton, Penfield, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Oct. 19, 1973, Ser. No. 408,217
Int. Cl. G01p *21/00, 5/20*
U.S. Cl. 73—1 D **11 Claims**



1. A calibration apparatus for calibrating a particle velocity measuring instrument defining an optical path for optically viewing particulate matter to generate signals as a function of the velocity of the particulate matter, comprising:

a disc disposed for receiving light emanating from along the defined optical path;

areas of contrast disposed upon the disc for receiving the light emanating from along the optical path to be optically viewed by the particle velocity measuring instrument; and

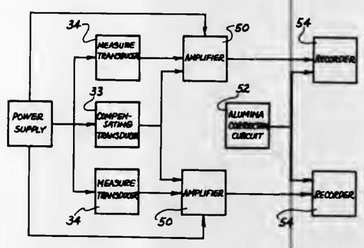
means for moving the areas of contrast disposed upon the disc at a predetermined rate across the received light emanating from along the optical path for the generation of calibration signals as a function of the velocity of the areas of contrast traversing the received light at a predetermined rate.

3,885,416
DILATOMETER APPARATUS

Paul G. Cooper, Johnstown, Ohio, assignor to Harrop Precision Furnace, Columbus, Ohio

Filed Aug. 13, 1973, Ser. No. 387,924
Int. Cl. G01h *25/16*
U.S. Cl. 73—16 **2 Claims**

1. A dilatometer apparatus comprising, in combination, a furnace including a furnace chamber adapted to removably receive a plurality of test samples disposed on the base of said chamber; a plurality of sample probes of predetermined known dimensions vertically disposed within said chamber each including a lower end adapted to freely rest on the top of a respective one of said test samples and an upper end extending through the upper wall of said furnace; a compensating probe of the same material and substantially the same dimensions as said sample probe vertically disposed within said chamber and including a lower end resting on the top of a reference sample which rests on the base of said chamber and an upper end extending through the top wall of said furnace; a plurality of first transducing means fixedly mounted above the upper wall of said furnace and each operatively engaging a respective one of said sample probes for sensing and converting the relative vertical movement of each of said probes to an electrical signal; a second transducing means

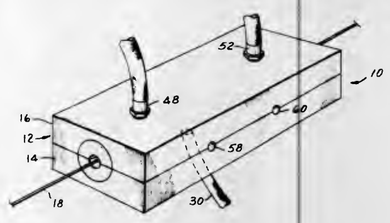


fixedly mounted above the upper wall of said furnace and operatively engaging said compensating probe for sensing and converting the relative vertical movement of said probe and said reference sample to an electrical signal; and measuring circuit means operatively connected to said first and second transducing means to effectively substract that portion of the signal associated with said compensating probe representing the dilation of the probe from each of the signals associated with each of said sample probes and including recording means to visually record only the portion of the signal representing the vertical dilation of the sample.

3,885,417
FLUIDIC GAUGING SENSOR HEAD HAVING A GAS BEARING MATERIAL

Hansjoerg Stern, Schenectady, N.Y., assignor to General Electric Company, New York, N.Y.

Filed June 28, 1973, Ser. No. 374,319
Int. Cl. G01b *13/08*
U.S. Cl. 73—37.7 **14 Claims**



1. A fluidic gauging sensor head for monitoring a characteristic of strand-like material and guiding the material therethrough, comprising:

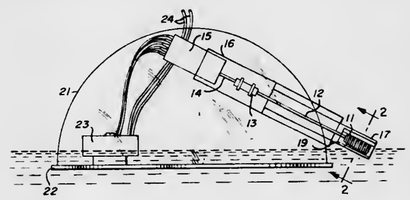
a. a support block having first and second guide sections and a fluidic sensor section positioned intermediate said first and second guide sections;
b. means for pneumatically isolating said intermediate sensor section from said respective first and second guide sections;
c. each guide section including a uniformly porous gas bearing extending the axial length thereof, a manifold surrounding said gas bearing and extending lengthwise between points adjacent opposite ends of said gas bearing, a supply port extending between said manifold and the periphery of said block;

d. each of said gas bearings having a bore extending the complete length therethrough; and
e. said intermediate sensor section including a channel extending lengthwise therethrough and concentrically aligned with each said bore in each of said gas bearings respectively, and means for admitting pressurized fluid to said channel to sense variations in the back pressure therefrom proportional to changes in the characteristic of the material being monitored as the strand-like material passes through said bore in said first guide section, into and through said channel in said sensor section and out through said bore and said second section whereby pressurized gas can be supplied to each of said manifolds for permeating uniformly through each said gas bearing into each of said bores so as to center the strand-like material passing through said bores thereby causing the strand-like material to be centered within said channel in said sensor section while passing therethrough.

3,885,418
METHOD AND APPARATUS FOR DETECTING THE PRESENCE OF AN OIL SLICK ON A WATER SURFACE

Anthony R. Kriebel, 340 La Mesa Dr., Menlo Park, Calif. 94025

Filed Oct. 17, 1973, Ser. No. 407,170
Int. Cl. G01n *11/14*
U.S. Cl. 73—61.1 R **18 Claims**



1. Apparatus for sensing the presence of an oil slick on the surface of a body of water comprising

a cylindrical spinner;

a hollow cylindrical shroud partially enveloping said spinner and providing a radial gap between the inner surface thereof and the surface of the spinner, said shroud having an opening therein adjacent said spinner to permit the passage of water and oil to the spinner, said shroud and spinner adapted to be positioned such that the opening in said shroud and said spinner are partially submerged in the surface of the water;

a drive motor for spinning said spinner in said shroud, the torque on said motor being of one value with the water surface free of oil and being of a different value with an oil slick present on the water surface, and

means for detecting the difference in the torque on said motor.

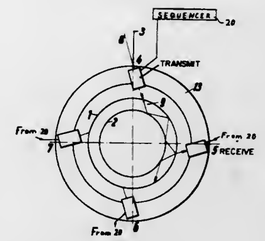
3,885,419
METHOD AND APPARATUS FOR ULTRASONIC TESTING OF TUBES AND RODS

Fritz Witte, Dortmund, and Heinrich Bockstiegel, Witten-Stockum, both of Germany, assignors to Mannesmannrohren Werke Aktiengesellschaft, Dusseldorf, Germany

Filed July 24, 1972, Ser. No. 274,623
Claims priority, application Germany, July 29, 1971, 2138458
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.5 R **8 Claims**

1. Method of continuous testing of rods or pipes, progressively in axial direction and by means of ultrasonic pulses to be received for detection of defects, comprising the steps of, using a plurality of at least three test units arranged in a plane transverse to said axis and in angularly spaced apart relation to each other;

rotating the units on the axis relative to the pipe or rod to be tested;



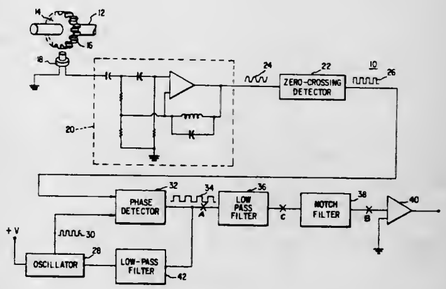
providing for axial movement as between the pipe or rod and the units for progressively testing the pipe or rod; and

sequencing the units so that each unit alternates between transmission of ultrasonic energy and responsiveness for receiving such energy, a unit of the plurality operating for receiving being spaced apart from a unit operating for transmission in angular direction corresponding to the direction of transmission into the rod or pipe to be tested.

3,885,420
METHOD AND APPARATUS FOR MEASURING SMALL VARIATIONS IN THE SPEED OF ROTATING SHAFTS

John F. Wolfinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 6, 1974, Ser. No. 448,605
Int. Cl. G01h *1/10*
U.S. Cl. 73—70.1 **9 Claims**



1. Apparatus for detecting instantaneous torsional vibrations in a rotating shaft, said apparatus comprising:

first means for generating a first signal at a frequency proportional to the instantaneous angular velocity of said shaft;

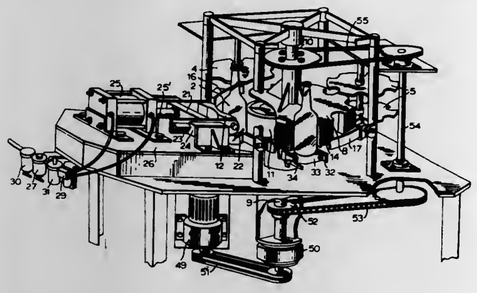
second means for generating a second signal at a frequency proportional to the average angular velocity of said shaft; and

third means connected to receive said first and second signals and responsive thereto to produce a third signal having an average value proportional to the phase difference between said first and second signals.

3,885,421
GLASS CONTAINER TESTING APPARATUS

Rikuzo Nakamura, Hanyushi, and Hiromu Kishigami, Yokohama, both of Japan, assignors to Nittoku Metal Industry Co. Ltd. and Toyo Glass Company Ltd., both of Tokyo, Japan

Filed Dec. 20, 1973, Ser. No. 426,692
Int. Cl. G01n *3/08*
U.S. Cl. 73—94 **2 Claims**



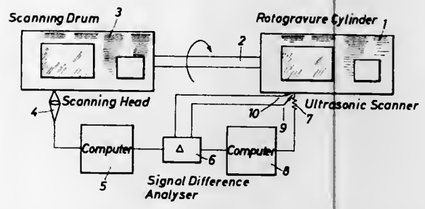
1. A glass container testing apparatus comprising:
a rotating star wheel having receiver pockets equally spaced around the circumference thereof for receiving and directing individual containers through the apparatus;
a movable pusher shoe movable toward and away from the circumference of said star wheel for imparting a test force against a container in one of said receiver pockets;
pusher means connected to said pusher shoe for providing the force necessary to operate said pusher shoe;
a container-rolling roller having a rotational axis parallel to the longitudinal axis of the container to be tested located at a distance below said star wheel and positioned so that said rolling roller abuts the container to be tested in the receiver pocket of said star wheel at a point opposite said pusher shoe so that the container will rotate at least 180° due to the friction exerted against the container between the pusher shoe and the rolling roller; and
brushes between the adjacent receiver pockets of said star wheel for protecting the glass containers adjacent to the container being tested from injury by broken pieces of glass when a container is broken between said pusher shoe and said rolling roller and for removing broken pieces of glass attached to said pusher shoe.

3,885,422
METHOD FOR THE EXAMINATION OR INSPECTION OF ROTOGRAVURE PRINTING CYLINDERS OR THE LIKE

Mamiliano Dini, Brescia, Italy, assignor to European Rotogravure Association, Munich, Germany

Filed June 19, 1973, Ser. No. 371,467
Claims priority, application Germany, June 21, 1972, 2230350
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.8 S **10 Claims**

8. A method for monitoring the depth of cells formed with parallel cell walls in the surface of a rotogravure cylinder and for signifying those cells which are of an improper depth, said method comprising the steps of:
scanning the rotogravure cylinder with an incident ultrasonic beam projected onto the cylinder surface in a plane substantially perpendicular to said cell walls;
measuring the intensity of the portion of said incident beam which is reflected backwardly substantially along and parallel to the incident beam and producing therefrom a first signal representative of the actual depth of the cells then being scanned,
scanning a reference pattern having sensible characteristics thereover representative of desired cell depths for respectively corresponding areas of the rotogravure cylinder and producing a second signal corresponding thereto,
synchronously comparing said first and second signals to produce a first output signal if the actual cell depth is substantially greater than the desired cell depth and a

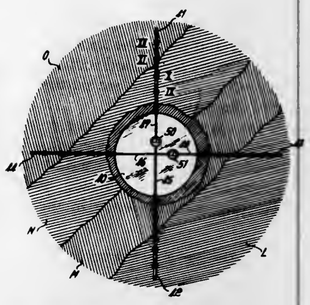


second output signal if the actual cell depth is substantially less than the desired cell depth, and
indicating said first and second output signals in association with respectively corresponding areas of the rotogravure cylinder thereby enabling corrective action.

3,885,423
METHOD OF MEASURING CHANGES IN THE AREA SURROUNDING A MINING CAVITY

Fritz Schuermann, Hattingen, Niederwenigern; Herbert Muller, Essen-Werden; Horst Boddicker, Essen-Kray, and Peter-Paul Heusinger, Essen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Division of Ser. No. 205,576, Dec. 7, 1971. This application Feb. 20, 1974, Ser. No. 439,018
Int. Cl. G01n *33/24*
U.S. Cl. 73—88 E **3 Claims**

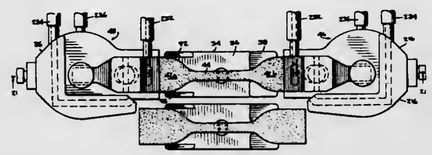


1. Method of measuring changes in the area surrounding a mining cavity consisting in adhesively embedding an elongate rod-like anchor rigidly in a bore hole of such cavity, measuring changes in the strata surrounding the anchor in several planes distributed over the length thereof by a series of operatively connected sensors arranged fixedly and at a predetermined distance to each other, and detecting outside of the bore hole and from the sensors the dimension and speed of changes in the strata.

3,885,424
TENSILE TEST SPECIMEN HOLDER

George E. Ryckman, East Liverpool, Ohio, and Walter J. Budd, Waterbury, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 213,265, Dec. 29, 1971, Pat. No. 3,803,907. This application Jan. 21, 1974, Ser. No. 435,023
Int. Cl. G01n *3/04*
U.S. Cl. 73—103 **2 Claims**

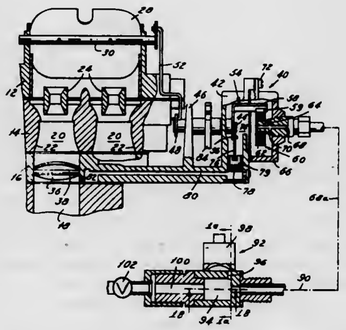


1. A cradle device for holding a sample having widened end portions and an intermediate neck portion, of which said end portions are to be engaged by grippers of a tensile testing apparatus, comprising a cradle member adapted to be incorporated as an element of a conveyor chain for movement therewith and having a flat top sample receiving face extending transversely to the intended direction of movement with two spaced-apart laterally oriented shoulders at each end for receiving the respective widened end portion of the sample therebetween, and the two shoulders at one end of said cradle member forming a recess of a size and shape to receive one widened end portion of a sample and flaring outwardly from an inwardmost narrowest opening for accommodating said neck portion of a sample at the juncture thereof with said one widened end portion to an outwardmost widest opening, the length of said cradle member being such that when a sample is received thereon said widened end portions of the sample extend beyond the ends of said cradle member for engagement by the grippers.

3,885,425
AUTOMATIC CHOKE TESTER

James R. Hughes, Windsor, Ontario, Canada, and John H. St. John, Birmingham, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 303,557, Nov. 3, 1972, Pat. No. 3,808,883. This application June 8, 1973, Ser. No. 368,393
Int. Cl. G01m *15/00*
U.S. Cl. 73—118 **3 Claims**

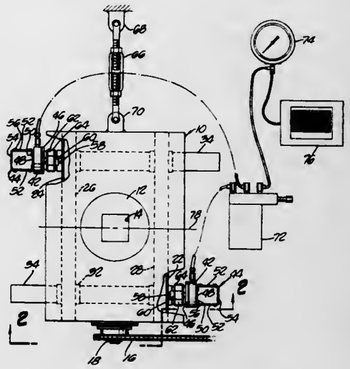


1. A tester for a motor vehicle type automatic choke having a housing enclosing a temperature responsive member operatively connected to an unbalance mounted, air movable choke valve for urging the same towards a position closing the upper end of a carburetor induction passage in response to decreases in temperature level below a predetermined level and movable to a position opening the induction passage in response to airflow thereagainst through the passage, comprising in combination, a rotatable sleeve valve having an air outlet adapted to be connected to the choke housing and an air vent, the sleeve valve being rotatably mounted with respect to a second sleeve closed at its ends and received therein, a vortex generator mounted within the second sleeve and separated therefrom radially by an annular chamber, an air inlet at one end of the second sleeve connected to the annular chamber and adapted to be connected to a source of compressed air, the generator having a plurality of circumferentially spaced tangentially positioned air inlets admitting compressed air to annular interior chamber for swirl of air therein around the interior chamber, a pair of axially directed and located conduits extending in opposite directions and of different diameters less than the diameter of the interior chamber whereby the generator divides the incoming air into a source of colder air flowing in one direction through the smaller diametered conduit and a source of warmer air flowing through the larger diametered conduit, the second sleeve having port means therethrough connected respectively to the colder and warmer air sources, rotation of the sleeve valve to its extreme positions alternately connecting one source to the sleeve valve outlet while connecting the other source to vent, and vice versa, whereby the choke temperature sensitive means may be quickly cooled or heated by rotation of the sleeve valve to simulate choke actual operating temperatures regardless of ambient temperature conditions.

3,885,426
TORQUE SENSING SYSTEM

Ray E. Hudson, Poway, and John W. Knowlton, Laguna Beach, both of Calif., assignors to Martin-Decker Company, Santa Ana, Calif.

Filed Apr. 30, 1973, Ser. No. 355,697
Int. Cl. G01l *3/14*
U.S. Cl. 73—136 R **6 Claims**



1. A torque sensing system on a drilling rig for a rotary drilling shaft driven by a rotary table, comprising
means for slidably mounting the rotary table on the drilling rig;
sensing means fixed to the drilling rig for measuring forces tending to rotate the rotary table on said slidable mounting means, said sensing means being capable of providing a force couple to resist rotation of the rotary table; and means for preventing lateral movement of the rotary table without significantly affecting the resulting forces measured by said sensing means, said means for preventing lateral movement including a rigid link pivotally mounted at one end to said rotary table and at the other end to the drilling rig, said link being perpendicular to the directions in which said sensing means provide the force couple to resist rotation of the rotary table.

3,885,427
ELECTRONIC BALANCE FOR MEASURING MASSES OR FORCES

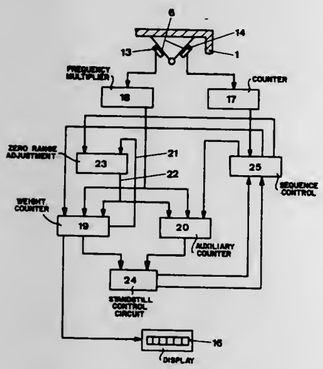
Domenic Melcher, Uster, and Mario Gallo, Zurich, both of Switzerland, assignors to Wirth, Gallo and Company, Zurich, Switzerland

Filed Aug. 22, 1972, Ser. No. 282,867

Claims priority, application Switzerland, May 16, 1972, 7287/72

Int. Cl. G01l *1/10*; G01g *3/16*

U.S. Cl. 73—141 R **1 Claim**



1. An electronic balance, comprising: a frame; a weighing platform; first and second pretensioned electronically excited transversely vibrating strings; means coupling said strings between said frame and said weighing platform such that the frequency of said first string is increased and the frequency of said second string is decreased as a function of a force exerted on said weighing platform; means for detecting the frequency generated by said first string; phase-locked frequency multiplying means coupled to said detecting means for multiplying the frequency generated by said first string with a predetermined fixed factor in such a manner that the multiplied frequency retains a constant phase relationship with the original frequency generated by said first string; first counting means for detecting and counting a given number of full cycles of the frequency generated by said second string; second counting means for counting the number of full cycles of the multiplied first string frequency during the period of time said given number of full cycles of the second string frequency is counted; and means for displaying the output of said second counting means.

3,885,428
OVERLOAD TESTING OF CHAINS

Hans Horst Dalferth, Haydnstrasse 21, 7083 Wasseralfingen, Germany

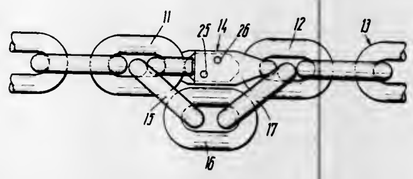
Filed Dec. 6, 1973, Ser. No. 422,414

Claims priority, application Germany, Dec. 12, 1972, 2261164

Int. Cl. G01l *5/04*

U.S. Cl. 73—143 **4 Claims**

1. An overload indicating device for round link chains for lashing and belaying comprising an indicating chain coupler, said coupler including two spaced elements attachable to two links of said chain, said elements being connected together, and means interposed between said spaced elements and



engageable therewith when the safe working load of said chain links is exceeded.

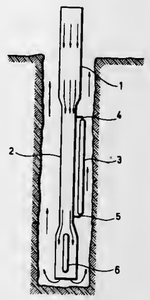
3,885,429
METHOD FOR MEASURING THE RHEOLOGICAL PROPERTIES OF FLUIDS IN THE BORE HOLES OF DEEP-WELLS

Mihaly Megyeri, 25, Oswald utca, and Jeno Molnar, 10, Tolbuchin setany, both of Nagykanisza, Hungary

Filed Nov. 30, 1973, Ser. No. 420,522

Int. Cl. E21b *47/06*

U.S. Cl. 73—153 **3 Claims**



1. In a method of measuring the rheological properties of fluids forming drilling mud in the bore holes of deep-wells, comprising conveying the fluid downwardly into the bore hole interiorly of a hollow bore rod, measuring the viscosity of the drilling mud while being pressed through the bore rod and the bore hole as a function of its shearing velocity, and evacuating the fluid upwardly in the annular space encompassing said bore rod, the improvement comprising; continuously measuring the rheological properties of said fluid on the basis of conditions responsive to the velocity of the fluid in motion while drilling in the annular space about said bore rod, and patterning the shearing velocity of the drilling mud to the most stringent predetermined operating demands thereon.

3,885,430
VERTICAL SPEED COMMAND INSTRUMENT

Leonard M. Greene, Chappaqua, N.Y., assignor to Safe Flight Instrument Corporation, White Plains, N.Y.

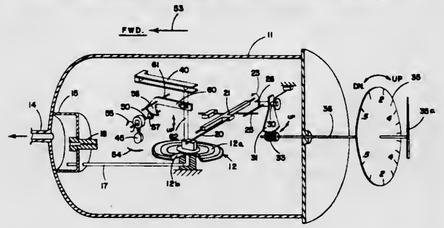
Filed Mar. 6, 1974, Ser. No. 448,541

Int. Cl. G01c *21/10*

U.S. Cl. 73—179 **8 Claims**

1. A vertical speed command for an aircraft comprising:
means for pneumatically sensing the rate of aircraft altitude change as a function of the rate of change of ambient air pressure outside the aircraft and providing a mechanical signal in accordance therewith;
an indicator;

means for coupling the mechanical signal from said sensing means to drive said indicator;
means for providing a mechanical signal in accordance with the horizontal acceleration of the aircraft; and
means for coupling said mechanical signal in accordance with horizontal acceleration to said indicator,



whereby the indicator indicates the rate of change of aircraft altitude which will be attained for a given horizontal aircraft thrust change at the commencement of a change of altitude maneuver and indicates actual rate of aircraft altitude change when horizontal acceleration has terminated.

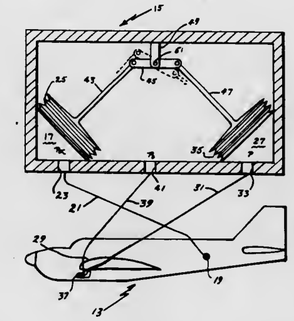
3,885,431
BALANCE TYPE ANGLE OF ATTACK INDICATOR

Roger W. Gallington, Qtrs. 4307 H, USAF Academy, Colo. 80840

Filed Aug. 28, 1973, Ser. No. 392,376

Int. Cl. G01c *21/00*

U.S. Cl. 73—180 **2 Claims**



1. A balance type angle of attack indicator for use in an aircraft cockpit instrument comprising means for sensing the pressure in at least three selected positions on the aircraft, one of the selected positions at which the pressure is sensed being the pitot tube of the aircraft, another of the selected positions being the atmospheric pressure at the aircraft static pressure port, and still another of the selected positions being located on the wing of the aircraft, tubing means for transmitting the pressures to a central area, and means for mechanically dividing the difference between one pair of pressures by the difference between a second pair of pressures including an enclosure having three operatively connected sections, the first of said sections being formed in the lower left side portion of the enclosure by the inner surface of a first bellows with a link arm extending angularly upward therefrom, the second of said sections being formed in the lower right side portion of the enclosure by the inner surface of a second bellows with a link arm extending angularly upward therefrom, the third of said sections being formed in the central portion of the enclosure between the first and second sections in operative communication with the outer surface of said first and second bellows, pressure from a different selected position on the aircraft being transmitted to each of the sections in said enclosure, each of said first and second bellows expanding linearly in response to differences in pressure at the selected positions on the aircraft and linkage means connected to said bellows link arms for translating the linear movement of said bellows into rotational movement to give an accurate indication of the angle of attack of the aircraft.

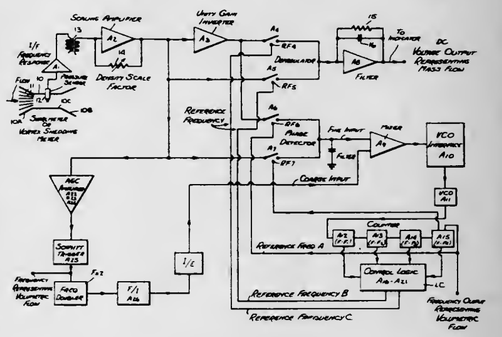
3,885,432
VORTEX-TYPE MASS FLOWMETERS

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Continuation-in-part of Ser. No. 232,058, March 6, 1972, Pat. No. 3,776,033. This application Aug. 2, 1973, Ser. No. 384,792. The portion of the term of this patent subsequent to Dec. 4, 1990, has been disclaimed.

Int. Cl.² G01F *1/00*; G01P *5/08*

U.S. Cl. 73—194 B **8 Claims**



1. Apparatus for measuring the mass flow of a fluid, said apparatus comprising:
A. a vortex meter provided with a flow tube having an obstacle disposed in the flow path of fluid passing through the tube to produce a pulsatory fluidic vortex at a frequency which is a function of flow rate, and a pressure-responsive sensor detecting said fluidic pulses to produce an electrical signal at the same frequency, the amplitude of said signal being a function of the kinetic energy contained in said vortex,
B. amplifier means coupled to said sensor and responsive to said electrical signal, said amplifier means having a gain which is inversely proportional to frequency, thereby dividing the electrical signal by frequency to produce an output signal having a fundamental frequency whose amplitude is indicative of mass flow, said output signal having a noise component representing turbulence introduced into said fluid before it enters said flow tube, and
C. a signal recovery system coupled to said amplifier means to reject said noise component and to pass only said fundamental frequency to an indicator, whereby an accurate reading of mass flow is obtained.

3,885,433
APPARATUS FOR MEASURING THE VELOCITY OF FLOW OF AN ELECTRICALLY CONDUCTIVE FLUID

Lawrence B. Marsh, Silver Spring, Md., assignor to Marsh, McBirney Inc., Rockville, Md.

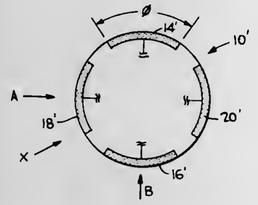
Filed Sept. 21, 1973, Ser. No. 399,734

Int. Cl. G01f *1/00*

U.S. Cl. 73—194 EM **2 Claims**

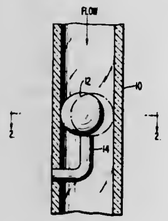
1. A velocity meter for measuring the relative speed of movement of an electrically conductive fluid, comprising
a. a cylindrical probe adapted for insertion into the fluid normal to said direction of relative movement, said probe having a circular cross-section;
b. means arranged within said probe for producing a magnetic field in the fluid parallel to the longitudinal axis of said probe; and

c. means for generating an electric signal which is a function of the velocity of the fluid relative to said probe, said generating means including a plurality of electrode means mounted on the outer circumferential surface of said probe in a plane normal to the axis thereof, a first pair of said electrode means being diametrically arranged on said probe and a second pair of said electrode means being



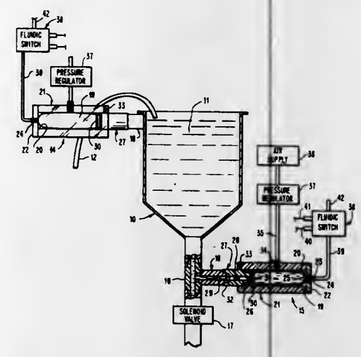
diametrically arranged on a diameter normal to the diameter of said first electrode means, each of said electrode means comprising an arcuate electrode which is a sector of a circular cylinder and the outer circumference of which conforms with the circumferential surface of said probe, said arcuate electrode subtending an angle of between 60° to 80° of the circumference of said probe.

3,885,434
FLOWMETER
Donald E. Williamson, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed Jan. 24, 1974, Ser. No. 436,235
Int. Cl. G01f *1/00*; G01p *5/00*
U.S. Cl. 73—194 B **7 Claims**



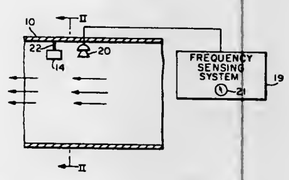
1. A flowmeter for measuring the flow of fluid, comprising:
a. a tube for the flow of fluid to be measured,
b. a spherical ball within the tube having a diameter less than the internal diameter of the tube by an amount sufficient to allow a significant amount of fluid to flow past the ball causing the ball to move,
c. a stationary ball stop positioned in the tube downstream of the ball in the direction of flow preventing movement of the ball in the direction of flow, flow of fluid in the tube past the ball restrained only by the stop and tube walls causing the ball to partake of rotational movement and revolutional movement having a lateral oscillatory component of movement with respect to the axis of the tube which is proportional to the flow of fluid, and
d. means for detecting the lateral oscillatory component of movement of the ball in the tube without being mechanically connected to the ball.

3,885,435
METHOD AND DEVICE FOR DETECTING PRESENCE OR ABSENCE OF A FLUID
Salvatore J. Cascio, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 28, 1974, Ser. No. 473,462
Int. Cl. G01f *23/22*
U.S. Cl. 73—290 R **14 Claims**



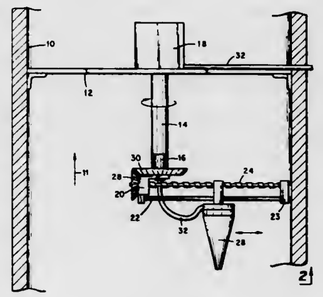
1. A device for detecting the presence or absence of a fluid in a tank or the like at a selected level including:
expansible means to contain fluid from the tank when the tank has fluid at the selected level to cause said expansible means to be in an expanded condition;
means to support said expansible means;
means to supply a pressurized gas through said support means;
said expansible means stopping supply of pressurized gas from said supply means through said support means when said expansible means is in its expanded condition due to said expansible means containing fluid because of the tank containing fluid at the selected level, said expansible means collapsing to allow supply of pressurized gas from said supply means through said support means when the fluid flows from said expansible means due to the fluid not being present in the tank at the selected level;
and means to determine whether pressurized gas from said supply means flows through said support means.

3,885,436
TEMPERATURE DETECTING SYSTEM
Charles A. Meyer, Media, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 160,649, July 8, 1971, abandoned. This application Oct. 2, 1973, Ser. No. 402,685
Int. Cl. G01k *11/24*
U.S. Cl. 73—339 A **3 Claims**



1. A system for indicating the average temperature of a fluid flowing through a duct, said system comprising a conduit disposed generally wholly within said duct, said conduit having a plurality of apertures disposed therein to admit fluid from substantially all portions of said duct, said conduit also having an opening disposed therein to provide constant drainage of fluid therefrom, whereby the fluid in said conduit is representative of a crosssection of the fluid in the duct, means for producing an acoustical vibration within said conduit, the frequency produced by said acoustical vibration producing means being a function of the sonic velocity of the fluid within the conduit, and means for sensing the frequency of said acoustical vibration within said conduit and converting said frequency to a temperature indication, whereby, immediately, a very accurate average fluid temperature is indicated.

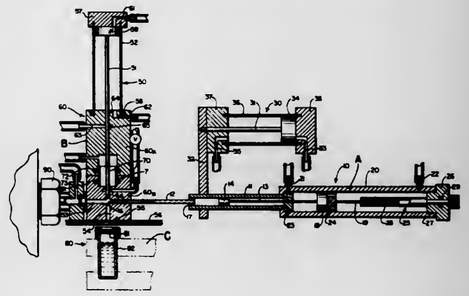
3,885,437
DEVICE FOR SAMPLING EXHAUST STACK EFFLUENT
Paul E. Reagan, Kingston, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Feb. 26, 1974, Ser. No. 446,067
Int. Cl. G01n *1/24, 1/26*
U.S. Cl. 73—421.5 A **3 Claims**



1. An apparatus for obtaining a substantially homogeneous sampling of an effluent stream flowing through an elongated dry stack, comprising a fixture disposed within said stack, a tubulation supported by said fixture and projecting along the longitudinal axis of the stack, a rotatable shaft disposed within said tubulation, an arm secured to said shaft and extending in a direction orthogonal to the latter with said arm having a length substantially corresponding to the inner radius of said stack and displaceable in a cross-sectional plane of the latter in response to shaft rotation, slide means carried by said arm, an effluent-gathering means affixed to said slide means, gear means coupling said slide means to said tubulation for effecting displacement of said effluent-gathering means along said arm in response to rotation of said shaft.

3,885,438
AUTOMATIC FLUID INJECTOR
Rano J. Harris, Sr., 1945 Carolyn Sue Dr., and Rano J. Harris, Jr., 9880 S. Riveroaks Dr., both of Baton Rouge, La. 70815
Continuation-in-part of Ser. No. 223,663, Feb. 4, 1972, Pat. No. 3,754,443. This application May 31, 1973, Ser. No. 365,552The portion of the term of this patent subsequent to Aug. 28, 1990, has been disclaimed.
Int. Cl. G01n *1/14*
U.S. Cl. 73—422 GC **22 Claims**

1. In apparatus for repetitively accurately measuring and injecting preselected quantities of fluid specimens into a media such as an inlet to an analytical instrument, the combination comprising
a housing, which can be mounted adjacent an inlet leading into the analytical instrument,
a tubular member located within the housing, said tubular member including a pair of communicated openings therethrough, a first opening of the pair extending through the tubular member and housing, a second axial opening adjacent to and communicated with the said first opening which can be aligned upon the inlet leading into the analytical instrument,
a needle syringe mounted upon the forward end of a piston of a cylinder-piston unit affixed upon the housing, said syringe including
a barrel, including forward and rearward tubular portions, formed by an enclosing wall defining an axial opening,
a chamber of substantially cylindrical-shaped cross section located at the front end of the forward portion of the barrel,
an enlarged chamber opening communicating with and located rearward of the said chamber,
an outlet located within the forward portion of the barrel, rearward of the enlarged chamber opening,



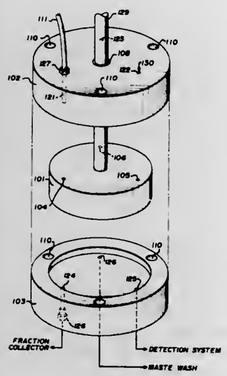
a hollow needle, provided with an opening in the dispensing end thereof, mounted at the forward end of the barrel, the opening through said needle communicating with the axial opening through the barrel,
a reciprocable plunger mounted within the barrel, said plunger including a forward portion fitted snugly within the chamber of substantially cylindrical-shaped cross section located at the forward end of the barrel and a rearward portion provided with an enlarged head of cross-section corresponding substantially with the cross-section of the rearward portion of the barrel within and through which the head moves on reciprocation of the plunger,
a seal located within and separating the forward and rearward portions of said barrel, the plunger being extended therethrough and reciprocable therein such that the head of the plunger traverses the rearward tubular portion of the barrel and the forward portion of the plunger traverses the forward portion of the barrel,
a plunger adjustment assembly located within the rearward portion of the barrel, within the path of travel of said plunger, wherein is included an end plug which fits within and encloses the rearward portion of said barrel, and a pair of telescoping members located forward of the said enclosing end plug, and means whereby the pair of telescoping sections can be lengthened or shortened in an axial direction along the length of the rearward tubular portion of the barrel such that the distance travelled by the reciprocable plunger can be preset as desired,
means provided within the rearward tubular portion of the barrel for reciprocation of the plunger,
an injector feed unit including a hollow probe provided with communicating upper and lower side openings mounted on the forward end of a piston of a cylinder-piston unit affixed upon the housing, said probe being aligned upon the said first opening of the tubular member within and through which the probe can be reciprocated by movement of the piston, and extended through the said first opening, and
means for transporting a fluid specimen containing a vial, with a septum cap, below the said first opening and into

the path of the hollow probe for penetration of the septum for pick-up of the fluid specimen via the lower side opening of the probe and conveyance of same via the upper opening of the probe, through the communication connecting the first and second openings, and into the opening within the dispensing end of the needle and into the cylindrical-shaped chamber in the forward barrel portion of the syringe, which fluid specimen can flow therethrough to the enlarged chamber outlet located within the forward portion of the barrel, and a predetermined quantity of fluid specimen can be trapped and accurately measured within the forward barrel portion of the syringe by forward movement of the tip of the plunger past the outlet and enlarged chamber located within the forward portion of the barrel, the needle of the needle syringe then thrust through the said second opening of the tubular member and into the inlet to the analytical instrument, and the accurately measured quantity of fluid specimen injected into the inlet by continued forward movement of the plunger.

3,885,439
ROTATING SAMPLING VALVE

James Edward Stone, Ringwood, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 24, 1973, Ser. No. 409,341
Int. Cl. G01n *1/20*
U.S. Cl. 73—422 GC **5 Claims**



1. A rotating sample valve comprising:

a. a cylindrical plate containing a plurality of channels parallel to its longitudinal axis, said channels being symmetrically disposed about the center axis of said cylindrical plates;

b. an upper and lower fixed plate between which said cylindrical plate is rotatably mounted, said upper plate and lower plate each containing the same plurality of channels symmetrically disposed around their respective center axis so that such channels are in operative flow relation with corresponding channels in said cylindrical plate;

c. a stepping motor means which is operatively connected to said cylindrical plate, which stepping motor means has a step proportional to the number of channels in each said cylindrical, upper and lower plates;

wherein one of said channels in said upper plate is operatively connected with inlet means for a first liquid stream and the corresponding channel in the lower plate is operatively connected to outlet means,

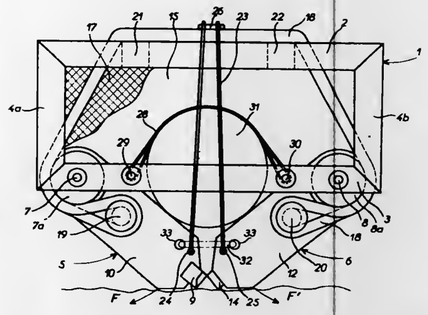
wherein another of said channels in said upper plate is operatively connected with inlet means for a second liquid stream and the corresponding channel in the lower plate is operatively connected with a second outlet means; and

wherein another of said channels in said upper plate is operatively connected with inlet means for a third liquid stream and the corresponding channel of said lower plate is operatively connected with a third outlet means, whereby a signal to said stepping motor means causes rotation of said cylindrical plate relative to said upper and lower plates with concomitant entrapment of any liquid stream contained in said channels in said cylindrical plate and transport of said entrapped stream to the next position of said cylindrical plate with respect to said fixed plates.

3,885,440
FREE-GRAB DEVICE FOR COLLECTING UNDERWATER SAMPLES

Andre Rossfelder, La Jolla, Calif., assignor to Le Nickel; Centre National pour l'Exploitation des Oceans, both of Paris, France and Tetra Tech Incorporated, Rosemead, Calif., part interest to each

Filed July 17, 1973, Ser. No. 379,940
Claims priority, application France, July 19, 1972, 72.26061
Int. Cl. G01n *1/08*
U.S. Cl. 73—425.2 **7 Claims**



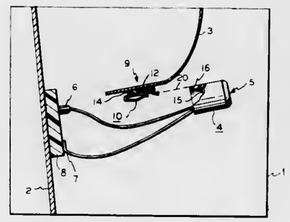
1. A free-grab device for collecting underwater samples, the device comprising a box-like frame, the bottom and two side faces of which are covered at least partially by an orificed wall, the other side faces being uncovered; two similar pick-up jaws which are fitted with scraping blades and which are pivoted on said frame to be displaceable between an open position in which they extend generally towards one another and a closed position in which they are in effective engagement with the uncovered side faces of the frame; return means acting on said jaws to urge them outwardly of said open position towards said closed position; releasable locking means acting on said jaws to lock them in said open position; and release means acting on said locking means to free said jaws when the device touches the sea-bed.

3,885,441
DASHBOARD MOUNT FOR AUXILIARY AUTOMOBILE INSTRUMENT

John Paul Jones, Jr., Wayne, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 275,044, July 25, 1972, abandoned. This application Feb. 14, 1974, Ser. No. 442,424
Int. Cl. G01d *11/24*
U.S. Cl. 73—431 **1 Claim**

1. A mounting structure for an auxiliary instrument on a dashboard of an automobile comprising in combination a spring clip member of resilient metal having a planar area with a friction clip portion extending therefrom and bent back towards said planar area in a shape to frictionally engage a panel section inserted between the clip portion and the inner surface of said planar area, and an adhesive layer on the outer surface of said planar area of such material that will engage the exposed surface of an automobile dashboard wherein said

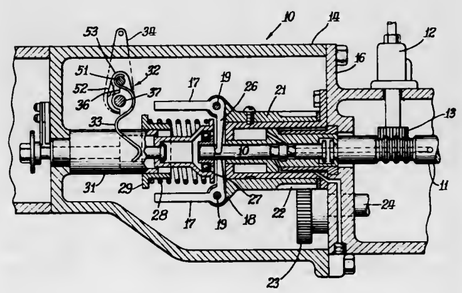


instrument is housed in a casing having a laterally extending back panel section and a visible front indicator panel, said laterally extending back panel section being disposed between said clip portion and the inner surface of said planar area, wherein said casing has recessed in the open back an instrumentation compartment closure substantially closing the rear portion of said casing.

3,885,442
GOVERNOR WITH ADJUSTING MEANS

Paul J. Staebler, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 17, 1973, Ser. No. 425,219
Int. Cl. G05d *13/20*
U.S. Cl. 73—543 **5 Claims**

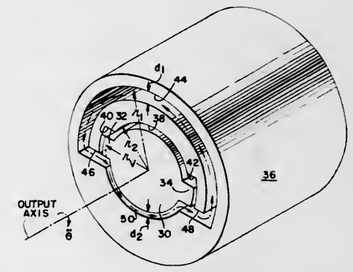


1. In a governor of the type having a governor spring interacting with a plurality of flyweights to regulate the speed of an engine, adjustment means for adjusting said engine regulation comprising a resilient lever having a cantilevered portion acting against said governor spring and adjustable fulcrum means for regulating the length and thereby the spring rate of said cantilevered portion of said resilient lever, wherein said fulcrum means comprises a semi-cylindrical rotatable member rotatably mounted on a shaft and having a first arcuate surface corresponding to a mating surface of the resilient lever and a second arcuate surface intersecting said first arcuate surface to form a shoulder comprising a fulcrum for said cantilevered portion of said resilient lever.

3,885,443
FLOATED GYRO WITH ANGULAR INERTIA COMPENSATION

William C. Albert, Boonton, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed May 24, 1973, Ser. No. 363,428
Int. Cl. G01c *19/20*
U.S. Cl. 74—5 R **9 Claims**

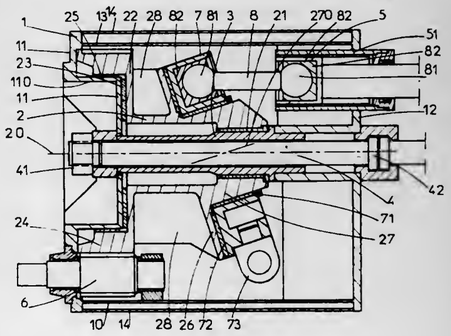


1. A single degree of freedom floated gyro compensation system, comprising a hollow gyro case having an output axis, a gyro float mounted within said case and rotatable about said output axis, floatation fluid filling the space between said case and said float, and duct means formed in said case about said output axis communicating with said floatation fluid for compensating for the inertia of the float with respect to the output axis by means of fluid inertia.

3,885,444
BARREL MECHANISM FOR A PISTON PUMP

Gerard Chanlon, Le Creusot, France, assignor to Creusot-Loire, Paris, France

Filed Nov. 8, 1973, Ser. No. 413,895
Claims priority, application France, Dec. 14, 1972, 72.44532
Int. Cl. F16h *23/08*; **F15h** *23/10*
U.S. Cl. 74—60 **8 Claims**



1. A barrel mechanism comprising:

a. a rotatable shaft having an axial bore;

b. a casing within which said shaft extends and having ends perpendicular to the axis of said shaft;

c. bearings supported respectively by said casing ends and supporting said shaft;

d. a plate fixed to said shaft and extending obliquely with respect to said axis of said shaft;

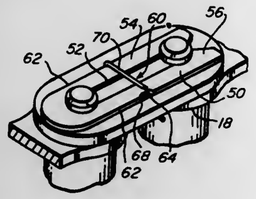
e. a barrel bearing on said oblique plate, centred about an axis intersecting said axis of said shaft, on an inclined cylindrical bearing perpendicular to said plate;

f. means locking said barrel against rotation;

g. a prestressed tie-rod extending along the said axis of said shaft in said axial bore and connecting said casing ends to

absorb axial thrust on said barrel, said oblique plate being integral with a thrust plate on that end of said casing remote from said barrel with respect to said oblique plate, said thrust plate being fixed to said shaft perpendicular to said axis of said shaft, said tie-rod extending in a tubular distance piece fixed to said two ends of said casing and extending through said axial bore in said shaft.

3,885,445
MASTER LINK ASSEMBLY
Joseph V. Montano, Hartford, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Nov. 27, 1972, Ser. No. 309,831
Int. Cl. F16g *13/02*
U.S. Cl. 74—250 R **8 Claims**

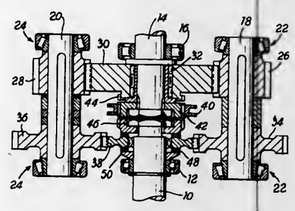


1. A master link assembly for releasably coupling the opposing ends of a series of articulated links to form a chain wherein the opposing ends are defined by a pair of roller link assemblies each having a pair of opposing link plates with pitch holes extending between the opposing faces thereof and a pair of tubular bushings press fitted thereinto comprising
first and second link plates each including a pair of pitch holes extending between the opposing faces thereof,
a pair of connecting pins selectively configured for slidable insertion into a tubular bushing and for insertion into the pitch holes of said first and second link plates,
means for limiting the separation of said first and second link plates to a predetermined maximum separation,
said limiting means including a bifurcated clip spring selectively configured for placement about said connecting pins adjacent the outer face of one of said first and second link plates comprising the master link plate,
said one master link plate including a pair of fastener receiving bores extending downwardly from the outer surface therof,
fastener means selectively insertable into said fastener receiving bores for extending about and against the opposing arms of said bifurcated spring clip to secure said arms against said pins and prevent the transverse displacement and thereby the separation thereof,
means for maintaining said fastener means in said fastener receiving bores and for maintaining said fastener means at a position remote from the coupled roller link assemblies whereby said fastener means will not interfere with the free articulation thereof.

3,885,446
GEARING-TORQUE DIVISION
Eric Alexander Pengilly, Hawkesbury House, Woolton Hill, near Newbury, England
Filed Apr. 27, 1973, Ser. No. 354,955
Claims priority, application United Kingdom, Apr. 29, 1972, 20002/72
Int. Cl. F16h *3/08, 57/02*
U.S. Cl. 74—331 **19 Claims**

1. A transmission comprising first and second rotatable members between which torque is to be transmitted, a first helical gear rotatable with said first member, a plurality of further helical gears meshed with said first gear, coupling means for coupling said further gears with said second member, and mounting means for said first gear arranged to permit said first gear to pivot about an axis transverse to the rotational axis of said first gear under the action of axially directed components of reaction forces arising from said further gears under load so that torque can be transmitted between the members through each of said further helical gears.

11. A transmission comprising first and second members between which torque is to be transmitted; a plurality of intermediate shafts coupled with one of said members; a plurality of gear assemblies each comprising a plurality of helical gears fixed respectively on said intermediate shafts and an associated helical gear meshed with each of the intermediate shaft gears in its assembly, said gears of each of said assemblies having different meshing radii from said gears of each of the other of said assemblies to provide different transmission ratios; clutch means for selectively clutching said associated gears to the other of said members; and torque sharing means for causing torque to be transmitted simultaneously through each of the intermediate shaft gears of any assembly whose associated gear is clutched to said other member, the helix



angles of the gears of each of said assemblies being larger as are the meshing radii of said intermediate shaft gears thereof so that, the larger said meshing radius, the greater the rotational free play between the associated gear and the intermediate shaft gears, said rotational free play being such that an assembly whose associated gear is not clutched to said other member does not prevent transmission of torque by each intermediate shaft gear of an assembly whose associated gear is clutched to the other member.

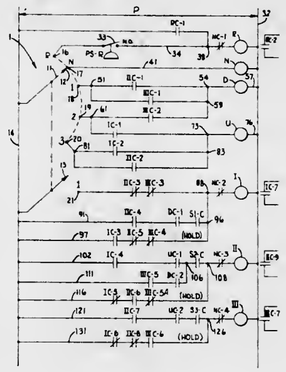
12. A transmission for obtaining reversible drive from a source of unidirectional, rotational drive comprising an input member for connection with said source, an output member to be reversibly driven, an output member driving gear for driving said output member, first and second couplings between said gear and said input member arranged to drive said gear in opposite directions and clutch means for selecting which of said couplings is effective to drive the gear.

18. A transmission according to claim 17, wherein said reverse gear means comprises a single gear in constant mesh with said range section intermediate shaft gear.

3,885,447
SHIFT CONTROL
Eugene R. Braun, Royal Oak, and Elmer A. Richards, Oshtemo, both of Mich., assignors to Eaton Corp., Cleveland, Ohio
Filed Oct. 9, 1973, Ser. No. 404,189
Int. Cl. F16h *5/50*
U.S. Cl. 74—336 **12 Claims**

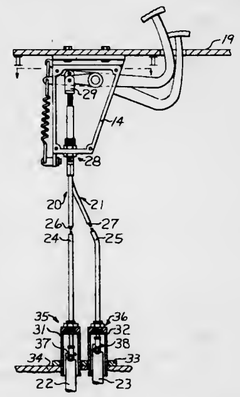
1. A semi-automatic, multi-ratio transmission having at least three power paths defining low, intermediate and high speed ratios, the improvement comprising:
speed sensitive controlling means for controlling the automatic shifting of said transmission, said controlling means including first control means for effecting automatic shifting of said transmission only in an upshift direction and second control means for effecting automatic shifting of said transmission only in a downshift direction;
operator controllable selector means coacting with said first and second control means for determining the direction of automatic shifting; and

holding means for preventing downshifting of said transmission when said first control means is activated and for



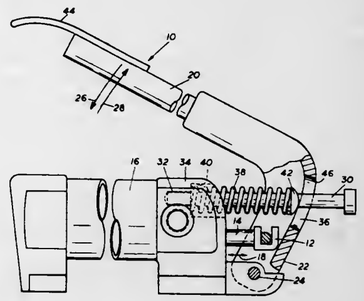
preventing upshifting of said transmission when said second control means is activated.

3,885,448
CONTROL LEVER AND LINKAGE SYSTEM
Duane E. Beals, Decatur; William W. Blake, Wyoming, and Paul C. Rosenberger, Decatur, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 272,407, July 17, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 450,211
Int. Cl. F16c *1/10*
U.S. Cl. 74—501 **6 Claims**



1. A sealed control lever and linkage system comprising in combination:
at least one manually manipulatable control lever;
at least one remotely located movable control element;
linkage means including an enclosed flexible cable comprising an outer guide sleeve and an inner flexible wire element slidably mounted within said sleeve for connecting said control lever to said remotely located control element;
a first housing sealingly enclosing one end of said cable and one end of said control lever, said lever including a shaft rotatably journaled in one wall of said housing and having a first arm secured to said shaft externally of said housing for manual manipulation and a second arm secured to said shaft internally of said housing and detachably secured to one end of said flexible wire element; and
a second housing sealingly enclosing the other end of said cable and the connection of said flexible wire element to said remotely located control element.

3,885,449
FOOT OPERATION FOR A PUMP
Cyril Robert Green, Honesdale, Pa., assignor to Mario D. Medio and Grace E. Medio, both of Malverne, N.Y.
Filed June 24, 1974, Ser. No. 482,492
Int. Cl. G05g *1/14*
U.S. Cl. 74—512 **5 Claims**



1. A foot operator for a pump or the like comprising a member mounted for movement from a ready position through a pivotal traverse providing a power stroke, a guide member oriented in the plane of said pivotal traverse operatively arranged to confine said member to said plane during said power stroke, and a return spring so disposed on said guide member as to be compressed during said pivotal traverse and to bias said member through a reverse direction return stroke back into said ready position thereof, said guide member having a portion located along the path of said pivotal traverse in physically abutting relation to said member during said return stroke, whereby said guide member controls the spring bias used for said return stroke by limiting the extent of said reverse direction movement of said member, wherein said guide member is a cylindrical rod which is projected through an arcuate slot in said member.

3,885,450
SPEED-SETTING ARRANGEMENT FOR CAR ACCELERATOR PEDAL
Harold E. Tatum, 4605 St. Rita Dr., Louisville, Ky. 40219
Filed Apr. 10, 1974, Ser. No. 459,536
Int. Cl. G05g *1/14*
U.S. Cl. 74—513 **4 Claims**



1. In a car accelerator arrangement for use with an obtuse-angled throttle-connected lever vertically-arranged and nor-

mally biased in its normal idling position, in which its upper and lower ends are urged forwardly and rearwardly respectively, and pivotally secured at its apex to the firewall of a car for swinging movement about the horizontal axis of its apex out of said idling position against said bias through a speed-setting position to a full-throttle position, an improved speed-setting arrangement comprising:

A. a pedal pivot on the lever near its lower end;

B. a foot-operated accelerator pedal, having upper and lower portions, and pivoted at its mid-portion to said pedal pivot for movement bodily therewith to all of said positions and for rocking movement relative thereto between said speed-setting and full-throttle positions;

C. means biasing the accelerator pedal so that its lower portion is normally urged resiliently forward into a given angular position relative to said lever; and

D. stop means mounted between the lower end portion of the pedal part and the firewall part in position to bridge the space therebetween partially when said pedal pivot is on the rear side of said speed-setting position and to bridge said space completely when said pedal pivot is moved forwardly into said speed-setting position.

3,885,451
PYROTECHNICALLY CONTROLLED MECHANICAL STEPPING DRIVE

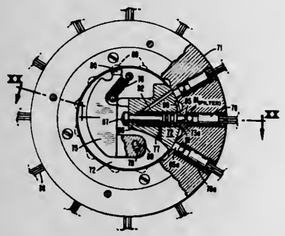
Emile F. J. Hamon, La-Seyne-sur-Mer, France, assignor to Etat Francais, Delegation Ministerielle pour l'Armement, Paris, France

Filed Oct. 24, 1972, Ser. No. 261,108

Claims priority, application France, Mar. 3, 1972, 72.07354; Mar. 3, 1972, 72.07355

Int. Cl. F02n *13/00*

U.S. Cl. 89—1 B **13 Claims**



1. A mechanical stepping drive apparatus, comprising:

a housing having a guide chamber formed therein;

first and second pyrotechnic igniters contained in said housing along and in communication with said guide chamber;

a movable member mounted in said guide chamber for step-by-step sliding movement in a forward direction in said guide chamber;

stopping means for substantially preventing sliding movement of said movable member in a reverse direction;

locking means for locking said movable member into engagement with said first igniter;

unlocking means for unlocking said movable member from engagement with said first igniter by gas pressure produced upon ignition of said first igniter; and

urging means for urging said movable member into sliding movement one step in said forward direction in said guide chamber toward and into locking engagement with said second igniter upon ignition of said first ignitor.

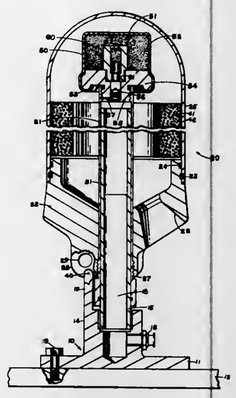
3,885,452
ROCKET CATAPULT AIRCRAFT ESCAPE ARRANGEMENT

Manuel Weinstock, Philadelphia, Pa., and Frank T. Pisano, Voorhees, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 12, 1974, Ser. No. 441,915

Int. Cl. F41f *3/06*

U.S. Cl. 89—1.807 **5 Claims**



1. In an aircraft emergency escape system having a pedestal attached to an aircraft frame and supporting a rocket catapult assembly,

said rocket catapult assembly having a booster tube secured to said pedestal,

a booster propellant charge cartridge positioned in one end of said booster tube adjacent said pedestal,

an electric ignition element secured to said pedestal and in fluid communication with said cartridge,

a rocket motor assembly comprising a launch tube slidably mounted on said booster tube and secured to a rearwardly exhausting nozzle unit, a rocket tube secured to said nozzle unit and containing a cylinder of rocket propellant grain, and a delay rocket motor igniter unit secured to said launch tube adjacent the other end of said booster tube,

a shear pin connecting said nozzle unit to said pedestal, and means on said nozzle unit for connection to a pendant line of a seat occupant's shoulder harness.

3,885,453
REGULATION OF TRAVERSING MOVEMENT OF TARGET ALIGNMENT APPARATUS

Howard P. Higginson, and Robert P. Mack, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 48,787, June 19, 1970, abandoned. This application July 24, 1972, Ser. No. 274,528

Int. Cl. F41f *21/06*

U.S. Cl. 89—37 H **11 Claims**

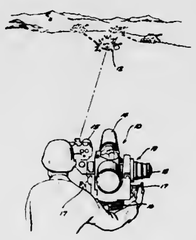
1. In combination, non-Newtonian damped traversing unit and sighting means disposed on said traversing unit for locating and tracking objects;

pivot means providing at least two degrees of movement about azimuth and elevation axes for traversing operations about said axes including movement over a range of traversing rates during operation of the traversing unit;

fluid damper means for respective axes coupled to said pivot means for producing non-linear dampening of said movement about said axes over the range of traversing rates;

said damper means comprising annular sections having spaced, opposing annular surfaces defining a gap and disposed for relative movement including one of said sections which is coupled to said pivot means to be movable therewith to produce relative movement at a rate which is a function of said traversing rates;

said damper means including a highly viscous fluid disposed in the gap between said sections and engaging the opposing surfaces of the damper to produce shear in said fluid in the range of traverse rates for damping resistance to relative movement, said highly viscous fluid at the desired high viscosity and in the range of traversing rates exhibiting a non-Newtonian characteristic including repeatedly exhibiting a substantial reduction in apparent viscosity in the intermediate and higher traversing rates of the range of each traversing operation exceeding predetermined rates of shear to limit the damping resistance wherein the degree of said reduction is apparent viscosity and limiting of damping resistance is determined by the non-Newtonian characteristic of the fluid at the desired high viscosity thereof, said damper means being constructed and arranged to utilize the substantial reduction in apparent viscosity provided by the non-Newtonian characteristic of the highly viscous fluid in the gap by producing



relative movement of said opposing surfaces including relative movement below and above said predetermined shear rates within the range of traversing rates of the traversing unit to produce non-linearity in damping resistance while maintaining a stable area of fluid contact with the opposing annular surfaces of the sections forming the gap for producing a substantial decreasing rate of damping resistance to higher rates of movement producing relative movement of said opposing surfaces above said predetermined shear rates in the upper range of traversing rates in the operation of said unit wherein said fluid is made responsive to relative movement of said annular sections in the range of shear rates to produce shear stresses in the fluid for non-linear damping resistance over the range of traversing rates for damping of movement of said pivot means about said axis as a function of rate of movement so that the resistance to movement is substantially limited to below a predetermined torque applied to said pivot means for facilitating relative movement exceeding a predetermined desired traversing rate in said range while maintaining damping resistance below said predetermined desired traversing rate for substantial damping of movement of the traversing unit in the lower range of operation thereof.

3,885,454
FLUID ACTUATING DEVICE FOR AN ELECTRIC CIRCUIT BREAKER

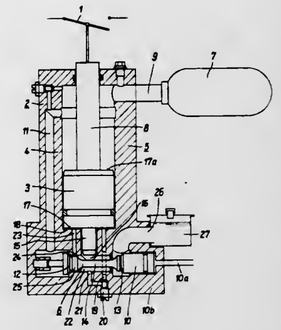
Gerhard Grieger, and Joaquin Bohrdt, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed July 2, 1973, Ser. No. 375,747

Claims priority, application Germany, July 13, 1972, 2234812

Int. Cl. F15b *15/22, 15/17;* **H01h** *35/38*

U.S. Cl. 91—26 **4 Claims**



1. A fluid actuating device for an electric switching apparatus such as a high-voltage power circuit breaker or the like comprising: an actuator for actuating the electric switching apparatus; said actuator including an actuator cylinder, and a differential piston movable in said cylinder between first and second end-positions corresponding to the open and closed positions respectively of the switching apparatus, said differential piston having two end-faces for receiving fluid pressure force, one of said end-faces having a surface area greater than the surface area of the other one of said two end-faces; high-pressure supply means for supplying fluid to said two end-faces; valve means for alternately interrupting and passing the fluid from said fluid supply means to said one end-face whereby said differential piston is caused to move from said second end-position to said first end-position when said valve means interrupts fluid to said one end-face thereby relieving the fluid pressure thereon; said one end-face of said differential piston and the portion of said actuator cylinder facing towards said one end-face conjointly defining a chamber having a volume that changes in dependence upon the movement of said piston in said actuator cylinder; passage means formed in said actuator cylinder for conducting fluid to and from said chamber in accordance with the movement of said piston between said end-positions; damping means for reducing the speed of said piston in the course of the movement of the same toward said first end-position from said second end-position and before said first end-position is reached, said damping means including: a bypass for conducting fluid away from said chamber, an ancillary piston projecting from said one end-face of said differential piston, said passage means being an opening configured to accommodate and recieve said ancillary piston therein for interrupting the flow of fluid passing therethrough from said chamber before said differential piston reaches said first end-position thereby causing the fluid remaining in said chamber to be conducted away through said bypass whereby the speed of said differential piston is reduced; a second bypass connected in parallel with said first-mentioned bypass; said actuator including a valve-inlet passage for directing fluid from said fluid supply means to said one end-face of said differential piston, and a valve-outlet passage for directing fluid away from said one end-face; and, said valve means comprising a member movable between first and second positions, two valve bodies forming part of said member and corresponding to respective ones of said passages

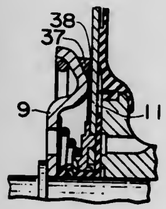
for opening and closing the same in dependence upon the position of said member, and a slide-valve body also forming part of said member for opening and closing said second bypass in the same sense as said valve-inlet passage in opened and closed and so controls the passage of fluid through said second bypass thereby getting fluid to said one end-face of said piston during the time said ancillary piston is still in said opening during the first part of a movement of said differential piston to said second end-position from said first end-position.

3,885,455

MECHANICAL SERVO MEANS

Yasuo Kita, Takarazuka, Japan, assignor to Sumitomo Electric Industries, Limited, Osaka, Japan

Division of Ser. No. 196,998, Nov. 9, 1971, Pat. No. 3,772,963. This application Sept. 6, 1973, Ser. No. 394,901
Claims priority, application Japan, Apr. 9, 1971, 46-22414
Int. Cl. F15b *9/10*
U.S. Cl. 91—369 B **2 Claims**



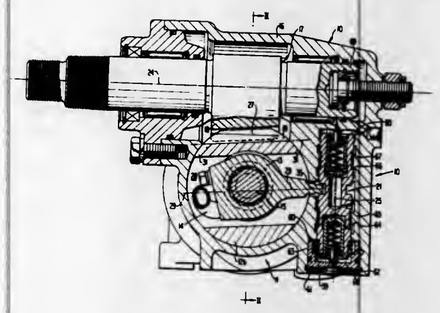
1. In a mechanical servo means of the type including a booster body, a valve body having a hollow portion at its end, a push rod inserted at its one end into the hollow portion of said valve body in a slidable and coaxial relation therewith, a diaphragm having an outer periphery secured to said booster body and an inner periphery secured to said valve body to form a first chamber and a second chamber in said booster body, a finger plate abutting at a portion thereof on a side wall of said diaphrgm and slidable with respect to said push rod, a fulcrum plate secured to said push rod and urged by a return spring in one direction to engage at its outer periphery with the finger plate at a first fulcrum point located radially inwardly from a point at which the resultant force of the pressure on the diaphragm acts, said valve body being provided with passage means for communicating said second chamber with atmosphere, said finger plate having means for opening and closing said passage means, said opening means being adapted also to control the communication between the first chamber and the second chamber; the improvement which comprises resilient means disposed between said finger plate and the fulcrum plate so as to form a second fulcrum point which is radially deviated from said first fulcrum point whereby an effective fulcrum is provided which is displaced from the second point to the first point when the resilient force is overcome by the force exerted by the finger plate toward the fulcrum plate, said resilient means including a rubber ring of triangular cross-section, the outermost annular edge of the rubber ring being in engagement with the finger plate to provide the second fulcrum point.

3,885,456

SERVO-STEERING DEVICE FOR VEHICLES

Hans-Joachim M. Forster, Stuttgart-Riedenberg, and Manfred Bulow, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Continuation of Ser. No. 269,876, Aug. 7, 1972, abandoned, which is a continuation of Ser. No. 62,039, Aug. 7, 1970, abandoned. This application Nov. 21, 1973, Ser. No. 418,053
Claims priority, application Germany, Aug. 8, 1969, 1940490
Int. Cl. F15b *9/10, 13/04*
U.S. Cl. 91—380 **72 Claims**



1. A servo-steering arrangement for vehicles comprising: housing means, a working piston displaceably supported within a working cylinder formed in said housing means, a steering shaft having toothed segment means in meshing engagement with toothed rack profile means provided on said working piston, a steering nut rotatably supported in said working piston in a position axially fixed with respect to said working piston, a steering worm axially non-displaceably supported within said housing means, said steering nut being helically movably connected with said steering worm, and control slide valve means for controlling fluid flow to working spaces adjacent the working piston, the axes of the steering shaft and the control slide valve means being substantially perpendicular to one another, the axis of the steering shaft being disposed in a diametric plane extending substantially perpendicular to the axis of rotation of the steering nut, the toothed segment means of said steering shaft having a tooth width disposed approximately centric to an axial plane of the housing means, said axial plane extending substantially perpendicularly to the axis of the steering shaft, the longitudinal axis of the working piston being disposed in said axial plane, the working piston being provided with substantially radial aperture means within the area of its toothed rack profile means for the insertion of the steering nut, the center axis of the aperture means being substantially perpendicular to the longitudinal axis of the working piston.

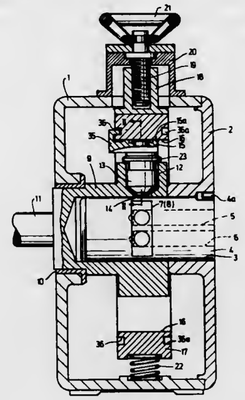
3,885,457

RADIAL PISTON MACHINE

Paul Bosch, Ludwigsburg, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Apr. 6, 1973, Ser. No. 348,737
Claims priority, application Germany, Apr. 19, 1972, 2218872
Int. Cl. F01b *13/06*
U.S. Cl. 91—488 **8 Claims**

1. In a radial piston machine, a combination comprising a rotary cylinder block having substantially radially extending cylinders; pistons reciprocably extending into said cylinders; a control ring assembly spacedly surrounding said pistons; shoes interposed between said assembly and said pistons; and a ball and socket joint articulately connecting each of said shoes with one of said pistons, the ball of each of said joints having a convex surface whose radius of curvature exceeds the radius of the respective piston and the socket of each of said joints having a concave surface adjacent to the convex surface of the respective ball and defining therewith a hydrostatic relief chamber which is in communication with the pressure side of said machine and whose area is at least 90 percent of the cross sectional area of the respective piston.

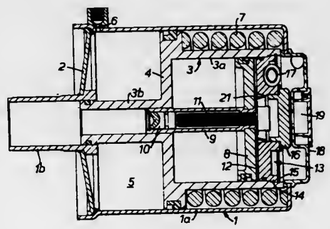


3,885,458

VEHICLE WHEEL BRAKE ACTUATORS

Andrew Charles Walden Wright, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Nov. 26, 1973, Ser. No. 418,919
Claims priority, application United Kingdom, Nov. 28, 1972, 55012/72
Int. Cl. F01b *7/20*
U.S. Cl. 92—52 **7 Claims**



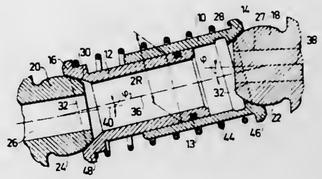
1. A vehicle wheel brake actuator comprising a first cylinder, a first fluid pressure operable member working in said first cylinder, resilient biasing means biasing said first member towards an actuating position, said first member being normally held off by fluid pressure opposing said biasing means, a second cylinder, a second fluid pressure operable member working in said second cylinder and movable between a normal position and an actuating position, output means, means releasably connecting the output means to said second member and movable therewith for transmitting forces of said second member when said second member travels toward its actuating position, means engaging said first member with said second member to transfer the biasing force of said resilient biasing means through said second member and said releasable connecting means to said output means upon release of said opposing fluid pressure, said connecting means comprising axially movable release means releasably connected to said second member for movement therewith between its normal and actuating positions, said release means being axially movable relative to said second member to release the forces of said biasing means acting on said output means following release of said opposing fluid pressure.

3,885,459

TELESCOPIC PISTON-CYLINDER ASSEMBLY FOR HYDRAULIC MACHINES AND MACHINERY COMPONENTS

Lennart Werner Freese, Jarfalla, Sweden, assignor to New-Invent S.A., Geneva, Switzerland

Continuation-in-part of Ser. No. 114,935, Feb. 12, 1971, Pat. No. 3,742,819. This application Mar. 26, 1973, Ser. No. 345,073
Claims priority, application Sweden, Feb. 20, 1970, 2183/70
Int. Cl. F01b *15/04, 31/00*
U.S. Cl. 92—119 **5 Claims**



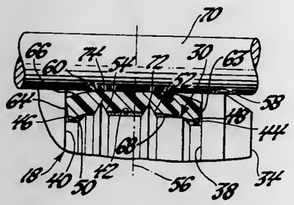
1. A telescopic piston cylinder assembly for use with a pressure fluid, comprising:
- a telescopic unit having first and second bearing surfaces formed on the opposite ends thereof;
- first and second reaction-force absorbing seat means respectively engaging said first and second supporting surfaces for supporting said unit;
- said first and second seat means having first and second seating surfaces, respectively, disposed in slidable bearing engagement with said first and second bearing surfaces, respectively, for permitting angular movement of said unit relative to at least one of said seating surfaces;
- said telescopic unit having a maximum cross-sectional pressure area defined by a predetermined diameter, and including a sleeve-like cylinder and a sleeve-like piston slidably received in said cylinder, the opposed ends of said cylinder and piston being axially overlapped, the other ends of said cylinder and piston respectively having said first and second bearing surfaces thereon;
- passage means communicating with the interior of said unit for permitting pressure fluid to be supplied thereto and removed therefrom;
- one of said seating surfaces being provided with an internal conical configuration, and the corresponding one of said bearing surfaces as disposed in engagement with said one seating surface having an outer convex spherical configuration whereby it engages said one seating surface substantially along a circular line of contact, said line of contact having a diameter of magnitude similar to said predetermined diameter; and
- the other of said seating surfaces being provided with an outer convex spherical configuration, and the other of said bearing surfaces as disposed in engagement with said other seating surface having an internal conical configuration whereby it engages said other seating surface substantially along a circular line of contact having a diameter of magnitude similar to said predetermined diameter.

3,885,460

PISTON RING GROOVE FOR FLUOROCARBON SEAL RINGS

Kwang H. Park, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 2, 1973, Ser. No. 337,377
Int. Cl. F16j 1/02, 9/00
U.S. Cl. 92—249 1 Claim



1. In combination with an air conditioning compressor having front and rear cylinder blocks provided with a pair of opposed axially aligned cylindrical bores, a double-acting piston assembly installed for reciprocation in said pair of cylindrical bores comprising, a cylindrical double-acting piston having a peripheral groove adjacent each piston head, each said peripheral groove including front and rear radially extending spaced side walls and a bottom wall, front and rear annular recesses recessed below each end of each said bottom wall and defining said bottom wall therebetween, front and rear V-sectioned ridges asymmetrically located on the periphery of each said bottom wall, said front ridge located forward of and adjacent to the medial transverse plane of its associated groove, said rear ridge located about half-way between said medial transverse plane and said groove rear side wall, the V-sectioned ridges having their peaks radially located substantially intermediate said bottom wall and the outer diameter of the piston, an elastic flexible seal ring received in each of said grooves, each said seal ring being a continuous annular member of polytetrafluorethylene material having an arcuate cross-section, each said seal ring normally in the form of a washer having smooth inner and outer peripheral surfaces, each said seal ring having a thickness substantially equal to the radial depth of its groove measured between the diameter of the groove bottom wall and the diameter of said piston, the seal rings being positioned in their respective grooves with each seal ring outer smooth surface referenced substantially flush with the piston diameter and each seal ring forward and rear edge being positioned adjacent its associated groove radial side wall, said V-sectioned ridges of each groove penetrating the inner peripheral smooth surface of its associated seal ring an amount sufficient to seat the rings therein in a sealed manner such that each seal ring maintains a generally arcuate shape in cross section, and the asymmetrical positioning of the groove V-sectioned ridges insures that the front and rear edges of each seal ring is received into its associated groove front and rear annular recesses an amount sufficient to define a clearancce between the forward portion of the seal rings and the outer diameter of the piston to insure that each of the piston heads will be readily received into their associated opposed cylindrical bores.

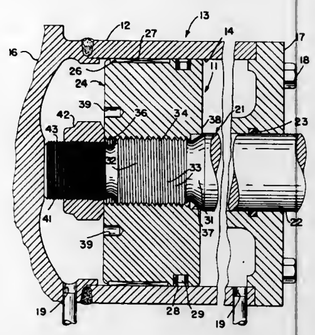
3,885,461

SELF-LOCKING PISTON AND ROD ASSEMBLY FOR A FLUID MOTOR OR THE LIKE

Chester A. Crisp, Wilmington, and Herschel M. Williamson, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 23, 1973, Ser. No. 408,668
Int. Cl. F16j 1/12
U.S. Cl. 92—258 1 Claim

1. A piston and piston rod assembly for reciprocation within a cylinder comprising a piston rod having a first portion with threads thereon of a first pitch and having a second portion with threads thereon of a lesser pitch, an annular piston threadably engaged on said first portion of said rod, the threaded engagement of said piston on said rod being wholly at said first portion thereof, a lock nut threadably engaged on said second portion of said rod and in direct engagement with said piston for exerting axial pressure on said piston, said second portion of said rod being of reduced diameter relative to said first portion thereof and said lock nut has an internal diameter correspondingly smaller than that of said piston, a



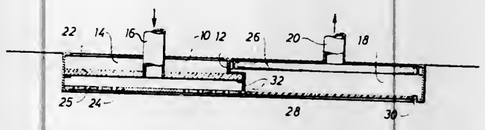
conical step being formed on said rod adjacent said first portion thereof, and said piston has a threaded bore through which said first portion of said rod extends, said bore having theads engaging said threads of said first portion of said rod with the end of said bore adjacent said step being unthreaded and forming with a planar face of said piston a continuous annular sharp edge which bites into said concial step of said rod upon threading of said piston on said first portion of said rod to block fluid flow between said piston and said rod.

3,885,462

DEVICE TO CONDITION ROOMS

Soren Sven Olof Krook, Billesholm, Sweden, assignor to Gullfiber AB, Billesholm, Sweden

Continuation of Ser. No. 412,181, Nov. 2, 1973, abandoned. This application July 1, 1974, Ser. No. 484,772
Claims priority, application Sweden, Nov. 13, 1972, 14727/72
Int. Cl. F24f 13/06; F21v 29/00
U.S. Cl. 98—40 DL 4 Claims



1. A ceiling device to air condition rooms comprising
a box-like, oblong case adapted to be mounted in the ceiling of a room,
a partition in said case extending parallel to the short sides thereof and dividing said case into two parts,

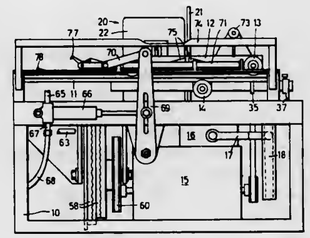
each of said parts having in the top side thereof a central passageway for connection to imput and output air, respectively, and the bottom of the part of the case including the input passageway having therein a plurality of perforations,
a layer of a sound absorbing material positioned in the first-mentioned part of the case a small distance above its perforated bottom,
the other part of said case comprising the light fitting and having one or more openings communicating with the room in which the device is mounted, and
a movable damper mounted in an opening in said partition and movable selectively to connect said other part of the case to said first-mentioned part of the case.

3,885,463

APPARATUS FOR SLICING AND SPREADING BREAD

Mervyn Major Penhallurick, and Colin McGrath, both of Surfers Paradise, Queensland, Australia, assignors to Penmac Distributors, Brisbane, Queensland, Australia

Filed Mar. 22, 1974, Ser. No. 453,782
Int. Cl. B26d 3/28
U.S. Cl. 99—450.2 5 Claims



1. Apparatus for slicing and spreading bread including:
a frame,
a carriage mounted for reciprocal horizontal movement on the frame,
means for reciprocating the carriage,
a loaf holder on the carriage to receive a loaf of bread with one end lowermost,
movable support means for releasably supporting a loaf in the loaf holder,
a pair of vertically spaced substantially horizontal cutters so located that as the carriage and loaf holder are advanced the cutters cut through the lower part of the loaf supported in the loaf holder to sever two slices from the loaf,
a hollow substantially horizontal fixed spreader blade mounted on the frame near to the trailing part of the lower cutter and having an inlet thereto, and outlets from its upper and lower faces, and
means for feeding a spread under pressure to the inlet to the speader for ejection from the spreader outlets onto adjacent surfaces of the two slices severed from the loaf.

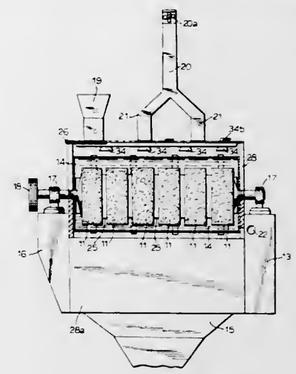
3,885,464

POLISHERS FOR CEREALS

Guillermo Ceballos-Aguilera, Escobedo Sur 733 Suite 201, Monterrey, Nuevo Leon, Mexico

Filed Mar. 15, 1973, Ser. No. 341,555
Int. Cl. B02b 3/02
U.S. Cl. 99—605 3 Claims

1. Improvements in polishers for grains such as sorghum grain, comprising in combination, within a housing, a plurality of polishing disc-like members for frictionally engaging the grain arranged in substantially parallel relationship along the axis of a rotatable cylinder and held thereon to rotate therewith, a mesh surrounding the polishing members and closely spaced therefrom to receive grain bouncing off the members and direct it back to the members, a set of deflector vanes arranged for selective movement from positions substantially parallel to said members and positions deflecting grain bouncing off said polishing members axially along the axis of said rotatable member in a predetermined direction, a feed hopper assembly mounted to feed grain within said housing to the



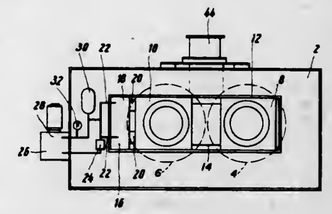
discs at one end of said rotatable cylinder to thereby be carried to the other end by deflection off said vanes, and a discharge chute at the other end of said rotatable cylinder to remove grains from said housing, suction means to remove hulls from said housing, and means for rotating said cylinder from outside said housing.

3,885,465

HYDRAULIC SUPPORT FOR THE MOVABLY SUPPORTED ROLLER IN ROLL PRESSES

Hans-Georg Bergendahl, Nevelstrasse 32, 463 Bochum, Germany

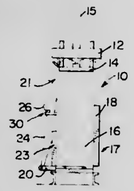
Filed Feb. 6, 1974, Ser. No. 439,888
Claims priority, application Germany, Feb. 6, 1973, 2305685
Int. Cl. B30b 15/16, 3/04
U.S. Cl. 100—47 3 Claims



1. A hydraulic support for the bearing blocks of a movable roller in a roll press having a frame and two rollers having a gap therebetween, one of said rollers being radially movable away from and toward the other of said rollers, said support comprising:
at least one hydraulic cylinder for each bearing block, mounted between the press frame and the side of the bearing block which is away from the roller gap; and
a hydraulic circuit connected to said cylinder;
a motor pump for supplying hydraulic fluid through said circuit to said cylinder;
a maximum-minimum pressure switch within said circuit for starting said motor pump when a predetermined minimum pressure is reached in said circuit and for stopping said motor pump when a predetermined maximum pressure is reached in said circuit;

a pressurized hydraulic storage tank in said circuit; and
a pressure-limiting valve connected to said hydraulic circuit for releasing sufficient amounts of hydraulic fluid from said circuit, when the pressure within said circuit exceeds a predetermined operating pressure, to keep the pressure within said circuit at said predetermined operating pressure.

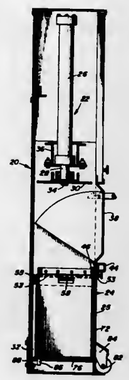
3,885,466
EJECTION APPARATUS FOR A RAM BALER
Vincent J. Ceraiglia, Wayne, Pa., assignor to American Environmental Products Corp., Glassboro, N.J.
Filed Mar. 26, 1974, Ser. No. 455,006
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 **15 Claims**



1. In a ram baler having a frame defining a compacting chamber, a platen reciprocable to compress waste material in the compacting chamber into a bale, and a door to provide access to the compacting chamber to remove the bale, a semi-automatic ejection apparatus comprising:
bale ejection means mounted on the frame and adapted to contact the bale of waste material during ejection thereof;
a flexible connector having one end thereof secured to said bale ejection means;
hook means on the platen;
hook engaging means at the other end of said flexible connector, said hook engaging means being engaged with said hook means when the waste material has been compacted into a bale and the door has been opened, the succeeding stroke of the platen causing said bale ejection means to be actuated to eject the bale through the open door; and
retaining means to maintain said hook engaging means in a position to be engaged with said hook means while disengaged therefrom and to disengage said hook engaging means from said hook means upon the stroke of the platen after the bale has been ejected from the baler.

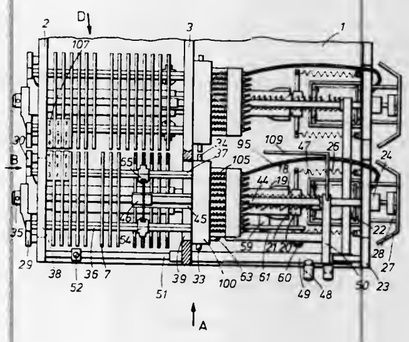
3,885,467
PROTECTIVE SLEEVE FOR REFUSE HANDLING APPARATUS
Eugene Merkin, Huntingdon Valley, Pa., assignor to The Union Corporation, Verona, Pa.
Filed Feb. 8, 1972, Ser. No. 224,614
Int. Cl. B30b *15/06*
U.S. Cl. 100—229 A **23 Claims**

1. Refuse-compaction and transportation apparatus comprising a housing, said housing defining a portion of the side walls of a compaction chamber, compaction means mounted in said housing, portable transportation apparatus removably mounted in said housing, said portable transportation apparatus comprising at least a base plate and a front plate secured to said base plate, said front plate defining a portion of the side walls of the compaction chamber, a sleeve positioned on said base plate and within said compaction chamber, said sleeve comprising a rigid reinforcement member at the upper end thereof and a plurality of panels mounted on and extending downwardly from said reinforcement member, at least one of said panels being capable of flexing, at least at the lower region thereof, in a manner substantially independent of adjacent panels, said compaction means being adapted to compact



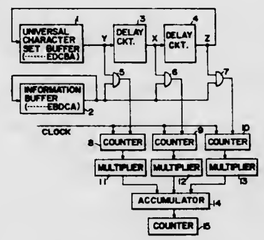
refuse in said sleeve and against the side walls of said compaction chamber upon flexure of one or more of said panels.

3,885,468
AUTOMATIC TYPE SETTING APPARATUS FOR PRINTING UNITS
Wolfgang Leihe, No. 9 Bulowplatz, 585 Solingen, Germany
Filed July 16, 1970, Ser. No. 55,521
Claims priority, application Germany, July 22, 1969, 1937128
Int. Cl. B41j *7/08*
U.S. Cl. 101—93.18 **12 Claims**



1. A type setting apparatus for use within a printing unit having a plurality of printing wheels comprising:
a. a plurality of adjusting wheels,
b. each said adjusting wheel including means to individually position a printing wheel of said printing unit when the adjusting wheel is rotated,
c. means to set each adjusting wheel at a preselected rotational position,
d. means for sequentially positioning the setting means adjacent each adjusting wheel, and
e. means for actuating said setting means to rotate the selected adjusting wheel to said preselected rotational position thereby positioning each printing wheel.

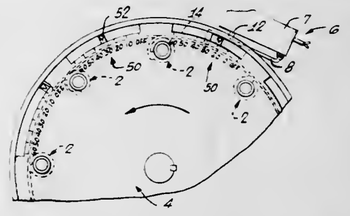
3,885,469
MAGNET OPERATING TIME COMPENSATION SYSTEM
Tadashi Sugimoto, Yokohama; Tyuirito Nagai, Kawasaki, and Isao Shimoda, Oume, all of Japan, assignors to Fujitsu Limited, Japan
Filed July 30, 1973, Ser. No. 383,503
Claims priority, application Japan, July 28, 1972, 47-75766
Int. Cl. B41j *9/26*
U.S. Cl. 101—93.48 **8 Claims**



1. A time compensation control system for use in a line printer wherein for each successive line of characters to be printed in accordance with printing information supplied to the system, the line printer presents, in common, at each character print position of the print line and in each print interval of a cycle of plural time sequential print intervals, a corresponding one of plural character types available for printing, and wherein printing of a common type character at print positions of a line selected in accordance with said printing information is effected by a drive voltage generated for each such print interval, the generation of the drive voltage and thus the instant of printing in response to the drive voltage in a given print interval being controlled in accordance with the duration of a compensation time, comprising:
means for storing printing information signals corresponding to the characters to be printed in a line, for each of successive lines,
means for detecting from the printing information signals of said storing means each character of a given, common type to be printed on a line simultaneously and during a corresponding print interval,
means responsive to the number of common type characters detected by said detecting means for predicting a resultant change in the drive voltage during the said corresponding print interval, and
means for adjusting the duration of the compensation time in accordance with the said predicted resultant change in the drive voltage, thereby to control the timing of the drive voltage and thereby the instant of printing impact during the said corresponding print interval.

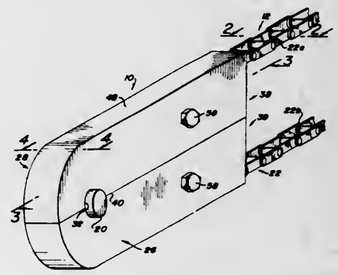
3,885,470
CAMMING SYSTEM INCLUDING A FLEXIBLE CAM OF ADJUSTABLE PERIPHERAL LENGTH
Robert B. Costa, Covina, and Edward M. Troup, Mt. Baldy, both of Calif., assignors to Clemar Manufacturing Corporation, Glendora, Calif.
Filed Nov. 8, 1973, Ser. No. 413,885
Int. Cl. F16h *53/00*
U.S. Cl. 74—568 R **17 Claims**

1. For use in a camming system including a sensor and a cam carrier mounted for motion relative to each other along a predetermined path of motion, an adjustable cam assembly comprising:
an elongate guide track on the carrier;
an elongate flexible cam movable along said guide track, said cam having opposite longitudinal ends, said guide track supporing said cam with at least a longitudinally extending portion of said cam exposed to and facing towards the sensor to be sensed thereby when proximate to the sensor.
a hub fixedly secured to one longitudinal end of said cam; and



mounting means for rotatably mounting said hub on the carrier to enable said cam to be selectively would onto and off said hub to vary the longitudinal exent of the portion of said cam exposed to the sensor.

3,885,471
GUARD ASSEMBLY FOR ENDLESS FLEXIBLE DRIVE MEMBERS
Richard L. Morine, Mentor, and James J. Hokes, Lakewood, both of Ohio, assignors to Fedco Inc., Mentor, Ohio
Continuation of Ser. No. 338,873, March 7, 1973. This application Feb. 25, 1974, Ser. No. 445,748
Int. Cl. F16p *1/00*
U.S. Cl. 74—611 **11 Claims**

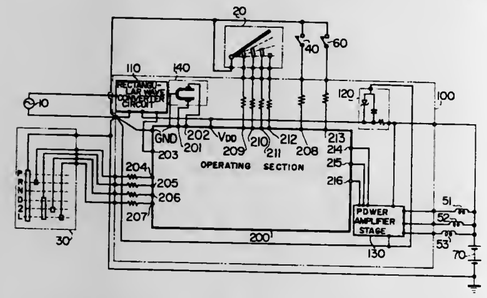


1. A guard for drive systems of the type including a shaft mounted, generally circular, rotatable power member about which travels an endless, flexible power transmitting member, said guard comprising:
a pair of side wall portions positioned on axially opposite sides of said power member and extending generally parallel thereto, said wall portions having a radial extend greater than the maximum radial extent of said generally circular power member;
an opening formed through at least one of said wall portions and sized to receive said shaft, the inner periphery of said opening being defined by a bearing surface which rotatably receives said shaft;
a connecting wall portion extending between said side wall portions at a location radially outwardly of said generally circular power member and enclosing the generally circular power member;
a second bearing surface carried by said guard and engaging said endless power transmitting member at a location spaced a substantial distance from said generally circular power member; and,
an intermediate connector portion extending between said side wall portions.

3,885,472
ELECTRICAL CONTROL SYSTEM FOR AUTOMATIC VEHICLE TRANSMISSION

Hisato Wakamatsu, Toyota; Hiroshi Fujinami, Kariya, and Toshihiro Kamiya, Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio-shi, Japan

Filed June 15, 1973, Ser. No. 370,528
Claims priority, application Japan, June 21, 1972, 47-62648
Int. Cl. B60k *21/00*
U.S. Cl. 74—866 **17 Claims**



1. In an automatic transmission having means for shifting the gear positions of a vehicle driving system, an electrical control system comprising:

converting means for detecting the speed of a vehicle and generating a converted signal, said converted signal having a fixed frequency when the vehicle speed is below a predetermined level and having a frequency proportional to the vehicle speed when the vehicle speed is above the predetermined level,

means for setting the vehicle driving condition and for generating a digital signal corresponding to a selected driving condition,

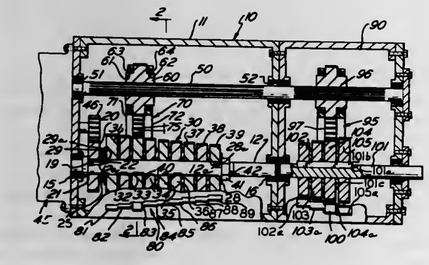
means responsive to the movement of an accelerator pedal for generating a throttle position digital signal, and

logic operation means connected to receive the converted signal from said converting means and the digital signals from said driving condition setting means and said accelerator pedal responsive means for performing a logic operation and for generating a shift command signal to thereby control the operation of said shifting means.

3,885,473
ADJUSTABLE SPEED GEAR DRIVE USING MULTIPLE CONE GEARING

Andrew Stratienko, 8503 Elliston Dr., Philadelphia, Pa. 19118

Filed Jan. 22, 1973, Ser. No. 325,546
Int. Cl. F16h *3/22*
U.S. Cl. 74—349 **14 Claims**



1. An adjustable speed gear drive comprising in combination:

a common structure;

gear stock means mounted for rotation in said structure, including a plurality of stock gears of various predetermined sizes mounted for rotation on a stock shaft, for providing a plurality of engageable stock gears arranged in a progressively descending order;

torsional engagement means mounted on said gear stock means for securing said stock gears to said stock shaft to a predetermined level of torsional engagement; and

yoke means mounted in said structure for selective translation between respective ones of said stock gears in concurrent engagement with adjacent ones thereof while running and providing a gear ratio corresponding to the gear size thereof.

14. An adjustable speed gear drive comprising:

a structure;

stock means mounted for rotation in said structure, including a plurality of concentric stock gears of various sizes for providing a plurality of engageable gears arranged in a predetermined order;

a yoke shaft disposed in said structure in parallel arrangement with the axis of rotation of said stock gears;

a yoke pivotally and slidably mounted at one end thereof on said yoke shaft;

an idler gear mounted for rotation in said yoke for selective engagement of said stock gears;

register means formed in said structure for receiving the other end of said yoke;

drive means disposed in said structure for engagement with said idler gear;

adjustable gear drive means operatively connected to said yoke shaft, including a shaft, a plurality of concentric gears of predetermined sizes mounted in descending order for rotation on said shaft, friction means interposed between said shaft and said gears for securing said gears to said shaft to a predetermined level of frictional engagement;

idler means carrying an idler gear pivotally and slidably mounted in said structure for selective translation between respective ones of said concentric gears in concurrent engagement with adjacent ones thereof for engaging respective ones of said gears; and

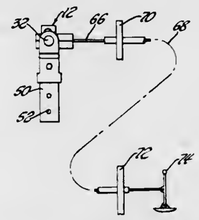
gear means disposed in said structure for continuous engagement with said idler gear whereby said adjustable gear drive means having said adjustable gears of said predetermined sizes are selected to produce a group of total ratios of said adjustable speed gear drive and said adjustable gear drive with magnitude intermediate of any two ratios produced by any adjacent said stock gears of said adjustable speed gear drive.

3,885,474
MOTION TRANSMITTING REMOTE CONTROL ASSEMBLY INCLUDING A CABLE CONNECTOR ASSEMBLY

Louis T. Horvath, Solon, and Robert K. Farrington, Shaker Heights, both of Ohio, assignors to Teleflex Incorporated, Cleveland, Ohio

Filed July 16, 1973, Ser. No. 379,477
Int. Cl. F16c *1/18, 1/06*
U.S. Cl. 74—501 R **36 Claims**

1. A motion transmitting remote control assembly for transmitting motion along a curved path comprising: a conduit, a flexible cable slidably disposed within said conduit, a control member, and terminal connector means for connecting said cable to said control member so that said control member moves with said cable; said terminal connector means including a housing, pivotal connection means for connecting said housing to said control member to permit rotation of said housing with respect to said control member about a first axis, and an elongated cable attachment means supported within said housing for rotation about its longitudinal axis, said longitudinal axis of said cable attachment means being disposed transversely to said first axis; said cable attachment means comprising a hollow cylindrical member including a first end having an internal diameter of one size and a second end having an internal diameter of a different size for selectively receiving one of two cables having different sized ends.

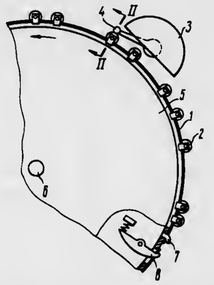


22. An assembly as set forth in claim **21** wherein said assembly includes means for preventing axial movement of said cable attachment means with respect to said housing.

3,885,475
PROGRAM CONTROL APPARATUS

Vladimir Nikolaevich Shubin, Pervomaiskaya ulitsa 1, kv. 103; Samuil Moiseevich Polyak, Tankovy Proezd, 1, kv. 55, and Viktor Sergeevich Silantiev, Kastanaenskaya ulitsa, 57, korpus 1, kv. 58, all of Moscow, U.S.S.R.

Filed Dec. 10, 1973, Ser. No. 423,531
Int. Cl. F16h *53/08*
U.S. Cl. 74—568 R **3 Claims**

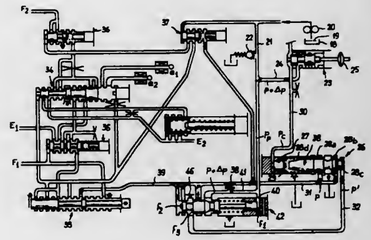


1. A program control device for a tube bending machine and the like, wherein the machine has a framework, operative members, and a drive; the device comprising: a command device mounted on said framework and including stationary followers controlling the operation of corresponding ones of said members; a disc rotatable by said drive; a program carrier in the form of a flexible band tensioned about the cylindrical periphery of said disc and secured thereto, including successive peripheral sections of said band; cams arranged on said band in transversal arrays that are substantially parallel to the axis of said disc, for successive engagement of each cam, in respective peripheral rows about said band, by a respective one of said followers during the rotation of said disc; said transversal cam arrays being removably and slidably mounted on said band, each array including a number of said cams coaxially received about a common spindle which extends across said band; said cams being disposed on said spindles in accordance with a preset program within corresponding ones of said peripheral rows; said followers being mounted at predetermined locations above said corresponding peripheral cam rows, to provide for the preset program and the modification of that program during the operation of the machine; and means for positioning said cams within said arrays across said band at any one of said locations, and also for positioning said transversal cam arrays in a stepless manner at any one of said peripheral band sections, thereby to provide the preset program.

3,885,476
PRESSURE REGULATION CONTROL VALVE FOR AN HYDRAULIC CONTROL SYSTEM OF AN AUTOMATIC POWER TRANSMISSION

François Jean-Louis Leorat, and André Mouttet, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Continuation of Ser. No. 264,332, June 19, 1972, abandoned. This application Feb. 1, 1974, Ser. No. 438,768
Claims priority, application France, July 21, 1971, 71.26656
Int. Cl. B60k *19/00*
U.S. Cl. 74—863 **4 Claims**



1. A pressure regulation control valve for a hydraulic control system of an automatic power transmission mechanism having friction devices for providing stepped gear ratios and comprising: a pressure fluid pump, a fluid reservoir, a pump output pressure regulating device and input and output lines for the fluid from and toward said friction devices operated through a selector valve, said control valve comprising:

in a body first and a second output conduits for communication between a central control valve and said friction devices lines; a distributor member of the slidable differential spool type with a plurality of control faces; a fluid pressure restriction means having its inlet in communication both with a delivery line communicating said pump with a first end face of the distributor spool member and to the input of a first flow way leading to a feed line of said selector valve, and its outlet in communication jointly with a second end face of said distributor spool member and with the input of a second flow-way communicating with a guaged orifice in the body opening into said fluid reservoir and into a connection line of said pump output pressure regulating device, wherein:

a. in a first initial position said distributor spool member is in abutment with said valve body under action exerted by fluid pressure on said first end face and said second end face of said distributor spool member, said first flow way and second flow way;

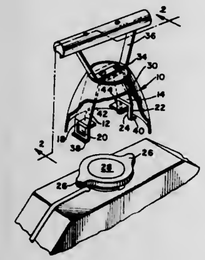
b. in a second intermediate position of said distributor spool member, obtained by the action of fluid pressure on said first and second end faces of said distributor spool member and on a third intermediate face near the output of said second flow way, both first and second flow ways are obstructed; and

c. in a third position of said distributor spool member, obtained by the action of fluid pressures on said first, second and third faces of said distributor spool member, said first and second flow ways are opened.

3,885,477
WRENCH FOR REMOVING AUTOMOBILE RADIATOR CAPS

Alvin L. Shook, 301 S. Pearl, Salem, Ill. 62881

Filed Oct. 25, 1973, Ser. No. 409,663
Int. Cl. B67b 7/16; B25b 13/48
U.S. Cl. 81—3.1 R 2 Claims



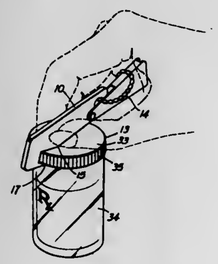
1. An improved wrench for a radiator cap comprising a pair of opposed resilient jaws arranged in spaced apart cooperating relation and having inner confronting faces, said jaws having terminal end portions provided with transverse cut-out portions for engagably receiving the ears of a radiator cap and flat lateral shoulders integrally formed on the inner faces of the jaws from the material cut-out from the jaws to define the cut-out portions which material is bent inwardly and upwardly and arranged laterally of the jaws so that the shoulders extend in an inwardly facing coplanar relation from the jaws,

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3,885,478
TOOL FOR REMOVING CAPS FROM CONTAINERS

William Richard Evans, 2090 Zelda Dr., N.E., Atlanta, Ga. 30345

Filed Sept. 7, 1973, Ser. No. 395,188
Int. Cl. B67b 7/14
U.S. Cl. 81—3.46 R 3 Claims



1. A tool for manually removing caps from containers comprising:

a. an elongated integral rigid bar having a handle portion and a head portion, said handle portions having approximately parallel back and bottom edges, said head portion having a recess defining wall extending toward the head end of said bar from and at an incline to said bottom edge to define at the junction of said recess defining wall and said bottom edge a fulcrum shoulder, said head portion of said bar also having a U-shaped recess defined by said recess defining wall and by a straight recess defining edge spaced from and opposite said recess defining wall and by a straight recess bottom edge joining the ends of said wall and said recess defining edge, said head portion having a tapered spike tip adjacent said recess and defined in part by said recess defining edge;

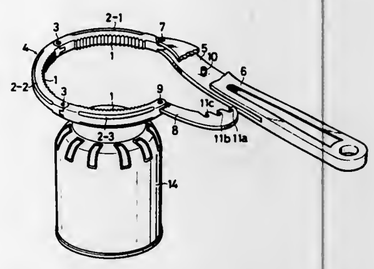
b. a transverse pivot pin in said handle portion of said bar, said pivot pin being disposed intermediate the ends of said bar; and

c. a sheath on said pivot pin, said sheath having a pair of opposed spaced parallel side plates and a bridge plate at the distal end portion of said sheath joining the adjacent edges of said side plates, said side plates at the proximal end portion of said sheath straddling said bar, said side plates and said bridge plate being sufficiently long and of such dimensions that when said sheath is pivoted toward said head portion to the extremity of its movement, said bridge plate engages said tip and said side plates cover said tip and said recess without covering entirely said head portion, said sheath being pivotal away from said head portion to expose said tip and said recess.

3,885,479
WRENCH

Komei Ono, No. 19-33-315, 5-chome, Narimasu, Tokyo, Japan

Filed May 18, 1973, Ser. No. 361,453
Claims priority, application Japan, June 19, 1972, 47-71371; Sept. 5, 1972, 47-103611
Int. Cl. B25b 13/52
U.S. Cl. 81—66 R 3 Claims



1. A wrench for engaging objects comprising exactly three curved members pivotally connected to each other, each of said first, second and third curved members having an engaging portion, the three said engaging portions being the only portions which engage the said object, a lever which is pivotally connected to said first curved member at one end of the connected curved members in their engaged position, said lever having a handle portion near one of its ends and means near its opposite end pivotally connecting said lever and said first curved member, a clamping member which extends outwardly from said connected curved members when they are in their engaged position, said clamping member being pivotally connected near its inner end to said third curved member near the end of said curved member opposite its pivot connection to said second curved member, said clamping member and said lever having adjustable means for removably engaging said clamping member and said lever, said adjusting means on said lever being between said handle portion and its said pivot connection means, said adjustable means consisting of a pin and a plurality of hooks.

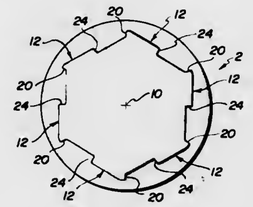
3,885,480
TORQUE-TRANSMITTING ARRANGEMENT FOR FASTENERS AND THE LIKE

Herman G. Muenchinger, South Dartmouth, Mass., assignor to Research Engineering & Manufacturing Inc., New Bedford, Mass.

Filed Dec. 7, 1973, Ser. No. 422,836
Int. Cl. B25b 13/06
U.S. Cl. 81—121 R 9 Claims

1. An article of manufacture comprising a body having a central axis, a first series of surfaces each being equally spaced from said central axis, said surfaces each having opposite ends

and being disposed about said central axis with said opposite ends of each surface being circumferentially spaced from the adjacent surfaces of said series, said surfaces having flat portions between their opposite ends, said flat portions being in planes that intersect to form a regular hexagon that is centered on said axis, the body at corresponding ones of said opposite ends having a second series of surfaces respectively lying in planes that intersect said central axis, and the body at the

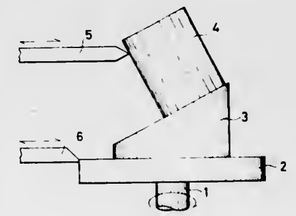


corresponding others of said opposite ends having a third series of surfaces respectively lying in other planes that intersect said central axis, the surfaces of said series all facing circumferentially in the same direction and the surfaces of said third series all facing in the opposite circumferential direction, the surfaces of said second series extending to radial distances from said central axis that are greater than the distances that the surfaces of said third series extend from said central axis.

3,885,481
METHOD TO PRODUCE AN OVAL PRODUCT HAVING OVAL CIRCUMFERENCE BY CUTTING PROCESS

Jujiro Okada, No. 69, Chodo-1-Chome, and Isamu Satoo, No. 11/17, Fukae-Minami-2-chome, Higashinari-ku, both of Osaka, Japan

Filed Nov. 30, 1973, Ser. No. 420,461
Int. Cl. B23b 3/00, 3/28
U.S. Cl. 82—1 C 1 Claim



1. A method of cutting an object having an oval circumference comprising the steps of:

fixing a cylindrical body to one end of a rotatable main shaft at a prescribed angle to the shaft such that a plane cutting through the inclined cylindrical body at right angles to the axis of the main shaft will define the oval shape of the desired oval product;

biasing a tracing apparatus against the circumference of the cylindrical body at the circumference of the body where said plane at right angles to the axis of the shaft defines the desired oval circumference at the position where the center of the defined oval corresponds to the axis of said main shaft;

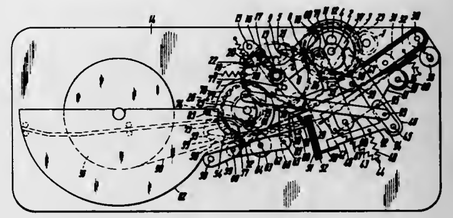
cutting a master cam from material fixed onto the main shaft using said tracing apparatus connected to a cutting means whereby the master cam cut from the material by said cutting means corresponds to the oval circumference of the inclined cylindrical body traced by said tracing apparatus; and

cutting the desired oval object from material fixed to the main shaft using said tracing apparatus connected to said cutting means to trace around the circumference of said master cam, thereby cutting the desired oval shape similar to the oval circumference of the inclined cylindrical body originally traced by the tracing apparatus to form said master cam.

3,885,482
DEVICE FOR FEEDING ADHESIVE STRIPS TO A FRANKING MACHINE

Horst Denzin, Berlin, Germany, assignor to Francotyp GmbH, Berlin, Germany

Filed Apr. 18, 1973, Ser. No. 352,724
Claims priority, application Germany, Apr. 20, 1972, 2219146
Int. Cl.² G07B 17/00
U.S. Cl. 83—241 9 Claims



1. A device for infinitely adjusting within a given adjusting range the length of adhesive strips in a franking machine having a printing mechanism, the adhesive strips being drawn from a storage roll and, after having been severed therefrom, being fed to the printing mechanism, along a given guiding path, comprising manual adjusting means adjustable for varying the travel length within a given adjustment range of adhesive strips that are to be issued by the franking machine, a trigger lever means for releasing travel of the adhesive strips, means for blocking said trigger lever means, means for arresting a cassette wherein the storage roll is received, and means for pivoting into and out of operating position a means defining the given guiding path.

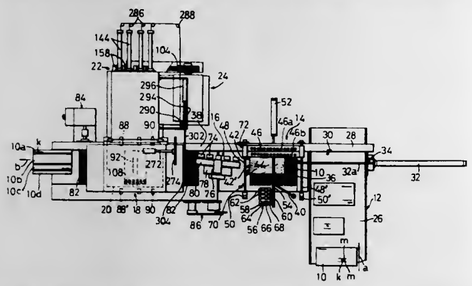
3,885,483
SAW APPARATUS

Akira Ikeya; Hiroshi Ueno, and Toshiyuki Suzuki, all of Hamakita, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Continuation of Ser. No. 284,150, Aug. 28, 1972, abandoned.
This application Oct. 16, 1973, Ser. No. 406,957
Claims priority, application Japan, Aug. 17, 1971, 46-77691; Aug. 27, 1971, 46-77692; Aug. 27, 1971, 46-66037; Aug. 27, 1971, 46-66038; Aug. 27, 1971, 46-66039; Apr. 29, 1972, 47-43001
Int. Cl. B26d 5/34; B27b 7/04
U.S. Cl. 83—365 14 Claims

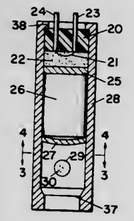
1. A saw apparatus for cutting a board into sections in accordance with at least one marking applied thereto, comprising at least one blade conveying means for conveying the marked board in a predetermined path which is aligned with said at least one saw blade, scanning means operable to detect said at least one marking on the board, signal generating means responsive to said scanning means for producing a

signal representative of the location of said at least one marking, and saw-blade shifting means responsive to said signal for



axially moving said at least one saw blade to a position aligned with said marking.

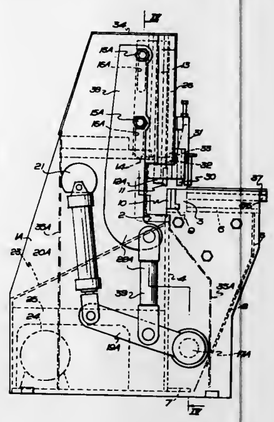
3,885,484
EXPLOSIVELY ACTUATED COMPRESSED DISC LINE CUTTER
Daniel C. Sturgis, Tamaqua, Pa., assignor to ICI United States Inc., Wilmington, Del.
Filed Oct. 23, 1973, Ser. No. 408,505
Int. Cl. B26d *5/08*
U.S. Cl. 83—580 **7 Claims**



1. A line cutting tool comprising:
a. a tubular casing having at least one pair of opposing openings through its walls for the insertion of a line therethrough,
b. a moveable, tempered disc having contact with the interior walls of said casing,
c. means for pushing said disc under compression to pass by said openings such that a line inserted through said openings is severed into three sections.

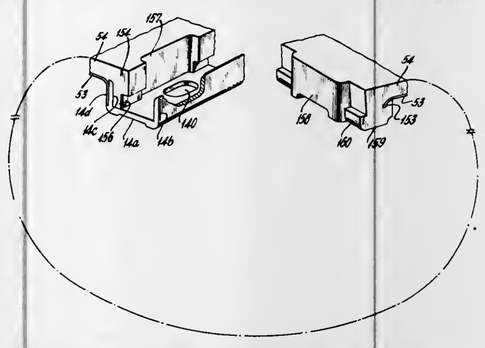
3,885,485
HYDRAULICALLY OPERATED GUILLOTINE
Frederick Ralph Savory, Sutton-in-Ashfield, England, assignor to Steel Construction & Engineering Co. (Notts.) Limited, Sutton-in-Ashfield, England
Filed Jan. 21, 1974, Ser. No. 434,949
Claims priority, application United Kingdom, Jan. 26, 1973, 4045/73
Int. Cl. B26d *5/08*
U.S. Cl. 83—625 **7 Claims**

1. A hydraulically operated guillotine comprising side-frames with guides for a movable blade-carrying beam, projections on the ends of the blade-carrying beam projecting through slots in the side-frames extending in the direction of movement of the blade-carrying beam, a shaft extending through journals in the side frames with its axis parallel to the central plane of the slots in the side-frames, a pair of arms rigidly secured one to each end of the shaft and extending transversely with respect to the central plane of the slots in the side-frames, a pair of hydraulic rams secured one between each arm on the shaft and an anchorage on the respective side-frame, and linkages from positions on the arms intermediate the shaft and the rams to the projections on the ends of the blade-carrying beam, wherein each linkage comprises a bar extending rigidly from the projections at one end of the blade-



carrying beam and a link pivotally connected at one end to the arm from the shaft and pivotally connected at the other end to the bar.

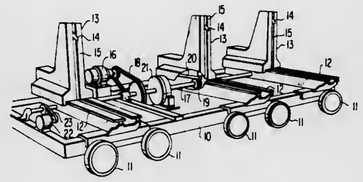
3,885,486
CYLINDER COVER FASTENING DEVICES
Alan D. Kirkpatrick, 5 Warren Pl., Newfoundland, N.J. 07435, and Ronald T. Warll, 334 High Crest Dr., Butler, N.J. 07405
Continuation-in-part of Ser. No. 184,348, Sept. 28, 1971, Pat. No. 3,765,329. This application Jan. 5, 1973, Ser. No. 321,456The portion of the term of this patent subsequent to Oct. 16, 1990, has been disclaimed.
Int. Cl. B26d *7/20*
U.S. Cl. 83—659 **5 Claims**



1. A fastening device for releasably securing a split ring annular member around a rotary die cutting machine cylinder body comprising:
a non-elastically deformable mounting member and a fastening element coextensive in length, said mounting member adapted to fit within a slot provided in a cylinder and being generally of U-shaped cross section, and said mounting member including a longitudinal flange of an elastically deformable material partially restricting the opening of said mounting member and extending partially into said mounting member, said fastening element including a projection for cooperative engagement with said mounting member flange when in a fastened position, said fastening element being of an elastically deformable material, whereby said fastening element will conform to said mounting member sufficiently to be

retained thereby when in operative engagement but permit forceable separation of said fastening element and mounting member;
means for attaching said fastening element to one end of said split ring member; and
means for attaching said mounting member to the opposite end of said split ring member.

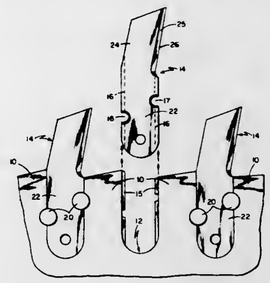
3,885,487
SETWORKS CONTROL FOR SAWMILL
Clement Walker Weston, Jr., 4819 Baudin St., New Orleans, La. 70150
Filed Feb. 25, 1974, Ser. No. 445,142
Int. Cl. B27b *29/10*
U.S. Cl. 83—728 **20 Claims**



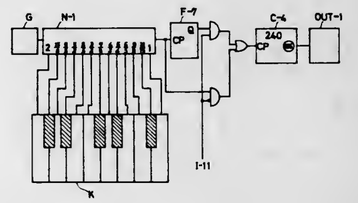
1. An electronically controlled setworks for automatically positioning the head blocks of a sawmill, comprising, in combination:
prime mover means coupled to the head blocks of a sawmill carriage for selectively advancing and retracting the head blocks in response to command signals applied to said prime mover means;
means coupled to said prime mover means for providing a DC output signal which is a function of the linear velocity of said head blocks on said carriage;
electrical signal integrator circuit means coupled to said DC output signal means and being responsive to the output thereof for a predetermined time to provide a DC output signal the magnitude of which is proportional to the distance said head blocks move on said carriage;
selector circuit means providing a plurality of first DC output signals, each of which has a magnitude calibrated to the desired plurality of widths of cut by said sawmill; comparator circuit means coupled to the output signal from said integrator circuit means and a selected first DC output signal from said selector circuit means and providing a control output signal when said DC output signal equals said selected first DC output signal; and
first circuit means responsive to said control output signal coupled between said comparator circuit means and said prime mover means, applying a first command signal to said prime mover means to stop advancement of said head blocks in response to said control output signal.

3,885,488
TAPERED CAST TOOTH INSERT FOR SAW
Ernest A. Evancic, Fitchburg, Mass.; Kenneth E. Davis, Winter Park, Fla., and Joseph T. Blucher, Waltham, Mass., assignors to Wallace Murray Corporation, Fitchburg, Mass.
Filed Jan. 7, 1974, Ser. No. 431,231
Int. Cl. B27b *33/12;* **A01d** *55/18*
U.S. Cl. 83—835 **2 Claims**

1. A tooth insert for a saw, said insert having a solid flat cast metal shank portion having substantially uniform thickness and a blade portion cast in one piece with said shank portion, said blade portion having a maximum thickness no greater than the thickness of said shank portion and decreasing in thickness symmetrically from the shank portion to the tip end of the insert and a sharpened cutting edge formed by a symmetrical double bevel extending along the front edge of said blade portion.

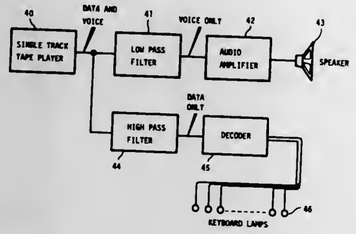


3,885,489
ELECTRONIC MUSICAL INSTRUMENT HAVING KEYBOARDS
Fumi Sasaki, Hanamaki, Japan, assignor to Kenju Sangyo Kabushiki Kaisha, Hanamaki, Japan
Filed Mar. 14, 1973, Ser. No. 341,068
Int. Cl. G10h *5/06*
U.S. Cl. 84—1.01 **10 Claims**



1. An electronic musical instrument having a circuit means comprising:
a pulse train generating means producing a pulse train having variable periodic or average pulse periods;
a first keyboard having a plurality of keys corresponding to the notes of do, re, mi, fa, sol, la, and ti;
a second keyboard having a plurality of keys corresponding to the keys A, B, C, D, E, F and G;
a first circuit arrangement connected to said first keyboard for absorbing or pulling out a pulse of said pulse train in response to the depression of a key of said first keyboard; a second circuit arrangement connected to said second keyboard, for modulating the periodic vibrations or average pulse periods of said pulse train in response to the depression of a key of said second keyboard;
cycle counter means for producing a waveform, including a first cycle counter for counting the pulses absorbed or pulled out by said first circuit arrangement, and for returning to reset after a predetermined number of input pulses have been counted; and
output means connected to said cycle counter means for amplifying and converting waveform into sound, said output means including code converter means for converting the counted number of pulses counted by said cycle counter, into codes, a first digital-analog converter means for convering said codes into analog voltage and analog-tsound converter means for converting said analog voltage into sounds.

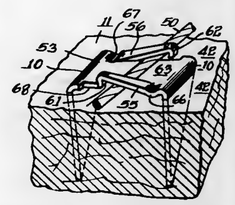
3,885,490
SINGLE TRACK SIGHT AND SOUND MUSICAL INSTRUMENT INSTRUCTION DEVICE
Cecil F. Gullickson, 2018 Fosgate Dr., Winter Park, Fla. 32789
Filed Feb. 1, 1973, Ser. No. 328,657
Int. Cl. G09b *15/00*
U.S. Cl. 84—470 2 Claims



1. A sight and sound instructional device for a musical instrument, comprising a plurality of illumination means adjacent the portions of the instrument to be contacted by the fingers of the player, control means operatively connected to said plurality of illumination means, a single track tape playing device arranged for playing a pre-recorded magnetic tape containing coded instructional information and aural instructional information both recorded on a single track on said magnetic tape, such coded instructional information and aural instructional information being superimposed on such single track, separation means connected to the output of said tape playing device and being responsive to such aural instructional information and to such coded visual instructional information, said separation means including two-channel filter means wherein a first of said channels effectively passes frequencies below a selected upper limit, and a second of said channels effectively passes frequencies higher than such upper limit and effectively rejects frequencies lower than such upper limit, said coded instructional information being limited to frequencies above such upper limit, and decoder means connected to the output of said second channel, said decoder means being responsive to modulated segments of a sinusoidal carrier wave, said carrier wave having a frequency higher than such selected upper limit, said decoder means having input means such that said decoder means responds to pre-recorded information supplied thereto, where such pre-recorded information is modulated segments of said sinusoidal carrier wave, said decoder means operatively connected to said control means, thereby selectively causing the illumination of said plurality of illumination means singly and in various combinations and sequences for instruction of the player as determined by such instructional information, and simultaneously providing aural instruction to the player related to such illumination.

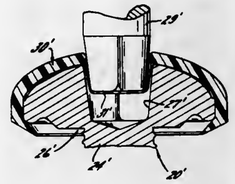
3,885,491
LOCKING STAPLE
Gary Martin Curtis, Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Dec. 21, 1973, Ser. No. 427,237
Int. Cl. F16b *15/00, 39/24*
U.S. Cl. 85—49 3 Claims

1. A one-piece generally U-shaped staple device for the attachment of wires or the like to a support surface, the staple device including a pair of legs extending in a first direction each having workpiece penetrating points and a planar bridge portion interconnecting said pair of legs and providing an impact driving surface for the staple device, a pair of arms formed integrally to the staple extending between the legs, each arm having a free end and said free ends being disposed adjacent opposing extremities of the bridge, the arms being generally planar and generally positioned in the plane of the bridge, crimped surfaces forming arm rotating means on the arms extending downwardly in said first direction from the plane of the arms and the bridge and located intermediate the free extremity and the point of connection of the arm with the staple thereby adapted to engage the support surface prior to



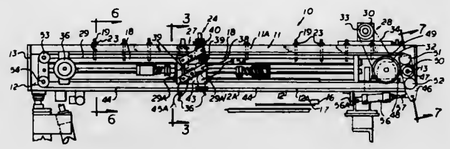
the engagement of the bridge with the support surface to progressively rotate the arms out of the bridge plane in a direction away from the support surface as the staple is driven into the workpiece, the free extremities of each arm including hook means extending downwardly in said first direction to retain the wire beneath the arms and on top of the bridge surface.

3,885,492
CAPPED FASTENER
Charles E. Gutshall, Rockford, Ill., assignor to Elco Industries, Inc., Rockford, Ill.
Filed Nov. 16, 1973, Ser. No. 416,374
Int. Cl.[2] A47G *3/00*; F16B *15/02*
U.S. Cl. 85—53 9 Claims



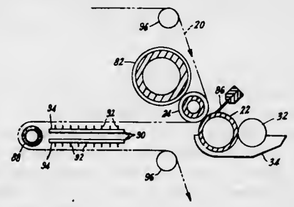
1. A fastener adapted to be tightened in a member by a driver including a threaded shank, a head integrally formed with one end of said shank and having a driver recess formed therein, means connected to the underside of said head and projecting in a generally axial direction away from said head for engagement with the member to space the underside of said head from the member when said fastener is secured in the member, and a cap formed of a resilient, synthetic resinous material mounted on said head, said cap including an upper side of predetermined thickness, a peripheral skirt integrally formed with and depending from said upper side along the sides of said head, an annular lip integrally formed with and extending radially inwardly from the lower margin of said skirt along the underside of said head to hold said cap on said head, said lip having a thickness greater than the distance said means spaces the underside of said head away from the member so the lip is compressed and clamped tightly against the member by the head when said fastener is secured in the member, and means including a resiliently yieldable central web integrally formed in said upper side and normally disposed across said recess and covering the latter for resilient flexure into said recess as the driver is mated with said recess for turning said fastener said web being substantially thinner than said predetermined thickness of said upper side and resiliently moving outwardly of said recess and toward its original shape to again cover the recess as said driver is withdrawn therefrom.

3,885,493
PRINTING HEAD CONSTRUCTION FOR USE IN A SCREEN PRINTING MACHINE
David Jaffa, Fairlawn, N.J., assignor to Precision Screen Machines, Inc., Hawthorne, N.J.
Filed Apr. 3, 1973, Ser. No. 347,383
Int. Cl. B41f *15/42*
U.S. Cl. 101—123 8 Claims



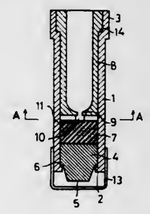
1. A screen printing head for use with a screen printing machine having a printing surface for supporting thereon a material to be screen printed comprising:
a printing head frame having opposed longitudinally extending rigid support members,
a guide rail on each said support member,
support means for supporting said guide rail on each of said rigid support members,
a squeegee carriage slidably mounted on said guide rails for traversing a printing stroke,
a squeegee carried on said squeegee carriage,
and said support means including means for adjusting the spacing between each said guide rail and the printing surface so that the pressure exerted by said squeegee is maintained substantially constant as said squeegee carriage traverses a printing stroke,
said support means including a plurality of adjusting rods located at spaced intervals along said rigid members for supporting said guide rail from each said rigid support member,
said adjusting rods each having a threaded portion,
and an adjusting nut engaging said threaded portion whereby the adjustment of said nut on said adjusting rod adjusts each said guide rail relative to said printing surface.

3,885,494
PRINT MACHINE AND METHOD
Johann Heinrich Saueressig, Wuellen, Ahaus, Germany, assignor to Saueressig GmbH, Wuellen, Ahaus, Germany
Continuation-in-part of Ser. No. 210,064, Dec. 20, 1971, Pat. No. 3,738,265, which is a continuation-in-part of Ser. No. 23,564, March 30, 1970, abandoned. This application Mar. 29, 1973, Ser. No. 345,873
Claims priority, application Germany, Apr. 29, 1969, 1916359The portion of the term of this patent subsequent to June 12, 1990, has been disclaimed.
Int. Cl. B41f *9/02*
U.S. Cl. 101—181 22 Claims



1. A print machine for the continuous printing of a continuous web traveling therethrough comprising:
a. a machine frame;
b. a vertical gate member pivotally mounted at least on one side thereof on said frame for pivotal movement about a vertical axis at said pivoted side from a closed position to an open position wherein the side opposite the pivotal axis is spaced away from said frame;
c. a multiplicity of pairs of cooperating print and press rolls rotatably supported on said frame in vertically spaced alignment, the print roll of each pair being disposed outwardly adjacent said gate member and having a circumferential pattern of a multiplicity of measuring indicia about its circumference adjacent an end thereof dividing the circumference into a multiplicity of measuring units, said print rolls having their axes lying in a common vertical plane and said press rolls having their axes lying in a parallel vertical plane;
d. a multiplicity of inking units supported on said gate member in vertically spaced alignment and each cooperating with one of said print rolls for applying a coating of ink to the circumferential surface of an associated print roll as it rotates during operation of the machine, each inking unit including an ink trough, an inking roll and means for moving said ink trough relative to said print rolls;
e. a plurality of path deflecting means on said machine frame each including a support member on said frame spaced inwardly of said press rolls relative to said gate member whereby the web issuing from the nip of one pair of rolls is directed inwardly of the machine about said support member and thence outwardly into the nip of the next adjacent pair of rolls along the path of web travel;
f. a plurality of pitch adjustment means each including an alignment element cooperating with the said measuring indicia of one of said print rolls and means for independently rotating each of a plurality of the print rolls to effect registry of a preselected measuring indicium with said alignment element;
g. drive means for rotating said print and press rolls; and
h. an auxiliary drive roll for the web and means for driving said auxiliary drive roll.

3,885,495
STAMPING DEVICE
Takaji Funahashi, 1, Kitatakasho-machi 2-chome, Nishi-ku, Nagoya, Japan
Continuation of Ser. No. 283,543, Aug. 24, 1972, abandoned. This application Feb. 19, 1974, Ser. No. 443,764
Int. Cl. B41f *31/00*
U.S. Cl. 101—327 2 Claims



1. A stamping device adapted for continuous and high speed operation comprising:
a cylindrical outer frame open at upper and lower ends, and having an inwardly directed flange at its lower end, and an annular shoulder on its upper end on the interior thereof;
a generally mating inner frame received in said outer frame and defining a hollow cavity therein for receiving and holding ink, said inner frame having an open upper end for receiving ink therethrough, and an annular shoulder on its upper outer wall which is complimentarily shaped to said annular shoulder on said outer frame, and a transverse bottom wall provided with an inwardly and down-

wardly inclined inner surface defining the bottom of said hollow cavity;

aperture means opening through said groove means on the face of said inner surface communicating with said aperture means;

ink storage means formed of porous materials and received adjacent to said aperture means for storing ink;

stamping means formed of porous material and disposed beneath said ink storage means, supported on said flange of said outer frame, and having an exposed face projecting downwardly below the under surface of said flange of said outer frame and adapted to be wetted by ink from said ink storage means; and,

wherein said outer frame includes an outer annular shoulder adjacent to said inner annular shoulder on the exterior thereof, said outer annular shoulder providing means for connecting said device with a stamping machine.

3,885,496

DEVICE FOR APPLYING INK TO THE INKING ROLLER OF AN OFFSET PRINTING PRESS

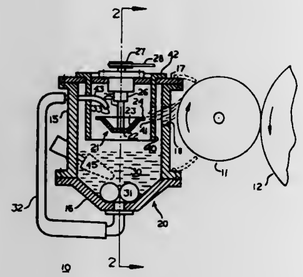
Peter Breitweg, Offenbach-Rumpenheim; Karl-Heinz Franz, Hanau am Main; Peter Mayer, Muhlheim am Main, and Klaus Wolf, Neu-Isenburg, all of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher, Germany

Filed Aug. 22, 1973, Ser. No. 390,520

Claims priority, application Germany, Aug. 22, 1972, 2241281

Int. Cl. B41f *1/40, 31/28*

U.S. Cl. 101—363 **5 Claims**



1. In an inking device for supplying a film of ink to a printing cylinder in a printing press comprising, in combination, an ink roller, a frame, a cup-like disc horizontally oriented and journaled in the frame, the disc having a peripheral lip, means for continuously depositing ink on the disc, means for rotating the disc at high speed so that the ink deposited thereon flows in a thin layer to the lip of the disc and is ejected radially outwardly therefrom by centrifugal force in a finely divided spray, a shield mounted on the frame and spaced outwardly from the disc to surround the same and having an opening at the bottom, the shield having an aperture adjacent the ink roller, and scraper blade means engaging the lip of the disc in the region remote from the aperture to prevent ejection of ink from the lip in the form of spray in the region of the scraper means while permitting ejection of ink spray in the region of the aperture and onto the surface of the ink roller.

3,885,497

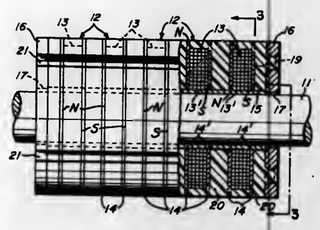
MAGNETIC PRINTING BASE AND METHOD OF MAKING SAME

William A. Jenkins, Englewood, Ohio, assignor to Monarch Marking Systems, Incorporated, Dayton, Ohio

Filed Nov. 9, 1970, Ser. No. 87,673

Int. Cl. B41f *27/00*

U.S. Cl. 101—382 MV **18 Claims**



1. Method of making a printing base for mounting a printing plate, comprising the steps of: providing a cylindrical member, placing at least two magnetic circuit means on said cylindrical member, each circuit means including annular magnet means disposed between a pair of annular magnetizable plates, said plates having a greater diameter than said magnet means, placing said cylindrical member with said magnetic circuit means in a mold, flowing non-magnetic moldable material between the plates of adjacent magnetic circuit means, between the plates of each magnetic circuit means around the associated magnet means, and beyond the final desired diameter of the base, and trimming off the portions of all the plates and non-magnetic material beyond to the final desired diameter.

3,885,498

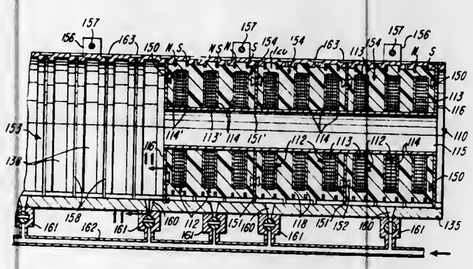
MAGNETIC PRINTING BASE AND METHOD OF MAKING SAME

William A. Jenkins, Englewood, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 87,673, Nov. 9, 1970. This application Mar. 6, 1974, Ser. No. 448,774

Int. Cl. B41f *27/02*

U.S. Cl. 101—382 MV **16 Claims**



1. A magnetic base for mounting a printing plate, comprising: an elongated member, at least two spaced-apart magnetic circuit means disposed on the elongated member, each magnetic circuit means comprising magnet means disposed between a pair of magnetizable plates, and a partition disposed between adjacent magnetic circuit means, the partition being imperforate and having keying means, the partition serving to facilitate molding of the base in sections and serving when the moldable material has hardened to key the molded sections together.

3,885,499

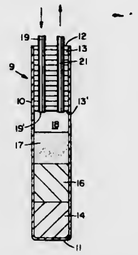
THERMAL DETONATION ENERGY-INITIATABLE BLASTING CAPS, AND DETONATION SYSTEM AND METHOD

Eldon K. Hurley, Kenvil, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 20, 1973, Ser. No. 426,979

Int. Cl. F42d *1/04*; **F42b** *3/10*

U.S. Cl. 102—23 **17 Claims**



1. A nonelectrically initiated blasting cap which comprises a closed shell; an initiator charge in said shell ignitable in response to action of thermal detonation energy of an explosive gas mixture and said shell containing an open space adjacent said initiator charge; a first conduit means extending from outside said shell into said open space in direct open communication with said initiator charge so as to convey an explosive gas mixture as a confined stream into detonating position in said open space for responsive ignition of said initiator charge; a second conduit means permitting said open space to be purged of gases other than said explosive gas mixture prior to detonation of said confined stream for said responsive ignition extending from said open space to the outside of said shell, whereby a stream of said explosive gas can be continuously passed from said first conduit means through said open space and through said second conduit means to purge said open space as described and thereafter explosive gas in said first conduit means can be detonated for propagation of resulting thermal detonation energy to said open space for ignition of said ignition charge.

3,885,500

PERCUSSION IGNITER FOR PROJECTILES AND PROJECTILE EMBODYING THE SAME

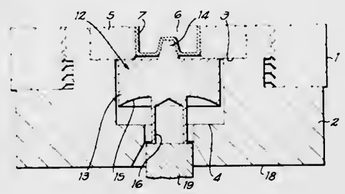
Robert M. Bornand, Meyrin, Switzerland, assignor to Valinor Anstalt, Vaduz, Liechtenstein

Filed Oct. 16, 1973, Ser. No. 406,930

Claims priority, application Switzerland, Oct. 5, 1973, 14241/73

Int. Cl. F42c *1/00*

U.S. Cl. 102—45 **5 Claims**



1. In a percussion igniter for projectiles, comprising an igniter body, a primer within said igniter body, a striker disposed in said igniter body for movement toward and away from said primer, said body having an annular internal shoulder thereon that surrounds an opening through the bottom of said primer to provide access to said striker, said body and primer and striker and shoulder being coaxial; the improvement in which said striker has a concave surface confronting said annular shoulder whereby upon combustion of said primer, said striker is forced against said annular shoulder to flatten out said concave surface against said annular shoulder thereby to seal against the escape of gas under pressure through said opening.

3,885,501

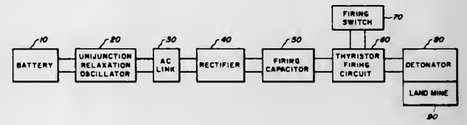
FAIL-SAFE ELECTRICAL TIMER

Clayton J. Schneider, Jr., East Aurora, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Nov. 16, 1973, Ser. No. 416,723

Int. Cl. F42c *7/02*; **F42b** *23/26*

U.S. Cl. 102—70.2 R **5 Claims**



1. A fail-safe electrical timer which will become deactivated after a preselected time and upon the intervening failure of a component including:

power means;

oscillator means driven by said power means and producing an AC output;

rectifier means for rectifying said AC output;

firing capacitor means charged by said rectifier means;

thyristor firing circuit means including a normally open firing switch and a detonator connected to said firing capacitor means whereby upon the closing of said firing switch the said firing capacitor means is allowed to discharge through and thereby activate said detonator.

3,885,502

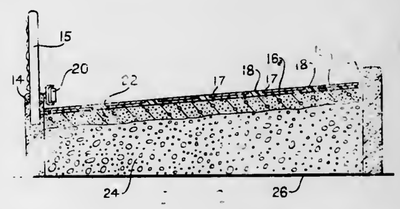
ENTERTAINMENT VEHICLE RIDE

Jay Sarno; Jon Daugherty, both of Las Vegas, Nev., and Carl Schneidinger, Rolling Hills Estates, Calif., assignors to Sarno International Speedways, Inc., Las Vegas, Nev.

Filed May 9, 1974, Ser. No. 468,430

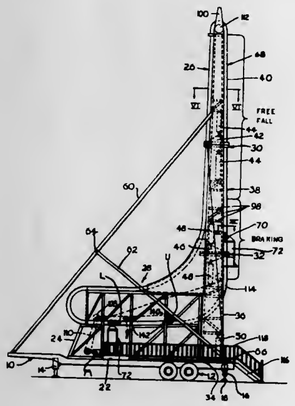
Int. Cl. A63h *18/12*

U.S. Cl. 104—53 **7 Claims**
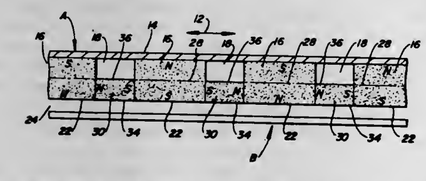


1. A closed loop track for amusement type electrically powered vehicles, comprising: A concrete support base extending under the entire surface area of the track, the upper surface thereof being in the desired configuration of a track surface; a thick plastic insulating coating deposited on and entirely covering the upper surface of the concrete support base; a plurality of spaced substantially parallel electrical conductor strips embedded in the insulating coating and presenting an exposed upper surface for electrical engagement, the insulating coating electrically isolating the strips from each other; the conductor strips each being electrically connected to a power supply.

3,885,503
AMUSEMENT RIDE
Gerald L. Barber, 309 Cardinal Dr., Taylors, S.C. 29687
Filed Apr. 24, 1974, Ser. No. 463,445
Int. Cl. A63g *1/08*
U.S. Cl. 104—76 17 Claims



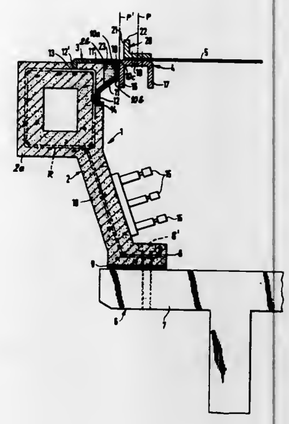
1. In an amusement ride; endless track means in the form of a loop comprising a vertical portion and a horizontal portion extending laterally from the bottom of the vertical portion, a carriage having a passenger compartment suspended therefrom and captive on the track means for movement in one direction therearound, first conveyor means operable to engage the carriage in a first predetermined position on said horizontal position and to move the carriage to the top of said vertical portion and to release the carriage thereat for free fall along the vertical portion, cooperating brake elements on said carriage and on said vertical portion near the bottom thereof forming first brake means for braking said carriage, second conveyor means operable to engage and move the carriage out the bottom of the first brake means for movement to a second predetermined position on said horizontal portion, second brake means for arresting the carriage in said second predetermined position, and selectively operable means for moving said carriage from said second predetermined position toward said first predetermined position, all movements of said carriage being in said one direction around said endless track means.

3,885,504
MAGNETIC STABILIZING OR SUSPENSION SYSTEM
Max Baermann, 506 Bensburg, Germany
Continuation-in-part of Ser. No. 181,523, Sept. 17, 1971, Pat. No. 3,791,309. This application May 25, 1973, Ser. No. 363,988
Claims priority, application Germany, Jan. 9, 1971, 2100839
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 MS 20 Claims



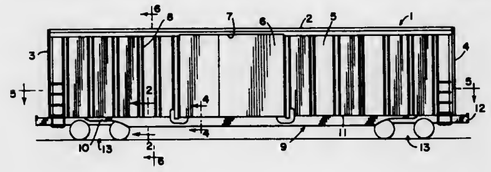
1. In an arrangement for maintaining a vehicle in spaced relationship to an elongated support over which said vehicle moves in a predetermined direction said support including conductor means of non-magnetic material, the improvement which comprises; a plurality of small permanent magnets movable with said vehicle and spaced-apart in said predetermined direction a distance approximately equal to one half of their length in said direction, each of said magnets having opposite north and south poles and an axis of magnetization perpendicular to said support, alternate ones of said magnets being reversely positioned so that said magnets present alternate north and south poles facing said support, and a magnetically permeable member in engagement with the ends of said magnets remote from said support and bridging the spaces therebetween, said magnets having magnetic flux extending into said conductor means between adjacent poles of said magnets, whereby movement of said magnets with said vehicle in said predetermined direction relative to said conductor means produces eddy currents in said conductor means which establish magnetic fields opposite to the magnetic fields of said magnets and said fields repulse one another.

3,885,505
TRACK FOR MAGNETIC-SUSPENSION VEHICLE
Gunther Winkle, Munich; Peter Molzer, Hebertshausen; Peter H. Otto, and Rudolf Zurek, both of Munich, all of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed Jan. 18, 1974, Ser. No. 434,572
Claims priority, application Germany, Jan. 25, 1973, 2303515
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 LM 8 Claims



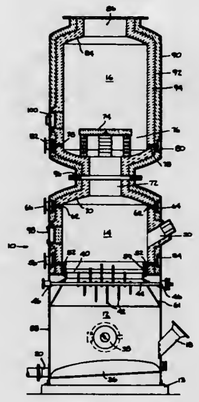
1. In a track for a magnetic suspension vehicle having suspension and guide electromagnets, the improvement wherein said track comprises a longitudinally extending beam of reinforced concrete, a connecting rail rigid with said beam and at least in part imbedded therein along the length of said connecting rail, and an armature of U-profile extending along and connected to said connecting rail, said armature being adapted to cooperate with said electromagnets, said connecting rail having a hollow profile defining a base leg and a pair of lateral legs, said lateral legs having free edges remote from said base leg and imbedded in the concrete of said beam, said armature having a lateral shank rigidly connected to said base leg.

3,885,506
RAILROAD CAR WITH DEPRESSED FLOOR
William D. Mundinger, Canfield, Ohio, and Richard C. Snyder, Michigan City, Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed Apr. 8, 1974, Ser. No. 458,741
Int. Cl. B61d *17/00*
U.S. Cl. 105—367 22 Claims



1. A railroad car for high cubic capacity interior design including a recessed floor construction and comprising:
a pair of side sills,
a center sill structure spaced between the side sills,
said floor construction including a floor structure having a pair of recessed floor units, one on either side of and extending substantially below the top of the center sill structure and inwardly of a respective side sill, and
said floor structure having a longitudinal recess portion between each floor unit and its adjacent side sill and a removable filler within said recess portion.

3,885,507
INCINERATOR SYSTEMS
Thomas E. Davy, Newark, and Gerald E. Marquess, Matawan, both of N.J., assignors to Nichols Engineering & Research Corporation, New York, N.Y.
Filed Oct. 6, 1972, Ser. No. 295,535
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 R 12 Claims



8. An incinerator system comprising an incinerator member having a lower tank portion, a medial ignition chamber mounted in fluid flow communication with said tank portion, and an upper combustion chamber mounted in fluid flow communication with said ignition chamber, said lower tank having an inlet for receiving a continuous flow of oleaginous floatable materials contained in a liquid, said tank having an oulet, means for controlling the liquid level in said tank, ignition burners mounted on the wall of said ignition chamber, means for supplying air to support combustion in said igntion chamber, a connecting passage interconnecting said ignition chamber with said combustion chamber, a baffle mounted on the bottom of said combustion chamber encompassing the upper end of said connecting passage to direct the products of combustion entering the combustion chamber in a radial flow pattern, said baffle forming an annular passage in the bottom of said combustion chamber, combustion air jets mounted around the periphery of said combustion chamber to direct air into said annular passage.

3,885,508
FOOD CASING AND METHOD OF MAKING IT
Richard E. Hofmann, 504 Wimer Cir., and Francis R. Walters, 8494 Lincoln Blvd., both of Pittsburgh, Pa. 15237
Continuation-in-part of Ser. No. 343,366, March 21, 1973. This application Jan. 17, 1974, Ser. No. 434,032
Int. Cl. D05b *1/08*, *93/00*
U.S. Cl. 112—262 11 Claims

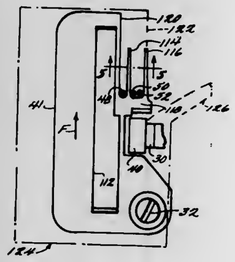


1. A method of making a relatively thin-wall hollow food-receiving casing from a relatively flat length of non-woven paperlike material whose fibers extend substantially crosswise of its length which comprises, folding-over a length of the material to provide a pattern piece having a fold-closed longitudinal side, an opposed longitudinal side having a pair of open edges, and open upper and lower ends; double folding-over a central bottom end portion of the folded-over piece to provide a four-thickness portion, cutting the folded-over pattern piece at its lower end into a convexly rounded shape about the four-thickness portion, applying a longitudinally advancing and cross-looped edge-overlapping multi-thread stitching of thread along edge portions of the closed and open longitudinal sides and along the rounded lower end of the pattern piece to provide a closed-off stitching-reinforced casing having an open upper end for stuffing a food product therein, and controlling the stitching operation to assure a close engagement of the thread with hole portions formed in the material at least about the four-thickness rounded end portion of the pattern piece.

3,885,509
OVEREDGE SEAMING
Roy B. Cox, High Point, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Continuation of Ser. No. 169,035, Aug. 4, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,417
Int. Cl. D05b *1/22*
U.S. Cl. 112—441 5 Claims

1. In a sewing machine for overedge stitching of a plurality of layers of material in a manner such that the layers can be hinged about a common axis to form a relatively flat seam, said machine being of the type having means for feeding a plural layered workpiece past a seaming area on a throat plate, a needle carrier mounting two curved needles and adapted to reciprocate the curved needles in arcuate paths through the throat plate and through the superimposed layers of material along two different lines parallel to and spaced from the edge of the layers of material, a looper mechanism for cooperating with both needle threads to effect overedge stitches, said

looper mechanism including an upper looper arm and a lower looper arm, said looper arms being driven by cam cylinders having endless cam grooves, a trimming mechanism disposed in advance of the seaming area for trimming off the edge of superimposed layers of material along a straight trim line just prior to arrival of the superimposed layers at the seaming area, and a drive mechansim for driving the needle carrier and looper arms in synchronization, the improvement comprising an auxiliary needle carried by the needle carrier in a position transversely spaced from the aforesaid needles with respect to the direction of feed such that the third needle moves in a path substantially coextensive with the trim line and through the raw edges of the freshly trimmed material, said looper arms cooperating with the thread carried by said auxiliary needle in the same manner as with the thread carried by the first-mentioned needles to form an overedge stitch.



3. A method of overedge seaming a plurality of layers of work material comprising: superimposing the edge portions of the layers trimming off a thin strip of the superimposed layers, passing first and second continuous needle threads through the work material at points spaced along two parallel lines which are parallel to and spaced from the trimmed edge of the work material to form first and second rows of needle thread loops in the material, simultaneously passing a third thread through the raw, freshly trimmed edge of the work material to form a third series of loops, manipulating a looper thread to be interlooped with all three series of loops to form overedge stitches of the type which permit the layers of the work material to be rotated relative to each other about a common axis to bring the edges of the layers into generally abutting relationship, and rotating layers about said common axis to bring the edges into generally abutting relationship whereby the resulting seam is smooth and flat and free from holes.

3,885,510

METHOD AND APPARATUS FOR CREATING A SUB-ATMOSPHERIC PRESSURE INSIDE CLOSED CONTAINERS

Ivo Hauser, Vevey, and Werner Hiltbrunner, Berne, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

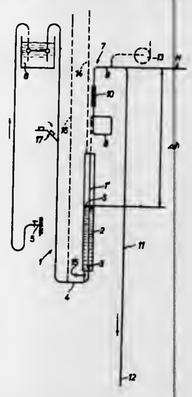
Continuation-in-part of Ser. No. 240,956, April 4, 1972, abandoned. This application Mar. 7, 1974, Ser. No. 449,149

Claims priority, application Germany, Apr. 14, 1971, 2118137

Int. Cl. B21d *51/26*

U.S. Cl. 113—1 G **8 Claims**

1. Apparatus for creating a sub-atmospheric pressure inside closed containers filled and/or sealed at atmospheric pressure, comprising a duct full of liquid with an inlet and an outlet, a supply of liquid, said liquid moving from the inlet to the outlet, part of said liquid in the duct being at atmospheric pressure,



a section of said duct being a barometric leg, being placed higher than the part of the liquid at atmospheric pressure.

3,885,511

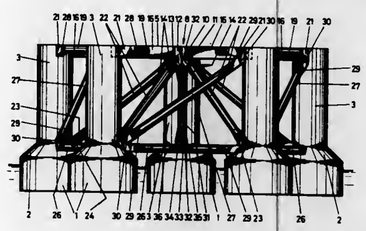
FLOAT DRILLING PLATFORM OR SIMILAR FLOATING STRUCTURE

Johannes Wipkink, Sassenheim; Marinus Van Holst, and Johan Gerhard Wolters, both of Maassluis, all of Netherlands, assignors to Ingenieursbureau Marcon (Marine Consultants) B.V. and Scheepsbouwbelangen B.V., both of The Hague, Netherlands

Filed Apr. 21, 1972, Ser. No. 246,371

Int. Cl. B63b *35/00*

U.S. Cl. 114—.5 D **7 Claims**



1. In a floating platform for the open sea of the type including a number of vertical columns carried by floating devices at their lower ends, the floating devices having a larger horizontal cross-sectional area than the columns, a horizontal work deck carried by said columns, and a plurality of horizontal and/or inclined bracing members between adjacent columns to maintain the relative position of the columns, the improvement comprising:

a. a first bracing member joint centrally located between all of the columns adjacent the lower surface of the horizontal work deck,

b. a second bracing member joint substantially vertically below said first bracing member joint,

c. a plurality of bracing members emanating from said first bracing member joint to upper and lower points on said columns, wherein the bracing members between the first bracing member joint and the upper points on said columns lie in on plane, the first bracing member joint having a central core member having a polyhedral shape with the number of faces corresponding to the number of bracing members leading to said joint, a first connecting portion protruding horizontally from said core member, the number corresponding to the number of bracing members extending from said joint to said lower points on said columns, and third connecting portions extending downwardly toward said second bracing member joint, and

d. a plurality of bracing members emanating from said second bracing member joint only to lower points on said columns, and to said first joint.

3,885,512

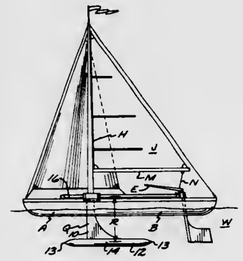
CATAMARAN STRUCTURE

Paul M. Marcil, 12117 Phillips Ave., Lynwood, Calif. 90262

Filed July 15, 1974, Ser. No. 488,589

Int. Cl. B63h *9/00*

U.S. Cl. 114—39 **3 Claims**



1. In a catamaran that includes a pair of laterally spaced parallel pontoons, a plurality of spaced cross pieces secured to said pontoons to maintain them in a fixed spaced relationship, a mast having a first end, a sail supported from sail mast, a rudder pivotally supported in a fixed position relative to said pontoons, a support for a user of said catamaran intermediately disposed between said pontoons, the improvement for so supporting said mast and sail that said pontoons, support and cross pieces remain substantially horizontal when said catamaran is wind propelled, said improvement comprising:

a. a rigid elongate member secured to said cross-pieces and normally disposed thereto, said member of circular transverse cross section;

b. a pair of longitudinally spaced collars adjustably secured to said rigid member;

c. a tubular sleeve pivotally supported from said elongate member and disposed between said collars;

d. first means for rigidly connecting said first end of said mast to said sleeve for said mast to extend upwardly therefrom; and

e. a keel weight

f. a rigid downwardly extending keel member that has first and second ends, said first end of said keel member secured to said sleeve and said second end to said keel weight, with the magnitude of said keel weight and the distance between said first and second ends of said keel member being so related to the height of said mast and the area of said sail that said mast and sail will pivot downwardly and outwardly and said keel member and keel weight upwardly and outwardly as said catamaran is subjected to wind without said pontoons crosspieces and support being appreciably displaced from a horizontal position.

3,885,513

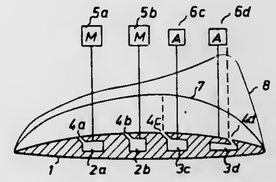
AUTOMATIC MECHANISM FOR PREVENTING CAVITATION AT AIR FED HYDROFOILS AND FLOW BODIES

Hanns Von Schertel, Hergiswil, and Otto Munch, Horw, both of Switzerland, assignors to Supramar AG, Luzern, Switzerland

Filed June 4, 1973, Ser. No. 366,795

Int. Cl. B63b *1/24*

U.S. Cl. 114—66.5 H **10 Claims**



1. Automatic mechanism for preventing cavitation at hydrofoils and flow bodies supplied with air at a surface thereof from air exit openings, the improvement comprising the provision of air exit rows at those locations of greatest excess speed at the foil profile defining a flow body, said excess speed being related to the negative pressure at said foil profile, air admission valve means operatively connected to each such air exit row and controlled by the pressure in said exit row, said air admission valve means being opened by negative pressure against the action of an adjustable closing force, the closing force being of a magnitude such that each air admission valve means is opened and admits air from the atmosphere when a predetermined pressure has been reached.

3,885,514

ARRANGEMENT RELATING TO SHIP HULLS

Jan Tronje Lauenborg, Fjelltun, 1640-Raade, Norway

Filed July 31, 1973, Ser. No. 384,252

Claims priority, application Norway, Aug. 1, 1972, 2744/72

Int. Cl. B63b *1/12, 1/22*

U.S. Cl. 114—66.5 R **4 Claims**

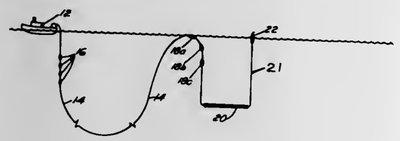


1. A ship's hull having a bow, stern, bottom and lateral sides and including two depending side portions which are spaced in opposition to one another and have free lower edges, said side portions defining at said bottom, a central longitudinal channel extending from the stern towards the bow, and a central portion disposed in said channel at the front thereof and including a downwardly projecting portion extending at a level beneath the free lower edges of said side portions and of substantially shorter length than the overall length of the hull, said downwardly projecting portion being disposed substantially in entirety below said free lower edges of the side portions and constituted as a horizontally extended torpedo-like body.

3,885,515
RIGID LINE ARRAY SUSPENSION SYSTEM

Hamlin A. Caldwell, Jr., Stonington, Conn., and Ralph R. Miller, III, Seattle, Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 7, 1974, Ser. No. 477,528
Int. Cl. B63b 21/56
U.S. Cl. 114—235 B 5 Claims



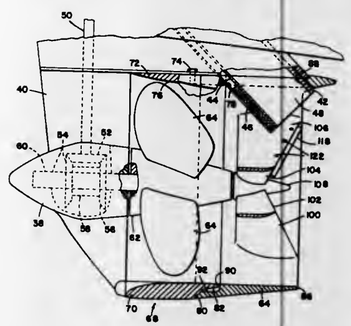
1. An array suspension system suitable for towing in water comprising:
a tow cable;
weighting means connected near the fore end of said tow cable for adding negative buoyancy to the system;
first buoyant means adapted for being towed totally submerged underwater and further adapted for rising to the surface of the water at zero speed connected to said tow cable aft of said weighting means;
an array of negative buoyancy having forward and aft ends, said forward end connected to said tow cable a predetermined distance from said floating means to enable said forward end of said array of negative buoyancy to be suspended at a predetermined depth in water when the system is at zero speed;
a drogue system including a drogue line with a second buoyant means connected to the aft end of said drogue line, said second buoyant means adapted for being towed totally submerged underwater and further adapted for rising to the surface of the water at zero speed, said second buoyant means comprising a drogue, said drogue line having its forward end connected to said aft end of said array and said drogue line being a predetermined length to enable said array of negative buoyancy to be suspended at said predetermined depth when the array suspension system is at zero speed.

3,885,516
PROPULSION UNIT FOR A WATER-SKI TOWING DEVICE

Miroslav Uroshevich, 2505 Fleetwood Ave., Cincinnati, Ohio 45211, and Harry V. March, 7223 Gracely Dr., Cincinnati, Ohio 45233

Filed Oct. 4, 1973, Ser. No. 403,440
Int. Cl. B63b 21/56
U.S. Cl. 115—6.1 12 Claims

1. A water-ski towing device comprising:
a bouyant hull;
a motor mounted in said hull and having a vertically oriented output shaft;
a streamlined strut extending downward through said hull, said output shaft extending through said strut;
a propeller drive unit mounted adjacent the lower end of said strut, said propeller drive unit receiving an input from said motor output and having a right angle propeller drive shaft;
a propeller mounted on said propeller drive shaft;
an annular two-piece streamlined shroud secured to said strut and comprised of abutting upstream and downstream annular sections, said annular upstream section of said shroud being positioned around said propeller closely adjacent the tips thereof whereby a propulsive annular stream is directed from said shroud in an axial direction, said annular stream having a tangential velocity component;
said annular downstream section of said shroud supporting a plurality of radial vanes in the flow path of said stream through said shroud, said vanes being angled to turn the flow in a tengential direction opposite to and at least as

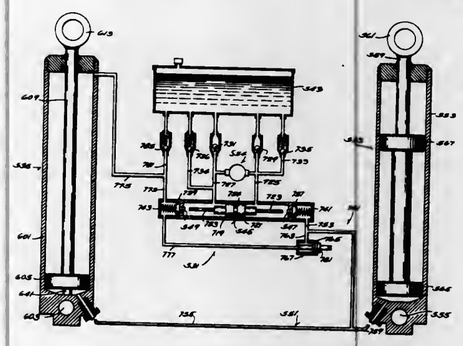


great in mangitude as the tangential component imparted by said propeller; and an anticavitation plate supported from said strut above said propeller drive unit and wherein said annular shroud is secured to said anticavition plate.

3,885,517
POWER TRIM-TILT SYSTEM

Gaylord M. Borst, Waukegan, and Martin H. Meyer, Libertyville, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 4, 1973, Ser. No. 320,913
Int. Cl. B63h 5/12
U.S. Cl. 115—41 HT 13 Claims

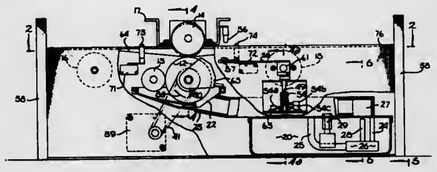


1. A marine propulsion device comprising a first member adapted to be attached to a boat, a second member, means including a tilt pin for connecting said second member to said first member for vertical swinging movement of said second member relative to said first member about said tilt pin, a first hydraulic cylinder-piston assembly connected to said first and second members at locations spaced from said tilt pin, a second hydraulic cylinder-piston assembly connected to said first and second members, said second hydraulic cylinder-piston assembly including a cylinder, a piston assembly located in said cylinder and including first and second axially spaced pistons fixedly connected to each other, a piston rod, and means connecting said piston assembly to said piston rod for limited relative movement therebetween axially of said cylinder, and hydraulic means connected to said first and second hydraulic cylinder-piston assemblies for pressurization thereof.

3,885,518
RIBBON INKING APPARATUS

Anselm F. Varni, Los Angeles, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 284,668, Aug. 29, 1972, abandoned.
This application May 28, 1974, Ser. No. 473,796
Int. Cl. B05c 1/08
U.S. Cl. 118—6 9 Claims



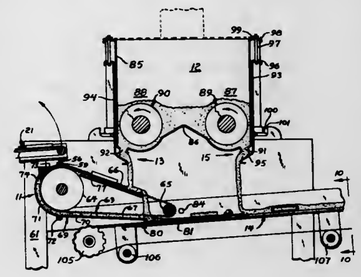
1. Apparatus for re-inking a ribbon comprising;
a housing;
a first pair of spindles for receiving a first roll mounted for rotation in said housing;
a second pair of spindles for receiving a second roll mounted for rotation in said housing, said first pair and second pair of spindles being mounted in said housing such that rolls engaging said spindles are parallel and define an intermediate space;
an elongated inking roller rotatably mounted in said housing parallel to said first and second rolls in said intermediate space;
a metering roller rotatably mounted within said housing parallel to said inking roller for metering ink onto said inking roller;
a trough disposed beneath said inking roller; an inking well coupled to said trough such that ink from said well may be transported to said trough and brought in contact with said inking roller;
a lid coupled to said housing;
a pressure roller rotatably mounted within said lid parallel to said inking roller, said roller having a first and second operating position, said first position being such that said pressure roller presses a ribbon disposed between said inking roller and said pressure roller and said second position being such that said pressure roller is spaced apart from said inking roller;
ribbon guiding means coupled to one of said spindles of said first pair of spindles including means for axially moving said spindle and a roll engaging said spindle for guiding a ribbon onto a roll engaging said first pair of spindles, said guiding means including photosensitive semiconductor means and a light, said semiconductor means being coupled to one of said spindles of said first pair of spindles and movable therewith, said light being mounted on said housing such that said ribbon may interrupt light incident on said semiconductor means when said ribbon is misaligned with respect to said rolls means responsive to said photosensitive semiconductor means to actuate said exially moving means; and
means whereby the ribbon may be driven from said first roll to said second roll and inked as it passes between said pressure roller and said inking roller.

3,885,519
APPARATUS FOR BREADING FOOD OBJECTS

Gerald J. Orlowski, Calumet Park, Ill., assignor to Korlow Corporation, Posen, Ill.

Filed June 4, 1973, Ser. No. 366,433
Int. Cl. A23g 3/20
U.S. Cl. 118—16 6 Claims

1. Apparatus for applying particulate matter to articles of food, comprising: conveyor means conveying said articles and including a first conveyor belt having a forward run and a return run; baffle means conforming to and partially surrounding said return run of said first belt and adapted to collect some of said particulate matter, said return run of said first conveyor belt moving said material collected by said baffle means to the input end of the forward run of said first conveyor belt to provide a bed of said particulate matter for articles deposited thereon; a source of said particulate matter above said conveyor means including an accumulator bin defining first and second elongated slots spaced respectively upstream and downstream and each extending across said

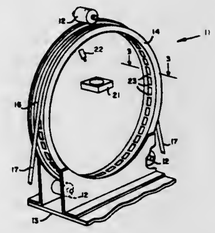


conveyor means; first and second augers rotatably mounted within said bin and located respectively above said first and second discharge slots, each of said augers conveying matter in said accumulator bin in an opposite direction relative to the direction of elongation of said slots, means for driving said augers to evenly distribute said material throughout said bin and across said slots; and means for collecting said particulate matter not adhered to said articles downstream of said first slot and returning the collected material to said bin for recirculating the same.

3,885,520
VAPOR DEPOSITION APPARATUS WITH ROTATABLE RING MASK

John F. Krumme, 87 Upenuf Rd., Woodside, Calif. 94062

Filed Mar. 8, 1974, Ser. No. 449,219
Int. Cl. C23c 13/08
U.S. Cl. 118—49.1 7 Claims



1. In a vacuum deposition apparatus for depositing material in a stripe on an elongated substrate strip comprising:
1. a masking wheel for delimiting an area of said substrate strip upon which said material is deposited during passage of said strip through a deposition area, said wheel including:
a. a pair of axially aligned and spaced apart masking rims having generally the same outer peripheral circumferences and upon which said strip rides bridging the gap therebetween during said passage through said deposition area, and
b. a plurality of connectors extending between said rims and securing the same together at locations spaced circumferentially of said rims to normally maintain the

same a predetermined spacing apart defining said stripe;

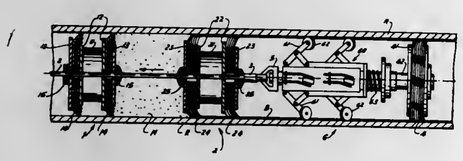
2. a source of said material to be deposited positioned inwardly of said rims whereby upon rotation of said wheel to carry said strip on said rims through said deposition area, material from said source will be deposited on the area of said strip exposed between said rims;

3. each of said connectors extending between said rims at a location between said strip and said source which is spaced inwardly of the location at which said strip bridges the gap between said rims, and said source being positioned inwardly of said rims at a location which is off the axis of rotation thereof, whereby the portions of said strip area between said rims which are shielded by said connectors from the deposition of said materials shifts along said area as said rims rotate so that all portions of said area of said strip exposed between said rims are exposed to deposited material during passage through said deposition area.

3,885,521
APPARATUS FOR COATING THE INNER WALL SURFACE OF A DUCT

Paul von Arx, Gelterkinderstr. 31, CH-4450 Sissach, Switzerland

Filed May 21, 1973, Ser. No. 362,014
Claims priority, application Switzerland, May 24, 1972, 7785/72
Int. Cl. B05c 7/06, 11/02
U.S. Cl. 118—105 **6 Claims**



1. An apparatus for the application of a coating on the inner wall surface of a duct, comprising:

a forward and a rearward piston axially displaceable and spaced apart inside said duct and jointly with a portion of said inner wall surface forming therebetween a space for a coating mass, said forward piston having first sealing means along said inner wall surface for providing increased sealing when the pressure exerted on said coating mass increases, and said rearward piston having second sealing means along said inner wall surface which increasingly yields with increasing pressure of said coating mass and permits the issuance of said coating mass between said second sealing means and said inner wall surface;

a polishing device upstream of both said pistons;

a guide cable attached to said polishing device and passing through both said pistons;

respective means for sealing each piston against said guide cable, respectively, said polishing device pushing both said pistons and said coating mass enclosed therebetween through said duct when said guide cable is pulled;

guide means for said polishing device for inducing rotary motion thereto in said duct while said polishing device pushes said pistons through said duct;

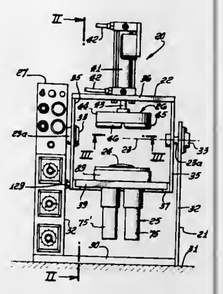
connecting means between said polishing device and said guide cable for permitting said rotary motion without substantial twisting of said guide cable, and

a swivel joint between said polishing device and said rearward piston permitting relative pivotal movement thereof while transmitting axial force from said polishing device to said rearward piston.

3,885,522
METHOD AND APPARATUS OF DECORATING A SURFACE OF AN ARTICLE

William E. MacDonald, Los Angeles, and Robert C. Harris, Jr., Glendale, both of Calif., assignors to Interpace Corporation, Los Angeles, Calif.

Filed Oct. 19, 1973, Ser. No. 408,200
Int. Cl. B05c 3/109
U.S. Cl. 118—406 **16 Claims**



1. An apparatus for depositing a flowable thick composition material for decorative purposes on a surface of an article, comprising:

a frame structure including spaced upright standards;

an article support frame pivotally mounted on and between said spaced standards;

a removable plate on the article support frame;

a flexible elastomeric mold member fixed on said plate and including a surface generally corresponding to the surface of the article to be decorated;

said mold member having pattern defining edges forming an opening in said mold surface and having a chamber in communication with a supply of glaze composition material and said opening;

a ram carried by the article support frame in spaced relation to said mold member;

said ram having a soft yieldable pad for pressure engagement with an article aligned with said mold surface;

and operable means advancing said ram toward said mold surface and urging said soft yieldable pad carried by said ram into pressure engagement with an article and the article into tight sealing relation with the pattern defining means on said mold surface;

said operable means including means for rotating said article support frame with said mold member and ram thereon to invert the relative positions of said mold member and the article carried thereby whereby said supply of composition material is flowable into contact with the area of said surface defined by said pattern defining means;

said article support frame, mold member, and ram being rotable back to their initial positions to remove undeposited composition material from the openings on said mold member defined by said pattern defining edges.

3,885,523
SANITARY FACILITY FOR ANIMALS

Bruce A. Coleman, 201 W. 86th St., New York, N.Y. 10024

Filed July 19, 1974, Ser. No. 490,209
Int. Cl.² A01K 29/00
U.S. Cl. 119—1 **14 Claims**

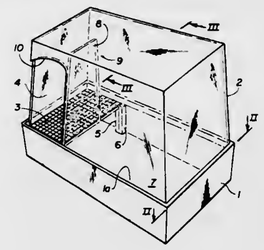
1. A sanitary facility for animals comprising:

a lower, relatively shallow tray member;

a raised horizontal screen or mesh member extending across a portion of said tray and defining an entry and exist area, the remainder of said tray defining a toilet area for receiving litter;

a top removable enclosure removably positioned over said tray, said enclosure having an entry and exit opening through at least one wall thereof, said opening extending above said screen or mesh member and being in communication with said entry and exit area of said tray; and

means for preventing litter from being tracked out of said toilet area, including a divider member partially dividing the entry and exit area of said tray from the toilet area of

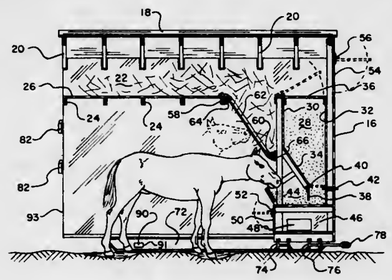


said tray and defining a passageway between said toilet area and said entry and exit area, said passageway extending above the litter and screen or mesh member and being offset relative to said opening formed in said upper enclosure member so as to define a tortuous entry and exit path for the animal over said screen or mesh member and between said opening and said passageway, whereby any litter or the like picked by the animal is caused to fall on said screen or mesh member.

3,885,524
PORTABLE LIVESTOCK FEEDER/SHELTER

Arthur B. Gregory, 101 Cypress St., West Monroe, La. 71291

Filed Dec. 7, 1973, Ser. No. 422,831
Int. Cl. A01k 1/00
U.S. Cl. 119—16 **12 Claims**



1. A portable livestock unfloored feeder/shelter comprising a partially enclosed and unfloored upright structure mounted on underlying surface means and having opposed and spaced side wall means, end wall means having inside surface means and extending between and connected to the opposed side wall means, roof means extending between and connected to the end wall means and the opposed side wall means;

said structure having an open end for free ingress and egress of livestock and disposed between the opposed side wall means and between said roof means and the underlying surface means, the open end being arranged in opposed and spaced relation to the end wall means;

hayloft means disposed beneath said roof means and extending between and connected to the opposed side wall means, said hayloft means extending in a direction from the open end toward but spaced from the end wall means;

grain bin and feeder means mounted on the inside surface means of the end wall means and extending between and connected to the opposite side wall means;

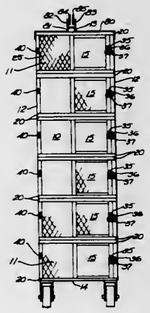
grate means for dispensing hay from the hayloft means to livestock extending between and connected to the opposed side wall means and between and connected to said hayloft means and side grain bin and feeder means; and

said hayloft means, said grain bin and feeder means and said grate means rigidifying said structure so as to maintain the integrity of said structure throughout normal use of said structure at a location and movement of said structure from one location to another.

3,885,525
APPARATUS AND METHOD FOR TRANSPORTING, UNLOADING AND PROCESSING LIVE POULTRY

James B. Powell, 8 Bon Haven; Beverly G. Yeiser, Robin Rd., and Joseph R. Lightner, Rt. No. 4, all of, Winchester, Ky. 40391

Division of Ser. No. 255,842, May 22, 1972, Pat. No. 3,782,398. This application Oct. 5, 1973, Ser. No. 403,805
Int. Cl. A01k 1/00
U.S. Cl. 119—17 **6 Claims**



1. A metallic enclosure for transporting and unloading live poultry, said enclosure comprising substantially rectangular side walls and end walls and a substantially rectangular bottom wall, all said walls being formed of foraminous metal and being secured together into a unitary structure, a plurality of equally spaced, substantially horizontal floor sections secured between said top and bottom walls, said floor sections being formed of foraminous metal, a plurality of substantially vertical partitions formed of foraminous metal extending from side to side of said enclosure, a single partition of said partitions being secured between the top wall and an adjacent floor section, between adjacent floor sections and between the bottom wall and an adjacent floor section, said floor sections and partitions forming tiers of superimposed compartments of equal size within said enclosure, each tier having two said compartments, access means to the interiors of each of said compartments comprising a plurality of doors formed of foraminous metal and opposed horizontal channels within which said doors are slidable horizontally between open and closed positions, said opposed channels being secured along said end walls, means abutting said doors when in closed position for locking said doors, said locking means being readily releasable by upward movement thereof, and stop means abutting said doors in open position secured to said end walls for preventing sliding movement of said doors beond fully open position.

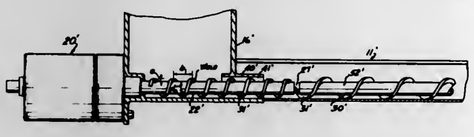
3,885,526
ANIMAL FEEDER CONSTRUCTION

Elton Sumner, 425 Brookwood Dr., Athens, Ga. 30601, and Aaron W. Adams, Jr., Douglas, Ga. 31533

Continuation-in-part of Ser. No. 72,971, Sept. 17, 1970, Pat. No. 3,636,928. This application Jan. 25, 1972, Ser. No. 220,601

Int. Cl. A01k *5/02*

U.S. Cl. 119—52 AF **7 Claims**



1. In an animal feeder construction for transporting particulate feed material,

a feed hopper for holding the feed material;

a distribution means connected to said feed hopper through which the feed material from said hopper is to be distributed;

an open cored spring-type auger having endless helical flights of a constant cross-sectional height capable of transmitting turning torque rotatably carried in said hopper and extending therefrom into said distribution means for transporting said feed material from said hopper into said distribution system, said helical flights defining a feed conveying surface thereon;

drive means for selectively rotating said auger means to distribute said feed material, said drive means including a drive shaft having a diameter a predetermined amount greater than the diameter of said open core, said drive shaft defining a helical recess therearound and receiving said helical flights therein to reduce the exposed cross-sectional height of said flights within said hopper so that said helical flights of said auger lying within said hopper have a unit conveying surface area less than the unit conveying surface area within said distribution means.

3,885,527
HANDLING OF LIVESTOCK

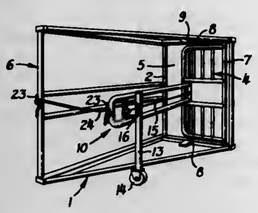
Alan Loader Maffey, Lord Rugby, The Grove Farm, Frankton, nr. Rugby, Warwickshire, England

Filed Nov. 7, 1973, Ser. No. 413,632

Claims priority, application United Kingdom, Nov. 17, 1972, 53263/72; May 7, 1973, 21560/73

Int. Cl. A01k *1/06*

U.S. Cl. 119—98 **11 Claims**



1. An assembly for immobilising an animal and for defining a gap, which may form an exit and/or an entrance to a pen, the assembly comprising, in combination, a frame insertable into said gap, through which the animal may pass, a gate in said frame hinged about a vertical axis and closable partially to close said gap to trap and immobilise an animal moving forwardly through said frame with its head clear of said gap and its shoulders in contact with said gate, operating means for said gate and means for securing said operating means in a position at least partially closing said gate and immobilising the animal with its head clear of said gap and its shoulders in contact with said gate.

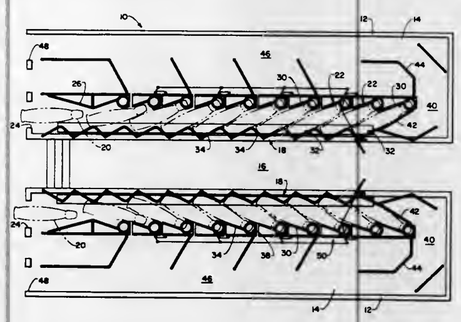
3,885,528
RAPID EXIT MILKING BARN

Ben W. Vandenberg, Artesia, Calif., assignor to August Vandenberg, Artesia and Andrew W. Vandenberg, Bellflower, both of, Calif., part interest to each

Filed Feb. 14, 1974, Ser. No. 442,456

Int. Cl. A01k *1/00*

U.S. Cl. 119—14.03 **1 Claim**



1. In a milking barn for a plurality of cattle, the combination of: an elongated milking structure having primary ingress means and primary egrees means and incorporating a plurality of milking stations; front and rear cattle restraining means at each of said stations; and secondary egress means located between the extremities of said primary egress means and constituted by a plurality of movable gate portions in said front restraining means to permit said cattle to debouch directly into said primary egress means intermediate its extremities, said gate portions being provided at alternate ones of said milking stations to permit said cattle to debouch in pairs from said alternate stations; and common actuating means secured to said gates to permit said gate portions to be simultaneously actuated to prevent or permit egress from said milking stations.

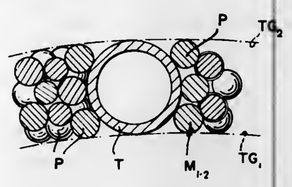
3,885,529
HEAT EXCHANGER STRUCTURE FOR A COMPACT BOILER AND THE LIKE

Peter N. Renzi, Basking Ridge, N.J., assignor to American Standard, Inc., New York, N.Y.

Continuation of Ser. No. 16,202, March 20, 1970, abandoned. This application Dec. 8, 1971, Ser. No. 208,038

Int. Cl. F22b *37/10*

U.S. Cl. 122—367 PF **23 Claims**



1. A boiler comprising a conduit network through which a first fluid is transmitted, a matrix of discrete conductive bodies which contact each other, said matrix being randomly dispersed between adjacent conduits forming said conduit network and contacting only part of the outer adjacent surfaces of said conduits forming said network, the bodies of said matrix providing tortuous light-transparent spacial paths therebetween through which a second fluid may pass, said matrix in the direction of flow of said second fluid having plural layers of said conductive bodies, said second fluid being applied directly against the outer wall of said conduit network and being indirectly applied against said outer wall through the spacial paths between the bodies of said matrix, and a burner which discharges the second fluid at an elevated temperature to transfer heat to the first fluid, whereby the second fluid will be applied substantially at the elevated temperature directly, and indirectly through the spacial paths of the matrix, against the outer wall of said conduit network.

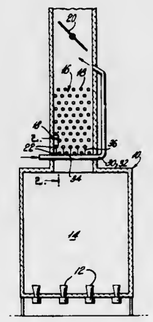
3,885,530
SHIELD TUBE SUPPORTS

John A. Kivlen, Denville, N.J.; James E. Massey, Jr., Baton Rouge, and James H. Martin, Jr., Zachary, both of La., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed July 3, 1974, Ser. No. 485,523

Int. Cl. F22b *37/24*

U.S. Cl. 122—510 **10 Claims**



1. A method of supporting furnace tubes exposed to high temperatures at which metal support beams for said tubes are subject to creep failure comprising:

a. providing an air passageway through each of said support beams;

b. admitting cool ambient air to one end of said passageways of (a) and flowing said air therethrough thereby increasing its temperature;

c. removing said heated air of (b) from the passageway of (a) and discharging it into the furnace at a location having negative pressure relative to the pressure of said ambient air;

d. insulating each of said tube support beams to limit heat input to said supports sufficient to allow the operating temperature of said support beams to be reduced by air passing through said passageways of (a) to below the temperature at which creep failure occurs,

e. supporting said furnace tubes on pairs of metal supports welded to said beams, one of said supports being within said insulation of (d) and supporting a tube immediately adjacent said insulation and the second of said supports supporting a second tube disposed further away from said passageway and being welded to said first support and outside said insulation of (d).

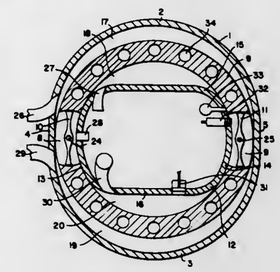
3,885,531
ROTARY INTERNAL COMBUSTION ENGINE

Hans M. Zollenkopf, Niagara Falls, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 29, 1973, Ser. No. 375,125

Int. Cl. F02b *55/14*

U.S. Cl. 123—8.45 **7 Claims**



1. A rotary internal combustion engine, comprising

an outer housing of substantially hollow cylindrical configuration having a cross-section of a pair of spaced diametrically opposite semicircles joined by a pair of spaced substantially parallel diametrically opposite linear parts; a rotor of substantially hollow cylindrical configuration coaxially rotatably mounted in the outer housing;

an inner housing of substantially hollow cylindrical configuration having a cross-section of a pair of spaced diametrically opposite arcs joined by a pair of spaced substantially parallel diametrically opposite linear parts at substantially right angles to the linear parts of the outer housing, the inner housing being coaxially positioned in the rotor thereby forming a combustion chamber between the rotor and one of the semicircles of the outer housing and between the rotor and one of the linear parts of the inner housing and a compression chamber between the rotor and the other of the semicircles of the outer housing and between the rotor and the other of the linear parts of the inner housing;

a pair of elongated windows formed through the rotor in diametrically opposite positions and extending parallel to the axis of the rotor;

a pair of blades rotatably mounted in diametrically opposite parts of the rotor with their axes parallel to the axis of the rotor, each of the blades being mounted in a corresponding one of the windows;

blade rotating means coupled to the blades for rotating both blades 90° relative to the radius of the rotor for each 90° of rotation of the rotor and 180° in relation to its former position, whereby when the blades are positioned between the linear parts of the outer housing and the arcs of the inner housing said blades are substantially perpendicular to radii of the rotor, and when the blades are positioned between the semicircles of the outer housing and the linear parts of the inner housing said blades are substantially radially positioned in the rotor; and intake and exhaust means extending to the inner and outer housings of said engine.

3,885,532
ROTARY ENGINE

Albert Pike, 825 Condor Ave., Victoria, British Columbia, Canada

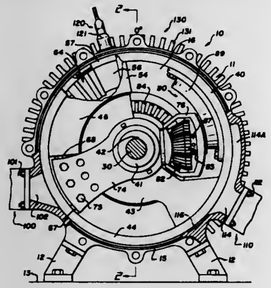
Filed Nov. 8, 1973, Ser. No. 413,900

Int. Cl. F02b *53/00*

U.S. Cl. 123—43 B **7 Claims**

1. A rotary engine comprising a housing having an annular side wall, a drive shaft journalled in the housing, a rotor non-rotatably mounted on the drive shaft within the housing, said

rotor having a rim adjacent the side wall, a cylinder on the rotor alongside the rim and curved about the axis of rotation of the drive shaft, a piston mounted for reciprocation within the cylinder and having a connecting rod, a rocking beam journalled to rock about the axis of rotation of the drive shaft



and having one end connected to the connecting rod, a pinion rotatably mounted on the opposite end of the rocking beam, a gear carried by the housing in mesh with the pinion, a cam gear rotatable with the pinion, an oscillator gear mounted on the rim in mesh with the cam gear, and said rim having an intake port through which fuel is induced into the cylinder.

3,885,533

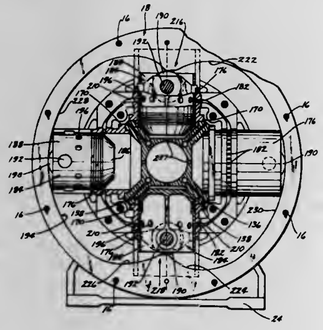
ROTARY INTERNAL COMBUSTION ENGINE AND METHOD OF CONTROLLING THE COMBUSTION THEREOF

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Continuation-in-part of Ser. No. 286,189, Sept. 5, 1972, and Ser. No. 301,096, Oct. 26, 1972. This application Apr. 16, 1973, Ser. No. 351,605

Int. Cl. F02b *57/00*

U.S. Cl. 123—44 E **5 Claims**



1. A rotary internal combustion engine, comprising,
an engine frame means having a rotatable shaft rotatably extending outwardly therefrom,
a rotor means in said frame means mounted on said shaft for rotation therewith,
a plurality of cylinders mounted on said rotor means,
a piston movably mounted in each of said cylinders and being movable between compression and expansion positions with respect thereto; said cylinder having a combustion chamber at one side of said pistons,
a cam plate means on said frame means extending around said rotor means and having a cam surface,
connecting means mounted on each of said pistons and movably engaging said cam surface to cause said piston to be moved in said cylinder as said rotor means is rotated with respect to said cam plate,
said cam surface having at least one lobe provided thereon which extends towards said rotor means, each of said pistons being moved to its maximum compression position as the connecting means thereon engages said lobe, supply means for supplying air and fuel to said cylinders, and means for exhausting the exhaust gases from the engine after the fuel and air mixture has been combusted, said lobe having a cam portion thereon which maintains said piston in a predetermined position to retard the expansion of the volume of said combustion chamber during at least a portion of the period of combustion.

3,885,534

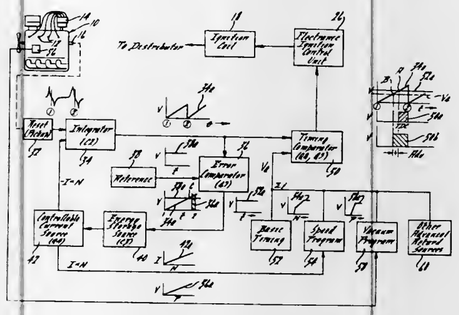
ELECTRONIC ADVANCE AND RETARD CONTROL CIRCUIT

John Lyman Webster, Huntsville, Ala., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 15, 1973, Ser. No. 388,673

Int. Cl. F02p *5/04*

U.S. Cl. 123—117 R **10 Claims**



1. In an internal combustion engine with a closed loop, regulated shaft angle position signal and shaft angular velocity signal generating system, comprising in combination an adjustable current source, integrating means having an input connected to said adjustable current source, reset means responsive to engine rotation periodically resetting said integrating means at regular spaced intervals of engine rotation to produce a sawtooth-shaped signal related to engine shaft angle position in the output of said integrating means, a voltage reference source establishing the regulation level for said sawtooth signal and having a predetermined relationship to the peak amplitude which the sawtooth signal should attain when said integrating means is reset by said reset means, comparator means connected to said reference source and said integrating means to produce an output signal when the amplitude of said sawtooth signal attains said predetermined relationship to the level of said voltage reference source, and means connecting the output of said comparator means to said adjustable current source for adjusting the latter until the output of said integrating means attains said predetermined relationship to the voltage level of said reference source when the integrator means is reset, said integrating means, comparator means and said adjustable current source connected in a closed feedback loop which automatically and continuously regulates the sawtooth-shaped shaft angle position signal in the output of said integrating means and produces the shaft angular velocity signal in the output of the adjustable current source as a result of the regulation of the shaft angle position signal in the output of said integrating means.

3,885,535

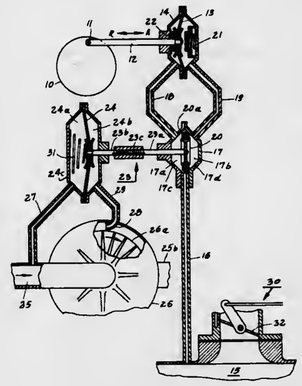
SPARK TIMING CONTROL

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94108

Continuation of Ser. No. 593,363, Nov. 10, 1966, abandoned. This application June 22, 1971, Ser. No. 155,651

Int. Cl. F02p *5/04*

U.S. Cl. 123—117 A **7 Claims**



1. A spark timing control for an internal combustion engine having an intake manifold defining a source of suction comprising a suction operated motor connected to a spark timing mechanism, first conduit means for connecting said motor to the source and to atmosphere for operating the motor to produce an advance of the timing of the spark, second conduit means for connection said motor to the source and to atmosphere for operating the motor to produce a retard of the timing of the spark, and means responsive to a predetermined speed of engine for selectively connecting the source to said first or second conduit means, the motor comprising a movable wall defining an expansible chamber on each side thereof, and said first conduit means is connected to one chamber and the second conduit means is connected to the other chamber, said responsive means including a housing having a pair of bleed openings connected to atmosphere and a valve therein shiftably mounted between a pair of positions and said conduit means comprises a conduit connecting said housing to said source and separate conduits connecting the housing to each of said chambers whereby movement of the valve to one position will connect the source of suction to one of said chambers while closing the source of suction to the other chamber and allow said other chamber to bleed to atmosphere.

3,885,536

RECIRCULATING EXHAUST GAS LOAD INITIATED CONTROL (RELIC)

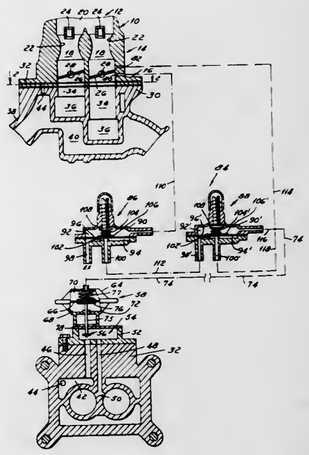
John R. Marshall, Novi, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 23, 1973, Ser. No. 408,953

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **6 Claims**

1. An exhaust gas recirculating system in an internal combustion engine having intake and exhaust manifolds, a carburetor induction passage, a throttle valve controlling flow through the passage, the system comprising, a duct connecting the exhaust gases to the engine intake manifold, an exhaust gas recirculation (EGR) valve normally closing the duct to prevent recirculation and movable to an open position by a signal vacuum connected thereto, the induction passage containing an exhaust gas recirculating (EGR) port located relative to the throttle valve so as to be traversed by the throttle valve edge during opening throttle valve movements so as to be at essentially atmospheric pressure at closed throttle positions with decreases in pressure level in proportion to the progressive opening of the throttle valve upon exposure of the port to manifold vacuum until EGR port vacuum reaches the level of manifold vacuum, conduit means operatively connecting EGR port signal vacuum to the valve to move the same, a



vacuum regulator in the conduit means for regulating the EGR signal vacuum level including a source of air at ambient or atmospheric pressure connected to the regulator for variably bleeding the EGR signal vacuum to a regulated level, and switch means for shutting off or permitting the flow of air to the regulator to terminate or permit the regulating function of the regulator.

3,885,537

ROAD LOAD MODULATED EXHAUST GAS RECIRCULATION SYSTEM

Roy E. Diehl, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

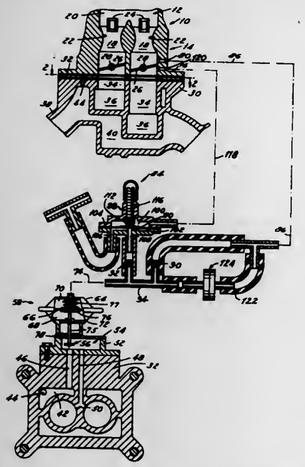
Filed Nov. 5, 1973, Ser. No. 413,159

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **4 Claims**

1. An exhaust gas recirculating system for an internal combustion engine, having a throttle valve controlling flow through a carburetor induction passage, comprising, a duct connecting the exhaust gases to the engine intake manifold, a spring closed exhaust gas recirculation (EGR) valve normally closing the duct to prevent recirculation and movable to an open position by a signal vacuum connected thereto, the induction passage containing an exhaust gas recirculating (EGR) port located relative to the throttle valve so as to be at essentially atmospheric pressure at closed throttle positions with decreases in pressure level in proportion to the progressive opening of the throttle valve until EGR port vacuum reaches the level of manifold vacuum, conduit means operatively connecting the EGR port signal vacuum to the valve to move the same, and vacuum signal control means in the conduit means for at times reducing the EGR flow by reducing the level of the EGR vacuum signal at the EGR valve to a value below the value at the EGR vacuum port, and below the level necessary to maintain the EGR valve open, the control means including an air bleed means responsive to a predetermined mode of operation of the engine for bleeding air into the conduit means, the conduit means including first and second

flow restrictors in series flow arrangement with each other, the conduit means connection to the EGR valve being between



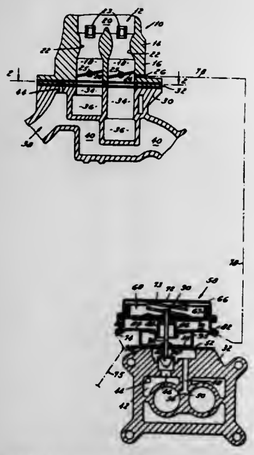
the flow restrictors, and the air bleed means being located downstream of the restrictor furthest from the EGR port.

3,885,538

ENGINE AIR PUMP PRESSURE/MANIFOLD VACUUM CONTROLLED EXHAUST GAS RECIRCULATING CONTROL SYSTEM

Mark H. Suter, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 3, 1973, Ser. No. 421,382
Int. Cl. F02b *33/00*
U.S. Cl. 123—119 A **5 Claims**



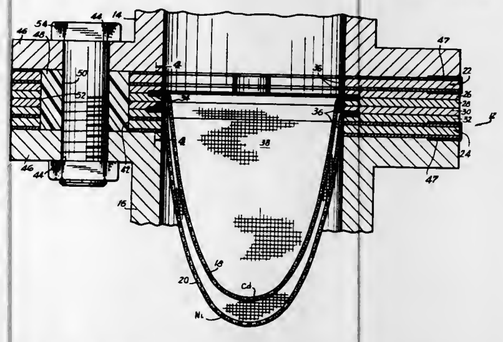
3. An exhaust gas recirculating system, comprising, in combination, an internal combustion engine having an air pump driven by the engine, the air pump producing a supply of air increasing in pressure in proportion to engine speed, the engine having intake and exhaust manifolding and a carburetor with an induction passage connected to the intake manifold and having a manifold vacuum sensing port therein, a duct connecting portions of the intake and exhaust manifolding for recirculating exhaust gases back into the engine, a valve movable between alternate positions to open and close the duct, and a load and speed sensitive servo connected to the valve for moving the same, the servo having a plunger connected to the valve, and differential force means acting on the plunger to open the duct as a function of the differential in pressure between air pump pressure and manifold vacuum conjointly operatively acting on the plunger in one direction opposed by ambient pressure operatively acting on the plunger in the opposite direction.

3,885,539

PRECOMBUSTION CATALYST DEVICE FOR USE WITH AN INTERNAL COMBUSTION ENGINE EMPLOYING A VAPORIZABLE LIQUID FUEL AND AN ENGINE UTILIZING SUCH A DEVICE

J. Byron Hicks, Colts Neck, N.J., assignor to Hydro-Catalyst Corp., Colts Neck, N.J.

Filed Jan. 23, 1974, Ser. No. 435,733
Int. Cl. F02b *33/00*
U.S. Cl. 123—119 E **35 Claims**



18. A precombustion catalyst means for interposition between the carubretor and the engine intake of an internal combustion engine employing a vaporizable liquid fuel, said means comprising a pair of spaced foraminous members of dissimilar catalytic metals and a gasket supporting said members spaced from one another and spaced from the carburetor and from the engine intake, said gasket containing an electrolyte in the electrical path between the members and between each member and engine ground

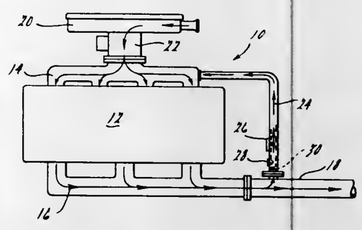
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3,885,540

AIR-FUEL RATIO CONTROL SYSTEM FOR A COMBUSTION ENGINE

Henry L. Stadler, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 10, 1974, Ser. No. 478,025
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **9 Claims**



1. In a system which utilizes a sensor responsive to the partial pressure of oxygen to control the ratio of air to fuel supplied to a combustion engine, said engine having an intake conduit through which air enters the engine, having means for mixing the fuel with the air which enters said engine through said intake conduit and having an exhaust conduit for conducting exhaust gases from said engine, the improvement which comprises:

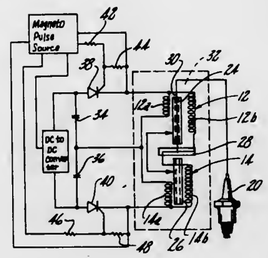
a third conduit interconnecting said intake conduit and said exhaust conduit, said third conduit permitting a portion of said exhaust gases of said engine to be conducted from said exhaust conduit to said intake conduit, said sensor being located for exposure to the gaseous medium in said third conduit to sense the partial pressure of oxygen in said gaseous medium, and means for modifying the partial pressure of oxygen in said portion of the exhaust gases of said engine to produce a partial pressure of oxygen in said gaseous medium different than the partial pressure of oxygen in said exhaust gases flowing through said exhaust conduit.

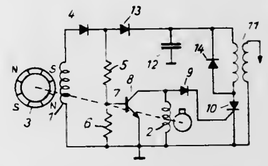
3,885,541

DUAL IGNITION COIL FOR INTERNAL COMBUSTION ENGINE

Arthur G. Hufton, Mobile, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed July 23, 1973, Ser. No. 381,989
Int. Cl. F02p *9/00*
U.S. Cl. 123—148 E **13 Claims**





1. A capacitor discharge ignition system for an internal combustion engine for firing each of the engine spark plugs twice during each combustion interval comprising:

a dual ignition coil apparatus;

means for physically and electrically separating the high voltage winding of each of said coils, one from the other; a single high voltage output lead coupled between said separating means and a terminal of said spark plug;

a pair of electronic switching means operable in timed relationship one to the other to provide ignition impulses to the primaries of said coils at slightly spaced time intervals;

said means for separating the high voltage windings of the coils comprising a carbon material disc, each of said high voltage coils fixed to an opposite surface of the disc at points spaced one from the other, said disc further having connected to its central portion a high voltage output lead.

3,885,542

ENGINE IGNITION SYSTEM ADAPTED TO PREVENT ENGINE ROTATION IN THE WRONG DIRECTION

Georg Haubner, Berg; Walter Hofer, Schwabach, and Peter Schmaldienst, Nurnberg, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 1, 1973, Ser. No. 402,625
Claims priority, application Germany, Oct. 2, 1972, 2248293
Int. Cl. F02p *1/17*
U.S. Cl. 123—148 E **6 Claims**

1. In the ignition system of an internal combustion engine having an engine crankshaft, in combination, charging generator means having a mechanical input coupled to the engine crankshaft and having an electrical output winding and operative for generating an AC output voltage; ignition capacitor means; rectifying means connecting said output winding of said charging generator means to said ignition capacitor means and operative for applying across said ignition capacitor means voltage half-cycles of only one predetermined polarity; an ignition transformer having a primary winding and a secondary winding; a fuel igniting unit connected across said secondary winding; circuit means connecting said ignition capacitor means to said primary winding and including an electronic discharge switch having a control input and operative when said discharge switch is conductive for discharging said ignition capacitor means through said electronic discharge switch and through said primary winding of said ignition transformer; triggering signal generating means having a mechanical input coupled to said engine crankshaft and having an electrical output connected to said control input of said electronic discharge switch for controlling the conductivity of the latter and operative for producing triggering signals synchronized with voltage half-cycles produced by said charging generator means; and control means connected to said triggering signal generating means and connected to said charging generator means and operative for preventing said triggering signal generating means from rendering said discharge switch conductive when the voltage half-cycle being generated by said charging generator means is of predetermined first polarity and operative for permitting said triggering signal generating means to render said discharge switch conductive when the voltage half-cycle being generated by said charging generator means is of opposite second polarity, wherein said triggering signal generating means comprises an electromechanical triggering signal generator having an output winding connected to said control input of said discharging switch and operative for periodically generating triggering signals in synchronism with the generation of voltage half-cycles by said charging generator means, and wherein said control means comprises diverting means connected to said output winding of said charging generator means and connected to said output winding of said triggering signal generator and operative for diverting triggering signals produced by said triggering signal generator away from said control input of said electronic switch when the voltage half-cycle being generated across said output winding of said charging generator means is of said predetermined first polarity, wherein said diverting means comprises a semiconductor switch circuit having an input connected to said output winding of said charging generator means and having an output current path connected across said output winding of said triggering signal generator and operative when the voltage half-cycle being generated across said output winding of said charging generator means is of said predetermined first polarity for substantially short-circuiting said output winding of said triggering signal generator.

3,885,543

ENGINE STARTER CONTROL SYSTEM

Mark Swartz, 134 Babcock St., Brookline, Mass. 02146

Filed Apr. 27, 1973, Ser. No. 354,990
Int. Cl. F02n *11/08*
U.S. Cl. 123—179 B **13 Claims**

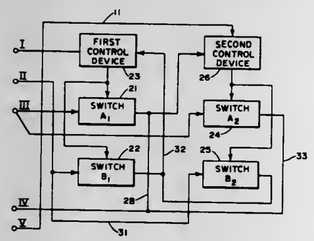
1. In an engine start system for starting an engine and energizing the ignition thereof, said system including a starter motor, a source of electrical energy, an electrically controlled start motor switch, having an electrical input control, said

switch electrically connecting the source to the motor and an ignition switch electrically connecting the source to the starter motor switch input control and to the engine ignition, said ignition switch having OFF, IGNITION and IGNITION-START positions producing in the latter two positions an ignition output signal and an ignition-start output signal, respectively, means for controlling the sequence of energization of the starter motor comprising,

electrical switches A_1, B_1, A_2 and B_2 each having an electrical signal input and output and a control input and each capable of being in a conducting or a non-conducting state between the signal input and output thereof,

first electrically energized control means for switches A_1 and B_1 having an electrical input and having an output and capable of being in one or the other of two electrical states represented by the output thereof,

second electrically energized control means for switches A_2 and B_2 having an electrical input and having an output and capable of being in one or the other of two electrical states represented by the output thereof,



first means coupling the output of the first control means to the control inputs of switches A_1 and B_1

second means coupling the output of the second control means to the control inputs of switches A_2 and B_2,

the said ignition output signal being coupled to the signal inputs of switches B_1 and B_2

the ignition-start output signal being coupled to the signal inputs of switches A_1 and A_2,

means connecting the outputs of switches B_1 and B_2 to the first control means input and

means connecting the outputs of switches A_1 and A_2 to the second control means input and to the starter motor electrical input control,

whereby the starter motor switch cannot be energized to electrically connect the source to the starter motor following switching the ignition switch from the IGNITION-START position to the IGNITION position, except by first switching the ignition switch to the OFF position.

3,885,544

STARTING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Peter W. Pfeiffer, San Marino, Calif., assignor to Colleen B. Hamilton, Arcadia, Calif.

Filed July 5, 1973, Ser. No. 376,671
Int. Cl. F02n *11/14, 11/10*
U.S. Cl. 123—179 SE **7 Claims**

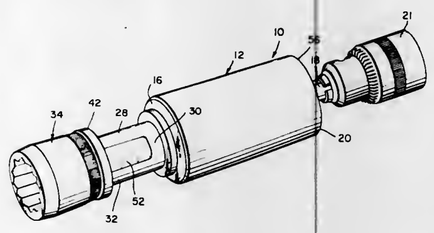
1. A starting device for coupling a rotary starting motor to a starting attachment point of an internal combustion engine, comprising:

an elongated body member having an axial bore at one end and a rotary starting motor driven shaft extending axially from the other end,

an elongated driving shaft having an inner end and an outer end,

overrunning clutch means mounted in said axial bore of said body member and including an outer member affixed to the wall of said axial bore and having an inclined ramp retainer and a plurality of rollers operatively associated with said retainer and said inner end of said driving shaft for connecting said driving shaft to said body member to turn therewith in the same normal rotational direction,

engine starting attachment means for applying starting rotational movement to a starting point of an internal combustion engine, and



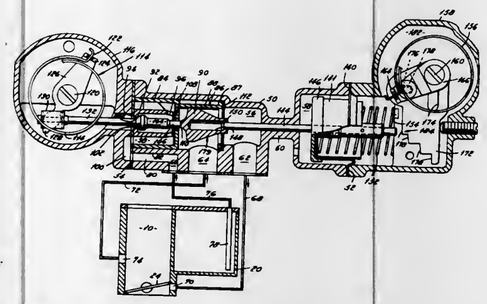
safety connecting means releasably connecting said driving shaft to said attachment means for automatically uncoupling said driving shaft from said attachment means if the rotational speed of the attachment means is greater than that of the driving shaft.

3,885,545

CARBURETOR COLD ENRICHMENT DEVICE

William W. Charron, Orchard Lake; William E. Dickensheets, Southfield; Robert S. Harrison, Grosse Ile, and Alvin P. Nowroski, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed July 2, 1973, Ser. No. 375,973
Int. Cl. F02m *1/06, 1/10*
U.S. Cl. 123—180 R **6 Claims**



1. An air/fuel mixture enrichment device for use with a carburetor having an induction passage open to air essentially at atmospheric pressure at one end and adapted to be connected to an internal combustion engine intake manifold at the opposite end, a throttle valve mounted for a rotative movement across the passage between closed and fully open positions to control flow through the passage, and a fuel reservoir, the device including control means to supply an air/fuel mixture to the carburetor during cold weather engine cranking and running operations that is supplemental to the carburetor normal air/fuel mixture supply, the control means comprising;

first conduit means connecting fuel from the reservoir and air to a port in the induction passage located at a point below the closed position of the throttle valve and subject to engine vacuum,

first temperature responsive valve means variably movable from a first position closing the conduit means when the temperature is at a predetermined level to subsequent positions progressively opening wider the conduit means when the temperature progressively decreases below the predetermined level, and

vacuum servo means responsive to the engine vacuum attaining an engine running level and acting thereon for moving the valve means at times in a closing direction to decrease the supplemental fuel and airflow,

second temperature responsive means operably connected to the servo means for controlling the movement of the servo means as a function of temperature changes,

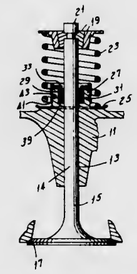
the second temperature responsive means being responsive to ambient temperature changes from a predetermined level.

3,885,546

VALVE STEM SEAL AND LUBRICATOR

Thomas J. Foley, Southfield, and Arthur E. Witzke, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 5, 1973, Ser. No. 413,138
Int. Cl. F01l *3/00*
U.S. Cl. 123—188 P **15 Claims**



1. A combination seal and lubricato: means, a fixed member and a cylindrical member reciprocable relative to and protruding from the fixed member,

said seal and lubricator means comprising

an annular member secured to the fixed member and positioned about the cylindrical member, said annular member engaging the circumference of said cylindrical member,

said annular member comprising porous material and elastomeric material, said elastomeric material interposing portions of said porous material, said elastomeric material being under tension when installed about the cylindrical member.

3,885,547

REFUELING AND IGNITION GROUNDING DEVICE FOR SMALL ENGINES EQUIPPED WITH A PROTECTIVE HOOD

Donald G. H. Doepke, Greenfield, and Daniel E. Braun, Brookfield, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

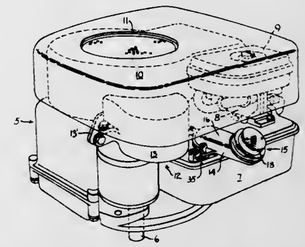
Filed Feb. 15, 1974, Ser. No. 442,871
Int. Cl. F02b *77/00*
U.S. Cl. 123—198 D **9 Claims**

7. In a small engine having a magneto ignition system with a grounding terminal that can be electrically connected to the engine body to prevent the engine from running, and having a fuel tank secured to the engine body at a location alongside the same, and wherein the top portion of the fuel tank is substantially inaccessible, means for facilitating safe refueling, comprising:

A. a substantially S-shaped filler spout having a cylindrical, downwardly opening inner end portion and an upwardly opening outer end portion;

B. cooperating means on the top of the fuel tank and the inner end portion of the filler spout rotatably mounting the filler spout for swinging motion between a normal position in which its outer end portion is substantially inaccessible and a refueling position in which said outer end portion is readily accessible;

C. switch means on the top of the fuel tank connected with said grounding terminal to ground the same when the switch means is closed; and



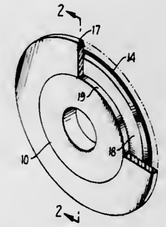
D. switch actuating means on said filler spout operable to effect closure of said switch means as the filler spout is swung to its refueling position.

3,885,548

CUTTING WHEEL ASSEMBLY

Barrie F. Regan, 1760 Manor Dr., Hillsborough, Calif. 94010

Continuation-in-part of Ser. No. 376,536, July 5, 1973, abandoned. This application Oct. 17, 1974, Ser. No. 515,594
Int. Cl. B28d *1/04*
U.S. Cl. 125—15 **2 Claims**



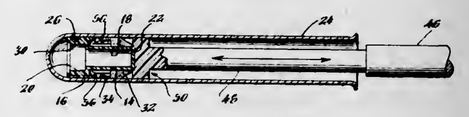
1. A cutting wheel assembly comprising a wheel body having a circular hub with an integral peripheral flange, the hub having a shoulder extending axially from said flange, a thin cutting disc formed of abrasive particles embedded in a metal matrix firmly bonded to said flange on the same side thereof as said shoulder and projecting radially from said flange and a protective readily removable flexible washer having a diameter slightly greater than that of the cutting disc fitted on said hub shoulder and in close contact with the cutting disc.

3,885,549

APPARATUS FOR PRODUCING A VACUUM IN A TEST TUBE

David Thomas Green, Wolfpit Ave., Norwalk, Conn. 06851

Continuation of Ser. No. 266,396, June 26, 1972, abandoned. This application May 29, 1974, Ser. No. 474,236
Int. Cl. A61b *5/14;* **A61m** *1/00*
U.S. Cl. 128—2 F **7 Claims**



1. A device for forming a vacuum in a test tube when inserted, moved along the length therein and then partially

withdrawn therefrom, the partial withdrawal sealing the test tube to maintain the vacuum produced therein, comprising

a. a test tube which is desired to be evacuated having walls therein,

b. a cap on said test tube having an integral body formed of a cylindrically shaped upper portion sealed on one end thereof, and an enlarged cylindrically shaped lower portion of diameter less than that of said test tube, whereby said cap may be inserted, moved therein, and partially withdrawn from said test tube,

c. a flexible flange ring formed as an integral part of said lower portion, the diameter of said flange being greater than the diameter of said test tube, said flexible flange being bent back on said lower portion of said body when said cap is inserted and moved along the length of said test tube, the pressure of air trapped ahead of said cap forcing said flexible flange ring out of contact with the walls of said test tube, allowing the trapped air to escape between the walls of said test tube and the smaller diameter of said integral body, said flexible flange contacting the walls of said test tube as said cap is partially withdrawn thereform to maintain the vacuum in said test tube below said cap,

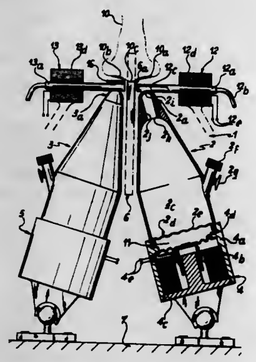
d. an insertion tool having detachable mounting means positioned on one end thereof engaging said cap and moving said cap in said test tube, and

e. flexible detent means mounted on said upper portion of said body engaging said detachable mounting means of said insertion tool, said detent means and said detachable mounting means defining means whereby said insertion tool remains mounted on said cap so long as the walls of said test tube are in contact with said flexible detent means, said flexible detent means releases said insertion tool from said cap when said upper portion of said cap is removed from said test tube, said flexible detent means being deflected by said detachable mounting means on removal from said test tube, thereby gripping the top of said test tube by said cap to prevent said cap from moving back into said test tube which has been evacuated thereby.

3,885,550
METHOD AND DEVICE FOR DIFFERENTIAL OLFACTOMETRY

Patrick MacLeod, Chatenay Malabry, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 30, 1973, Ser. No. 420,613
Claims priority, application France, Dec. 8, 1972, 72.43805
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 R **14 Claims**



1. Method for measuring respective odor intensities of olfactory stimuli, comprising the steps of:

a. presenting two olfactory stimuli simultaneously to the nose, one to each nostril, one of the stimuli comprising a standard stimulus and the other of the stimuli comprising a stimulus to be measured,

b. comparing the respective intensities of the stimuli by determining which of the stimuli is the stronger as perceived within one of the nostrils,

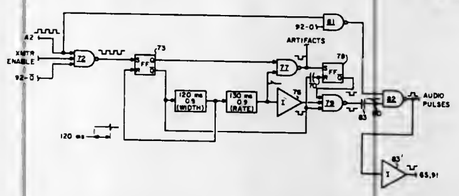
c. adjusting the amplitude of the stimulus to be measured relative to the amplitude of the standard stimulus until the intensities perceived in both nostrils are about equal, and

d. determining the difference in amplitude between the standard stimulus and the stimulus to be measured when the intensities perceived in both nostrils are about equal.

3,885,551
ARTIFACT REJECTION FOR BLOOD PRESSURE MONITORING

Harold Lee Massie, Hightstown, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 130,422, May 1, 1971, abandoned.
This application July 19, 1973, Ser. No. 380,805
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 A **8 Claims**



5. In electronic apparatus, such as indirect blood pressure measuring apparatus having means for analyzing patient derived electrical signals which include tone bursts containing a plurality of pulses indicative of certain physiologic activity, in which only signals determined as non-artifact are passed and those signals determined to be artifact are selectively rejected and inhibited from passing based upon a predetermined pulse width or rate, the combination comprising:

means for delaying said signals for a first period, the first period defining a desired maximum pulse width and a second period, the first period and second period together defining a desired maximum rate, said delaying means including first means receiving said signals for providing said first period and second means directly coupled to said first means for providing said second period, said second period being caused to commence upon the termination of said first period;

first gate means connected from said delay means; and

detector means for comparing non-delayed derived signals with said delayed signals during said second period and controlling said first gate means to pass the delayed signals upon the absence of non-delayed signals and to inhibit the passage of the delayed signals upon the presence of non-delayed signals.

3,885,552
CARDIAC FUNCTION MONITORING SYSTEM AND METHOD FOR USE IN ASSOCIATION WITH CARDIAC PACER APPARATUS

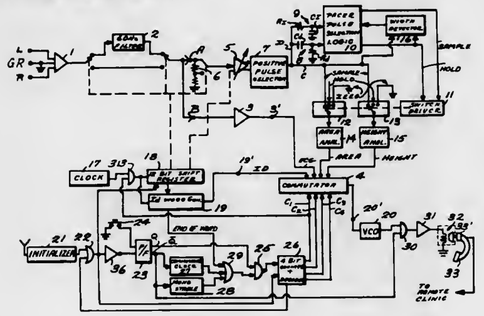
James R. Kennedy, Gainesville, Fla., assignor to Pacemaker Diagnostic Clinic of American, Inc., Gainesville, Fla.

Filed Nov. 16, 1972, Ser. No. 307,182
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.05 R **28 Claims**

1. A system for providing transtelephonic information for a plurality of patients remotely located from a central data processing clinic, the information to be transmitted being related to coronary functions and including artificial cardiac pacer pulse information, comprising:

means responsive to cardiac pacer pulses including bandwidth compression means for producing outputs representative of selected characteristics of said cardiac pacer pulses, said outputs having a bandwidth substantially less than the cardiac pacer pulses;

a transmission means;



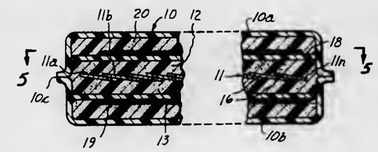
control means for sequentially producing gating signals for sequentially gating each of said respective outputs to said transmission means,

said transmission means responsive to said outputs for producing output audio signals indicative respectively of each of said outputs.

3,885,553
FLEXIBLE THERAPEUTIC PAD AND VIBRATORY ARMATURE THEREFOR

Luigi Vecchio, 2040 E. Amado, Palm Springs, Calif. 92262

Filed Oct. 29, 1973, Ser. No. 410,452
Int. Cl. A61h *29/00*
U.S. Cl. 128—24.1 **18 Claims**



1. A pad comprising:

an electrically conductive coil for conducting alternating electrical current;

an armature lying generally in a plane within said coil,

said armature comprising a plurality of strips of magnetic material, each of which overlaps the next and generally lies in a plane oblique to the plane of the armature;

and

a body of compliant material covering and in contact with each side of said armature between the coil and the armature, the compliant material being adherent to the sides of the armature,

whereby flow of alternating electrical current through the coil creates an alternating magnetic field surrounding said pad.

3,885,554
APPARATUS FOR GENERATING PULSES OF FLUID PRESSURE

Adelbert W. Rockwell, Jr., Gloucester, Mass., assignor to USM Corporation, Boston, Mass.

Filed Dec. 8, 1972, Ser. No. 313,583
Int. Cl. A61h *1/00*
U.S. Cl. 128—24 R **1 Claim**

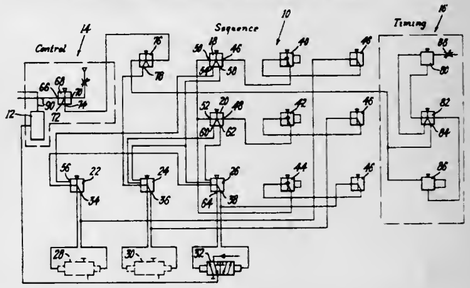
1. Apparatus for sequentially supplying fluid pressure to a system of more than two bladders according to a predetermined sequence, said bladders being adapted to apply external pressure to portions of the human body comprising:

A. A source of pressurized fluid connected to each bladder;

B. A valve connected to each bladder for controlling the flow of pressurized fluid thereto;

C. Means in each bladder for sensing the pressure therein;

D. A selector for generating fluid pressure signals for actuating the pressure control valves of the bladders according to the predetermined sequence;



E. Means to receive the pressure from the pressure sensors, compare said pressure with a predetermined value, and generate a fluid pressure signal when a predetermined relation between said pressures exists;

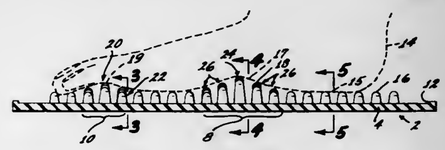
F. Means responsive to the fluid pressure signals from the selector and the pressure comparator to sequentially actuate the valves to inflate and deflate the bladders; and

G. Timing means associated with the pressure comparator to control the overall cycling time of each bladder.

3,885,555
FOOT MASSAGE PAD

Mulford J. Nobbs, Hacienda Heights, Calif., assignor to Con-Stan Industries, Inc., City of Industry, Calif.

Filed Jan. 28, 1974, Ser. No. 437,010
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 B **12 Claims**



1. A foot exercising and massaging pad comprising:

a base member;

a plurality of upstanding resilient protuberances formed on a surface of said base member;

an arch region and a toe joint region defined by protuberances of greater height;

said arch region and toe joint region being spaced apart by a distance which approximates the distance between the arch and toe joint of a human foot;

the protuberances in the arch region and in the toe joint region being varied in height in a direction transverse to said arch region and toe joint region with the variation in the height of the protuberances in said transverse direction approximating the curvature of the arch and toe joint of the human foot, and

the protuberances in said arch region varying in height in a generally uniform manner in a direction along the axis of the arch region with the protuberances increasing gradually in height in proceeding from either end of the arch region along the axis of the arch region toward the center of the arch region,

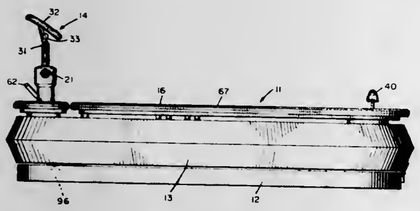
whereby the user of the exercising and massaging pad can increase the stimulation of the arch of the foot by moving the foot from the ends of the arch region toward the center of the arch region to bring protuberances of

greater height in said arch region into contact with the arch of the foot.

3,885,556
INCLINABLE BED ADAPTED FOR USE TO MEDICAL CARE

Katsuzo Agatani, 1-3, 3-chome, Naka-yoshino-cho, Tokushima-shi, Japan

Filed Aug. 27, 1973, Ser. No. 391,757
Int. Cl. A61f *5/00*
U.S. Cl. 128—71 **8 Claims**

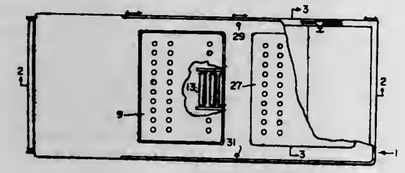


1. An inclinable bed adapted for use to medical care, comprising: a base; a bed body laid over said base, the rear end thereof being pivotally connected thereto and having a hanging means; a foot-moving means and a transversely moving plate on the upper surface of said bed body; a lifting mechanism having screw rods supported by bearings fixed to said base in the longitudinal direction thereto; a motor mounted on said base to rotate said screw rods through a power transmitting device; nuts engaged to said screw rods and divided respectively into a replaceable nut body and a nut holding means so that said nut body can be removably secured in the inside of said nut holding means; and a plurality of connecting rods, one end of each of which is connected through a bearing to said nuts so that said connecting rods can rotate in a plane vertical to said nuts and the other end of each of which is connected by a bearing to said bed body, wherein the bed body is lifted when said screw rods are rotated in a right hand direction by said driving motor to move said nuts rearward and is lowered when said screw rods are rotated reversely to move said nuts forward.

3,885,557
HYDROPATHIC SYSTEM

Pedro A. Varea, 116 38th St., Union City, N.J. 07087

Filed Nov. 15, 1973, Ser. No. 415,954
Int. Cl. A61h *9/00*
U.S. Cl. 128—65 **10 Claims**



1. A hydropathic system for hot and cold water, salt water, and steam treatments for patients, said system comprising, in combination:

a first compartment adapted to house equipment for use in a hydropathic treatment;

a second compartment having an opening at its top adapted for use in a salt water treatment of patient;

said second compartment comprising first water outlet means for the outlet of salt water, first valve means for controlling the outlet flow rate of the salt water, second valve means for controlling the temperature of the salt water from said first water outlet means, and first drain means for draining the salt water from said second compartment;

a third compartment having an opening at its top adapted for use in a water and/or steam treatment of a patient;

said third compartment comprising second water outlet means for the outlet of water, third valve means for controlling the outlet flow rate of the water, fourth valve means for controlling the temperature of the water from said second water outlet means, steam outlet means for the outlet of steam, fifth valve means for controlling the outlet flow rate of the stream, and second drain means for draining the water from said third compartment;

seat means adapted for use as a seat by a patient in said third compartment;

foot treatment means located in said second compartment and adapted for use by a patient sitting with a foot extending into said second compartment;

said foot treatment means comprising a plurality of rotatable cylinders arranged parallel and defining a common plane;

first water supply means for supplying salt water to said first water outlet means;

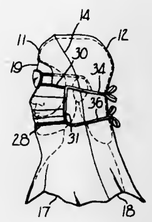
second water supply means for supplying water to said second water outlet means;

steam supply means for supplying steam to said steam outlet means; cover means to cover said second and said third compartments top openings whereby a continuous top surface is defined for said first, second, and third compartments for use by a patient on which to lie for a treatment; and main valve means for controlling the supply and temperature of the salt water, water, and steam of said supply means.

3,885,558
COMPLETE HEAD COVERING FOR USE IN STERILE ENVIRONMENTS

Nathan L. Belkin, 16 Panorama Dr., Huntington, N.Y. 11743

Filed Nov. 8, 1972, Ser. No. 304,620
Int. Cl. A61b *19/00*
U.S. Cl. 128—142.7 **16 Claims**



1. An inexpensive, disposable head covering for sterile environments, said head covering comprising:

A. first and second sheets of material joined together along their peripheries, except along a bottom edge, to form an enclosure large enough to be placed over a wearer's head with said bottom edge reaching wearer's shoulders;

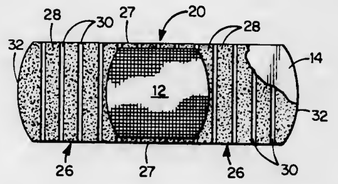
B. an opening in said material; and

C. a face mask of filter material having an upper edge spaced from the upper edge of said opening defining the boundaries of an eye slot, and having a lower edge secured to the lower edge of said opening, and closure means attached to the respective side edges of said mask adapted to be looped behind said head covering to hold the mask securely over the wearer's nose and mouth and to hold the head cover in place on the wearer.

3,885,559
PROCESS FOR THE REDUCTION OF PAIN IN THE REMOVAL OF ADHESIVE TAPES AND BANDAGES

George J. Economou, 8 Elm St., Norton, Mass. 02110

Continuation-in-part of Ser. No. 274,449, July 24, 1972, Pat. No. 3,811,438, which is a continuation-in-part of Ser. No. 239,688, March 30, 1972, abandoned. This application Mar. 29, 1974, Ser. No. 456,435The portion of the term of this patent subsequent to May 21, 1991, has been disclaimed.
Int. Cl. A61l *15/00*
U.S. Cl. 128—156 **24 Claims**

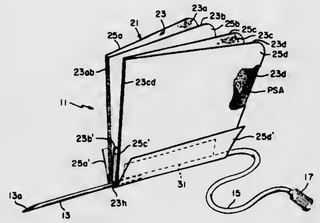


1. A process for the reduction of pain or discomfort in the removal of a tape from a receptor region comprising receptor cells, which process comprises removing an adhesive tape from a receptor region of receptor cells subject to excitation by stimuli, which tape comprises a backing and an adhesive portion comprising a plurality of adhesive layers and a plurality of regions of lesser adhesiveness, the layers adhered with the regions of lesser adhesiveness between such layers, the regions and layers being straight and successively alternating along the longitudinal length of said backing, each layer and each region characterized generally by a uniform width and having a minimum width of about 0.02 inches, the number of said layers or regions per linear inch of tape being from 4 to about 25, the removal being generally perpendicular to the longitudinal edges of the tape, thereby reducing frequency-dependent responsiveness of the receptor cells upon removal of the contacted tape.

3,885,560
NEEDLE ASSEMBLY HAVING A FOLDED BANDAGE HANDLE

Brian E. Baldwin, Wilmette, Ill., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.

Continuation of Ser. No. 42,713, June 2, 1970, abandoned. This application Oct. 17, 1972, Ser. No. 298,282
Int. Cl. A61m *5/00, 25/02*
U.S. Cl. 128—214 R **35 Claims**



23. A portable and manually manipulable needle and bandage assembly unit for insertion in and adhering connection to a body member as a unit, comprising

a folded flexible securing sheet forming a manually graspable handle in its folded form and having intersecting cross-fold lines formed by a first fold along one line and a second fold along a line transverse to and intersecting said first fold forming at least four fold-interconnected sections,

a pointed needle secured to said sheet and extending through an opening formed in a central zone of said sheet at the intersection of said fold lines and beyond its folded periphery,

said securing sheet having an adhesive surface on one face thereof and a removable protective backing thereon,

said needle being removably secured to said foldable flexible securing sheet on the face thereof opposite said adhesive surfaced face.

27. An attachable freely manually manipulable and portable needle assembly unit for removable attachment to a body, comprising

a needle having a pointed end,

a multifunction flexible bandage secured to said needle,

said flexible bandage including a flexible body-surface-conformable cover sheet cross-folded transversely of and in the general direction of the longitudinal extent of said needle to form at least four fold-interconnected sections to enable ease of insertion of said needle into a body, and for unfolded covering of a puncture site formed upon insertion of said needle into a body member, as well as for aid in securing of said needle to said body said needle extending beyond said cross-folded sheet.

3,885,561
CATHETER

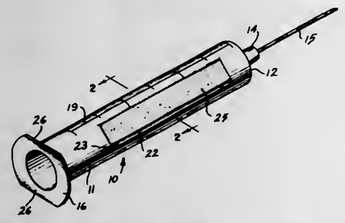
Charles N. Mazal Cami, Roma No. 19, Mexico 6, D.F., Mexico

Continuation-in-part of Ser. No. 312,236, Dec. 4, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,690
Int. Cl. A61m *5/00;* **A61b** *25/00, 27/00*
U.S. Cl. 128—214 **3 Claims**



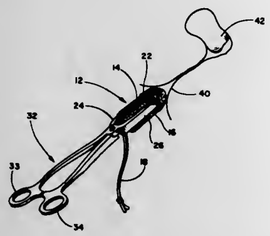
1. A catheter for epidural anesthesia composed of a plastic material having its near end open and adapted for connection to a syringe and having its distal end closed and rounded and having embedded in its internal portion a metallic piece which is opaque to X-rays, said catheter having near its distal end a plurality of longitudinal slits for delivering anesthetic, each of said slits being both longitudinally and circunferentially offset from the nearest slit so that each slit be placed in a different diametral plane, and being so spaced from the adjacent slit that the diametral planes on which they are located form an angle of at least 45°, thus giving the catheter substantially equal rigidity to that of a catheter having no slit whatever.

3,885,562
SYRINGE WITH WRITING SURFACE
John C. Lampkin, Box 3501, Tallahassee, Fla. 32303
Filed Nov. 16, 1973, Ser. No. 416,536
Int. Cl. A61m 5/18; G09f 3/00
U.S. Cl. 128—218 R 2 Claims



1. A hypodermic syringe comprising an elongated substantially non-flexible barrel having wall structure defining a bore adapted to receive a plunger, said barrel being substantially closed at one end and open at the other end, means on said substantially closed end for mounting a hollow needle, an enlarged flange integrally formed on said barrel adjacent the open end, said flange having at least one substantially flat portion located adjacent to said barrel and extending laterally thereof for engaging a substantially level surface, indicia fixed on said barrel and extending longitudinally thereof for indicating the volume of the contents within the same, a roughened writing surface integrally formed on the exterior of said barrel generally opposite the flat portion of said flange, said writing surface extending substantially axially of said barrel adjacent to said indicia, whereby when the flat portion of said flange is placed in engagement with a supporting surface, said barrel is stabilized so that indicia identifying the contents can be written on said writing surface and can be observed without handling the syringe.

3,885,563
SPREADABLE TAMPON AND INSERTER COMBINATION
Russell L. Johnson, Weyauwega; Leonard M. Kaczmarzyk, Menasha, and Robert F. Skora, Neenah, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed June 10, 1974, Ser. No. 477,630
Int. Cl. A61f 13/20
U.S. Cl. 128—263 10 Claims



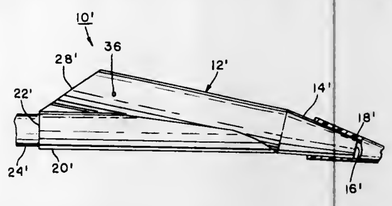
1. The combination of a tampon particularly adapted to be transversely spread within the vagina at the time of insertion and an inserter device adapted for inserting and spreading said tampon; said tampon comprising an elongate absorbent member folded on itself to form a pair of adjoining, upwardly extending legs and having a withdrawal string attached near the base of said legs; the upper end portion of each of said legs being provided with an open pocket disposed on the exterior side thereof with the open end of each of said pockets facing downwardly; said inserter comprising an elongate device provided with a grip portion at one end and a tampon delivery portion at the other end; the tampon delivery portion comprising a pair of generally parallel extensions adapted for movement away from each other by manual operation of said grip portion; the extensions of said tampon delivery portion being disposed in the pockets of said tampon whereby manipulation of said grip portion will spread apart the legs of said tampon.

3,885,564
VAGINAL MEDICATOR
Harvey H. Groves, 6 Cherry La., Westport, Conn. 06880
Division of Ser. No. 274,263, July 24, 1972, Pat. No. 3,815,600. This application May 6, 1974, Ser. No. 467,071
Int. Cl. A61m 31/00
U.S. Cl. 128—271 16 Claims



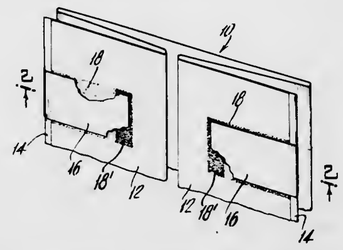
1. A vaginal medicator comprising:
A. an elongated body-undissolvable stem means extending along substantially the entire length of the vaginal canal to the region of the cervix, the stem means including a loop having a curved portion at the inner end thereof adapted to be positioned behind and to at least partially surround the cervix, said curved portion serving to hold and position the vaginal medicator within the vaginal canal;
B. body-dissolvable medication carried by said stem means for slowly dissolving in the vaginal canal to supply medication thereto; and
C. pullout means connected to the body-undissolvable portion of the vaginal medicator and extending out from the vaginal canal when the medicator is in place therein for providing easy removal of the medicator.

3,885,565
SUCTION DRAINAGE CONTROL CONNECTOR
Fred E. Satchell, Chesterfield, Mo., assignor to Sherwood Medical Industries, Inc., St. Louis, Mo.
Filed Nov. 7, 1973, Ser. No. 413,716
Int. Cl. A61m 1/00
U.S. Cl. 128—276 5 Claims



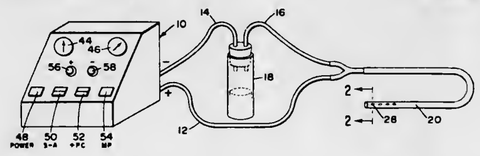
1. A suction drainage control connector, comprising an elongate hollow body having an outlet passage terminating in an outlet port adapted to communicate with a source of suction, an inlet passagge in fluid communication with said outlet passage and having an inlet port adapted to receive a suction catheter, and a suction control passage in fluid communication with said inlet and outlet passages and terminating in a control port adapted to be occluded by the user to regulate the suction applied to said catheter, said control passage extends angularly relative to said inlet passage, and said body having a relief port extending through the side wall of said control passage to the atmosphere between said control port and said outlet port for providing a continuous flow of air in said control passage toward said outlet passage from the atmosphere when said control port is occluded, and wherein the cross-sectional area of said control port is substantially greater than the cross-sectional area of said relief port.

3,885,566
DISPOSABLE DIAPER WITH INTEGRAL ABHESIVE REINFORCING AREAS
Ezekiel J. Jacob, 25 Monroe Pl., Brooklyn, N.Y. 11201
Filed Apr. 17, 1973, Ser. No. 353,306
Int. Cl. A61f 13/16
U.S. Cl. 128—287 2 Claims



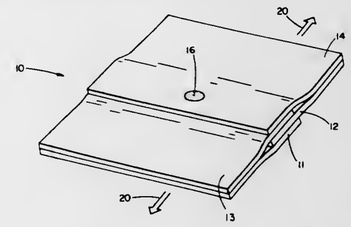
1. In a tape-fastenable disposable diaper comprising a facing sheet of water permeable material, a backing sheet of water-impermeable material, a filling therebetween of absorbent fibrous cellulose material, a pair of pressure-sensitive adhesive tape fastening strips, the improvement which comprises the addition of water-sensitive abhesive areas on the facing sheet underlying the tape strips, terminal sections of said tape strips resting releasably upon said abhesive areas.

3,885,567
GASTROINTESTINAL ASPIRATOR PUMP
John R. Ross, 370 Clyde St., Brookline, Mass. 02167
Filed Feb. 20, 1973, Ser. No. 333,871
Int. Cl. A61m 1/00
U.S. Cl. 128—278 4 Claims



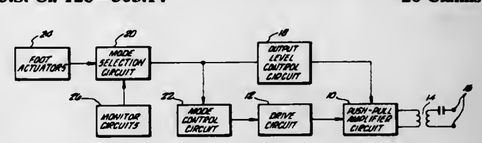
1. An aspirator-pump and tube combination for evacuating liquid from an intestinal cavity wherein debris or tissue can block the evacuating means comprising:
a. air pump means with connections to supply both positive and negative pressure (relative to atmospheric) air;
b. a multi-lumen tube adapted to be inserted into said cavity having a positive air pressure lumen connected to the positive air connection of said pump and a negative pressure lumen connected to the negative pressure connection of said pump;
c. means including valves and a timer for supplying positive pressure air from said pump to said positive air pressure lumen for a measured period of time;
d. means for withdrawing liquids from said cavity comprising walls forming a negative pressure opening in said negative pressure lumen communicating with said cavity, and
e. means for moving debris or tissue away from said negative pressure opening comprising walls in said positive air pressure lumen forming a positive air pressure opening, and additional walls supporting said positive air pressure opening in position to project air against said debris or tissue blocking the negative pressure opening during said period:

3,885,568
EXPANDABLE ARTICLE
Charles H. Schaar, 1300 Country Clud Rd., Lake Zurich, Ill. 60047
Division of Ser. No. 128,267, March 26, 1971, Pat. No. 3,816,227, which is a continuation-in-part of Ser. No. 41,377, May 28, 1970, abandoned. This application July 12, 1973, Ser. No. 378,405
Int. Cl. A61f 13/16
U.S. Cl. 128—287 12 Claims



1. A disposable diaper having an expandable fluid impervious back sheet and an expandable, fluid pervious cover sheet enclosing a bulkable product comprising bendable sheet material superposed together in flat planar relation and presenting more layers of said sheet material in a central region of said product than in other regions thereof, means retaining portions of said layers in said central region in said superposed planar relation and remaining portions of said sheet material being movable independently of each other in a predetermined direction into irregularly bent non-planar layers patulously bulking said product and retaining said product in bulked configuration, at least some of said layers being formed of an absorbent sheet material.

3,885,569
ELECTROSURGICAL UNIT
Donald W. Judson, Simi Valley, Calif., assignor to The Birtcher Corporation, Los Angeles, Calif.
Filed Nov. 21, 1972, Ser. No. 308,488
Int. Cl. A61n 3/02
U.S. Cl. 128—303.14 26 Claims

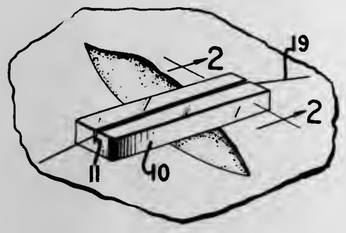


1. An electrosurgical unit for generating electrical signals to be applied to the body of a patient by an electrosurgical electrode for producing surgical cutting and coagulation as selected, said electrosurgical unit comprising:
a pair of output terminals adapted to be coupled to the electrosurgical electrode;
first means for providing a continuous alternating current cutting signal having a selected freuency that produces surgical cutting when applied to the body of a patient;
second means for cyclically disabling said first means to provide a coagulating signal that is a succession of bursts of said alternating current signal, said coagulating signal providing coagulation when applied to the body of a patient;
third means for altering the disabling cycle of said second means to extend the length of time said first means operates and to provide a blended signal that alternately produces cutting and coagulation when applied to the body of a patient; and
output means for applying the blended signal to the output terminals.

3,885,570
WOUND SPLINTS

Harry H. Leveen, 800 Polly Pl., Brooklyn, N.Y. 11209

Continuation-in-part of Ser. No. 158,687, July 1, 1971, Pat. No. 3,789,851, which is a continuation-in-part of Ser. No. 813,478, April 4, 1969, abandoned. This application Dec. 17, 1973, Ser. No. 425,536
Int. Cl. A61b 17/04
U.S. Cl. 128—335 6 Claims

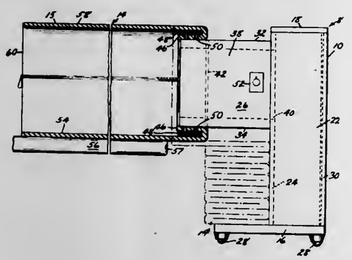


1. A wound splint in the form of a semi-rigid flat resilient bar of pliable elastomeric plastic material, means defining a suture receiving groove extending lengthwise of said bar, said means including sides of said groove gradually converged downwardly from the surface of said bar, said sides being displaceable, whereby a suture placed in said groove displaces said sides frictionally to engage said sides.

3,885,571
PERSONAL COOLING DEVICE

Charlotte Cramer Sachs, 1200 Fifth Ave., New York, N.Y. 10029

Filed Oct. 19, 1973, Ser. No. 407,933
Int. Cl. A61f 7/00
U.S. Cl. 128—400 1 Claim

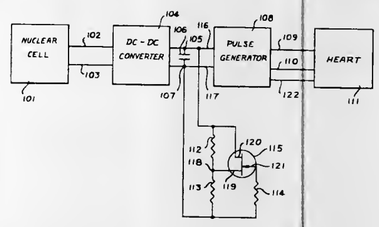


1. A personal cooling device for use by a sleeping user comprising: a generally vertically oriented cabinet having an entrance opening and an exit opening, absorptive type electrically powered cooling means disposed within said cabinet communicating with said entrance and exit openings, a flexible horizontally disposed elongated conduit means of a size and configuration adapted to surround a user, and be supported upon a bed, said conduit having a first distal opening disposed in the area of the head of a user, and a second proximal opening communicating with said outlet opening, and thermostatic means disposed in the area of said outlet opening controlling the operation of said absorptive cooling means; whereby during use, said cooling means provides solely by convection a continuous current of cooling air to said proximal opening of said conduit means which flows past said thermostatic means and exits through said distal opening.

3,885,572
QUICK DISCHARGE CIRCUIT FOR PACER NUCLEAR POWER SUPPLY

Chieh Yang Chen, Billerica, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 30, 1973, Ser. No. 420,411
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 7 Claims

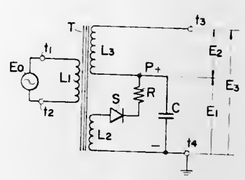


7. A quick discharge circuit for use with a nuclear battery powered implantable heart pacer, said pacer comprising terminal means for connection to said patient's heart, pulse generating means for generating heart stimulating pulses on said terminal means, voltage source means for providing a first voltage level, means for converting said first voltage level to a second voltage level, means utilizing said second voltage level for energizing said pulse generating means, said energizing means including capacitor means, means for charging said capacitor means to said second voltage level, circuit means for providing a third voltage level below the lower of said first and said second levels, and wherein said quick discharge circuit comprises means for rapidly discharging said capacitor means to below said third voltage level when said converting means malfunctions.

3,885,573
THERAPEUTICAL APPARATUS APPLYING SUPERPOSED OUTPUT OF DC AND AC VOLTAGES

Akikuni Hara, No. 50-17, Motoyoyogi-cho, Shibuya-ku, Tokyo, Japan, assignor to Hakuju Institute for Health Science Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1973, Ser. No. 342,938
Int. Cl. A61n 1/36
U.S. Cl. 128—420 5 Claims



1. A therapeutic treatment apparatus utilizing superimposed DC and AC voltages, said apparatus comprising: therapeutic voltage generating means for generating an output comprising superimposed DC and AC voltages, means for producing a therapeutic electric field including first and second parallel opposed electrodes, and means for connecting the output of said therapeutic voltage generating means to said electrodes, said therapeutic voltage generating means including transformer means comprising a primary winding adapted to be connected to an AC power source, and first and second secondary windings, one of said secondary windings forming an AC generating circuit, a rectifier means, means for connecting said rectifier means to the other of said secondary windings so as to form a DC generating circuit, and means for connecting said DC generating circuit to said AC generating circuit in a mutually superimposed relationship to therapeutic voltage terminals so that an output comprising superimposed DC and AC voltages is presented at said terminals, said therapeutic voltage terminals being connected respectively to said opposed electrodes of said therapeutic electric field producing means and one of said electrodes being adapted to be connected to the subject for therapeutic treatment, the AC voltage presented at said terminals being a low AC voltage as compared to the AC voltage used in conventional therapeutic treatment apparatus.

3,885,574
SMOKING MIXTURE

James Borthwick, Glasgow, and James Forrester Morman, Troon, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 18, 1971, Ser. No. 125,872
Claims priority, application United Kingdom, Mar. 23, 1970, 13860/70
Int. Cl. A24b 15/00
U.S. Cl. 131—2 9 Claims

1. A smoking mixture in fabricated form comprising
a. as smoke-producing fuel, a particulate solid thermally degraded carbohydrate tobacco substitute which is obtained by subjecting a carbohydrate to a catalysed degradation process at a temperature of at least 100°C until the weight of the degraded material is less than 90 percent of the dry weight of the original carbohydrate,
b. a harmless filler and
c. sufficient binder to enable the mixture to be fabricated, said filler being harmless on pyrolysis and present in a proportion of 40 to 65 percent by weight of the mixture and being selected from salts wherein the anion comprises formate, oxalate, citrate, tartrate, silicate, carbonate, chloride, sulphate, phosphate, borate, oxide, dioxide or aluminate and the cation comprises sodium, potassium, calcium, magnesium, iron or titanium, the combination of cations and anions in the filler being selected to impart a burning rate correlated to a puff number of 8–12 of a machine-made standard Class B British cigarette containing 1.1 g. tobacco, where each puff is of 25 ml. volume in two seconds, followed by a 58 second rest or smouldering period and where the 70 mm. cigarette is smoked to a butt length of 20 mm.

3,885,575
MANUFACTURE OF A SMOKING MATERIAL

James Brown Parker, and John Evan Philip Hicks, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 7, 1973, Ser. No. 386,427
Claims priority, application United Kingdom, Aug. 31, 1972, 40322/72
Int. Cl. A24b 15/00
U.S. Cl. 131—2 8 Claims

1. In a process for the manufacture of a modified non-toxic carbohydrate material suitable for smoking mixtures which comprises the catalytic degradation of a carbohydrate material by impregnating said material with from 2.5 to 10% by weight of a degradation catalyst in aqueous solution followed by drying and heating until the weight of the degraded material is less than 90% of the weight of the original carbohydrate material, the improvement which comprises only partially drying the impregnated material so that the partially dried material contains from 1 to 15% by weight of water, and catalytically degrading said partially dried carbohydrate material by exposing the same to microwave energy at the rate of 100 to 300 calories for each gram of carbohydrate material until the desired degree of degradation is attained.

3,885,576
WRIST BAND INCLUDING A MERCURY SWITCH TO INDUCE AN ELECTRIC SHOCK

Eliot N. Symmes, Seattle, Wash., assignor to Habi-Chek Corporation, Campbell, Calif.

Filed Sept. 23, 1974, Ser. No. 508,453
Int. Cl. A24f 47/00
U.S. Cl. 131—170 A 10 Claims



1. Electrical apparatus for inducing a shock in a person in response to a movement of one of his arms comprising
a wrist band adapted to be worn on the arm of said person,
a source of electrical power including means for attaching said source to the clothing of said person,
a pair of spaced electrodes attached to said wrist band and disposed to physically contact the wrist of said person,
a mercury switch disposed on said wrist band to be opened or closed dependent upon the position thereof,
means connecting said mercury switch to said pair of spaced electrodes,
means connecting said source of power to said pair of spaced electrodes through said mercury switch,
whereby the closure of said mercury switch causes current to flow from said source of power through said spaced contacts and the arm of said person upon movement thereof, to induce a shock therein when said apparatus is worn by said person.

3,885,577
HEAT-ASSISTED PERMANENT WAVING SYSTEM

Norman L. Edelberg, Des Plaines, and John R. Forsberg, Arlington Heights, both of Ill., assignors to Helene Curtis Industries, Inc., Chicago, Ill.

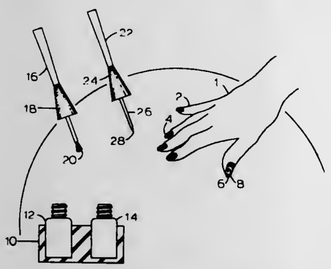
Filed Jan. 11, 1974, Ser. No. 432,597
Int. Cl. A45d 7/00
U.S. Cl. 132—7 5 Claims

1. In a heat-assisted method for the permanent waving of hair in which an aqueous solution containing ammonium thioglycolate is applied to hair wound around a roll to wet said hair, the wetted hair is maintained at an elevated temperature by a heated clamp holding said hair around said roll, excess ammonium thioglycolate solution is then removed and an oxidizing solution is thereafter applied to said hair to neutralize said ammonium thioglycolate solution, the improvement which comprises permitting said heated clamp to heat said wetted hair to a temperature above 120°F. and to maintain a temperature about 120°F. for no more than 6 minutes, and utilizing as said ammonium thioglycolate solution, a solution of greater strength than is used on similar hair in prior heat-assisted permanent waving and of lesser strength than is used in prior non-heat assisted permanent waving, said solution having an ammonium thioglycolate content in the range between 0.75 ± 0.05 and 9.7 ± 0.1 weight percent and having a pH in the range between 7.6 ± 0.1 and 9.35 ± 0.05.

3,885,578
FINGERNAIL DECORATING

Carolyn Colburn Hicks, 5789 Kalaniannole Hwy., Honolulu, Hawaii 96821

Filed Dec. 12, 1972, Ser. No. 314,422
Int. Cl. A45d *40/30*
U.S. Cl. 132—88.5 1 Claim

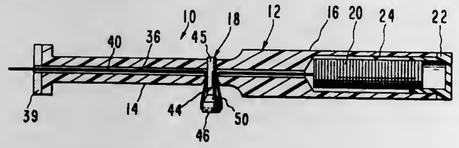


1. Fingernail coating apparatus comprising a first container, first fingernail coating material in the first container, a spreading applicator associated with the first container for spreading the first coating material over a fingernail, a second coating container means for holding a second liquid coating material, second liquid coating material in said second container means, applying means connected on the second coating holder means for applying the second coating material form the holder means to the fingernail, wherein the applying means comprises a cap-mounted shaft with a point immersed in the liquid for holding the liquid second coating material on a wall of the shaft when transferring the second coating material to the fingernail upon touching the point to the fingernail.

3,885,579
DENTAL FLOSS HOLDER

Leonard F. Navrat, 210 N. Belmont, Wichita, Kans. 67218

Filed July 18, 1973, Ser. No. 380,449
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 R 3 Claims

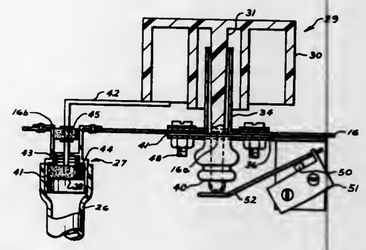


1. A dental floss holder comprising: an elongated, generally longitudinal straight body having a pair of ends and means at one end thereof for holding a spool of dental floss, there being a passage extending longitudinally through the body for guiding a stretch of dental floss from a spool of floss at said one end to the opposite end of the body, said body further having a bore intermediate its ends, said bore extending transversely of said passage and being in communication therewith, said body having an annular, beveled surface surrounding the outer end of the bore, a pair of spaced arms rigid to the body at said opposite end and extending laterally therefrom, the outer ends of the arms adapted to position a span of dental floss for insertion into the mouth and into the region between a pair of adjacent teeth; and a pin shiftably mounted within the bore for longitudinal movement relative thereto and having a transverse dimension less than a corresponding transverse dimension of the bore to permit a doubled portion of said stretch of floss from said spool to extend laterally of the passage through the bore to a location exteriorly of the body, around the outer end of the pin, then back into and through the bore and into and through said passage to said opposite end, said pin having an annular, beveled face substantially complemental to said beveled surface of said body and movable longitudinally thereof for wedging the doubled portion of said floss stretch against the body when tension is applied to the span bridging the outer ends of the arms to thereby lock the span against any substantial movement relative to said body.

3,885,580
DISHWASHER CONTROL SYSTEM

Donald S. Cushing, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 4, 1974, Ser. No. 457,837
Int. Cl. B08b *3/02*
U.S. Cl. 134—57 D 7 Claims

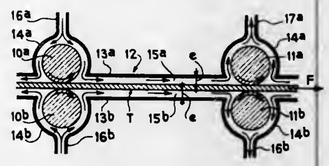


1. In a dishwasher of the type having a washing chamber, spray means contained within said washing chamber for distributing washing liquid therein, a pump in flow communication with said spray means for delivering said washing liquid to said spray means, a motor driving said pump and an electrical control circuit for regulating said motor and providing various cycles of operation of said dishwasher, the invention comprising: (a) a switch assembly operatively connected to the electrical control circuit of the dishwasher; and (b) pressure activated control means in pressure communication with the outlet of said pump adapted to operate said switch assembly in response to pressure changes at the outlet of said pump.

3,885,581
MACHINE FOR COOLING METAL SHEETS OR PLATES

Gilbert Mordekhaï Ihouda Dahan, Villepreux; Jean Schrempp, Joey-en-Josas, and Stephane Georges Jean-Marie Viannay, Plaisir, all of France, assignors to Usinor, Paris, France

Filed Apr. 19, 1974, Ser. No. 462,580
Int. Cl. B08b *3/04*; B05c *3/132*
U.S. Cl. 134—122 12 Claims



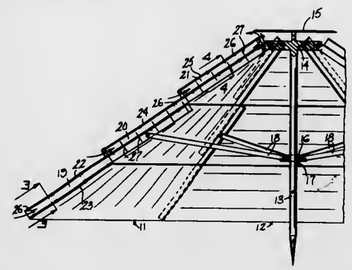
1. A machine for cooling metal sheets or plates, comprising a casing having at least two substantially planar and substantially parallel portions in facing relation to each other and defining therebetween a gap having a width which exceeds the thickness of the sheet to be cooled so as to define two chambers with the sheet, means for supplying said chambers with a current of cooling water which moves substantially in a direction substantially parallel to the plane of the sheet, a series of parallel sheet support and guide rollers which are disposed transversely of the longitudinal direction of the sheet, said substantially planar portions being disposed between two adjacent rollers of said rollers which are located on

the same side of the sheet, the casing further comprising substantially part-cylindrical portions surrounding said rollers.

3,885,582
HEAT DISSIPATING SUNSHADE

Stanley S. Kowalski, 59 Pitt St., Bridgeport, Conn. 06606

Filed June 3, 1974, Ser. No. 475,743
Int. Cl. A45b *25/26*
U.S. Cl. 135—35 V 8 Claims



1. A heat dissipating sunshade, comprising: first and second pairs of ribs,

each rib having a substantial vertical dimension and substantially parallel upper and lower edges;

said second pair of ribs being mounted above said first pair of ribs in terraced arrangement;

a portion of the lower edge of each second pair of ribs being fixed to a portion of the upper edge of each first pair of ribs;

a first canopy section covering said first pair of ribs on the upper edges thereof and extending under a portion of the second pair of ribs;

a second canopy section covering a portion of said first pair of ribs on the lower edges thereof; and

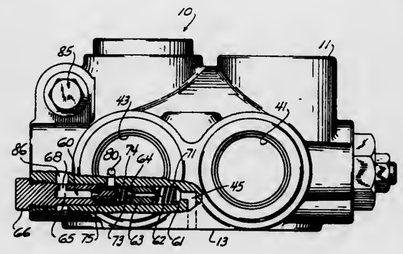
a third canopy section covering said second pairs of ribs on the upper edges thereof;

whereby the faces of said first and second canopy sections are spaced apart by said first pair of ribs and the faces of said first and third canopy sections are spaced apart by said second pair of ribs to define channels therebetween for directing air upwardly when said sunshade is angularly positioned with said first pair of ribs lowermost.

3,885,583
PRESSURE COMPENSATING VALVE MECHANISM FOR HYDRAULIC CONTROL VALVES

Francis H. Tennis, Oconomowoc, Wis., assignor to Hydraulic Industries, Inc., Hartland, Wis.

Filed Apr. 22, 1974, Ser. No. 463,098
Int. Cl. F15b *13/02*
U.S. Cl. 137—115 6 Claims



1. In a valve mechanism having pressure fluid inlet, feed and bypass ports, and wherein flow of signal fluid into a feedback chamber causes force to be imposed on a pressure compensating valve plunger to move the same in a feed direction and thereby effect diversion of inlet fluid to the feed port, and wherein flow of inlet fluid into an inlet chamber causes force to be imposed on the plunger to move the same in a bypass direction and thereby effect diversion of inlet fluid to the bypass port, movement of the plunger in the bypass direction tending to increase the pressure in the feedback chamber and the speed of such plunger movement being dependent upon the rate at which fluid can be expelled thereby from the feedback chamber, the improvement which comprises:

A. means providing separate substantially unrestricted ducts through which inlet and signal fluid can flow rapidly to the inlet and feedback chambers, respectively;

B. a one way valve arranged to open under signal fluid pressure to allow signal fluid to flow to the feedback chamber;

C. means defining a restricted first venting passage which connects with the feedback chamber and is at all times effective to damp pulsations of moderate pressure therein such as occur during normal modulating operation of the plunger;

D. means defining a substantially unrestricted second venting passage connecting with the feedback chamber to provide for rapid flow of fluid therefrom;

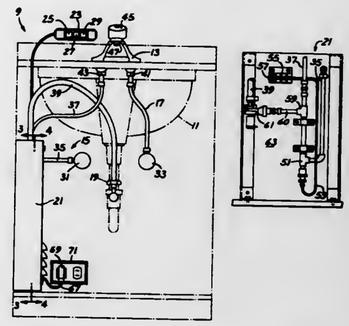
E. a fluid pressure actuatable valve member governing fluid flow through said second venting passage, said valve member being movable to a passage open position under force which pressure fluid in the feedback chamber imposes thereon;

F. and means to yieldingly hold said valve member in its passage closing position against opening forces which said moderate pressure pulsations impose thereon while allowing the valve member to be opened in consequence of higher pressures in the feedback chamber resulting from movement of the plunger in the bypass direction, said last named means comprising a surface on the valve member upon which signal fluid exerts passage closing force.

3,885,584
HOT WATER SYSTEM

Walter L. Hock, 7539 Kolmar Ave., Skokie, Ill. 60076

Filed Jan. 7, 1974, Ser. No. 431,357
Int. Cl. F16k *19/00*
U.S. Cl. 137—115 5 Claims

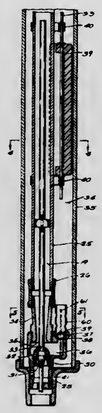


1. A hot water system comprising a drain, a hot water line, a faucet having a given flow capacity and disposed in said line, a valve disposed in said line ahead of said faucet and arranged to cause water in said line to bypass said faucet and be discharged directly to said drain from said line when said valve is open, said valve being electrically operated and having a flow capacity greater than that of said faucet, a manually actuated switch for selectively causing the opening of said

valve, means for sensing the temperature of the water in said line, control

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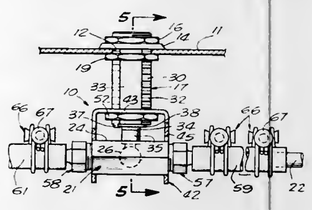
3,885,585
YARD HYDRANT
John H. Carpentier, Fort Atkinson, Wis., assignor to Whitewater Mfg. Co., Whitewater, Wis.
Filed Dec. 4, 1972, Ser. No. 312,160
Int. Cl. E03b *9/08, 9/14*
U.S. Cl. 137—282 **10 Claims**



1. In a yard hydrant having a spout, a valve located below the frost line, a reservoir located below the frost line, a passage connecting the valve to the spout, and reservoir regulating means connecting said passage with said reservoir to drain said passage into said reservoir when said valve is closed and to withdraw water from said reservoir into said passage only when said valve is open, said valve including a valve seat and a complementary valve closure member, said valve seat and said valve member comprising the converging cone of a venturi in said passage, said venturi having a throat open to said reservoir regulating means, said valve member being secured to a valve rod extending through said valve seat, said valve rod, valve member and valve seat cooperating to form a variable opening annular jet orifice for water passing through said valve, said orifice being smaller at smaller valve openings, whereby to create an area of lowered pressure around said jet at substantially all valve openings.

3,885,586
KEY ACTUATED LOCKING VALVE
Rodney B. Tibbetts, 9210 Stamp Ave., Downey, Calif. 90240
Filed Aug. 23, 1973, Ser. No. 390,683
Int. Cl. F16k *35/06*
U.S. Cl. 137—354 **4 Claims**

1. A key actuated locking valve device comprising a valve body having hexagonally shaped cross sectional end portions and an inlet and outlet opening, a valve ball having a passage therethrough and seated in said valve body for rotation between an open position in which said inlet and outlet opening is connected and a closed position, said valve ball having a coupling element on the upper end thereof extending through an access opening on said valve body, a tumbler lock including a barrel having flats thereon and threads along the length thereof, a cylindrical plug in said barrel having its lower end extending into the access opening on said valve body and adapted to engage the coupling element on said valve ball, a bracket having a top member and spaced depending side members, said top member having an opening therein with straight sides for engaging the flats on said barrel and said depending side members each having an hexagonal opening therein for engaging a respective end portion of said valve body, a nut on said barrel for retaining said bracket on said barrel and thereby holding the lower end of said plug engaged to the coupling element on said valve ball, and a key for rotating said plug relative to said barrel and thereby rotating said valve ball between said open and closed position in said

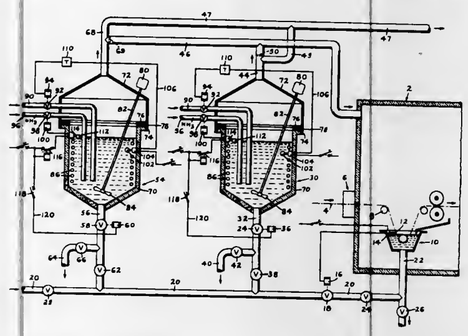


valve body, said key being removable from said tumbler lock when the valve ball is in its closed position.

3. The invention in accordance with claim 1 wherein the upper end of said barrel extends through an opening provided in the floor pan of the driver's compartment of a motor vehicle, and, including

an upper and lower nut on said barrel for engaging the upper end of said barrel on said floor pan.

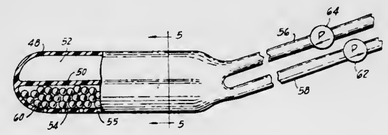
3,885,587
APPARATUS FOR MIXING VOLATILE LIQUID WITH NONVOLATILE MATERIAL
Walter S. Troope, Latham, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.
Division of Ser. No. 854,542, Sept. 2, 1969, abandoned. This application Mar. 9, 1972, Ser. No. 234,442
Int. Cl. B01f *15/04*
U.S. Cl. 137—391 **9 Claims**



1. Apparatus for mixing a measured amount of nonvolatile material with a measured amount of volatile liquid and for maintaining the proportion of said material in said liquid substantially constant, said apparatus comprising a mixing tank having an insulated mixing chamber and a cover over said chamber, a coolant coil for circulating coolant in said chamber, first feed means for feeding a volatile liquid into said chamber, a valve in said first feed means, a second feed means for feeding a nonvolatile material into said chamber, a valve in said second feed means, a first float in said chamber, means connecting said first float to said valve in said first feed means, a second float in said chamber, means connecting said second float to said valve in said second feed means, means for discharging the mixture of said measured amount of nonvolatile material and said measured amount of volatile liquid from said mixing tank after said measured amounts have been mixed

therein, valve means in said discharge means, means connected to said valve means in said discharge means for opening and closing said discharge valve means, said means for opening and closing said discharge valve means including means for opening said valve in said first feed means when said discharge valve means is closed and for closing said valve in said first feed means when said discharge valve means is opened, said first float in said chamber including means for closing said valve in said first feed means when the liquid in said chamber lifts said first float and for opening said valve in said first feed means when the liquid in said chamber is below the level to lift said float.

3,885,588
DEVICE FOR REMOVING WATER FROM THE BOTTOM OF UNDERGROUND LIQUID FUEL TANKS
Albert Shotmeyer, 46 Westerly Rd., Saddle River, N.J. 07506
Filed Sept. 12, 1973, Ser. No. 396,576
Int. Cl. B67d *5/60*
U.S. Cl. 137—565 **5 Claims**

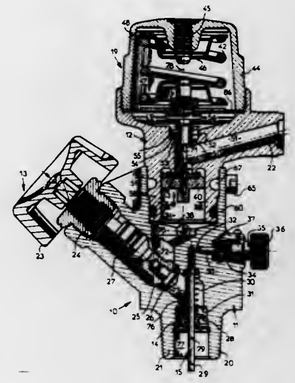


1. A device for removing the water from the bottom of an underground liquid fuel containing tank having a body of water below the fuel therein, comprising: a collapsible flexible hollow container having at least one perforation through a wall thereof, a flexible tubular conduit connected at one end with said container and communicating with the interior thereof; and a suction means connected with the other end of said tubular conduit;

means within said container having a specific gravity greater than that of the fuel and water within the tank, said means within said container comprising particulate matter having a minimum cross section greater than that of the perforation in said container wall and less than that of the tubular conduit, said particulate matter comprising a material that is insoluble in any liquid fuel or water within a fuel tank in which it is to be immersed.

3,885,589
COCK AND PRESSURE-REDUCER UNIT FOR LIQUEFIED-GAS RESERVOIRS
Jacques Iung, Pontarlier, France, assignor to Gurtner S.A., France
Filed May 16, 1973, Ser. No. 360,918
Claims priority, application France, May 18, 1972, 72.17880
Int. Cl. F16k *21/00*
U.S. Cl. 137—613 **11 Claims**

1. Cock and pressure-reducer unit for connecting a source of liquefied gas under pressure to a gas distribution network after reducing the pressure of the gas, said cock and pressure-reducer unit comprising first and second bodies, a flow-limiting device, a stop cock having a closed position preventing flow and an open position permitting flow, a pressure-reducing device having a pressure-reducing chamber, a seat in the latter chamber and valve means acting with said seat, said valve means being controlled by a manometric control chamber acted upon by the pressure of the gas at the inlet into the distribution network, and a maximum level gauge, wherein the aforesaid components are so arranged with respect to one another that gas proceeding from the source and supplied to a network passes successively through the flow-limiting device, the stop cock and the pressure-reducing device, said flow-limiting device and said stop cock being mounted on said first body, and the pressure-reducing device and its control chamber being mounted on said second body, said second body being fitted sealingly into said first body and being removably connected thereto, whereby said stop cock may be



placed in its closed position to permit said second body to be removed, as required, without flow of gas beyond said stop cock.

3,885,590
GAS TRANSMISSION AND MONITORING DEVICE
John L. Ford, and John Serafin, both of Phoenix, Ariz., assignors to Serefor Industries, Inc., Phoenix, Ariz.
Filed May 10, 1974, Ser. No. 468,653
Int. Cl. G05d *11/00;* **F16k** *45/00*
U.S. Cl. 137—613 **1 Claim**

1. A compact, self-contained flow and pressure regulator device having manual and automatic safety means for monitoring gas transmission from a source of compressed gas to a human body cavity during a peritoneoscopy, said regulator device comprising:

a. a housing having an inlet and an outlet and a gas transmission conduit communicating therebetween,

said inlet adapted for connection to a source of pressurized gas,

said outlet adapted for connection to a gas delivery conduit;

b. a selectively adjustable pressure regulator proximate the inlet end of said gas transmission conduit for modulating the pressure of said gas entering said conduit from said pressurized source;

c. a limiting orifice for receiving said gas from said adjustable pressure regulator and reducing the flow of said gas to a predetermined rate;

d. a control valve downstream of said adjustable pressure regulator and said limiting orifice for maintaining said gas below a predetermined rate of flow and pressure;

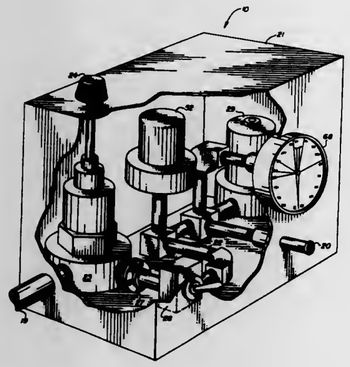
e. a relief valve operatively associated with said gas transmission conduit between said orifice and said outlet for the escape of gas therethrough when the gas in said conduit exceeds a predetermined maximum pressure or flow rate,

said relief valve opening in response to a pressure and flow rate which is higher than the values maintained by said control valve;

f. gauge means for indicating gas conditions in said gas

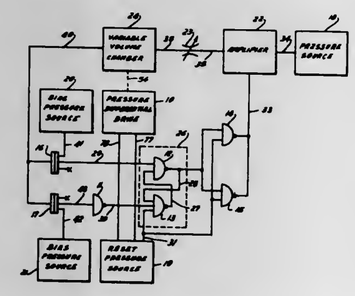
b. a volume chamber;

f. gauge means for indicating gas conditions in said gas transmission conduit; and



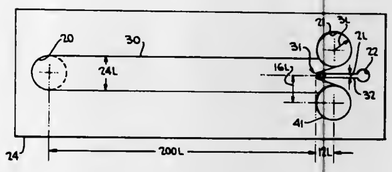
g. valve means for selectively discontinuing the discharge of gas from said outlet.

3,885,591
TUNABLE FLUIDIC OSCILLATOR
Robert F. O'Keefe, Trumbull, Conn., assignor to Automatic Switch Company, Florham Park, N.J.
Filed June 14, 1973, Ser. No. 370,121
Int. Cl. F15c 3/04
U.S. Cl. 137—826 **5 Claims**



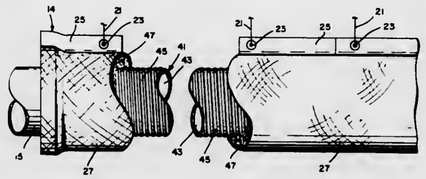
1. A fluidic oscillator, comprising:
a. a fluidic bistable device having two input ports and an output port;
b. a volume chamber;
c. means for charging the volume chamber when the output of the bistable device is in a first binary state and discharging the volume chamber when the output is in a second binary state; and
d. means, coupling the volume chamber to the input ports, for changing the output of the bistable device from the first state to the second state when pressure in the volume chamber rises above a predetermined level and for changing the output of the bistable device from the second state to the first state when pressure in the volume chamber drops below another predetermined level, whereby the states at the output port change periodically, said means coupling the volume chamber to the input ports including first and second isolator means each having an inlet port and an outlet port, means for applying a pressure at the predetermined level to the inlet port of the first isolator means, means for applying pressure at said another predetermined level to the inlet port of the second isolator means, and means coupling the outlet port of said first isolator means to one of the inputs of the bistable device and the outlet port of said second isolator means to the other input of the bistable device.

3,885,592
PURE FLUID PASSIVE SQUARE FUNCTION GENERATOR
Tadeusz M. Drzewiecki, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 11, 1973, Ser. No. 405,728
Int. Cl. F15c 4/00
U.S. Cl. 137—842 **6 Claims**



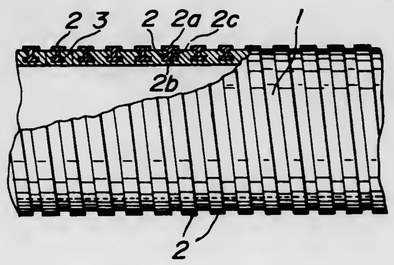
1. A passive fluidic function generator for generating an output pressure signal which is proportionally related to the square of an input pressure signal, said generator comprising in combination; input port means for connection to an input fluid pressure signal source; linear fluidic resistor means connected to said input port means for transmitting a pressure signal therethrough; a fluidic catcher means for catching and receiving the pressure signal as it exits said linear fluidic resistor means, said linear fluidic resistor means being connected directly to said fluidic catcher means to form a passage of uniform cross-section between said input port means and said fluidic catcher means; at least one vent to the ambient disposed between said fluidic resistor means and said catcher means; means defining a fluidic stagnation plenum connected to said catcher means for stagnating the pressure signal exiting said linear fluidic resistor means; and an output port means coupled to said stagnation plenum means for providing an output pressure signal, said output pressure signal being functionally related to the square of the input pressure signal.

3,885,593
STRETCHABLE REINFORCED WRAPPER FOR INSULATED FLEXIBLE DUCT
Marvin A. Koerber, Abbeville, and Charles G. Richitelli, Greenwood, both of S.C., assignors to Automation Industries, Incorporated, Los Angeles, Calif.
Filed Dec. 18, 1972, Ser. No. 316,023
Int. Cl. F16l 11/12
U.S. Cl. 138—128 **27 Claims**



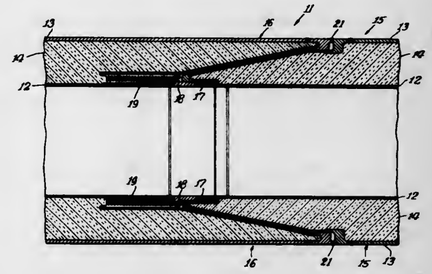
3. An insulated flexible duct, comprising:
an elongated, helical, semi-rigid, wire core;
insulating material disposed about said wire core;
a vapor barrier disposed about said insulating material;
reinforcement means in said vapor barrier, said reinforcing means being constructed and arranged to protect said vapor barrier against rips and tears while still allowing circumferential stretching of said vapor barrier,
said vapor barrier including at least one moisture and air impervious film with inherent elongation in both axial and circumferential directions, and
said reinforcement means includes reinforcement material arranged to increase the durability, strength and puncture and tear-resistance of said vapor barrier without the loss of axial elongation thereof.

3,885,594
REINFORCED FLEXIBLE PIPE
Kenichi Tanaka, Tokyo, Japan, assignor to Kakuichi Mfg. Co., Ltd., Ueda, Japan
Continuation of Ser. No. 240,209, March 31, 1972, abandoned. This application May 20, 1974, Ser. No. 471,807
Claims priority, application Japan, Jan. 17, 1972, 47-6204; Jan. 17, 1972, 47-6205; Jan. 27, 1972, 47-9434
Int. Cl. F16l 11/08
U.S. Cl. 138—129 **4 Claims**



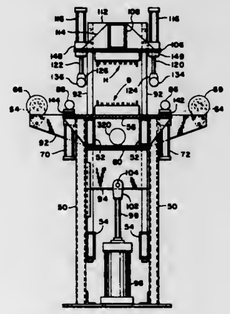
1. A reinforced flexible pipe comprising a tubular wall formed of a soft synthetic resin material, and a reinforcing spiral core of a hard synthetic resin material having a substantially I-shaped cross-section and extending throughout the length of said pipe, partly exposed out of said wall and intimately bonded thereto, the adjoining lateral edges of an elongated strip being welded together in abutting relation so as to integrally form said wall, said strip being formed of a soft synthetic resin material and of a reinforcing hard synthetic resin material core extending throughout the length of said strip and having a substantially I-shaped cross-section and being partly exposed out of said strip.

3,885,595
CONDUIT FOR CRYOGENIC FLUID TRANSPORTATION
Clarence John Gibson, and Kenneth Kimble, both of El Cajon, Calif., assignors to Kaiser Aerospace & Electronics Corp., Oakland, Calif.
Filed Jan. 28, 1974, Ser. No. 437,250
Int. Cl. F16l 9/22, 51/00
U.S. Cl. 138—155 **5 Claims**



1. A conduit section for use in a cryogenic fluid carrying conduit formed from a plurality of said sections, said conduit section having at its opposite ends a first end portion and a second end portion, said end portions being telescopable into and connectible to end portions of like conduit sections to thereby form a cryogenic fluid carrying conduit, said conduit section having an inner pipe portion and a concentric outer pipe portion with thermal insulation therebetween, the said first end portion being frusto-conical, and said second end portion having a motion compensator secured thereto, said motion compensator being exposed only to external pressure when said conduit sections are connected together, and providing a gas or liquid cryogen seal while elastically compensating for relative motion between said outer and inner pipe portions due to temperature differences between said portions.

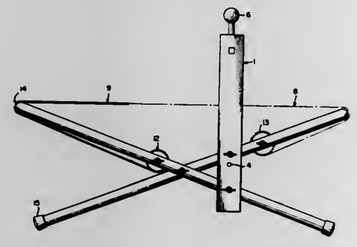
3,885,596
FABRIC SPLICE APPARATUS
Alexander V. Alexeff, Cleveland, Ohio, assignor to Alexeff-Snyder Enterprises, Inc., Cleveland, Ohio
Filed July 5, 1973, Ser. No. 376,537
Int. Cl. D03d 41/00; B65h 69/06
U.S. Cl. 139—28 **22 Claims**



1. Apparatus for splicing overlapped fabric end portions defining a fabric double layer having a longitudinal axis and a lapping plane comprising; clamping means for transversely clamping said double layer in longitudinally-spaced locations, loop forming means on opposite sides of said double layer intermediate said clamping means for forming a plurality of loop rows in said double layer spaced-apart parallel to said

longitudinal axis with each row having a plurality of loops extending alternately in opposite directions out of said plane transversely of said axis and with adjacent loops in adjacent loop rows extending in opposite directions out of said plane, and rod inserting means for inserting elongated substantially rigid rods in each of said loop rows.

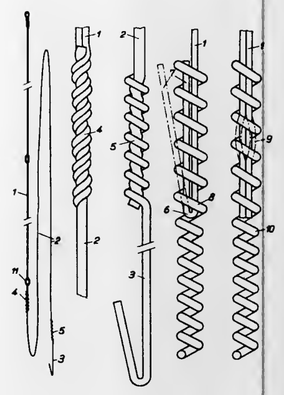
3,885,597
A LIGHTWEIGHT COLLAPSIBLE LOOM
Mildred Elizabeth Hines, 72 Second St., Geneseo, N.Y. 14454
Filed Apr. 19, 1973, Ser. No. 352,700
Int. Cl. D03d *29/00*
U.S. Cl. 139—29 **6 Claims**



1. A lightweight, collapsible loom comprising two U-shaped members each having a pair of spaced legs connected by a transverse base portion, said members being arranged so that one leg of one member is positioned adjacent one leg of the other member, the adjacent legs of said members being pivotally joined at their mid-sections, a shedding mechanism including a pair of rigid uprights each of which extends transversely of and substantially intersects adjacent legs of said members, means for connecting each upright to each of said adjacent legs at their area of intersection to form a stable triangular brace, warp and cloth rollers, and means for mounting said rollers on at least one of said members.

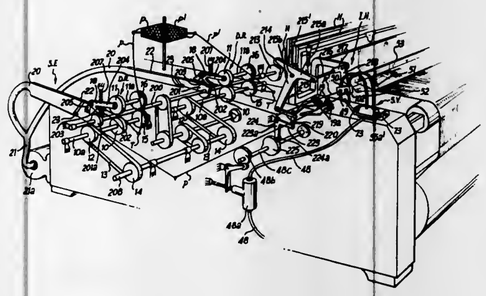
3,885,598
JACQUARD HEALD WITH ELASTIC RETRACTING CORD
Erich Vogelbacher, Horgen, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland
Filed Aug. 1, 1973, Ser. No. 384,540
Claims priority, application Switzerland, Aug. 4, 1972, 11580/72
Int. Cl. D03c *3/44, 9/04*
U.S. Cl. 139—89 **2 Claims**

1. In the combination of a Jacquard heald and a fastening element coupled by an elastic retraction cord connected at its one end to the heald and at its other end to the fastening element, the improvement characterized by the connections between the heald and the elastic cord and the fastening element and the elastic cord being made by spaced helical wire spirals which coil around and entwine the ends of the elastic cord, the inside diameter of the spirals being smaller than the outside diameter of the elastic cord, wherein the



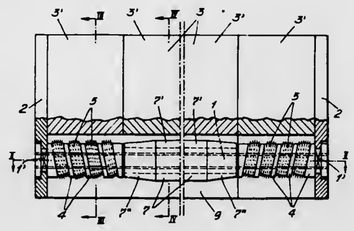
spirals are formed by the ends of the heald and the fastening element.

3,885,599
SHUTTLELESS WEAVING LOOMS
Thomas Blackburn Mawdsley, and Albert Whittle, both of Chorley, England, assignors to Carrington Viyella Limited, Chorley, Lancashire, England
Continuation of Ser. No. 201,431, Nov. 23, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 402,276
Int. Cl. D03d *47/34, 47/28*
U.S. Cl. 139—127 P **13 Claims**



1. A fluid jet loom including a weft yarn supply means, weft yarn feed means comprising a weft drive roll means including pairs of drive rolls, each pair having a weft yarn therebetween, separate means continuously driving each pair of said drive rolls, storage means for each said weft yarn and weft insertion means for each said weft yarn, said storage means being arranged between said weft drive roll means and said weft insertion means, selective control means operatively connected to each pair of drive roll means and operative on signal to cause selected drive rolls to drivingly engage said weft yarn or to become separated so as not to feed said weft yarn, whereby weft yarn may be fed intermittently or continuously by said weft drive roll means to said storage means.

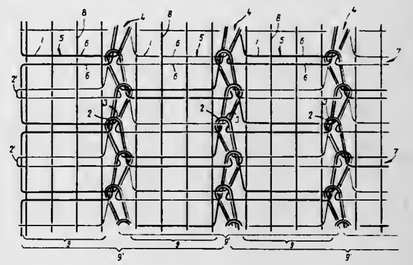
3,885,600
METHOD AND TEMPLE APPARATUS FOR GUIDING FABRIC LENGTHS THROUGH TEXTILE WEAVING MACHINES
Jack G. Altmann, Kirchenrainstrasse 21, CH-8630 Tann-Ruti, Switzerland
Filed July 17, 1973, Ser. No. 380,184
Int. Cl. D03j *1/22*
U.S. Cl. 139—292 **2 Claims**



1. A structure for guiding and expanding a continuous length of fabric through a textile machine comprising means operative to selectively pinch the fabric over its full width between the selveges to guide said fabric and to hold it in place, said structure being further operative to periodically release said pinching action while said length of fabric is being pulled thereby to effect transport of said fabric, and being operative to positively stretch said fabric outwardly in opposing directions at its selveges while said fabric is being transported and thereafter to repinch the fabric over its full width between the selveges to terminate said transport, said structure comprising a temple which includes an elongated guiding and tensioning element mounted for rotation within a housing, said guiding and tensioning element including a radially free-floating and freely rotatable tubular portion positioned across the full width of said fabric between its selveges and adapted to move in a radial direction toward and into engagement with a portion of the housing to selectively pinch the fabric therebetween, and said element further including two temple cylinder sections positioned at opposite ends of said free-floating and freely rotatable tubular portion and having oppositely inclined pinned temple rings respectively disposed in the selvege zones of the fabric so that the pins thereof penetrate through the selveges and thereby, due to the opposing inclinations of the temple rings, stretch the fabric outwardly weftwise during the free rotation of said tubular portion without relative gliding of the fabric over said tubular portion or temple rings.

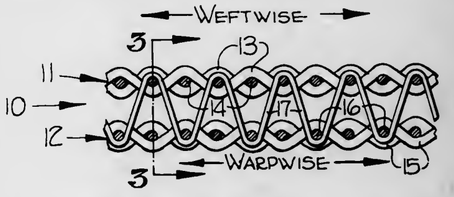
3,885,601
KNIT-WOVEN FABRIC AND A MACHINE FOR MAKING THE SAME
Josef Zmatlik; Miloslav Jisa, both of Liberec, and Josef Mohelnicky, Prague, all of Czechoslovakia, assignors to Statni Vyzkumny ustav Textilni, Liberec, Czechoslovakia
Continuation-in-part of Ser. No. 246,239, Apr. 21, 1972, Pat. No. 3,746,051. This application Feb. 6, 1973, Ser. No. 330,044
Claims priority, application Czechoslovakia, Apr. 23, 1971, 2981-71; Jan. 14, 1972, 251-72; Jan. 19, 1972, 343-72; Feb. 8, 1972, 775-72
Int. Cl. D03d *25/00*
U.S. Cl. 139—383 R **1 Claim**

1. A knit-woven fabric, comprising a warp-knitted structure having wales of double stitches spaced across the width of the fabric formed by weft threads and consisting of closed reverse stitches doubled by open not reverse stitches, and longitudinal woven stripes located between said wales and formed by warp threads interlaced with double weft threads composed of connecting loops of closed reverse stitches and of connecting loops of open not reverse stitches, each pair of said weft



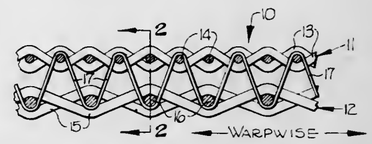
threads forming in one wale one closed reverse stitch and in an adjacent wale one open not reverse stitch.

3,885,602
WOVEN FOURDRINIER FABRIC
Philip H. Slaughter, Charlotte, N.C., assignor to Evans S. Creech; Jimmie O. Hutchins and John W. Whitley, all of Charlotte, N.C., part interest to each
Filed Nov. 21, 1973, Ser. No. 417,873
Int. Cl. D03d *15/00, 15/02;* **D21f** *1/10*
U.S. Cl. 139—425 A **8 Claims**



1. A Fourdrinier fabric comprising at least two woven plies of respective sets of weft yarns and warp yarns, binder warp yarns interwoven with and interconnecting said two plies, and each of said plies being in the form of a mesh weave having an open area of at least about 9% per square inch thereof.

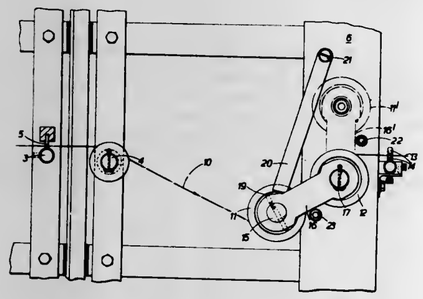
3,885,603
PAPERMAKING FABRIC
Philip H. Slaughter, Charlotte, N.C., assignor to Evans S. Creech; Jimmie O. Hutchins and John W. Whitley, all of Charlotte, N.C., part interest to each
Filed Nov. 21, 1973, Ser. No. 417,872
Int. Cl. D03d *15/00, 15/02;* **D21f** *1/10*
U.S. Cl. 139—425 A **13 Claims**



1. A multi-ply woven fabric of mesh construction for use as a Fourdrinier forming belt and especially constructed to permit drainage therethrough of liquid from a slurry received thereon and to withstand flexing, high tension and abrasion incident to paper manufacture, said fabric comprising at least two plies each having an open area of at least about 9 percent and each ply being formed of respective interwoven warp and weft yarns, binder warp yarns interwoven with and interconnecting said plies, said plies including a top ply and a bottom ply, and said top ply being formed of a considerably greater number of warp yarns and weft yarns per square inch than said

bottom ply with at least the warp yarns in said top ply being substantially smaller than the warp yarns in said bottom ply, and the aggregate cross-sectional area of the yarns in said bottom ply being substantially greater than that of the yarns in said top ply per square inch of the fabric.

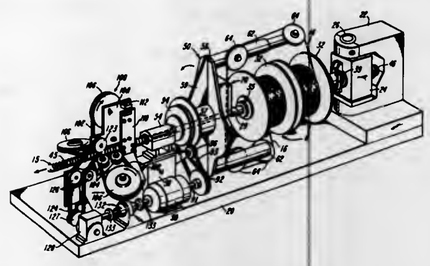
3,885,604
MAKING REINFORCED FABRICS
Kenneth Harry Rowland, Melksham, England, assignor to Avon Rubber Company Limited, Melksham, Wiltshire, England
Filed Apr. 5, 1974, Ser. No. 458,349
Claims priority, application United Kingdom, Apr. 9, 1973, 16945/73
Int. Cl. B21f 23/00
U.S. Cl. 140—3 C 11 Claims



1. In the combination of creel rack and a machine for drawing and embedding wire from wire storage reels in the creel rack to form a wire-reinforced fabric wherein there are means for exerting tension on the wires the improvement comprising a tensioning device placed in the wire path between the creel rack and the machine and tensioning in common a plurality of the wires, the tensioning device including a pair of spaced-apart grooved rollers each having an abrasion-resistant surface of uniform diameter in the grooves, the plurality of wires running around each roller on its surface over a part of the periphery thereof, each of the wires occupying one groove, all the grooves of each roller respectively being constrained to rotate in common, such that the wires execute a double bend in their path and drive the rollers against their resistance to rotation without slippage between any wire and the rollers.

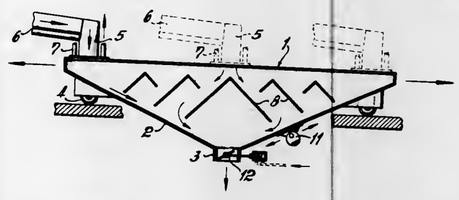
3,885,605
HELICAL COIL FORMING MACHINE
Ernest U. Lang, Niles, Mich., assignor to Dayco Corporation, Dayton, Ohio
Division of Ser. No. 343,617, March 21, 1973, Pat. No. 3,823,590. This application Mar. 22, 1974, Ser. No. 453,748
Int. Cl. B21f 3/00
U.S. Cl. 140—92.6 2 Claims

1. Apparatus for continuously producing a nonrotating coil having helical wire turns of substantially uniform diameter, comprising means for rotatably supporting a plurality of wire supply rolls positioned in tandem relation, a coil forming rotor including means for receiving a wire from each of the wire supply rolls and for deforming the wires beyond their elastic limit into interfitting continuous wire turns, means for supporting said rotor for rotation on an axis substantially aligned with the axis of rotation of the wire supply rolls, means for rotating said rotor, means on said rotor for directing the wires from the corresponding wire supply rolls to said wire deforming means, means for guiding the coil axially from said rotor after the coil is formed by rotation of said rotor, means for feeding the wire coil from said rotor as the coil is being formed, and means for varying the speed of said feeding



means relative to the speed of rotation of said rotor to provide for changing the pitch of the wire turns of said coil.

3,885,606
MOVEABLE LOADING APPARATUS FOR FINE GRANULAR AND PULVERIZED LOOSE SOLIDS
Werner Krauss, Hamburg, Germany, assignor to Claudius Peters A.G., Hamburg, Germany
Filed Feb. 1, 1973, Ser. No. 328,620
Claims priority, application Germany, Feb. 4, 1972, 2205203
Int. Cl. B65b 1/20, 1/22
U.S. Cl. 141—71 10 Claims

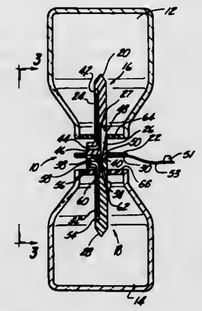


1. In a loading apparatus for granular or pulverulent material including a moveable hopper having downward sloping bottom sheets adjacent an outlet and arranged to deliver material from a feedspout to a variable-position receiver, the improvement comprising de-aerating means associated with said hopper, said de-aerating means including a plurality of baffles within the hopper and positioned on downward sloping planes intersecting the plane of the downward sloping bottom sheets.

3,885,607
DEVICE FOR PROVIDING FLUID COMMUNICATION BETWEEN TWO SEALED VESSELS
Richard I. Peltier, 2148 Painted Post Dr., Flushing, Mich. 48433
Filed Nov. 16, 1973, Ser. No. 416,404
Int. Cl. B65d 47/12; B67d 3/04; B67c 3/26
U.S. Cl. 141—329 12 Claims

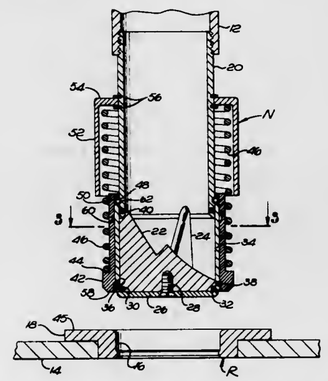
1. A device for providing fluid communication between two sealed vessels, comprising: a first cannula member, said first cannula member having an air passageway and a liquid passageway, said passageways extending longitudinally wherein one end of said air passageway is longitudinally displaced from the corresponding end of said liquid passageway; a second cannula member, said second cannula member having an air passageway and a liquid passageway, said passageways of said second cannula member extending longitudinally wherein one end of said air passageway is longitudinally displaced from the corresponding end of said liquid passageway; means for removably connecting said first cannula member to said second

cannula member with said liquid passageways in registry whereby the liquid passageway of said first cannula member



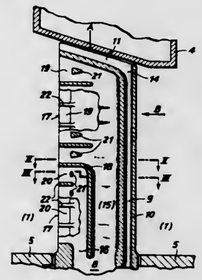
communicates with the liquid passageway of said second cannula member.

3,885,608
FLUID COUPLING APPARATUS
David B. Ayres, 4633 West M-12, Quartz Hill, Calif. 93534
Filed Feb. 2, 1973, Ser. No. 329,004
Int. Cl. B65b 3/04
U.S. Cl. 141—354 4 Claims



1. A fluid coupling member, as for use on a hose for passing a fluid stream through said hose to a port in a receptacle, comprising:
- a central cylinder adapted to be connected to a terminal end of a hose;
- an end closure means affixed in axially-aligned, spaced-apart relationship to said central cylinder, defining radial open space therebetween;
- a sealing member of cylindrical configuration disposed concentrically with said central cylinder for movement between one position to close said open space and another position telescoped over said central cylinder;
- bias means for urging said sealing member to said one position to close said open space;
- a sequence ring telescopically positioned over said sealing member; and
- an engaging mechanism controlled by the position of said sequence ring including a locking means for locking said sealing member in said one position until said sequence ring is displaced by engagement with a port in a receptacle, and thereupon for locking said sealing member for movement with said sequence ring in relation to said central cylinder whereby said radial open spaced is opened.

3,885,609
COOLED ROTOR BLADE FOR A GAS TURBINE
Oskar Frei, Burgstrasse 84, 8404 Winterthur, and Dilip Mukherjee, Walkerstrasse 31, 8400 Winterthur, both of Switzerland
Filed Jan. 18, 1973, Ser. No. 324,780
Claims priority, application Switzerland, Jan. 18, 1972, 00698/72
Int. Cl. F01d 5/18
U.S. Cl. 416—97 3 Claims

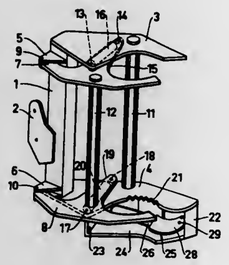


1. A cooled rotor blade for a gas turbine comprising
- a one-piece rotor blade body having a blade front, a trailing edge and a blade tip at one radial end extending from said blade front to said trailing edge, said blade tip having a trough-shaped indentation extending longitudinally therein;
- means defining a first flow path through said blade body extending immediately downstream of and parallel to said blade front and terminating in said trough-shaped indentation;
- a first coolant exit in said blade body in the zone of said trailing edge, said exit being in communication with said trough-shaped indentation on the suction side of said body for the passage of coolant therethrough; and
- means defining a second flow path and a third path through said blade body, each of said second and third flow paths having a portion parallel to said first flow path and including portions for deflecting respective flows of coolant 90° therein; a second coolant exit in communication with said second flow path and a third coolant exit in communication with said third flow path, each of said second and third coolant exits being disposed over a part of the height of said blade body in the zone of said trailing edge on the pressure side of said body.

3,885,610
TREE HARVESTING DEVICE FOR HYDRAULIC OPERATION
Erik Torsten Forslund, and Bo Emil Fredrik Morenius, both of Alfta, Sweden, assignors to Ostbergs Fabriks AG, Alfta, Sweden
Filed Oct. 10, 1973, Ser. No. 405,009
Claims priority, application Sweden, Oct. 17, 1972, 13363/72
Int. Cl. A01g 23/08
U.S. Cl. 144—34 R 3 Claims

1. Tree harvesting device for hydraulic operation, with a vertical frame supporting at the top and at the bottom the ends of a pair of fixed upper and lower grip arms as well as a pair of movable grip arms for gripping a tree trunk, characterized in that a cutting-off means in the form of a guide provided with a supporting holder and a chain saw is located under the said lower fixed grip arm, said holder being pivoted near the outer end of the fixed arm, so that the guide from a position covered by said fixed arm can be swung outwards in direction from the inner end of the fixed grip arm for engagement with a tree trunk bearing against said part,

said device further including a resilient returning device inserted between the holder of the cutting-off means and a fixed point located on the said lower fixed arm, a wire extending from a point on the lower moveable grip arm passing a guiding point on the adjacent fixed grip arm and



ending at a point on said supporting holder spaced from its journal axis, whereby when bringing the grip arms together, said wire is tightened for limitation of the maximum swinging-out of the cutting-off means in dependence of the diameter of the gripped tree trunk.

3,885,611

MATERIAL SHAPING PLATFORM WITH MULTIPLE OR EXCHANGEABLE TEMPLATES

Friedrich Peter Schell, Las Vegas, Nev., assignor to Revolution, Inc., Las Vegas, Nev.

Division of Ser. No. 214,007, Dec. 30, 1971, Pat. No. 3,797,543, which is a continuation-in-part of Ser. Nos. 129,507, March 30, 1971, Pat. No. 3,739,826, and Ser. No. 198,727, Nov. 15, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 422,796

Int. Cl. B27c *5/06*

U.S. Cl. 144—145 R **6 Claims**

1. A device for guiding a material workpiece to be shaped by a stationary working tool comprising:

a. a rotatable and reciprocating platform for securing a material workpiece,

b. a template cooperating with and adjacent said platform,

c. a guide member having a surface abutting said template, and

d. biasing means cooperating with said platform for constantly maintaining said template and said guide member in abutment while said working tool acts on said material workpiece,

wherein said template comprises a plurality of surfaces, the shape of which are to be reproduced on said material workpiece said template selectively attached to an upper or lower surface of said platform.

3,885,612

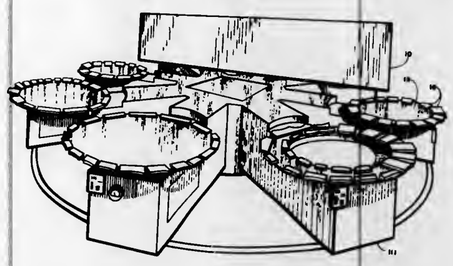
MATERIAL SHAPING PLATFORM WITH MULTIPLE OR EXCHANGEABLE TEMPLATES

Friedrich Peter Schell, Las Vegas, Nev., assignor to Revolution, Inc., Las Vegas, Nev.

Division of Ser. No. 214,007, Dec. 30, 1971, Pat. No. 3,797,543, which is a continuation-in-part of Ser. Nos. 129,507, March 30, 1971, Pat. No. 3,739,826, and Ser. No. 198,727, Nov. 15, 1971, abandoned. This application Dec. 10, 1973, Ser. No. 422,926

Int. Cl. B27c *5/06*

U.S. Cl. 144—145 R **1 Claim**



1. A device for guiding a material workpiece to be shaped by a working tool comprising a rotatable platform for mounting said workpiece thereon, a pivotal platform carriage, a platform support to which said platform is rotatably secured said platform support having means for reciprocating travel therealong and arm members pivotally attached between said platform support and said pivotal carriage.

3,885,613

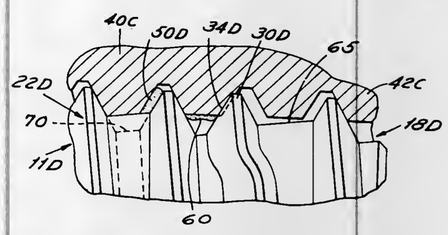
SELF-LOCKING FASTENER

Robert J. Evans, 1307 Porters Ln., Bloomfield Hills, Mich. 48013

Division of Ser. No. 88,008, Nov. 9, 1970, Pat. No. 3,721,283. This application Feb. 5, 1973, Ser. No. 329,677

Int. Cl. F16b *39/30*

U.S. Cl. 151—22 **5 Claims**



1. A self-locking male member having a generally helical male thread, a female member having a generally helical preformed female thread mating with said male thread, said male thread having in at least a partial convolution adjacent its entering end a swaging flank portion which is modified relative to the corresponding flank portions of convolutions of said male thread more remote from said entering end by being offset toward the flank portion which it confronts and hence spaced therefrom a distance less than the distance between confronting flank portions of said more remote convolutions, said swaging flank portion being offset sufficiently to have positive interference with the opposing flanks of said female thread upon entry of said male member and to displace such opposing flank material toward the crest of said female thread, the root of said male thread in said more remote convolutions and at the base of said swaging flank portion being sufficiently less in diameter prior to assembly than the crest of said female thread that in assembly there is a clearance between said crest of said female thread and said root of said male thread in said more remote convolutions and at the base of said swaging flank portion for the receipt of such displaced material, said male member having a raised root forwardly of said swaging flank portion which is of greater diameter than the root of said male thread in said more remote convolutions and at the base of said swaging flank portion adapted, upon withdrawal of said male member, to swage said displaced female thread material back along the flanks of said female thread.

3,885,614

SAFETY TIRE

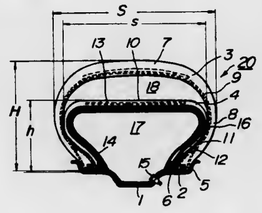
Akira Fujikawa, and Takashi Takusagawa, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 19, 1973, Ser. No. 408,017

Claims priority, application Japan, Oct. 21, 1972, 47-105693

Int. Cl. B60c *5/08*

U.S. Cl. 152—340 **8 Claims**



1. A pneumatic safety tire comprising an outer tubeless tire having a tread and a pair of sidewalls extending from opposing edges of the tread to corresponding tire beads; an inner tire disposed within the outer tire and having a tire tube disposed therein, said inner and outer tires defining first and second tire chambers isolated from each other, respectively, said inner tire having a pair of annular beads, a carcass including at least one reinforcing cord layer and extending across the pair of beads while turning around the opposing edges of the carcass about the beads so as to secure the carcass to the beads, a breaker disposed on the outer surface of the carcass at a crown portion thereof, and a layer of tread rubber overlying the breaker, said breaker including at least two reinforcing plies made of cords each having a Young's modulus of not smaller than 1.0×10^5 Kg/cm², said cords of the breaker reinforcing plies being disposed at an angle of 10° to 30° relative to the equatorial direction of the inner tire, said breaker of the inner tire being of cylindrical shape about the axis of rotation of the safety tire, the width of said breaker in parallel to the axis of rotation of the tire being substantially as wide as the tread of said outer tire; and a tire valve means selectively communicating said first and second tire chambers to the outside of the safety tire.

3,885,615

PNEUMATIC TIRE WHEEL RIM ASSEMBLY

William Eric Mitchell, Coventry, England, assignor to Dunlop Limited, London, England

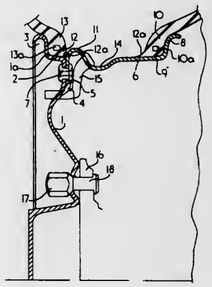
Filed June 7, 1972, Ser. No. 260,463

Claims priority, application United Kingdom, June 16, 1971, 28096/71

Int. Cl. B60b *23/10, 25/22;* **B60c** *5/12*

U.S. Cl. 152—411 **12 Claims**

1. A rim for a pneumatic tire comprising a first rim part having a tire bead retaining flange and bead seating portion, a second rim part having the other tire bead retaining flange and a bead seating portion of the same diameter as the first bead seating portion, said second rim part being formed in the region adjacent the first rim part with a circumferentially-extending radially outwardly projecting hump portion, said hump portion including a radially inwardly turned flange constituting an attachment flange by which the second rim part is secured to the first rim part, the hump portion projecting radially outwardly beyond the radial height of the bead seat on the second rim part and being arranged to be capable of making air-tight sealing engagement with the bead of an associated tire seated on the first rim part, the second rim part having a shallow well portion of sufficient depth to enable a tire bead to be passed over the hump portion.



3,885,616

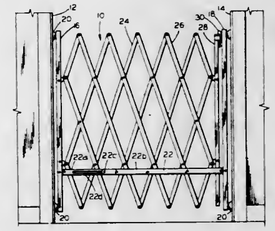
CHILD'S GATE

Norton J. Berkowitz, Cider Mill Rd., Tolland, Conn. 06084

Filed Mar. 27, 1973, Ser. No. 345,260

Int. Cl. E06b *9/06*

U.S. Cl. 160—215 **4 Claims**



1. A gate assembly for positioning in a passageway having a pair of opposed side wall members, the gating including:

a first vertical member having first upper and lower wall engaging members thereon for engaging a first wall of a passageway, said first upper and lower wall engaging members being fixed directly to said first strut;

a second vertical strut member having second upper and lower wall engaging members thereon for engaging a second wall of a passageway, said second upper and lower wall engaging members being fixed directly to said second strut;

said first and second strut members being parallel to each other and all of said wall engaging members being identical;

movable gate means, said gate means being connected at one end to one of said vertical strut members and having a third vertical strut member at the other end thereof, said gate means being movable between a first closed position spanning the passageway between the walls and a second open position wherein at least part of the passageway is open;

engagement means for selectively connecting and disconnecting said second and third vertical strut members

when said gate means is in the closed and open positions,

amounts of liquid from said chilled liquid line and said heated

said skirt being fixed relative to said shell, and the upper end

when said gate means is in the closed and open positions, respectively; and

pressure bar means perpendicular to and extending between said first and second vertical strut members for urging said strut members into engagement with the walls of the passageway, said pressure bar means having two elements relatively slideable with respect to each other, one of said elements having an elongated slot, and said elements being secured in place solely by locking means connected between the other of said elements and said elongated slot;

said pressure bar means being located above the bottom of said gate means at a position not more than one third of the height of said gate means and between said first and second fixed upper and lower wall engaging members on said wall engaging struts, said pressure bar in said position providing the bearing pressure to force said first and second upper and lower wall engaging members into bearing engagement with the walls while permitting easy passage thereover by an adult in the open position of said gate means.

3,885,617

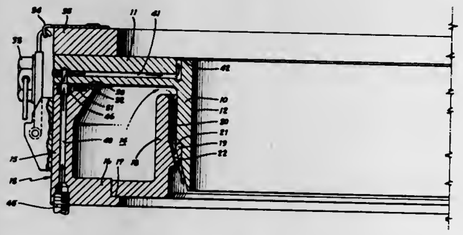
DC CASTING MOLD ASSEMBLY

John J. Foye, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 262,510, June 14, 1972, abandoned. This application June 1, 1973, Ser. No. 365,835

Int. Cl. B22d *11/12*

U.S. Cl. 164—283 **13 Claims**



1. A DC mold assembly for casting light metals which allows for the rapid change of the mold body comprising in combination

a. an open-ended tubular mold body provided with a flange extending out radially from the feed end of the mold body and provided with at least one recess in the outer surface of the mold body;

b. a coolant jacket comprising a first extending leg generally concentric with the mold body, a second extending leg generally perpendicular to the first extending leg and a baffle member disposed between the first extending leg and the mold body, the mating surfaces of the first extending leg and the mold flange being adapted to receive a coolant-sealing gasket;

c. at least one spacing member extending inwardly from the baffle member and seated in the recess provided in the outer surface of the mold body to thereby positively position radially and axially the mold body with respect to the baffle member and define a plurality of conduits which allow the passage of coolant from the conduit defined by the baffle member and the mold body to the surface of an emerging ingot during casting;

d. a resilient, rubber-like gasket provided between the mating surfaces of the first extending leg of the coolant jacket and the mold flange; and

e. means to urge the mold flange into a water-tight engagement with the first extending leg of the coolant jacket.

3,885,618

VENTILATION VALVE FOR CLOSING A VENTILATION DUCT IN A CASTING MOLD

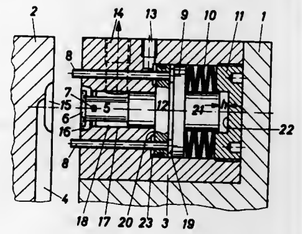
Fritz Hodler, 28, Ave. de Collonge, Territet, Switzerland

Filed June 25, 1973, Ser. No. 373,128

Claims priority, application Switzerland, Oct. 5, 1972, 14572/72

Int. Cl. B22d *17/20*

U.S. Cl. 164—305 **17 Claims**



1. A ventilation valve for closing a ventilation duct in a casting mold, the valve comprising a valve cylinder; a valve piston slidingly received by the valve cylinder so as to be movable between an open and a closed position in a direction perpendicular with respect to said ventilation duct, said valve closing in the direction of the pressure exerted by casting material onto the surface of said piston which faces said ventilation duct, a displacement member which urges the piston into its open position when the mold is open; and means actuated by closure of the mold to move the displacement member away from the piston so that the piston can be brought to its closed position without being hindered by the displacement member load.

3,885,619

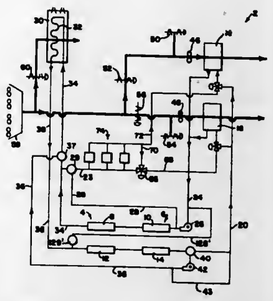
AIR CONDITIONING SYSTEM AND CONTROL INCLUDING METHOD AND MEANS

Alden I. McFarlan, 691 Dorian Rd., Westfield, N.J. 07090

Division of Ser. No. 80,448, Oct. 13, 1970, Pat. No. 3,774,674. This application Oct. 30, 1973, Ser. No. 411,100

Int. Cl. F25b *29/00*

U.S. Cl. 165—26 **9 Claims**



1. In a system for conditioning air for a zone in a climate where the outside air may be at a high temperature and at a low relative humidity and wherein the temperature may drop and there may be a rise in the relative humidity, the combination of, refrigeration means having liquid chiller means with a liquid flow path extending to a chilled liquid line, said refrigeration means also having a liquid heating flow path along which liquid flows to a heated liquid line to thereby remove heat from the refrigeration means, air-treating for passing air to said zone and having means connected to receive the desired amounts of liquid from said chilled liquid line and said heated liquid line to provide air at temperature which is required for said zone, heat-exchange tower, having a liquid flow path therethrough means to exhaust air from said zone through said tower in heat exchange relationship with respect to liquid flowing along said flow path of said tower, liquid flow means to direct liquid along said flow paths, and means to pass liquid from one of said lines through said tower thereby to transfer heat between said liquid and said exhaust air.

3,885,620

HEAT-EXCHANGE INSTALLATION FOR COOLING OF A HEAT-EXCHANGE LIQUID

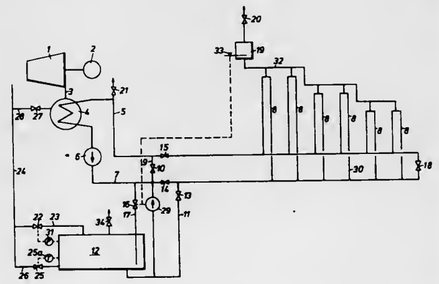
Hans-Henning Von Cleve, Bochum, Germany, assignor to Gea Luftkuhlergesellschaft Happel GmbH & Co. KG, Bochum, Germany

Filed Mar. 6, 1974, Ser. No. 448,520

Claims priority, application Germany, Nov. 13, 1973, 2356505

Int. Cl. G01d *23/00*

U.S. Cl. 161—32 **12 Claims**



1. In a heat-exchange installation for cooling of a heat-exchange liquid which is heated in a user, a combination comprising a plurality of heat-exchange elements through which heat-exchange liquid can circulate to be cooled therein; a reservoir adapted to contain said heat-exchange liquid when any of said heat-exchange elements are not in use; conduit means connecting said heat-exchange elements with a user to supply and receive heat-exchange liquid therefrom, and also with said reservoir; a source of gaseous pressure fluid; and connecting means for connecting said reservoir with said source so as to admit pressure fluid from the latter into said reservoir and expel heat-exchange liquid contained therein via said conduit means into said heat-exchange elements, to thereby provide for rapid charging of the heat-exchange elements with the heat-exchange liquid.

3,885,621

VENT CONDENSER FOR A FEEDWATER HEATER

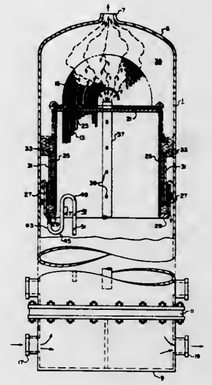
Robert G. Slebodnick, Collingdale, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 29, 1974, Ser. No. 456,423

Int. Cl. F28g *1/00*

U.S. Cl. 165—110 **9 Claims**

1. A feedwater heater comprising a vertically disposed shell portion, a plurality of U-shaped tubes forming a tube bundle disposed in said shell, a tube sheet having a plurality of holes for receiving the ends of the tubes, a tube support plate disposed transverse to said tubes adjacent the bent portions thereof, said plate having a plurality of holes through which the tubes pass in a tightly embracing relationship, a sleeve portion disposed adjacent the outer periphery of said plate, said sleeve being disposed to extend downwardly from said plate, a collar extending upwardly from the lower end of said sleeve, sealing means disposed between said collar and said sleeve, a skirt disposed between said sleeve and said collar, said skirt being fixed relative to said shell, and the upper end of said skirt being disposed in a sealing relationship with said shell, said sleeve, collar and skirt being cooperatively associated to form a water seal when said heater is operating, said water seal cooperating with said plate to form a chamber in the upper portion of the shell and a vent nozzle disposed in the upper portion of said shell, whereby said chamber forms a vent condenser incorporating the bent portion of the U-shaped tubes.



3,885,622

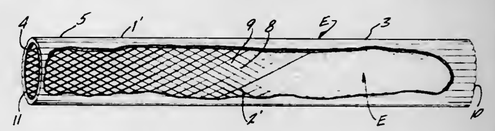
HEAT EXCHANGER TUBE

Charles D. McLain, Alton, Ill., assignor to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 214,034, Dec. 30, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 447,735

Int. Cl. F28f *1/40*

U.S. Cl. 165—179 **6 Claims**



1. A welded hollow metal heat exchanger tube formed from metal strip material and having a longitudinally extending weld seam, said tube having a given wall thickness and an inside surface corresponding to one side of said strip material and an outside surface corresponding to the opposing side of said strip material, a heat exchange enhancement pattern extending throughout only a portion of the tube wall thickness embossed into at least the inside surface by embossing the corresponding side of said strip, whereby variation in enhancement pattern is provided by varying the embossment of the strip.

3,885,623

UNDERWATER WELLHEAD FOUNDATION ASSEMBLY

Bruce J. Watkins, West Covina, and Glenn D. Johnson, Downey, both of Calif., assignors to Shell Oil Company, Houston, Tex.

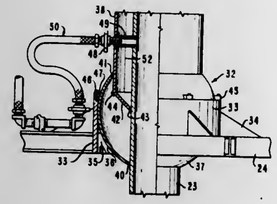
Filed May 14, 1962, Ser. No. 194,367

Int. Cl. E21b *7/12*

U.S. Cl. 166—.5 **16 Claims**

12. Landing base apparatus for use with a conductor pipe in off-shore drilling operations conducted in an underwater formation from a floating vessel, comprising in combination: a base member adapted to land on said formation, said base

member including means for supporting said conductor in said formation and means associated with said conductor pipe so arranged and proportioned that said conductor pipe is universally movable relative to said base member whereby said conductor pipe maintains substantially vertical alignment irrespective of the slope of said formation on which said base member is landed.



3,885,624

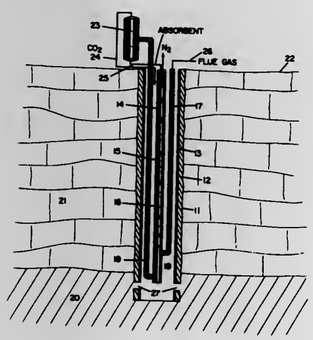
PROCESS FOR CARBON DIOXIDE MANUFACTURE

Larry P. Brown, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Division of Ser. No. 116,356, Feb. 18, 1971, abandoned. This application Jan. 21, 1974, Ser. No. 435,147

Int. Cl. E21b *43/00*

U.S. Cl. 166—57 **2 Claims**



1. Apparatus for the manufacture of carbon dioxide comprising:

a. a well drilled into the earth,

b. a first tubing string hung within the well,

c. a flue gas generating means located at the surface for producing carbon dioxide by burning a carbonaceous material,

d. a second tubing string leading from said generating means into the lower portion of said first string,

e. vaporizer means for separating carbon dioxide from an absorbent therefor, said vaporizer having a carbon dioxide removal line leading therefrom and an absorbent removal line leading therefrom into said first string, and

f. a third tubing string which leads from the lower portion of said first tubing string into said vaporizer.

3,885,625

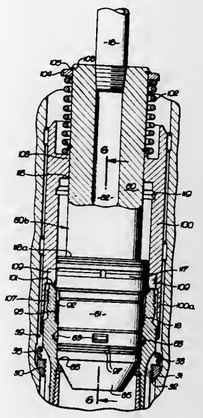
WELL CASING RUNNING, CEMENTING AND FLUSHING APPARATUS

Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Feb. 7, 1974, Ser. No. 440,339

Int. Cl. E21b *43/10*

U.S. Cl. 166—181 **24 Claims**



1. Hanger apparatus for supporting a tubular string extending into a well bore from a surrounding wellhead having a seat: comprising a hanger body adapted to be moved into engagement with the seat and having a seal portion spaced laterally inwardly from the wellhead to form a seal region therewith, said body having means at its lower portion for connection to the tubular string; a running tool connectible to a running string; means releasably connecting the hanger body to the running tool to enable the hanger body to be lowered to the wellhead seat; and flushing means carried by the running tool and operatively associated with said hanger body to direct a flushing fluid from the interior of said running tool to the exterior of said hanger body at said seal portion and seal region to flush such seal portion and region.

3,885,626

OIL RECOVERY PROCESS UTILIZING HIGHER ALKYL TOLUENE SULFONATE

Walter W. Gale, Houston; Thomas L. Ashcraft, Jr., and Rhoderick K. Saunders, both of Baytown, all of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Jan. 2, 1974, Ser. No. 430,338

Int. Cl. E21b *43/22*

U.S. Cl. 166—273 **19 Claims**

1. In a method of recovering crude oil from a subterranean formation wherein an aqueous surfactant system is injected into the formation through at least one injection means to displace crude oil in the formation toward at least one production means, the improvement wherein the surfactant of said aqueous surfactant system is a $C_{12\text{-}20}$ alkyl toluene sulfonate.

3,885,627

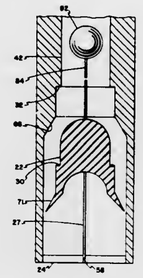
WELLBORE SAFETY VALVE

Holland J. Berry, and David W. Lewis, Richardson, both of Tex., assignors to Sun Oil Company, Philadelphia, Pa.

Division of Ser. No. 128,290, March 26, 1971, Pat. No. 3,739,845. This application June 1, 1973, Ser. No. 365,892

Int. Cl. E21b *43/12*

U.S. Cl. 166—224 A **3 Claims**



1. Safety apparatus for closing of well pipe extending from the earth surface down into earth formations where the safety apparatus operates to close in the well in response to abnormal well conditions comprising: a plug member positioned in the well pipe and located below the earth surface a valve seat spaced from and located near the plug member; means for retaining the plug in a position spaced from the valve seat, said retaining means having a two part retaining member held together by a shear pin, and means for releasing the plug from the retaining means said releasing means being a velocity float mechanically connected to the retaining member and related shear pin.

3,885,628

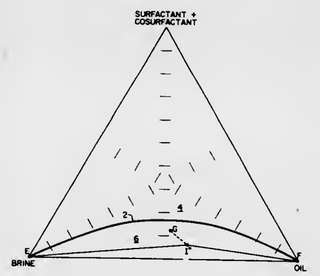
RECOVERY OF OIL USING MICROEMULSIONS

Ronald L. Reed; Robert N. Healy; Donald G. Stenmark, and Walter W. Gale, all of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Jan. 2, 1974, Ser. No. 430,362

Int. Cl. E21b *43/22*

U.S. Cl. 166—252 **59 Claims**



1. A method of recovering crude oil from a subterranean formation having one or more injection means in fluid communication with one or more production means which comprises injecting into said formation through said injection means a first liquid slug, then injecting into said formation through said injection means a second liquid slug, said slugs being mutually immiscible and at least one of said slugs being a microemulsion, to displace crude oil in said formation toward said production means; driving said slugs through said formation by injection of a driving fluid; and recovering crude oil through said production means.

3,885,629

METHOD AND ASSEMBLY FOR CONTROLLING BLOW-OUTS IN OIL WELLS

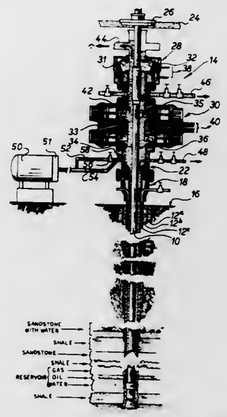
Brian Richard Erb, 4469 Melrose St., Montreal 261, Quebec, Canada

Filed July 27, 1972, Ser. No. 275,462

Claims priority, application Canada, Aug. 5, 1971, 119937

Int. Cl. E21b *43/24*

U.S. Cl. 166—302 **1 Claim**



1. A method of sealing off an exploitory well for the production of oil and gas, said well having a well-head including a core through which extends a drill pipe, comprising the steps of introducing by pumping down the drill pipe liquid carbon dioxide at a given rate of flow to a desired height in said drill pipe; pumping in said drill pipe above said carbon dioxide an alcohol substance; and pumping in said drill pipe over said alcohol substance mud to thereby prevent the egress of oil and gas resulting from the blowout and to prevent ground fracturing adjacent the well.

3,885,630

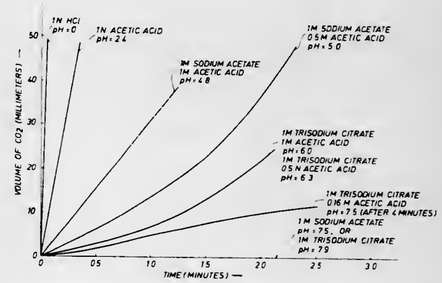
BUFFER-REGULATED CARBONATE ACIDIZATION

Edwin A. Richardson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 24, 1974, Ser. No. 436,289

Int. Cl. E21b *43/27*

U.S. Cl. 166—307 **8 Claims**



8. A process for acidizing a remotely-located fluid-contactable acid-reactive material which process comprises:

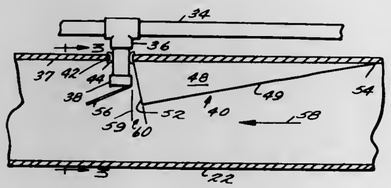
flowing fluid into contact with the material to be acidized; and

including in that fluid an aqueous solution which, at the time it is flowed into the remote location, consists essentially of a solution of enough water-soluble weak acid to acidize a significant amount of the acid-reactive material and enough water-soluble weak acid salt to provide a ratio of weak acid to weak acid salt that maintains the pH of the solution at a relatively high level and maintains the concentration of ionized weak acid at a relatively low level such that the rate of acidization of the acid-reactive material is relatively low.

3,885,631
FIRE SUPPRESSING SYSTEM

Kenneth L. McBride, Box 855 Taylors, Greenville, S.C. 29687

Filed Apr. 19, 1974, Ser. No. 462,547
Int. Cl. A62c *35/36*
U.S. Cl. 169—11 **8 Claims**



1. In a material conveying system of the pneumatic type having hollow duct means for conveying material by means of a fluid current therethrough,

fire suppressing means including a plurality of dispensing means for a fire suppressing gas each disposed at spaced-apart locations within said duct means,

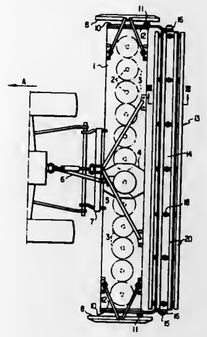
a plurality of baffle means for deflecting material being conveyed through said duct means around a said gas dispensing means, each of said baffle means including a base portion, a said baffle means being securely mounted on the interior of said duct means with said base portion disposed immediately upstream of a said gas dispensing means, each of said baffle means having surfaces extending from said base portion in an upstream direction with said surfaces converging substantially at a point.

3,885,632
SOIL COMPRESSING ATTACHMENTS FOR IMPLEMENTS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed June 26, 1973, Ser. No. 373,881
Claims priority, application Netherlands, June 27, 1972, 7208816
Int. Cl. A01b *49/00, 21/06*
U.S. Cl. 172—68 **17 Claims**

1. A soil compressing attachment for travel over the ground comprising a roller rotatably mounted on a horizontal axis, said roller including movably mounted peripheral parts, said parts comprising two spaced apart elongated ground engaging elements mounted on rockable arms, said arms extending substantially parallel to a plane which extends perpendicular to the axis of rotation of said roller, said arms having ends and at least one pivot pin between said ends connected to support means on said roller, said elongated elements extending substantially parallel to one another and said elements being connected to said arms on opposite sides of said pivot pin, said arms and said elements being rockable about an axis defined

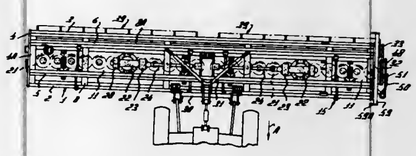


by said pivot pin and said axis extending in a direction substantially parallel to the axis of rotation of said roller.

3,885,633
SOIL CULTIVATING IMPLEMENTS OR HARROWS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland; Ary van der Lely, 10, Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

Filed June 14, 1973, Ser. No. 369,907
Claims priority, application Netherlands, Apr. 18, 1973, 7305416
Int. Cl. A01b *33/06*
U.S. Cl. 172—68 **28 Claims**

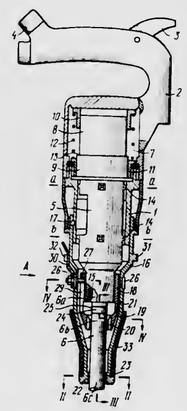


1. A soil cultivating implement comprising an elongated supporting frame and two groups of soil-working members, each said group being mounted on a corresponding transverse frame portion and each group comprising soil-working members rotatably supported on upwardly extending shafts by said corresponding frame portion, said shafts being arranged in a row and driving means being in driving engagement with the soil-working members of each group, coupling means at the forward side of said elongated supporting frame, said coupling means being connectable to the rear of a prime mover, said supporting frame extending across the transverse width of the implement to bridge said transverse frame portions, said transverse frame portions each being pivotably connected to the supporting frame through parallelogram linkage means, said linkage means making each group independently pivotable with respect to the other group and movable in substantially vertical directions on its corresponding transverse frame portion.

3,885,634
PNEUMATIC HAMMER

Albert Adolfovich Goppen, ulitsa Narodnogo opolchenia, 22, korpus 3, kv. 95; Igor Vladimirovich Nikolaev, ulitsa Fadeeva, 5, kv. 37, both of Moscow; Iosif Fadeevich Vysotsky, Vladimirovsky pereulok, 5, kv. 44; Mikhail Maximovich Zaslavsky, Vladimirovsky pereulok, 4, kv. 4, both of Tomsk; Nikolai Alexandrovich Klushin, ulitsa Narodnaya 1, kv. 23; Anatoly Mikhailovich Petreev, ulitsa Sibiryakov-Gvardeitsev, 8, kv. 59, both of Novosibirsk; Lidia Mikhailovna Dronova, ulitsa Kalarash, 5, kv. 68, Ljubertsy Moskovskoi; Anatoly Ivanovich Lednikov, Korovinskoe shosse 9, korpus 2, kv. 51; Jury Alexandrovich Grishenkov, Novye Cheremushki kvartal 34a, korpus 1, kv. 73, both of Moscow, and Jury Mikhailovich Bashlykov, ulitsa Kartasheva, 31B, kv. 18, Tomsk, all of U.S.S.R.

Filed May 23, 1974, Ser. No. 472,858
Int. Cl. B25d *9/00*
U.S. Cl. 173—104 **6 Claims**

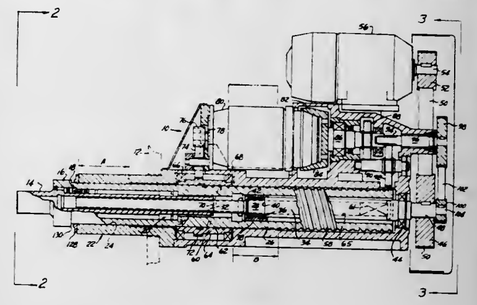


1. A pneumatic hammer comprising: a casing; a barrel in said casing, said barrel being axially movable relative to said casing; a working tool mounted in the front portion of said barrel, said working tool having a shank; an air-distribution device and an impact mechanism with a hammer piston in said barrel, said air-distribution device and impact mechanism ensuring reciprocation of said hammer piston imparting blows at the shank of said working tool under the action of compressed air; a guide bush fixed in the front portion of said barrel, the shank of said working tool being received in said guide bush; a hood mounted on the front portion of the hammer; means preventing said working tool from falling out, said means comprising a lock in the form of a tubular member rotatably mounted on the front portion of said barrel; an end wall at the front end of said lock, said end wall having an non-circular opening; said hood being rotatably mounted on said casing and embracing said lock so as to form an annular space therebetween; an end wall at the front end of said hood, said end wall having a non-circular opening; a first portion of said working tool adjacent to the shank thereof, said first portion having a shoulder, the cross-sectional shape of said shoulder corresponding to the shape of the opening of said end wall of said lock, whereby, upon a relative angular rotation of said hood and lock, after said shoulder has been received in the opening of said lock, said working tool is held in said lock from falling out; a second portion of said working tool having a non-circular cross-sectional shape corresponding to the shape of the opening of said end wall of said hood so as to ensure an angular rotation of said working tool when in the operative position by rotating said hood; means for locking said working tool in the hammer, said means providing the fixing of the relative angular position of said hood and lock in the operative position at which the openings of said end walls of said hood and lock are not in register, whereby said working tool is positively held in said lock.

3,885,635
TWO-SPEED MECHANICAL QUILL FEED AND SPINDLE DRIVE MECHANISM FOR A MACHINE TOOL

Klaus Menzel, Orchard Lake, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 19, 1974, Ser. No. 462,286
Int. Cl.² B23Q *5/40;* **E21C** *5/02*
U.S. Cl. 173—146 **12 Claims**



1. A two-speed quill drive comprising:

a quill shaft mounted for sliding movement along its longitudinal axis;

a spindle shaft rotatably mounted for rotation with respect to said quill shaft, adapted to be carried therewith during said longitudinal movement of said quill shaft;

a first motor;

a second motor having an armature and an armature shaft connected to said armature;

means for producing longitudinal advancing movement of said quill shaft, said means including drive means drivingly connecting said second motor armature shaft and said quill shaft so as to cause said longitudinal movement of said quill shaft in response to rotation of said armature shaft;

means drivingly connecting said first motor and said spindle shaft so that said spindle shaft is rotated by said first motor; and

means drivingly connecting said second motor armature shaft and said first motor whenever said second motor is deenergized whereby said first motor is adapted to rotate said spindle shaft and is also adapted to longitudinally advance said quill shaft through said second motor armature shaft.

3,885,636
TERMINAL FOR LOW-TEMPERATURE CABLE

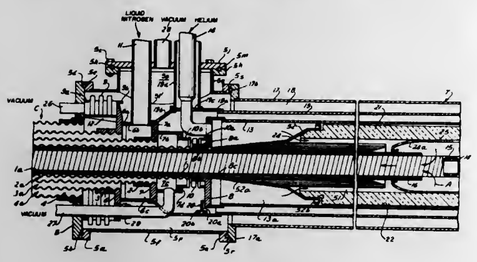
Ulrich Hildebrandt, Munich, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Oct. 9, 1973, Ser. No. 404,681
Claims priority, application Germany, Oct. 10, 1972, 2249560
Int. Cl. H01v *11/00*
U.S. Cl. 174—15 C **23 Claims**

1. A low-temperature system for the transmission of electrical energy comprising a cable having at least three coaxial corrugated ducts defining at least two annular compartments and a central compartment, a conductor extending through said central compartment, and a layer of electrical insulation disposed between said conductor and the wall of the innermost duct, a terminal disposed at one end of said ducts and defining a deep-cooling zone adjacent said ducts, a cool zone adjacent said deep-cooling zone and a warm zone adjacent said cool zone, the improvement wherein said terminal comprises:

respective conductor means electrically connected to said conductor and extending through said zones for transmission of electric current in series through the respective conductor means, said conductor means of said cool zone including an electrically conductive tube;

A sheath of electrical insulating material surrounding said conductor means at least in said deep-cooling zone and



defining an axial passage extending along said conductor means in said deep-cooling zone; and

means including a conduit held at ground potential communicating with said passage for conducting a cooling medium through the innermost duct around said conductor means through said deep-cooling zone and then through said electrically conductive tube.

3,885,637

BORING TOOLS AND METHOD OF MANUFACTURING THE SAME

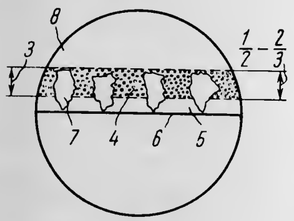
Vladimir Ivanovich Veprintsev, Chongarsky bulvar, 11, korpus 1, kv. 30; Lev Iosifovich Klyachko, B. Cheremushkinskaya ulitsa 2, kv. 234; Nikolai Andreevich Kudrya, Simferopolsky proezd 9, kv. 58; Evgeny Ivanovich Suslov, Krivorozhskaya ulitsa, 31, kv. 36; Gennady Petrovich Grishin, ulitsa Narodnogo opolchenia, 20, kv. 174; Anatoly Vasilievich Kolchin, Krivorozhskaya ulitsa, 31, kv. 61; Evgeny Vasilievich Funtikov, B. Cheremushkinskaya ulitsa, 2, korpus 1, kv. 127; Vladimir Fedorovich Shpak, 3 ulitsa Textilschikov, 20, kv. 8, and Vasily Andreevich Barkov, Varshavskoe shosse, 10, kv. 79, all of Moscow, U.S.S.R.

Filed Jan. 4, 1974, Ser. No. 430,940

Claims priority, application U.S.S.R., Jan. 3, 1973, 1862188

Int. Cl. E21b *9/36*

U.S. Cl. 175—329 **4 Claims**



1. A boring tool comprising: a body; a rock-destroying member secured to the body; a matrix of said rock-destroying member; a first metallic layer in said matrix arranged over a rock-destroying surface of the rock-destroying member; a second metallic layer in the matrix containing embedded fine abrasive grains and arranged internally relative to the first metallic layer; cutting elements comprising coarse abrasive grains which are located at the boundary of said two layers and penetrate at ½ – ⅔ in the matrix layer containing embedded grains, while the remaining portion of the coarse grains are located in the exclusively metallic layer of the matrix.

3,885,638

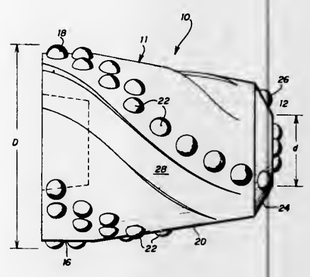
COMBINATION ROTARY AND PERCUSSION DRILL BIT

Sam C. Skidmore, 1513 Azteca Dr., Fort Worth, Tex. 76112

Filed Oct. 10, 1973, Ser. No. 405,115

Int. Cl. E21c *13/06*

U.S. Cl. 175—390 **10 Claims**



1. A combination rotary and percussion drill bit, comprising:

a. a substantially solid body having a relatively narrow and flat point which is adapted to make initial contact with the matter to be penetrated;

b. a substantially cylindrical base having one or more hardened inserts protruding radially therefrom, said base and its inserts being adapted to serve as a gauging member, and said base having both means against which torque forces may be applied and means against which axial forces may be applied, whereby the bit may be both rotated and driven axially forward;

c. a generally frustoconical sidewall section extending between the narrow point of the body and the larger cylindrical base thereof;

d. a plurality of hardened inserts mounted on the bit and protruding outwardly from the frustoconical surface thereof, said inserts being arranged substantially symmetrically in helical rows extending from the point to the base, and each row winding at least 120° around the bit as it traverses the distance from the point to the cylindrical base, and the protruding inserts in a given row being closely spaced to effectively establish an elevated ridge which is adapted to urge cuttings around and past the bit during rotary movement thereof, and the spacing between adjacent inserts being less than the width of said inserts; and

e. hardened means on the point for fracturing such brittle material as may be encountered during drilling.

3,885,639

MULTIPROPORTION BEAM SCALES FOR MEASURING EQUAL VOLUMES OF MATERIALS HAVING DIFFERENT SPECIFIC GRAVITIES

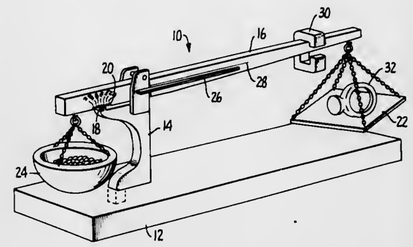
Robert B. McLarrin, 2495 Hillside Dr., Eureka, Calif. 95501

Filed Nov. 7, 1974, Ser. No. 521,669

Int. Cl. G01g *23/14, 1/18*

U.S. Cl. 117—172 **9 Claims**

1. A beam scales for directly measuring a volume for material which is equal to the volume of an object having a specific gravity different from that of the material, said scales comprising: a balance beam; first support means at one end of the beam for supporting the object; second support means at the other end of the beam for supporting the volume of material to be measured; a fulcrum support disposed intermediate the ends of the beam and so positioned relative to the first and second support means that the beam balances when the volume of material supported on the support means equals the volume of an object supported on the first support means.



3,885,640

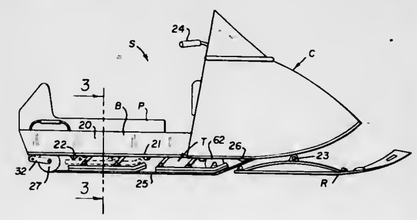
SLIDE ASSEMBLY FOR SNOWMOBILES

Louis A. Valentine, Aurora, and Henry L. Valentine, Boulder, both of Colo., assignors to Louis A. Valentine and Henry L. Valentine, both of Aurora, Colo.

Continuation-in-part of Ser. No. 7,540, Feb. 2, 1970, Pat. No. 3,637,265. This application Dec. 11, 1970, Ser. No. 97,172

Int. Cl. B62m *27/02*; **B62d** *55/10*

U.S. Cl. 180—5 R **10 Claims**



1. In combination with a snowmobile having a drive track mounted between forward drive wheels and rearward idler wheels, a slide track assembly adapted to engage the lower reach of the track between the drive and idler wheels to support the snowmobile thereon, and comprising:

a. a frame including a pair of longitudinally disposed members carried on the snowmobile, one at each side of the track, and transversely disposed pivot bars between the longitudinal members;

b. a plurality of longitudinally disposed slides below the frame and upon the lower reach of the track with one slide being at each side of the track;

c. inclined rocker arms at each side of the frame with one end of each arm pivotally connecting with a pivot bar and the other end of each arm pivotally connecting with a slide to permit the slide to move upwardly toward and downwardly away from the frame;

d. means associated with each rocker arm to bias the arms and slides thereon downwardly and away from the frame and thus support the snowmobile above the track and to permit vertical movements of the slides as when the snowmobile is moving over rough terrain;

e. the rocker arm connections with the pivot bars including a pivot sleeve fixedly attached to each rocker arm and carried upon its pivot bar, the pivot sleeves at one side of the frame being independent of the pivot sleeves at the other side of the frame, whereby the rocker arms and the slide at one side of the frame is permitted to move independently of the rocker arm and the slide at the other side of the frame so as to permit the snowmobile to tilt sideways;

f. clutch means interconnecting the pivot sleeves on a pivot bar whereby pivotal movement of the rocker arm at one side thereof will act against the rocker arm at the other side thereof, wherein the clutch means includes:

means to permit a predetermined degree of movement of the rocker arm and slide at one side of the frame with respect to the other side and to interlock the rocker arm and slides of both sides when the movement of one exceeds the said predetermined degree of movement.

3,885,641

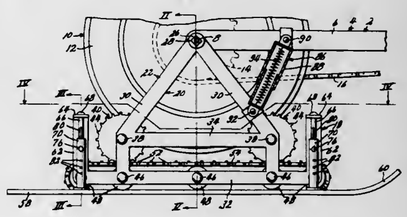
SKI ATTACHMENT FOR MOTORCYCLES

Walter L. Harris, 8804 W. 104th Ter., Overland Park, Kans. 66212

Filed Dec. 10, 1973, Ser. No. 423,145

Int. Cl. B62m *27/02*

U.S. Cl. 180—5 R **7 Claims**



1. For use in combination with a motorcycle having a main frame and a power driven rear ground-engaging wheel, a ski attachment comprising:

a. an attachment frame including means for mounting it on said main cycle frame,

b. an endless traction belt carried operably by said attachment frame so as to be disposed beneath said rear cycle wheel, and having a normally horizontal lower reach,

c. a ski having an aperture formed therethrough,

d. attaching means connecting said ski to said attachment frame so that said belt is disposed within the aperture of said ski and its lower reach engages a snow surface beneath said ski,

e. at least one drive roller carried rotatably by said attachment frame, said drive roller including a friction portion engageable with said cycle wheel whereby said roller is turned by rotation of said wheel, and a sprocket wheel rotatable with said friction portion, and

f. a flexible sprocket chain affixed peripherally to said traction belt and meshed with said sprocket wheel.

3,885,642

FINAL DRIVE MOUNTING FOR A TRACK-TYPE VEHICLE

Calvin L. Miller, Aurora, and Harvey A. Knell, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 20, 1974, Ser. No. 471,207

Int. Cl. B62d *55/08*

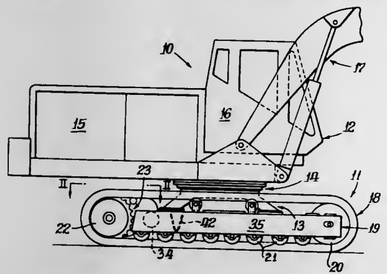
U.S. Cl. 180—9.2 R **8 Claims**

1. A track-type vehicle disposed for movement along a longitudinal axis thereof comprising

a track roller frame having a pair of laterally spaced outer and inner rails,

a final drive having a housing, and

mounting means securing said housing to said frame comprising first connection means securing said housing to an



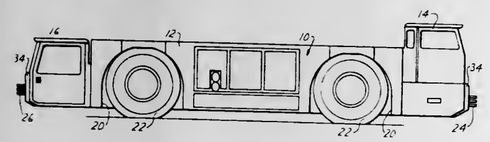
inner side of said outer rail and second connection means securing said housing to a rearward end of said inner rail.

3,885,643

ELEVATABLE CAB FOR VEHICLES

Edgar R. Goodbary, Tulsa, Okla., assignor to Unit Rig & Equipment Co., Tulsa, Okla.

Filed July 31, 1970, Ser. No. 59,903
Int. Cl. B62d *33/06*
U.S. Cl. 180—89 R **1 Claim**



1. In combination with a steerable vehicle having a substantially horizontal platform secured thereto, a cab section movably secured to the vehicle and disposed above the platform, the cab section comprising an outer housing having a substantially vertical backwall secured thereto and operator controls and control lines disposed therein, horizontal shoulder means provided on the upper portion of the vertical backwall, elongated power fluid piston means having one end thereof pivotally secured to the shoulder means and the opposite end being pivotally secured to the platform for transmitting reciprocal vertical movement to the cab section, vertically disposed track and roller means cooperating between the backwall of the cab section and the vehicle for guiding the vertical movement of the cab section and for providing cantilever support to the cab section when said cab section is raised above the platform, and including an elongated channel means pivotally secured at one end thereof to the lower portion of the cab section, the opposite end of said channel means being slidably disposed against the platform for the protection of the operator control lines extending from the cab section to the vehicle during the raising and lowering of the cab section.

3,885,644

VARIABLE GAIN VEHICLE SPEED CONTROL SYSTEM

Helmut G. Seidler, Schwenksville, and James T. Walker, Norristown, both of Pa., assignors to Philco-Ford Corporation, Blue Bell, Pa.

Filed Dec. 10, 1973, Ser. No. 423,549
Int. Cl. B60k *31/00*
U.S. Cl. 180—105 E **2 Claims**

1. A vehicular speed control system for use in a vehicle having a throttle controlled engine and vehicle speed sensing means, said system comprising:

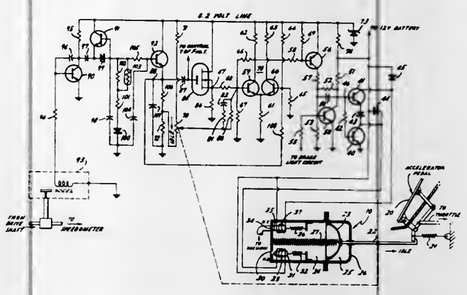
electromechanical actuator means for operating said throttle to vary the speed of said vehicle through the action of said engine,

means for generating a first electrical quantity in response to the position of said actuator and in direct proportion to the motion that will result in throttle advance,

an amplifier adapted to operate said actuator,

means for applying at least a portion of said first electrical quantity to said amplifier,

means for connecting said amplifier to said actuator in a polarity sense to cause said first electrical quantity to be varied by the action of said actuator and said throttle in a direction which will oppose any change in said first electrical quantity caused by changes in speed of said vehicle,



means for generating a second electrical quantity proportional to the speed of said vehicle, said generating means producing a voltage that varies in linear proportion to vehicle speed,

means for establishing and storing a third electrical quantity representative of a desired vehicle speed,

means for comparing said second and said third electrical quantities to produce an error quantity representative of the difference between desired and actual vehicle speeds,

means for applying said error quantity to said amplifier in a polarity sense that will operate said system to reduce said error, and

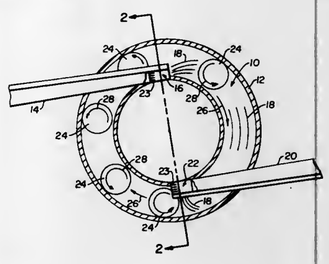
means for applying a portion of said second electrical quantity to said amplifier in a polarity such that it opposes said first electrical signal.

3,885,645

DYNAMIC MUFFLER

Roy M. Harrigan, Bromley Mountain Rd., Manchester, Vt. 05254

Filed Apr. 10, 1974, Ser. No. 459,775
Int. Cl. F01n *1/08*
U.S. Cl. 181—49 **12 Claims**



1. A muffler comprising:

A. a chamber in the form of a closed loop path having a given cross-sectional area,

B. an inlet to said chamber for exhaust gas,

C. an outlet from said chamber for the exhaust gas, and

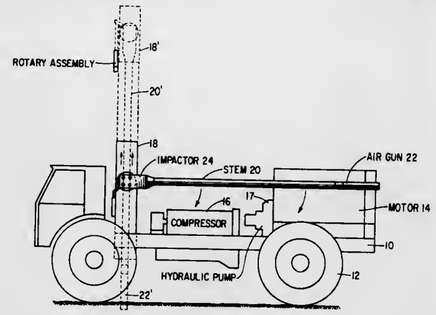
D. a plurality of objects rollable in said chamber around said closed loop path, said objects being dimensioned to substantially encompass the cross-sectional area of said path.

3,885,646

DRY LAND AIRGUN IMPLEMENTATION SYSTEM

Joseph W. Knight, and Kennis W. Gilbert, both of New Orleans, La., assignors to Amoco Production Company, Tulsa, Okla.

Filed July 12, 1971, Ser. No. 161,577
Int. Cl. G01v *1/04*
U.S. Cl. 181—114 **6 Claims**



5. An apparatus for initiating a seismic signal in the earth which comprises:

a vehicle;

an extensible mast having a first portion extendable and retractable in the vertical direction and a non-extendable portion which is supported by said vehicle in a fixed position relative to said vehicle;

a stem means;

pivot means connecting said stem means to said first portion of said extensible mast, said stem means not otherwise connected to said vehicle;

means to rotate said stem means about said pivot means in a vertical plane; and

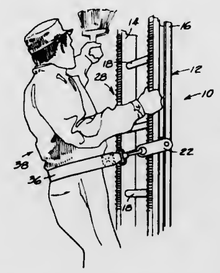
a seismic source connected to said stem means.

3,885,647

CLIMBING SAFETY DEVICE

Anthony L. Acosta, 1645 Burrows St., San Francisco, Calif. 94134

Filed July 5, 1973, Ser. No. 376,539
Int. Cl. A62b *35/00*
U.S. Cl. 182—8 **6 Claims**



1. A climbing safety device for use with an upwardly extending member for preventing the fall of the user thereof as said user ascends or descends along the upwardly extending member comprising:

means interconnecting the user and the upwardly extending member and comprising a bar member connected at one end to the user and pivotally connected at the other end to the upwardly extending member and movable therealong as the user ascends and descends along the upwardly extending member;

the upwardly extending member defining a plurality of depressions along its length;

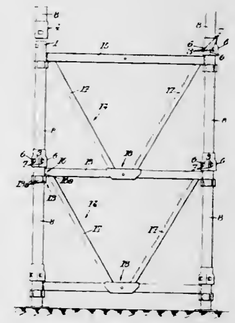
engaging means fixed to the bar member intermediate its ends and seatable in any one of said depressions to engage the surface defining said depression upon predetermined downward movement of the user which pivots the bar member downwardly relative to the upwardly extending member to limit downward movement of the bar member, and user relative to the upwardly extending member; the bar member normally being disposed in an attitude relative to the upwardly extending member to allow relatively free movement of the user and the bar member therewith upwardly and downwardly along the upwardly extending member with the engaging means being removed from and free of said depressions.

3,885,648

BAYONET - TYPE CONNECTION

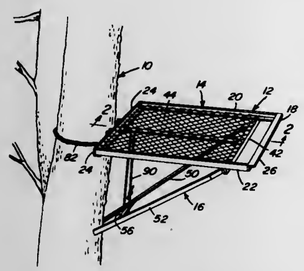
Bernard Beziat, Carrieres sur Seine, France, assignor to Societe Nouvelle des Echafaudages Tubulaires Mills, Le Bourget, France

Filed Jan. 8, 1974, Ser. No. 431,744
Claims priority, application France, Jan. 31, 1973, 73.03425
Int. Cl. E04g *1/06*
U.S. Cl. 182—178 **7 Claims**



1. In a bayonet-type connection comprising a male element formed by a cylindrical tubular section having at least one radial catch, and a female element adapted to receive such male element and produce an axial locking effect once the male element has been suitably encased in the female element and a relative rotary movement has taken place between the male and female elements the improvement that the female element is formed by a tubular section having at least one deformed zone extending axially from one of the ends of such section to a central region, and at least one perforate zone disposed between the central region and such end, the perforate zone being offset in relation to the deformed zone, the deformed zone radially outwardly enlarging the tubular section to allow the passage of the radial catch of the male element, and the perforate zone having an opening such that the radial catch takes up position therein when the relative rotary movement has taken place between the male and female elements.

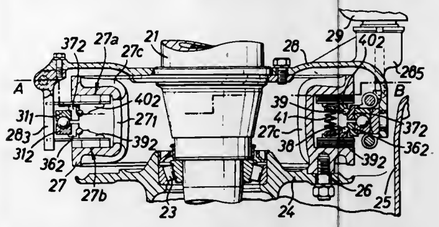
3,885,649
HUNTER'S TREE STAND
John R. Damron, 1013 Gulon St., Ottawa, Ill. 61350
Filed June 18, 1974, Ser. No. 480,498
Int. Cl. A47c 9/10
U.S. Cl. 182—187 8 Claims



1. A hunter's tree stand including a generally horizontal support platform including opposite inner and outer ends, an elongated brace structure pivotally supported at one end from the outer end portion of said platform for swinging relative to the latter about an axis extending transversely of said brace structure and said platform between a first collapsed position with said brace structure closely underlying and substantially paralleling said platform and the other end of said brace structure projecting outwardly of the inner end of said platform and a second operative positon with said other end of said brace structure inclined downwardly from said platform and terminating downwardly in generally vertical alignment with the inner end of said platform, means anchored to said inner end of said platform and adapted to be secured about a tree trunk against which said inner end of said platform is abutted, the other end of said brace structure including means adapted to frictionally engage a lower portion of said tree trunk below said platform, said brace structure including interconnected longitudinal opposite side members, the ends of said opposite side members adjacent the outer end of said platform including transverse pivot pin portions projecting laterally outwardly therefrom toward each other and pivotally supported from the outer end portion of said support platform, said outer end portion of said support platform including a transverse angle member, the opposite end portions of said angle member including angle member sections opening theretoward and secured to the open side of said transverse angle member a spaced distance inwardly of the opposite ends of said transverse angle member, the adjacent ends of said pivot pins being received between the confronting surfaces of said angle member sections and the opposing surfaces of the opposite end portions of said transverse angle member, and abutment flanges carried by the opposite end portions of said transverse angle member and closely opposing the remote ends of said pivot pins.

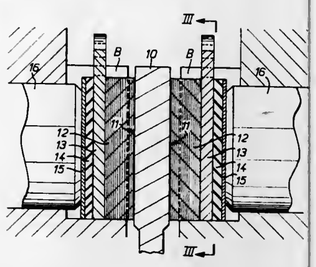
3,885,650
SPREADING DISC BRAKE WITH REMOVABLE SHOES
Hermann Klaue, Tour d'Ivoire 24e, 1820 Montreux, Switzerland
Continuation-in-part of Ser. No. 73,566, Sept. 18, 1970, abandoned. This application Sept. 12, 1972, Ser. No. 288,287
Claims priority, application Germany, Dec. 2, 1969, 1960286; Dec. 27, 1969, 1965171; Dec. 27, 1969, 1965170
Int. Cl. F16d 55/04
U.S. Cl. 188—71.4 21 Claims

1. A brake assembly comprising:
a brake housing comprising an annular member having an annular gap of channel-like cross-section open on its radially exterior side, the opposite inner sides of said channel-like gap providing annular braking surfaces, said brake housing being attachable to be rotatable jointly with a wheel of an assembly to be braked;
pairs of segmental brake shoes disposed from the radially exterior side into the channel-like gap having friction faces facing the adjacent braking surfaces, each of said pairs of brake shoes being attached to a member attached to a carrier adapted to be secured to a stationary part of the assembly, said members extending over the channel-like gap, and at least two oppositely disposed members movable with respect to said carrier for uncovering the



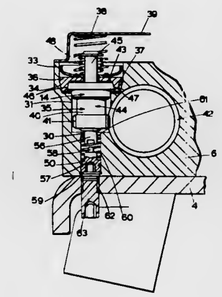
portion of the channel-like gap over which said members extend, said brake shoes being insertable into the gap from the radially exterior direction after partly uncovering said gap with the movable members without dismantling the brake assembly;
brake shoe operating means separate from the brake shoes comprising actuator rings and actuating means for spreading apart said rings which are arranged between the pairs of brake shoes including linking members for causing said shoes to contact the braking surfaces of the brake housing.

3,885,651
BRAKE ASSEMBLY
Jean Odier, Antony, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed Apr. 30, 1973, Ser. No. 355,490
Int. Cl. F16d 65/00
U.S. Cl. 188—73.5 9 Claims



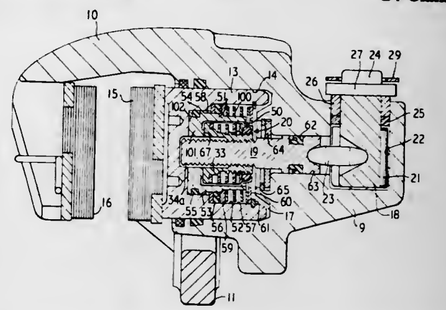
1. A brake assembly comprising a rotatable element having a braking surface thereon, a brake shoe, mounting means for mounting the brake shoe opposite the braking surface, said brake shoe comprising a composite flat platelike sandwich structure including a rigid support plate and a brake lining adapted to be brought into contact with the braking surface and a flat damping element of heat-resistant butyl rubberlike material with visco-elastic properties and a Young's modulus of about 10^7 N/m² thereby to damp a predetermined frequency of vibration of the brake shoe and a covering element adjacent to the damping element and having steel-like elastic properties, and resilient means operatively located between a lateral edge of the brake shoe and the mounting means, said resilient means having a stiffness of about 5×10^6 N/m thereby to channel the frequency range of audible brake shoe vibrations into a narrowed range approaching said predetermined frequency of vibration which the damping element is adapted to damp thereby reducing noise produced by the vibrations.

3,885,652
AUTOMATIC ADJUSTERS FOR VEHICLE BRAKES
Richard Gerald Meade Taylor, Solihull, England, assignor to Girling Limited, Birmingham, England
Filed Jan. 4, 1974, Ser. No. 430,691
Claims priority, application United Kingdom, June 8, 1973, 27351/73
Int. Cl. F16d 65/56
U.S. Cl. 188—196 D 6 Claims



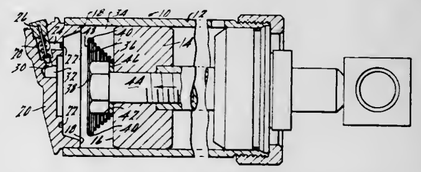
1. An automatic slack adjuster for a vehicle brake having a friction member, and a rotatable braking member with which said friction member is adapted to engage, said slack adjuster comprising a strut assembly having a first part, a second part, and a non-reversible screw-threaded connection between said first and second parts, rotatable adjusting means for rotating said parts relatively to each other to increase the effective length of said strut assembly to maintain at a substantially constant value braking clearance between said friction member and said braking member, a first helical gear on one of said first and second parts, a second helical gear on said adjusting means in mesh at all times with said first helical gear, and means defining between said gears a degree of back-lash of a predetermined value equal to said braking clearance and a normal brake applying movement, said adjusting means normally being located in a first datum position but rotatable into a second datum position only when movement of said strut assembly in a brake applying direction exceeds a said predetermined value to take-up said back-lash, whereafter movement of said strut assembly in an opposite direction first takes up the back-lash, and then said gears engage to cause the said one part to rotate with respect to said adjusting means which is held fast, and with respect to the other part thereby increasing the effective length of said strut assembly, wherein said adjusting means comprises a two-part relatively rotatable assembly of which one part comprises an annular plate having a central opening and an outer peripheral edge defining a clutch surface for engagement with a complementary clutch surface in said housing, and of which the other part comprises a head, and a stem carrying said head and projecting through said opening in said plate, an inner face of said plate and an outer face of said head defining clutch surfaces, and a spring acting between said plate and an end of stem projecting from said plate to urge said clutch faces into friction engagement, a re-set member for rotating said adjusting means manually being engagable with an end of said head remote from said stem whereby to rotate at least said head and said stem with respect to said housing.

3,885,653
BRAKE ADJUSTERS
Glyn Phillip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Birmingham, England
Filed Sept. 27, 1973, Ser. No. 401,198
Claims priority, application United Kingdom, Nov. 1, 1972, 50259/72
Int. Cl. F16d 65/56
U.S. Cl. 188—196 D 24 Claims



1. In a hydraulic brake actuator which has two components relatively movable apart by the application of hydraulic pressure therebetween, an automatic slack adjuster which comprises an auxiliary stepped piston having first and second external cylindrical surfaces of larger and smaller diameter respectively and having a hollow interior, first and second sealing means slidably sealing one of the actuator components to said first and second cylindrical surfaces such that the hydraulic pressure acts on said one actuator component and said auxiliary piston in opposite directions so that said auxiliary piston is urged towards the other actuator component by the hydraulic pressure, a spring biassing said auxiliary piston away from said other actuator component, an adjuster member associated with said other actuator component, and an adjuster mechanism disposed essentially in said hollow interior of said auxiliary piston and operative between said one actuator component and said adjuster member, said adjuster mechanism being automatically adjustable responsively to relative axial movement between said auxiliary piston and said other actuator component in excess of a desired movement.

3,885,654
DECELERATION DEVICE AND VALVE MECHANISM
Vernon O. Hauswirth, Madison Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Apr. 5, 1974, Ser. No. 458,379
Int. Cl. F16f 9/34, 9/48
U.S. Cl. 188—284 2 Claims



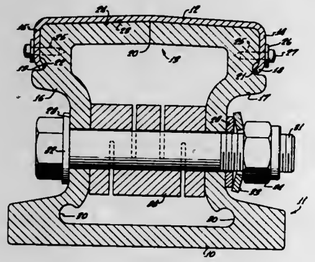
1. An improved deceleration device for a hydraulic cylinder which has a piston mounted for movement in the cylinder between terminal positions, the deceleration device comprising:
an end cap of circular shape sealing off the end of the cylinder adjacent which the piston is positioned when in one of its terminal positions;
an annular groove formed on the surface of the one end cap facing into the cylinder, the groove being symetrical about the central axis of the end cap;

a hydraulic passage forming a portion of the end cap;
passage means for connecting the annular groove to the hydraulic passage;
a ring shaped plate having a dimension between an inner diameter and an outer diameter thereof greater than the width of the annular groove so that the groove is covered when said ring shaped plate is in covering relationship therewith;
at least one small opening through said ring shaped plate;
a spirally wound spring secured at one end to the face of the piston and at the other end to the ring shaped plate, the spirally wound spring spacing the ring shaped plate a sufficient distance from the piston that the ring shaped plate covers the annular groove prior to the piston reaching the end of its travel to its terminal position;
whereby when the piston is being moved towards its terminal position the annular groove conducts fluid within the cylinder in the volume between the end cap and the piston to the passage means for exhausting of that fluid from the cylinder, and whereby: when the ring shaped plate covers the annular groove, fluid within the cylinder is exhausted initially from the volume through the small opening in the ring shaped plate and thence to the passage means thereby reducing the fluid exhausting rate from the cylinder to cause a deceleration of the piston as it approaches its terminal position.

3,885,655
HIGH CONDUCTIVITY LIGHTWEIGHT THIRD RAIL FOR ELECTRIC RAILWAYS

James A. Corl, San Carlos, and Ronald J. Kilburg, Belmont, both of Calif., assignors to The Rucker Company, Oakland, Calif.

Filed Apr. 27, 1973, Ser. No. 355,050
Int. Cl. B60m *1/30*
U.S. Cl. 191—29 10 Claims

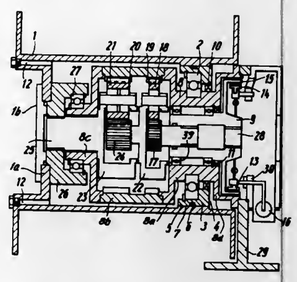


1. A composite electrical conductor comprising:
a hollow rail made of lightweight electrically conductive material such as aluminum, the rail having a base, two sides integrally formed with the base and an upper wall integrally attached to the sides, the upper wall being formed in two segments which are slightly spaced from each other when the rail is in an unstressed condition;
a U-shaped cap formed of an electricaly conductive material such as steel which wears better than aluminum, the cap being dimensioned to fit onto the upper portion of the rail and stress the rail so as to substantially close the gap between the two segments of the rail upper wall and introduce pressure between the cap and the rail to assure good electrical contact between them, the cap and the rail being sufficiently springy such that they remain under stress so as to continue good electrical contact, means forming rounded internal grooves at the junction between the sides and base of the rail which facilitate moving the walls to close the gap when the cap is snapped onto the rail; and
means maintaining the cap on the rail in addition to the spring forces of the material.

3,885,656
WINCH WITH GEARING AND BRAKE INSIDE OF A CLOSED DRUM

Wilhelm Michling, Hattingen, and Heinz Rauscher, Witten, both of Germany, assignors to Mannesmann-Meer AG, Monchen-Gladbach, Germany

Filed Jan. 28, 1974, Ser. No. 437,113
Claims priority, application Germany, Jan. 26, 1973, 2304370; Feb. 6, 1973, 7304814
Int. Cl. F16h *57/00*; B66d *1/30*
U.S. Cl. 192—4 R 4 Claims



1. In a winch for ropes or cable, having a drum receiving and being connected to for being driven by at least one planetary gear, further having a brake for the drum, the drum being journalled by means of ball or roller bearings disposed to both sides (axially) of the ring gear of the planetary gear, a driving shaft journalled in a stationary part of the winch to which is also connected the said ring gear for remaining stationary therewith, the stationary part of the winch extending into the drum, circumscribing the driving shaft, the improvement comprising:
a supporting annulus having a cylindrical, sleeve-like portion bearing against but not being secured to the drum, in a cylindrical interface, there being an annular groove in said sleeve, holding a sealing ring which bears against the drum at said interface to provide sealing between the annulus and the drum;
an outer race as part of one of said bearings being mounted to the inside of said sleeve;
an inner race of said one bearing being disposed on the stationary part as extending into the drum;
the supporting annulus having an inwardly directed flange on the side of the said one bearing facing axially the exterior of the drum;
a first oil-tight, radial sealing ring between said flange and said stationary part; and
a second oil-tight, radial sealing ring between said stationary part and said shaft, said first and second sealing ring together with said annulus, said stationary part and said shaft closing one axial end of said drum.

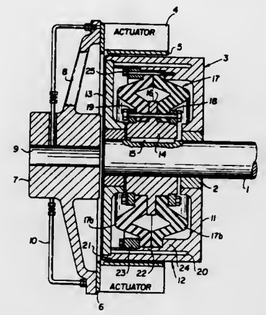
3,885,657
FRICTION CLUTCH

Hisaharu Sato, Seiei-So, No. 50-16 Tsukakoshi, Warabi, Saitama Prefecture, Japan

Filed Sept. 28, 1973, Ser. No. 401,899
Int. Cl. F16d *13/10*, *3/76*
U.S. Cl. 192—79 6 Claims

1. In a clutch having an input member and an output member mounted for rotation relative to each other about a common axis, a drum element connected to one of said members for joint rotation and having an engagement face of circular cross section about said common axis, a plurality of friction shoes mounted on the other member in circumferentially spaced relationship, and actuating means for moving said friction shoes into motion transmitting frictional engagement with said engagement face, the improvement which comprises:

a. said drum element including a circumferential wall having two annular portions offset radially relative to said common axis,
1. one of said portions carrying said engagement face,
2. the other portion being radially spaced from said one member,
3. the two portions of said circumferential wall defining therebetween at least one cavity extending about said common axis in an arc of at least 180°; and

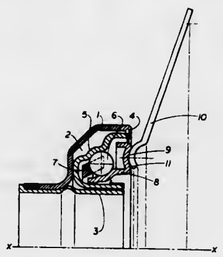


b. a ring of elastomeric material radially interposed between said other portion of said circumferential wall and said one member, respective radial portions of said ring being fixedly fastened to said one member and to said other portion of said circumferential wall for transmitting torque between said drum element and said one member, said at least one cavity impeding the transmission of the heat generated by frictional engagement of said shoes with said engagement face to said ring.

3,885,658
SYSTEM FOR MOUNTING CLUTCH RELEASE BEARINGS

Horst Ernst, Eltingshausen; Manfred Brandenstein, Aschfeld, and Armin Olschewski, Schweinfurt, all of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands

Filed Oct. 11, 1973, Ser. No. 405,404
Claims priority, application Germany, Oct. 14, 1972, 2250455
Int. Cl. F16d *19/00*, *11/06*
U.S. Cl. 192—98 6 Claims

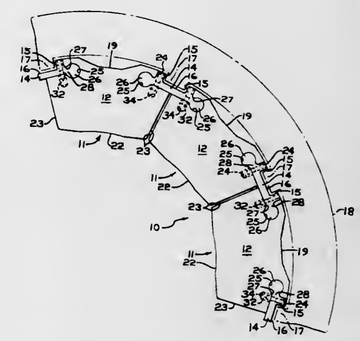


1. The combination of a clutch release bearing and a clutch release lever mechanism, comprising an annular first race member, the axial frontal end of which has a curved surface, and a clutch release mechanism having at least one lever, the end of which engages said frontal surface of said first race member said end having a surface curved in cross section to conformingly mate with the frontal surface of said first race member, the radius of the curvature of one of said curved surface being larger than the other whereby a radial force is exerted to center the bearing with respect to the lever mechanism.

3,885,659
SEGMENTAL FRICTION MEMBER FOR BRAKE OR CLUTCH

Billy N. Smith, Troy, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sept. 24, 1973, Ser. No. 400,014
Int. Cl. F16d *13/64*
U.S. Cl. 192—107 R 5 Claims

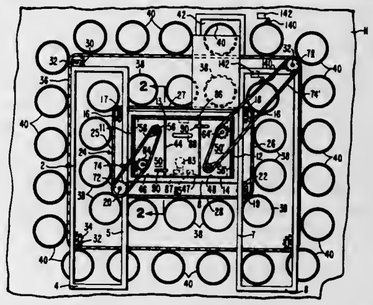


1. A segmented friction member for a brake or clutch having a series of annularly disposed friction segments forming an annular friction face, a torque link member connecting adjacent friction segments at positions near the radially outer edges, said torque link having locking portions movable into interlocked positions with said adjacent friction segments, spline driving means on said torque link engageable with an associated brake or clutch structure, said locking portions of said torque link having shaped end portions and said adjacent friction segments having shaped slots for retaining said end portions in locked relationship, said shaped end portions being movable axially of said annular friction face into said shaped slots and pin means extending through said torque link and into said adjacent friction segments to retain said torque link in said interlocked position.

3,885,660
VENDING MACHINE WITH PLURAL CONVEYORS

Howard L. Burks, Lake Park, Fla., assignor to Jack Follrath, Jensen Beach, Fla.

Filed Nov. 6, 1972, Ser. No. 304,094
Int. Cl. G07f *5/12*, *11/58*
U.S. Cl. 194—9 T 24 Claims



1. A product dispensing machine including a plurality of conveyors, each including means for delivering like or different products to a dispensing station, there being at least two

said conveyors, said two conveyors each comprising an endless conveyor, one of which endless conveyors is surrounded by the other, said two conveyors being supported on drive elements which are spaced in vertical planes, means for the independent drive of said two conveyors through said drive elements, to move a selected one of said conveyors to successively present the products carried thereby to its dispensing station, and a framework commonly supporting said conveyors and providing a receptacle for said drive means which is central to and surrounded by said two conveyors.

22. A coin meter for a vending machine of the type having a dispensing mechanism responsive to a signal from said coin meter upon the depositing therein of the proper number of correct coins, a start switch to generate said signal, said coin meter providing a coin channel leading downwardly and being so configured that the last of the total correct coins required to operate said vending machine closes said start switch to produce said signal to actuate said dispensing means, a horizontally oriented disc-like member underlying said coin channel whereby to retain coins therein, said disc-like member having at least one aperture therein which when aligned with said coin channel allows coins to drop therefrom through said aperture and means for rotatively positioning said disc-like member in a synchronized relation to operation of said dispensing mechanism.

3,885,661

PRINTING HEAD FEEDING MECHANISM FOR PRINTERS

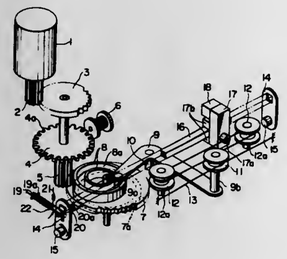
Katsuhiko Okabe, Tokorozawa, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Oct. 15, 1973, Ser. No. 406,339

Claims priority, application Japan, Oct. 18, 1972, 47-120297

Int. Cl. B41j *23/02*

U.S. Cl. 197—16 **2 Claims**



1. A printing head holder feeding mechanism for printers, comprising: an operating gear, a first cam member formed on said operating gear, a crank lever engaged with said first cam member and arranged to complete one to-and-fro motion by means of one rotation of said operating gear, an intermediate pulley rotatably mounted on one end of said crank lever, a pair of pulleys positioned at both sides of said intermediate pulley leaving a space between each other, a printing head holder movable between said pair of pulleys, a rope having an intermediate portion connected to said printing head holder and having extending portions respectively extended from said intermediate portion in the opposite direction and applied between each of said pair of pulleys and said intermediate pulley and further having a respective end of said extending portions held in fixed condition, one of said extending portions being shaped in S-shape and the other being shaped in reverse S-shape, a printing head connected to said rope and movable between said pair of pulleys, and a rail slidably supporting said printing head for linear movement of said printing head.

3,885,662

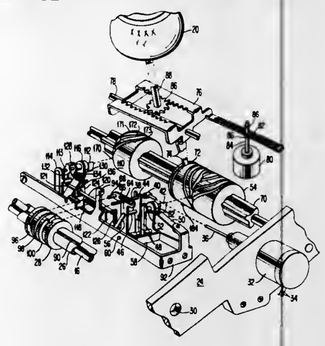
STEERABLE FOLLOWER SELECTION MECHANISM

John O. Schaefer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,882

Int. Cl. B41j *1/60*; **F16h** *25/12*

U.S. Cl. 197—52 **7 Claims**



1. Selection apparatus for selecting a character on a single type element of a single element printing mechanism, comprising:

a cam control means having a single groove branching to form a plurality of branch grooves and said branch grooves terminating in said single groove;

means for rotating said cam control means through a complete revolution and returning said cam control means to a predesignated position;

a follower for engagement with said cam grooves;

means for deflecting said follower from said single groove to cause said follower to enter a selected one of said branches to cause relative axial motion between said cam and said follower along the axis of said cam;

said follower returning to said single groove when said control cam means is in said predesignated position;

means engaged by said cam control means to convert said caused relative motion to a rotational movement of said type element in accordance with and corresponding to the one of said grooves selected by said follower.

3,885,663

CONTROL DEVICE FOR TABULATION PRINTING

Masahiko Suzuki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1973, Ser. No. 422,550

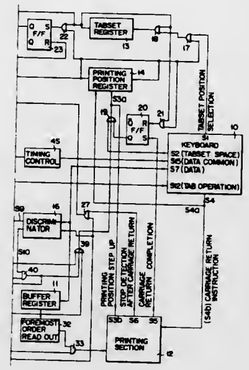
Claims priority, application Japan, Dec. 13, 1972, 47-124407

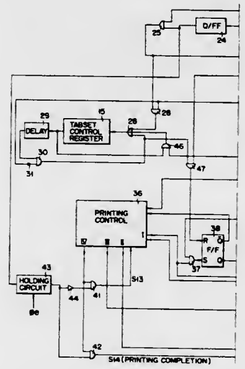
Int. Cl. B41j *25/18*

U.S. Cl. 197—176 **1 Claim**

1. A control device for tabulation printing comprising an input means of a printing data; a memory device for temporarily storing a printing data supplied by the input means; a printing means for printing the temporarily stored data in the designated column of a printing sheet; a tabset register for storing a plurality of tabset position signals defining the columns of the printing sheet; a discriminator for generating a first signal where the printing data only consists of digits and a second signal where the printing data includes at least a character; a means for reading out a signal denoting the lower order tabset position of the designated column from the tabset register and generating a signal designating the position where the foremost order of the temporarily stored data is to be printed, with reference to the readout signal and a signal denoting the number of orders of the printing data; a control means for controlling the printing means with reference to the first signal and a signal designating the printing position of the

foremost order such that where the input data only consists of digits, the highest order digit is impressed in the foremost printing position of the designated column of the printing sheet and the lowest order digit in the lower tabset position





side of said column; and a control means for controlling the printing means with reference to the second signal such that where the input data includes at least a character, the printing of said data is commenced from the higher order tabset position side of the designated column of the printing sheet.

3,885,664

TRANSPORT-DIRECTION REVERSING APPARATUS FOR AN AUTOMATIC MAIL HANDLING SYSTEM AND THE LIKE

Akira Fujimura, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 5, 1973, Ser. No. 404,049

Claims priority, application Japan, Oct. 5, 1972, 47-100442

Int. Cl. B65g *47/04*

U.S. Cl. 198—21 **3 Claims**

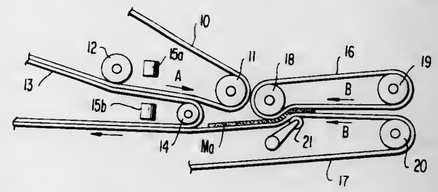
1. A transport-direction reversing apparatus for such flat articles as postal matter, comprising:

means for transporting a flat article in a first transport direction;

means for detecting said flat article;

a pair of endless belts moving in a second direction substantially opposite to said first direction, the distance between said belts being greater than a thickness of the thickest flat article to be processed; and

moving roller means installed in a space surrounded by one of said endless belts for reducing said distance between



said endless belts in response to said detecting means so that said flat article fed from said transporting means is transported by said endless belts.

3,885,665

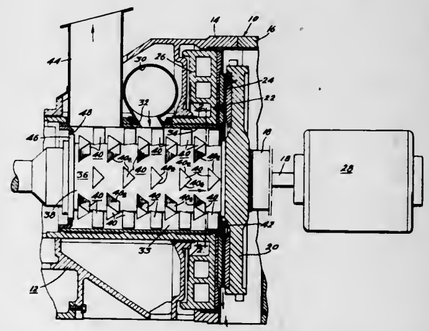
REVERSIBLE REFINER FEEDER

Chester Donald Fisher, Muncy, Pa., assignor to Sprout, Waldron & Company, Inc., Muncy, Pa.

Division of Ser. No. 296,564, Nov. 12, 1972, Pat. No. 3,853,276. This application May 23, 1974, Ser. No. 472,798

Int. Cl. B65g *33/00*

U.S. Cl. 198—110 **6 Claims**



1. A reversible conveyor for particulate material and the like comprising a cylindrical casing, a shaft rotatably mounted within said casing in radially spaced axially paralled relation thereto, said casing and said shaft defining a conveying chamber therebetween, a material inlet in said casing at one end of said conveying chamber, a material outlet in said casing at the opposite end of said conveying chamber, a plurality of conveying lugs fixed to said drive shaft and extending into said conveying chamber, said conveying lugs each having a pair of intersecting faces oppositely angularly inclined with respect to the axis of said shaft, the lug edge formed by said intersecting faces being directed toward said material outlet, said lugs upon rotation of said shaft serving to advance material introduced into said conveying chamber toward said material outlet regardless of the direction of shaft rotation.

3,885,666

STORAGE DEVICE FOR PALETTES CONTAINING AIR DRYING PAINTS AND VALUES

William J. Maxwell, Scottsdale, Ariz., assignor to Masterson Enterprises, Inc., Phoenix, Ariz.

Filed July 12, 1973, Ser. No. 378,585

Int. Cl. B44d *3/04*, *3/02*; **B65d** *43/10*

U.S. Cl. 206—1.7 **2 Claims**

1. A storage device for palettes containing air drying paints and values comprising:

a shallow rectangular box comprising a base and side and end walls extending laterally from said base in the same

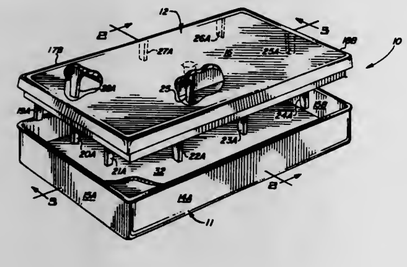
direction for forming a container for receiving one or said can and including an opening receiving a portion of said

direction for forming a container for receiving one or more palettes juxtapositioned against its base,

a substantially flat cover having a lip around its periphery for engaging in substantially air tight arrangement the edges of said side and end walls of said container,

a means arranged around the periphery of said cover for extending into said container beyond said lip when said cover is mounted thereon for holding the palettes against the base of said container,

said means comprises a plurality of projections which taper toward their ends,



a tapered projection extending outwardly from the center of said cover in the same direction as said projections around the periphery of said cover,

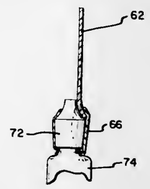
the edges of said side and end walls being provided with a convex surface for engaging a concave pocket in said lip around the periphery of said cover to form substantially an air tight seal,

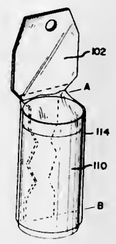
said lip around the periphery of said cover further comprising a flat surface projecting into said container along the surfaces of said side and end walls in sliding engagement therewith for aiding in providing a substantially air tight seal,

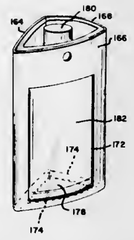
said flat surfaces of said lip wedgingly engages the surfaces of said side and end walls.

3,885,667
CARDED PACKAGE
William Spiegel, Southampton; Jacob Spiegel, Philadelphia, both of Pa., and Albert Miller, Somerdale, N.J., assignors to Gilbreth Company, Conwells Heights, Pa., by said Miller
Division of Ser. No. 138,056, April 28, 1971, Pat. No. 3,764,002. This application Feb. 28, 1973, Ser. No. 336,569
Int. Cl. B65d *65/16, 73/00*
U.S. Cl. 206—45.33 **6 Claims**

1. In a package including a bottle having a cap, said package including a heat shrinkable tube and a card, said card including a pair of slots therein spaced from one another to define a tongue therebetween, said tongue wrapping partially around said cap and including an opening receiving a portion of said cap therein, said tube being disposed about said tongue and







said cap and heat shrunk thereabout securing the bottle in place on said card.

3,885,668
APPARATUS FOR SORTING, CARRYING AND DELIVERING MAIL OR THE LIKE
Andrew J. McClain, 908 Alete St., Arlington, Tex. 76010
Filed Sept. 10, 1973, Ser. No. 395,400
Int. Cl. B65d *1/34, 7/00, 21/00*
U.S. Cl. 206—73 **10 Claims**

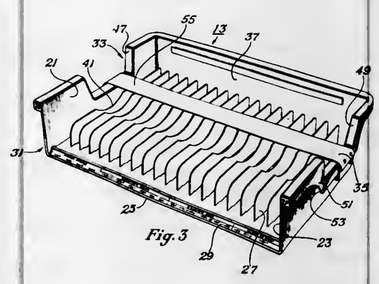


Fig. 3

1. Apparatus for sorting and carrying mail or the like comprising:

a. a plurality of sorting trays; said trays being adapted for insertion within a sorting bin for sorting of mail or the like into respective street addresses and being adapted for being stacked into a delivery vehicle for delivering said mail or the like without re-sorting said mail; each said tray including:

i. two sloping ends and a rear side for stacking an upper tray inside of the top of a lower tray;

ii. a bottom;

iii. a plurality of partitions carried by said bottom so as to define mail slots therebetween, said partitions having means facilitating gripping the mail in said mail slots for removal of said mail;

iv. a label holder at the bottom of the front side of said tray, each label holder including a plurality of street and address slots, the latter being disposed between respective said partitions;

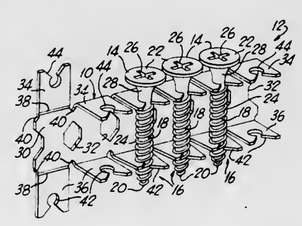
v. stacking means for supporting said trays in stacking relationship in said vehicle with the bottom of an upper tray supported above the top of said partitions in a lower tray;

vi. interlock means at each end of said trays for preventing an upper said tray from sliding out of its stacked relationship in engagement with a lower stacked tray;

vii. holding means removably connected with the ends of said tray and traversing over the mail therewithin for holding said mail in place and being removable for insertion of sorted mail within said tray; and

viii. sequence denoting means for facilitating ordering of said trays for a predetermined route.

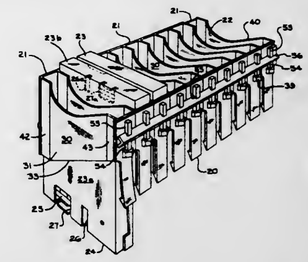
3,885,669
ROTARY ENTRY FASTENER CARRIER AND STRIP
Frank R. Potucek, Des Plaines, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.
Filed Apr. 29, 1974, Ser. No. 464,913
Int. Cl. B65d *85/24*
U.S. Cl. 206—338 **17 Claims**



1. A strip of rotary entry fasteners comprising a flexible plastic carrier including a web and pairs of tabs extending generally transverse to the web from opposite edges thereof, slots in the tabs, a plurality of fasteners having shanks frictionally and releasably retained in said slots, each shank including a threaded portion supported by a first tab of each pair and a spaced portion supported by a second tab of each pair, and the slot of each first tab having a fastener engaging portion narrower than the major thread diameter and wider than the minor thread diameter.

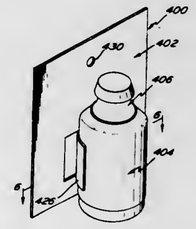
3,885,670
STORAGE CELL ASSEMBLY
Bernard A. Cousino, Fort Myers, Fla., assignor to Cousino Corporation, Fort Myers, Fla.
Filed Nov. 9, 1973, Ser. No. 414,372
Int. Cl. B65d *1/34*; **A47g** *19/00*
U.S. Cl. 206—387 **2 Claims**

1. A cartridge storage cell assembly for use in a tape player apparatus comprising, in combination, a plurality of storage cases positioned in a side-by-side relationship, each of said storage cases including a panel, said panel having a top loading recess defined adjacent its upper end and a bottom loading recess defined adjacent its lower end, first and second sidewalls integrally attached to said panel, said first sidewall being substantially longer than said second sidewall, a flexible release finger extending downwardly from said second sidewall, an end cover panel positioned adjacent the last one of said



plurality of storage cases, and means on said first and second sidewalls and said end cover panel for retaining said plurality of storage cases and said end cover panel in assembled relationship.

3,885,671
SECUREMENT OF BAND TO CARD
William Spiegel, Southampton; Jacob Spiegel, Philadelphia, both of Pa., and Albert Miller, Sommerdale, N.J., assignors to Gilbreth Company, Cornwell Heights, Pa.
Continuation-in-part of Ser. No. 138,056, April 28, 1971, Pat. No. 3,764,002. This application Jan. 10, 1973, Ser. No. 319,111
Int. Cl. B65d *73/00*
U.S. Cl. 206—460 **5 Claims**

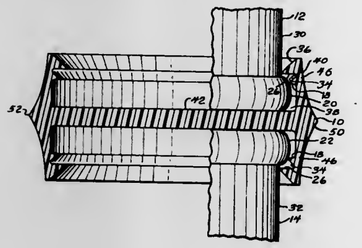


1. A carded package comprising an article, a heat shrinkable tube and a planar card including a surface having a predetermined area with an adhesive material applied over said entire area, said area including a portion bent out of the plane of said card and conforming in shape to said tube, said article being disposed within said tube, with said tube being heat shrunk thereabout, and said (heat shrinkable) tube being adhesively secured to said entire predetermined area.

3,885,672
COMBINED STACKING RING AND CONTAINER COVER
Irmgard M. Westenrieder, 1145 East 166th Street, South Holland, Ill. 60473
Filed Feb. 7, 1974, Ser. No. 440,373
Int. Cl. B65d *21/02*
U.S. Cl. 206—503 **5 Claims**

1. In combination, a pair of containers, each having at least one beaded end, and a molded plastic stacking device for stacking said pair of containers and engaging and retaining said beaded ends, said stacking device comprising an imperforate, substantially planar center portion defined at its periphery by oppositely axially extending annular flange portions, said flange portions each including a pair of integral, spaced annular ridges having their apexes directed generally

radially inwardly and having their axially outermost walls directed toward said planar center portion, the intermost ridge of each of said pair of ridges extending radially inwardly to a lesser extent than the outermost ridge, each of said intermost ridges engaging and retaining the end bead of one of said pair



of containers and each of said outermost ridges engaging the side wall of one of said pair of containers, said intermost ridges being axially spaced from said planar center portion and having an inner diameter less than the maximum diameter of the beaded end of the container with which it is engaged.

3,885,673

ELECTROSTATIC SEPARATION OF POTASH ORES

Robert Berthon, Wittelsheim, Haut-Rhin, and Michel Bichara, Richwiller, Haut-Rhin, both of France, assignors to Mines de Potasse d'Alsace S.A., Mulhouse, France

Filed July 26, 1968, Ser. No. 747,788

Claims priority, application France, July 28, 1967, 67.116039

Int. Cl. B03b *1/00*

U.S. Cl. 209—9 **14 Claims**

1. In an electrostatic process for the beneficiation of potash ore containing intermingled crystals of sylvite and halite and insoluble impurities, the improvement comprising conditioning said ore before electrostatic separation with:

a. an aliphatic amine of 8–22 carbon atoms, and

b. an ammonium salt of a lower aliphatic carboxylic acid of 1–4 carbon atoms whereby a concentrate is obtained having a higher proportion of sylvite to insoluble impurities.

3,885,674

ANTI-THEFT SECURITY CHAIN

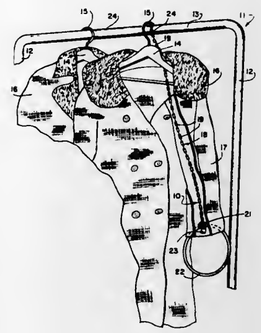
Thomas Rosenberg, and Harold Rosenberg, both of 144-150 W. 18th St., New York, N.Y. 10011

Filed July 17, 1973, Ser. No. 379,937

Int. Cl. E05b *73/00*

U.S. Cl. 211—4 **1 Claim**

1. An anti-theft security chain exclusively for a standard garment rack fixture of the type usual to a retail store and the like, said anti-theft security chain being for use only with garments having sleeves, said rack fixture being of the type that includes a horizontally disposed bar on the upper portion thereof, a plurality of hangers each having a hook portion loosely and freely engaging the top bar of said rack fixture, garments mounted on said hangers, each of said garments including sleeves of hollow formation, a chain projecting through a sleeve of the garment and said chain having a portion that is freely wrapped and looped over the bar of said rack fixture and wherein the looped wrapped portion permits the chain to be moved along the horizontally disposed bar as well as permitting convenient removal of the chain from the bar, said chain comprising a plurality of interfitting, interconnected small links, said chain including a top link and a lower link, the top link of each chain having an enlarged formation thereby allowing the upper portion of the chain to be extended through the top link of the chain, the anti-theft security chain providing a choke effect on the bar so that the upper portion thereof can not be removed from the rack, a lock detachably connected to the lower link of said chain, a retainer connected to said lock, said retainer including an enlarged open ring member having a greater size than the diameter of the sleeve of the garment, said ring member being positioned contiguous to the lower outer end of said sleeve, said ring member having an open interior and said ring member having a loose free connection to said lock, the main portion of the chain hanging down by gravity due to the weight of the retainer, and wherein



said anti-theft security chain permits a prospective purchaser to examine and handle the garment but preventing the garment from being removed from the rack fixture until the lock is manually unlocked, said chain having a length that is sufficiently large enough to permit the chain to be looped over the top bar, said chain being free of sharp edges so that damage to the garment will be prevented and wherein the links of the chain provide a smooth construction so that the links will not snag the garment lining, said retainer being sufficiently large enough so that it can not be pulled back through the sleeve, and wherein when a rack of clothes is being displayed the only garment that will show the anti-theft security chain is the end garment so that the overall appearance of the garments being displayed will not be spoiled, said ring member being of sufficient strength and weight so that it can not be compressed whereby unauthorized removal can be prevented, said anti-theft security chain being usable with the conventional garment rack fixture without requiring any alteration to the rack fixture, said anti-theft security chain being solely for use with garments and articles of clothing to be worn.

3,885,675

CONSTRUCTION KIT FOR THE ERECTION OF STORAGE AND DISPLAY STRUCTURES OF VARYING DIMENSIONS IN THE FORM OF SHELVES, CUPBOARDS, DISPLAY CASES AND THE LIKE

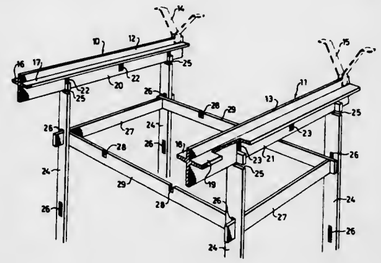
Gladys E. K. Hultenby, Vasterlanggatan 58, 111 29 Stockholm, and Patric C-O. Hellberg, Jakobsbergsgatan 5, 111 44 Stockholm, both of Sweden

Filed Dec. 27, 1973, Ser. No. 428,679

Claims priority, application Sweden, Dec. 28, 1972, 17978/72

Int. Cl.² A47F *5/08*

U.S. Cl. 211—118 **12 Claims**



7. The collapsible structure of claim 6 wherein said main bars are made of aluminum.

3,885,676

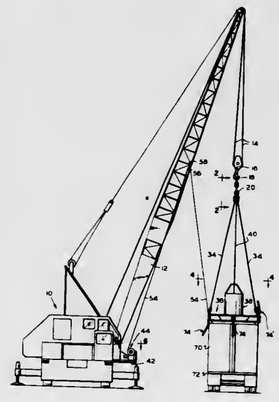
CRANE SYSTEM FOR CARGO CONTAINERS

Lester W. Wilson, Portland; Joseph H. Tracy, Troutdale, and Clarence C. Wilson, Portland, all of Oreg., assignors to Lester W. Wilson and Clarence C. Wilson, both of Portland, Oreg.

Filed Apr. 20, 1973, Ser. No. 352,876

Int. Cl. B66c *1/00*

U.S. Cl. 212—44 **11 Claims**



1. A crane system for moving a cargo container, said system comprising:

a crane having a crane boom and a crane operator's cab,

a container head adapted to be received upon the top of said container, said container head having four remotely operated locking members located substantially at corners of said container head for engaging mating locking devices provided at the top of a container,

cable means for suspending said container head and container locked thereto from said crane boom,

a first group of four switching devices located on the container head and responsive to the container's presence for preventing unlocking of said locking members when said container head is not resting on said container,

four additional switching devices located on the container head and responsive to operation of said locking members,

and indicating means located in the operator's cab and electrically coupled to said container head for indicating to the crane operator the position of said first group of four switching devices and the position of said four additional switching devices,

whereby, when the crane lifts the container, said container head is not resting on said container and upon lowering of the container onto a supporting surface said container head rests on the container and said indicating means thereby provides an indication to an operator in said operator's cab that the container is fully down on the said supporting surface.

3,885,677

TRAVELING CRANE CONSTRUCTION

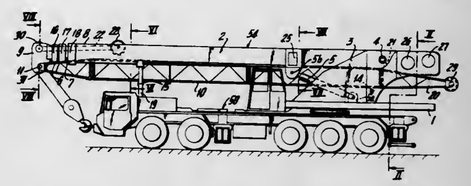
Richard Gorl, and Helmut Blase, both of Dortmund, Germany, assignors to Rheinstahl Aktiengesellschaft, Germany

Filed Jan. 4, 1974, Ser. No. 430,723

Claims priority, application Germany, Jan. 8, 1973, 2300643

Int. Cl. B66c *23/06*

U.S. Cl. 212—59 R **7 Claims**



1. A traveling crane, comprising a support base, an upper chassis rotatable on said support base, a twin jib pivoted adjacent its one end on said upper chassis and having two laterally spaced single jib portions each with a plurality of telescopic sections having outer ends opposite to the inner end of said twin jibs, said twin jibs being telescopically extensible in unison, head traverse means interconnecting said telescopic sections having a receiving head recess defined between said single jib portions, a head connected to the outer ends of said telescopic sections, and a head jib articulated to said head and being positionable in a collapsed transport position between said single jibs in said head receiving recess in substantially horizontal and pa. allel relationship, said head including a ball and socket mounting for said head jib, said head jib being connected to said ball and socket mounting in a collapsed transportable position in which it is received in the recess.

3,885,678

MATERIAL HANDLING APPARATUS

Sven Christer Borg, Handen; Christer Ragnar Hesson, Johanneshov, and Erik Henning Nilsson, Trangsund, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Oct. 15, 1973, Ser. No. 406,593

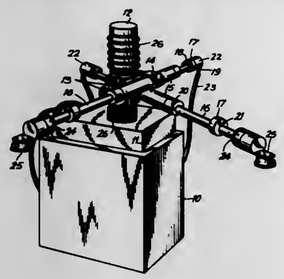
Claims priority, application Sweden, Oct. 18, 1972, 13470/72

Int. Cl. B66c *1/42*

U.S. Cl. 214—1 BB **12 Claims**

1. A material handling apparatus for the transfer of work pieces from one predetermined position to another predetermined position comprising at least one unit for movement

along its longitudinal axis and an additional assembly having a unit for vertical movement and a unit for rotary movement, the latter being adapted to transfer said work pieces in a substantially horizontal plane, said additional assembly being provided with at least one exchangeable and adjustable holder



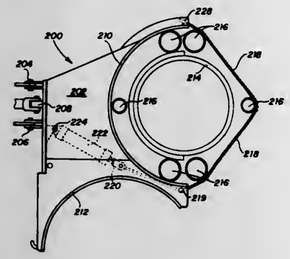
for setting the corresponding longitudinally moving unit in the selected position relative to said additional assembly, said holder having an adjustment device provided with means to lock said longitudinally moving unit at an adjustable distance from the additional assembly and at an adjustable angle to said horizontal plane.

3,885,679

RACHING ARM FOR PIPE SECTIONS, DRILL COLLARS, RISER PIPE, AND THE LIKE USED IN WELL DRILLING OPERATIONS

John J. Swoboda, Jr., and Norman L. Swoboda, both of P.O. Box 1939, Victoria, Tex. 77901

Division of Ser. No. 377,321, July 9, 1973, Pat. No. 3,840,128.
This application Jan. 17, 1974, Ser. No. 434,200
Int. Cl. B65g *47/08*
U.S. Cl. 214—1 BD **4 Claims**



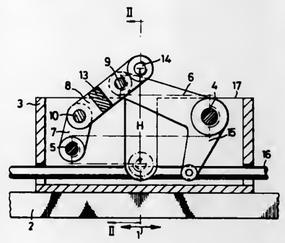
1. In a racker arm system for guiding elongated pipe members used in well drilling operations wherein an extendible boom has a free end movable to a plurality of locations in the region of the drilling platform, the combination comprising:
- a pipe gripper mounted on the free end of said boom and including a gripper base having a semicircular cutout portion for receiving a first peripheral portion of a vertical pipe,
- a flexible elongated member attached at one end to said gripper base and having a free end, said member being of sufficient length to be wrapped about said second peripheral portion of the vertical pipe in order to limit lateral movement of said pipe,
- means for attaching said free end of said flexible member to said gripper base,
- means for sensing the vertical attitude of said boom, and
- means for moving said gripper relative to said boom to maintain said gripper at a predetermined orientation during movement of said boom.

3,885,680

APPARATUS PROVIDED AT PRESSES FOR THE LIFTING AND CONVEYING OF WORKPIECES

Otto Rasenberger, Goppingen, Germany, assignor to L. Schuler GmbH, Germany

Filed Apr. 1, 1974, Ser. No. 456,856
Claims priority, application Germany, Mar. 30, 1973, 2315950
Int. Cl. B65g *25/04*
U.S. Cl. 214—1 BB **21 Claims**



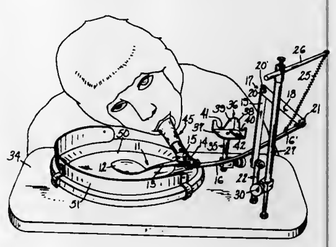
1. Apparatus for lifting and conveying workpieces in a machine tool or the like, comprising:
- a bar reciprocably movable in the machine tool,
- and at least one work handling fixture attached to and movable with said bar, said work handling fixture including a lifting element directly engageable with a workpiece and a drive system for effecting workpiece lifting movements of said lifting element,
- wherein said drive system includes a driven lever and a rocker arm which are pivotal about mutually parallel axes and are joined together by a coupler means attached to said lifting element, said driven lever being pivotally joined to said coupler means at a position intermediate the attachment point of said lifting element and coupler means and the junction point of said coupler means and rocker arm.

3,885,681

FEEDING DEVICE

Pasquale M. Mancino, 182 Beach Ave., East Haven, Conn. 06512

Filed June 28, 1974, Ser. No. 483,955
Int. Cl. A61j *7/00*
U.S. Cl. 214—1 T **7 Claims**



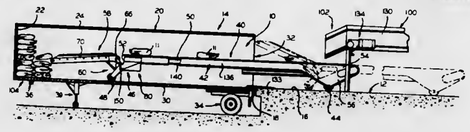
1. A feeding device for no-hand operation comprising, a spoon having a bowl and a handle, a mouthpiece assembly connected to said handle and projecting laterally therefrom, counterbalancing means connected to said spoon and mouthpiece assembly to support at least a portion of the weight thereof, and a cradle mounted adjacent said counterbalancing means and adapted to support the balance of said weight when the spoon and mouthpiece assembly are rested thereon.

3,885,682

MAIL BAG HANDLING APPARATUS

Joseph E. McWilliams, 1345 Canterbury Ln., Glenview, Ill. 60025

Continuation of Ser. No. 306,006, Nov. 13, 1972, abandoned.
This application July 15, 1974, Ser. No. 488,502
Int. Cl. B65g *57/12, 67/08*
U.S. Cl. 214—6 G **5 Claims**



1. In bulk handling apparatus for moving elongated bags between a loading dock and the load receiving area of an end loading transport vehicle backed into load transferring relation adjacent the loading dock to dispose its end opening to pass the bags therethrough, said apparatus comprising:
- an elongate wheeled conveyor adapted to be movably mounted on the loading dock adjacent the load transferring position of the vehicle and be aligned with the vehicle and its end opening in the load transferring position of the vehicle,
- said conveyor having a width transversely thereof that approximates the width of the mail bags,
- said conveyor having a forward end that faces the vehicle when aligned therein and a rearward end extending oppositely of said forward end thereof,
- said conveyor at said forward end including a forward wheel assembly,
- said forward wheel assembly comprising:
- a frame secured to said conveyor and defining a pair of spaced apart legs each journaling a wheel on which said frame and said conveyor ride,
- said frame including a vertically disposed spindle journaled for pivotal movement about its longitudinal axis, said spindle axis being substantially aligned with the longitudinal centerline of said conveyor,
- said spindle having mounted thereon a conveyor head for movement about a horizontal axis extending transversely of said head,
- said head projecting forwardly of said conveyor,
- means for swinging said head about said spindle axis to swing said head from side to side relative to said conveyor,
- and an adjustable strut structure connected between said head and said spindle for supporting said head cantilever fashion from said frame and including means for adjusting the length thereof for adjusting the forward end of said head vertically,
- said head comprising an elongate frame mounting conveyor means extending longitudinally thereof for conveying mail bags between said conveyor and said head forward end.

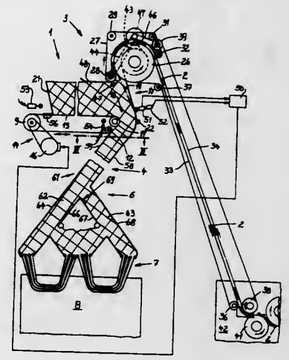
3,885,683

APPARATUS FOR TEMPORARY STORAGE AND TRANSPORT OF CIGARETTES OR THE LIKE

Ulrich Bornfleth; Fritz Selonke, and Horst Scharnetzke, all of Hamburg, Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed June 14, 1973, Ser. No. 369,954
Claims priority, application United Kingdom, June 21, 1972, 29049/72; Sept. 19, 1972, 43421/72; Feb. 20, 1973, 8152/73
Int. Cl. B65g *37/00*
U.S. Cl. 214—17 CA **16 Claims**

1. Apparatus for transporting rod-shaped articles from a source to a consumer, particularly for transporting rod-shaped smokers' products from at least one producing machine to at least one packing or other processing machine, comprising a plurality of successive units defining an elongated path extending from said source to said consumer, said units including a first unit constituting a variable-capacity reservoir arranged to store a variable supply of articles and having an inlet for admission of articles into and an outlet for discharge of articles from the interior thereof, said reservoir comprising a first end wall adjacent to said inlet, a second end wall located opposite said first end wall, displacing means actuatable to move said second end wall toward and away from said first end wall to thereby change the capacity of said reservoir, and



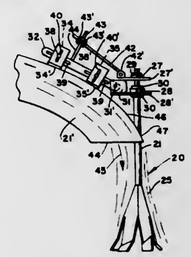
actuating means for said displacing means including pressure-responsive feeler means, said feeler means including said first end wall and said first end wall being movable by the articles of said supply between a plurality of positions each of which is indicative of a different number of articles in said supply, said units further including a second unit constituting feeding means for moving the articles from said source to said inlet, said path having a downwardly extending portion along which the articles move toward said inlet and said feeding means including conveyor means for positively engaging and moving the articles between said source and said inlet.

3,885,684

SILAGE SPREADER

Lester R. Mitchell, Rt. 1, Detroit Lakes, Minn. 56501

Filed June 27, 1974, Ser. No. 483,695
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 CB **1 Claim**



1. A silage spreader device for attachment to the outlet spout of a silage harvester to spread the silage about a silage bin as it comes out of the outlet spout, said spreader comprising a shaft adapted to be rotatably mounted to the outlet spout so that the lower end of the shaft is suspended beneath the outlet spout in the path of silage coming out of said spout, a plurality of blades coming to a point about the shaft and extending outward and downward diverging relative at a uniform angle to one another in a cone-like shape with the lower portions of the fins separated and spaced from one another,

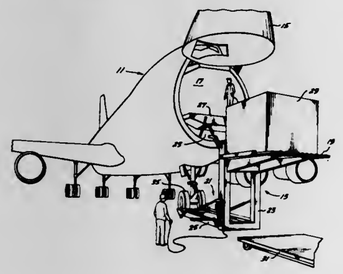
and with the lowermost ends of the fins angled to one another, so that as silage drops out of the outlet spout some of the silage will engage the angled portions of the fins and cause the spreader to rotate relative to the outlet spout and to toss the silage outward as some of the silage engages the angled fins, the rotation of the fins will act to toss the silage outward in an arc, with the spaces between the fins enabling some of the silage to drop between the fins and be deposited in the central portion of the bin.

3,885,685

TRANSPORTABLE LOADER FOR AIRCRAFT

Howard W. Montgomery, and Charles R. Stanley, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 17, 1974, Ser. No. 434,294
Int. Cl. B64d *9/00*
U.S. Cl. 214—38 BB **9 Claims**



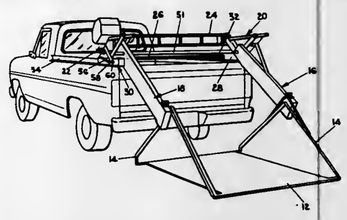
1. A collapsible transportable loader for raising and lowering cargo between the cargo deck of a nose-loading cargo aircraft having a nose wheel structure located rearwardly of a nose access opening allowing access to the cargo deck of the aircraft and some other predetermined level, said collapsible transportable loader comprising:
a horizontal support member;
first attachment means located at one end of said horizontal support member and suitable for attaching said horizontal support member to the nose wheel structure of a nose-loading cargo aircraft;
a vertical support member rotatably attached to the end of said horizontal support member opposite to the end associated with said first attachment means;
second attachment means for attaching the upper end of said vertical support member to the bulkhead of said nose-loading cargo aircraft in the region generally defined by the nose access opening;
collapsing means associated with said horizontal and vertical support members for rotating said horizontal and vertical support members with respect to one another between a position whereat said vertical support member lies in a plane parallel to said horizontal support member and a position whereat said vertical support member lies at a right angle with respect to said horizontal support member;
an elevator platform suitable for supporting cargo;
elevator means associated with said vertical support member and said elevator platform for raising and lowering said elevator platform between the level of said cargo deck of said nose-loading cargo aircraft and some other level; and,
third attachment means for rotatably attaching said elevator platform to said elevator means on the side of said vertical support member opposite to said horizontal support member and in a manner such that said elevator platform is rotatable between a position whereat said elevator platform lies in a plane parallel to said vertical support member and a position whereat said elevator platform lies at a right angle with respect to said vertical support member.

3,885,686

POWER LIFTING ATTACHMENT FOR VEHICLES

Barton G. Siebring, Grand Rapids, Mich., assignor to Simon M. Oppenhuizen, Grand Rapids, Mich.

Filed Jan. 11, 1973, Ser. No. 322,765
Int. Cl.² B60P *1/48*
U.S. Cl. 214—77 R **16 Claims**



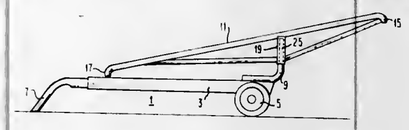
14. A power lifting apparatus for vehicles comprising in combination:
first and second tracks;
means for mounting said tracks on a vehicle;
first and second carriages mounted on said first and second tracks respectively for movement therealong;
first and second lifting arms each being hollow substantially along the length thereof and pivotably mounted on a horizontal axis on said first and second carriages, respectively in spaced relationship to each other for rotational movement on said carriages;
a platform;
means for supporting said platform on the free ends of said first and second lifting arms; and
means for maintaining said platform level as said lifting arms are rotated about their pivotable mountings on said carriages, said means for maintaining said platform level including a first guide means with a curved upper surface having a center of curvature on the pivotable mounting axis of said first arms, a cable drawn over the curved surface and rigidly coupled to said first guide means, said cable passing through the interior of said hollow arm, a second guide means with a curved upper surface of the curvature to the first guide means curved surface rotatably mounted within the free end of said first lifting arm and secured nonrotatably to said platform supporting means, said cable being drawn over said curved surface of the second guide means and means for rigidly coupling said cable to said second guide means so that said cable is maintained taut as said first lifting arm rotates and so as to maintain said platform support means angularly fixed with respect to said first support means.

3,885,687

HANDTRUCK ADAPTER FOR HANDLING LONG HEAVY OBJECTS

Seymour E. Blas, 54 Linderman Ave., Kingston, N.Y. 12401

Filed June 7, 1973, Ser. No. 367,846
Int. Cl. B62b *1/04*
U.S. Cl. 214—372 **4 Claims**



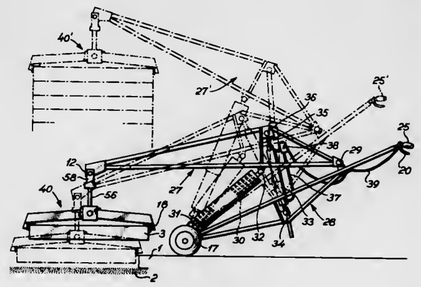
1. An adapter designed for attachment to a handtruck for moving long cylindrical objects by an individual comprising a frame of tubular material having a pair of side members and a pair of end members, said end members being contoured for holding said cylindrical objects in position on said support member, a laterally spaced support member substantially perpendicular to said side members, further support members extending from said laterally spaced support member to different locations on said tubular frame, means connecting said support members to said frame and means for attaching said adapter to the blade of said handtruck.

3,885,688

DEVICE FOR LAYING FLAGSTONES

Albert Johannes Larsen, Roskildevej 52, Vaerebro, 3650 Oelstykke, Denmark

Filed Sept. 1, 1972, Ser. No. 285,569
Claims priority, application United Kingdom, Sept. 2, 1971, 41083/71; July 11, 1972, 32418/72; Denmark, Aug. 7, 1972, 3885/72
Int. Cl. B60p *1/54*
U.S. Cl. 214—384 **7 Claims**



1. A device for laying of flagstones or the like block-formed paving elements comprising:
a double-armed lever structure comprising a main frame being at its front end provided with supporting means adapted for resting on a supporting surface so as to allow tilting of the structure about a transverse axis and at its rear end provided with means for manoeuvring the device by hand or by mechanically driven manoeuvring means; a beam being at its rear end connected to said main frame pivotally about a transverse axis and with its front end extending in front of said supporting means and carrying pivotally about a transverse axis a pair of tongs adapted for temporary carrying a flagstone or the like paving elements in a horizontal position;
spring means for lifting the beam in relation to the frame when in unloaded condition;
and means for selectively controlling the movement of the beam in relation to the frame.

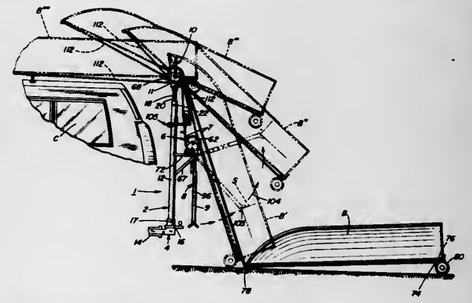
4. A device for the laying of flagstones, block-formed paving elements, and the like, comprising, in combination,
a double-armed lever structure carrying at its front end pivotally about a transverse axis a pair of tongs adapted for temporarily carrying a flagstone or the like in a horizontal position
said double-armed lever structure being provided at its rear end with means for manoeuvering the device by hand or by powerdriven manoeuvering means
said double-armed lever structure being also provided with supporting means adapted for resting on a supporting surface so as to allow tilting of said structure about a transverse axis.
a fitting for suspending the pair of tongs pivotally from said double-armed lever structure including a suspending bolt said fitting being provided with two sets of bores for the suspending bolt arranged perpendicularly to each other in a horizontal plane so as to suspend the pair of tongs either with the arms in the longitudinal direction of the device or perpendicularly to said direction, abutment means connected to said tongs for abutting the top of the said flagstones, block-formed paving elements and the like, whereby the contact between said tongs and said flagstones, block-formed paving elements and like can be varied.

3,885,689

BOAT LOADING AND UNLOADING APPARATUS

Hiram D. Grove, 8700 Mentor Rd., R.R. 1, Mentor, Ohio 44060, and Harry A. Sauders, 108 Sholle Dr., Hudson, Ohio 44236

Filed Oct. 11, 1973, Ser. No. 405,428
Int. Cl. B60p *3/10*
U.S. Cl. 214—450 **14 Claims**



1. An apparatus for loading a boat onto a carrier comprising,
a support,
winch means on said support including a retractable loading element for lifting said boat off of the ground,
fulcrum means on said support for movingly supporting said boat thereon,
means for connecting the distal end of said loading element to one end of said boat for lifting said boat by said winch means,
releasable guide means releasably connecting the opposite end of said boat to said loading element inwardly from the distal end of said loading element for lifting the opposite end of said boat into engagement with said fulcrum means,
said guide means includes a guide receptacle for releasing said opposite end of said boat from said loading element after engagement of said opposite end of said boat with said fulcrum means to enable said boat to be moved upwardly and along said fulcrum means by said loading element upon continued actuation of said winch means,
booster means of said support selectively engaging said boat adjacent said one end after said opposite end has been moved into engagement with said fulcrum means, and
said booster means coacts with said fulcrum guide means to pivot said boat from said generally vertical position into a generally horizontal position upon continued actuation of said winch means for placement of said boat in a generally horizontal position on said carrier.

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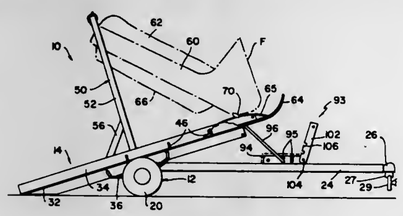
TRAILER FOR SNOWMOBILES

James J. Van Slambrouck, Riverview, Mich., assignor to Warren Burke, Lincoln Park, Mich.

Continuation of Ser. No. 236,381, March 20, 1972. This application Dec. 13, 1973, Ser. No. 424,219
Int. Cl. B60p *1/28*
U.S. Cl. 214—506 **4 Claims**

1. A trailer for carrying snowmobiles in tandem, comprising a supporting assembly having ground-engaging wheels, a sup-

ported assembly mounted on said supporting assembly comprising a deck, and means for securing snowmobiles in tandem on said deck with their longitudinal axes extending lengthwise of said deck comprising means for securing the forward end of a front snowmobile down on said deck, means for securing the rear end of the front snowmobile in elevated position spaced above said deck comprising an inverted U-shaped frame having laterally spaced uprights mounted on opposite sides of and extending upwardly from said deck, a transversely extending bar connecting the upper ends of said uprights and



disposed above the elevated rear end of the front snowmobile, means for suspending the rear end of the front snowmobile from said transversely extending bar, means for securing a rear snowmobile down on said deck with its forward end nested under the elevated rear end of the front snowmobile, an axis extending transversely of said trailer for tipping said supported assembly, and means for locking said supported assembly in a first position in which said deck is substantially horizontal and for locking said supported assembly in position for loading in which the rear end of said deck is tilted adjacent ground level.

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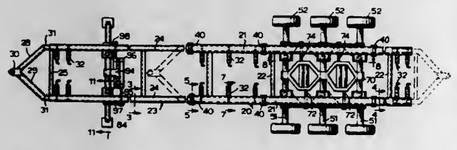
MOBILE HOME CARRYING TRAILER

Maynard Bill Knapp, Salisbury, N.C., assignor to Knapp Corporation, Salisbury, N.C.

Filed May 16, 1974, Ser. No. 470,674

Int. Cl. B60p *1/02*

U.S. Cl. 214—512 **6 Claims**



1. A carrier for transporting a single-wide or half of a double-wide mobile home or modular home constructed without wheels and steel underframe, comprising a stationary frame having a pair of parallel hollow box beams and fixed cross braces between them securing them to each other, an adjustable frame comprising a pair of parallel beams slidable telescopically in the stationary box beams of the stationary frame and having removable cross brace between them securing them to each other, lock means locking the frames to each other in any of a plurality of positions, a plurality of pairs of wheels and an axle extending between each pair of wheels, a wheel chassis slidably mounted on said axles for movement in the direction of the length of said axles, said stationary frame being mounted on said wheel chassis for vertical movement relative to said wheel chassis and extending transversely to the direction of length of said axles, an outrigger housing adjacent the end of the adjustable frame remote from the stationary frame extending substantially parallel with said axles and having outrigger support means depending therefrom for contact with the ground beneath the carrier, outrigger slide means slidably mounted on said outrigger housing, the adjustable frame being mounted on said outrigger slide means for vertical movement relative to said outrigger slide means and extending transversely to the direction of length of said outrigger housing, raising and lowering means between the wheel chassis and the stationary frame and between the outrigger housing and the adjustable frame for raising and lowering the frames together, and lateral shifting means between said axles and said wheel chassis and between said outrigger housing and said outrigger slide means for shifting the wheel chassis and the outrigger slide means together in one or the other direction transversely of the length of the frames, whereby the frames can be shifted up and down relative to the wheels and the outrigger housing and can be shifted laterally back and forth relative to the wheels and the outrigger housing for adjusting the position of the mobile or modular home or a part of it at the installation site.

3,885,692

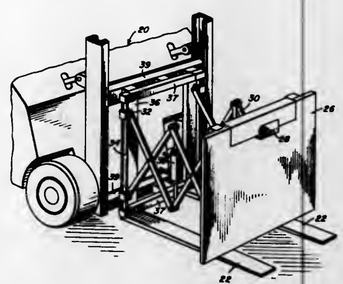
HANDLING SYSTEM FOR INTERLOCKING COVER BOXES

Seymour Clarence Anderson, Jr., Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Mar. 26, 1973, Ser. No. 344,775

Int. Cl. B60p *1/02*

U.S. Cl. 214—514 **4 Claims**



1. Load handling apparatus for a vertically adjustable lift truck support unit including a rear truck engaging portion and horizontal support means projecting forwardly therefrom and terminating in a forward edge selectively introducible beneath a load to be supported; said apparatus comprising a positioning panel overlying said horizontal support means and projecting vertically thereabove; means mounting said positioning panel for horizontal movement over said support means between a first forward position adjacent the forward edge and a second position sufficiently rearward of the forward edge to accomodate a load on the horizontal support means between the positioning panel and the forward edge; power means for effecting movement of the positioning panel between the first and second positions thereof; load engaging means on said positioning panel selectively engageable with a load for a controlled movement of a load with the positioning panel relative to the horizontal support means; means for effecting a vertical adjustment of the load engaging means relative to the positioning panel; and said load engaging means having an upwardly directed blade engageable beneath a top cap upon vertical adjustment of said blade whereby the carton can be both gripped and upwardly tipped and the load can be selectively drawn onto and pushed from the support means.

3,885,693

COMBINATION VEHICLE AND BOAT

Jimmie L. Haptonstall, 411 Ridgeview, Rockwall, Tex. 75087

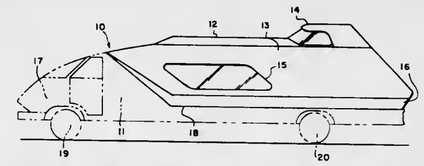
Filed Jan. 19, 1973, Ser. No. 325,094

Int. Cl. B60p *1/36*

U.S. Cl. 214—516 **2 Claims**

1. A combined vehicle and boat comprising a prime mover having an open topped bed at the rear end thereof; a wheeled

cradle having a pair of support wheels slideably mounting said cradle on said open topped bed for displacement rearwardly to a position behind said prime mover, said support wheels being pivotally connected to said cradle for downward movement to a ground engaging position upon said rearward displacement; a box-like beam having a longitudinal slot in the top thereof and mounted in said bed longitudinally and forming a guide track therealong; a dolly running within said guide



track; connecting means projecting through said slot and being connected to the front end of said wheeled cradle; said dolly and said connecting means comprising a guide means; drive means for driving said guide means forwardly and backwardly along said guide track; and a boat hull, so proportioned with respect to said vehicle that one fairs into the other and presents the appearance of a unitary structure when said boat hull is positioned on said cradle.

3,885,694

THREE-WAY BUCKET ASSEMBLY FOR LOADER

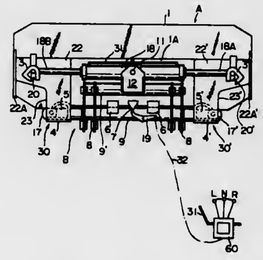
Tomio Uchida, Sagamihara, and Kisaburo Otabe, Isehara, both of Japan, assignors to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Oct. 24, 1973, Ser. No. 409,331

Claims priority, application Japan, Oct. 25, 1972, 47-106206

Int. Cl. B66f *9/00*

U.S. Cl. 214—768 **8 Claims**



1. In a three-way bucket assembly for an earth moving machine comprising a dump bucket and a dump bucket support, the improvements characterized in that the dump bucket is provided with first and second connecting means displaced at each of its rear sides, respectively, the bucket support comprises at least one plate connected with lift arms of the earth moving machine, at least one frame is secured to the plate and laterally extended, a double rod type hydraulic cylinder, the center of which is pivotally mounted on the center of the frame and is laterally extended, is provided with third connecting means disposed at the outer ends of each rod of the cylinder, and fourth connecting means, disposed at both ends of the frame, are provided with pivot pins whereby at standard conditions when the hydraulic cylinder is at rest, each of the first connecting means is engaged with each of the third connecting means and each of the second connecting means with each of the fourth connecting means; the hydraulic cylinder, when actuated in either direction, moves the bucket laterally relative to the bucket support in the direction a given amount to release the locking of the second and fourth connecting means located backwardly of the dump bucket and thereafter begins to turn the bucket about the pivot pin of fourth connecting means located forwardly of the bucket while releasing the locking of the first and third connecting means located backwardly of the bucket.

3,885,695

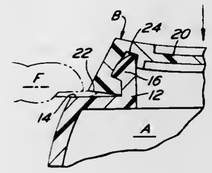
SNAP-ON SAFETY CLOSURE FOR CONTAINERS

Robert Bey Schaefer, Malvern, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 276,181, July 28, 1972, Pat. No. 3,830,393. This application May 29, 1974, Ser. No. 474,473

Int. Cl. B65d *55/02*; A61j *1/00*

U.S. Cl. 215—224 **12 Claims**



1. A dispensing container having a snap-on closure resistant to removal by small children comprising

a body portion including a tubular neck projecting from an extended shoulder portion, said tubular neck having a bead means in the form of an annular ridge circumscribing an exterior surface of said tubular neck, said bead means being in concentric disposition with an open end of said tubular neck which serves as the opening for the container, said bead means being suitably configured for engaged, interlocking relation with a groove means disposed on a cap for closing the container,

a cap of flexible material including a center portion and a skirt, said skirt having an internal dimension complementary with the exterior of said neck and an exterior perimeter smaller than the periphery of said shoulder portion,

groove means, disposed on an internal surface of said skirt and suitably disposed for engaged interlocking relation with said bead means, for detachably locking said cap on said neck so that the margin of the skirt abuts entirely against said shoulder portion,

the exterior of said cap being so configured and arranged when in locked disposition on said neck as to render grasping thereof by one's fingers difficult, and

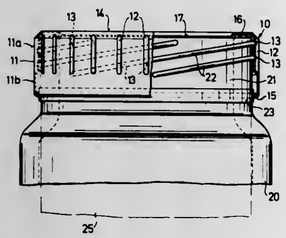
a pressure zone at the center of said cap for affecting a bowing couple in said cap when pressure is applied downward on the center of the cap,

wherein said skirt is disposed with respect to said center portion that when said cap is in engaged relation with said body portion, by having been snapped on said body portion, the application of a suitable downward force upon said pressure zone, creating a bowing couple in said cap, will result in said skirt moving slightly away from said shoulder portion, as said skirt groove means rotates slightly about said bead means, said movement of said skirt away from said shoulder portion creating only a small space into which one may insert one's fingernail and pry said cap from said body portion.

3,885,696
CLOSURE CONSTRUCTION FOR CONTAINER WITH LID

Heinrich Eberhardt, Gasstrabse 9, 221 Itzehoe/Holst., Germany

Filed Oct. 29, 1973, Ser. No. 410,337
Claims priority, application Germany, Nov. 4, 1972, 2254034
Int. Cl. B65d 41/04
U.S. Cl. 215—337 2 Claims



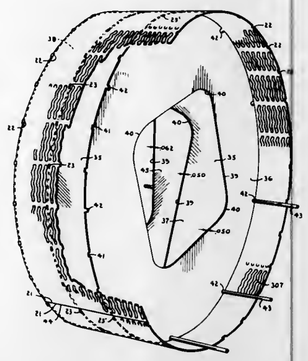
1. A closure and container combination comprising a container having a cylindrical neck with a top opening and a substantially flat rim surrounding the top opening, a male thread projecting outwardly around the side of said neck extending inwardly from said rim, an annular cylindrical ring formation on said neck spaced inwardly from said male thread, a container closure lid having a recessed central portion closing the neck opening, a raised peripheral annular portion overlying said rim and a cylindrical depending skirt portion extending inwardly from said rim, an annular ceiling insert disposed between said lid raised peripheral annular portion and said rim, said lid cylindrical skirt portion having an upper section adjacent said rim with circumferentially spaced vertically extending inwardly projecting corrugations which are malleable and deformed to define a female thread when engaged on said male thread, said lid skirt having a lower section with the same diameter as the upper section but free of corrugations and connected to said upper section and being at least one third the length of said upper section, said lower section having a lower edge with an inwardly directed flange circumferentially engaging said ring formation and centering the lid as it is threaded to said container.

3,885,697
BEAN SNIPPER MACHINE

Joe R. Urschel, 202 Michigan, Valparaiso, Ind. 46383

Filed Aug. 14, 1972, Ser. No. 280,494
Int. Cl. B65d 85/00
U.S. Cl. 220—22 8 Claims

1. A subassembly comprising: a cylinder having a peripheral surface provided with circumferentially spaced circumferentially extending zigzag slots and with circumferentially spaced openings, and a round apertured planar partition disposed in said cylinder and provided with circumferentially spaced means disposed in said openings whereby said partition is



locked in said cylinder in a plane transverse to its longitudinal axis.

3,885,698
CONTAINERS FOR AEROSOLS, GASES AND THE LIKE

Constantin Erwin Lebel, 107, Avenue de Saint-Quen, 75017 Paris, and Pierre Ilie Isidore Karmitz, 95, Avenue Henri Martin, Paris 75016, both of France

Division of Ser. No. 295,524, Oct. 6, 1972, Pat. No. 3,805,995.
This application Dec. 20, 1973, Ser. No. 426,653
Int. Cl. B65d 7/42; G01d 13/00
U.S. Cl. 220—69 2 Claims

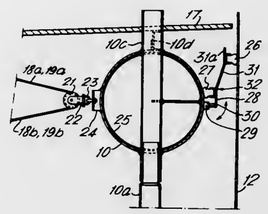
1. A removable bottom member for fluid holding containers comprising a base member having a cavity for receiving and frictionally engaging the base of a fluid holding container and opposite to said cavity a bottom defined by a first portion in the form of one flat horizontal plane and by a second portion diverging from said plane generally along a line offset from the vertical axis of the container including a counterweight positioned thereon, said line forming a balancing pivot line around which the container pivots by gravity when the level of fluid material in the countainer drops below a preselected minimum amount, whereby the container and bottom member rests on said flat horizontal plane when the fluid therein exceeds said preselected minimum amount and rotates by gravity about said pivot line offset from the vertical axis of the container when the fluid therein falls below said preselected minimum amount.

3,885,699
FLOATING ROOF

Nestor Leon Pladys, Rosendael, France, assignor to The British Petroleum Company Limited, London, England

Filed Sept. 20, 1972, Ser. No. 290,761
Claims priority, application France, Sept. 20, 1971, 71.33779
Int. Cl. B65d 87/20
U.S. Cl. 220—225 24 Claims

1. A floating roof suitable for use with a large capacity storage tank comprises (i) a central framework and at least one floating rim, (ii) tensioning cables connected from said central framework to said floating rim, (iii) a covering sheet adapted to be supported by said central framework and said floating rim, and (iv) a seal comprising an articulated collar pivotally attached to the outermost floating rim, said articulated collar being fitted with a first inflatable attachment and

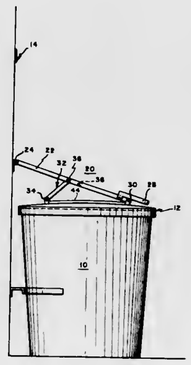


a second inflatable attachment which is nearer to the pivot than the first inflatable attachment, said attachments being on opposite sides of said articulated collar and being adapted so that upon inflation of said inflatable attachments, the second inflatable attachment is pressed against the rim and by a level action presses the first inflatable attachment against a surrounding wall.

3,885,700
CAN TOP REMOVAL MECHANISM

Lavale Allard, Box 171, Haedrige, Nebr. 68949

Filed May 1, 1974, Ser. No. 466,084
Int. Cl. B65d 43/26
U.S. Cl. 220—263 7 Claims

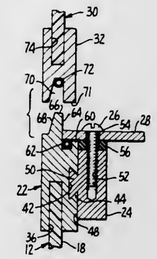


1. An apparatus for removing a can top from a can comprising a fixed pivot means, a first operating lever pivotally connected to said pivot means, a second operating lever pivotally connected to said pivot means, and bell crank means pivotally connected to said first operating lever, said second operating lever and the can top, said pivot connection to said first operating lever being between the ends of said bell crank means, a handle on said first operating lever whereby an upward pivoting movement of said first operating lever removes said can top from one end of said can, and continued upward movement of said first operating lever completely removes said can top from said can.

3,885,701
VALANCE MOLDING FOR EQUIPMENT CASES

Dennis M. Becklin, Grants Pass, Oreg., assignor to Environmental Container Systems, Inc., Palo Alto, Calif.

Filed Oct. 23, 1973, Ser. No. 408,509
Int. Cl. B65d 45/16
U.S. Cl. 220—325 7 Claims

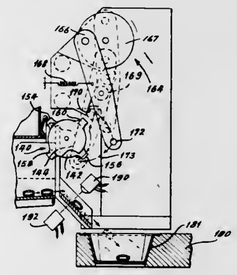


1. A formable valance molding for a case having a mouth bounded by edges of wall panels that form the case, said valance molding comprising an elongate deformable body having a length corresponding to the peripheral length of the mouth, said body having a first surface that defines a continuous slot therein for receiving the edges of the wall panels to secure the valance to the case, said body having a second surface generally normal to said first surface, said second surface facing inward with respect to said mouth, said body defining a continuous channel having a relatively small dimension in said second surface and a relatively large dimension inward of said second surface, portions of said body being excised in a region adjacent said channel to afford access to said channel, a clamp body having a lateral surface adapted to confront said second surface and a protrusion extending from said lateral surface and being configured complementally to said channel so as to be retained therein, said excised region having a longitudinal extent such that said protrusion can be introduced and retained in said channel by inserting said protrusion into said channel at the excised region and sliding the body away from said excised region, said clamp body having means for fastening a mouth spanning panel member thereto.

3,885,702
STORAGE MEANS FOR PELLET DISPENSER

Joel A. Joslin, Crestwood; Alan B. Ranford, Desperes, and Elmer A. Koenig, Kirkwood, all of Mo., assignors to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed Apr. 3, 1974, Ser. No. 457,678
Int. Cl. B23q 7/00
U.S. Cl. 221—174 11 Claims



1. A pellet storage and dispensing device comprising a storage unit including a bowl adapted to store pellets and

having an outlet for discharging pellets from said bowl, a pair, to the seed selector for delivering seed there

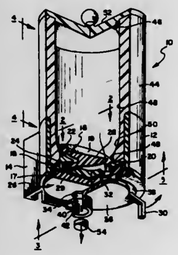
having an outlet for discharging pellets from said bowl, a pair of auxiliary pellet storage bins each adapted to contain an auxiliary supply of pellets for replenishing pellets in said bowl, means mounting each of said bins adjacent said bowl, each of said bins having a hinged closure normally retaining its auxiliary supply of pellets within the bin, and closure operating means including a pair of rotatable wheels each having an abutment member thereon with the abutment members of the wheels in angular relation and respectively engageable with said closures to sequentially open said bins in response to rotation thereof in a given direction.

3,885,703

PILL DISPENSER WITH MOVABLE TRAP CHAMBER AND AGITATOR

William T. Neavin, 3736 Berry Dr., Studio City, Calif. 91604

Filed July 2, 1973, Ser. No. 375,826
Int. Cl. B65d *83/04*
U.S. Cl. 221—202 **13 Claims**



7. A pill dispenser mechanism for dispensing standard sized pills from the open end of an inverted pill container comprising:

a base member having a central upstanding portion registrable within the open end of the pill container and an upper surface defining an eccentric funnel thereon, terminating in a lower discharge orifice, said base member including a lateral aperture in a side of the eccentric funnel portion;

pill discharge means including at least one pill receiving orifice, disposed below said base member and movable arcuately between pill receiving and pill discharge positions relative to the discharge orifice; and

pill agitating means mounted on said pill receiving means and extending through the lateral aperture of said base member, and comprising an elongated arm member extending substantially in a lateral plane across the eccentric funnel portion of the base member, and sweeping over the discharge orifice therein during arcuate movement of the pill discharge means.

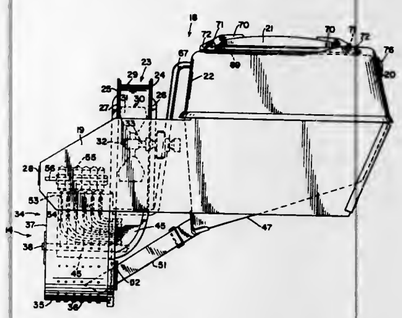
3,885,704

PRESSURE EQUALIZER FOR PNEUMATIC PLANTER

Darlo E. Lienemann, Darien, and Daniel Henry, Downers Groove, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed May 24, 1971, Ser. No. 146,258
Int. Cl. A01c *15/00*
U.S. Cl. 221—211 **3 Claims**

1. A seed dispenser assembly for planters comprising, a stationary wall having openings formed therein; a rotatable seed selector formed of a drum having a closed end and an open end, said rotatable seed selector rotatably mounted such that said open end is adjacent said stationary wall, sealing means between said drum and said stationary wall to prevent escape of air under pressure from the drum; a seed hopper having a top opening, a lid, sealing means between said top opening and said lid to prevent escape of air under pressure from the seed hopper, and a seed discharge outlet connected to the seed selector for delivering seed thereto; an air blower for supplying air under pressure to the interior of the seed selector; said openings connected to said blower and to said hopper respectively to direct air under pressure and seed to



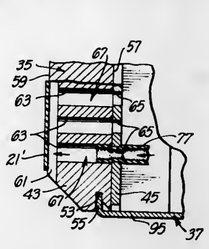
the interior of the drum; and a by-pass opening formed in said stationary wall, said by-pass opening being connected to the hopper to direct air under pressure to the latter for equalizing the air pressure in the hopper with the air pressure in the seed selector to facilitate the flow of seed to the seed selector.

3,885,705

LABEL APPLICATOR WITH RETENTION MEANS FOR FLEXIBLE AIR TUBES

John B. French, Hacienda Heights, Calif., assignor to Compac Corporation, Newark, N.J.

Filed Mar. 12, 1974, Ser. No. 450,314
Int. Cl. C09j *7/02*
U.S. Cl. 221—211 **16 Claims**



1. A label applicator comprising:

wall means defining a chamber, said chamber being adapted for connection to means for reducing the pressure in said chamber to less than atmospheric;

a first portion of said wall means defining a gas pervious wall section, said pervious wall section having an outer face outside said chamber;

means for supplying a label to said outer face of said pervious wall section with the reduced pressure in the chamber releasably retaining the label against said outer face;

a manifold adapted for connection to a source of gas at a pressure greater than atmospheric;

a plurality of flexible tubes;

means for coupling the flexible tubes to said manifold;

said pervious wall section having a plurality of passages;

each of said passages having an outer portion and an inner portion with the inner portion being closer to the interior of said chamber than the outer portion;

each of said tubes being extendible through the inner portion of one of the passages and into the outer portion of such passage, said inner portion gripping the tube which extends therethrough to attach such tube to said pervious wall section, said outer portion exerting a lesser gripping force on said tubes than the inner portion; and

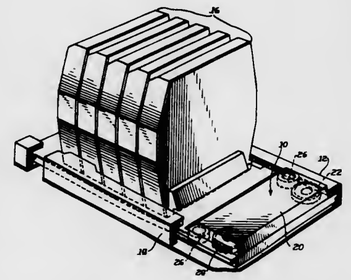
said passages providing communication between the tubes received therein and said outer face whereby the gas under pressure in said manifold can be transmitted through said tubes to blow the label from the outer face of the pervious wall section.

3,885,706

CASSETTE PUSHER VELOCITY REGULATOR

Edward H. Lodge, Wilmette, Ill., assignor to Bell and Howell Company, Chicago, Ill.

Filed Aug. 20, 1973, Ser. No. 389,854
Int. Cl. B65d *83/10*
U.S. Cl. 221—279 **13 Claims**



1. An apparatus for regulating the motion of an assembly of cassettes during indexing, comprising:

means for applying displacement force to at least one of an assembly of cassettes, the displacement means comprising a pusher assembly and spring means coupled thereto; means for guiding the direction of displacement of the cassettes during movement by said displacement means; the guide means being arranged to opposite sides of said pusher and said cassette assembly, to permit movement thereof only within said guide means;

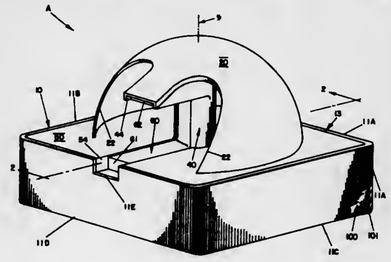
means coupling said spring means to said guide means; and means for regulating the velocity of the cassettes during indexing by modifying the acceleration of said displacement means caused by said spring means, the velocity regulating means comprising gear means attached to both displacement means and guide means.

3,885,707

DISPENSING APPARATUS FOR TOOTHPASTE DENTIFRICE AND OTHER FLOWABLE VISCOUS-MATERIAL

Gladys Ann Wittwer, 725 17th St., Auburn, Nebr. 68305

Filed Sept. 7, 1973, Ser. No. 395,015
Int. Cl. B65d *35/44*
U.S. Cl. 222—96 **6 Claims**



1. Dispensing apparatus for toothpaste dentifrice and other similarly flowable viscous-material, said dispensing apparatus comprising:

A. A boxy receptacle having an enlarged mouth-opening and including upright wall-means surrounding a vertical-axis for the receptacle and also including a transversely extending base panel means that intersects said receptacle vertical-axis;

B. A dispensible supply of flowable viscous-material enclosed within a manually compressible pouch carried within said boxy receptacle, said dispensible pouch supply including a pouch floor-panel underlyingly supported by the receptacle base panel means and a pouch roof-panel provided with a discharge opening located substantially at the receptacle vertical-axis, the floor-panel and the roof-panel each substantially horizontally and transversely intersecting the vertical-axis and defining therebetween along the pouch vertical-height the pouch volumetric capacity, said pouch along the vertical-axis when enclosing its volumetric capacity of flowable viscous-material being of substantially regular annular cross-sectional size and shape and having the cross-sectional dimension thereof exceeding the pouch vertical-height;

C. Pressure-plate means located externally of said pouch to permit the operator to apply manual pressure vertically against the pouch and toward the receptacle base panel means and thereby cause flowable viscous-material to flowably travel through a conduit means having an exit located above the said dispensible pouch supply;

D. Said conduit means located above the pouch supply and in communicating relationship with the pouch discharge-opening whereby flowable viscous-material might flowably travel through said conduit upon the application of manual pressure by the operator vertically against the pouch through said pressure-plate means, said conduit including a transversely extending upper portion whereby the conduit has a forward side and a forward exit transversely offset from the vertical-axis, the forward side of the conduit and the upper side of said pressure plate means are provided with a grooved track of generally C-shaped configuration; and

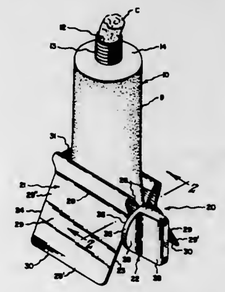
E. Closure means comprising a resiliently movable and flexible tongue slidably disposed along said C-shaped track means for temporarily closing the conduit exit during periods of non-use for the dispensing apparatus.

3,885,708

FLEXIBLE TUBE WINDING AND EMPTYING DEVICE

David W. Parry, 2390 N. Forest Rd., Getzville, N.Y. 14068

Filed June 6, 1974, Ser. No. 476,988
Int. Cl. B65d *35/34*
U.S. Cl. 222—100 **12 Claims**



1. A device for progressively advancing the contents of a flexible tube longitudinally along a usable portion thereof toward an opening provided through a first end of said tube, and for winding a flattened spent portion of said tube which is arranged proximate a second end thereof, said device comprising:

a pair of opposed jaws arranged to move toward and away from one another and adapted to act transversely upon a part of said tube which is arranged between said jaws, said jaws separating said usable portion from said spent portion;

biasing means including a spring means arranged to engage each of said jaws to continuously urge each of said jaws to move toward the other of said jaws to compressively flatten the part of said tube which is arranged between said jaws; and

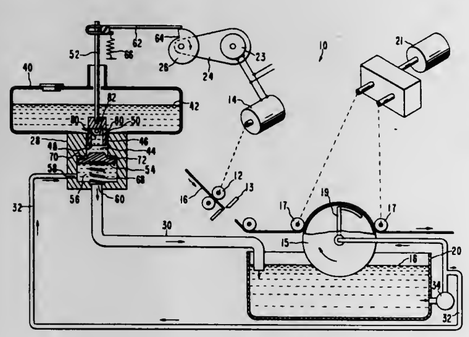
a rotatable turn-key having a shank portion provided with a longitudinal slot adapted to receive said second end of said tube, whereby when said turn-key is rotated said spent portion is wound around said shank portion, said usable portion is drawn between said jaws, and said contents are advanced longitudinally along said usable portion toward said opening.

3,885,709

LIQUID TONER CONCENTRATE DISPENSER HAVING A VALVE RESPONSIVE TO HYDROSTATIC PRESSURE

Raymond L. Levy, Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Feb. 1, 1974, Ser. No. 438,917
Int. Cl. B67d *5/46*
U.S. Cl. 222—133 **9 Claims**



1. A self cleaning dispenser for dispensing toner concentrate into a developing tank through a flow of toner fluid, comprising the following combination:

a reservoir for containing a quantity of the toner concentrate;

a variable volume chamber in liquid communication with the reservoir formed by a wall member and an end member moveable relative to one another to vary the volume of the chamber;

means for activating changes in volume of said chamber comprising means for reciprocating one of said members causing a decreasing volume stroke in which the chamber members are moved rapidly together causing a temporarily elevated hydrostatic pressure within the chamber, and an increasing volume stroke in which the chamber members are moved slowly apart;

a valve formed in the wall member of the chamber and which opens in response to the temporarily elevated hydrostatic pressure within the chamber during the rapid decreasing volume stroke; and

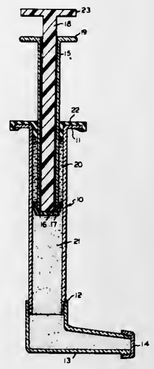
a discharge chamber formed about the valve for receiving the displaced toner concentrate from the variable volume chamber, the discharge chamber having an input port which receives a flow of toner fluid from the developing tank for diluting and agitating the displaced toner concentrate and having an outlet port through which the flow of toning fluid is returned to the developing tank along with the toner concentrate dispensed therein.

3,885,710

MIXING DISPENSER WITH A SELECTIVELY RETRACTABLE SEAL TO PERMIT INTERMIXING OF THE INGREDIENTS

Maxwell L. Cohen, Chevy Chase, Md., assignor to Milton Cohen

Filed Mar. 20, 1973, Ser. No. 343,135
Int. Cl. B67d *5/60*
U.S. Cl. 222—145 **15 Claims**



1. A combined mixer and pressure ejector for initially retaining two ingredients in separated relationship, permitting controlled mixing of said components, and controlled ejection of said mixed components comprising:

a hollow barrel,

a plunger reciprocally disposed partially inside said barrel, a deformable seal means radially projecting from said plunger and engageable with the walls of said barrel to provide upper and lower separated chambers within said barrel,

said plunger incorporating manually operable means for enabling the retraction of said seal means away from the walls while the plunger is stationary within the barrel and said plunger and seal means being constructed and arranged to provide positive mixing of said components by the seal means by reciprocating said plunger with the seal means in retracted position,

said manually operated means permitting return of the said means to the walls for enabling the ejection of said mixture.

3,885,711

SANITARY LIQUID DISPENSER

Charles P. Martindale, 4322 Palm Tree Blvd., Cape Coral, Fla. 33904

Filed Apr. 17, 1972, Ser. No. 244,358
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 **9 Claims**

1. A sanitary liquid dispenser for dispensing a liquid such as milk from a source such as a cannister in a refrigeration closet comprising:

A. a housing suspended beneath the floor of the refrigeration closet and including an enclosed semi-spherical lower end providing,

1. a fixed portion,

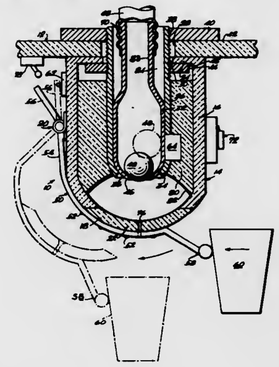
2. a central portion which comprises a swingable portion hinged to said fixed portion and swingable between a closed and an open position,

3. an enclosed inner chamber;

B. a well, extending upwardly through the floor of the refrigeration closet and downwardly into said chamber and having an inwardly rounded bottom flange,

C. a tubular insert including an inwardly rounded bottom flange seated on said well flange providing an opening defining a valve seat for a ball valve comprising said valve means nested within said well providing,

1. an open upper end,



2. a normally closed valve means at the lower end;

D. a conduit tube extending in open communication between the liquid storage source in the refrigeration closet and said insert through said open upper end;

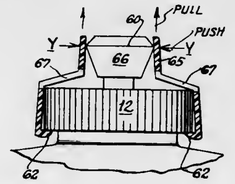
E. means to open said valve means, when said swingable portion is swung from a closed position to a fully open position to permit a fluid flow from the source through said open valve.

3,885,712

CHILDPROOF CLOSURES OF THE PULL-PUSH TYPE

Sidney M. Libit, 441 Lakeside Terrace, Glencoe, Ill. 60022

Filed June 28, 1974, Ser. No. 484,284
Int. Cl. B67d *5/32*
U.S. Cl. 222—153 **12 Claims**



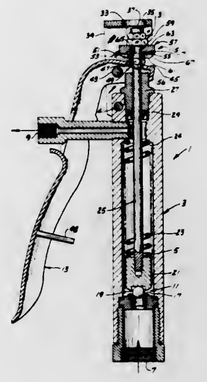
3. In combination, a dispensing closure of the pull-push type for a container for a hazardous substance potentially injurious to small children and an adjunct to preclude opening of the closure by a child of tender years, the closure comprising a fixed part having means attaching the same to the container and a movable part operatively mounted on the fixed part for reciprocating movement between "on" and "off" positions for flow of contents from the container and termination of flow respectively, the fixed part having a passage in fluid communication with the interior of the container and the movable part having a passage for exit of the substance from the container, a valve intermediate said passages which, upon movement of the movable part to "on" position connects the passages for flow therethrough, the movable part having an actuating head and a stem extending therefrom into the fixed part to constitute the movable part of the valve, the adjunct having first means for attachment of the adjunct to the fixed part and second means cooperative with the head of the movable part of the closure for joint movement therewith, said second means including guard means normally preventing access to the head for actuation of the valve, said guard means comprising a sleeve of resilient but generally shape-retaining material around the head capable of being digitally squeezed against the head to couple said guard and head to open the valve.

3,885,713

DISPENSING GUN WITH SAFETY RING

George Weitzel, Bridgeton, Mo., and Wayne J. Devries, Mount Olive, Ill., assignors to McNeil Corporation, Akron, Ohio

Filed Dec. 10, 1973, Ser. No. 423,133
Int. Cl. F16r *3/12*
U.S. Cl. 222—153 **4 Claims**



1. A gun for dispensing a viscous composition, such as lubricating grease, automotive undercoating compounds or the like, comprising a body, a bore within said body, an inlet for said bore adapted for connection to a source of pressurized composition to be dispensed, an outlet for the bore adapted for discharge of said pressurized composition from said bore, and valve means for controlling the flow of said composition under pressure from said inlet to said outlet, said valve means comprising a valve seat in the bore, a valve member movable toward and away from the seat, a rod extending from the valve member out of one end of the bore, spring means biasing the valve member toward the seat to close said valve means, a handle pivotally mounted on the body, the rod extending through an end portion of the handle, an abutment on the rod outward of said end portion of the handle, and compression link means between said end portion of the handle and said abutment, said compression link means comprising a member adjustable on the rod between an operative position wherein said link means constitutes a compression link between said end portion of the handle and said abutment to transmit motion from said end portion of the handle to the rod to move said valve member away from said seat when the handle is swung to open said valve means, and a safety position permitting lost motion of said end portion of the handle relative to said abutment.

3,885,714

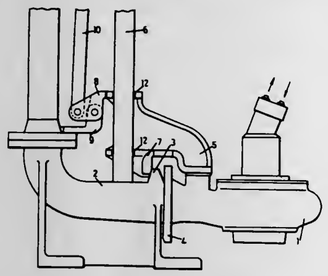
SYSTEM FOR COUPLING PUMP UNITS TO OUTLETS UNDER WATER

Evert Sjostrand, Solna, Sweden, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 19, 1974, Ser. No. 462,413
Int. Cl. F04b *17/00*
U.S. Cl. 222—180 **6 Claims**

1. A locking device for submersible pumps arranged as a releasable connection between a pump unit and a usually submerged outlet pipe, comprising guide means attached to a pump unit, said guide means including spaced upper and

lower sleeve adapted to slide along a substantially vertical guide when a pump unit is being lowered or raised, a locking pawl, means for operating said locking pawl from a position above a water surface when said pump unit is submerged, said locking pawl including means engaging said upper sleeve for



securing the pump unit by pressing the upper sleeve against one side of the substantially vertical guide while pressing the lower sleeve against the opposite side of the vertical guide to rotate the guide means and press the pump unit securely against the outlet pipe.

3,885,715

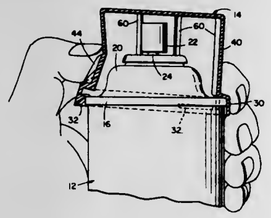
SECURITY CAPS FOR CONTAINERS

Robert D. Lowry, Winchester, Mass., assignor to Lowry Development Corporation, Winchester, Mass.

Continuation-in-part of Ser. No. 284,660, Aug. 29, 1972, abandoned. This application Aug. 6, 1973, Ser. No. 386,017

Int. Cl. B65d *55/02*

U.S. Cl. 222—182 **10 Claims**



1. A cap for an aerosol container having a bead around its top outer periphery comprising

a hollow cap including

a bottom skirt depending from a superimposed body portion,

a plurality of inwardly-extending spaced lugs on said skirt for engaging the bead on said container

one of said lugs being disposed at the front of said cap, the lower portion of the front wall of said cap above said front lug having one or more vertical stiffening ribs extending upwardly from said skirt to a point spaced downwardly from the top of the cap, said ribs being on the outside of said front wall, the upper portion of said cap above said stiffer portion being more flexible than said stiffer portion and adapted to be deformed when inward pressure is exerted against said upper portion to distort said skirt to move said front lug radially outwardly,

said cap being removable backwardly and upwardly off said container after said front lug has been so moved outwardly, followed by exertion of upward pressure on said front wall to raise said front lug free and clear of said container bead.

3,885,716

APPLIANCE TO MEASURE OUT A GIVEN VOLUME OF POWDER

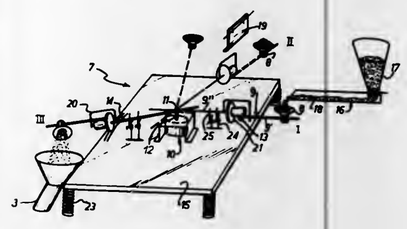
Claude Marechal, Lozanne, France, assignor to Ciments Lafarge S.A., Paris, France

Filed Nov. 29, 1972, Ser. No. 310,367

Claims priority, application France, Apr. 25, 1972, 72.14569

Int. Cl. G01f *11/10*

U.S. Cl. 222—346 **3 Claims**



1. A device for measuring out at a filling station successive samples of a powderous substance from a bulk quantity thereof and for delivering said samples at a delivery station located at a distance from said filling station, comprising: a substantially horizontal arm having first and second portions; a calibrated open-ended receptacle mounted on said first portion of said arm; a rotary joint connecting said first arm portion to said second arm portion and permitting rotation of said first arm portion between a first position wherein the open end of said receptacle is upwardly directed and a second position wherein the open end of said receptacle is downwardly directed; a substantially vertical rotary shaft connected to said second portion of said horizontal arm for rotating said arm, a motor driving said vertical shaft for rotating said arm and said receptacle between said filling and delivery stations, means for biasing said first arm portion to said first position, means at said delivery station engageable with said rotary joint for rotating said first arm portion to said second position when said arm is at said delivery station, means for delivering an amount of said powderous substance from said bulk quantity thereof into said receptable when the latter is at said filling station, and means for vibrating said receptacle.

3,885,717

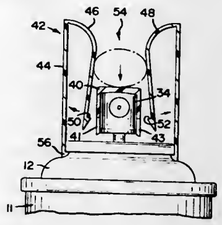
CHILD SAFETY CLOSURE FOR AEROSOL CONTAINERS

Ronald F. Ewald, Rolling Meadows, Ill., assignor to Seaquist Valve Company, Cary, Ill.

Continuation-in-part of Ser. No. 281,917, Aug. 18, 1972, Pat. No. 3,786,968. This application Apr. 19, 1973, Ser. No. 352,440

Int. Cl. B65d *83/14*

U.S. Cl. 222—402.11 **10 Claims**



1. A safety adaptor for an aerosol dispenser comprising control means to prevent actuation of a valve actuating means by a finger less than a predetermined width, said control means comprisng a base attached tp said aerosol dispenser,

said base including at least one pair of finger guides attached thereto by resilient interconnecting means, said resilient interconnecting means disposed to movably bias said finger guides in predetermined spaced relation to one another, at least one of said finger guides including a locking means disposed thereon to operatively engage an element of said aerosol dispenser to prevent actuation of said dispenser when in a locked position, said finger guides being movable away from one another and against the biasing portion of said resilient interconnecting means, whereby said locking means is moved out of operative engagement with said aerosol dispenser to permit movement of said valve actuation means and actuation of the dispenser.

3,885,718

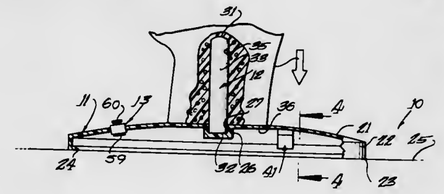
PORTABLE WIG STAND

John A. Clemence, 501 Halsey Ave., San Jose, Calif. 95128

Filed July 22, 1974, Ser. No. 476,827

Int. Cl. D06c *15/00;* **H45c** *11/02*

U.S. Cl. 223—66 **5 Claims**



1. A portable wig stand adapted to support a head shaped manikin thereon for purposes of maintaining and styling a wig supported on the manikin, the wig stand comprising:

a base member adapted to be rested on a horizontal supporting surface;

a post adapted to be removably secured in an operative position in said base and project upright therefrom and adapted to be received in a base of said manikin to secure the same to the stand;

a resilient spring clip affixed to said base and adapted to hold said post when in an inoperative position separated from said base;

vacuum means associated with said base and selectively operable in a manner to assist in securing said base to said supporting surface; and

valve means mounted in said base and in communication with said vacuum means and movable between an inoperable position retaining said vacuum and an operative position destroying said vacuum and permitting said base to be easily removed from said supporting surface.

3,885,719

DEVICE FOR THREADING A RIBBON THROUGH A HEM

Penelope Williams, 3364 Nevada Ave., Costa Mesa, Calif. 92626

Filed Feb. 19, 1974, Ser. No. 443,225

Int. Cl. D04d *11/00*

U.S. Cl. 223—103 **4 Claims**

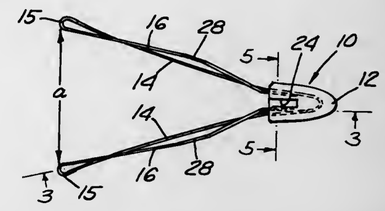
1. A lacing device for threading a ribbon through a tunnel, comprising:

a smooth pilot body dimensioned to pass through the tunnel;

a pair of resilient wires attached to said pilot body and extending rearwardly therefrom;

said wires being doubled back from their outer ends towards the pilot body, forming a pair of resilient two-wire arms with loops at the outer ends thereof, respectively, which are adapted to engage the ribbon material, the forward ends of said doubled-back wires extending forwardly beyond the trailing edge of the pilot body, and said forward ends being pointed to penetrate the material of the ribbon; and

said pilot body having a cavity provided therein into which said forward ends of said wires can be inserted by springing the doubled-back ends of the wires toward the cavity, said forward ends of the wires being engaged and retained by spring tension in said cavity so as to shield the points thereof;



said two-wire arms being resiliently biased to spread said two loops apart a distance greater than the width of the ribbon when unrestrained, whereby engaging said loops with the leading end of the ribbon at transversely spaced points thereon causes the arms to place the leading end of the ribbon under transverse tension to hold the ribbon flat.

3,885,720

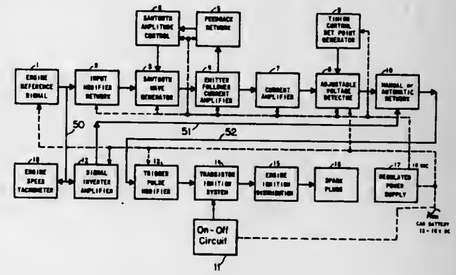
METHOD AND SYSTEM FOR CONTROLLING COMBUSTION TIMING OF AN INTERNAL COMBUSTION ENGINE

William R. Brennan, Stanford, Conn., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 109,878, Jan. 26, 1971. This application Jan. 10, 1973, Ser. No. 322,393

Int. Cl. F02p *5/04*

U.S. Cl. 123—148 E **14 Claims**



1. A system for controlling the timing of the combustion cycle in an internal combustion engine having a rotatable power shaft, said system comprising:

means responsive to rotation of said power shaft for generating sequential input trigger signals having a frequency proportional to the speed of rotation of said power shaft;

a waveform generator responsive to said input trigger signals for generating sequential sawtooth waveforms, each of said sawtooth waveforms having a duration corresponding to a predetermined number of degrees of power shaft rotation and having an amplitude changing as a function of time;

feedback means responsive to said waveform generator for maintaining the maximum amplitude of said sawtooth waveforms at a substantially constant level for all engine speeds by varying the rate of change of the amplitude as a function of engine speed such that a given instantaneous

magnitude of each sawtooth waveform corresponds to a predetermined angular position of the power shaft regardless of engine speed;

means for generating a set point signal corresponding to a predetermined angle of rotation of said power shaft;

means for detecting when the amplitude of each of said sawtooth waveforms reaches a level defined by said set point signal so as to correspond to a predetermined angle of rotation of said power shaft;

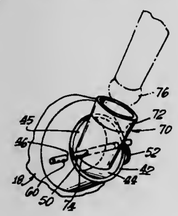
means responsive to said detecting means for generating an engine trigger signal corresponding in time to a predetermined angle of rotation of said power shaft; and

means for adjusting said set point signal so as to adjust the timing of said engine trigger signal to correspond with a different predetermined angle of rotation of said power shaft.

3,885,721
SPORT FISHING BELT

Anthony M. Vanus, 105 Bronn Dr., Claremont, Calif. 91711

Filed Nov. 30, 1973, Ser. No. 420,449
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 E **1 Claim**



1. A sport fishing belt comprising a rod holding plate fixed to a belt, the belt being adapted to be secured about the body of the user, the plate having secured thereto a generally cup shaped holder bracket for the fishing rod, the bracket having a pair of diametrically opposed circular holes, a pin having its ends slidably fitting in said holes, said pin extending diametrically across said bracket and being removable from said bracket by endwise movement through said holes, means for releasably retaining said pin in said holes and a cup having diametrically opposed holes slidably receiving said pin, whereby said holder may be adapted to receive the butt end of a fishing rod directly in said bracket by removal of said pin and cup, or adapted to receive the butt end of a fishing rod in said cup by installation of said pin and cup in said bracket, or adapted to receive a slotted gimbal on the butt end of a fishing rod with said pin engaging in the gimbal slot by installation of said pin only or both said pin and cup in said bracket.

3,885,722
PACK FRAME SUSPENSION MEANS

Jerry D. Robertson, Phoenix, Ariz., assignor to Camp Trails Company, Racine, Wis.

Filed May 8, 1972, Ser. No. 251,054
Int. Cl. A45f *3/00*
U.S. Cl. 224—25 A **15 Claims**

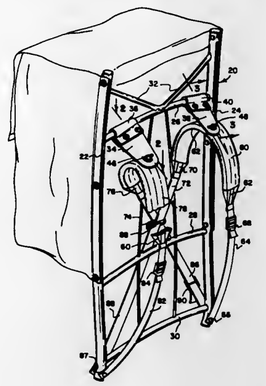
14. A pack frame suspension means comprising:

a rigid frame having, when in worn position, top and bottom ends and opposite sides;

a sway adjustment ring secured to said frame between said top and bottom ends and between said opposite sides;

flexible shoulder straps adjacent to said frame between said top and bottom ends and said opposite sides, said straps including concavo-convex shoulder-engaging portions between said top end and said sway adjustment ring, said shoulder straps having first ends attached near said bottom end of said frame and second ends joined together through said sway adjustment ring thereby permitting self-adjustment of the relative lengths of the shoulder straps during certain body movements;

substantially rigid brace members coupled to said frame near said top end, extending from said frame, and terminating in free ends generally aligned with said shoulder-engaging portions of said shoulder straps, said brace



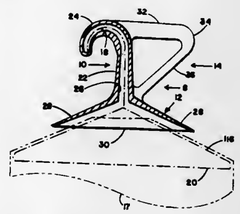
members being of substantially fixed dimensions between said couplings to said frame and said free ends, said brace members further being of resilient material deflectable in up and down directions; and

means connecting said free ends of said brace members with the convex surfaces of said shoulder-engaging portions of said straps.

3,885,723
CARRIER DEVICE FOR HANGER SUPPORTED GARMENTS

Robert L. Magnie, 945 Detroit St., Denver, Colo. 80206

Filed Jan. 14, 1974, Ser. No. 432,963
Int. Cl. B65d *35/28*
U.S. Cl. 224—45 T **11 Claims**



1. A carrier device for hanger supported garments wherein the hanger has an upper hook shaped portion and a depending body portion comprising,

a skirt adapted to extend at least partially over the body portion of the hanger, said skirt having an opening therethrough,

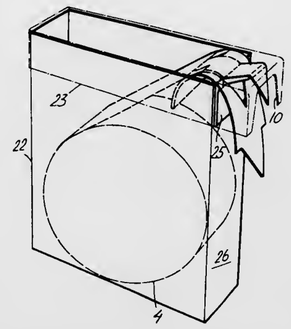
a connection element integrally connected to the skirt and extending upwardly from the skirt from a location immediately adjacent said opening in the skirt, said connection element having means for confining the hook shaped portion of the hanger so that the connection element conforms in configuration to that of the hook shaped portion of the hanger, and

a handle connected to the connection element adapted to be grasped by a user in carrying the hanger and the garments supported thereby.

3,885,724
DEVICE FOR TEARING OFF PIECES OF A CERTAIN LENGTH FROM A STRIP

Åke Ehrlund, Alvkvarnsvagen 177, Spanga, Sweden

Filed Jan. 24, 1973, Ser. No. 326,457
Claims priority, application Sweden, Jan. 26, 1972, 846/72
Int. Cl. B26f *3/02*
U.S. Cl. 225—77 **5 Claims**

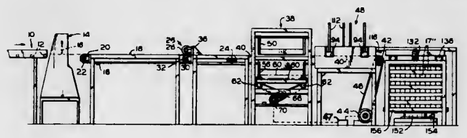


1. A device for tearing off pieces of the same predetermined length from a roll of fed flexible strip, said strip having punched lines forming tongues equally spaced along said strip with their spacing equal to said predetermined length and directed in the feeding direction for said strip, whereby the portion of each tongue which is firmly connected to the remainder of the strip is perpendicular to the longitudinal direction of the strip, said device comprising a casing for said strip roll, said casing having side walls and an open top, a cover pivotally connected to said casing and closing said top, said cover having an outwardly extending portion, another portion integral with the first-mentioned portion and extending in a downwardly direction relatively to the cover, said casing having a portion extending substantially parallel to the first-mentioned portion but spaced therefrom to form a gap for the passage of the strip out of the casing, a flange for temporarily arresting movement of said tongue integral with the third-mentioned portion and extending close to the second-mentioned portion but spaced therefrom to form a gap for the continuing passage of the remainder of the strip, and tear-off portions on either side of said flange connecting the base of said flange to the side walls of the casing arranged for the cut-off of the remainder of the strip.

3,885,725
MACHINE FOR MANUFACTURING ARTICLES OF FOLDED PLASTERBOARD

James P. Petermann, Tigard; William E. Dolinar, and Stanley V. Ehrlich, both of Portland, all of Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Apr. 10, 1974, Ser. No. 459,674
Int. Cl. B27f *7/14*
U.S. Cl. 227—66 **6 Claims**



1. A machine for manufacturing articles of folded plasterboard, comprising:

cutter means for cutting plasterboards to a standard length;

scoring means for scoring said boards on the opposite sides thereof to provide a plurality of spaced score lines extending partially through the thickness of said boards;

folding means for folding each of said boards along said score lines to provide a folded member having a plurality of pleats formed by layers of gypsum board material

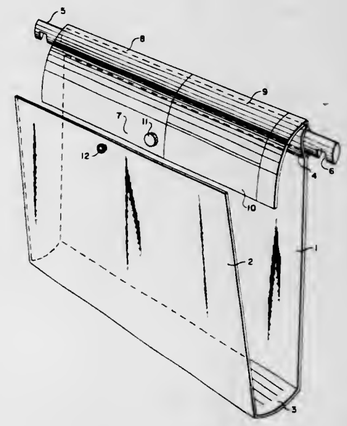
fastening means for fastening together the layers of each folded member to form said articles; and

automatic conveyor means for intermittently conveying said boards between said cutter means, said scoring means, said folding means and said fastening means.

3,885,726
OFFICE FOLDER

Karl Gösta Fridlund, Stockholm, and Jan Urban Jiveman, Jakobsberg, both of Sweden, assignors to Gosta Fridlund, Stockholm, Sweden

Filed Feb. 20, 1973, Ser. No. 333,459
Claims priority, application Sweden, Feb. 17, 1972, 1888/72
Int. Cl. B65d *3/00*
U.S. Cl. 229—1.5 R **1 Claim**



1. A folder for letters, documents, and the like, comprising, in combination:

a. a first section, a second section, and a bottom section, the latter being arranged interconnecting the first and second sections at one edge of each;

b. a longitudinal track arranged at another edge of the first section, which another edge is opposite the one edge connected to the bottom section and is parallel to the bottom section;

c. a mounting bar free-running insertable in the track;

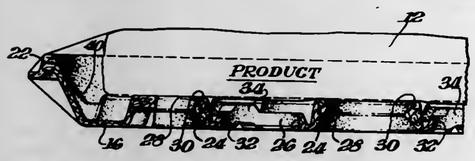
d. a longitudinal overlapping section being arranged in connection with the another edge of the first section and provided with at least one pocket arranged for the insertion of marking labels, and with a first locking member at the inner surface of the overlapping section; and

e. a second locking member arranged on the outside of the second section for cooperating with the first locking member and creating a locked closing of the folder in hanging as well as lying position thereof.

3,885,727
PACKAGING TRAY WITH JUICE TRAPPING VIEWING WINDOWS

James E. Gilley, South China, Maine, assignor to Keyes Fibre Company, Waterville, Maine

Filed Apr. 18, 1974, Ser. No. 462,097The portion of the term of this patent subsequent to May 27, 1992, has been disclaimed.
Int. Cl. B65d *1/00*
U.S. Cl. 229—2.5 5 Claims

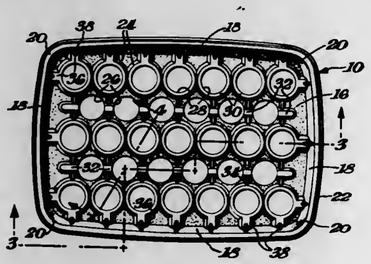


1. A molded, open top tray for packaging products, such as moist pieces of meat, fish or poultry in conjunction with a transparent wrapping enclosing both the tray and the product packaged thereon, comprising a base portion defining the bottom of the tray, a plurality of truncated hollow posts tapering upwardly from the base portion, the upper ends of said posts having openings which define viewing windows, the periphery of said windows providing product support rims, openings through the base portion between the posts to define lower viewing windows whereby portions of the packaged product located over a post are visible through the upper viewing windows and portions of the product not located over a post are visible through the lower viewing windows, and upstanding lip means around the periphery of each lower viewing window to trap juices on the upper surface of the base portion and inhibit the flow of juices downwardly through the lower viewing windows.

3,885,728
PACKAGING TRAY WITH UPPER AND LOWER VIEWING WINDOWS

James E. Gilley, South China, Maine, assignor to Keyes Fibre Company, Waterville, Maine

Filed June 25, 1973, Ser. No. 373,432
Int. Cl. B65d *1/00, 65/00*
U.S. Cl. 229—2.5 8 Claims

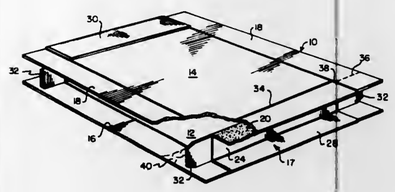


1. A molded, open top tray for packaging products, such as moist pieces of meat, fish or poultry in conjunction with a transparent wrapping enclosing both the tray and the product packaged thereon, comprising a base portion defining the bottom of the tray, a plurality of truncated hollow posts tapering upwardly from the base portion, the upper ends of said posts having openings which define viewing windows, the periphery of said windows providing product support rims, openings through the base portion between the posts to define lower viewing windows whereby portions of the packaged product located over a post are visible through the upper viewing windows and portions of the product not located over a post are visible through the lower viewing windows, the size of the upper viewing windows as defined by the product support rims and the spacing of the upper viewing windows with respect to each other precluding substantial contact between the packaged product and the base portion of the tray, and the horizontal dimensions of the upper viewing windows being greater than the vertical distance between the level of the upper viewing windows and the level of the lower viewing windows.

3,885,729
BOOK CARTON

Arthur Rous, deceased, late of Englewood, N.J. (by Vivian Rous); David Cowen, and Myron Eisenstein, both of New York, N.Y., assignors to Stone Container Corporation, Chicago, Ill.

Filed Jan. 23, 1974, Ser. No. 435,704
Claims priority, application Canada, Oct. 4, 1972, 153250
Int. Cl. B65d *5/02*
U.S. Cl. 229—40 5 Claims

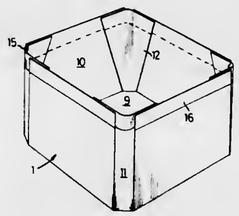


1. A carton comprising an integral one-piece blank including a top wall and bottom wall, said top and bottom walls being parallely aligned one above the other, first side flaps being hingedly connected to the sides of said top wall, second side flaps being hingedly connected to the sides of said bottom wall, first and second end walls which adjoin the ends of said top and bottom walls, said first end wall including a first panel being completely glued to the inwardly facing surface of said top wall and being parallely aligned with said top wall, a second panel being hingedly connected to said first panel and being perpendicularly disposed with respect to said top wall and a third panel being hingedly connected to said second panel and being hingedly connected to said bottom wall; said second end wall including a fourth panel being completely glued to the inwardly facing surface of said bottom wall and parallely aligned with said bottom wall, a fifth panel being hingedly connected to said fourth panel and being perpendicularly disposed with respect to said bottom wall, and a sixth panel being hingedly connected to said fifth panel and being hingedly connected to said top wall and a pair of end flaps being hingedly connected to the ends of said second and fifth panels, said end flaps being adapted to be perpendicularly disposed with respect to said second and fifth panels, a first precut being formed in said second side flaps adjacent one of said end walls, said first precut extending the width of said second side flaps, a second precut being formed along the boundaries between each of said second side flaps and said bottom wall, said second precut extending from said first precut in a direction away from said adjacent end wall and means for separating said top wall into two sections, said separating means extending across the width of said top wall and said first side flaps, said separating means being positioned generally parallel to and adjacent said adjacent end wall.

3,885,730
STERILIZABLE PACKAGE

Od W. Christensson, Stockholm, Sweden, assignor to Christenssons Maskiner & Patenter Aktiebolag, Bromma, Sweden

Filed Mar. 7, 1974, Ser. No. 448,941
Int. Cl. B65d *5/64*
U.S. Cl. 229—43 9 Claims

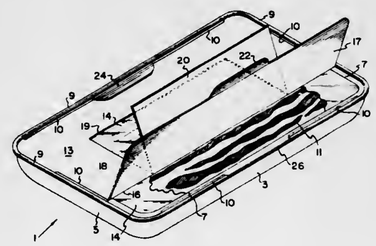


1. A sterilizable container comprising a container bowl of a liquid-tight material which bowl is open at the top and which is connected along the upper edge thereof to a lid thereby forming a tight, closed unit, characterized in that said container bowl is formed by at least two thin foils which are intimately contacting a base of a stiff material disposed therebetween wherein said base extends a distance less than the distance to said upper edge of said container bowl, and wherein said foils are joined together along said upper edge and said lid is joined in sealed relationship with the non-strengthened upper part of said container bowl.

3,885,731
PACKAGE CONSTRUCTION

Charles D. Mullinix, 465 Golden Rd., Fallbrook, Calif. 92028

Filed Sept. 30, 1971, Ser. No. 185,190
Int. Cl. B65d *43/10*
U.S. Cl. 229—43 5 Claims

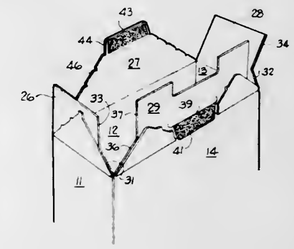


1. A cover construction for a food package or the like comprising a transparent membrane; an opaque panel having opposite sides and ends overlying said membrane, said panel having between its sides a score line adjacent one side thereof and extending from one end to the opposite end to form a hinged edge portion between said score line and said one side of said panel, said hinged edge portion being swingable about said score line, said panel having a first slit between its opposite ends and extending along a line located between said score line and the opposite side of said panel and substantially parallel to but spaced from said score line, said panel also having slits at opposite ends of said first slit and extending to said score line to form a hinged flap swingable about said score line; and means adhering said panel to said membrane at selected zones to permit swinging movement of said hinged edge portion and of said flap relative to said membrane.

3,885,732
CARTON WITH EASY OPENING RECLOSURE

Thomas W. Foster, Palo Alto, Calif., assignor to Fiberboard Corporation, San Francisco, Calif.

Filed Mar. 27, 1974, Ser. No. 455,181
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 TC 9 Claims



1. A carton structure having an easy opening feature, said carton structure comprising side walls, a front wall, a back wall, a bottom closure and a top closure, said top closure comprising

a. minor flaps hinged to said side walls,
b. an inner major flap hinged to said front wall,
c. an outer major flap hinged to said back wall, said outer major flap folded over and sealed to said other flaps only in areas closely adjacent its side edges and a front edge thereof to form said top closure,
d. a tab formed in said outer major flap medially of the front edge thereof,
e. a first pair of lines of weakness extending diagonally outwardly and backwardly from said tab toward the corners of said outer major flap remote from said front edge,
f. a second pair of lines of weakness extending from medial portions of said first pair of lines of weakness diagonally outwardly and forwardly towards the corners of said outer major flap adjacent said front edge, and
g. cutaway portions at side edges of at least one of (1) said inner major flap and (2) both of said minor flaps, so arranged that said outer major flap is sealed only to said inner major flap in areas adjacent its front edge and only to said minor flaps in areas adjacent its side edges, whereby said closure may be opened by first grasping said tab and pulling upwardly to split said outer major flap along said first pair of lines of weakness and then grasping said inner major flap and pulling upwardly to split the remaining sealed portions of said outer major flap along said second pair of lines of weakness.

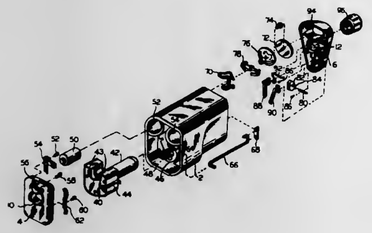
3,885,733
NEW ELECTRIC PROD

Franklin R. Klebold, P.O. Box 7650, and Robert L. Bruce, 1604 Eagle Drive, both of Fort Worth, Tex. 76111

Filed Mar. 27, 1973, Ser. No. 345,462
Int. Cl. B68b *11/00*
U.S. Cl. 231—2 E 16 Claims

1. An electrical prod for animals or individuals; comprising, an elongated body member of non-conducting material; a battery means; shocker circuit means operatively connected to said battery means and including a pair of spaced spark gap means; acoustical signal circuit means operatively connected to said battery means; and switch means operatively connected to said shocker circuit means and said acoustical signal circuit means and adapted to independently actuate one of said acoustical signal circuit means and a combination of said

acoustical signal circuit means and said shocker circuit means; said battery means, said shocker circuit means, said acoustical



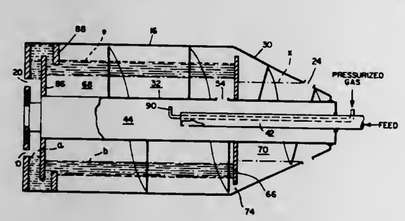
signal circuit means and said switch means being mounted on said body member.

3,885,734

CENTRIFUGE APPARATUS

Chie-Ying Lee, Hatboro, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 284,371, Sept. 6, 1972, Pat. No. 3,795,361. This application Jan. 10, 1974, Ser. No. 432,258
Int. Cl. B04b *1/20*
U.S. Cl. 233—3 6 Claims



1. In a decanter centrifuge for separating light and heavy phase materials into respective inner and outer layers from a mixture thereof and for separately discharging said materials, having an elongated imperforate bowl with a tapered portion, said bowl being adapted for rotation about its longitudinal axis, feed means for delivering the mixture to be separated into said bowl, a screw conveyor coaxially arranged with the bowl to revolve relative to the bowl for advancing heavy phase material in the direction of the tapered portion of the bowl, means for discharging light phase material from the bowl, and means for discharging heavy phase material from the bowl including a discharge port in the tapered portion of said bowl, said discharge port having a weir surface, that improvement comprising:

a baffle positioned between said axis and said bowl and dividing the interior of the bowl into

a separating zone which communicates with said means for discharging light phase material, and

a discharging zone for heavy phase material which is disposed within the tapered portion of the bowl and communicates with said means for discharging heavy phase material,

said baffle having its inner edge disposed closer to said axis than the radial distance between said weir surface and said axis, and extending through the entire layer of separated light phase material in the separating zone and having its outer edge closely spaced from the bowl to define therewith a restricted passageway for the underflow of heavy phase material from the separating zone to the discharging zone and to prevent the flow of separated light phase material from said separating zone to said discharging zone,

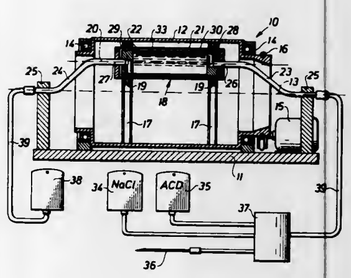
and means for pressurizing the heavy phase material in the separating zone beyond the pressures applied thereto by the centrifugal force of separated light phase material disposed radially outwardly of the weir surface of said port, whereby the additional pressure provided by said pressurizing means is transmitted to the heavy phase material in said separating zone and through said restricted passageway to the heavy phase material in the discharging zone for promoting the advance of the heavy phase material through the discharging zone to said port for discharge thereform.

3,885,735

CENTRIFUGE APPARATUS

J. Eric H. Westbert, Rodstuguvagen 14, 181 31 Lidingo, Sweden

Filed Aug. 27, 1973, Ser. No. 391,537
Claims priority, application Sweden, Nov. 2, 1972, 14193/72
Int. Cl. B04b *5/00*
U.S. Cl. 233—25 14 Claims



1. Apparatus for use with a centrifuge having a rotor rotatable about a first axis for separating a liquid mixture into fractions of different densities, comprising:

a. a jacket;

b. bearing means, adapted to be mounted on the centrifuge rotor remotely from said first axis, for supporting said jacket for relative rotation with respect to the rotor about a second axis;

c. flexible inlet and outlet conduits for liquid connected at one end to said jacket;

d. an elongated flexible holder adapted at one end remote from the rotor to be held stationary by a fixed reference, and connected to said jacket for holding it against rotation about said second axis;

e. a separation vessel disposed in and rotatably supported by said jacket for relative rotation about said second axis and communicating with said conduit; and

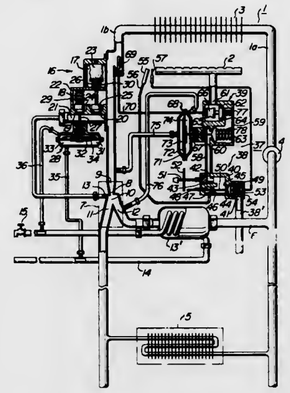
f. orientation means acting on said vessel for maintaining it in a fixed angular position about said second axis during rotor rotation.

3,885,736

HOT WATER CONTROLLING DEVICE

Keizo Amagami, Neyagawa; Yutaka Takahashi, Suita; Motoyuki Nawa, Amagasaki; Norio Kawabata, Yamatokoriyama; Nobuhiko Nishibayashi, Nara, and Katsumi Sasada, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 163,608, July 19, 1971. This application Jan. 28, 1974, Ser. No. 436,929
Claims priority, application Japan, July 23, 1970, 45-65294; July 23, 1970, 45-65297; July 23, 1970, 45-65304
Int. Cl. G05b *11/44*; F24d *3/08*
U.S. Cl. 237—8 R 5 Claims



1. A hot water control device comprising a burner; a hot water circulating passage having a radiator, a first heat exchanger which is heated by the burner, a forward passage connecting one end of said heat exchanger with one end of said radiator, a backward passage connecting the other end of said first heat exchanger with the other end of said radiator, and a circulation pump in the mid-portion of the circulating passage; a bypass passage connected between said forward passage and said backward passage for forming a short hot water circulating circuit near said first heat exchanger, said bypass passage including said circulation pump; a first fluid device disposed in said forward passage, said first fluid device including an annular supply port connected with the upstream of said forward passage, an annular nozzle formed adjacent to said supply port, an annular interaction region, first and second output ports which diverge from said nozzle as an inner and an outer port through said interaction region, said first output port being connected with the downstream of said forward passage and said second output port being connected with said bypass passage, and a control passage connected to said interaction region for providing control water to said interaction region; a control device for said first fluid device for detecting the temperature of the water in said forward passage and opening and closing said control passage of said first fluid device depending on the water temperature; a hot water supply circuit including a second heat exchanger for providing hot water in the hot water supply circuit, said second heat exchanger being connected to said bypass passage; a water pressure responsive device which operates according to the water pressure difference between the upstream and the downstream of the hot water supply circuit, said control device including a heat responsive means responsive to the temperature variation of the water in said forward passage, said water pressure responsive device including means, in parallel with said heat responsive means, for opening and closing said control passage; and a control port connected with said control passage, said control port being formed on the whole portion of one of said output ports in said interaction region.

3,885,737

DISPENSING PACKAGE, CARTRIDGE AND CONTAINER

Lucius D. Watkins, Hartland, Wis., assignor to Permtek, Incorporated, Naples, Fla.

Continuation-in-part of Ser. No. 169,439, Aug. 5, 1971, Pat. No. 3,785,556, which is a continuation-in-part of Ser. No. 854,979, Sept. 3, 1969, Pat. No. 3,661,506. This application Oct. 23, 1973, Ser. No. 408,479
Int. Cl. A47g *21/18*; A61j *15/80*
U.S. Cl. 239—34 17 Claims



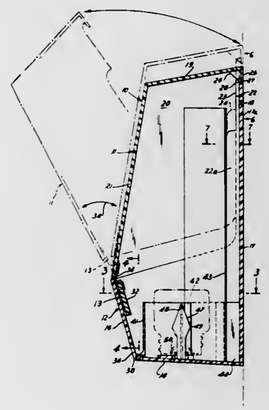
1. A package for controllably dispensing a liquid substance and including first and second plies of a plastic material which is permeable to the liquid substance, each of said plies being formed to include a plurality of corrugations with said corrugations of one of said plies being substantially identical to the corrugations of the other of said plies, said first and second plies being peripherally sealed to each other and in opposed relation to form a sealed package with said corrugations of one of said opposed plies in nested relation to said corrugations of the other of said opposed plies, and a quantity of said liquid substance in said sealed package.

3,885,738

VOLATILIZING DISPENSER

David M. Chesmel, Marlboro, N.J., and I. Martin Spier, New York, N.Y., assignors to West Chemical Products, Incorporated, Long Island, N.Y.

Filed Feb. 19, 1974, Ser. No. 443,401
Int. Cl. A61l *9/04*
U.S. Cl. 239—44 13 Claims



1. A volatilizing dispenser comprising closely interfitting and vented housing parts adapted for mounting on a support surface, vent means peripherally of one, lower part of said assemblage having angularly disposed deflecting means at the lower extremity thereof adapted to divert horizontal air streams to vertically and upwardly directed air streams within said assemblage, vent means in the other, upper part of said assemblage arranged to provide limited restriction to the escape of upwardly directed air streams from said assemblage, a liquid reservoir within said lower part, and means within said liquid reservoir for positioning the lower end of a vertically elongated evaporator element for free standing within said

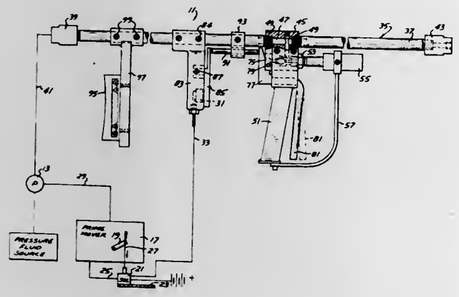
assemblage, whereby liquid within said reservoir is introduced to upwardly moving air streams within said assemblage through prolonged contact with said evaporator element.

3,885,739

PRESSURE FLUID CLEANING DEVICE

Phillip E. Tuttle, P.O. Box 1213, Lakeworth, Fla. 33460

Filed Jan. 2, 1974, Ser. No. 430,153
Int. Cl. B05b *9/00*
U.S. Cl. 239—124 8 Claims



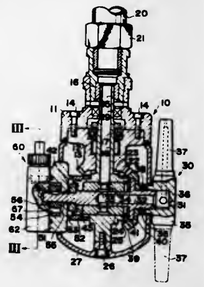
1. In a pressure fluid cleaning device having a pump connected to a source of fluid and having an outlet, a prime mover driveably connected to said pump, an electrically controlled speed control connected to said prime mover, a water gun having a pipe and an outlet nozzle for ejection of fluid under pressure, a conduit between said pump outlet and pipe, a normally open dump valve on and in communication with the pipe upstream of said nozzle, and a normally open electric switch on the gun for operating said speed control, the improvement comprising:
- a first grip depending from said pipe;
- a valve control pivotally mounted on said valve including a depending trigger arranged forward of said grip and having a first inoperative position;
- a normally unseated valve assembly within said dump valve; said trigger having a second retracted position with said valve control operably engaging and seating said valve assembly cutting off flow through said dump valve;
- a second grip spaced rearwardly of said first grip secured to and depending from said pipe, said switch being mounted on said second grip;
- a switch control pivotally mounted on said second grip having a first inoperative position with one end spaced from said switch, and movable to a second position to close said switch;
- and a safety pin slidably mounted upon said pipe and at its ends interposed between and engaging said valve control and said switch control normally retaining said switch control in its first position; whereby retraction of said trigger to its second position releases said pin so that said switch control may be successively moved to a second position to energize said speed control to shift said prime mover from idling to maximum speed for ejection of fluid through said nozzle at an increased predetermined pressure.

3,885,740

AUTOMATICALLY REVOLVED WASHING APPARATUS

Kenji Sugino, Uozu; Hisataka Mori, and Hironobu Yamagata, both of Toyama, all of Japan, assignors to Sugino Machine Limited, Uozo, Japan

Filed Aug. 20, 1974, Ser. No. 499,038
Claims priority, application Japan, Aug. 23, 1973, 48-99299; Aug. 23, 1973, 48-99300; Aug. 23, 1973, 48-99301
Int. Cl. B05b *3/00*
U.S. Cl. 239—227 6 Claims



1. An automatically revolved washing apparatus comprising in combination:
- a head body adapted to be connected to a pipe passage through which a washing fluid under high pressure is supplied,
- a hollow shaft member disposed in said head body and communicated with said pipe passage,
- a nozzle arm having an axially extending hollow space closed at one end portion thereof, said hollow space being communicated at the inner portion thereof with an axial space of said hollow shaft member,
- a pair of nozzles symmetrically disposed relative to the axis of said nozzle arm and communicated with an opened outer end portion of said nozzle arm to rotate said nozzle arm about the axis thereof by means of the reaction of the jet flow through said nozzles,
- gear means for revolving said nozzle arm relative to the axis of said head body while said nozzles are rotating about the axis of said nozzle arm, and
- a trochoid pump provided at the opposite side of said nozzles to control rotary and revolving speeds of said nozzles, said trochoid pump having a cylindrical space into which a pump-drive shaft rotatable by the rotation of said nozzle arm extends, an external gear secured to said pump-drive shaft within said cylindrical space, an internal gear snugly disposed in said cylindrical space and engaged with said external gear, a closed fluid circulation passage communicating with an inlet and outlet of said cylindrical space, a fluid amount adjusting valve extending in said closed fluid passage, and a fluid material storage chamber communicating with said closed fluid passage, said storage chamber having a balance means to follow to increase and decrease of said fluid material.

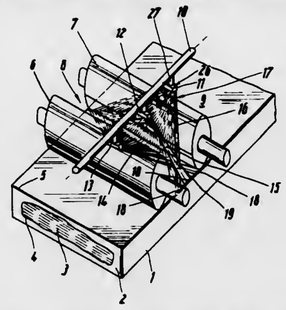
3,885,741

APPARATUS FOR COOLING METAL WEBS

Elmar Wagener, Neukirchen-Vluyn, Germany, and Frantisek Jansch, Prague, Czechoslovakia, assignors to Demag A.G., Germany

Division of Ser. No. 192,885, Oct. 27, 1971, Pat. No. 3,753,793. This application June 18, 1973, Ser. No. 370,914
Int. Cl. B05b *13/02*
U.S. Cl. 239—268 2 Claims

1. In apparatus for cooling a hot continuously moving metal web, and having a cooling zone, and a source of cooling liquid, the combination which comprises roller means for moving said web through said cooling zone, said roller means defining the longitudinal extent of said zone, a plurality of fan jet nozzles in said zone and spaced from the surface of said moving web; means providing flow communication between said source of said nozzles; said nozzles being fan-shaped to provide longitudinally extending slit-like orifices with said orifices being parallel to each other and positioned transverse to the longitudinal axis of said moving web; adjustable connecting means in said flow communication means for adjusting the spacing between said nozzles and said moving web and for maintaining the longitudinal axes of said nozzle orifices parallel to each other but spaced apart along said longitudinal axis of said moving web, allowing angular adjustment of each of said nozzles to provide a fan jet of cooling liquid issuing therefrom in a plurality of planes for impinging the surface of said moving web in said zone, and said fan jets impinge each other at a point spaced from the moving surface of said web in said zone, whereby the prismatic volume of said intersecting jets is expanded for impinging said web.

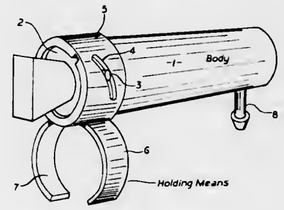


3,885,742

ATTACHMENT OF DRIP FEED DEVICES TO HOSES OR THE LIKE

Stanley W. O. Menzel, Elizabeth, South Australia, Australia, assignor to Iplex Plastic Industries Pty. Ltd., Elizabeth, South Australia, Australia

Filed Feb. 6, 1974, Ser. No. 440,254
Claims priority, application Australia, Feb. 14, 1973, 2252/73
Int. Cl. B05b *1/20*
U.S. Cl. 239—272 2 Claims



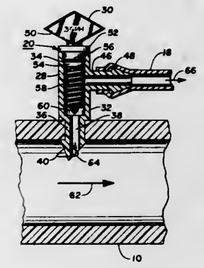
1. A drip feed device comprising,
an elongaged body,
an inlet nipple near one end of said body adapted to be engaged in an aperture through the walls of a supply line to hold the body to the supply line and to place the drip feed device into communication with the water supply in said supply line, and
holding means on the said body remote from the said nipple to engage the said supply line and further hold the said body to the supply line when the nipple is engaged in the supply line, said holding means comprising two members, one at least shaped to partly surround the said supply line, the other positioned to hold the said shaped member to the supply line when the said nipple is engaged in the suppply line, the one said member being nearer to the said nipple than the other, whereby the said members can be engaged on the supply line when the body is angled to the supply line and then caused to hold to the said supply line when the body is orientated to engage the nipple in the aperture in the supply line.

3,885,743

FLOW CONTROL DEVICE FOR PROVIDING LOW FLOW RATES

Harold E. Wake, Lindsay, Calif., assignor to Apache Corporation, Minneapolis, Minn.

Filed Sept. 5, 1974, Ser. No. 503,524
Int. Cl. B05b *15/00*, *15/02*, *1/34*
U.S. Cl. 239—542 16 Claims



1. A flow control device of the type suitable for use in a flow system which is supplied with fluid through a main hose comprising:
- a. a female member having an open end and including inlet means for communicating with the main supply hose, outlet means and a portion having smooth internal walls disposed between said inlet means and said outlet means;
- b. a male insert including a handle for assembling and disassembling the device and a helically threaded portion wherein, when the device is in its assembled position, said handle is disposed exteriorly of said open end, said helically threaded portion is disposed interiorly of said female member and cooperates with said portion thereof having smooth internal walls to form a helical flow path between said inlet means and said outlet means, and the device is capable of selective limited movement without disruption of the flow through the device; and

wherein said male insert and said female member include interengaging frictional retaining means which, when the device is in its assembled position, hold said male insert and said female member in engagement to seal said open end, prevent undesired movement of said male insert, and maintain the seal of the open end during limited movement of said male insert.

3,885,744

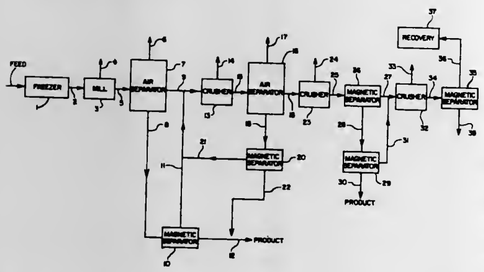
METHOD AND APPARATUS FOR CRUSHING AND SEPARATING SCRAP MATERIAL

David J. Drage, Park Forest, Ill., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 20, 1974, Ser. No. 471,273
Int. Cl. B02c *21/00*
U.S. Cl. 241—23 9 Claims

1. A method for the recovery of components of scrap material having mechanically intermingled ferrous metals, nonferrous metals and non-metallic materials comprising the steps of:
- a. passing the totality of said scrap through a freezing zone where it is cooled to cryogenic temperatures below the transition temperature of the ferrous matrix of the scrap;
- b. crushing said scrap, while it is in cryogenically embrittled condition, in a first crushing zone, to effect a first size reduction thereof;

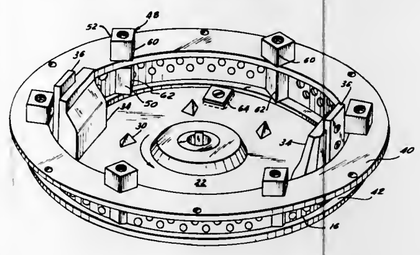
c. separating the discharge from said first crushing zone, in a first separating zone, into a dust, a first light fraction, and a first heavy fraction;
d. magnetically separating said first heavy fraction into a first magnetic fraction and a first non-magnetic fraction and said magnetic fraction being recovered as a ferrous product;
e. combining said first non-magnetic fraction with said first light fraction and feeding said combined fractions, at ambient temperatures, to a second crushing zone within which a second size reduction is effected;
f. separating the discharge from said second crushing zone, in a second separating zone, into a dust, a second light fraction and a second heavy fraction;
g. magnetically separating said second heavy fraction into a second magnetic fraction and a second non-magnetic fraction, said second magnetic fraction being recovered as a ferrous product;



h. combining said second non-magnetic fraction with the feed to said second crushing zone to recycle it therethrough;
i. feeding said second light fraction to a third crushing zone within which a third size reduction is effected;
j. magnetically separating the size-reduced effluent from said third crushing zone into a third non-magnetic fraction and a third magnetic fraction, said magnetic fraction being recovered as a ferrous product; and
k. continuing a series of crushings of magnetic fractions in a crushing zone, each followed by a magnetic separation of the crushed effluent into a magnetic product fraction and a non-magnetic fraction, said latter fraction being the feed for the next successive crushing zone, until a non-ferrous product stream is obtained which is essentially incapable of further magnetic separations.

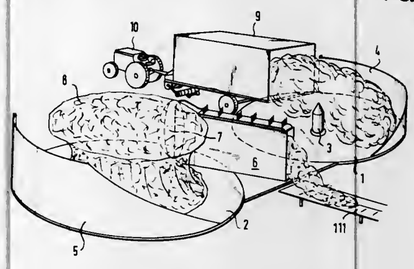
3,885,745
WASTE PULPING MACHINE WITH REPLACEABLE SHEAR MEMBERS
Robert W. Hankes, Downingtown; Eugene J. Schramm, Norristown; James C. Spiker, Honey Brook, and Frank T. Tober, Coatesville, all of Pa., assignors to Somat Corporation, Pomeroy, Pa.
Filed Nov. 19, 1973, Ser. No. 417,079
Int. Cl. B02c *13/14*
U.S. Cl. 241—46.11 **3 Claims**

1. In a waste disposal unit of the type having: a cylindrical tank for receiving waste material and water, a wall of said tank, the bottom portion of said tank extending radially inwardly from said wall, a disc impeller in said tank spaced from said wall and supported for rotary motion, means for rotating said impeller, a sieve ring encircling said impeller supported in said tank between said wall and said impeller, said sieve ring having a bottom edge and a top edge and being formed with a plurality of through apertures; the improvement comprising: a bottom ring supported in said tank encircling said impeller, said sieve ring bottom edge being seated on said bottom ring; a top ring encircling said impeller seated on the top edge of said sieve ring; said sieve ring comprising at least two identical interchangeable arcuate sections; first shear member support means secured to said impeller; second shear means support means secured stationary relative to said impeller; a first shear member removably mounted to said first shear member support means; second shear means mounted to said second shear means support means, said second shear means including a lower portion extending between said top and bottom rings interposed between said sieve ring arcuate sections and an upper portion axially aligned with said lower portion seated on



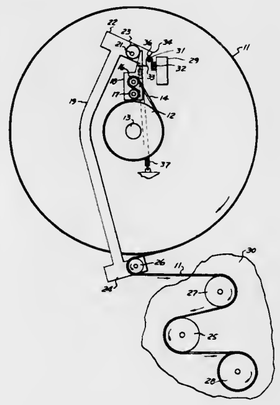
said top ring and projecting upwardly therefrom, each of said upper and lower shear means portions having four longitudinally extending cutting edges, said second shear means upper and lower portions being rotationally adjustably mounted to said second shear means support means so that upon rotational adjustment, a different cutting edge comes into play; said first shear member having a cutting edge for periodically coming into play with a cutting edge of said second shear means portions upon rotation of said impeller.

3,885,746
APPARATUS FOR REMOVING MATERIAL FROM A ROTATING SURFACE
Ernst Weichel, Bahnhofstrasse 1, 7326 Heiningen, Germany
Filed May 22, 1973, Ser. No. 362,846
Claims priority, application Germany, May 25, 1972, 2225388
Int. Cl. B02c *18/22*
U.S. Cl. 241—279 **7 Claims**



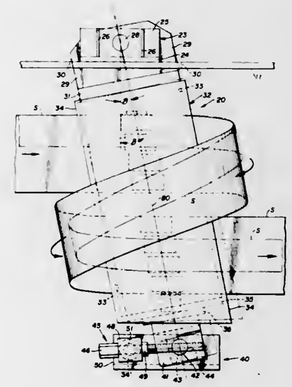
1. Apparatus for removing a pile of stalks and leaves located on the support surface of a rotatably driven turntable and a conveyor pivotally displaceable across the support surface of said turntable, a cutting disc mounted on said conveyor and arranged to cut material from the pile of material on the support surface of said turntable, a discharge duct formed on said conveyor and arranged to receive and transport the material removed by said cutting disc, said conveyor along with its said cutting disc is arranged to be displaced from the periphery to the center of said turntable as said turntable rotates for removing material located on the support surface, wherein the improvement comprises two said turntables disposed in side-by-side relationship with the adjacent peripheral surfaces of said turntables disposed in spaced relationship, said conveyor being longitudinally elongated and extending between the adjacent peripheral surfaces of said turntables, said conveyor being pivotally displaceable inwardly from the peripheral surfaces alternately over each of the support surfaces of said turntables, so that said conveyor and cutting disc can remove material from one said turntable while the other said turntable can be loaded, said conveyor extending from said turntable for moving the removed material to a selected disposal location, said cutting disc on said conveyor rotating about an axis extending in the longitudinal direction of said conveyor, and a motor operatively connected to said cutting disc for selectively driving it in opposite directions about its axis.

3,885,747
CONTROL DEVICE FOR ROLLED MATERIAL FEED
James R. Moss, Mount Clemens, and Walter Wilson, Northville, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.
Filed Mar. 28, 1974, Ser. No. 455,753
Int. Cl. B65h *25/22*
U.S. Cl. 242—75.43 **2 Claims**



1. A device for controlling the feeding of rolled material in a feeding mechanism including means for applying a force to said material and having a supply spindle and a storage roller comprising:
a lever pivotably mounted in the proximity of said supply roller;
cam means fixedly mounted on said lever so that said lever and said cam means rotate in unison;
follower means pivotably mounted in the proximity of said cam means, said follower means being biased against said cam means so that rotation of said cam means causes rotation of said follower means;
means responsive to rotation of said follower means for applying and removing tension to said supply roller as said follower rotates in different directions;
switch actuating means arranged for rotation with said lever, said switch actuating means being configured to include two switching areas;
switch means in the proximity of said switch actuating means, wiper means for changing the condition of said switch, said wiper means being biased against said switch actuating means and causing the condition of said switch means to change upon reaching either of said switching areas; and
idler means rotatably mounted on said lever, the rolled material passing over said idler means to apply a rotating force to said lever so that said wiper means normally rests between said switching areas and rests on one of said switching areas when said force increases in response to forming of said material and the other of said switching areas when said material is exhausted.

3,885,748
TAKE-OUT ARBOR FOR A STRIP ACCUMULATOR
Anthony C. Costello, Strongsville; Leon L. Shaffer, Kent, and Robert G. Weatherby, Franklin, all of Ohio, assignors to Loopco Industries, Inc., Twinsburg, Ohio
Filed Mar. 28, 1974, Ser. No. 454,956
Int. Cl. B65h *75/02, 17/48*
U.S. Cl. 242—55 **17 Claims**

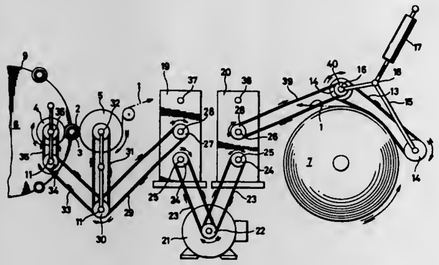


1. Apparatus for accumulating strip material in a processing line comprising means receiving the strip and forming an outer set of convolutions of the strip, means receiving strip from the outer set of convolutions and forming an inner set of convolutions of the strip, and arbor means receiving strip from the inner set of convolutions before the strip is transferred to the processing line, said arbor means having an axis which is angular to the path of the strip as received from the inner set of convolutions, and means to adjust the angularity of the axis of said arbor means with respect to the path of the strip to maintain the strip in line with the processing line.

3,885,749
WINDING DEVICE FOR WINDING ROLLS OF STRIPS OR RIBBONS
Stephen J. Skacel, Augustin-Mulldorf, Germany, assignor to Waldmann-Verpackung KG, Altenberg, Germany
Filed Mar. 7, 1973, Ser. No. 338,908
Claims priority, application Germany, Mar. 8, 1972, 2211076
Int. Cl. B65h *19/26, 19/28*
U.S. Cl. 242—56 A **29 Claims**

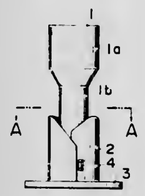
1. A fully automatic winding device for winding rolls from material in strip or ribbon form, said device comprising in combination: at least one wind-up spindle for winding thereupon a roll of the material, a first and a second pressure roller movable into engagement with material supported on said spindle for pressing material against the spindle proper or material already wound thereupon, said wind-up spindle being freely rotatable and said pressure rollers driving said spindle, and a supply spool for withdrawing material to be wound therefrom, driving of the wind-up spindle by said pressure rollers causing withdrawal of material from said supply spool, and centrally disposed variable speed power drive means

coupled to said pressure rollers and said supply spool, said drive means including gearing means causing driving of the



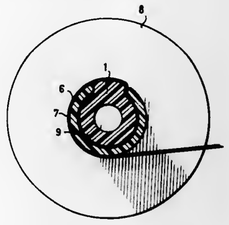
pressure rollers and the supply spool without slippage and in synchronism.

3,885,750
PHOTOGRAPHIC FILM TAKE-UP SPOOL
Takeshi Ikeuchi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 16, 1973, Ser. No. 360,729
Claims priority, application Japan, May 19, 1972, 47-59310; Aug. 25, 1972, 47-99033
Int. Cl. B65h *75/28*
U.S. Cl. 242—74 **6 Claims**



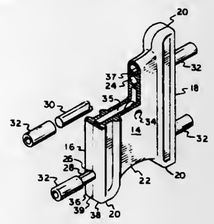
1. A take-up spool for film having perforations comprising a lower base member rotatable in a forward film take-up direction about a vertical axis and located at an end of said spool, a first wall section extending upwardly from said base member parallel to said axis and having an outer cylinderical face and a tail section projecting peripherally, rearwardly, relative to said forward rotation of said base member and having an upper edge which is upwardly, peripherally inclined from the rear end of said tail section, a second wall section extending upwardly from said base member parallel to said axis and having an outer cylindrical face and a tongue section projecting peripherally forwardly beneath and spaced inwardly of said tail section a film perforation engaging tooth projecting radially, outwardly from said second wall section spaced proximate to and rearwardly of the rear end of said tail section and extending outwardly to a point inwardly of a cylindrical plane extending between the outer faces of said wall section, and a shaft extending from said base member above the top of and surrounded by said wall sections and having a peripheral face spaced inwardly from the inside faces of said wall sections.

3,885,751
TAPE CARRIER FOR RECORD TAPES AND THE LIKE
Heinz Kelch, Buchenberg; Hilmar Kirchgessner, and Eduard Schuh, both of Villingen, all of Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany
Filed Mar. 26, 1974, Ser. No. 454,819
Claims priority, application Germany, Mar. 29, 1973, 2315717
Int. Cl. B65h *75/28*
U.S. Cl. 242—74.1 **9 Claims**



1. A tape carrier, particularly for carrying recording tapes, comprising a resilient clip of generally circular cross-section having a longitudinal axis and a first outer circumferential surface formed with an axial slot extending parallel to said axis, and bounded by edge portions of said clip; and a core body having a second outer circumferential surface and being adapted to be received within the confines of said clip by a snapping action so that an end portion of the tape may be clamped intermediate said second outer circumferential surface and said clip, said core body comprising a rib portion, having an arcuate surface portion and being received in said slot intermediate said edge portions, said rib portion projecting outwardly from said core body to an extent so as to form a substantially circumferentially complete configuration with said first outer circumferential surface, whereby the tape adjacent said clamped end portion which has been passed between said rib portion and one of said edge portions is passed over said arcuate surface portion in a smooth and continuous manner without pressure-marking the tape.

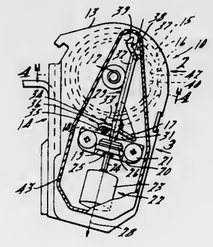
3,885,752
POCKET REEL
Gerald G. Noffsinger, Rt. 1, Box 147-N, Eatonville, Wash. 98328
Filed Mar. 4, 1974, Ser. No. 448,072
Int. Cl. B65h *75/02*
U.S. Cl. 242—96 **2 Claims**



1. A lightweight compact pocket size reel to receive, for example, fishing line, comprising:
   a. a central elongated rectangular body;
   b. two elongated rectangular side portions adjacent to the central elongated body, of greater length than the central elongated body, and extending beyond the central elongated body to define a line receiving volume;

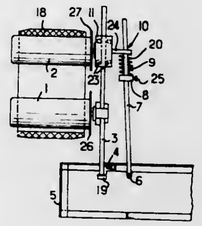
   c. passageway structures extending straight through the central elongated body and on through the elongated side portions at two locations equally spaced from the center of the central elongated body;
   d. rotatable handles, having a constant diameter that is less than the diameter of the passageway structures, one rotatable handle being longer than the other, and both rotatable handles extending completely through the passageway structures to be used by the fisherman in creating relative circular movement of the central elongated body to take in or let out active lengths of fishing line;
   e. sleeves, tightly fitted to the ends of the rotatable handles, to serve as finger grips and as stops to keep the rotatable handles in part confined in the passageways of the elongated central body and elongated side portions.

3,885,753
SEAT BELT RETRACTOR MECHANISM
David G. Connors, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Mar. 14, 1974, Ser. No. 451,314
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.4 **8 Claims**



1. A seat belt retractor mechanism having a belt receiving reel rotatably mounted on a shaft journalled in side walls of a support bracket,
   the reel at each of its ends having circular ratchet plates with peripheral ratchet teeth,
   a locking bar paralleling the reel shaft and pivotally mounted in the bracket side walls for movement into engagement with the circular ratchet plates to lock the reel against rotation in seat belt protraction direction,
   and an inertia sensor comprising a pendulum for driving the locking bar into circular ratchet plate engagement,
   wherein the improvement comprises:
   a substantially vertical, elongated, drive link paralleling one side wall of the support bracket,
   the drive link at one end having a first portion abutting the pendulum and a second portion having an interlocking connection with the locking bar,
   the drive link at its other end having a pawl appendage,
   an annular ratchet plate having internal ratchet teeth,
   the annular ratchet plate being secured to a circular ratchet plate for rotation with the latter and thereby the reel,
   the pendulum when accelerated causing the drive link to be raised an initial distance to place its pawl appendage into ratchet engagement with the annular ratchet plate,
   the interlocking connection between the drive link and the locking bar having a lost motion segment wherein the locking bar is nonresponsive to initial movement of the driving link,
   rotation of the reel caused by protraction forces exerted on the belt subsequent to pendulum displacement causing the annular ratchet plate to further raise the drive link to drive the locking bar into engagement with the circular ratchet plate to lock the reel against further movement in belt protraction direction.

3,885,754
HANK CARRIER
Dominique Michel Delerue, 43, rue de la Briqueterie, F-59420 Mouvaux, France
Filed May 29, 1973, Ser. No. 364,615
Claims priority, application France, May 29, 1972, 72.19213; Oct. 27, 1972, 72.38294
Int. Cl. B65h *49/30, 75/24*
U.S. Cl. 242—127 **7 Claims**



1. Hank carrier apparatus for unwinding a hank of yarn in an upward direction, comprising:
   a. a chassis carrying a pivoting support, pivotable between a vertical position for placement of the hank and a horizontal position for upward unwinding of the hank;
   b. two substantially parallel arms on said support, said arms being pivotable on their axes;
   c. at least one of said arms being slide-mounted on said support to reduce the separation of said arms when said support is vertical, and to increase the separation of said arms when said support is horizontal, thereby tensioning the hank during unwinding;

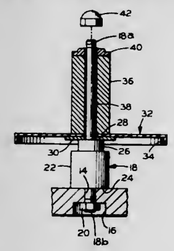
characterized by

   d. a lever pivotable at one end on said chassis and slidably coupled to said slide-mounted arm at the other end, the chassis pivot points of said support and said lever and the coupling point of said slide with said lever forming a triangle having one side of fixed length and two sides of variable length; and
   e. means on said lever for maintaining pressure against said slide mounted arm away from the other arm, the side of said triangle formed by said lever being shortened by pivoting said support from its vertical to its horizontal position, thereby activating said means for maintaining pressure.

3,885,755
PORTABLE SOLDERING FIXTURE
Dominic S. Bezrutczyk, 286 Lawlor St., New Britain, Conn. 06051
Filed Jan. 9, 1974, Ser. No. 431,921
Int. Cl. B65h *49/00;* **D01h** *7/16*
U.S. Cl. 242—129.5 **7 Claims**

1. A fixture particularly suited as a support for a holder of material comprising:
   a. a base operable for supporting the fixture on a supporting surface;
   b. a shaft having at least one end thereof threaded and having shoulder means formed intermediate the ends thereof operable to provide said shaft with a portion having a differing diameter;
   c. mounting means fixedly mounting the other end of said shaft on said base at least a portion of said shaft lying in a plane perpendicular to the principal plane of said base;
   d. a coil support operable for receiving a holder of material thereon supported on said shaft for rotation relative thereto at a location along the length thereof determined by said shoulder means; and
   e. retaining means detachably mounted at said one end of said shaft for retaining said coil support rotatably

mounted on said shaft, said retaining means comprising a washer positioned on said shaft in engagement with one



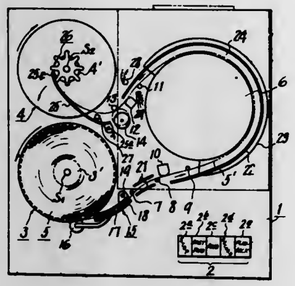
end of said coil support and a cap nut tightened on said one end of said shaft in threaded engagement therewith.

3,885,756

AUTOMATIC THREADING APPARATUS

Seigo Uehara, and Jin Yamagishi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 2, 1973, Ser. No. 337,443
Claims priority, application Japan, Mar. 7, 1972, 47-27625
Int. Cl. G11b 15/66
U.S. Cl. 242—195 14 Claims



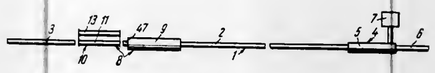
1. An apparatus for automatically threading a tape-like member having a leader extending from at least one end and being distinguishable from said tape-like member, said apparatus comprising tape drive means for transporting said leader and said tape-like member in succession along a predetermined tape path, said tape drive means being manually controllable for selectively providing at least first and second modes of transportation of said tape-like member, tape sensing means at a location adjacent said tape path for distinguishing between the presence, at said location, of said leader and said tape-like member, respectively, and providing corresponding distinctive indications, drive control means responsive to said indications provided by the sensing means for controlling said tape drive means, and timing means for determining the control of said tape drive means by said drive control means in response to said indications in dependence on at least first and second predetermined time periods, said timing means including condenser means having at least two condensers, condenser charging means operative in response to the distinctive indication from said sensing means corresponding to the presence of said leader at said location for charging said condenser means at a predetermined rate, means for connecting said two condensers in parallel with said condenser charging means when said first mode of transportation is selected so that said condenser means attains a predetermined charge level in said first time period while being charged at said predetermined rate, means for disconnecting one of said condensers from said condenser charging means when said second mode of transportation is selected so that said condenser means then attains said predetermined charge level in said second time period while being charged at said predetermined rate, means responsive to said predetermined charge level on said condenser means for determining said first and second time periods when said first and second modes of transportation are respectively selected, and means for discharging said condenser means in response to the distinctive indication from said sensing means corresponding to the presence of said tape-like member at said location.

3,885,757

RECEIVING-AND-DISPATCHING STATION

Adolf Moritsovich Alexandrov, Federativny prospekt, 6, korpus 3, kv. 8; Vladimir Efimovich Aglitsky, Zatsepsky val, 6/13, kv. 61, both of Moscow; Dmitry Rudolfovich Gun, Komsomolskaya ulitsa, 7, kv. 29, Ljubertsy, Moskovskaya oblast; Ilya Solomonovich Kantor, Malo-Moskovskaya Ulitsa, 31, kv. 45, Moscow; Avtandil Semenovich Kakhniashvili, ulitsa Eliava 37, kv. 41, Tbilisi; Jury Arnoldovich Topolyansky, Matveevskaya ulitsa, 10 korpus 4, kv. 233, Moscow; Ippolit Davidovich Suladze, prospekt Chavchavadze, 11, kv. 41, Tbilisi, and Jury Abramovich Tsimbler, Sojuzny prospekt 10, kv. 261, Moscow, all of U.S.S.R.

Filed July 24, 1974, Ser. No. 491,517
Claims priority, application U.S.S.R., July 27, 1973, 1954150
Int. Cl. B65g 51/32
U.S. Cl. 243—19 2 Claims



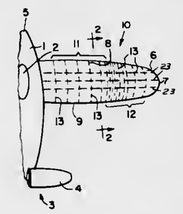
1. A receiving-and-dispatching station of the installation for pneumatic transportation of containerized cargoes located between any adjacent sections of a pipeline and comprising: a loading-and-unloading chamber one end of which adjoins one of said pipeline sections; a carriage installed between the other end of said loading-and-unloading chamber and the other one of said pipeline sections; a pipe section whose inside diameter is approximately the same as the inside diameter of said pipeline sections and which is secured on said carriage so that one of its ends adjoins the other end of said loading-and-unloading chamber while its other end adjoins the other one of said pipeline sections; a device for braking the containers and pushing them into said loading-and-unloading chamber, located in said pipe section; another pipe section whose length and inside diameter are practically equal to the length and inside diameter of said first pipe section and which is secured on said carriage parallel to said first pipe section; a drive of said carriage providing for its reciprocating motion across the geometrical axes of said pipe sections for placing them alternately between said loading-and-unloading chamber and the other pipeline section so that, when said first pipe section is set coaxially with the loading-and-unloading chamber, said containers are stopped and moved into said loading and unloading chamber while after placing said other pipe section coaxially with the loading-and-unloading chamber, said containers pass through said loading-and-unloading chamber.

3,885,758

AIRPLANE WING CAMBER CONTROL

Thomas L. Croswell, Jr., Vienna, Va., assignor to Thomas L. Croswell, Jr., Baden, Pa.

Continuation-in-part of Ser. No. 201,417, Nov. 23, 1971, abandoned. This application Aug. 22, 1973, Ser. No. 390,399
Int. Cl. B64c 3/44
U.S. Cl. 244—44 16 Claims



7. A fluid flow controlling member having opposed fluid contacting surfaces defining a leading edge and a trailing edge with respect to the relative fluid flow; a plurality of generally parallel pretensioned wires generally extending in the direction from said leading edge to said trailing edge closely adjacent at least one of said surfaces and said pretensioned wires maintain said surfaces in a predetermined shape; and means selectively heating only the wires in said one surface for thermally expanding said pretensioned wires to expand said member in the direction of fluid flow on the side having said one surface to a greater extent than the other side having the other surface to generally warp said member from its leading edge to its trailing edge in a smooth manner.

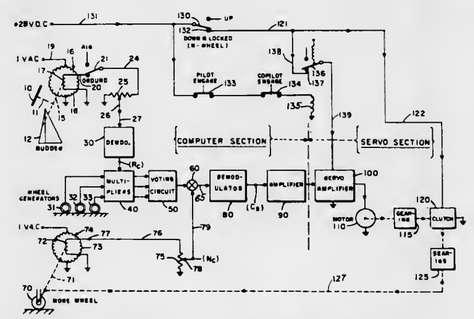
12. A method for controlling the curvature of a fluid flow control member having a leading edge generally transverse to the fluid flow, a trailing edge generally transverse to the fluid flow, opposed surfaces over which the fluid flows, and opposed structural generally parallel wires extending in the direction of fluid flow and respectively adjacent each surface, comprising: selectively heating only the structural wires adjacent one surface for a portion of said member to expand the heated structural wires on the one side to at least an extent greater than the structural wires adjacent the other surface to curve the member in cross section generally from said leading edge to said trailing edge.

3,885,759

NOSE WHEEL STEERING SYSTEM

William P. Lear, Verdi, Nev., assignor to Lear Avia Corporation, Reno, Nev.

Filed June 21, 1973, Ser. No. 372,400
Int. Cl. B64c 25/50; B62d 5/04
U.S. Cl. 244—50 7 Claims



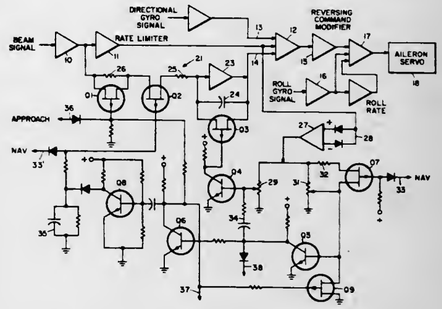
1. A steering system for an aircraft having a pilot steering command member and a nose wheel that effects steering of the aircraft on the ground, comprising first transducer means coupled to the command member for generating an a.c. signal (R_c) that corresponds in phase and magnitude to the steering command of the pilot on the member, generating means of plural signals (V_n) that correspond to the ground speed of the aircraft, multiplier means including an individual multiplier unit for each of said (V_n) signals to provide n resultant signals (E_n) each of which corresponds to $R_c \cdot (1/V_n)$ respectively, a voting circuit with a section connected to each E_n signal, said voting circuit selecting as its output the mid-value (E_m) of the (E_n) signals, second transducer means coupled to the nose wheel for generating an a.c. signal (N_c) that corresponds in phase and magnitude to the angular position of the nose wheel, circuit means responsive to said (E_m) and (N_c) signals to provide a net servomotor control signal, and servomotor means mechanically coupled to the nose wheel and in circuit connection with said circuit means whereby the nose wheel is angularly positionable for steering the aircraft within a predetermined variable authority command range that corresponds to the elected (E_m) signal.

3,885,760

AUTOPILOT RADIO GUIDANCE SIGNAL CIRCUIT INCLUDING CONTROLLED INTEGRATOR

Alton O. Grimes, Fort Lauderdale, and Frank D. Pugh, Pompano Beach, both of Fla., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 8, 1974, Ser. No. 449,318
Int. Cl. B64c 13/20
U.S. Cl. 244—77 B 5 Claims



1. A radio command signal circuit for an aircraft autopilot comprising:

means supplying a radio guidance signal the amplitude and polarity of which is related to the displacement of the aircraft off the desired radio course;

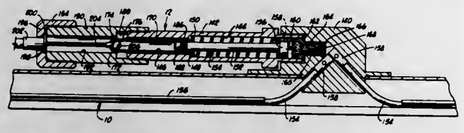
integrating means providing an output proportional to the time integral of said radio guidance signal, said integrating means having control means for rendering said output zero;

means supplying said radio guidance signal and said output of said integrating means to the autopilot to cause said autopilot to steer the aircraft in a direction to reduce the amplitude of said radio guidance signal;

threshold means for actuating said integrating means control, said threshold means being operative at signal levels of said radio guidance signal equalling or exceeding a first upper level to hold output from said integrating means at zero and being operative at a second lower level for momentarily rendering output from said integrating means zero; and

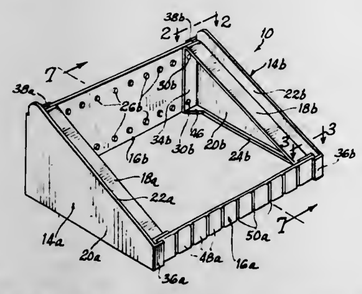
means for setting said second lower level of said threshold means at one value when the source of said radio guidance signals is VOR and at a second value when the source of said radio guidance signals is ILS.

3,885,761
AIRCRAFT EMERGENCY EGRESS SYSTEM
Daniel O. Pendergast; William T. Engel, both of Arlington, and Vernon R. Dorrough, Grapeville, all of Tex., assignors to Jet Research Center, Arlington, Tex.
Filed Mar. 5, 1974, Ser. No. 448,324
Int. Cl. B64c 1/32
U.S. Cl. 244—121 22 Claims



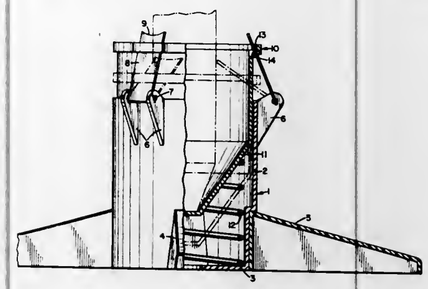
1. A vehicle emergency egress system comprising:
at least one explosive cutting assembly for explosively forming an opening in the body of said vehicle;
one explosive initiator assembly per each explosive cutting assembly, wherein each explosive initiator assembly is positioned adjacent an explosive cutting assembly for detonating said explosive cutting assembly;
at least one manually actuated firing handle;
a junction box comprising a housing and a block slidably mounted in said housing, said block having an initiator side and a handle side;
one elongated mechanical actuating linkage per each explosive initiator assembly, wherein each said linkage is connected at one of its ends to an explosive initiator and at the other of its ends to said initiator side of said block; and
one elongated mechanical actuating linkage per each firing handle, wherein each said linkage is connected at one of its ends to a handle and at the other of its ends to said handle side of said block.

3,885,762
ADJUSTABLE STAND FOR ELECTRONIC CALCULATORS OR THE LIKE
Ben A. Sebastiani, 218 E. Nottingham Ln., Hoffman Estates, Ill. 60172
Filed Nov. 14, 1973, Ser. No. 415,546
Int. Cl. F16f 15/02
U.S. Cl. 248—13 10 Claims



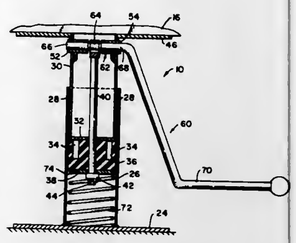
1. An adjustable stand for an electronic calculator or other device,
comprising left and right side members,
front and rear members for extending between said side members,
first fastening elements on said front and rear members,
and second fastening elements on said side members for mating with said first fastening elements to secure said front and rear members between said members,
said front and rear members having modules which can be removed from said front and rear members to adjust the size of said stand,
said front and rear members having a series of said fastening elements on said modules whereby new sets of said first fastening elements become operative as said modules are removed from said front and rear members.

3,885,763
SUPPORTING STAND PREFERABLY ADAPTED FOR SUPPORTING A CHRISTMAS TREE
Sigvard E. Blom, Sodermannagatan 37 116, 38 Stockholm, Sweden
Filed Nov. 20, 1973, Ser. No. 417,525
Int. Cl. A47g 33/12
U.S. Cl. 248—44 3 Claims



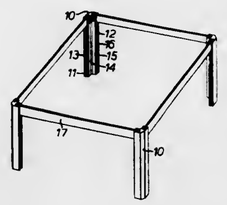
1. Supporting stand for a supporting a Christman tree or similar object, comprising an outer container, an inner container, said inner container being slideably arranged within said outer container and capable of holding substantial quanity of water, said inner container having further a conical lower part and in its upper end outwardly projecting portions having slots, arms each slideably extending through one of said slots, lugs extending outwardly from the upper portion of said outer container, and each having one of said arms pivotally connected thereto, said arms having free ends positioned for pressing aganist the tree trunk when the tree is placed in said inner container and the latter as a consequence thereof by means of the gravity of the tree is displaced thereby pivoting said arms under control of said slots, a coil spring being interposed between said inner and said outer container for holding said inner container in such a position that its upper end is located at a predetermined distance above the upper end of said outer container.

3,885,764
SEAT PEDESTAL
Robert M. Pabreza, Jackson, Mich., assignor to Excel Industries, Incorporated, Elkhart, Ind.
Filed July 25, 1973, Ser. No. 382,329
Int. Cl. F16m 11/28
U.S. Cl. 248—162 3 Claims



1. A seat pedestal capable of supporting the weight of a person comprising an upstanding first tubular element, a second tubular element telescopingly received in the first tubular element for support of a seat, an elastomeric block within the first tubular element, said block being out of engagement with the inner surface of the first tubular element when the block is in a relaxed state, means securing said block to the second tubular element for movement therewith, said means for securing said block to the second tubular element for movement therewith comprising a first plate affixed to the lower end of said second tubular element, said first plate including downwardly extending pin elements extending into the block in securement therewith, a plurality of peripherally spaced apart inwardly extending ribs on the upper end of said first tubular element defining a bearing surface for said second tubular element, said first plate being of slightly greater diameter than said second tubular element whereby the peripheral edges of said second plate will contact said ribs upon extreme upward movement of said second tubular element to thereby prevent separation of the tubular elements, actuator means to compress the block in the direction of the longitudinal axis of the first tubular element with consequent radially outward expansion of the block to frictionally engage the inner surface of the first tubular element and releasably secure said tubular elements together to prevent relative movement therebetween, said actuator means being operable to release the block to permit relaxation thereof to thereby permit simultaneous vertical and rotative adjustment of the second tubular element with respect to the first tubular element, said actuator means including a second plate in abutment with the underside of said block, means to raise and lower said second plate for compression and relaxation of said block comprising a rod extending from said second plate and through said block and terminating at its upper end at a point adjacent the upper end of the second tubular element, crank means affixed to the upper portion of the second tubular element in engagement with the upper end of the rod to cause raising and lowering of the rod, said crank means comprising a crank arm extending exteriorally of the second tubular element for manual engagement, a ring-like element on the upper end of said rod, and an offset crank portion connected to the crank arm and located within said ring-like element for raising and lowering of the rod upon turning of the crank arm.

3,885,765
FURNITURE FRAMES
Adrian John Richards, 835 Fulham Rd.-S.W.6, London, England
Filed Apr. 17, 1973, Ser. No. 351,892
Int. Cl. F16b 5/00
U.S. Cl. 248—188.1 3 Claims



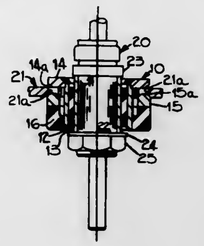
1. A rectangular furniture frame comprising four leg members each of which consists of an extruded profile bar with a pair of continuous longitudinal grooves substantially at right angles to each other and symmetrically arranged about a centre line through the cross-section of said bar at 45° to each of said grooves, said bar being bevelled externally across said centre line, and four rail members each consisting of a substantially flat plane bar the ends of which are located in the grooves of adjacent leg members and clamped therein, by screws inserted from the inside of the leg members, so as to lie with its top surface flush with the top surface of the corresponding leg members.

3,885,766
MODULAR SEATING ASSEMBLY
Richard J. Resch, and Robert J. Bomber, both of Green Bay, Wis., assignors to Krueger Metal Products, Incorporated, Green Bay, Wis.
Filed Dec. 26, 1973, Ser. No. 427,620
Int. Cl. F16m 11/20
U.S. Cl. 248—188.1 9 Claims



1. In combination, a horizontally disposed support beam having a rectangular cross section and opposed parallel sides, and a clamp for fastening furniture elements to said support beam, said clamp comprising a channel member including spaced wall portions interconnected by a web, said wall portions including spaced discontinuous surfaces converging toward each other within said channel and toward said web, said converging surfaces being engageable in a friction fit with said opposed sides of said beam, threaded apertures in said channel member wall portions, said clamp including a clamping plate with openings arranged at a spacing greater than the width of said beam and bolts extending through said openings into said threaded apertures and located adjacent the sides of said beam to urge said beam between said converging surfaces against the frictional contact of said beam and said converging surfaces into abutment with said web.

3,885,767
SNAP-IN MOUNTING AND MOUNTING ASSEMBLY
Edward J. Olowinski, 1136 W. 34th St., Erie, Pa. 16508, and Ernest H. Atkinston, 556 Timber Valley Rd., N.E., Atlanta, Pa. 30305
Filed Jan. 23, 1974, Ser. No. 435,800
Int. Cl.² F16F 15/04
U.S. Cl. 248—204 16 Claims



1. A snap-in mounting comprising
concentrically spaced inner and outer elongate rigid sleeves subject to relative movement,

elastomeric means interposed and secured between said sleeves and resiliently accommodating said relative movement,
flange means carried by and adjacent one end of said outer sleeve and extending radially outward therefrom, and
lock means resiliently carried by and adjacent the other end of said outer sleeve in opposed relation to said flange means, said lock means being normally maintained in a predetermined axially spaced relation to said flange means and resiliently resisting movement relative to said flange means,
said lock means comprising an annular lock ring concentrically disposed about said outer sleeve in opposed relation to said flange
means and an annular elastomeric member having an L-shaped cross
section with the end of one of said legs secured to said outer sleeve and
the end of the other of said legs secured to said lock ring.

3,885,768
SEPARABLE SELF-SECURING HOLDING DEVICE

Bruce J. Frye, 13601 69th Ave. N., R.R. No. 2, Osseo, Minn. 55369

Filed Aug. 8, 1973, Ser. No. 386,751
Int. Cl. A47f 7/14; A47g 1/17
U.S. Cl. 248—467 **2 Claims**

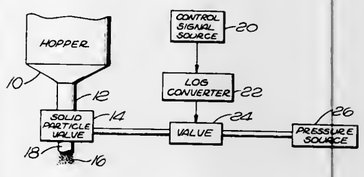


1. A separable self-securing article holding device, having in combination
a body portion comprising a pair of layers,
one of said layers being rigid,
and other of said layers being flexible,
said layers being separably conected by a plurality of spaced-apart welds spaced inwardly of the peripheries of said layers,
said welds being arranged and constructed to withstand considerable shear force and to separate under relatively small tear force,
said flexible layer having an adhesive outer surface layer, and
article holding means carried by said rigid layer, said rigid layer distributing the load carried by it over said welds without exerting any significant pull at the edge portions of said flexible layer.

3,885,769
VARIABLE FLOW-CONTROL VALVE

Wallace T. Morrison, Whittier, Calif., assignor to Stoody Company, Santa Fe Springs, Calif.

Filed June 20, 1973, Ser. No. 371,802
Int. Cl. F16k 7/07
U.S. Cl. 251—5 **4 Claims**

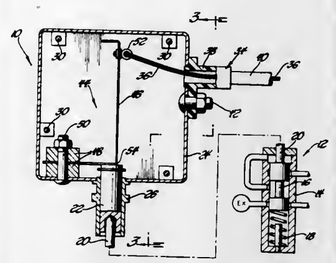


1. A flow valve for controlling flow of a substance in accordance with a control signal comprising:
means defining a flow passage for said substance;
a somewhat tubular member of resiliently-deformable material, defining at least three internally-extending radial intrusions for abutting engagement to variously close said tubular member, said tubular member being fixed to receive substance from said flow passage;
a housing member receiving said somewhat tubular member to provide a somewhat annular operating space about said tubular member, and said tubular member having the characteristic of being non-linearly responsive to a pressure applied to said space for deforming same; and
fluid control means non-linearly responsive to said control signal for developing a pressure in said operating space that is non-linearly related to said control signal, whereby to linearize the response of said tubular member to control flow in accordance with said control signal.

3,885,770
TRANSMISSION ASSEMBLY

Richard D. Houk, Stow, Ohio, assignor to Teleflex Incorporated, North Wales, Pa.

Filed Sept. 24, 1973, Ser. No. 400,359
Int. Cl. F16k 31/44; B60k 31/00
U.S. Cl. 251—294 **8 Claims**

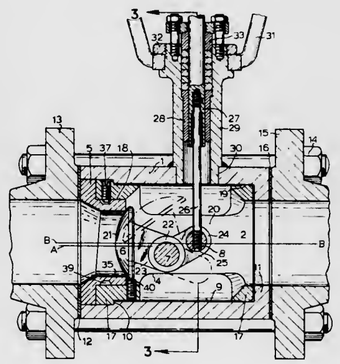


1. A transmission assembly comprising; a modulator valve, a motion transmitting remote control including guide means and a flexible motion transmitting core element movably supported by said guide means, and a flexible lever means extending in a cantilevered fashion from a support and engaging said valve, said core element being attached to said lever means for actuating said valve upon movement of said core element, said lever means including a flat spring, said spring engaging said valve at a position between said support and the attachment to said core element.

3,885,771
ECCENTRIC ROTARY PLUG VALVE WITH QUICK REMOVAL TRIM INSERT

Hans D. Baumann, 29 Villa Dr., Foxboro, Mass. 02035

Continuation-in-part of Ser. No. 456,757, April 1, 1974. This application Aug. 26, 1974, Ser. No. 500,306
Int. Cl. F16k 1/20
U.S. Cl. 251—298 **5 Claims**

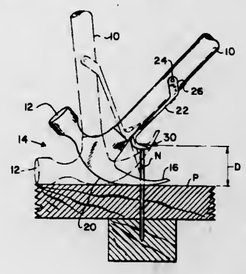


1. Eccentric rotary plug valve with quick removal trim insert comprising:
a. a tubular housing;
b. one inlet and outlet end formed in said housing, said inlet and outlet ends adapted to be coupled to a pipeline;
c. a straight cylindrical passage formed in said housing and extending from one end of said housing towards a shoulder near the other end of said housing providing at that point a reduced cross-section, said passage additionally having a slightly enlarged diameter portion near the inlet side;
d. a cylindrical insert assembly removably placed within the straight cylindrical passage having a raised diameter portion slidingly engaging the slightly enlarged diameter near the inlet side of said housing and engaging a stop shoulder formed at the terminating end of said enlarged portion of said passage, leaving the remaining length of said insert assembly unrestrained within said straight cylindrical passage of the housing;
e. a bore or passage extending throughout the central length of a yoke forming the retaining shell of said insert assembly;
f. a seatring guiding closely within one end of the bore of said yoke or housing and having a flanged portion engaging one terminating end of said yoke within the slightly enlarged portion of said straight cylindrical housing passage;
g. a shaft located perpendicular to and off-set from the longitudenal axis of said yoke and being retained on either end by the outer walls of said yoke;
h. an eccentrically rotating plug tiltingly engaged on said shaft and within the central bore or passage of said yoke by a hub, said plug having a fully or partly spherical head portion suitably connected to the hub, said head portion engaging and cooperating with a bore of said seatring, and wherein the center of said sphere is located essentially along the central axis of said seatring bore;
j. means to tiltingly move said valve plug;
k. actuating means connected exterior of said housing and cooperating with said means to tiltingly move the valve plug.

3,885,772
NAIL PULLER FOR CLAW HAMMER

Carl E. Balkus, Jr., 147 Deepwood Dr., Amston, Conn. 06231

Filed May 15, 1974, Ser. No. 470,333
Int. Cl. B66f 15/00
U.S. Cl. 254—26 **4 Claims**

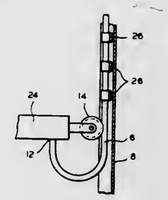


1. In a claw hammer which includes a handle and has a head provided at one end of the handle, which head has a nail driving anvil portion and also a nail pulling portion defined by projecting claws and a convex fulcrum surface, the improvement comprising:
a. a link one end of which is pivotally connected to the handle in spaced relation to said nail pulling portion,
b. auxiliary projecting claws at the opposite end of said link, said auxiliary claws being spaced above said claws in said head when said link is in a normal position alongside the handle,
c. means for normally biasing said link toward its normal position alongside the handle, and
d. said link being so arranged with respect to said handle and said fulcrum in said head that said link is pivoted away from the handle when said auxiliary claws are used to draw a nail.

3,885,773
MAGNETIC CABLE TAKEUP DEVICE

Thomas L. Dunkelberger, Richland, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed May 6, 1974, Ser. No. 467,023
Int. Cl. B66d 1/36
U.S. Cl. 254—190 R **9 Claims**



1. Apparatus for magnetically restricting the lateral movement of a flexible energy conduit extending between an energy source and an energy consumer movable with relation thereto including:
an energy source,
an energy consumer capable of movement relative to said energy source,
a flexible energy conduit extending between said energy source and said energy consumer,
a rigid conduit restraining member extending in a plane substantially parallel to the path of relative movement between said energy consumer and said energy sources, magnetic means for magnetically attracting said flexible energy conduit to said conduit restraining member and

restricting the lateral movement of said conduit from said restraining member,

whereby said conduit is held against said restraining member and allowed to be removed therefrom against the force of said magnetic means as said energy consumer moves relative to said fixed energy source.

3,885,774
APPARATUS FOR PREPARING AND DISPENSING MIXTURES OF CONCRETE AND FIBRES

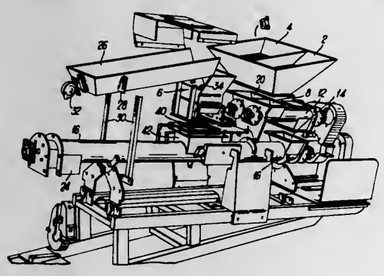
David Michael Harris, Egmanton, near Newark; James Albert Harvey, Collingham, near Newark, and John Alfred Clipston, Edwinstowe, near Manfield, all of England, assignors to Caledonian Mining Company Limited, Carlton-on-Trent, Newark, Nottinghamshire, England

Filed July 18, 1973, Ser. No. 380,193

Claims priority, application United Kingdom, July 22, 1972, 34391/72; Sept. 26, 1972, 44369/72; Sept. 29, 1972, 45003/72; Dec. 5, 1972, 56151/72; Dec. 5, 1972, 56152/72

Int. Cl. B28c *7/04*

U.S. Cl. 259—165 **7 Claims**



1. A mixing machine particularly adapted for use in the production of a fibrous mix, said machine comprising,

a first hopper for a first feedstock,

a first feed screw disposed in fixed relation to said first hopper, said first feed screw being adapted to receive the first feedstock discharge from said first hopper,

a blending scroll having first and second charging ports, said blending scroll being positioned relative to said first feed screw to receive through said first charging port the first feedstock discharge metered from said first feed screw, and

a fiber hopper having a screen fixed at the outlet thereof onto which fibers may be loaded, said hopper being positioned to discharge said fibers directly into said second charging port provided for said blending scroll, and said hopper being reciprocable relative to said second charging port for discharging fibers within said fiber hopper into said second charging port.

3,885,775
VEHICLE SUSPENSION DEVICE

Germain C. Bolduc, 54 Rabbit Rd., Salisbury, Mass. 01950

Filed Jan. 24, 1974, Ser. No. 436,220

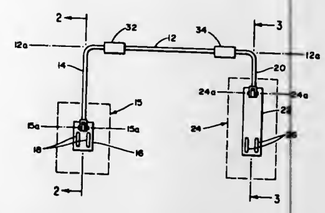
Int. Cl. B60g *21/02*

U.S. Cl. 267—11 **6 Claims**

1. In an automotive vehicle having a sprung frame assembly and an unsprung drive axle assembly, said axle assembly including two wheels and a wheel driving means and housing therefor, said housing having a section associated with each of said wheels, the improvement comprising a suspension device including:

a. a cross-bar having a first arm extending from a point near one cross-bar endpoint and being associated with the housing section associated with with one of said wheels, and a second arm extending from a point near the other cross-bar endpoint, and being associated with the housing section associated with the other of said wheels, and wherein said cross bar includes a cross-bar connection means for connecting said cross-bar to said vehicle sprung frame assembly, said cross-bar connection means permitting rotation of said cross-bar about the longitudinal axis of said cross-bar.

b. a first junction means associated with said first arm, said first junction means including a first extension bar, a flexible joint for pivotally connecting said first arm to said first extension bar, and a connection means for rigidly connecting said extension bar to said associated housing section, and



c. a second junction means associated with said second arm, said second junction means including a second extension bar, a flexible joint for pivotally connecting said second arm to said second extension bar, and a connection means for rigidly connecting said extension bar to said associated housing section,

wherein forces applied by said first extension bar to said first arm are applied at a greater distance from said cross-bar longitudinal axis than are forces applied by said second extension bar to said second arm.

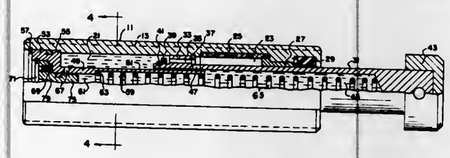
3,885,776
VARIABLE CUSHION SHOCK ABSORBER

Leland F. Blatt, 31915 Groesbeck Highway, Fraser, Mich. 48026

Filed May 8, 1974, Ser. No. 468,018

Int. Cl. B60g *11/56*

U.S. Cl. 267—34 **3 Claims**



1. A shock absorber comprising a body having a bore and a counterbore;

a piston having an axial opening and a plurality of bleed passages between said bore and counterbore;

said piston being movable within said bore and including a hollow piston rod extending through said counterbore and axially outward of said body, said rod having a plurality of radial ports between the piston opening and said counterbore;

an end cap on said rod adapted to be engaged by a moving mass toward the end of a longitudinal stroke;

a float valve in said bore movable upon said piston in registry with said passages closing same on retraction of said piston and opening said passages on forward return movement of said piston, permitting flow of liquid from said counterbore to said bore;

an axially apertured metering pin in said bore at one end having a head closing off and anchored within said bore, and adjacent thereto a transverse bleed passage between said bore and the aperture of the metering pin; the other end of said metering pin extending into said piston and piston rod;

a coiled spring interposed between said metering pin and piston rod normally biasing said rod outwardly of the body;

an adjustable orifice element eccentrically mounted in said metering pin in registry with said transverse bleed passage to variably regulate fluid flow from said bore into said metering pin, said bore, metering pin, piston and piston rod being completely filled with liquid; whereby on retraction of said piston rod over said pin, displaced liquid from said bore passes through the metering pin into said piston and piston rod and through its radial ports to said counterbore;

said adjustable orifice element being sealed and rotatably adjustable in said metering pin head and having a valve element to variably regulate the size of a return chamber between said metering pin passage and metering pin bore, to provide for a preadjusted return flow of liquid into and through said metering pin;

and a sleeve of resilient foam plastic material nested in said counterbore, the liquid flowing into said counterbore compressing said sleeve, preloading the liquid in said counterbore, piston and metering pin.

3,885,777
LEVEL CORRECTOR FOR SHOCK ABSORBERS

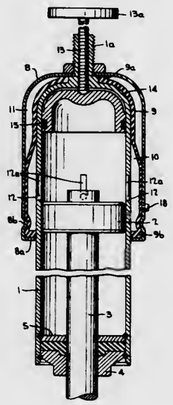
Christian Bourcier de Carbon, 64, Boulevard Maurice-Barres, 92-Neuilly-Sur-Seine, France

Continuation of Ser. No. 83,707, Oct. 26, 1970, abandoned. This application Dec. 29, 1972, Ser. No. 319,659

Claims priority, application France, Oct. 29, 1969, 69.37113

Int. Cl. F16f *5/00*

U.S. Cl. 267—64 R **5 Claims**



1. A variable-load shock absorbing suspension device capable of partially or completely suspending a portion of a vehicle on a wheel assembly, the device comprising an oleopneumatic shock absorber having a cylinder and a reciprocable damping piston therein, a rod on said piston extending outwardly of said cylinder through a packed opening provided at one end of said cylinder, a quantity of damping liquid within said cylinder within which said piston reciprocates, a quantity of compressible gaseous fluid separated by a partition from the quantity of damping liquid and exerting pressure on the damping liquid, a control piston disposed for fluid-tight reciprocation within said cylinder and being located at an end opposite said one end of said cylinder in pressure-exerting confining relation to the damping liquid and the gaseous fluid, and means on said cylinder for adjusting the position of said control piston to vary the pressure on the damping liquid and the gaseous fluid to proportionately vary the force of said rod to compensate for variations in load on the vehicle.

3,885,778
CLOSURE COUNTERBALANCE

Robert J. Deisenroth, Elkhart, Ind., assignor to Excel Industries, Incorporated, Elkhart, Ind.

Continuation of Ser. No. 265,334, June 22, 1972. This application Jan. 21, 1974, Ser. No. 434,921

Int. Cl. F16f *3/04*

U.S. Cl. 267—71 **5 Claims**



1. A counterbalance for a movable closure on a structure, comprising first and second tubular members telescopingly connected together in sliding relationship, each of said members having abutment structure at the outer end thereof, a compression coil spring within said members, the end of said spring pressing against said abutment structures thereby urging said tubular members apart, the outer diameter of said spring being less than the inner diameter of either of the tubular members, an elongated rod within said tubular members in engagement at one end with the abutment structures of one of said members and extending into said spring in sliding contact therewith to guide same, said rod terminating short of the abutment structure of the other of said tubular members when said tubular members are telescoped together, a second compression coil spring positioned within said aforementioned coil spring, the ends of said second spring pressing against the inner end of said rod and the abutment structure of the other of said tubular members to aid the aforementioned spring in urging said tubular members apart upon initial expansion of the counterbalance to cause unassisted initial movement of the movable closure prior to counterbalancing thereof by the counterbalance.

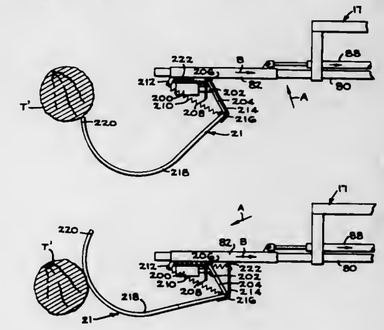
3,885,779
CONTROL MECHANISM

Donald P. Block, 147 Deerwood Dr., Orlando, Fla. 06231

Division of Ser. No. 248,221, April 27, 1972, Pat. No. 3,762,140. This application July 11, 1973, Ser. No. 378,086

Int. Cl. F16k *31/44;* **A01d** *75/28*

U.S. Cl. 251—229 **6 Claims**



1. An abutment responsive control mechanism for actuating a switch means having a switching element movable between an extended and a retracted position comprising: support means connected to and supporting said switch means and movable in at least two directions relative to the abutment, a lever supporting arm movably mounted on said support

means, a switch actuating lever movably mounted on said support means, an abutment contacting element rigid with said switch actuating lever and disposed in position to engage the abutment upon relative movement of the abutment and said support means, resilient means connected to said switch actuating lever for normally holding said lever supporting arm and said switch actuating lever in retracted position with the switch actuating lever bearing against and moving said switch element to its retracted position, contact of said abutment contacting element with the abutment when said abutment and abutment contacting element are relatively moving in one direction causing said switch actuating lever to move relative to said lever supporting arm and away from said switch means allowing the switching element to move toward its extended position, and relative movement between the abutment and said abutment contacting element in the opposite direction causing said switch actuating lever and said lever supporting arm to move away from said retracted position allowing the switch element to move to its extended position.

3,885,780

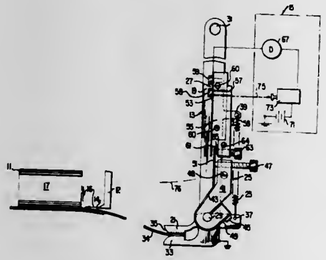
GRIPPER JAW INSERT MISTAKE DETECTOR

Wilbur J. Morrison, Nazareth, Pa., assignor to Bell and Howell Company, Phillipsburg, N.J.

Continuation-in-part of Ser. No. 62,912, Aug. 11, 1970, Pat. No. 3,744,787. This application Jan. 22, 1971, Ser. No. 108,900

Int. Cl. B65h *43/02*

U.S. Cl. 270—56 **10 Claims**



1. A mistake detector for inserting machines utilizing at least one gripper jaw assembly movable toward and away from an insertion station and comprising a first jaw and a second jaw rotatably attached to one another in a manner such that said jaws are rotatable toward and away from each other so as to form an insertion gripping gap therebetween, said mistake detector comprising:

a leaf spring fixedly attached to one of said jaws so as to rotate with said one jaw relative to the other jaw of said gripper jaw assembly;

spaced apart first and second electrodes fixedly attached to the other of said jaws a portion of said leaf spring lying between said electrodes and normally occupying an intermediate position between said electrodes whereby rotation of said one jaw causes said leaf spring to contact either said first or said second electrode depending upon the number of inserts being gripped by said gripper jaw assembly; and,

an electronic detector and indicator means electrically connected to said electrodes and to said leaf spring for detecting and indicating when one of said electrodes is in contact with said leaf spring by completing an electrical circuit which includes said electrodes and said leaf spring.

3,885,781

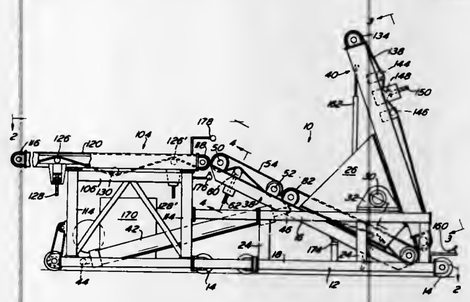
APPARATUS FOR SHINGLING FLAT SHEETS

Charles H. Krebs, Lindenwold, N.J., assignor to Molins Machine Company, Inc., Camden, N.J.

Filed June 13, 1973, Ser. No. 369,634

Int. Cl. B65h *1/30*

U.S. Cl. 271—3.1 **13 Claims**



1. Apparatus for shingling sheets from a stack comprising a frame,

a V-shaped shingling conveyor rotatably supported by said frame,

said shingling conveyor having first and second conveyor supports disposed at an acute angle to each other,

said first conveyor support having a conveyor thereon for moving a stack of sheets toward the plane of said second conveyor,

said second conveyor support having a conveyor thereon for moving sheets away from the plane of said first conveyor support,

motor means for driving said conveyors, and

means for pivoting said shingling conveyor about a transverse horizontal axis from a stack receiving position to a discharging position wherein sheets from the stack lean in the direction of discharge on said second conveyor support and are consecutively discharged in shingled relationship.

13. Apparatus comprising a feed table for feeding sheets, said table having a hopper, means for feeding sheets one at a time from the bottom of the hopper, conveyor means for feeding sheets into the hopper, level control means for said hopper including means for disabling said feeding means until a predetermined number of sheets are in the hopper and means for disabling said conveyor means when the number of sheets in said hopper is greater than a predetermined number of sheets, said conveyor means including an outfeed conveyor, a shingling conveyor for delivering shingled sheets to said outfeed conveyor, said shingling conveyor including first and second conveyor supports inclined with respect to each other at a fixed angle and pivotable about a transverse horizontal axis, and each conveyor support having conveyors thereon, said second conveyor support being inclined upwardly toward said outfeed conveyor in the discharge position of the shingling conveyor for feeding sheets to said outfeed conveyor, and means associated with the conveyor on said second conveyor support for moving the sheets therealong at progressively faster speeds toward said outfeed conveyor.

3,885,782

SHEET FEEDER

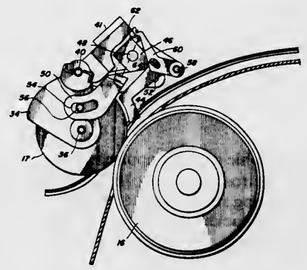
David D. Wright, Vershire, Vt., and Ivor Hawkes, Lyme, N.H., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1973, Ser. No. 422,385

Int. Cl. B65h *3/52*

U.S. Cl. 271—10 **2 Claims**

1. In an apparatus for separating and feeding individual sheets of material from a stack of sheet material including separator means adapted for engagement with one sheet in the stack to separate the sheet from the stack, feed means adjacent said separator means for engaging and feeding the separated sheets away from the stack, a retard roll adapted for cooperation with said feed means, drive means adapted to rotate said retard roll in a direction to return excess separated sheets to the stack of sheet material; and slip means associated with said drive means and said retard roll adapted to allow said retard roll to rotate in a feed direction when a single sheet is present between said retard roll and said feed means, the improvement comprising:



sheet sensing means adapted to sense the presence of a sheet between said feed means and said retard roll, said sheet sensing means being adapted to momentarily deenergize said feed means to allow time for said retard roll to return excess separated sheets to the stack; and,

lift means adapted to move said retard roll out of engagement with said feed means after the excess sheets have been cleared from between said retard roll and said feed means to remove the drag on the sheet being forwarded by said feed means.

3,885,783

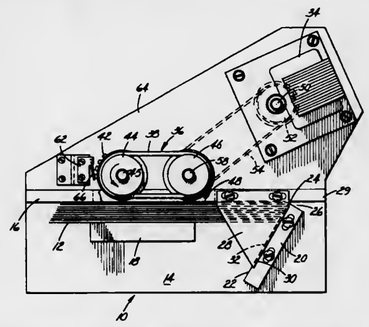
DOCUMENT FEEDER

Carl E. Anderson, Des Plaines, Ill., assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed July 2, 1973, Ser. No. 375,734

Int. Cl. B65h *3/04*

U.S. Cl. 271—34 **4 Claims**



1. A document feeder for separating and advancing a single document at a time from a supply of documents comprising:

a hopper for holding a supply of documents standing on edge to be fed, said hopper including a document guide assembly comprising a guide plate, a movable gate member and a fixed guide element for restraining the lower and upper edges of said document respectively, said guide assembly being angularly disposed in relation to said guide plate causing the lead edges of said documents to be offset from one another in a direction extending into the interior of said hopper to form an exitway therebetween, said exitway having a width large enough to permit the passage therethrough of a single document at a time;

an endless belt member positioned adjacent said guide plate and having access to the face of a forward-most document to be fed from the supply of documents, said endless belt having raised finger elements on a portion of its outer periphery for engagement with the face of the document to be fed;

drive means for driving the endless belt in a predetermined path into and out of engagement with the face of the document being fed during each revolution of the endless belt;

switch means in the path of said belt identifying a start position for said belt in said path to provide finger contact with said document for a period of time to assure removal of said document from said hopper during the period said belt completes one revolution and stopping the operation of the belt when said finger returns to said start position; whereby movement of the finger elements into engagement with the face of the document during each revolution advances one document at a time from said supply.

3,885,784

DOCUMENT SINGLING ARRANGEMENT

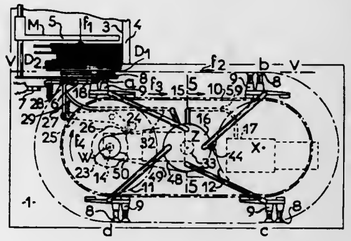
Guy Sautton, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 19, 1973, Ser. No. 417,089

Claims priority, application France, Jan. 27, 1971, 71.02623; Sept. 14, 1973, 73.33137

Int. Cl. B65h *3/08*

U.S. Cl. 271—94 **10 Claims**



1. Mechanism to assure the one by one separation and the putting in series at a constant interval of documents from a stack of documents, comprising:

a hopper that contains this stack of documents and presents them to be picked up,

a preseparation element intended to separate the first document from the rest of the documents in said hopper and hold it in the pickup position,

mobile suction means to pick up the first document presenting itself in pickup position and to make it advance to the end of the advancement path, said suction means comprising:

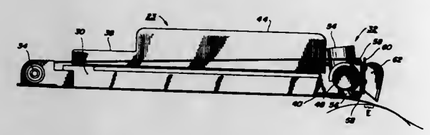
conveyor means to which are attached a plurality of evenly spaced suction cup carrier units,

at least two pulleys on which said conveyor means travels, the documents being conveyed around the arc of at least one of the pulleys, said pulleys having shafts whereof one is driven by motor means, and

a distributor to supply a vacuum to the suction cup carrier units, said distributor being connected to the vacuum source by two distinct conducts, one of which is used to supply a vacuum to the suction cup carrier units presenting themselves in the pickup position and the other is used to supply a vacuum to the suction cup carrier units starting from a position located between the pickup position and the passage around the pulley to the position of the end of the path, said distributor further connecting

said suction cup carrier units to atmospheric pressure when they reach said end of path position.

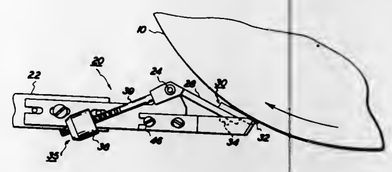
3,885,785
VACUUM TRANSPORT
Robert A. Burkett, Fairport, and Daniel S. Hoffman, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 20, 1973, Ser. No. 426,977
Int. Cl. B65h *29/56*
U.S. Cl. 271—174 **3 Claims**



1. In a reproduction machine wherein a transfer member is electrostatically tacked to a moving image support member, a vacuum transport for removing the transfer member from the image support member and transporting the transfer member away from the support member including:
a frame member;
a plurality of small diameter rolls in axial alignment mounted on one end of said frame member forming a first roller assembly, the axis of said rolls being disposed parallel to the leading edge of said transfer member adjacent said support member;
a second roller assembly mounted on said one end of said frame member, the roller axis of said second roller assembly being disposed parallel to and spaced from the axis of said small diameter rolls;
a third roller assembly mounted on the other end of said frame member;
a plurality of endless perforated belts operatively mounted in said transport for movement around said roller assemblies;
means for forming first vacuum ports immediately behind each of said small diameter rolls; and,
means forming second vacuum ports between each of said small diameter rolls, said second vacuum ports being positioned adjacent said support member and parallel to the leading edge of said transfer member, movement of said transfer member on said support member adjacent said small diameter rolls causing said transfer member to be separated from said support member by the flow of air through said first and second vacuum ports for engagement with said belts and movement by said belts away from said support member.

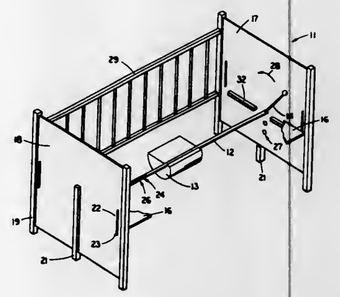
3. In a reproduction machine wherein a transfer member is electrostatically tacked to a moving image support member:
a transport for removing the transfer member from the image support member and transporting the transfer member away from the support members; and,
a corona emission device located adjacent said transport for spraying the transfer member with charged ions, said corona emission device including shield means adapted to direct the charged ions onto a limited area of the transfer member, said limited area being that area on the transfer member between the point on the image support member whereat the transfer member is separated from the image support member and the point at which the transfer member is contacted by said transport, the shield means thereby directing ions only on the area of the transfer member which is unsupported in the space between said image support member and said transport to provide optimum stripping of the transfer member from the image support member while assuring optimum copy quality resulting from the charge produced on the transfer member by said corona emission device.

3,885,786
STRIPPER FINGER
Herbert F. Schmalzbauer, Chester, Conn., assignor to Xerox Corporation, Stamford, Conn.
Continuation of Ser. No. 247,064, April 24, 1972, abandoned.
This application Apr. 25, 1973, Ser. No. 354,551
Int. Cl. B65h *29/56*
U.S. Cl. 271—174 **2 Claims**



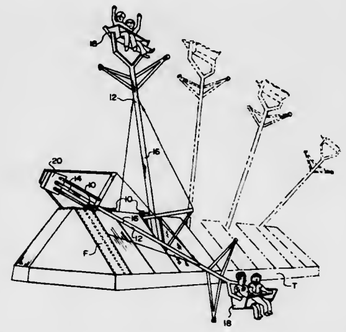
1. In a xerographic copying apparatus wherein an insulating copy sheet is electrostatically tacked to a moving xerographic drum image bearing surface, an improved stripping apparatus for removing the tacked copy sheet from the moving drum surface comprising
a frame,
a support member mounted about a pivot axis on said frame,
an elongated finger member mounted on said support member extending tangentially to the drum surface with its tip portion extending a predetermined extent beyond the point of tangency,
counterweight means mounted on said support member on a side of said pivot axis opposite said finger member to urge said finger member into low pressure riding contact with the drum surface whereby the copy sheet is stripped from the drum surface at very low compressive stresses, wherein the support member is formed with a counterbore opening about the pivot axis to present a minimum of pivot bearing surface to effect self aligning of the finger member at the line of contact with the drum surface.

3,885,787
MOVABLE PLATFORM AMUSEMENT DEVICE FOR A CHILD
Jeff B. Walker, 131 Berkley Rd., Indianapolis, Ind. 46208
Filed Jan. 21, 1974, Ser. No. 434,864
Int. Cl. A63g *31/02*; **A47d** *9/02*
U.S. Cl. 272—1 R **5 Claims**



1. An amusement device for a child comprising:
a rod, mountable below a child's enclosure which has a raised movable bottom platform;
a platform-deflecting member rigidly attached to the rod and having a varying radial dimension measured from the axis of the rod;
a handle rigidly attached to the rod and extending beyond the platform-deflecting member; and
a child's enclosure which has a raised movable bottom platform, the rod being rotatably mounted below the platform, and wherein the platform-deflecting member is sized to contact the platform when the rod is rotated, whereby the platform is deflected upwardly a distance dependent upon the radial dimension of the member at its point of contact with the platform.

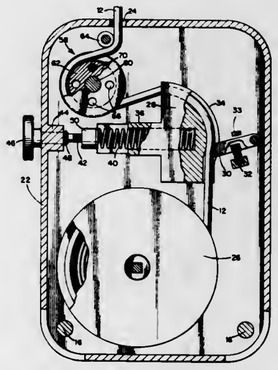
3,885,788
JUMP-OVER AMUSEMENT RIDE
Richard A. Harris, 1027 Jefferson Rd., Greensboro, N.C. 27403
Filed Oct. 12, 1973, Ser. No. 406,027
Int. Cl. A63g *11/00*
U.S. Cl. 272—55 **5 Claims**



1. A jump-over amusement device comprising a horizontally extending axle supported at a prescribed distance above a ground or support surface, a beam pivotally mounted to said axle at a point closer to one end of said beam than the other end, the distance between said axle and said one end being less than the distance between said axle and said support surface, the distance between said axle and said other end being greater than the distance between said axle and said support surface, a rider support means attached to the free end of the longer end section, a counterweight slidably mounted on the shorter end section, a fluid cylinder and piston means having the free end of the piston thereof connected to said counterweight for moving said counter-weight along said shorter end section between a non-operative position where said counterweight is nearest said axle and an operative position further from said axle, and a control means for activating said fluid cylinder means, said control means located at a position remote from said shorter end section.

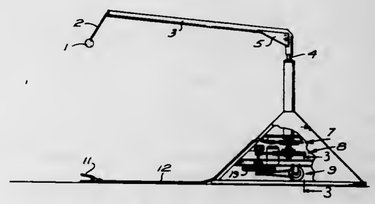
3,885,789
EXERCISING DEVICE
Michael E. Deluty, Brookline, and Morton A. Levine, Belmont, both of Mass., assignors to Michael E. Deluty, Brookline, Mass.
Filed June 21, 1974, Ser. No. 481,907
Int. Cl. A63b *21/02*
U.S. Cl. 272—83 A **13 Claims**

6. An exercising device comprising:
a. a housing having a hollow interior and a cord opening;
b. a cord retractor reel mounted for rotation within said housing;
c. rewind means for continuously urging said retractor reel in the rewind direction;
d. a capstan mounted within said housing, said capstan being fixed against rotation in the unwind direction in its operative mode;
e. a flexible cord fixed to and wrapped around said retractor reel, said cord running from said reel to and being wrapped at least one full turn around said capstan, said cord running from said capstan out of said housing through said cord opening; and
f. manually adjustable variable resistance friction nip means mounted within said housing between said cord retractor reel and said capstan for applying frictional force to said cord, said friction nip means including a support member contacting one side of said cord, a pivoted jamming arm mounted on the other side of said cord, resilient means for continuously urging the free end of said pivoted jamming arm in the unwind direction against the other side



of said cord to frictionally wedge said cord between said support member and said jamming arm as said cord is pulled out of said housing, said jamming arm pivoting in the rewind direction to unwedge said cord as said cord is retracted into said housing;
g. said rewind means, said capstan, and said variable resistance friction nip means all cooperating to apply force to said cord to oppose an exteriorly applied manual force pulling said cord in the unwind direction, said friction nip means releasing force on said cord, and said rewind means retracting said cord in the rewind direction in the absence of an exteriorly applied manual force on said cord.

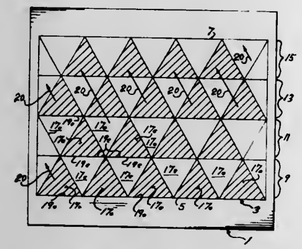
3,885,790
PITCHING MACHINE
Lee Roy Parr, 131 Berkley Rd., Rialto, Calif. 46208
Filed June 18, 1973, Ser. No. 371,153
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 E **3 Claims**



1. A fully automatic centrifugal baseball pitching machine comprising the combination of:
a. a base;
b. A vertical shaft mounted on said base and having a horizontal arm attached to its upper end,
c. a tether line having a baseball attached to one of its ends and having its other end extending through said horizontal arm and vertical shaft,

d. a retracting spool mounted to said base;
e. said retracting spool engaged with said other end of said line;
f. a rotational drive means engaged with said retracting spool to maintain a positive pressure on said line to remove any slack in the line;
g. a friction slip clutch mounted between said rotational drive means and said retracting spool to permit the retracting spool to rotate relative to said friction slip clutch when said ball is hit with a predetermined force;
h. drive motor mounted to said base and connected to said vertical shaft to impart rotation to said shaft, horizontal arm and baseball.

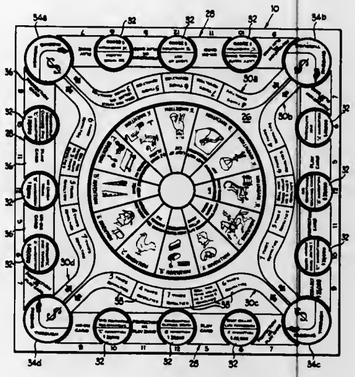
3,885,791
BOARD GAME APPARATUS
Jean-Yves Choulnard, 81 St. Louis St. Apt. 3, Quebec G1R 3Z4, Quebec, Canada
Filed June 3, 1974, Ser. No. 476,059
Int. Cl. A63f *3/00*
U.S. Cl. 273—131 K **3 Claims**



1. A game comprising a game board and playing pieces, said game board having a playing surface positioned between a pair of parallel opposite sides and divided into four rows designating different phases of the game and arranged in spaced parallel relationship relative to each other and to said opposite sides, each of said rows including a first series of an odd number of triangles and a second series of an even number of triangles interposed between said triangles of the first series and having their base facing toward the other of said sides, the first series of triangles in the row adjacent each of said sides having their bases aligned along the corresponding side and including a center triangle defining a laterally centered goal place triangle, said playing pieces including two distinct sets each having a number of distinct playing pieces equal to the total of said odd and even numbers of triangles in one row, and originally positioned on the triangles of the one of said rows which is adjacent one of the sides, and each of said two distinct sets including a single goal marking playing piece originally positioned on one of said centered goal place triangles and marking a goal upon reaching the other of the latter.

3,885,792
GAME APPARATUS
Jeffrey D. Breslow, Highland Park, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Aug. 10, 1973, Ser. No. 387,521
Int. Cl.² A63F *3/00*
U.S. Cl. 273—134 C **4 Claims**

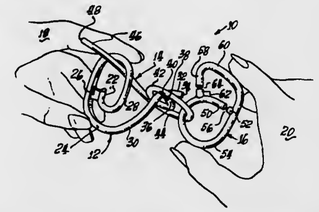
1. A board game comprising:
a gameboard having a playing surface thereon;
a plurality of playing pieces;
simulated money;
a set of patent cards each having indicia representative of a patented invention and indicating the possible scope of protection in the form of the number of claims and the expected financial return of said patent in the form of its purchase price and royalties corresponding to and increasing with the number of claims;
a set of protection cards each having indicia thereon which dictates how many claims a patented invention has, said protection cards being acquired during the course of the game;
a plurality of stations defining a main playing piece path of travel including patent stations having indicia thereon representative of a patented invention corresponding to the patented inventions represented by the patent cards, said patent cards being acquired by expending said simulated money should a player's playing piece land on that particular patent station, and protection stations having indicia thereon which allow a player to pick a protection card should its playing piece land on a protection station, said main path also including at least one entrance station



and at least one exit station defining stations where a playing piece may be moved on or off the main path;
means defining a secondary playing piece path of travel on said playing surface connected to said main path, said secondary path comprising a plurality of stations including and overlapping with an entrance station wherein said secondary path begins and an exit station wherein said secondary path ends, whereby a playing piece may be able to move onto said secondary path only when it is advanced onto said entrance station, said secondary path also including cash stations having indicia thereon representative of a financial return on a patented invention, said financial return being the amount of royalties for the price indicated by a patent card corresponding to the number of claims obtained for that patent; and
a chance device for determining how many stations a particular playing piece is to be advanced along said paths.

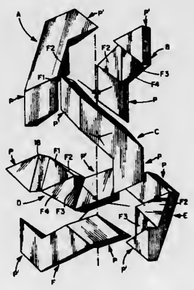
3,885,793
PUZZLE DEVICE
Eldon D. Vaughn, 212 S. Kraemer, No. 1908, Placentia, Calif. 92670
Filed Mar. 22, 1974, Ser. No. 453,583
Int. Cl. A63f *9/08*
U.S. Cl. 273—158 **6 Claims**

1. A puzzle device comprising:
first and second self-contained elements, each being formed of substantially rigid wire-like material of substantially uniform cross-section in scroll-like configuration;
the configuration of each of said elements having a first end curved as an inwardly convoluted spiral into an inner loop with said first end disposed adjacent a portion of said inner loop, said inner loop thereafter merging into an outer loop, said outer loop thereafter merging into a substantially elongate tail terminating at a second end of said element configuration;
web means disposed between said first end of said configured first element and said adjacent portion of said inner loop of said first element to define a restriction therebetween to deny passage of the cross-section of said second element, said web means having a portion of less thickness than said first element,



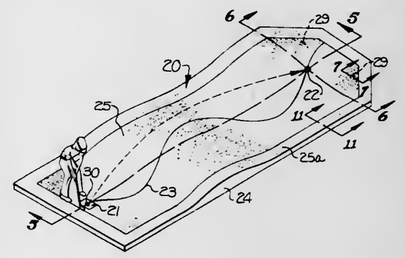
said first end of said configured second element being disposed relative to said adjacent portion of said inner loop of said second element to form an open gap span dimensionally less than that of the cross-section of the material of said first element but great enough to accommodate said restriction thereof with clearance to enable said restriction to pass through said open gap span by hand manipulation of said elements.

3,885,794
PUZZLE
Stewart T. Coffin, Old Sudbury Rd., Lincoln, Mass. 01773
Filed May 18, 1973, Ser. No. 361,568
Int. Cl. A63f *9/12*
U.S. Cl. 273—160 **5 Claims**



1. A family of at least two three-dimensional puzzles, each puzzle having six identical pieces, each piece comprising:
a pair of members, each member defining a prismatic shape of equilateral triangular cross-section;
said members being arranged so that their longitudinal axes are askew, and with a longitudinal edge line of one of said prismatic members substantially intersecting a longitudinal edge line of the other of said prismatic members at an angle of approximately 109.5°;
said prismatic members being oriented so that their surfaces which are opposite their intersecting edges are substantially parallel to each other;
an intermediate member connecting said prismatic members to secure said prismatic members together, said intermediate member having selected surfaces which are engageable with corresponding surfaces of intermediate members of the other pieces of said puzzle to facilitate orientation and mating of said puzzle pieces with each other;
each intermediate member of each piece of each of said puzzles being substantially identical in shape and each piece of each of said puzzles being of the same dimensional scale, the pieces from each of said puzzles being interchangeable with the pieces of the other of said puzzles;
the ends of each of the prismatic members in the pieces of a particular puzzle being cut off along the planes defining an oblique angle with the axis of said prismatic member; and
the ends of the prismatic members in the puzzle pieces of one of said puzzles being cut off along oblique planes which are different from the oblique planes along which the ends of the prismatic members of other pieces of the other puzzles in said family are cut off.

3,885,795
GOLF BALL PUTTING GAME
Walter E. Brewer, 524 Clarendon Pl., Rock Hill, S.C. 29730
Filed Jan. 28, 1974, Ser. No. 437,489
Int. Cl. A63b *69/36*
U.S. Cl. 273—176 E **3 Claims**



1. A putting game characterized by providing a challenging and interesting test of skill both to experienced and unexperienced players, and wherein the playing ball is adapted to travel a difficult to predict generally serpentine path upon being stroked, said game comprising a golf putter, a playing ball of oval, generally egg-shaped configuration adapted to travel an erratic path curving generally in the direction of the smaller end when stroked with the putter, and a playing course along which the oval playing ball is to be stroked during the play of the putting game, the playing course comprising a plurality of putting holes positioned adjacent one another and arranged in a series for being successively played, each putting hole comprising an elongate slab of a length and width sufficiently large to permit a person playing the putting game to walk thereon and having an undulating contoured upper playing surface over which the oval playing ball may travel during play of the game, each putting hole having means defining a teeing area adjacent one end thereof from which the oval playing ball may be initially stroked, cup means located adjacent the opposite end thereof at a distance from the teeing area and adapted for receiving the oval playing ball therein, and means extending along said undulating upper playing surface for substantially the entire length thereof and serving to delineate on said playing surface a pair of side-by-side visually distinguishable longitudinally extending scoring zones of different values, with such different valued scoring zones coupled with the erratic path of travel of the oval playing ball serving to enhance the challenge and test of skill of the game.

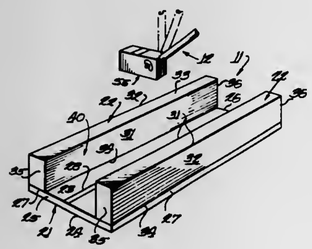
3,885,796
GOLF PUTTING PRACTICE APPARATUS
Verne W. King, Sargent, Nebr. 68874
Filed July 5, 1974, Ser. No. 486,181
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 C **1 Claim**

1. An improved practice device for training in establishing correct putting technique and in the development of the cor-

rect putting stroke in the game of golf, said device comprising, in combination:

A guide member having a generally U-shaped crosssection adapted to be supported on the ground, said guide member being defined by a flat rectangularly shaped base having a flat top surface and a flat bottom surface with opposed front and back edges and opposed parallel side edges, the guide member further including identical side rails having top, bottom and back surfaces with a flat interior vertical surface and opposed end edges, each said side rail associated with one of the base side edges and extending therealong with the side rail bottom surface being supported upon the base top surface, the guide member further defining a pair of transversely extending slots associated with each of the side edges and disposed adjacent opposite end edges of the base member, each slot extending completely through the base member with the guide member further including fastening means associated with each said slot and extending therethrough to engage the associated side rail through the bottom surface thereof each of the side rails being adjustably movable transversely of the base member in a direction either toward or away from each other to selectively vary the width of the channel defined therebetween; and

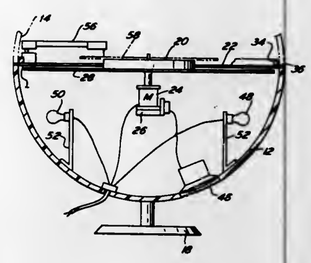
a club element adapted to be used in combination with said guide member, the club having a head member adapted to pass through the side walls of said guide member and



including a shaft extending from the head member and adapted to be gripped by the user for use in guiding the movement of the head member, the club being defined by an elongated shaft having a gripping portion at the top terminal thereof and a block shaped rectangular club head having substantially parallel top and bottom surfaces and parallel side surfaces disposed normal to the top and bottom surfaces, the club further defining an opening extending through the head adjacent one corner thereof and being defined between the top surface and one of the side surfaces, the club head including an aperture extending through the terminal end of the shaft normal to the axis of the shaft and adapted to receive a bolt to pass through the club head hole and aligned shaft aperture to pivotally secure the shaft to the club head, the club further being defined by a fastening means threadibly adjustably received on the bolt to permit adjustment of the angle of the club head with respect to the axis of the shaft; and

a first indicia extending along the central axis of the base member of the top surface thereof between opposite end edges thereof and a second indicia disposed on the top surface of the club head intermediate the side surfaces thereof and extending in a direction normal to the front and back surfaces thereof said second and first stripes being identical in general configuration and adapted to the aligned in use for training purposed.

3,885,797
PHONOGRAPH
Donald J. Booty, and Charles F. Vandervelde, both of Frankfort, Ill., assignors to LCA Corporation, Philadelphia, Pa.
Filed Oct. 3, 1973, Ser. No. 402,933
Int. Cl. G11b *1/04*
U.S. Cl. 274—2 **4 Claims**

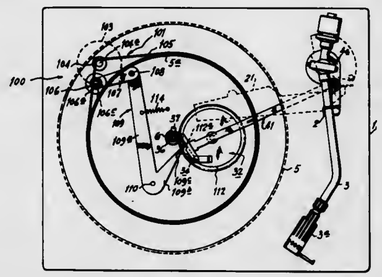


1. A phonograph in combination with an opaque housing having a removable cover, a rotatable turntable horizontally supported by said housing for rotation about a vertical axis and adapted to support a phonograph record, motor means supported by said housing for rotating the turntable at different selected speeds, first and second discs, said first disc being on said housing horizontally disposed adjacent the plane of said turntable, said discs having an outer diameter greater than the outer diameter of said turntable, said first disc being annular and stationary, said first disc having a centrally disposed hole through which a portion of said turntable extends, means for rotating said second disc with said turntable at the same speed, a phonograph arm supported by said housing and movable to a position over said turntable for contact with a phonograph record adopted to be supported by said turntable, each of said discs having spaced light transmitting zones in a portion thereof which is radially outwardly from the outer periphery of said turntable and which partially overlap at different rotative positions of said second disc, said zones on at least one of said discs being multicolored, and illuminating means in said housing for simultaneously projecting light upwardly from the housing about the periphery of the turntable through a plurality of said partially overlapping zones on said discs.

3,885,798
DRIVE ASSEMBLY FOR PHONOGRAPH RECORD PLAYER
Kunio Yokokura, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 25, 1974, Ser. No. 454,776
Claims priority, application Japan, Mar. 29, 1973, 48-38065
Int. Cl. G11b *17/06, 3/60*
U.S. Cl. 274—10 R **14 Claims**

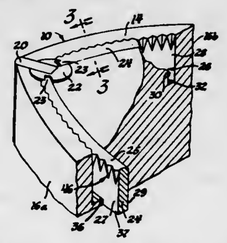
1. In a phonograph record player having a frame, a turntable rotatably mounted on said frame for supporting a phonograph record during the playing thereof, and a function control mechanism driven by rotation of said turntable in response to actuation of said control mechanism; a drive mechanism for said turntable comprising an electrical motor, a first transmission means connecting said motor with said turntable for rotating said turntable during the playing of a phonograph record thereon, and a second transmission means made operative upon actuation of said function control mechanism for

further connecting said motor with said turntable and for driving said turntable from said motor so as to prevent slowing



of the rotation of said turntable when said turntable drives said control mechanism.

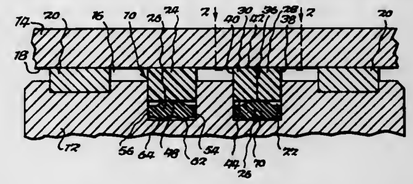
3,885,799
SEALING ASSEMBLY
William H. Bibbens, 16500 N. Park Dr., Southfield, Mich. 48075
Division of Ser. No. 312,408, Dec. 5, 1972, Pat. No. 3,851,999.
This application June 20, 1974, Ser. No. 481,567
Int. Cl. F01c *19/00*
U.S. Cl. 277—81 P **48 Claims**



1. A sealing assembly comprising: a first seal supporting member having an end face; a groove formed in said end face; a sealing strip received in said groove an outer portion of which projects axially from said groove and is adapted to engage a surface of a second member spaced from said end face and movable with respect thereto; and interengageable force transmitting means on said sealing strip and seal supporting member operable in response to friction forces on said outer portion to apply transverse and axial reaction forces on said sealing strip in directions to simultaneously urge said sealing strip into sealing engagement with one side wall of said groove and to project further axially outwardly from said groove.

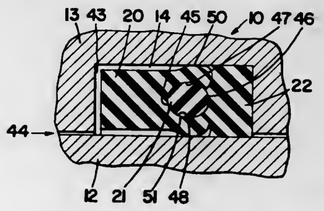
3,885,800
SEAL RING SYSTEM
Ward Sievenpiper, Milgrove, N.Y., assignor to A-T-O Inc., Willoughby, Ohio
Continuation of Ser. No. 353,532, April 23, 1973, abandoned.
This application Dec. 28, 1973, Ser. No. 429,186
Int. Cl. F16j *9/06*
U.S. Cl. 277—165 **20 Claims**

1. A sealing ring system comprising: an annular outer member of non-deformable material adapted to be received in a peripheral groove formed in a reciprocating member in spaced relation to the bottom wall of said groove; an annular inner expander member adapted to be received in said groove between said groove bottom wall and said outer member for urging the latter into pressure sealing engagement against the surface to be sealed; said expander member being formed of a material providing relatively high resistance to axial deformation and having an irregularly shaped outline in cross sectional configuration defining a peripheral bead on one surface thereof and a pair of axially spaced inner peripheral ribs on



the other surface in sealing engagement with said outer member and said groove bottom wall surface, respectively, to impart a relatively light radial loading on said outer member under static sealing conditions.

3,885,801
PACKING
John B. Scannell, Long Beach, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Continuation of Ser. No. 201,018, Nov. 22, 1971, abandoned.
This application May 15, 1974, Ser. No. 470,205
Int. Cl. F16j *15/32, 9/00*
U.S. Cl. 277—165 **3 Claims**

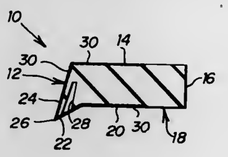


1. A sealing arrangement including two telescoped members, one of said members having a groove therein with a bottom wall radially opposite the other member, the groove having opposed end walls, one of said end walls having an axially projecting annular portion of less radial thickness than said groove, said one end wall being shaped to provide an annular space on each side of the projecting portion, a sealing assembly within said groove and comprising a sealing ring and a loading ring, the sealing ring comprising a body having inner and outer lips extending from one end thereof and defining an annular groove therebetween with an open end of substantially the same width as said projecting portion, each lip having a free end, said loading ring being within and initially substantially filling said annular groove and having an exposed end engageable with said projecting portion, said exposed end being initially substantially flush with the free ends of said lips, and said sealing and loading rings being made of deformable materials whereby upon fluid pressure being applied to the assembly from the other end of said body said projecting portion will enter the annular groove to deform the loading ring and sealing ring while confining the loading ring completely within said annular groove, and said lips will enter said spaces.

3,885,802
PACKING MEMBER FOR AUTOMOBILE LIFT
John H. Wheeler, 3921 Marquette St., Dallas, Tex. 75225
Filed Oct. 4, 1973, Ser. No. 403,527
Int. Cl. F16j *15/32*
U.S. Cl. 277—212 **10 Claims**

1. A packing member comprising an annular body of elastomeric material having a substantially radially disposed top

wall, a substantially axially disposed outer wall extending downwardly from the top wall, a bottom wall including a substantially radially disposed outer portion extending inwardly from the outer wall and an angularly downwardly extending inner portion, and an inner wall extending angularly downwardly and inwardly from the top wall to the bottom wall and intersecting with the inner portion of the bottom wall to define a sealing lip at the lower inner edge of the packing member, and a plurality of holes formed in the packing member at spaced points around the inner portion of the bottom wall, all of said holes extending into the packing member substantially axially and through a substantial portion of the distance between the top and bottom walls, said holes for permitting the packing member to distribute itself more uniformly during the use of the packing member and thereby form a more effective seal, for reducing stress concentrations and thereby reducing wear, and for accommodating eccentricities between the component parts of a cylinder incorporating the packing member.

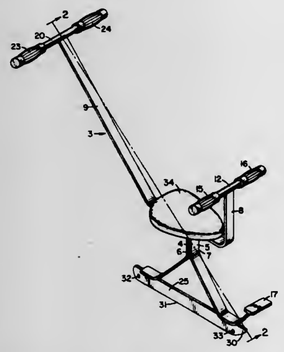


3,885,803

ICE SKATING VEHICLE

Anthony J. Christian, 100 Parker Rd., Rochester, N.Y. 14617

Filed Aug. 10, 1973, Ser. No. 387,259
Int. Cl. B62b *13/18*
U.S. Cl. 280—8 **2 Claims**



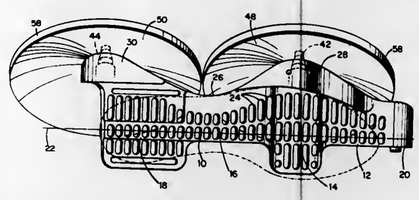
1. An ice-skating device having structure comprising,
a. a pair of handles to propel said device, said handles extending rearwardly and upwardly from a central portion of the structure with rigid means positioning said handles substantially clear of said central portion;
b. said central portion of said structure comprising a two-section framework having a base and a leveled top;
c. a single runner of length and characteristics comparable to an ice-skate runner with sharp edges and tapered ends, said runner permanently attached underneath the base portion of said two-section framework;
d. a seat for a rider positioned on said leveled top portion of said two-section framework;
e. rider's handles extending upwardly from the top of said framework at the front end of the rider's seat;
f. and rider's footrests extending upwardly and forwardly from the base portion of said combined two-section framework.

3,885,804

ROLLER SKATE

Patrick J. Cudmore, Cambridge, Mass., assignor to Wane-Rider, Incorporated, Duxbury, Mass.

Filed June 13, 1973, Ser. No. 369,759
Int. Cl. A63c *17/14*
U.S. Cl. 280—11.2 **12 Claims**



1. A roller skate comprising:
a. a sole plate having a ball portion and a heel portion on its upper surface to accommodate the corresponding parts of a skater's foot or shoe thereon, said sole plate having rigid front and rear axle mount portions along its outer margin at locations laterally aligned with said sole plate ball and heel portions, respectively;
b. foot engaging means affixed to said sole plate for gripping and securely maintaining the skater's foot or shoe against the upper surface of said sole plate;
c. a front axle and a rear axle mounted in and extending downwardly from said front and rear axle mount portions, respectively, said axles being parallel to each other and being angled downwardly in excess of 28° with respect to the horizontal;
d. a front wheel and an equal diameter rear wheel mounted for rotation on the outer ends of said front axle and said rear axle, respectively, said wheels having ground contacting points positioned vertically beneath the approximate front to rear center line of said sole plate; and
e. a toe stop mounted on the front end of said sole plate, said top stop extending forward of said front wheel periphery;
f. the point of intersection of the axis of said front wheel axle with the plane of said front wheel periphery being located in a horizontal plane which is above the upper surface of said sole plate ball portion;
g. the point of intersection of the axis of said rear wheel axle with the plane of said rear wheel periphery being located in a horizontal plane which is below the upper surface of said sole plate heel portion;
h. said front wheel periphery and said rear wheel periphery being spaced apart at their points of closest proximity by a distance which is less than 10% of the combined diameters of said wheels.

3,885,805

SKI INSTRUCTIONAL DEVICE

Frank Solymosi, 255 Violet St., Massapequa Park, N.Y. 11762

Filed Apr. 5, 1973, Ser. No. 348,129
Int. Cl. A63c *5/06*
U.S. Cl. 280—11.13 H **2 Claims**

1. In a ski-instructional device for use with a pair of skis and a pair of ski poles, the combination comprising:
a. a pair of attachments, each attachment being adapted to be mounted upon the upper surface of a different one of the skis at a location where the curvature of the tipe of the ski is substantially tangential to the remainder of the ski, each said attachment comprising a cupped-shaped receiver positioned on said skis with the opening of the cupped-shape facing upwardly, the surface of the interior of the cupped-shape having a slot; and
b. means adapted to be mounted on the lower end of each of the ski poles for mechanically coupling each pole to a different one of the attachments, said means for mechanically coupling each pole to a different ski comprising a T-shaped tip attached to the lower end of each of said ski poles, said T-shaped tip being insertable into said slot to bear against the attachment and when turned at an angle to the slot engaging the edges of the slot whereby said mechanical coupling means enables the skier to transmit both upwardly and downwardly extending forces through the ski poles to the tips of the skis, whereby the coupling means when engaged with the attachments enables the skier to vary the weight on the forward portion of the skis by forces transmitted through the ski poles.



3,885,806

NESTABLE STROLLER

Antoine Trubiano, Montreal East, Quebec, Canada, assignor to Cari-All Inc., Montreal East, Quebec, Canada

Filed June 17, 1974, Ser. No. 480,158
Int. Cl. B62b *7/00, 11/00*
U.S. Cl. 280—33.99 B **3 Claims**



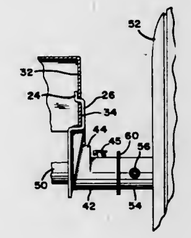
1. A nestable stroller construction comprising;
a frame member supported on wheel means for permitting movement of the stroller;
said frame member comprising a horizontally disposed U-shaped shelf support member at the bottom of said stroller, the closed part of the U-shaped member being at the front end of said stroller and comprising the front end of said U-shaped member, the legs of said U of said U-shaped member sloping outwardly away from each other from the front end to the back end of said U-shaped member;
upright members extending upwardly from each leg of the U at the back end of said U-shaped member, each said upright member comprising a forwardly extending bottom portion connected, at the bottom ends thereof, to their respective legs of said U and extending upwardly and forwardly from the respective leg, a central portion, extending upwardly from said forwardly extending bottom portion, and a rearwardly extending handle portion extending upwardly and rearwardly from said central portion and terminating in a free end;
the free ends of said handle portions being joined by a handle;
forwardly extending seat support members comprising a semi-circular like portion having upper and lower arcuate sections, and a downwardly extending portion extending from the said lower arcuate section adjacent the said central portion of the upright members to a connection with a leg of said U-shaped frame member; and
seat means suspended from said seat support members for holding a child including a leg receiving portion disposed between said upright members at the central portion thereof, a seating portion extending forwardly from said leg receiving portion and extending substantially horizontally between said lower arcuate sections of said seat support members, back support means extending upwardly from the forward end of said seating portion, and arm support portions formed by said upper arcuate sections of the seat support members.

3,885,807

WHEELED VEHICLE WITH SNAP-IN WHEEL SUPPORTS

James W. Bradbury, Butler, and William Todeff, Cuyahoga, both of Ohio, assignors to The Huffman Manufacturing Company, Miamisburg, Ohio

Filed Jan. 17, 1974, Ser. No. 434,010
Int. Cl. B60b *37/00*
U.S. Cl. 280—80 R **9 Claims**

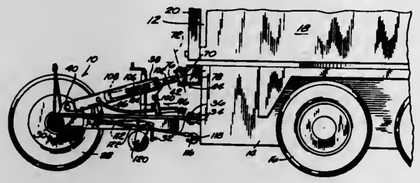


1. A wheeled vehicle comprising:
a. a chassis,
b. means defining slots in said chassis on opposite sides thereof,
c. a pair of wheel supports,
d. each of said wheel supports including a tongue portion and a body portion extending from said tongue portion and having inner and outer faces,
e. said tongue portions of said wheel supports being received in said slots formed in said chassis on opposite sides thereof,
f. said body portions of said wheel supports having said inner faces thereof overlying and engaging underlying portions of said chassis,
g. an axle extending across said chassis and through openings formed through said body portions of said wheel supports,
h. a pair of wheels positioned outwardly of said outer faces of said wheel supports and receiving opposite ends of said axle at opposite sides of said chassis, and
i. means fixing said wheels to said axle outwardly of said wheel supports and preventing outward pivoting movement of said wheel supports about said tongue portions thereof away from engagement of said body portions with said chassis and disengagement of said tongue portions from said slots.

3,885,808
DETACHABLE AUXILIARY LOAD DISTRIBUTING ASSEMBLY

Philip A. Derrwaldt, Brookfield, Wis., assignor to D. G. Beyer, Inc., Milwaukee, Wis.

Filed Jan. 5, 1973, Ser. No. 321,336
Int. Cl. B60g 17/00
U.S. Cl. 280—81 R 12 Claims



1. A detachable auxiliary load distribution assembly in combination with a vehicle-mounted mobile crane which includes a frame, said load distribution assembly comprising a dolly frame;

ground engaging wheel means on and supporting said dolly frame;

means for detachably connecting said dolly frame to the rear of said mobile crane frame;

a swivel assembly adapted to be positioned in engagement with said mobile crane frame and including

first means defining a generally horizontal axis for vertical movement of said dolly frame relative to said vehicle-mounted crane; and

second means defining a generally vertical axis for horizontal movement of said dolly frame relative to said vehicle-mounted crane;

means interengaging between said swivel assembly and said mobile crane frame providing butt engagement of said swivel assembly with said mobile crane frame to resist movement of said swivel assembly relative to said vehicle-mounted crane, said interengaging means including a horizontally and rearwardly extending wall member affixed to said mobile crane frame and having an underside against which said swivel assembly bears; and

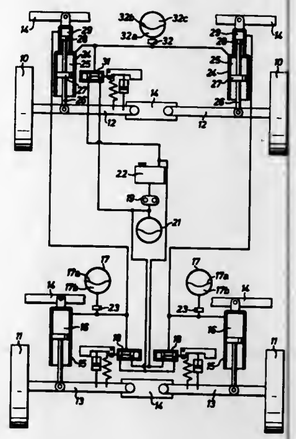
actuating means having a first end connected to said swivel assembly and a second end connected to said dolly frame, said actuating means being operable, when actuated and when said swivel assembly is engaging said interengaging means, to react through said butt engagement of said swivel assembly with said mobile crane frame and apply a downward force on said dolly frame thereby transferring a portion of the load from said vehicle-mounted mobile crane to said wheel means and so that said vertical and horizontal movement of said dolly frame is accommodated in said swivel assembly independent of said butt engagement.

3,885,809
VEHICLE SUSPENSION

Robert Hazell Pitcher, Leamington Spa, England, assignor to Automotive Products Co., Ltd., Leamington Spa, England

Filed Feb. 20, 1973, Ser. No. 333,647
Claims priority, application United Kingdom, Mar. 8, 1972, 10802/72
Int. Cl. B60g 11/30
U.S. Cl. 280—112 A 3 Claims

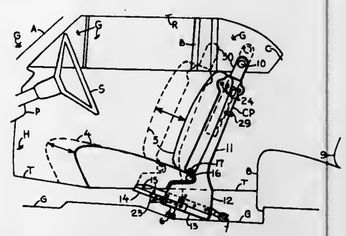
1. A vehicle suspension system including a wheel mounted structure with a first and a second pair of wheels, first liquid filled struts with a chamber therein connecting one of said first pair of wheels with a source of liquid pressure and a drain source to oppose relative up and down movement of the wheel mounted structure and the wheel to which said strut is connected, valves connecting one of said first pair of wheels to said source of liquid pressure and drain source to produce roll resistance for said first pair of wheels, second liquid filled struts each having a first and second chamber connecting one wheel of said second pair of wheels to said wheel mounted structure, another valve in communication with the second chamber of said second struts selectively operatively connected to said second chamber and a source of pressure and drain source to connect either second chamber therewith, said first chambers being in open communication with the chamber of one of the struts of said first pair of wheels, whereby the pressure in said first chamber of each strut of the second pair of wheels varies with the pressure in the first chamber of one of the struts of the first pair of wheels, the arrangement being such that the changes of pressure in said second chambers produce roll resistance at the second pair of wheels in the same sense as the roll resistance produced at the first pair of wheels.



3,885,810
SEAT SUPPORTING STRUCTURE FOR FAST MOVING VEHICLES

John J. Chika, 1350 Orchard Ridge Rd., Bloomfield Hills, Mich. 48013

Filed Jan. 10, 1972, Ser. No. 216,344
Int. Cl. B60r 21/10
U.S. Cl. 280—150 B 46 Claims



1. An auxiliary multi-function seat-supporting structure for seats of an enclosed transportation vehicle, positioned back of the seats and operatively attached to them, and secured to the immediately adjacent components of the floor structure of said vehicle and to the lower sides of the vehicle body immediately adjacent said seats and configured to provide:

means of additional support and transverse rigidity for said seats;

means to stabilize said seats in any preselected position during any severe deceleration of said vehicle;

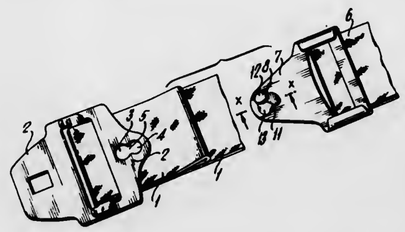
means to prevent said seat from collapsing, upending and dislocating during a collision of said vehicle;

means for easy, convenient connecting and disconnecting of any individual-restraining devices used by said seat occupants back and inboard of their shoulders.

3,885,811
SELECTIVELY ENGAGEABLE THREE POINT VEHICLE SAFETY BELT

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1973, Ser. No. 412,949
Claims priority, application Japan, Nov. 6, 19?2, 47-127220; Nov. 6, 1972, 47-127221
Int. Cl. B60r 21/10
U.S. Cl. 280—150 SB 12 Claims



1. A safety belt system comprising a lap belt, a shoulder belt, a first coupling section attached to one of said belts and having formed therein a first opening and a second opening spaced from and of lesser width than said first opening and a restricted passageway connecting said first and second openings and of lesser width than said second opening, and a second coupling section including a coupling pin having an enlarged outer head portion of greater width than said second opening and of no greater width than said first opening, an intermediate portion of no greater width than said second opening and of greater width than said passageway and an inner portion of no greater width than that of said passageway, said pin being axially movable in said second opening when said pin is in engagement therewith between a lock position with said intermediate portion engaging said second opening and in longitudinal alignment with said passageway and an unlock position with said intermediate portion out of engagement with said second opening and said inner portion in longitudinal alignment with said passageway.

3,885,812
LOCKING DEVICE IN PARTICULAR FOR A SAFETY BELT

Hubert De Lavenne, Meudon, France, assignor to Automobiles Peugeot Regie Nationale des Usines Renault, Paris, France

Filed Jan. 7, 1974, Ser. No. 431,310
Claims priority, application France, Jan. 26, 1973, 73.02759
Int. Cl. B60r 21/02
U.S. Cl. 280—150 SB 9 Claims

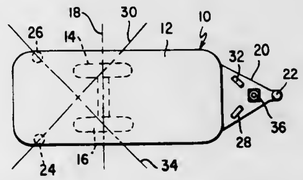
1. A locking device in particular for a safety belt secured at one end to a winder, the device comprising a fixed plate and a movable member defining a gap for the belt, links pivoted to the plate and to the movable member interconnecting the plate and movable member, the links being movable between a first position in which the movable member is in a position relative to the plate to allow the belt to move freely and a second position in which the gap between the movable member and plate is less than the thickness of the belt, resiliently yieldable means co-operative with the links and biasing the links toward said second position thereof, movement of the links from said first position toward said second position being in such direction that when the belt is pulled in a direction to cause the unwinding of the belt there is an increase in the clamping of the movable member against the belt and fixed plate, and actuating means for shifting the movable member away from the fixed plate and thereby releasing the belt, said actuating means comprising an electromagnet having a moving armature, an electric circuit controlling the electromagnet, means connecting the armature to the links, the armature being adapted to act on the links in opposition to the action of the resiliently yieldable means.



3,885,813
METHOD AND APPARATUS FOR LEVELING A TRAILER

Calvin V. Kern, Maumee, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Mar. 25, 1974, Ser. No. 454,640
Int. Cl. B60s 9/04
U.S. Cl. 280—150.5 9 Claims

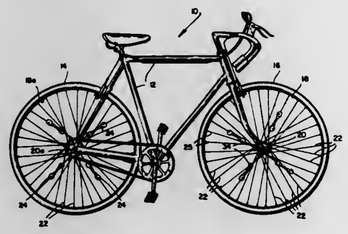


1. A method for leveling a trailer or similar vehicle having a longitudinally extending floor supported by first and second transversely spaced apart ground engaging means which establish a transverse axis for vertical pivotal movement of said trailer comprising the steps of: vertically pivoting the trailer about the axis until a line parallel to the trailer floor and passing through substantially the center of the ground engaging means on the uphill side of the trailer at an angle greater than 0° and less than 90° to the axis is level, partially supporting the trailer at a point along said line toward the downhill side of the trailer from the uphill side ground engaging means and vertically pivoting the trailer about said line until a line parallel to the trailer floor and non-parallel to said first-mentioned line is level.

6. In a trailer having a longitudinally extending generally rectangular floor supported by a pair of transversely spaced apart ground engaging means which establish a transverse axis for vertical pivotal movement of said trailer, the improvement comprising jack means mounted on the trailer for raising and lowering the front end of the trailer, a first adjustable support mounted on the trailer and located adjacent one rear corner of the trailer, a second adjustable support mounted on the trailer and located adjacent the other rear corner of the trailer, a first level mounted on the trailer and disposed to indicate the attitude of a line parallel to the floor of the trailer and passing through substantially the center of one of the ground engaging means and the location of the support adjacent the rear corner diagonally opposite from the one ground engaging means and a second level mounted on the trailer and

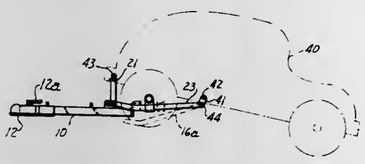
disposed to indicate the attitude of a line parallel to the floor of the trailer and passing through substantially the center of the other ground engaging means and the location of the support adjacent the rear corner diagonally opposite from the other ground engaging means.

3,885,814
CENTRIFUGAL BICYCLE WHEEL
Robert Rizzo, 305 E. 28th St., Brooklyn, N.Y. 11226
Filed July 8, 1974, Ser. No. 486,637
Int. Cl. B62m *1/10*
U.S. Cl. 280—217 **3 Claims**



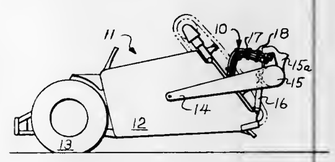
1. A wheel having an outer rim and central axle, a plurality of spokes extending between said axle and rim, a slidable weight spring biased and mounted on at least one of said spokes, a stationary yoke mounted on said spokes on the axle side of said weight, a spring extending between said weight and said yoke, said yoke having means for adjusting the radial position thereof on said spoke.

3,885,815
TOWING DEVICE
August A. Kniff, 137 S. Eucla, San Dimas, Calif. 91773
Filed Jan. 9, 1974, Ser. No. 432,067
Int. Cl. B60p *3/06*
U.S. Cl. 280—402 **9 Claims**



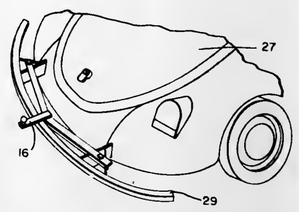
1. Towing means for towing a four-wheeled vehicle having a chassis from which its rear wheels mounted on an axle are suspended, comprising:
- an attachment member having a cross bar provided with a coupling means and an upstanding means adapted to fasten to an under part of the rear end of the chassis of the towed vehicle, and having leg means extending from the cross bar forwardly beneath the rear axle to a forward position in front of the axle, said leg means having a tongue receiving means;
- means at said forward position pivoting the leg means to the chassis;
- slider means on the leg means adapted to be slid back and forth between a location beneath the axle and a location away from the axle;
- a tow bar having a tongue at its forward end and an attaching means at an intermediate position of the tow bar for attaching to said coupling means;
- said tow bar having a rear end extending rearwardly from said attaching means;
- whereby when the tongue is attached to the tongue receiving means and the attaching means is fastened to the coupling means the rear end of the vehicle can be lifted by lifting the rear end of the tow bar.

3,885,816
TETHER BAND FOR FLEXIBLE HYDRAULIC HOSES
Lawrence J. Miller, and Roger M. Smith, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 223,466, Feb. 4, 1972, abandoned.
This application July 16, 1973, Ser. No. 379,587
Int. Cl. B60d *1/08*
U.S. Cl. 280—421 **1 Claim**



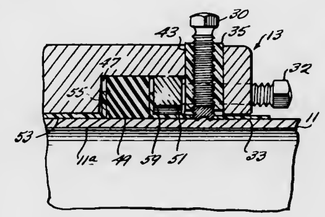
1. In combination with an articulated earth moving scraper having a joint between its movable parts with several flexible high pressure hydraulic hoses with hose fittings at their opposite ends connecting the movable parts thereof having restricted relative movement, a tether band for limiting the movement of the flexible hydraulic hoses comprising:
- an elongated band having a width substantially greater than its thickness, said band being flexible along its longitudinal axis normal to its width;
- anchor means on the opposite ends of said band for attaching said band to hose fittings on the opposite end of one of said hoses; and
- a plurality of bracket means disposed in spaced relationship along the length of said band with at least one of said bracket means located adjacent to each end of said band and the remaining bracket means disposed intermediately thereof, each of said bracket means mechanically secured to said band and forming a cage means about said several flexible hydraulic hoses gripping them sufficiently to prevent any substantial movement of said hoses parallel to the width of said band without interfering with their axial and radial growth movements, each of said bracket means including attaching means preventing its rotation about the longitudinal axis of said band.

3,885,817
TRAILER HITCH
Fredrick W. Christian, 8725 Baxter Way, Orangevale, Calif. 95662
Filed Feb. 6, 1974, Ser. No. 440,170
Int. Cl. B60d *1/00*
U.S. Cl. 280—491 E **3 Claims**



1. A tow hitch comprising a pair of horizontally disposed members defining an obtuse angle of less than 180° therebetween, a draft bar extending from the medial connected portions of said members, each of said members having a generally horizontally disposed portion, and a generally vertically disposed web portion extending downwardly therefrom, bolt means extending through the respective end portions of the horizontal portions of said members, and plate means adjustably positioned on said bolt means for securing said apparatus to a draft vehicle.

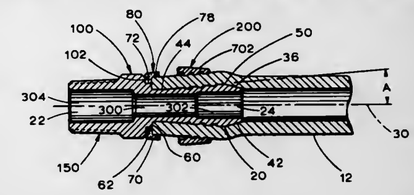
3,885,818
INSULATED COUPLING JOINT
Paul R. Ammann, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.
Filed Apr. 2, 1974, Ser. No. 457,355
Int. Cl.² F16L *58/00*
U.S. Cl. 285—31 **5 Claims**



1. An insulated coupling joint comprising:
- a fitting for mechanically connecting at least two pipes wherein said pipes are electrically insulated from one another, said fitting having at least one cylindrical pipe receiving passageway therethrough, an annular groove extending about the internal periphery of a first end thereof, and at least one insert receiving hole proximate said first end of said passageway, said hole extending radially from said passageway to the outside periphery of said fitting,
- a deformable gasket formed of an electrical insulating material positioned in said annular groove,
- a lock insert positioned in each of said insert receiving holes, said lock insert being an electrical insulator and having a threaded hole therethrough,
- means for inhibiting the rotation of said lock insert with respect to said fitting,
- means for preventing the radial movement of said lock insert with respect to said hole,
- a set screw threaded through said lock insert, and
- an insulator sleeve positioned about the portion of a pipe which extends into said first end of said passageway of said fitting, said set screw being threaded until the end thereof cuts through said insulator and into said pipe to a predetermined level,
- means for deforming said gasket in a radial direction to thereby cause said gasket to grip and retain said pipe, and means for securing the other end of said fitting to a pipe which extends into the passageway at said other end of said fitting.

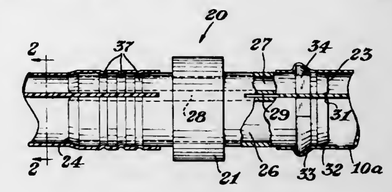
3,885,819
COMPRESSED AIR HOSE CONNECTION
Herbert Egerer, 4002 S. 89th St., Omaha, Nebr. 68131, and Donald W. Carlson, 8900 F. St., Omaha, Nebr. 68107
Filed Nov. 21, 1972, Ser. No. 308,403
Int. Cl. F16l *35/00*
U.S. Cl. 285—93 **5 Claims**

1. A hose fitting assembly comprising an annular nipple for receiving a hose therearound and having a passage therethrough extending from a terminal end thereof, said nipple having an axis extending through at least a portion of said passage beginning at said terminal end, said nipple having an enlarged annular exterior surface portion disposed between its ends and surrounding said axis, said enlarged surface portion being generally spaced a greater distance from said axis than other portions of the exterior of said nipple adjacent to said enlarged portion, said enlarged portion having an outer surface facing away from said axis which has an annular backside surface section facing partially away from said terminal end and inclined with respect to said axis, said backside surface section generally gradually tapering from a larger diameter at that end of said backside surface which is nearest said terminal end to a lesser diameter at its opposite end, and in which an abutment means is attached to said nipple and protrudes from said nipple away from said axis, said abutment means being disposed on the opposite side of said enlarged portion from said terminal end for receiving an end of said hose there-



against to limit movement of said hose onto said nipple, said abutment means being annular and surrounding and being attached to the remainder of said nipple all around said axis, said abutment means having an annular ledge protruding from that side thereof which faces said terminal end of said nipple, said ledge being spaced farther from said axis than those certain adjacent portions of the remainder of the outer surface of said nipple which latter portions are disposed toward said terminal end for the reception of an end of said hose between said ledge and said certain adjacent surface portions of said nipple, and in which said ledge is transparent enough so that an operator can see the end of said hose therethrough.

3,885,820
TUBING CONNECTOR
Walter A. Trumbull, Midland; James A. Schlosser, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 5, 1973, Ser. No. 412,946
Int. Cl. F16l *39/00*
U.S. Cl. 285—137 R **3 Claims**

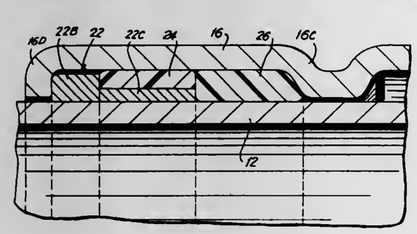


1. A connector for a multiple passage tube, the connector comprising
- a body portion having at least
- a first tube receiving end of generally cylindrical configuration, the first tube receiving end having defined therein
- a first passageway and
- a second passageway, each of the passageways being in full communication with space external to the first end, the body defining at least
- one wall separating the first and second passages, the wall between said first and second passages at a location adjacent the first end defining
- a first end slot extending inwardly into the wall from said first tube receiving end, the first end slot being generally parallel the first and second passageway and communicating with space external to the first tube receiving end both in axial and diametrical direction,
- a second end of generally cylindrical configuration, having a second end first passageway and a second end second

passageway, said second end passageways being in full communication with first and second passageways of the first end,

the second end defining a second end slot extending toward the first end slot, the second end slot disposed between the first end first and second passageways, the first and second slots being of generally like configuration.

3,885,821
EXPANSION FITTING
Robert A. Philibert, Burlington, Conn., assignor to General Signal Corporation, Rochester, N.Y.
Filed Dec. 5, 1973, Ser. No. 421,882
Int. Cl. F16l *55/00*
U.S. Cl. 285—175 **5 Claims**



1. An expansion fitting adapted for coupling or connecting electrical metallic tubing, comprising:

a pair of lengths of electrical metallic tubing, each having substantially the same predetermined diameter;

a sleeve of electrical metallic tubing having, substantially throughout its length, a diameter slightly larger than the diameter of the pair of lengths of tubing, the sleeve fitting over adjacent end portions of each of said lengths of tubing in overlapping relationship;

the adjacent end portion of one length of tubing being in telescopic sliding relationship with one end of said sleeve, and the adjacent end portion of the other length being in rigid coupling relationship with the other end of said sleeve;

the said telescoping relationship being defined by a moisture-tight, electrically continuous, assembly including a bent portion at said one end of the sleeve;

a split metal ring engaged by said bent portion, said split metal ring having an axially extending gap at its circumference and being provided with a portion of relatively large diameter and a remaining portion of smaller diameter, gasket means surrounding the portion of smaller diameter, while abutting the smaller diameter end of the ring and engaging said one length of tubing; and

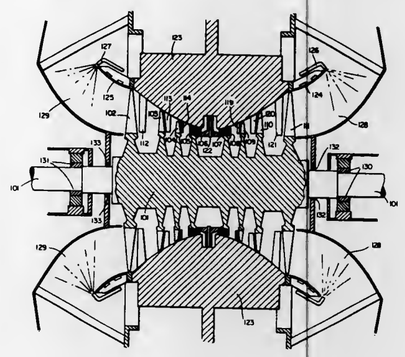
further including a crimped portion at the one end of said sleeve, said crimped portion engaging said gasket means, said bent portion of said sleeve being bent inwardly and firmly engaging the end of the ring having the larger diameter.

3,885,822
AUTOMATIC LOAD AND VACUUM SENSITIVE EXHAUST HOOD SPRAY SYSTEM
Albert Cohen, Wallingford; Frank O. Burckhalter, Newtown Square, and Michael C. Luongo, Brookhaven, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 21, 1974, Ser. No. 481,934
Int. Cl. F01d *5/00*
U.S. Cl. 290—1 R **41 Claims**

1. In a turbine generator system having an exhaust hood on at least one turbine and cooling sprays for said hood, hood spray control apparatus comprising:

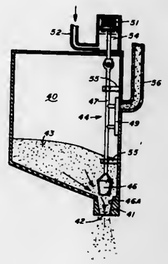
a. means for measuring the present load of said generator;

b. means for measuring the present exhaust vacuum of steam from said turbine; and



c. means responsive to the measured present load and to the present measured exhaust vacuum for selectively activating said cooling sprays.

3,885,823
WINTER EMERGENCY BRAKE SYSTEM
Poy Lee, 52 Tennyson St., Somerville, Mass. 02145
Filed Aug. 3, 1973, Ser. No. 385,419
Int. Cl. B60b *39/04*; **B61h** *11/00*
U.S. Cl. 291—15 **10 Claims**



1. Apparatus for use with a motor vehicle having wheels, a brake pedal, a master brake cylinder operated in response to application of the brake pedal and fluid lines coupling from the master brake cylinder to separate wheel brake means, said apparatus for depositing sand or the like on a roadway adjacent at least one wheel of the motor vehicle, and comprising:

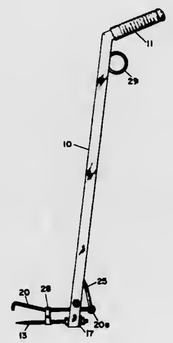
a tank positioned adjacent the wheel and having an outlet through which sand may be deposited and an inlet through which sand may selectively flow to the tank,

a first valve means including a fluid operated valve and a closure member responsive to said fluid operated valve being in a first position for closing the outlet and in a second position for opening the outlet,

means including fluid conduit means coupling from the vehicle fluid line to the fluid operated valve and responsive to actuation of the brake pedal of the vehicle for causing said valve to change to its second position for opening the outlet,

and a second valve means disposed in the fluid conduit means and having alternate positions for either permitting or preventing fluid flow to the first valve means.

3,885,824
PICKUP DEVICE
Henry J. Hulst, 18730 Elaine Ave., Artesia, Calif. 90701
Filed Feb. 1, 1974, Ser. No. 438,789
Int. Cl. A47f *13/06*
U.S. Cl. 294—19 R **2 Claims**



1. A pickup device comprising:

an elongated channel-shaped body having a face member and two opposing side members;

a handle attached to the upper end of said body forming an angle therewith, wherein the channel opening of said body is on the same side of said handle;

a pad bonded to both of said side members at the lower end thereof, and parallel to said face member;

said pad and said face member each having a hole which are aligned with each other;

a fixed finger having a point at one end and being threaded at the other end disposed through said aligned holes;

a pair of nuts threaded on said finger and disposed one against said face member and one against said pad;

a loop fixed to said finger;

each of said side members having a bore which are aligned to each other and spaced from said pad;

a threaded bolt extending through said aligned bores and having a nut on the other end, fixing the bolt to said body;

a pivotable finger having a nut bonded thereto, which bonded nut is disposed threaded onto said bolt between said side members;

said face member having a slot extending lengthwise therein with the said pivotable finger disposed to extend through said slot;

said pivotable finger being disposed to pivot within the same plane of said fixed finger and protruding through said loop;

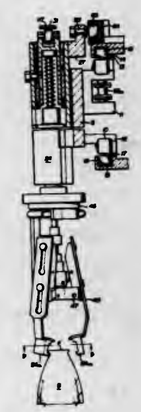
an elongated rod extending along said body within the channel and pin-connected by its lower end to said pivotable finger so that as said rod is moved axially, said pivotable finger pivots about said bolt;

a sleeve mounted on the upper end within and aligned with said body to receive the upper end of said rod to allow the rod to move axially with respect to said body;

a compression spring disposed within said sleeve to urge the rod out of its sleeve; and

trigger means disposed on said rod to allow the operator to lift up on the rod to compress said spring and to pivot said pivotable finger.

3,885,825
ARTICLE HANDLING CHUCK
Stephen W. Amberg, St. James; Thomas E. Doherty, Setauket, both of N.Y., and Clarence A. Heyne, Sun City, Ariz., assignors to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 209,751, Dec. 20, 1971. This application July 11, 1973, Ser. No. 378,336
Int. Cl. B65g *17/20*
U.S. Cl. 294—115 **12 Claims**



5. A chuck for supporting an article comprising

a housing,

an elongate rod means mounted in said housing for axial reciprocal movement,

a plurality of movable chuck elements for engaging the article each including an elongate holder having a chuck jaw attached adjacent one end thereof,

hub means connected with said rod for movement therewith,

rock arms pivotally attached to said housing intermediate their ends and mounting them in radially spaced apart relationship on said hub means,

link means pivotally connected on said hub means and connected near one end of each of said rock arms,

spaced studs on said rock arms,

cooperating elongated slots on said holders, the holders being supported on the rock arms for independent longitudinal movement, and

means operable for moving said rod means in opposite directions alternately for closing said chuck jaws collectively about an article and for opening the chuck jaws.

3,885,826
CAMPER VEHICLE WITH MOVABLE TOP
Omer G. Kropf, Millersburg, Ind., assignor to Rockwood, Inc., Topeka, Ind.
Filed Dec. 22, 1972, Ser. No. 317,564
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 R **21 Claims**

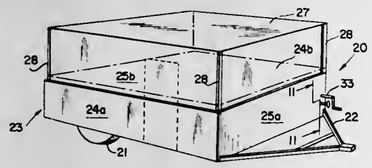
1. A vehicle having a body and a top vertically movable between positions elevated above and adjacent to said body, a pair of transversely flexible push rods each having a generally horizontal portion, an intermediate curved portion and a generally vertical portion,

means for connecting said vertical portions to said top,

means for guiding each push rod during movement thereof in a predetermined path,

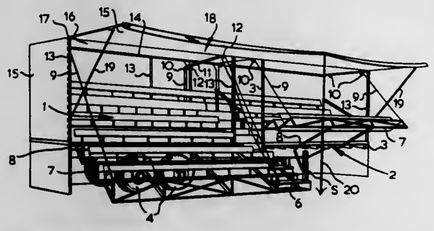
each said push rod having a lower end and said horizontal portions extending in opposite directions therefrom,

and reversible means for moving said lower ends simultaneously, equally and oppositely comprising endless flexible chain means having a first run and a second run,



means connecting the lower end of each said push rod to a said run,
and means for driving said chain means selectively in either direction.

3,885,827
GRANDSTANDS
John Edward Sanders, Ridgeway, The Moorings, Lower Heswall, Wirral, Cheshire, England
Filed Dec. 21, 1972, Ser. No. 317,230
Claims priority, application United Kingdom, Sept. 7, 1972, 41471/72
Int. Cl. B60n *1/02*
U.S. Cl. 296—64 **39 Claims**

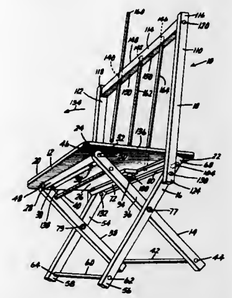


1. A mobile grandstand comprising a substantially horizontal base which can be moved to any desired location, means supporting said base above the ground, a plurality of seats mounted on the base in tiered rows ready for use, an aisle of steps dividing the seats on the base and allowing access thereto, a seat extension formed by interconnected rows of seats hinged to an edge of the base and arranged to be hinged downwardly to provide seats from ground level to the base and to be hinged upwardly ready for transportation, and an aisle extension of steps hinged to said edge of the base for allowing access to the seat extension.

3,885,828
FOLDING CHAIR
Clayton Leon Shepard, 824 S. Main St., Bluffton, Ind. 46717
Filed Feb. 11, 1974, Ser. No. 441,375
Int. Cl. A47c *4/14*
U.S. Cl. 297—52 **1 Claim**

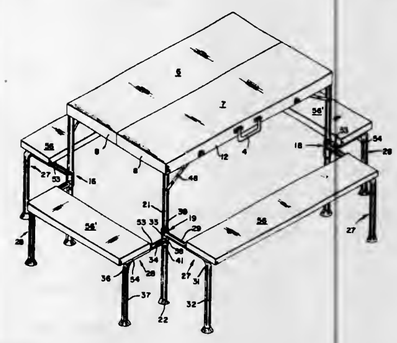
1. A folding chair comprising a planar seating panel of predetermined width, open and generally rectangular outer and inner leg frames, said inner frame being dimensioned to be received between the sides of said outer frame, said outer frame having a width generally equal to the width of said panel, said inner and outer frames being pivotally connected at points generally midway between the ends thereof, one of said frames having one end thereof pivotally coupled to said panel adjacent the forward end thereof, means secured to the upper end of the other of said frames and to the rear end of said panel for selectively coupling said upper end of said other frame to said rear end of said panel, a seat back including a generally rectangular and open frame, means pivotally coupling said back frame adjacent the lower end thereof to the upper end of said other leg frame for pivotal movement with respect thereto, means for supporting said seat back in a position upstanding with respect to said panel, said back frame being dimensioned to receive said other frame and said panel therebetween, whereby, said inner, outer, and back frames can be folded into co-planar relationship and parallel to said panel,

said back frame including a pair of elongated members pivotally coupled adjacent their lower ends to said upper



end of said other leg frame and connected adjacent their upper ends by a transverse member, said transverse member having a plurality of spaced openings therein, said seating panel having a plurality of spaced openings therein adjacent said rear end thereof and respectively aligned with said transverse member openings, said upper ends of said dowels being respectively, removably received in said transverse member openings and said lower ends thereof being respectively, removably received in said panel openings.

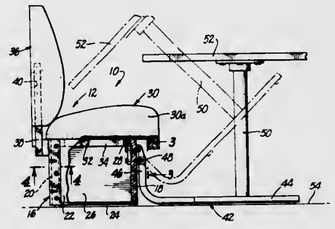
3,885,829
FOLDABLE TABLE AND BENCH ASSEMBLY
Virgil J. Haeger, 3081 Melchester Dr., Cheney, Wash. 95132
Filed May 4, 1973, Ser. No. 357,207
Int. Cl. A47b *3/14*
U.S. Cl. 297—159 **9 Claims**



1. A foldable table assembly comprising:
a. a table top formed from a pair of flat plates each having a peripheral flange constituting integral opposite end and side flanges;
b. means pivotally connecting associated edges of said plates to enable selective orientation of said plates from a position of planar alignment wherein they form a flat table top to a position of spaced parallelism wherein the edges of said flanges on the juxtaposed parallel plates are in alignment whereby said plates and peripheral flanges

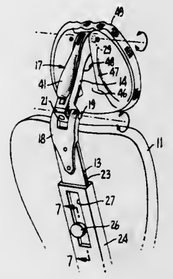
cooperate toform a closed container when said table top is folded;
c. a leg assembly pivotally mounted in each corner of said unfolded table top and selectively extensible to a position perpendicular to said table top and retractable to a position parallel to said table top wherein said leg assemblies lie nested within said peripheral flanges surrounding said flat plates, said leg assembly including an elongated tubular leg member extending from said table top to a supporting surface such as the ground or floor and an auxiliary leg structure comprising a horizontal bench mounting section pivotally mounted to the elongated tubular leg member intermediate its ends for pivotal movement through 360° about said tubular leg member and a vertical leg section integral with said horizontal bench mounting section, said vertical leg section of the auxiliary leg structure lying parallel to said elongated tubular leg member in both the folded and unfolded positions of said leg assembly; and
d. detachable bench means bridging the space between and selectively engageable at each opposite end with the horizontal bench mounting sections of auxiliary leg structures at opposite corners of said table top whereby each detachable bench cooperates with said table top and a pair of said leg assemblies to stabilize the table and to provide seats at said table which correspond in length to the side of the table top with which they are associated.

3,885,830
BENCH SEAT
Ferris E. Jones, 943 Millbury, La Puente, Calif. 91746
Filed June 18, 1973, Ser. No. 371,168
Int. Cl. A47c *7/62*
U.S. Cl. 297—193 **3 Claims**



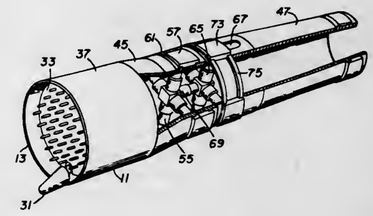
1. A bench seat comprising a hollow rectangular frame having front, rear and end walls forming a storage receptacle with a top opening:
a seat member removably supported atop said frame with said seat member resting on the upper edges of at least certain of said frame walls and including a lower depending shoulder formation projecting into said opening for locating said seat member relative to said frame,
a backrest member along the rear edge of and rising above said seat member, and
means fixed to said frame supporting said backrest member on said frame for vertical movement totally independently of and without moving said seat member between a lower position of use wherein the lower edge of said backrest member contacts the rear edge of said seat member to hold the seat member in seating contact with the upper edges of said certain frame walls and thereby retain the seat member in position on said frame and an elevated retracted position wherein the seat member continues to rest in the upper edges of said certain frame walls and said backrest member is spaced from said seat member to permit removal of said seat member.

3,885,831
CLOSE-COUPLED ARTICULATING HEADREST
Keith O. Rasmussen, 990 Broadway, San Francisco, Calif. 94133
Filed Jan. 24, 1974, Ser. No. 436,140
Int. Cl. A47c *3/00, 7/48*
U.S. Cl. 297—410 **12 Claims**



1. A close-coupled articulating headrest system for treatment chairs and the like, comprising
a tongue member adapted for longitudinally adjustable engagement with the back of the chair,
a link member pivotally attached at one end thereof to said tongue member,
a dished cushion support plate pivotally attached adjacent the upper edge thereof to the end of said link member opposite said tongue member, and
overcenter toggle clamp means adapted for simultaneous releasable locking of pivotal motion of said link member both with respect to said tongue member and with respect to said cushion support plate.

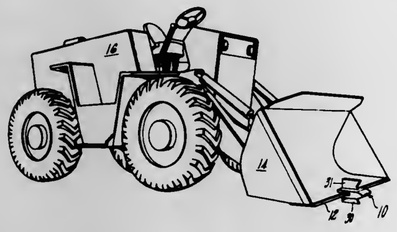
3,885,832
APPARATUS AND METHOD FOR LARGE TUNNEL EXCAVATION IN HARD ROCK
John H. Altseimer, and Robert J. Hanold, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Jan. 25, 1974, Ser. No. 436,401
Int. Cl. E21d *9/00*
U.S. Cl. 299—14 **3 Claims**



1. An earth drilling machine for excavating tunnels comprising an elongated hollow hull having a frontal portion with cross section equal to the cross section of the final tunnel prior to installation of final tunnel wall lining and a rearward portion reduced in cross-section relative to the frontal portion, a rock melting kerf penetrator affixed to and projecting longitudinally forward of the front end of the hull and having a peripheral shape similar in configuration with the front portion of the hull, a hull closure face plate affixed to the interior of the hull at the front end thereof, a plurality of rod-shaped thermal stress fracturing penetrators supported in said hull closure face plate with their direction of elongation parallel to

the direction of elongation of the hull, and projecting forward of the front surface of the hull closure plate, rock debris removal means supported in a peripheral portion of the hull closure plate, a nuclear reactor supported within the hull of the machine, heat pipe heat conduction means coupled to the reactor core at one end and to the kerf melter and thermal stress fracturing penetrators at the other end; the rear end of the kerf melting penetrator skirt and the front end of the hull being smoothly joined together, thermal cooling means coupled to the front end of the hull whereby said front end of the hull supports the molten rock against the excavation walls and simultaneously solidifies said molten rock into a tunnel wall initial supporting liner.

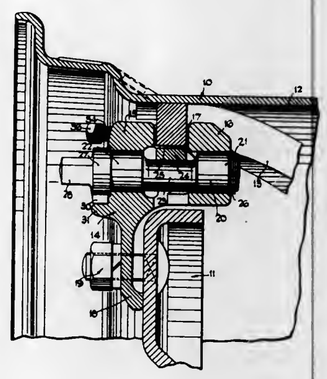
3,885,833
BLACKTOP CUTTER ATTACHMENT
Pierre C. Lemieux, 143 Edgemont Ave., West Hartford, Conn. 06110
Filed Nov. 1, 1973, Ser. No. 411,657
Int. Cl. E01c *23/09*
U.S. Cl. 299—36 **7 Claims**



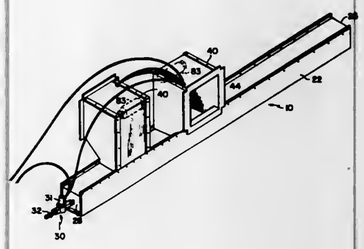
1. A blacktop cutter attachment adapted to be mounted on the lower edge of a blade or bucket of a conventional earth moving vehicle comprising a combination surface guide and support for guiding the cutter attachment along a blacktop surface and having a rear transversely extending slot for receiving the lower edge of a blade or bucket of a conventional earth moving vehicle for supporting the attachment thereon, and a depending cutter plate fin fixed to the combination surface guide and support having a forward cutting edge for cutting the blacktop surface as the cutter attachment is driven therealong by the earth moving vehicle, the combination surface guide and support having surface guide portions on both lateral sides of the depending cutter plate fin engageable with the blacktop surface for assisting in guiding the cutter attachment along the blacktop surface with the cutter plate fin depending into the blacktop for cutting the blacktop as the attachment is driven along the surface by the earth moving vehicle.

3,885,834
VARIABLE TRACK WHEELS
Michael Frederick Edwards, and Edward Williams, both of Wolverhampton, England, assignors to GKN Sankey Limited, Bilston, Stafford, England
Filed Dec. 6, 1973, Ser. No. 422,598
Claims priority, application United Kingdom, Dec. 7, 1972, 56532/72
Int. Cl. B60b *27/00*
U.S. Cl. 301—9 TV **3 Claims**

1. A wheel comprising a rim, a separate disc, a number of part helical rails secured on the radially inner surface of the rim, guides secured to the disc which engage the rails whereby as relative rotation takes place between the rim and disc their relative positions change in directions parallel to the rotary axis of the wheel, locking means on each of the guides operable frictionally to engage radially inwardly facing surfaces on the rails by applying forces directed outwardly of the centre of the wheel to said inwardly facing surfaces to lock the disc and rim in a desired relative position, at least one of the guides carrying a set pin in addition to the locking means, said set pin being arranged to engage the side face of the rail engaged by the locking means to supplement the locking effect of the latter.

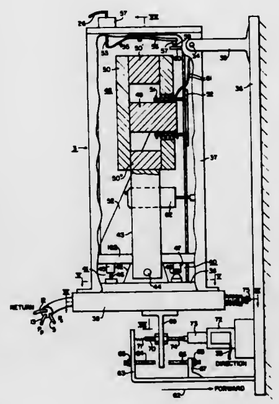


3,885,835
WASTE DISPOSAL SYSTEM
John F. Breeden, Royston, Ga., assignor to Hopeman Brothers, Inc., New York City, N.Y.
Filed Apr. 8, 1974, Ser. No. 458,804
Int. Cl. B65g *53/04*
U.S. Cl. 302—39 **12 Claims**



1. A waste disposal system for paper towels or the like comprising means providing an elongated waste disposal passageway, means defining a waste depository chamber having an inlet opening adapted to receive waste to be disposed of and an outlet opening communicating with said disposal passageway, door means extending across said inlet opening and mounted for movement from a normal position extending across said inlet opening and an open position permitting the depositing of waste through said inlet opening into said depository chamber, air means for directing the flow of air through said disposal passageway past said outlet opening to transport waste delivered into said disposal passageway from said depository chamber to a remote location for disposal thereof, and control means responsive to the movement of said door means toward said open position to actuate said air means to effect the blowing of air through said waste disposal passageway.

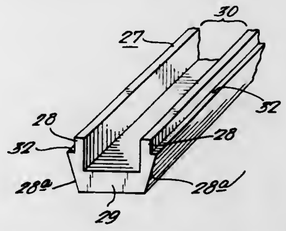
3,885,836
ACCELERATION CONTROLLED BRAKING SYSTEM
Thomas H. Putman, Pittsburgh, Pa., and William O. Osbon, Griffith, Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 28, 1974, Ser. No. 437,404
Int. Cl. B60t *8/14*
U.S. Cl. 303—24 A **7 Claims**



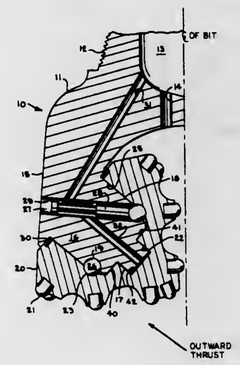
1. In apparatus for controlling the application of brakes on a vehicle, the combination comprising:
means for providing a reference signal having a magnitude indicative of the desired braking effort for said vehicle;
valve means, including first and second valves;
means for causing said first and second valves to move towards one valve condition and the opposite valve condition respectively in response to the magnitude of said reference signal changing in one sense, and to move towards said opposite valve condition and said one valve condition respectively in response to the magnitude of said reference signal changing in the opposite sense;
means for causing said first and second valves to move towards said opposite valve condition and said one valve condition respectively in response to a sensed deceleration when said vehicle is moving in one direction, and for causing said first and second valves to move towards said one valve condition and said opposite valve condition respectively in response to a sensed deceleration when said vehicle is moving in the opposite direction; and
means for applying the brakes on said vehicle in response to said first and second valves being in said one condition as said vehicle moves in said one and said opposite directions respectively.

3,885,837
LINEAR BEARING HAVING REPLACEABLE INSERT
Harrison Clay Mellor, 194 Providence Rd., Newtown Square, Pa. 19144
Filed May 29, 1973, Ser. No. 364,312
Int. Cl. F16c *17/00*
U.S. Cl. 308—3 R **6 Claims**

1. A linear bearing comprising: a base element having an elongated slot, an insert mounted within said slot, said insert being fabricated from a low-friction material and said base element being fabricated from a rigid material different from said base element material, said insert having a bottom wall and a pair of spaced upright sidewalls defining therebetween an upwardly-open groove, said sidewalls being flexible in a direction transverse to said slot and having smooth outer surfaces tapering inwardly toward one another in a downward direction, interengaging means on said base element and said insert for releasably retaining said insert in said slot, said interengaging means including a pair of inwardly extending ledges on said base element and a complementary pair of notches extending along the upper margins of the tapered sidewall surfaces coextensive in length with the insert, said base element ledges extending into said slot and terminating in spaced relation for cooperating with said tapered sidewall surfaces to flex said sidewalls inwardly when said insert is displaced downwardly into said slot, said ledges overlying the shoulders to secure the insert to the base element when the insert is mounted in the slot with the ledges of the base element received in the notches of the insert, whereby the insert is capable of expanding and contracting relative to the base element while being capable of being readily removed and replaced.



3,885,838
DRILL BIT BEARINGS
John S. Childers, and Clayton C. Mandrell, both of Houston, Tex., assignors to Reed Tool Company, Houston, Tex.
Filed June 14, 1973, Ser. No. 370,170
Int. Cl. F16c *21/00*
U.S. Cl. 308—8.2 **9 Claims**

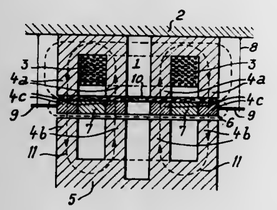


8. A drill bit bearing including:
a bearing shaft of carburizing steel extending downwardly and inwardly toward the rotational axis of a rotary head carrying said bearing shaft,
a roller cutter also of carburizing steel on said shaft,
the shaft and cutter each having a friction bearing surface arranged to carry outboard thrust loads imposed on the cutter,
the surfaces of said shaft and said cutter being carburized except at least one of said friction bearing surfaces being uniformly uncarburized throughout at least a substantial portion thereof to alleviate frictional heat cracking thereof during drilling operation.

3,885,839
MAGNETIC BEARING

Helmut Habermann, Vernon, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

Filed Aug. 20, 1973, Ser. No. 390,009
Claims priority, application France, Aug. 23, 1972, 72.30092
Int. Cl. F16c *39/06*
U.S. Cl. 308—10 **7 Claims**

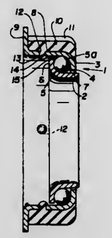


1. A magnetic bearing comprising stator means, a rotor, air gap means between said stator means and rotor, means for creating magnetic flux linking the rotor and stator means across said air gap means, at least one magnetic body, means mounting said body in said air gap means for movement relative to said stator means and the rotor in a radial direction at least approximately perpendicular to the flux path across the air gap means, and friction means positioned between the said body and said stator means for resisting displacement of said body along said radial direction.

3,885,840
CONNECTING LINK FOR THE RACES OF BALL BEARINGS

Gunter Neder, Schweinfurt, Germany, assignor to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands

Filed Mar. 5, 1974, Ser. No. 448,264
Claims priority, application Germany, Mar. 20, 1973, 7310449
Int. Cl. F16c *27/06, 1/24, 33/78*
U.S. Cl. 308—184 R **9 Claims**

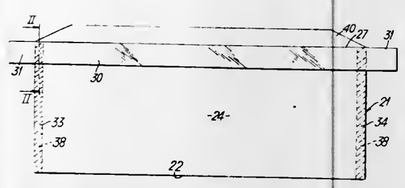


1. A ball bearing assembly for a steering column comprising an outer ring and an inner ring inserted therein, said rings defining annular bearing surfaces for a plurality of ball bearings located therebetween, one of said rings having a plurality of holes spaced about its circumference, an annular elastic member located on the surface of said one ring, said elastic member having lugs extending through said holes adjacent the end of the other race ring to thereby connect said race rings.

3,885,841
POCKETS FOR ARTICLES IN SHEET FORM

Arthur William Stevens, Westgate-on-Sea, England, assignor to Monodex Business Systems Limited, Kent, England

Filed Oct. 26, 1973, Ser. No. 409,815
Int. Cl. A47b *63/00*
U.S. Cl. 312—183 **10 Claims**

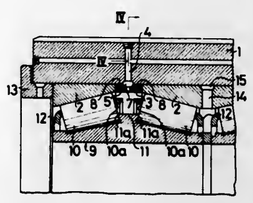


1. A pocket assembly for a sheet article comprising
a front panel having two faces and two lateral edges,
a back panel having two faces and two lateral edges, the front and back panels opposing each other with a first face of each lying adjacent each other face-to-face and united at a first fold line from edge-to-edge of the panels at a first end of the front panel,
a lip at a second end of the front panel and united to the front panel at a second fold line from edge-to-edge of the panel and parallel to the first fold line, the lip overlying the second face of the front panel,
the lip and the front and back panels being a unitary one-piece sheet of material,
a channel strip having a base and two opposed and parallel side walls,
the base of the channel being disposed over the second fold line with the two side walls overlying the one face of the front panel and the lip respectively,
end portions of the channel strip projecting laterally beyond respective lateral ends of the lip,
and securing means holding together the front and back panels adjacent their edges and holding the channel strip in the assembly.

3,885,842
BEARING LUBRICATING DEVICE

Takashi Furutsu, Osaka, Japan, assignor to Koyo Seiko Company Limited, Osaka, Japan

Filed Sept. 21, 1973, Ser. No. 399,542
Int. Cl. F16c *1/24*
U.S. Cl. 308—187 **5 Claims**

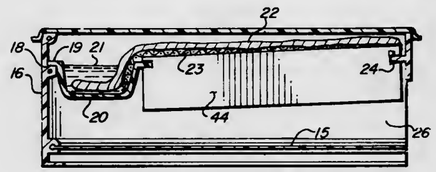


1. A double-row roller bearing lubricating device for a housing having a bore and a bearing assembly including a pair of outer races fitted to the bore of the housing, inner race means and a plurality of rollers disposed between the outer races and said inner race means said lubricating device comprising a dry oil mist inlet extending through the housing into the bore between the pair of outer races, a spacing member disposed between the outer races; an annular passageway extending around the spacing member in the bore of the housing communicating with the dry oil mist inlet for receiving dry oil mist therefrom; a plurality of mist nozzle means in the spacing member opening inwardly and communicating with the annular passageway; packing means on both sides of the annular passageway for effecting oil-tight sealing between the outer periphery of the spacing member and the bore of the housing for confining dry oil mist in said passageway between the outer periphery of the spacing member and a corresponding inner face of the bore in the housing so that dry oil mist is discharged from the passageway through said mist nozzle means and expands to supply wet oil mist between the rollers of the bearing assembly.

3,885,843
ARTIST HUMIDIFIER FOR PALETTE DISPLAYED PAINTS AND VALUES

George K. E. Rubel, 4116 E. Stanford Dr., Phoenix, Ariz. 85018

Filed Mar. 29, 1974, Ser. No. 456,189
Int. Cl. B44d *7/00*
U.S. Cl. 312—31 **10 Claims**



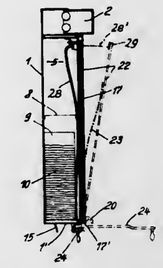
1. A humidifier for palettes containing air drying paints and values during their use and storage comprising:
a shallow rectangular box comprising a front, back and a pair of end members forming a container for receiving one or more palettes laterally between its side members, a cover for engaging the edges of said front, back and end members of said container,
said container having an opening within said front member for slidably receiving said palettes and for supporting said palettes when partially and fully positioned within said container,
means for supporting a wick in an inclined position juxtapositioned to and across the paint and value receiving surface of a palette, and
at least one sump mounted on said container for receiving water and one end of said wick,
whereby said wick absorbs water in a capillary manner and generates a moist atmosphere above the surface of a paint supporting palette when fully within said container and when said palette is pulled partially out of said container.

3,885,844
BATHROOM CABINET, ESPECIALLY FOR HOSPITALS

Walter Schneider, Wildenbuhlstrasse 54, CH-8135-a.-A. Langnau, Switzerland

Filed Jan. 2, 1974, Ser. No. 429,552
Claims priority, application Switzerland, Feb. 1, 1973, 1414/73
Int. Cl. A47b *67/00*
U.S. Cl. 312—227 **11 Claims**

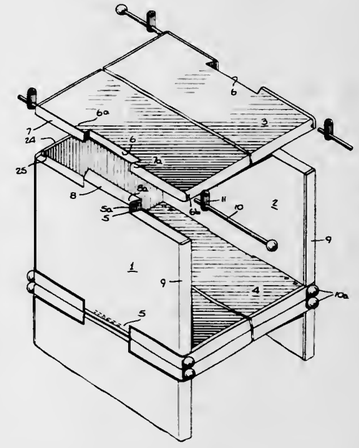
1. A bathroom cabinet comprising:
a housing with an open front side and a door for closing said front side, said door being swingable about a vertical axis;
a mirror on an outer face of said door mounted for tilting relative thereto about a horizontal lower edge thereof;
operating means for said mirror on said housing near the bottom thereof;
locking means in said housing mounted on said door near the top thereof for holding said door closed, said locking means being engageable by said mirror in an upright position of the latter for deactivation to permit opening of said door; and
biasing means in said housing acting upon said locking means for urging same into operative engagement with a coacting housing parts upon a forward tilting of said mirror into an inclined position, thereby preventing said door from being opened.



3,885,845
KNOCK-DOWN FURNITURE SYSTEM

Hans Krieks, 3 Horizon Rd., Fort Lee, N.J. 07024

Filed June 27, 1974, Ser. No. 483,546
Int. Cl. A47b *43/00*
U.S. Cl. 312—265 **11 Claims**

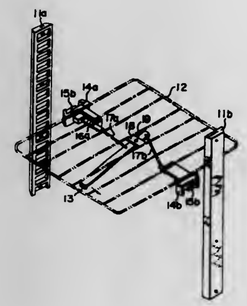


1. A knock-down furniture system comprising at least one set of two side panels and top and bottom panels which can be assembled in edge-to-edge relationship to form a basic unit having four walls formed by said panels, each two of said panels having edge sections which when said unit is assembled, are mutually adjacent and formed to provide a dovetail joint therebetween with a male joint portion in one of said sections and a female joint portion in the other of these sections, said panels having said female joint portions being formed with holes extending entirely through their said edge sections and open into said female joint portions, and said panels having said male joint portions having holes entering into their said male joint portion and which register with the first-named holes when said joint portions are interfitted, and pins proportioned for insertion through said holes in said sections having said female portions and projection into said holes in said male portions, for releasably interfastening said dovetail joints.

3,885,846
ADJUSTING APPARATUS FOR REFRIGERATORS SUPPORTING SHELF

Lieh Chuang, 12 Ln. 84, T'ung Jen St., Keelung, and Shin Chi Lin, 4th Fl., No. I-I, Ln. 1, Fu Shun St., Taipei, both of Taiwan/China

Filed Dec. 5, 1973, Ser. No. 421,860
Int. Cl. A47b *57/08*
U.S. Cl. 312—306 1 Claim



1. An adjusting apparatus for supporting shelves of a refrigerator from the interior sidewalls thereof, comprising:

a pair of guiding rails disposed in facing relationship on oppositely spaced sidewalls, said sidewalls having a cross section of a trapezoid configuration and being vertically disposed, said guiding rails each having a plurality of adapting holes;

a pair of fork-like members mounted on opposite side edges of the shelve and slidingly engaging and being retained on a respective guide rail, each of said fork-like members having a tongue slidably disposed therein and spring biased to a position where a tip portion of said tongue normally extends into an adapting hole in the associated guide rail;

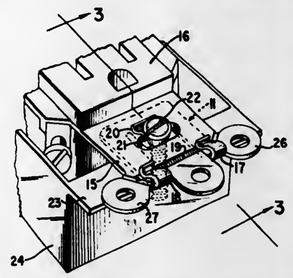
a manually actuated mechanical linkage arrangement for simultaneous retracting said tongues, against the spring biasing force, from said holes in said side rails so as to permit guided slidable movement of the shelf along said side rails, said mechanical linkage arrangement having a handle disposed beneath the shelf to be manually grasped at one end and being pivotally mounted on the shelf adjacent the opposite end, and a pair of force transmitting means being connected on opposite sides of the pivotally mounted and extending to and being connected to a respective tongue.

3,885,847
GROUNDING CLIP WITH WRAP-AROUND TABS

Ronald N. Thibeault, Buena Park, Calif., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Mar. 27, 1974, Ser. No. 455,419
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R 5 Claims

1. An electrical clip grounding device for interconnecting an electrically conductive mounting strap of an electrical wiring device to an electrically conductive mounting box threadedly engageable by a mounting screw, said clip device comprising a flat, U-shaped, electrically conductive member having spaced legs bridged at the base thereof, wrap-around tabs at the free ends of said legs and on the bridge between the base of said legs of said U-shaped member, said wrap around tabs extending out of the plane of said flat U-shaped member, one edge of each tab being integral with said member while the opposite free edge extends towards said bridge, said wrap-

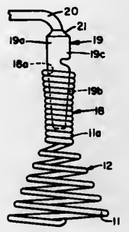


aroundtabs being resiliently biased to snugly hold the mounting strap between said tabs and said U-shaped member.

3,885,848
ELECTRICAL CONNECTION AND METHOD OF MAKING SAME

Harold A. Brouneus, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 3, 1974, Ser. No. 475,664
Int. Cl. H01r *11/22*
U.S. Cl. 339—17 C 10 Claims

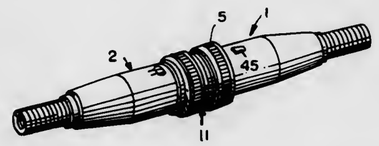


1. In an electrical contact member for making an electrical connection with an electrically conductive flat surface and including a volute helix of electrically conductive resilient wire including a succession of spirals progressively increasing in size such that each succeeding spiral will surround the preceding spirals when the helix is compressed against said flat surface, the combination therewith of an electrical connection with said contact member, such connection comprising; a cylindrical helix of electrically conductive resilient wire having a first end electrically connecting with the end of the smallest one of said spirals of said volute helix and a second end at the opening into the free end of such cylindrical helix; an electrically conductive terminal member including a first portion for connecting an electrical conductor to such terminal member and a longitudinal shank portion extending from said first portion of the terminal member, and having a generally circular outer periphery which tapers from said first portion towards the end of said shank portion of the terminal member with an intermediate region of such shank portion having a diameter corresponding in diameter to said opening in said free end of said cylindrical helix such shank portion of the terminal member being inserted through such opening and into the cylindrical helix with said intermediate region of the shank portion frictionally engaging the inner periphery of the end spiral of the cylindrical helix at said free end thereof, whereby said terminal member can then be manually rotated to partially and temporarily unwind some of the spirals of the cylindrical helix while simultaneously further inserting the shank portion of the terminal member into the cylindrical helix for frictional engagement between the shank portion of the terminal member and the inner peripheries of additional spirals of the cylindrical helix.

3,885,849
ELECTRICAL CONNECTORS WITH INTERCHANGEABLE COMPONENTS

James R. Bailey, Chicago, and Vernon W. Lavigne, Rolling Meadows, both of Ill., assignors to Switchcraft, Inc., Chicago, Ill.

Filed Mar. 8, 1973, Ser. No. 339,050
Int. Cl. H01r *13/48*
U.S. Cl. 339—31 R 4 Claims



1. An electrical connector comprising two housings each having a tubular opening therein, a pair of mating molded male and female inserts each interchangeably receivable in said openings, latch means associated with said inserts and said housings for holding each insert in its respective opening after it has been inserted, and means operable from the exterior of said housings for releasing said latch means to permit withdrawl of each said insert from its respective opening, said connector comprising coupling means to connect said housing together independently of said inserts and comprising a rotatable internally threaded ring mounted on one of said housings, the threads of which are engageable with external threads mounted on the other of said housings, said ring being slidable axially on said housing a predetermined distance so as to project beyond said opening, said distance in an outward direction with respect to said opening being limited by the inner side of an inwardly extending flange on the inner end of said ring contacting an outwardly extending flange adjacent the end of said housing and in an inward direction by an outwardly extending portion of said housing contacting the outer side of said flange on said ring, said outwardly extending portion comprising at least one cut resilient portion of said housing.

3,885,850
CONTROLLED RETENTION FORCE CONNECTOR WITH DETENT

Roy Witte, Rolling Meadows; Edward Kirby, Morton Grove, and George Mack, Roselle, all of Ill., assignors to TRW Inc., Cleveland, Ohio

Filed Mar. 5, 1973, Ser. No. 338,332
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R 30 Claims

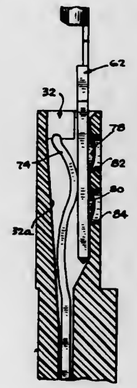
1. An improved electrical connector device adapted to define electrical contact between pre-determined electrical circuits wherein high retention forces are defined between the mating connector units of said device securing them in assembled relation to prevent unintended separation, the device comprising:

a female connector unit defined in part by an insulating body with said body having walls defining a row of spaced apart contact receiving recesses therein for receiving a male contact element in each recess along an insertion axis;

an electrical contact element mounted within each recess in said insulating body of the female connector unit;

the insulating body having associated with one of its walls which extends longitudinally of the row a plurality of discrete locking means in each contact receiving recess which are spaced apart theron along the insertion axis and adapted to interengage with locking means on a mating male contact element of the device, and

a mating male connector unit defined in part by an insulating body having at least one male contact element mounted within said body, said male connector unit adapted for mating operative engagement with said female connector unit by insertion along the insertion axis of a male contact element into a recess in the female

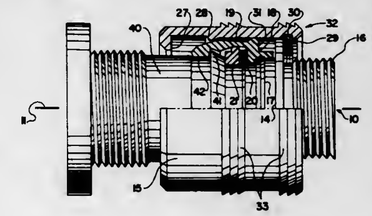


insulating body to bring the contact elements of each of said units into physical contact to define electrical engagement therebetween, a plurality of discrete locking means on the male contact element spaced apart along the insertion axis to interengage with the locking means on the insulating body of the female connector unit to define interlocking engagement therebetween and between said male and female units to secure them in assembled, mating relation.

3,885,851
PUSH-PULL CONNECTOR

Jeffrey Bennett, Herne Bay, England, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

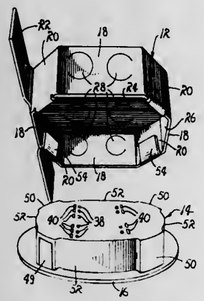
Filed June 20, 1973, Ser. No. 371,948
Claims priority, application United Kingdom, June 26, 1972, 29870/72
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R 8 Claims



1. A connector comprising first and second parts arranged for relative longitudinal push-pull movement along an axis into and out of connection with one another, the first part having a mounted retaining member and a latch comprising a resilient tine with a cantilevered end including a latch surface and a cam surface, means for resiliently biasing the mounted retaining member into a first position in which it prevents the tine from moving into a locking position with said retaining member having a second position into which it is moved against the resilient bias by the action of mating the first and second parts, the tine being free to move into the locking position when the retaining member is in the second position, the second part having a latch surface, one of the parts having

a movable locking member with a cam surface engaging the cam surface of the latch to prevent movement of said locking member in one direction relative to the latch when said retaining member is in said first position, said locking member movable in a push movement in said one direction with said first part relative to said second part to mate said first part to said second part for moving said retaining member to said second position whereafter the cam surface of the locking member is movable in said one direction against the cam surface on said latch to move the cantilevered end of the tine against its resilience in a direction toward the axis into the locking position to cause the latch surface on said tine to engage the latch surface on said second part, and means on said locking member engaging said latch in response to said retaining member being in said first position for holding said locking member against movement relative to said latch in a direction opposite said one direction.

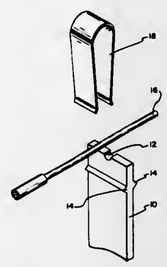
3,885,852
QUICK COUPLE ELECTRIC OUTLET
Edward H. Grove, P.O. Box 8, Morro Bay, Calif. 93442
Filed Oct. 24, 1973, Ser. No. 409,260
Int. Cl. H01r *9/06*
U.S. Cl. 339—95 D **10 Claims**



1. An electrical wall unit assembly comprising:
a housing having a generally symetrical periphery and mounting means disposed for mounting said housing in the wall of a building;
a core unit having a periphery mated to the periphery of said housing for insertion and rotation therein, said core unit periphery having a plurality alternately disposed of lands and channels;
a plurality of engaging fingers interconnected with said housing and disposed to engage said lands on said core unit when said core unit is inserted into said housing with said fingers aligned with said lands, and to disengage from said lands when said core unit is rotated with respect to said housing to align said fingers with said channels; and
a face plate on said core unit disposed to form a flange extending radially outward from said core unit to close said housing when said core unit is inserted into said housing.

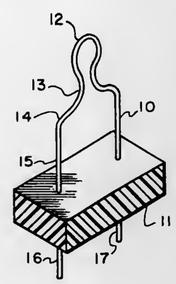
3,885,853
SPRING CLIP WIRE TERMINATING ARRANGEMENT
William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Jan. 7, 1974, Ser. No. 431,187
Int. Cl. H01r *9/08*
U.S. Cl. 339—97 R **6 Claims**

1. A wire termination apparatus comprising:
a terminal post having an end portion about which said wire is terminated, a U-shaped spring clip formed of flat spring material having configuration complementary to that of and disposed over said terminal post, and operative to dress said wire against opposed sides of said terminal post and compress said wire against said post with a preselected force, and
wire locating means comprising a notch disposed in the opposed surfaces of said spring clip which compress said wire against said post, means for positively locating said spring clip with respect to the end of said terminal post to thereby positively locate said wire with respect to the end of said terminal post, and a vertical extension disposed on



said spring clip, having a cross section configuration substantially identical to that of said terminal post, and having an end portion about which a second wire is terminated, a second substantially identical spring clip disposed over said vertical extension, operative to dress said second wire against opposed sides of said vertical extension, and compress said second wire against said vertical extension with a preselected force.

3,885,854
LOOP SHAPED CIRCUIT TEST POINT
William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed June 5, 1974, Ser. No. 476,482
Int. Cl. H01r *9/16*
U.S. Cl. 339—218 M **7 Claims**



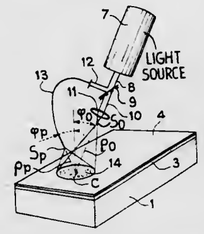
1. A loop-shaped circuit test point constructed of electrically conductive wire comprising: a head shaped portion forming the top of said test point; a body portion consisting of two legs, the uppermost portion of said body converging to form a shoulder portion; a neck portion coupling said shoulder portion to said head portion, each of said legs following a diverging path from said shoulder portion, the lower portion of each of said legs passing through a rigid base on a slightly converging path and passing through and beyond said base essentially parallel to each other, to form circuit connecting terminals.

3,885,855
FILTERING ANTISOLAR AND HEAT INSULATING GLASS
Daniel M. Gross, Carouge, Geneva, Switzerland, assignor to Battelle Memorial Institute, Switzerland
Filed Aug. 10, 1972, Ser. No. 279,472
Claims priority, application Switzerland, Aug. 16, 1971, 11990/71
Int. Cl. G02b *5/20*
U.S. Cl. 350—1 **37 Claims**



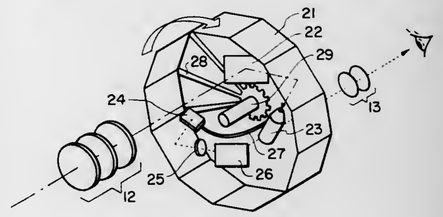
1. Filtering antisolar and heat insulating glass, comprising a support including at least one panel of light-transmitting material capable of transmitting at least a part of the spectrum of visible light, and at least one coalescent layer of filtering material applied to and adhering on at least one face of the panel, said filtering material comprising at least one compound selected from the borides, carbides, nitrides, carbonitrides and suboxides of at least one of the following metals: titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum and tungsten, and wherein the electric resistance of a square-shaped part of said layer of filtering material, having a thickness of between 200 and 1000 A, has an electrical resistance at most equal to 200 Ohms at ambient temperatures and 400 Ohms at −195°C.

3,885,856
HOLOGRAPHIC COUPLER FOR OPTICAL WAVEGUIDES
Daniel Ostrowsky; Andre' Jacques, and Michel Papuchon, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed June 1, 1973, Ser. No. 365,976
Claims priority, application France, June 7, 1972, 72.20423
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **6 Claims**



1. A method for manufacturing a coupling device for an optical waveguide;
said coupling device being capable of conjugating a non-plane electro-magnetic wave of wavelenght λ_1 propagating outside said waveguide and a substantially plane electromagnetic wave propagating at an angle inside said waveguide and comprising at least one hologram arranged on a face of said waveguide;
said method consisting in arranging on said face a layer of photosensitive material and in recording a hologram in at least one region of said layer;
said hologram resulting from the interference of a first and a second recording electromagnetic wave of wavelenght λ_2;
said first recording wave being substantially spherical and said second recording wave having a position in relation to said waveguide and wave fronts substantially identical to the position and the wavefronts of said non-plane electromagnetic wave.
the center of said spherical first recording wave being positioned for said hologram to conjugate said non-plane wave propagating outside said waveguide and said substantially plane wave propagating inside said waveguide.

3,885,857
CONVERGENT BEAM SCANNER WITH MULTIPLE MIRROR DEFOCUS COMPENSATION
William S. Flogaus, Alexandria, and Mitsumasa Masutani, Ft. Belvoir, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 23, 1973, Ser. No. 408,978
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 **6 Claims**

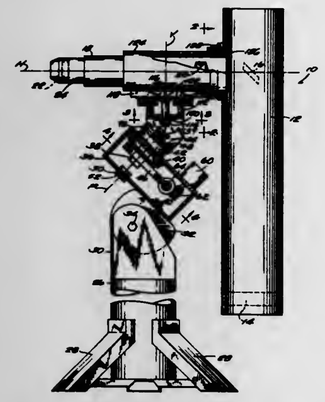


1. An optical system comprising:
an objective lens means having a first optical axis for forming a convergent focused beam of light from a distant radiating object;
a first plane deflection mirror mounted at a first point on said first axis and inclined thereto to redirect said beam to a second point in a reference plane normal to said first optical axis;
a plurality of plane scanning mirrors symmetrically mounted in fixed relative positions at a fixed radial distance parallel to and facing a second axis, the center of one of said scanning mirrors coinciding with said second reference point;
a linear array of optical detectors mounted in fixed relative position to said objective lens and said first and second points with the centers of their active faces in a first radial plane through said second axis, the normal to the center of said array passing through said second reference point making an acute angle of at least several degrees with the straight line through said first and second points, said acute angle being approximately bisected by the normal from said second axis to said second point;
a third point located at the center of a second of said scanning mirrors;
an eyepiece lens having a third optical axis parallel to said first and second axis;
a second deflection mirror centered on said third axis and inclined thereto to reflect a light ray from said third point to said third axis;
a linear array of light emitting elements having their centers in a second radial plane through said second axis and having a central normal which passes through said third point, said light emitters being electronically coupled to said detector elements, with said lenses, deflection mirrors, and arrays being in fixed relative positions to one another and the spacing of said first and third axes from said second axis being equal and less than said fixed radial distance to said scanning mirrors; and
means for rotating said scanning mirrors relative to said relatively fixed elements about said second axis.

3,885,858
TELESCOPE MOUNTING

Victor R. Hildemann, 1647 Minnesota St., Oshkosh, Wis. 54901

Filed Nov. 14, 1973, Ser. No. 415,909
Int. Cl. G02b 23/16
U.S. Cl. 350—83 8 Claims

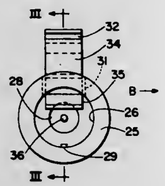


1. In a telescope assembly including a telescope tube with an eyepiece and means for rotatably supporting the telescope tube for rotation about a polar axis, the improvement comprising means for rotatably supporting the telescope tube for rotation about a vertical axis, and means for rotatably supporting the telescope tube for rotation about a horizontal axis, said telescope tube having an eyepiece tube projecting laterally from one side threrof, said eyepiece tube being strong enough to support said telescope tube, and wherein said means for supporting the telescope tube for rotation about a horizontal axis comprises a horizontal tube which is dimensioned to rotatably embrace said eyepiece tube, said horizontal tube being supported by said means for supporting the telescope tube for rotation about a vertical axis.

3,885,859
OPTICAL FIBRE CONNECTORS

Jack Frank Dalgleish, Ottawa, and Helmut Hans Lukas, Carleton Place, Ontario, both of Canada, assignors to Northern Electric Company Limited, Montreal, Canada

Filed June 24, 1974, Ser. No. 482,211
Int. Cl. G02b 5/14
U.S. Cl. 350—96 C 10 Claims

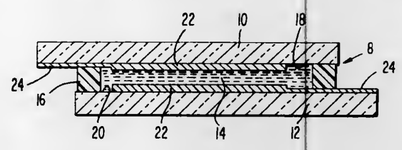


1. An optical fibre connector for connecting pairs of optical fibres in accurate end to end relationship comprising:
a first holding member for holding one of a pair of fibres and a second holding member for holding the other of said pair of fibres;
at least one locating member extending from one of said holding members for cooperation with the other of said holding members for axial end to end location of said holding members;
at least one groove in said locating member, said groove extending in a direction parallel to the longitudinal axis of the connector;
means for retaining said holding members in opposed assembled relationship;
means in each member for acceptance of at least one optical fibre, the fibres in end-to-end abutting relationship adjacent said locating member;
resilient means for urging the ends of said fibres into said groove.

3,885,860
FABRICATION OF LIQUID CRYSTAL DEVICES

Howard Sorkin, Berkeley Heights, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,233
Int. Cl. G02f 1/28, 1/36
U.S. Cl. 350—160 LC 5 Claims

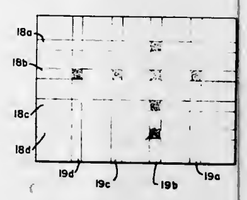


1. A method of fabricating a liquid crystal device comprising:
providing on each of two spaced apart surfaces of a device enclosure an electrode,
vapor depositing, using a small vapor deposition angle, an inorganic material on at least one of said electrodes to provide on said one electrode a surface along which the molecules of a liquid crystal material sympathetically align, the aligning characteristic of said electrode surface not being disrupted when said electrode surface is exposed to a first temperature,
hermetically sealing together portions of said enclosure with a fused joint formed at said first temperature, said electrode surface being heated to said temperature in the process, and
introducing a liquid crystal material into said enclosure and into contact with said electrode surface.

3,885,861
LIQUID CRYSTAL DIGITAL RETICLE

Robert P. Farnsworth; Lowell W. Hill, both of Los Angeles, and Shi-Yin Wong, Santa Monica, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 293,978, Oct. 2, 1972, abandoned. This application June 5, 1974, Ser. No. 476,499
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 1 Claim

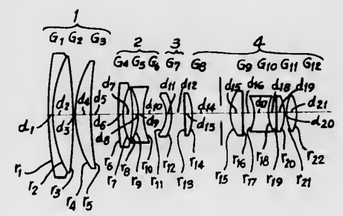


1. The method of operating a liquid crystal cell comprising the steps of:
a. positioning a first set of incrementally spaced transparent conductors on one interior face of said cell in spaced orthogonal relationship to a second set of incrementally spaced conductors on the opposite parallel interior other face of said cell;
b. completing an electrical energizing circuit between only a preselected one of said first set of conductors and a preselected one of said second set of conductors; and
c. maintaining the voltage difference between said preselected conductors at a magnitude greater than the half voltage required to cause turbulence of the liquid crystal material only in the projective intersection volume of said energized conductors to thereby cause turbulence at a plurality of other points along the length of each of said energized conductors by cross coupling.

3,885,862
ZOOM LENS

Yoshisato Fujioka, and Tetsuro Ishizuka, both of Tokyo, Japan, assignors to Kabushiki Kaisha Yashica, Japan

Filed Oct. 5, 1973, Ser. No. 403,830
Claims priority, application Japan, Oct. 9, 1972, 47-101150
Int. Cl. G02b 15/00, 9/00
U.S. Cl. 350—186 8 Claims

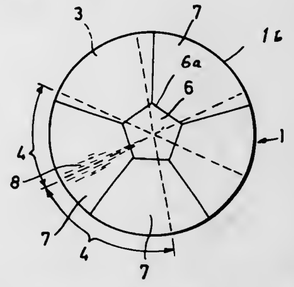


1. In a zoom lens having a front end to be directed toward an object to be photographed and a rear end to be directed toward an image plane of a camera, first means situated at said front end for carrying out an image-composing function with respect to a finite object, second means situated behind said first means for varying magnification, said first and second means having a common optical axis and being movable therealong, third means situated along said optical axis behind said second means and being movable therealong for compensating for a change in focal point produced by movement of said second means along said optical axis, and fourth means situated behind said third means along said optical axis for composing an image, said fourth means being fixed with respect to said optical axis, said first means including a first lens group of positive refracting power and consisting of three lens members which include from the front toward the rear a first negative meniscus lens having a forwardly directed convex surface, a second positive lens having a forwardly directed convex surface of greater curvature than its rearwardly directed convex surface, with said forwardly directed convex surface of said second lens contacting the rear surface of said first lens for providing a focusing function therewith, and a third positive meniscus lens having a forwardly directed convex surface, said second means including a second lens group having a negative refracting power and consisting of three lens members forming the fourth, fifth, and sixth lens, respectively, of the zoom lens, said fourth lens being a negative meniscus lens having a forwardly directed convex surface, said fifth lens being a positive meniscus lens having a rearwardly directed convex surface of greater curvature than its forwardly directed surface, and said sixth lens being a negative lens whose concave forwardly directed surface is of greater curvature than its rearwardly directed surface, said fifth and sixth lenses engaging each other and having a diverging function, said third means including a third lens group having a negative refracting power and consisting of a negative meniscus lens having a forwardly directed concave surface, said fourth means including a fourth lens group having a positive refracting power and consisting of four positive lens members and at least one negative lens member.

3,885,863
PRISM ARRANGEMENT

Arnold Mellert, Eltville, Germany, assignor to B & W. Filterfabrik Johannes Weber KG, Wiesbaden, Germany

Filed Jan. 29, 1973, Ser. No. 327,585
Claims priority, application Germany, June 28, 1972, 2410000
Int. Cl. G02b 3/00
U.S. Cl. 350—196 6 Claims

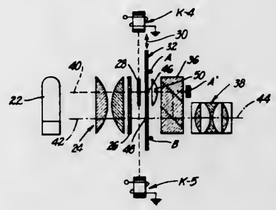


1. Prism arrangement for use with a photographic camera, comprising a transparent prism having a planar base face, a circular edge face and an outer face composed of a planar central polygonal top face and a plurality of slanted faces extending between said planar central polygonal top face and said circular edge face of said prism; a planar transparent colored layer superimposed on said planar base face of said transparent prism and composed of a plurality of sector shaped portions having different colors and apexes meeting in the center of said prism, at least some of said differently colored sector shaped portions overlapping two adjacent ones of said slanted faces of said transparent prism; and a planar transparent plate of uniform thickness covering said planar transparent colored layer.

3,885,864
METHOD OF AND APPARATUS FOR PROJECTING SPLICED FILM OR TAPE

Dietrich P. Friesen, 205 Queen Mary Dr., Apt. 205, Oakville, Ontario, Canada

Filed Jan. 14, 1974, Ser. No. 432,971
Int. Cl. G03b 9/08
U.S. Cl. 352—204 7 Claims

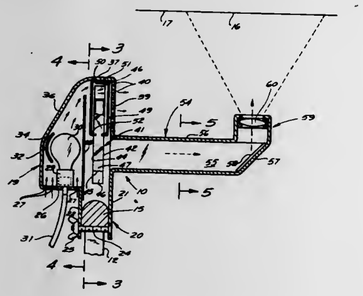


1. In an apparatus for projecting a spliced film or tape having picture frames and a spliced frame, the combination of:
a. projection means for projecting successive ones of said picture frames as they are moved into a projecting position;
b. means for preventing projection of said spliced frame when it is in said projecting position and for projecting an adjacent frame instead; and
c. means sensing the presence of said spliced frame in said projecting position.

3,885,865
AUTOMATIC KALEIDOSCOPE

Philip Stern, 200 E. 27th St.; Sanford Green, 230 W. 59th St., and Isaac Goodbar, 409 E. 60th St., all of New York, N.Y. 11207

Filed Nov. 14, 1973, Ser. No. 415,782
Int. Cl. G03b *21/00*
U.S. Cl. 353—2 **7 Claims**

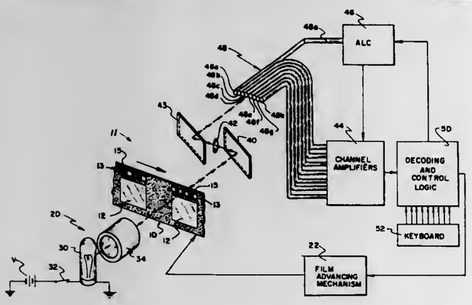


1. Automatic kaleidoscope, comprising a lamp housing, a lamp in the housing, the housing having air inlet means to admit ambient air into the housing and air outlet means to permit the exhausting from the housing of air heated by the lamp, a rotatable hollow disc-like wheel having spaced transparent opposite sides and a peripheral rim mounted in the housing, the wheel having vanes mounted thereon and positioned in the path of heated air being exhausted from the housing to turn the wheel thereby, a quantity of particulate material disposed in the wheel to be tumbled repeatedly as the wheel rotates, and a kaleidoscope mirror trough disposed to receive light from the lamp after it has passed through the wheel from side to side at the location of the tumbling particulate material.

3,885,866
COMPENSATION APPARATUS FOR IMPROVED MICROFILM CODE FIELD READING

Richard D. Stearns, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 8, 1974, Ser. No. 458,749
Int. Cl. G03b *21/20, 21/11, 23/12*
U.S. Cl. 353—26 **2 Claims**



1. In automatic retrieval apparatus including a code field reading station, means for moving an information bearing medium having at least one image and an identification code field disposed adjacent thereto to position such code field in said reading station, the code field having a plurality of information bit positions having relatively low (i.e., transparent) and/or high (i.e., opaque) optical densities respectively, and a light source for illuminating the code field, the improvement comprising:

a. a plurality of photocells disposed relative said reading station and arranged so as to correspond to bit positions of a code field positioned in said station, respectively, said plurality of photocells being responsive to light from said source for producing signals having relative levels indicative of the relative optical densities of corresponding bit positions, respectively;

b. automatic light control circuitry having (i) another photocell disposed relative to said reading station and arranged to produce a signal corresponding to the intensity of light passing through low optical density bit positions of the code field; and (ii) memory storage means responsive to the signal produced by said another photocell for producing a reference signal;

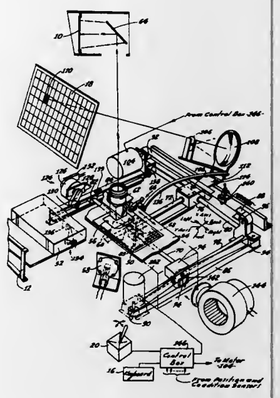
c. means responsive to said reference signal and said plurality of optical density indicating signals for producing digital signals representative of the relatively low or high contrast of said bit positions, respectively; and

d. logic and control means responsive to said digital signals for determining when a code field having a desired information is at said reading station.

3,885,867
MICROFICHE READOUT APPARATUS

Alfred M. Nelson, Redondo Beach; Robert G. McPherson, and Maurice S. Martin, both of Palos Verdes Peninsula, all of Calif., assignors to Cubic Industrial Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 219,103, Jan. 19, 1972, abandoned. This application July 17, 1972, Ser. No. 272,193
Int. Cl. G03b *1/52, 23/08*
U.S. Cl. 353—27 **5 Claims**



1. Microfiche card readout apparatus for providing a readout of an individual one of a plurality of frames arranged on the card in rows and columns, the apparatus comprising:

a support for holding the card in a plane for readout, the support having an opening at a readout position for passage of light through the card,

clamp means for holding the card for movement over the support,

positioning means connected to aid clamp means for moving the card along orthogonal X and Y axes,

control means coupled to said positioning means for positioning the card with a selected individual frame at the readout position,

said positioning means including a pair of fixed orthogonal guide rods each having a block member slidably mounted thereon, each block member having a positioning rod extending therefrom perpendicular to the respective guide rod;

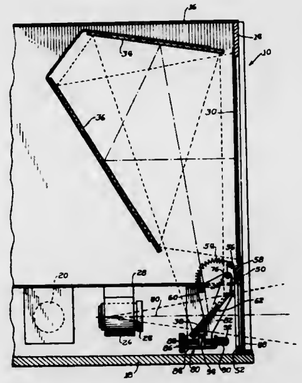
a follower block slidably mounted on both of said positioning rods for motion along X and Y axes, the positioning rods being orthogonally slidable through and supporting said follower block;

and said clamp means comprising a card engaging jaw pivotally secured to said follower block.

3,885,868
CONVERTIBLE PROJECTOR WITH DOOR ACTUATED MIRROR

Theodore M. Hadzimihalis, Libertyville, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Mar. 29, 1974, Ser. No. 456,327
Int. Cl. G03b *21/28, 21/30*
U.S. Cl. 353—71 **2 Claims**



1. In a film image projection apparatus convertible for projection of an image alternatively onto a remote surface and a built-in screen, the apparatus having projection means substantially enclosed within a housing and defining a projection path, the improvement comprising:

projection path blocking means adjustable about a first axis to open and closed positions, and being positioned substantially in a plane parallel with said built-in screen when in said closed position;

mirror means mounted for pivotable movement about an axis parallel to said blocking means supporting axis;

means coupling said blocking means and said mirror means for simultaneous displacement between projection path closed, image blocking condition and projection path open, image passing condition, said coupling means including:

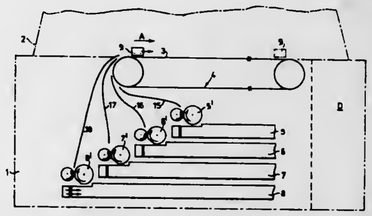
over-center spring means for positive displacement of said blocking means and said mirror means from a first predetermined position;

adjustable means for orienting said mirror means when said blocking means is in said image path closed position; and limit means for determining one of said predetermined positions of said blocking means.

3,885,869
ELECTROPHOTOGRAPHIC COPYING MACHINE

Paul Monamy James, London, England, assignor to Imaging Technology Limited, Middlesex, England

Filed Apr. 8, 1974, Ser. No. 458,803
Claims priority, application United Kingdom, Apr. 10, 1973, 17074/73
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 R **3 Claims**



1. An electrophotographic copying machine comprising

a. an exposure station,

b. a development station,

c. at least one reservoir for electrophotographic substrate material,

d. conveying means for supporting the substrate material at the exposure station and for moving the material to the development station,

e. a charging unit movable across the exposure station and disposed above the conveying means,

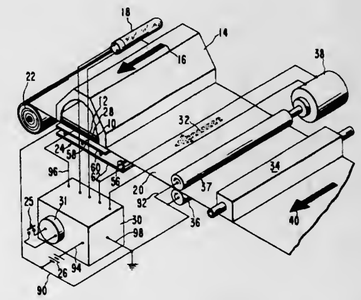
f. automatic feed means for drawing material from a reservoir and feeding it to the upstream end of the conveying means, and

g. logic circuit means for energising the charging unit either when stationary at said upstream end during passage of material below it or when moving across stationary material in the exposure station.

3,885,870
DEVICE FOR DISCHARGING CHARGE ACCUMULATED BETWEEN THE RECORDING MEDIUM AND A PHOTOCONDUCTIVE PLATE IN AN ELECTROPHOTOGRAPHIC RECORDER

Raymond L. Levy, Mountain View, and Gene F. Day, Los Altos, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Nov. 2, 1973, Ser. No. 412,238
Int. Cl. G03g *15/00*
U.S. Cl. 355—14 **9 Claims**



1. An electrophotographic recorder responsive to an image to be recorded for providing an image on the charge retentive surface of a recording medium having a conductive backing, comprising:

cycling means for defining a recording medium engagement period, an image exposure period, a recording medium disengagement period, and a discharge period for discharging accumulated net charge prior to the complete disengagement of the recording medium;

a photoconductive member which is selectively illuminated by the image to be recorded during the exposure period while engaging the charge retentive surface of the recording medium;

means for applying a charge transfer voltage across the photoconductive member and the recording medium during the exposure period in response to the cycling means, which voltage is sufficient to cause current to flow from the illuminated areas of the photoconductive member to the charge retentive surface and form a charge image thereon, the current flow causing a fixed space charge to build up throughout the photoconductive member which induces a mobile charge in the conductive backing of the recording medium proximate the charge retentive surface;

means movable with respect to the photoconductive member for urging the charge retentive surface of the recording medium into engagement with the photoconductive member during the engagement period, and for maintaining this engagement throughout the exposure period, and for disengaging the recording medium from the photoconductive plate during the disengagement period; and

conductive means responsive to the cycling means for establishing electrical communication between the conductive backing of the recording medium and the photoconductive member during the discharge period for permitting the induced mobile charge on the recording medium to flow into the photoconductive member and neutralize the fixed charge in the photoconductive member; said conductive means comprising:

a first conductive drive roller which engages the conductive backing of the recording medium for moving the recording medium with respect to the photoconductive plate after completion of the disengagement period; and

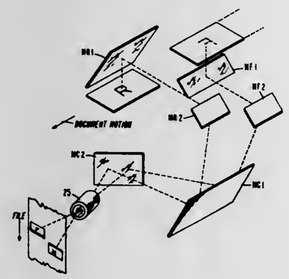
a switch responsive to the cycling means for electrically connecting said first conductive drive roller to the photoconductive member.

3,885,871

DOCUMENT PHOTOGRAPHY SYSTEM

Matthew J. Galatha, Vestal, and Richard F. Tynan, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 12, 1974, Ser. No. 460,321
Int. Cl. G03b 27/32
U.S. Cl. 355—23 **1 Claim**



1. In a document photography system for photographing on a photographic film both front and rear sides of elongate documents traveling serially and end to end, the combination comprising a reduction lens system, a first set of fixed mirrors aligned to reflect the image of the front side of one of said documents to be photographed to said lens system, and a second set of fixed mirrors aligned to reflect the image of the reverse side of the document to be photographed to said lens system, said lens system and said mirrors being aligned to project said images on the film surface which are aligned with respect to a common reference line,

said common reference line being perpendicular to the length of the film, with the images having their long sides parallel to said reference line and having the orientation of said first and second set of fixed mirrors such that the images generated by the documents being fed end to end serially are presented transverse to the image receiving surface of the film,

document transport means for conveying said documents serially and end to end past said first and said second sets of mirrors,

film advancing means for feeding said photographic film,

width sensing means for indicating the width of documents as they are fed through the system, and

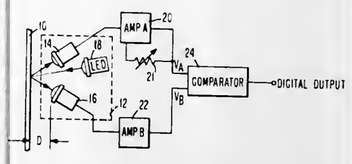
means governed by said width sensing means for advancing the film in increments proportional to the width of the documents being photographed.

3,885,872

DIGITAL PROXIMITY SENSING SYSTEM

James J. Howe, Jr., Portland, Oreg., and James C. Yarrington, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 12, 1973, Ser. No. 369,378
Int. Cl. G01c 3/08
U.S. Cl. 356—4 **4 Claims**



1. A proximity sensor comprising:

a light source,

first and second photosensitive elements responsive to light from said source reflected from an object,

said first photosensitive element being positioned to receive light from said source directly reflected from said object, said second photosensitive element being positioned to receive light from said source diffusively reflected from said object, and

means for comparing outputs from said photosensitive elements to obtain an indication of proximity, wherein said photosensitive elements have differing output characteristics with respect to displacement between said photosensitive elements and said object, said characteristics each comprising a voltage-displacement relationship in which the voltage decreases with respect to increase in displacement, said characteristics having an intersection with each other at a nominal predetermined displacement from said object.

3,885,873

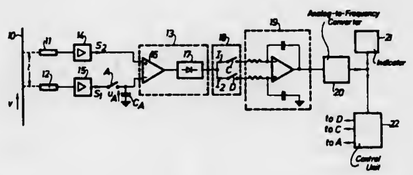
DEVICE FOR MEASURING THE RELATIVE MOVEMENT BETWEEN TWO OBJECTS

Nils Ingvar Andermo, Taby, Sweden, assignor to Stiftelsen Institutet for Mikrovagsteknik Vid Tekniska Hogsk-lan I Stockholm, Stockholm, Sweden

Filed Dec. 12, 1972, Ser. No. 314,320
Int. Cl. G01p 3/36
U.S. Cl. 356—28 **4 Claims**

1. A device for measuring the relative movement between two objects, comprising two sensors mounted on one of said objects in spaced-apart positions along the direction of relative motion between said objects to sense irregularities on the

other object and generate two signals of substantially equal shape, but displaced in time as a function of the relative speed between the two objects, sampling means for periodically sampling one of said signals and storing the sampled signal value, comparison means for comparing the stored signal value with the other signal and forming a differential signal, a switch unit means for alternately and periodically supplying the differential signal to opposite polarity inputs of an integrator during two selected time intervals, a voltage-to-frequency converter supplied with the output signal from the integrator and arranged to generate a frequency signal, and a control unit means supplied with said frequency signal for controlling the operation of the sampling means and the switch unit means so as to cause the frequency of the output signal from the converter to become proportional to the relative speed between said objects.

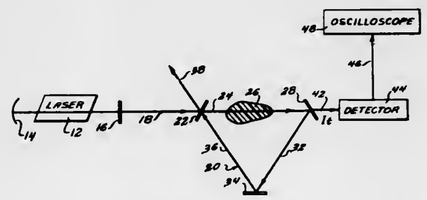


3,885,874

LASER PLASMA DIAGNOSTIC USING RING RESONATORS

Roger A. Haas, Manchester; Peter P. Chenausky, Farmington, and Robert J. Freiberg, South Windsor, all of Conn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 11, 1974, Ser. No. 434,528
Int. Cl. G01b 9/02
U.S. Cl. 356—107 **10 Claims**



1. Apparatus for measuring the change in the average electron density of a plasma comprising:

a. means for producing a laser beam;

b. ring resonator means independent of the aforesaid means for receiving said laser beam and propagating the same in a closed system without reflecting laser light into said means for producing said laser beam;

said ring resonator means containing at least a portion of said plasma so that said laser beam continuously circulates cyclically through said portion of said plasma;

successive portions of said laser beam interfering with the circulating laser beam;

c. means for extracting circulating laser light from said ring resonator means; and

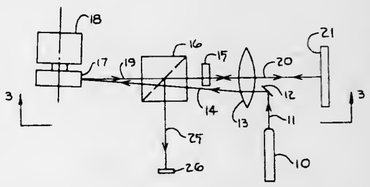
d. means for presenting the fringe pattern of the extracted laser light, the spacing in said pattern indicating the rate of change of the electron density of said plasma.

3,885,875

NONCONTACT SURFACE PROFILOMETER

Alvin H. Rosenfeld, Cromwell, and Carl A. Zanoni, Middletown, both of Conn., assignors to Zygo Corporation, Middlefield, Conn.

Filed July 29, 1974, Ser. No. 492,781
Int. Cl. G01b 11/30
U.S. Cl. 356—120 **4 Claims**



1. A device for measuring the surface profile and the first derivative of the surface profile of a basically flat reflecting object (comprising) (1) a source of radiant energy, and means to produce a narrow collimated beam therefrom; (2) means for focusing said beam onto a uniformly rotating reflective surface to produce a reflected beam on axis with; (3) means for recollimating said reflected beam to produce a linearly scanned beam which is scanned across the surface of said test object and reflected therefrom; (4) means for collecting said beam reflected from said test object and focusing it onto (5) a photoelectric position sensor; (6) means for processing the output of said position sensor to yield an output indicative of the first derivative of the surface profile of the test article along the line of intersection of said linearly scanned beam and the surface of the test object; (7) means for processing said first derivative output to produce an output indicative of the surface profile of the test article along said line of intersection and (8) means for processing the output of said position sensor in order to assure that said first derivative and surface profile outputs are independent of the tilt or alignment of the surface of the test article relative to the apparatus.

3,885,876

OPTICAL CHROMATIC DISPLAY FOR NAVIGATIONAL GUIDANCE

John P. Konopka, West Chester, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 26, 1973, Ser. No. 427,497
Int. Cl. G01b 11/26
U.S. Cl. 356—153 **6 Claims**

1. An optical device for providing a visual chromatic display for guiding an observer along a prescribed path of travel comprising:

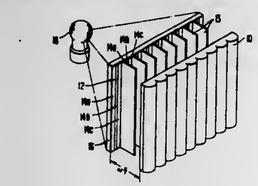
a lens system comprised of cylindrically ribbed lenticulars and having its aperture oriented toward said observer,

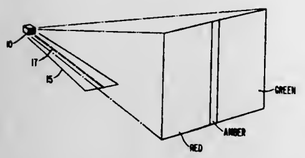
a color field member positioned at substantially the focal point of said lens system, said color field member comprising a plurality of identical sets of translucent color materials arranged in a repetitive pattern and occupying homologous positions with respect to the cylindrical lenses which make up said ribbed lenticulars and with which they are respectively associated, each of said sets including a plurality of colors and having substantially the same dimensions in length and width as one of said cylindrical lenses, the longitudinal axes of said sets being parallel with the rib axes of said lenses, and a plurality of opaque vane-like members situated respectively at the interstices of adjacent sets and projecting outward toward said lenticulars,

a light source positioned with respect to said color field member to provide for the back-lighting thereof,

said lens system forming an image of said illuminated color field member which encompasses said entire lens aper-

ture and which appears generally to said observer as one of said plurality of colors depending upon the observer's



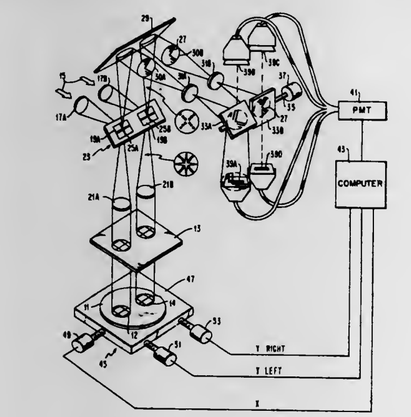


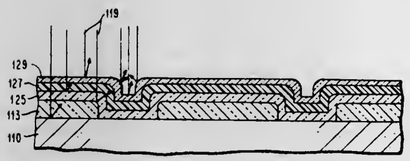
line of sight to said lens aperture, observation of a preselected one of said colors being indicative of the observer's alignment with said presecribed path of travel.

3,885,877
ELECTRO-OPTICAL FINE ALIGNMENT PROCESS

Ronald S. Horwath, Salt Point, and George A. Kolb, Wappinger Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,347
Int. Cl. G01b 11/26
U.S. Cl. 356—172 **9 Claims**



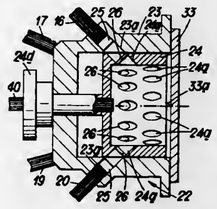


1. In a process for aligning two objects by electro-optical means in which each of said objects have corresponding alignment patterns with the patterns on one of said objects being in the form of a relief image which is coated with a layer of photoresist; the alignment being accomplished by illuminating said patterns with coherent monochromatic light which is reflected from said relief image to produce images of said corresponding patterns; using said images to produce electrical signals which are indicative of the location of said patterns; and moving the objects relative to one another until the signals agree, the improvement which comprises coating on said resist layer a layer of material prior to illuminating said patterns which material absorbs and reflects said light such that only light reflected from said layer is used to generate said signals.

3,885,878
COLOUR MEASURING DEVICES

Ishak Girgis Hanna Ishak, Teddington, England, assignor to The Research Association of British Point, Colour and Varnish Manufacturers, Middlesex, England

Continuation of Ser. No. 107,054, Jan. 18, 1971. This application Apr. 26, 1973, Ser. No. 354,709
Claims priority, application United Kingdom, Jan. 19, 1970, 2520/70
Int. Cl. G01j 3/50
U.S. Cl. 356—176 **6 Claims**

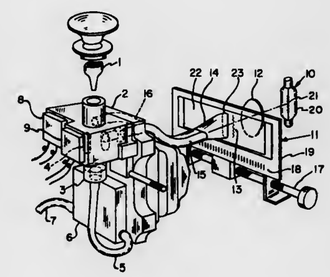


1. A colorimeter for determining the color of a sample comprising:
a. a stabilized light source;
b. a sensing head;
c. an illuminating bundle of fibre optics extending between said light source and said sensing head and having a light receiving end adjacent said light source and a light emitting end at said sensing head for illuminating a discrete area of said sample;
d. a number of light guide bundles of fibre optics having light receiving ends at said sensing head for receiving light from said discrete area of said sample, said bund being capable of transmitting said light received along their lengths;
e. said sensing head having means for supporting said light emitting end of said illuminating bundle of fibre optics in a direction normal to the surface of said sample so that said sample is illuminated by light from said light emitting end of said bundle in a substantially normal direction, and for supporting said light receiving ends of said light guide bundles of fibre optics so that they are at an angle of 45° to said light emitting end of said illuminating bundle of fibre optics and are evenly spaced around the light emitting end of said bundle of fibre optics;
f. means for maintaining the surface of said sample normal to said light emitting end and at an angle of 45° to each of said light receiving ends, whereby said light emitting end illuminates said discrete area substantially normally and said light receiving ends receive light from said illuminated discrete area at an angle of about 45° to the normal to said surface;
g. a light detector to which light transmitted by said light guide bundles is conducted for determination of the sum of said light transmitted by said bundles;
h. subtractive filter means for filtering at least part of said light transmitted by said light guide bundles and conducted to said detector so as to modify the spectral response of said detector to one color function, said filter means including individual light subtractive filters for filtering light passing through at least one light guide bundle, and said filter means comprising adjacent relatively rotatable supporting members respectively having ports extending through the members which can be brought into mutual registration by relative rotation, said light guide bundles terminating in the ports of one of said members, and at least some of the ports in the other member supporting filters therein, and means for rotating said members one with respect to the other so as to align particular ports in mutual registration, such alignment of particular ports in turn interposing filter arrangements between at least some of said light guide bundles and said detector so as to modify said spectral response to said detector to each color function in turn so as to measure the color of said sample, and
i. means for determining the output of said detector when modified by said filter means to each color function in turn.

3,885,879
DUAL BEAM SPECTROPHOTOMETER UTILIZING A SPECTRAL WEDGE AND BIFURCATED FIBER OPTIC BUNDLE

Nevitt M. Louder, Verona, and Warren G. Gillingham, Pittsburgh, both of Pa., assignors to Fisher Scientific Company, Pittsburgh, Pa.

Filed June 25, 1973, Ser. No. 372,931
Int. Cl. G01j 3/48, 3/42
U.S. Cl. 356—189 **9 Claims**

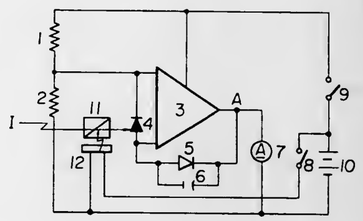


1. A spectrophotometer comprising:
A. a source of light;
B. an adjustable wedge for selecting wavelengths of light from the source;
C. a reference means and a measuring means for sensing the selected wavelengths;
D. bifurcated fiber optics comprising a bundle of light conductive threads, one end of the bundle being of rectangular cross section and disposed adjacent the wedge, the opposite end of the bundle being divided into two branches, each branch containing approximately one half of the number of threads in the end of rectangular cross section, one branch being so positioned to transmit light through a sample to be analyzed to the measuring means and the other branch being so positioned to transmit light to the reference means; and
E. means for comparing the output of the sensing means.

3,885,880
LIGHT SENSING DEVICE WITH AUXILIARY ILLUMINATION

Tokuichi Tsunekawa, Yokohama; Soichi Nakamoto, Tokyo; Tetsuya Taguchi, Kawasaki, and Takehiko Kiyohara, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Nov. 7, 1973, Ser. No. 413,494
Claims priority, application Japan, Nov. 9, 1972, 47-112284
Int. Cl. G01j 1/16
U.S. Cl. 356—226 **8 Claims**

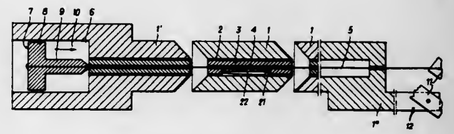


1. A light sensing device comprising, in combination, a photovoltaic cell generating an electric signal proportional to the light intensity incident thereupon, and having an output; a direct current operational amplifier having an input connected to the output of said cell and having an output; a source of d.c. potential; switch means selectively operable to connect said source to said amplifier to provide an operating potential thereto to initiate a light sensing operation; indicating means connected to the output of said amplifier to indicate a light value responsive to the amplified electric output signal of said cell; irradiating means operable, when energized, to emit light incident upon said cell; and means operable, upon initiation of a light sensing operation, to connect said irradiating means to said source for at least momentarily energizing said irradiating means.

3,885,881
ELONGATED, COLLAPSIBLE DEVICE

Bernhard Goldmann, Viktorgasse, Vienna, Austria (A-1040)

Filed Dec. 20, 1973, Ser. No. 426,853
Claims priority, application Austria, Dec. 22, 1972, 11032/72
Int. Cl. F16b 7/10
U.S. Cl. 403—291 **14 Claims**



1. An elongated device collapsible into a plurality of shorter sections comprising a plurality of component elements, each of which is longitudinally permeated by at least one flexible tension member for clamping together said component elements strung on the tension member in end-to-end contact, at least one core within each of said component elements, said cores being longitudinally shiftable relative to said component elements, each core having longitudinally spaced front faces, the cores disposed in adjacent component elements contacting one another with their front faces, and a means connected to the tension member for shifting the cores into a position in which the front faces of the cores are axially offset relative to the ends of the component elements.

3,885,882

COUPLING FOR THE ASSEMBLY OF CLOSELY JOINTED TUBULAR ELEMENTS

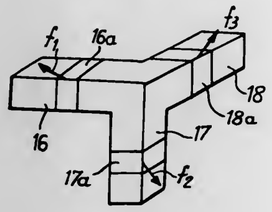
Lucien Curti, Le Clos Fleuri-rue Pierre Vaudnay, 78350 Jouy en Josas, France

Filed May 15, 1973, Ser. No. 360,451

Claims priority, application France, May 17, 1972, 72.17672

Int. Cl. F16b 7/18

U.S. Cl. 403—297 4 Claims



1. In a coupling for the assembly of closely jointed tubular elements having as many branch members as there are tubular elements to be assembled, said coupling including a branch member, said branch member including a body portion and a key portion with the body portion having a cross-sectional configuration adapted to conform to that of its respective tubular element and includes a maximum dimension being of such a magnitude that the branch member is adapted to be situated within its respective tubular element with a certain play and adapted to be wedged therein by the displacement of its key portion, each said body portion further having a lateral slot which extends into the body portion defining thereby three surfaces, the key being received within said slot and having an outer surface conforming to the inner surface of its respective tubular element and three further surfaces which confront and are coextensive with said three surfaces when the key is within said slot, the improvement wherein each said body portion further has a bore extending from the outer surface of the body portion and intersecting said slot and a displaceably mounted pointed-end screw in said bore and engaging the key portion of its respective branch member and exerting a biasing force thereagainst causing the key to be displaced until the outer surface of the key also engages the inner surface of the respective tubular element, the displacement being in a direction which is perpendicular to the longitudinal axis of the respective body portion and inclined with respect to each of the planes of the angles defined respectively by the plane containing the longitudinal axis of the respective body portion on the one hand and the planes containing the axes of the body portion of the other branch members on the other hand, obtaining an outward displacement directed toward the exterior of each of the angles causing in that direction, as a result of the engagement of said key with its respective tubular element, a slight lateral displacement of the respective tubular element, and adapted to close the visible junction line of the tubular elements with their adjacent tubular elements.

3,885,883

METHOD AND APPARATUS FOR COMPACTING EARTH, SAND, GRAVEL, BALLAST AND SIMILAR MATERIALS

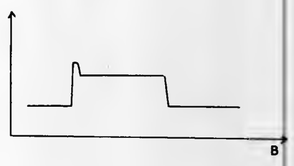
Helmut Sieke, An der Trift 5, 3001 Wulferode, and Rainer Sieke, Am Pahlberg 18, 3161 Ehlershausen, both of Germany

Filed Mar. 21, 1973, Ser. No. 343,482

Claims priority, application Germany, Mar. 21, 1972, 2213577

Int. Cl. E01c 3/06

U.S. Cl. 404—72 9 Claims



1. A process for compacting earth, sand, gravel, ballast and similar material which comprises subjecting a selected small area of sand material at a time to a periodic succession of individual pressure thrusts by means of a rectilinearly reciprocating compacting tool which is reciprocated cyclically but non-sinusoidally, the compacting tool at the beginning of each cycle being given a strong push through which a strong compacting pressure thrust is exerted on said material and pressure being thereafter maintained on said material by said tool for a selected period of time not less than one quarter of a cycle to hold the compacted material in place and thereby allow time for it to become settled and fixed in compacted condition, whereupon the pressure of said compacting tool on said material is relieved to complete the cycle, and thereupon repeating the cycle.

3,885,884

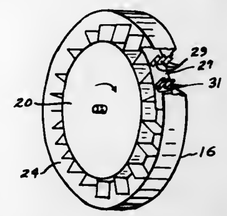
APPARATUS FOR PROVIDING AN AERODYNAMIC WINDOW

David B. Wilkinson, Xenia, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 9, 1974, Ser. No. 468,329

Int. Cl. F04f 1/00, 5/20

U.S. Cl. 415—53 5 Claims



1. An apparatus for maintaining a pressure difference across an opening between a high pressure region and a low pressure region, comprising: a housing having two spaced flat walls and a circular wall interconnecting said flat walls; a first aperture in one of said flat walls adjacent said circular wall; a second aperture in the other flat wall in alignment with said first aperture; means for connecting one of said pressure regions to said first aperture; means for providing a flow of gas along a path within said housing, adjacent said circular wall and past said apertures; means, in the gas flow path on one side of said apertures for directing the gas flow toward the aperture adjacent the high pressure region; and means, in the gas flow path on the other side of said apertures, for redirecting the gas flow into the gas flow path adjacent the circular wall within said housing.

3,885,885

FLUID PROPELLING APPARATUS EMPLOYING FLEXIBLE DRIVE SHAFT

Fred E. Cross, Jr., Eustis, Fla., assignor to Highway Equipment & Supply Company, Orlando, Fla.

Filed Oct. 1, 1973, Ser. No. 402,147

Int. Cl. F01d 15/12

U.S. Cl. 415—122 5 Claims



1. Apparatus comprising, in combination:
a flexible, hollow hose having two open ends;
a propeller at one end of said hollow member for propelling fluid therethrough;
prime moving means at the other end of said hollow member and spaced therefrom;
an outer, water-tight casing having an outer diameter substantially less than the inner diameter of said hose;
a flexible core positioned within said flexible casing;
a nipple surrounding said propeller and including an opening axial with said propeller;
a spider fixed in said nipple for positioning said flexible core in said flexible casing at said one end of said hose;
another spider positioned at the extremity of said nipple opening and having a threaded opening through said another spider axial with said propeller and the extremity of said flexible core;
a threaded thrust bearing member adjustably positioned in said threaded opening, said thrust bearing member including a thrust aperture facing said propeller; and
a conical thrust bearing fixed at the extremity of said flexible core and extending into said thrust aperture.

3,885,886

UNSHROUDED INTERNALLY COOLED TURBINE BLADES

Werner Richter, Hilgertshausen, Germany, assignor to Motoren-und Turbinen-Union Munich GmbH, Germany

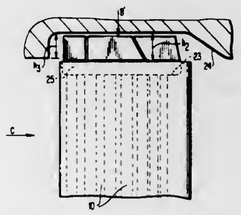
Filed June 27, 1973, Ser. No. 374,231

Claims priority, application Germany, June 27, 1972, 2231426

Int. Cl. F01d 1/18, 5/18

U.S. Cl. 415—116 5 Claims

1. An unshrouded turbine rotor blade of the type which in use is rotatable about a rotor axis and has radially inner and outer ends with respect to said axis; said blade comprising:
a tip well formed adjacent the radially outer end of the blade,
cooling flow cavity means in said blade which terminate in cooling medium exit means opening into said tip well such that cooling medium flows through said cavity means into said tip well during rotation of said blade,
cooling flow deflecting means for deflecting the flow of cooling medium out of said tip well, said cooling flow cavity means, said cooling medium exit means and said cooling flow deflecting means being relatively configured in such a manner that outflows of said cooling medium from said tip well impart reactive forces against said blade in the direction of blade rotation,
blade rubbing crown means at the radially outer end of the blade for accommodating rubbing engagement of the blade against a turbine casing means which surrounds the blade in use,
and turbine casing means for accommodating the outer end of said blade,
wherein said tip well is formed by wall means which extend radially outwardly of a bottom of said tip well and circumferentially surround the contour of the outer end of said blade,



wherein said cooling flow deflecting means includes opening means in said wall means which extend over at least a portion of one side of the blade,
wherein said blade has a suction side which faces in the general direction of rotation of the blade and a pressure side which faces in the general direction opposite the direction of rotation of the blade,
wherein said one side is said pressure side,
wherein said wall means includes suction side wall member means which have the radially outer ends thereof bent toward the pressure side of the blade, said opening means being formed between said radially outer ends of said suction side wall member means and respective radial outer ends of pressure side wall member means forming part of said wall means, and
wherein said turbine casing means for accommodating the outer end of said blade includes an annular slot which has a radial depth which is approximately equal to the radial extent of said opening means formed between said suction side wall members and pressure side wall members.

3,885,887

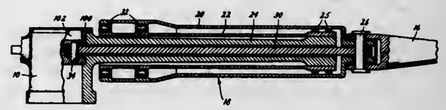
FLEXURE FOR BEARINGLESS ROTOR

Rene A. Desjardins, Media, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 5, 1973, Ser. No. 421,891

Int. Cl. B64c 11/12, 27/38

U.S. Cl. 416—141 5 Claims



1. In a rotor for a rotor craft having a rotor hub with a rotor blade mounted thereto, a flexure for mounting the rotor blade to the rotor hub so as to permit flapping, lead lag and pitch, which comprises:
a tubular first stage having one end thereof rigidly connected to the rotor hub extending radially therefrom;

a tubular second stage having one end thereof rigidly connected to the remaining end of said first stage, oriented concentrically about said first stage and extending radially toward the hub;

a tubular third stage having one end thereof mounted to the remaining end of said second stage so that axial movement therebetween may take place, said third stage mounted concentrically about said second stage, the remaining end of said third stage rigidly connected to the rotor blade; and

a tension-torsion strap mounted concentrically within said first stage connected at one end to the rotor hub and connected at the other end to the rotor blade for restraining axial movement and bearing tension loads therebetween.

3,885,888

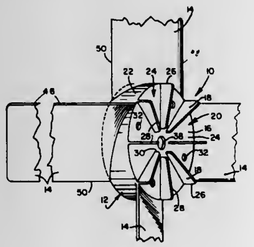
COOLING FAN FOR RADIATORS AND THE LIKE

John G. Warhol, 14041 Vernon Ave., Oak Park, Mich. 48237

Filed Mar. 26, 1973, Ser. No. 344,976

Int. Cl. F04d *29/28*

U.S. Cl. 416—175 **7 Claims**



1. A cooling fan for cooling radiators and the like comprising, a central hub and a plurality of radially extending main blades extending radially outward of said hub, said hub having a flat front face and a plurality of radially extending hub blades extending across the face of the hub and forwardly of said face, said front face and hub blades being integrally formed of plastic material, said hub blades radiating from a common axis, each said hub blade having a generally triangular shape in side elevation with the widest part of the blade adjacent the outer peripheral or top edge of the blade and reducing in width toward the center of the flat front face so that the lead edge of the blade is inclined inwardly from the outer peripheral or top edge toward the center and with the opposite sides of the blade being planar and parallel to each other and of a uniform thickness, with the outer peripheral edge of the blade extending substantially to the outer peripheral edge of the flat front face of the hub and the inner end of the blade being adjacent the axis or center of the flat front face, said hub blades forming a hub turbine and serving to distribute or break up the flow of air hitting the hub portion of the fan and directing said air outwardly into the path of environment of the flow of air created by the main fan blades.

3,885,889

METHOD AND APPARATUS FOR REDUCING EFFECTIVE PUMPING CAPACITY OF A REFRIGERANT VAPOR COMPRESSOR

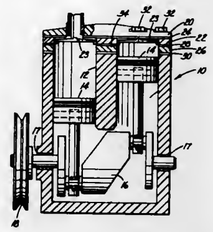
James D. Bares, Woodstock Rd., Gates Mills, Ohio 44040, and William P. Burke, Jr., 7665 Chesterbrook Rd., Chesterland, Ohio 44026

Filed Jan. 2, 1974, Ser. No. 429,918

Int. Cl. F04b *49/00*

U.S. Cl. 417—274 **4 Claims**

1. A method of reducing the effective pumping capacity of a refrigerant vapor compressor, which compressor includes a block having at least one cylinder bore therein with a piston reciprocally mounted in each bore and each having a predetermined fixed stroke length, a cylinder head, and a valve plate interposed between said head and said block, comprising the steps of providing a spacer plate having through bores therein corresponding to the cylinder bores and forming a continuation of each cylinder bore, said spacer plate being formed of a relatively rigid relatively non-deformable material, and interposing the spacer plate between the valve plate and block, whereby to increase the clearance volume of the cylinder bore and decrease the volumetric efficiency.



3. In a refrigerant vapor compressor having a block with at least one cylinder bore therein, and with a piston reciprocally mounted in each bore and each having a predetermined fixed stroke length, said compressor having also a head, and a valve plate interposed between the head and the block, the improvement comprising, a spacer plate formed of a rigid relatively nondeformable material interposed between said valve plate and said block, said spacer plate having a through aperture corresponding to each cylinder bore and each forming a continuation of each cylinder bore, whereby to decrease the effective pumping capacity and volumetric efficiency of the compressor by increasing the clearance volume of the cylinder bore.

3,885,890

ELECTROMAGNETIC PUMPS

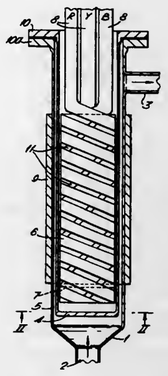
Daniel Fraser Davidson, Altrincham, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 2, 1973, Ser. No. 346,933

Claims priority, application United Kingdom, Apr. 26, 1972, 19490/72

Int. Cl. H02n *4/20*

U.S. Cl. 417—50 **4 Claims**



1. An electromagnetic pump comprising a cylindrical iron core co-axially arranged within an iron casing to bound an annular flow duct for liquid metal, the core being of laminated form and having three equally spaced, external helical slots and three equally spaced helical slits, the slits being in opposite rotational direction to the slots and intersecting the slots at right angles thereto, the slots being lined with electrically insulating material and housing windings adapted for connection at one end to a three phase electricity supply and joined together by a star point connection at the other end, the windings each comprising a stack of helically wound copper laminations and having coatings of insulating material on the outer circumferential surfaces, and a closely fitting stainless steel sheath for the core and windings.

3,885,891

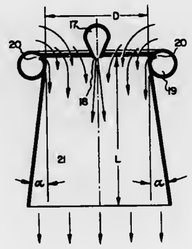
COMPOUND EJECTOR

Lester W. Throndson, Westerville, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 310,723, Nov. 30, 1972, abandoned. This application Jan. 11, 1974, Ser. No. 432,724

Int. Cl. F04f *5/44*

U.S. Cl. 417—196 **15 Claims**



1. In ejector apparatus immersed in a body of secondary flow fluid and producing an augmented thrust vector oriented along an ejector longitudinal axis, in combination:

perimeter injector means having opposed discharge slots that are positioned at opposite sides of said longitudinal axis and that are oriented and sized to each discharge primary fluid flowed therethrough in a direction toward and substantially at right angles to said longitudinal axis at a discharge velocity greater than approximately 0.7 Mach number;

convergent inlet surfaces each extending from immediately adjacent a respective one of said perimeter injector means opposed discharge slots and continuing in the direction of fluid flow along said longitudinal axis through a rotational angle in the range of approximately 80° to 110° to form an ejector apparatus throat having a minimum dimension D in a direction normal to said longitudinal axis;

center injector means having a discharge nozzle that is positioned intermediate said perimeter injector means discharge slots and above said ejector apparatus throat minimum dimension D and that is oriented and sized to discharge primary fluid flowed therethrough in a direction generally along said longitudinal axis at a discharge velocity greater than approximately 0.7 Mach number;

divergent diffuser surfaces continuing from said convergent inlet surfaces in the region of said ejector apparatus throat minimum dimension D to a termination at an interface with said body of secondary flow fluid and with an average divergence with respect to each other of angle 2α; and

duct means flowing high energy primary flow fluid to said perimeter injector means discharge slots and to said center injector means discharge nozzle at pressure ratios greater than approximately 1.3 relative to said body of secondary flow fluid and at flow rates sufficient for maintaining said discharge velocities,

said perimeter injector means opposed discharge slots and said divergent diffuser surfaces termination being separated in a direction along said longitudinal axis by a distance L that is less than approximately 2.5 times said ejector apparatus throat minimum dimension D, and said divergent diffuser surfaces average divergence angle 2α being at least approximately 15°.

3,885,892

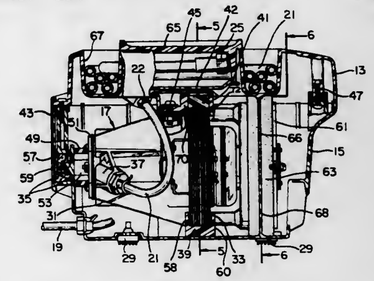
HOUSING ASSEMBLY FOR AIR COMPRESSOR AND THE LIKE

John Robert Dwyer, Timonium; Martin Omer Schrock; John Earl Dibbern, Jr., and Alfred Herbert Judge, all of Baltimore, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed May 29, 1973, Ser. No. 364,812

Int. Cl. F04b *21/00*

U.S. Cl. 417—234 **5 Claims**



2. A housing assembly for a portable, electric, air compressor as claimed in claim 1 wherein said housing comprises separable housing members adapted to entrappingly contain said air compressor therein, said housing members being formed of an electrically insulating material, said housing members forming a container whose top is provided with a substantially annular recess therein, a central handle integral with said top and disposed in said recess and forming carrying means for said compressor, said compressor having air hose means connected thereto and extending through an opening in said housing within said recess, said air hose being adapted to be stored within said recess about said handle.

3,885,893

MULTIPLE CYLINDER PUMP

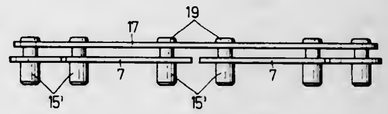
Wilfried Glock, and Ludwig Axthammer, both of Hambach, Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Apr. 17, 1974, Ser. No. 461,713

Claims priority, application Germany, Apr. 17, 1973, 2319307

Int. Cl. F04b *1/04*; **F16k** *15/00*

U.S. Cl. 417—273 **10 Claims**



1. In a pump including wall means defining an intake cavity, a shaft having an axis and mounted for rotation about said axis, a plurality of cylinders communicating with said cavity and extending from the same in angularly spaced relationship relative to said axis, a piston movable in each cylinder, an outlet conduit communicating with each cylinder, actuating means on said shaft for sequentially moving said pistons in the respective cylinders during rotation of said shaft and for thereby pumping fluid from said cavity to said conduits, an annular manifold communicating with said conduits and circumferentially extending about said axis, a plurality of check

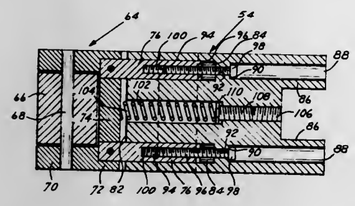
valve means respectively associated with each conduit for permitting fluid flow from the associated conduit toward said manifold while impeding fluid flow from said manifold into the associated conduit, and a discharge conduit leading outward of said manifold, the improvement in each of said valve means which comprises:

a. an elongated valve plate in said manifold,
   1. said outlet conduits having circumferentially spaced respective orifices in said manifold; and
b. guide means in said manifold guiding said valve plate transversely to the direction of elongation thereof toward and away from a position of sealing engagement with the orifice of the associated conduit,
   1. said guide means including a plurality of guide pins circumferentially spaced in said manifold,
   2. two longitudinally spaced portions of each valve plate slidably engaging respective ones of said guide pins.

3,885,894
ROLLER-TYPE BLOOD PUMP

Ernest A. Sikes, Cheyenne, Wyo., assignor to Sikes Industries, Inc., Cheyenne, Wyo.

Filed Apr. 13, 1973, Ser. No. 350,992
Int. Cl. F04b *43/08, 43/12, 45/06*
U.S. Cl. 417—477 **3 Claims**

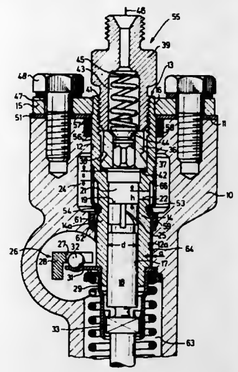


1. In a roller pump of the type having a base, an upstanding wall atop the base defining a concave semi-cylindrical raceway, latch means located at opposite ends of said raceway adapted to releasably hold an arcuate section of flexible tubing in position against said raceway, a shaft journalled for rotation within the base about an axis coincident with the cylindrical surface of said raceway, and an impeller assembly movable by said shaft for causing fluid movement through the tubing by collapsibly distorting said tubing, the improvement which comprises: providing said impeller assembly with an elongate arm mounted on the shaft for conjoint rotation about an axis intermediate the ends of said arm; a pair of roller frames each having one end adapted for attachment to an end of the arm and another end notched to accept a roller for rotation within said notch; a cylindrical roller mounted for rotation within the notched end of each roller frame; telescopable connecting means interconnecting said one end of each roller frame to an end of the arm for independent relative movement between an extended position and a retracted position, said connecting means including at least one rod projecting from one of said interconnected ends and a corresponding opening positioned and adapted to telescopically receive said rod in the other of said interconnected ends; biasing means interposed between said interconnected ends of said arm and roller frame independently biasing said roller frame into extended position; and, adjustable stop means operative upon actuation to independently limit the maximum extension of each roller frame relative to the end of said arm to which said roller frame is connected, said stop means including an enlarged head carried by a portion of said rod telescoped within the opening receiving said rod and a section of said opening cooperating to define a shoulder positioned to engage said enlarged head upon movement of said roller frame toward extended position, said head being mounted for adjustment in the direction of the length of said rod to vary the distance separating said head from the interconnected end from which said rod projects.

3,885,895
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Heinrich Staudt, Markgroningen-Talhausen; Eberhard Hofmann, Kirchberg; Wolfgang Eckell, Gebersheim, and Peter Knorreck, Munchingen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Continuation of Ser. No. 289,642, Sept. 18, 1972, abandoned. This application Apr. 19, 1974, Ser. No. 462,448
Claims priority, application Germany, Sept. 18, 1971, 2146797; Oct. 13, 1971, 2150973
Int. Cl. F04b *7/04, 37/10*
U.S. Cl. 417—499 **8 Claims**



1. In a fuel injection pump for an internal combustion engine, said pump being of the known type that includes

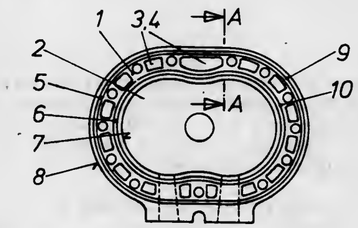
A. a one piece pump housing having
   1. an external edge face,
   2. a mounting bore extending into said housing from said edge face and defining a wall,
   3. a suction chamber,
B. a flanged sleeve formed of
   1. a cylinder sleeve having
      a. a cylinder bore, said cylinder bore defining a wall,
      b. an enlarged chamber adjoining said cylinder bore, said chamber defining a wall,
      c. an inner annular shoulder separating said cylinder bore from said enlarged chamber,
      d. an internal thread provided in the wall of said enlarged chamber and defining a zone of said wall of said enlarged chamber,
      e. a throughgoing control port provided in the wall of said cylinder sleeve in a zone defined by said cylinder bore, said control port connecting said cylinder bore with said suction chamber and
   2. a securing flange fixedly attached to said cylinder sleeve and extending radially outwardly therefrom,
C. bolts for clamping said securing flange to said edge face,
D. a pump piston axially slidably and angularly adjustably disposed in said cylinder bore, said pump piston having on its lateral face an obliquely extending control edge cooperating with said control port during reciprocating motion of said pump piston,
E. means for adjusting the angular position of said pump piston for varying the position of said control edge with respect to said control port for altering the length of the effective pressure stroke of said pump piston during which fuel delivery takes place,
F. a pressure valve disposed in said enlarged chamber of said cylinder sleeve, said pressure valve having a stationary valve body, and

G. an externally threaded nipple engaging the internal thread of said enlarged chamber and clamping said valve body against said shoulder; said flanged sleeve, said pump piston, said pressure valve and said threaded nipple forming a preassembled group of pump elements, the improvement comprising:
   i. a guide collar forming part of said cylinder sleeve and situated between said securing flange and said control port, said guide collar constituting the sole part of said preassembled group of pump elements that engages said mounting bore, the cylinder sleeve, apart from said guide collar, being disposed in said mounting bore with an annular clearance from the mounting bore wall;
   ii. a longitudinally displaceable fuel rack; and
   iii. an actuator arm secured to said pump piston and operatively connected to said fuel rack, said actuator arm and said fuel rack forming part of said means for adjusting the angular position of said pump piston, and wherein said cylinder sleeve is formed as a one piece member and said securing flange is exclusively positioned in the zone defined by said internal thread and axially spaced from said valve body, wherein said cylinder sleeve has an external surface portion in the zone between said shoulder and said control port, the axial distance between the beginning of said external surface portion and said shoulder being at least 0.25 times the inner diameter of said enlarged chamber, said cylinder sleeve having a portion of reduced outer diameter extending from said external surface portion away from said enlarged chamber, said reduced outer diameter being approximately 1.5 times the inner diameter of the largest permissible cylinder bore, said cylinder sleeve having its maximum hardness in the zone of said cylinder bore, the hardness of said cylinder sleeve decreasing radially towards said external surface portion and axially towards said internal thread.

3,885,896
LIQUID COOLED HOUSING FOR ROTARY PISTON COMBUSTION ENGINE

Max Ruf, Obereisesheim, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Germany

Filed June 12, 1974, Ser. No. 478,781
Claims priority, application Germany, June 16, 1973, 7322559
Int. Cl. F01c *21/06, 19/12*
U.S. Cl. 418—83 **3 Claims**

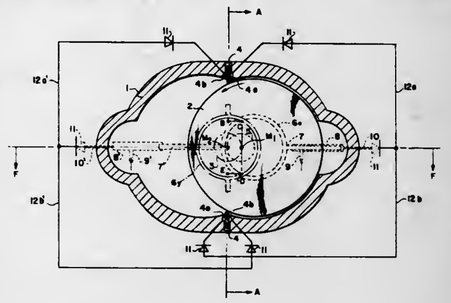


1. A liquid-cooled housing for a rotary piston combustion engine, comprised of at least one annular shell and two parallel end pieces, the shell and end pieces containing chambers traversed by cooling liquid and communicating with each other, ports in the meeting faces of the shell and end pieces communicating with the chambers, grooves encircling the ports close to the inner surface of the shell and essentially parallel thereto near the outer periphery of the shell, gaskets, the ports being sealed by the gaskets recessed in the encircling grooves, at least one side wall of each groove having a plurality of projections to retain the gasket during assembly.

3,885,897
LUBRICATING DEVICE FOR RADIAL SEALING STRIPS OF INNER-AXIAL ROTARY PISTON ENGINES OF TROCHOIDAL CONSTRUCTION WITH SLIDING ENGAGEMENT

Franz Huf, Constance, Germany, assignor to Dornier System GmbH, Friedrichshafen, Germany

Filed July 16, 1973, Ser. No. 379,601
Claims priority, application Germany, Aug. 16, 1972, 2240100
Int. Cl. F04c *29/02*
U.S. Cl. 418—88 **10 Claims**

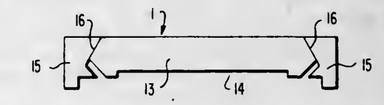


1. In a rotary piston engine having a piston means of epitrochoidal configuration, a housing having an internal configuration conforming substantially to the outer envelope curve of the trochoid, eccentric shaft means operatively connected to said piston, radial sealing strip means mounted in a corresponding bed in the interior side walls of said housing and lubricant groove means formed in the walls of said bed, the improvement comprising, drive means operatively connected to said piston to convert linear sliding movement of said drive means to rotary motion of said piston, pump means operatively coupled to at least one sliding element of said drive means, lubricant line means operatively connecting said pump means to said lubricant groove and non-return valve means operatively mounted in said lubricant line.

3,885,898
ROTARY PISTON INTERNAL COMBUSTION ENGINE WITH UNITARY OR MULTI-PARTITE SEALING BAR

Heinz Lamm, Esslingen-St. Bernhardt, and Lothar Kortner, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Mar. 6, 1972, Ser. No. 232,000
Claims priority, application Germany, Mar. 6, 1971, 2110817
Int. Cl. F01c *19/02, 21/00;* **F04c** *27/00*
U.S. Cl. 418—122 **7 Claims**



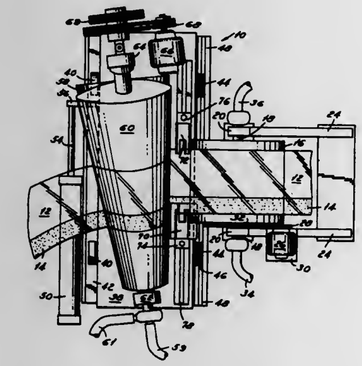
1. A rotary piston internal combustion engine with a housing including lateral parts and a casing and with a piston having a piston axis which piston is provided with several piston grooves extending substantially parallel to the axis over substantially the entire piston width, into which grooves radial sealing bar means are radially movably inserted, characterized in that at least one of said sealing bar means is multi-partite and consists of a center part and two corner parts, at least one of said corner parts includes plural adjacent surfaces extending at an angle to one another to define upper and lower corner part separating planes, said central part has at least one

end which includes plural adjacent surfaces extending at an angle to one another to define upper and lower central part separating planes, each of said corner part separating planes faces a corresponding central part separating plane, and said central part abuts said at least one corner part only at the respective upper separating planes.

3,885,899
APPARATUS FOR EXPANDING A LAMINATING INTERLAYER

Daniel J. Gurta, Westland, and George A. Koss, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 5, 1974, Ser. No. 489,272
Int. Cl. B29c 17/00; B29d 7/24
U.S. Cl. 425—150 **6 Claims**

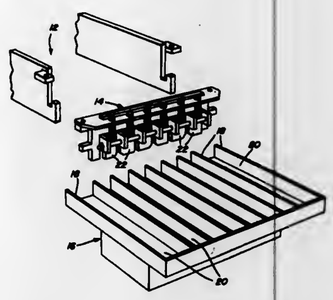


1. An apparatus for expanding a laminating interlayer which comprises:
feeding means for feeding a continuous web of laminating interlayer material from a supply thereof;
heating means associated with said feeding means for heating said web to a temperature whereat it is pliable, said heating means and said feeding means being stationary;
a movable platform adjacent to said last two mentioned means;
controllable means for moving said movable platform in a direction perpendicular to the path of travel of said web being fed from said feeding means;
cooling cone means both for applying a stretching force to and for cooling said web, said cooling cone means having a slant height greater than the width of said web whereby a different radius of curvature may be developed in said web depending upon the location along the slant height of said cooling cone means over which said web passes; structure means for rotatably mounting said cooling cone means on said movable platform;
edge position sensing means secured to said platform for sensing the location of one edge of said web at a position located between said feeding means and said cooling cone means, said edge position sensing means developing a signal indicative of the location of said edge with respect thereto; and
means responsive to the signal of said edge position sensing means for operating said controllable means to adjust said movable platform to keep said edge of said web located in a particular position with respect to said edge position sensing means and thereby with a particular location along the slant height of said cooling cone means.

3,885,900
FEED BOX CUT-OFF GATE

George E. Kanta, Box 96, Three Forks, Mont. 59752

Filed Sept. 21, 1973, Ser. No. 399,614
Int. Cl. B29c 3/04
U.S. Cl. 425—219 **13 Claims**



1. A cut-off gate for a feed box of a molding machine, comprising, in combination:
a. a plurality of cut-off shoes, each shoe associated with a respective compartment of an associated mold box; and
b. means for adjustably mounting the cut-off shoes on the cut-off gate and permitting each shoe to be adjusted independently of each other shoe whereby a height of an article molded in each mold box compartment is variable, the means for adjustably mounting including:
i. a bar mountable on a feed box;
ii. a plurality of adjusting members mounted on and spaced along the bar, each adjusting member associated with a respective one of the cut-off shoes;
iii. means connected to the cut-off shoes for cooperatively engaging with the adjusting members, mounting the shoes on the bar side-by-side in a common plane, and permitting the adjustment of the cut-off shoes independently from one another; and
iv. means for biasing the bar and cut-off shoes away from one another, the means for biasing including a plurality of compression springs, each spring arranged adjacent a respective adjusting member and with end portions of the spring abutting both the bar and the means for cooperatively engaging.

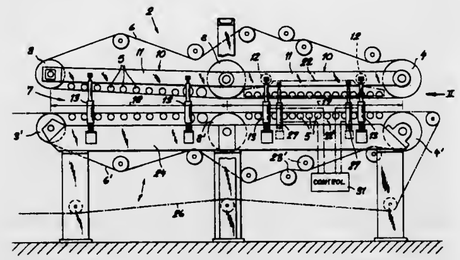
3,885,901
CONTINUOUS PREPRESS FOR FIBERBOARD PLANT

Wolfgang Reiners, Kapellen Kreis Moers, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany

Filed Apr. 3, 1974, Ser. No. 457,626
Claims priority, application Germany, Apr. 4, 1973, 2316781
Int. Cl. B29j 5/04, 5/08; B30b 5/04
U.S. Cl. 425—371 **6 Claims**

1. A roller frame for a continuous band press, said frame comprising:
a pair of longitudinally extending generally horizontal beams;
a pair of transversely extending generally horizontal beams bridging said longitudinal beams;
means rigidly fixing one end of each transverse beam to a respective one of said longitudinal beams;
a ball joint between the other end of each transverse beam and the other respective longitudinal beam;
a pair of generally parallel horizontally spaced rollers received between said longitudinal beams generally at the ends thereof;

a self-aligning bearing rotatably holding each end of each roller on the respective longitudinal beam; and

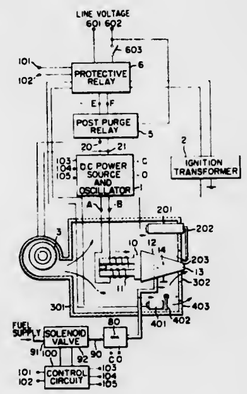


means for limited transverse displacement between each roller and a respective longitudinal beam.

3,885,902
ULTRASONIC GENERATOR AND BURNER

Hiroshi Fujieda, Yamatokoriyama, and Taro Yamamoto, Uji, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 23, 1973, Ser. No. 381,786
Claims priority, application Japan, July 31, 1972, 47-77218
Int. Cl. F23c 3/02, 11/00
U.S. Cl. 431—1 **22 Claims**

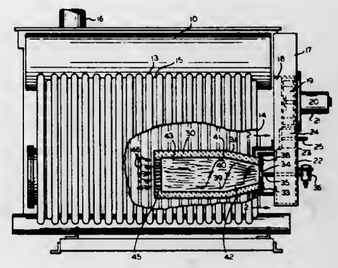


1. An ultrasonic generator comprising in combination
a. an ultrasonic transducer whose motional admittance becomes maximum at a resonant frequency,
b. an oscillator comprising an amplifier driving said ultrasonic transducer with a square waveform voltage at a frequency substantially equal to said resonant frequency, whereby a surface of the transducer oscillates and a feedback circuit for feeding back to said amplifier an AC control voltage in proportion to the driving current which drives said ultrasonic transducer,
c. a DC power source for supplying DC power to said oscillator, said DC power source being provided with a DC voltage regulator and
d. means for converting said AC control voltage into a DC control input voltage for said regulator.

3,885,903
REDUCTION OF POLLUTANTS IN GASEOUS HYDROCARBON COMBUSTION PRODUCTS

Paul G. La Haye, Cape Elizabeth, Maine, assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Oct. 30, 1972, Ser. No. 302,133
Int. Cl. F23c 11/00, 9/02
U.S. Cl. 431—8 **19 Claims**



1. A method of burning fuel in a manner to reduce the nitrogen oxides, carbon monoxide, and unburned hydrocarbons and carbonaceous particulates in the exhaust gases therefrom, comprising:
a. developing in a continuous combustion zone an ignited core stream constituting a fuel-rich mixture of fuel and substantially less than the amount of air required for stoichiometric combustion,
b. introducing into said continuous combustion zone a sheath of air which surrounds and interfaces directly with said core stream and which flows therealong without discontinuity, the quantity of air introduced as said sheath being at least the entire quantity of additional air and not substantially more than the additional air required to make up the stoichiometric amount for complete combustion of said fuel,
c. passing said sheath in a heat exchange relation with cooling means for extracting some heat permanently from said core stream, and then
d. allowing the incompletely oxidized gaseous combustion products and said sheath air to mix in non-discrete stages in said combustion zone and effect further combustion of some of the theretofore incompletely oxidized components of said fuel at a low enough temperature to avoid production of substantial quantities of nitrogen oxides.

3,885,904
SYSTEM FOR VAPORIZING OIL

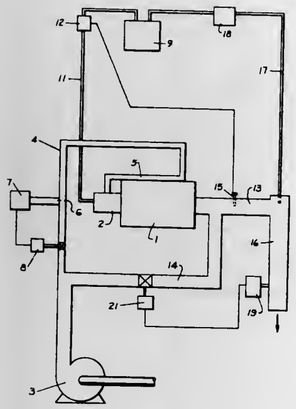
Chung Liao Feng, Radnor, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Mar. 1, 1974, Ser. No. 447,161
Int. Cl. F23d 11/44
U.S. Cl. 431—11 **4 Claims**

1. The method of preparing a liquid hydrocarbon for combustion which comprises:
burning fuel and air to produce hot products of combustion,
mixing a supply of additional air with said products of combustion,
regulating the supply of fuel to maintain the mixture of additional air and products of combustion at a temperature above the temperature of vaporization of said liquid hydrocarbon,
injecting liquid hydrocarbon into said hot mixture thereby

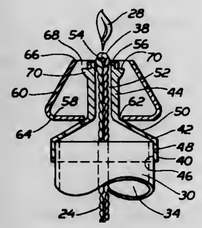
to vaporize the hydrocarbon and form a

to vaporize the hydrocarbon and form a vapor-air mixture, and



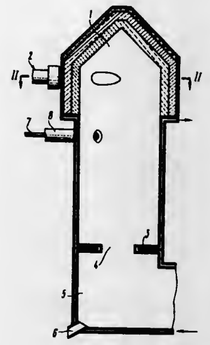
adjusting said supply of additional air to obtain a ratio of air to vapor so that the vapor-air mixture is combustible.

3,885,905
CANDLE WITH AUTOMATIC SNUFFER
Clayton Giangiulio, 5 Skyline Dr., Malvern, Pa. 19355
Filed Dec. 14, 1973, Ser. No. 424,992
Int. Cl. F23q *25/00*
U.S. Cl. 431—34 **9 Claims**



1. A candle arranged to flame when in a stable upright orientation and to automatically extinguish its flame when suddenly impacted or knocked over out of its upright orientation, comprising tubular a body for containing a combustible fuel and terminating in a first end having a cap with a tapered surface, a wick extending into said cap, with a predetermined length portion of the wick extending out of the apex of said tapered surface, said extending wick portion being exposed and serving as the site of the flame and automatic snuffer means comprising a hollow member having a base wall and an inwardly extending side wall projecting therefrom, said base wall having a central opening therein into which a portion of said tapered surface extends, said snuffer being loosely coupled to said first end, while being freely rotatable about the axis of said extending wick portion and pivotable with respect thereto, whereupon said snuffer overlies the exposed portion of the wick to extinguish the flame when the candle is suddenly impacted or tipped over.

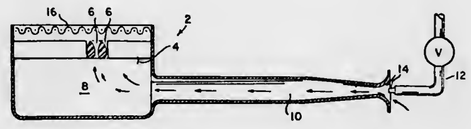
3,885,906
CYCLONE FURNACE
Alexei Petrovich Shurygin, Novye Cheremushki, kvartal 24, korpus 227, kv. 35; Mikhail Naumovich Bernadiner, Ozernaya ulitsa, 36, kv. 20; Boris Semenovich Edlevich, ulitsa 9 Rota, 14, kv. 10; Georgy Nesanelovich Rubinshtein, ulitsa Shukhova, 17, kv. 10; Emanuil Ivanovich Shipov, M. Afanasievsky pereulok, 6, kv. 4; Viktor Georgievich Gubarev, ulitsa Novaya Bodraya, 5, kv. 341; Igor Alexandrovich Lepakhin, ulitsa Bakinskikh Komissarov, 3, korpus 1, kv. 43; Rudolf Rudolfovich Tripushkin, Korennaya ulitsa, 8, kv. 53, all of Moscow; Petr Mikhailovich Sharov, Shekinsky raion, poselok Pervomaisky, ulitsa Komsomolskaya, 33, kv. 22, Tulskaya oblast; Boris Isaevich Lurie, Shekinsky raion, poselok Pervomaisky, ulitsa Komsomolskaya, 33, kv. 22, Tulskaya oblast; Arkady Dmitrievich Vodnev, Shekinsky raion, poselok Pervomaisky, ulitsa Oktyabrskaya, 16a, kv. 10, Tulskaya oblast; Alexandr Bentsionovich Moshkovich, ulitsa Yasnaya, 6, kv. 49, Shekino Tulskoi oblasti; Pavel Alexandrovich Lupanov, ulitsa Sovetskaya, 32, kv. 154, Vidnoe Moskovskoi oblasti, all of U.S.S.R.; Viktor Leonidovich Lukoshkin, deceased, late of ulitsa Novaya, 6, Solnechnogorsk Moskovskoi oblasti, U.S.S.R., and by Tatyana Dmitrievane Lukoshkina, administrator, ulitsa Novaya, 6, Solnechnogorsk Moskovskoi oblasti, U.S.S.R.
Filed May 21, 1974, Ser. No. 471,919
Int. Cl. F23c *5/18*
U.S. Cl. 431—173 **5 Claims**



1. A cyclone furnace for incinerating fluid industrial waste material containing organic or both organic and mineral components, comprising: a vertical cylindrical chamber; burner means arranged in the upper portion of said chamber tangentially to its walls for supplying fuel and air to said chamber; fluid waste atomizers arranged transversely of said chamber under said burner means; nozzles for supplying air, combined with said atomizers; a bottom of said chamber with an orifice provided therein; a gas duct for removing combustion products, communicating with said chamber through said orifice; a tap for letting out fused mineral components, provided in the lower portion of said gas duct.

3,885,907
INFRARED BURNER AND APPARATUS FOR PRODUCING SAME
Walter Dorwin Teague, Jr., Nyack, N.Y., assignor to Columbia Gas System Service Corporation, Wilmington, Del.
Continuation of Ser. No. 78,549, Oct. 6, 1970, abandoned, Continuation-in-part of Ser. No. 775,978, Oct. 2, 1968, abandoned. This application Dec. 26, 1972, Ser. No. 318,043
Int. Cl. F23d *13/12*
U.S. Cl. 431—328 **6 Claims**

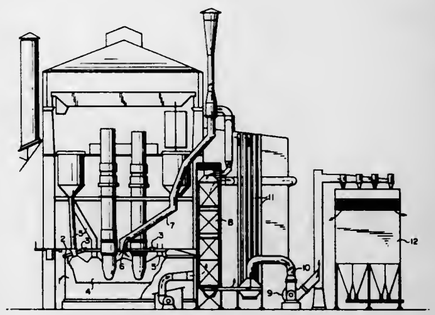
1. In a burner construction for an air-gas mixture, an orifice plate formed of a ceramic material having approximately 60 orifices per square inch of surface area formed therein defining parallel flow paths for the air-gas mixture between the upstream side of the plate and the flame front side of the plate, each of said orifices having parallely extending side walls defining a throat portion having the minimum cross-sectional area of the orifice and having a maximum dimension of the order of 0.046 inches and extending from the upstream side of the plate towards the center of the plate, each orifice also having a diverging portion extending from said throat portion towards said flame front side in the direction of flow of said air-gas mixture, said diverging portion defining an included angle of the order of 13° and having a smooth surface throughout its entire extent, said diverging portion also having a length of the order of 0.033 inches and a cross-sectional area at the flame front side of the plate which is at least twice the area of said throat portion and having a maximum dimension of the order of 0.118 inches, said throat portion having a minimum cross-sectional area of the orifice along substantially its entire length whereby the rate of flow of said air-gas mixture is maximum in said throat and is decreased in said diverging portion of said orifices, said maximum flow rate being greater than the rate of advance of flame in the air-gas mixture.



3,885,908
CLOSED ELECTRIC FURNACE AND METHOD FOR OPERATION THEREOF
Yoshishige Nagoya; Takashi Takeuchi; Kosuke Murai, and Hirota Amano, all of Hachinobeshi, Japan, assignors to Pacific Metals Co., Ltd., Tokyoto, Japan
Filed Jan. 15, 1974, Ser. No. 433,494
Claims priority, application Japan, Mar. 2, 1973, 48-24392
Int. Cl. F27b *3/20*
U.S. Cl. 432—1 **6 Claims**

1. A method for operating a closed electric furnace for the smelting of ferro-nickel, ferro-alloys, pig iron, titanium slag and the like, said process comprising the steps of:

providing an electric furnace having a cover thereon, said cover having therein a plurality of air inlet holes;
supplying into said furnace a charge of material to be smelted, while forming and maintaining a combustion space between said charge and said cover;
operating said electric furnace to smelt said charge and to thereby form in said combustion space carbon monoxide containing by-product gases;
sucking combustion air through said air inlet holes into said combustion space and completely burning herein the carbon monoxide from said by-product gases to form combustion gas;
heating new charges of said material in said furnace by the heat from the burning reaction of said carbon monoxide and by the radiant heat from operation of said electric furnace;
forcedly exhausting said combustion gas from said combustion space by means of an exhaust fan of a dust collector;
passing said thus exhausted combustion gas through a heat exchanger and therein effecting heat exchange between said combustion gas and a cold blast, thus cooling said combustion gas and heating said cold blast to form a hot blast;
passing said thus cooled combustion gas to said dust collector and therein removing dust from said cooled combustion gas;
releasing said thus purified combustion gas to the atmosphere; and
using said hot blast in a separate processing operation.



4. A smelting apparatus comprising:
a closed electric furnace having a cover thereon, said cover having therein a plurality of air inlet holes, means for introducing into said furnace a charge of material to be smelted, and an exhaust outlet, there being a combustion space between said charge and said cover;
means for operating said electric furnace to smelt said charge and to form carbon monoxide containing by-product gases;
fan means connected to said exhaust outlet for reducing the pressure in said combustion space and for thus sucking air through said air inlet openings into said combustion space and completely burning therein the carbon monoxide from said by-product gases to form combustion gas, said combustion gas being withdrawn from said combustion space through said exhaust outlet by said fan means;
heat exchanger means positioned between said exhaust outlet and said fan means for cooling said combustion gas, said heat exchanger means including means for passing a cold blast by said combustion gas in heat exchange

relation therewith, thereby cooling said combustion gas and heating said cold blast to form a hot blast; and

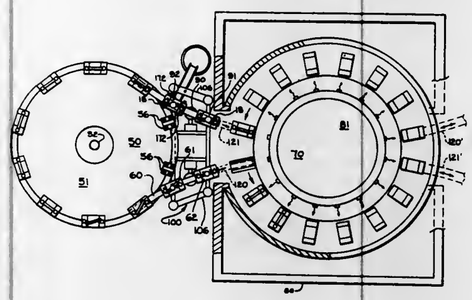
dust collector means positioned downstream of said fan means for receipt of said cooled combustion gas and for removing dust therefrom.

3,885,909
COMPRESSION MOLDING APPARATUS

Bruce C. Rockwell, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Division of Ser. No. 388,012, Aug. 13, 1973, Pat. No. 3,844,701. This application Aug. 1, 1974, Ser. No. 494,261
Int. Cl. F27b *9/14*
U.S. Cl. 432—122 **5 Claims**

1. An apparatus for compression molding articles positioned within mold carriers comprising, a first table having spaced means on its periphery to receive a plurality of mold carriers, a curing oven, a second table within said oven having spaced means on its periphery to receive a plurality of mold carriers and translating means for alternatively translating the mold carriers from said first table to said second table and from said second table to said first table, said translating means comprising a pair of arcuate members, each arcuate member having a first end radially aligned with the periphery



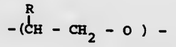
of said second table and a second end tangentially aligned with the periphery of said first table.

3,885,910
PROCESS FOR FINISHING FIBROUS MATERIALS WITH CHLORITES AND POLYMERIZABLE COMPOUNDS

Klaus Fischer, Kelkheim, Taunus, and Otto Deschler, Niederhofheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 29, 1972, Ser. No. 319,463
Claims priority, application Germany, Jan. 3, 1972, 2200112
Int. Cl. D06l *30/6*
U.S. Cl. 8—108 **11 Claims**

1. A process for bleaching and finishing fibrous materials with salts of chlorous acid and polymerizable monomers, which comprises applying to the fibrous materials a composition consisting essentially of a salt of chlorous acid as polymerization initiator and bleaching agent, a polymerizable olefinically unsaturated compound, 0.5 up to 80 percent by weight of water and at least 15 percent by weight of a polyoxyalkylene condensate of an organic compound having 1 to 10 active hydrogen atoms which condensate contains at least one alkylene oxy radical of the formula

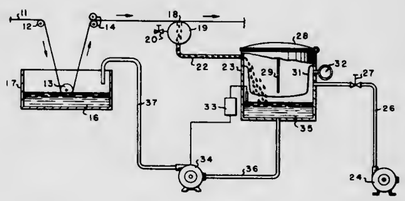


wherein R is hydrogen or the methyl or ethyl group, which radical is linked through an oxygen or nitrogen atom to the organic compound having the active hydrogens.

3,885,911
TEXTILE MATERIAL WITH SOIL RELEASE

Emile E. Habib, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 756,072, Aug. 28, 1968, abandoned. This application Oct. 14, 1968, Ser. No. 767,382
Int. Cl. D06
U.S. Cl. 8—115.6 **12 Claims**



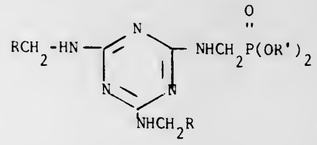
1. A process for producing improved knitted or woven textile material comprising linear polyester fibers which comprises applying thereto between about 30 and 100 percent by weight of an aqueous acrylic copolymer soil release composition containing about 2 to 40 percent copolymer, and passing air through said textile material at a rate between about 50 and 100 feet per second sufficient to remove between about 40 and 60 percent soil release composition from the interstices while inhibiting the formation of substantially any excessive film of said composition on the surface of said textile.

3,885,912
METHOD OF RENDERING TEXTILES FLAME RETARDANT WITH PHOSPHORUS CONTAINING MELAMINE

Peter Golborn, Lewiston, and James J. Duffy, Buffalo, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Division of Ser. No. 239,797, March 30, 1972, abandoned. This application Sept. 28, 1973, Ser. No. 401,767
Int. Cl. D06m *1/00*
U.S. Cl. 8—116 P **16 Claims**

1. A process for rendering textiles flame retardant which comprises applying to said textile, in an amount of from about 5 to about 40 percent by weight, a compound of the formula



wherein R is independently selected from the group consisting of —OH and



and wherein R′ is lower alkyl.

3,885,913
METHOD OF INHIBITING THE CORROSION OF METALS IN AN ACIDIC ENVIRONMENT USING QUATERNARY AMMONIUM SALTS OF POLYEPIHALOHYDRIN

Derek Redmore, Ballwin, and Frederick T. Welge, Brentwood, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Oct. 26, 1972, Ser. No. 301,176
Int. Cl. C23f *11/04, 11/14;* **C23g** *1/06*
U.S. Cl. 21—2.7 R **7 Claims**

1. The process of inhibiting corrosion of ferrous metals in an acid system which comprises adding to the acid system a small but effective inhibiting amount of a quaternary compound formed by the reaction of a polyepihalohydrin and a tertiary amine where the tertiary amine is a heterocyclic aromatic compound containing a tertiary nitrogen as part of the ring and is a member selected from the group consisting of pyridine, quinoline, isoquinoline, alkyl derivatives thereof, and mixtures thereof.

3,885,914
POLYMER-ZINC CORROSION INHIBITING METHOD

William Robert Hollingshad, Bethel Park, and Paul Hotchkiss Ralston, Pittsburgh, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

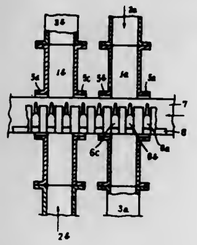
Filed June 4, 1973, Ser. No. 367,083
Int. Cl. C23f *7/10*
U.S. Cl. 21—2.7 R **4 Claims**

1. A method of inhibiting the corrosion of metals in a water system comprising maintaining in the water of said system at least about 5 ppm of a composition comprising zinc and at least one low molecular weight polymer selected from the group consisting of polyacrylamide, poly acrylic acid and sodium polacrylate.

3,885,915
METHOD AND APPARATUS FOR THE STERILIZATION OF AMPOULES WITH PHARMACEUTICAL LIQUID THEREIN

Isamu Utsumi, Kyoto; Kanae Murakami, Osaka; Teruo Murayama, Saitama, and Tokuo Takahashi, Tokyo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka and Nihon Denshi Kabushiki Kaisha, Tokyo, both of, Japan

Filed Dec. 1, 1972, Ser. No. 311,434
Claims priority, application Japan, Dec. 1, 1971, 46-97434; Feb. 21, 1972, 47-18261
Int. Cl. A61l *1/00, 3/00*
U.S. Cl. 21—54 R **6 Claims**

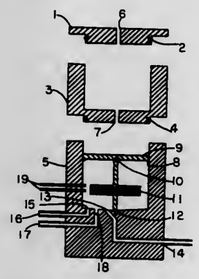


1. A method for sterilizing liquid-containing ampoules having branch parts which comprises the steps of: inclining each ampoule containing a liquid to an angle of inclination so that the liquid does not enter the branch part of the ampoule; rotating the ampoule about its longitudinal axis while in the inclined position; and irradiating said ampoule with microwaves, so that the liquid does not enter into the branch part of the ampoule during the irradiation process.

3,885,916
APPARATUS FOR DETERMINING THE WATER CONTENT OF LIQUIDS AND GASES

Albert F. Hadermann, Rt. 1, Ijamsville, Md. 21754, and Paul F. Waters, 3318 45th St. N.W., Washington, D.C. 20016

Filed Aug. 1, 1973, Ser. No. 384,563
Int. Cl. G01n *31/16, 33/18, 33/28*
U.S. Cl. 23—253 R **3 Claims**

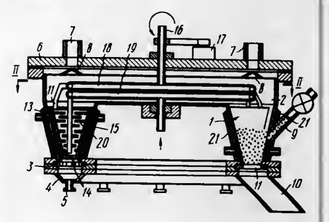


1. An apparatus for determining the water content of a liquid or gas which consists essentially of upper and lower cylindrical cells provided with Teflon "O" ring seals to prevent the leakage of atmospheric moisture into the titration cell; the upper chamber being filled with a drying agent to ensure that air entering the titration cell upon withdrawing the fluid contents is dry; the lower chamber serving as a vessel within which the titration with Karl Fischer Reagent is performed and being fitted with a removable stirring rotor, clad with an inert protective material, located between one fixed and one removable pivot; provision for detecting the end point of the titration by a "dead-stop" technique employing two platinum electrodes in communication with the cell contents; access to the lower chamber being provided by apertures in the body of the chamber wall and fitted with nipples for connection to tubing, for connection to said nipples and serving as ducts for sample entry, reagent entry and for filling and emptying the cell contents without complete disassembly.

3,885,917
APPARATUS FOR CARRYING OUT CONTINUOUS PHYSICAL AND CHEMICAL PROCESSES IN FLUIDIZED BED OF LOOSE MATERIAL

Valentina Anatolievna Osenkina, ulitsa Kurchatova, 5b, kv. 20; Viktor Borisovich Khorolsky, ulitsa Kurchatova, 9, kv. 39, and Jury Sergeevich Ippolitov, ulitsa Lapina, 9, kv. 10, all of Irkutsk, U.S.S.R.

Filed Aug. 23, 1973, Ser. No. 390,947
Claims priority, application U.S.S.R., Dec. 20, 1972, 1719485
Int. Cl. B01j *9/18*
U.S. Cl. 23—284 **13 Claims**



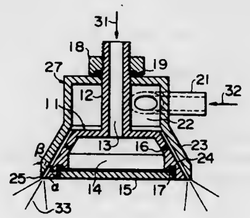
1. An apparatus for carrying out continuous physical and chemical processes in fluidized bed of loose material comprising: a working chamber having in a plan view a ring-shaped configuration; a bottom of said working chamber used as a gas distributing grid; partitions in said working chamber adjoining walls and said bottom of the working chamber and dividing it subsequently into separate sections; said partitions being hollow and including means for feeding a heat-carrying medium into their inner cavities and for discharging it therefrom; a common driving shaft extending vertically along the central axis of the working chamber, said shaft rigidly mounting said partitions so that they are adapted to be moved along said working chamber ensuring the movement of the loose material; means for feeding gas beneath said gas distributing grid and for discharging it from the apparatus; and unions for feeding the loose material into the working chamber and for discharging it therefrom.

3,885,918
EXHAUST GAS CLEANING APPARATUS

Fumio Isahaya, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Sept. 1, 1972, Ser. No. 285,644
Claims priority, application Japan, Sept. 10, 1971, 46-69675
Int. Cl. B01d *47/06*; **B05b** *7/00*; **C01b** *17/62*
U.S. Cl. 23—284 **18 Claims**

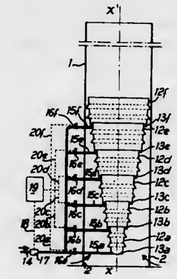
1. An exhaust gas cleaning apparatus comprising:
a. an inlet for directing an exhaust gas containing acid material from a source of combustion;
b. a reaction tower connected substantially at the top end with said inlet and at the other end with an exhaust gas outlet;
c. a separator having one end connected to said exhaust gas outlet and the other end with an outlet port; and
d. a two-fluid spraying device provided in said reaction tower for spraying, in the form of fine liquid particles, a liquid containing alkali material which can react with said acid material, said spraying device being provided with a port for introducing compressed gas which is adapted to spray the liquid under pressure, said spraying device further having diverging spraying passages disposed on a diverging conical surface, said passages being provided with separate inlets for said liquid alkali material and for said gas.



3,885,919
RESIDUAL GAS BURNER WITH SUPERIMPOSED, INCREASING SIZE BURNING CHAMBERS

Marcel T. Pillard, 6 Avenue Frederic Mistral, Marseille, 13008 France

Filed Nov. 19, 1973, Ser. No. 417,144
Claims priority, application France, Nov. 24, 1972, 72.42944
Int. Cl. F23c *9/04*; **F23g** *7/06*
U.S. Cl. 23—277 C **11 Claims**

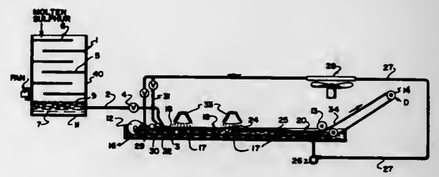


1. A device for burning residual gases comprising a plurality of vertically superposed, open-ended, co-axial tubes, each vertically successive tube having an interior volume greater than the interior volume of the tube next below to form a plurality of vertically superposed chambers of successively greater volume, the uppermost tube opening upwardly and the upper end of each other tube opening into the lower end of the tube next above, each tube also having at least a portion of the lower end thereof spaced from the upper end of the tube next below to provide air passageways between each pair of tubes, a plurality of residual gas burners, at least one at the lower portion of each tube and extending around the axis thereof, means for supplying said residual gases to said burners including control means for selectively supplying said residual gases to each said burner, means for measuring the flow of said residual gases in said supplying means and operating means responsive to said measuring means and connected to said control means for increasing the number of said burners to which said residual gases are supplied with an increase in said flow of said residual gases.

3,885,920
METHOD FOR THE SOLIDIFICATION OF MOLTEN SULPHUR

Ernest Ralph Ellitborpe, and Ronald Bruce Fletcher, both of Calgary, Alberta, Canada, assignors to Vennard & Ellitthorpe Ltd., Calgary, Alberta, Canada

Division of Ser. No. 207,909, Dec. 14, 1971, Pat. No. 3,832,145. This application Mar. 4, 1974, Ser. No. 448,152
Int. Cl. C01b *17/02, 17/14*
U.S. Cl. 23—293 S **5 Claims**



1. A method of solidifying molten sulphur comprising the steps of:
a. providing a movable endless member which is so surfaced as to inhibit the adherence of sulphur thereto;
b. forming on said member a plurality of separate and distinct undulations which are shaped so as to form at least three pools of molten sulphur thereon;
c. feeding molten sulphur onto said member from a feeding section at a predetermined rate such that a separate and distinct pool of molten sulphur is caused to form within each of said undulations;
d. maintaining the speed of said member in relation to the feed rate of said sulphur and in relation to the angle and length of the surface of said undulations remote from said feeding section so that molten sulphur forms into a layer and solidifies on said member as it is caused to pass through said pools and so that in continuous operation a constant level of molten sulfur in said pools is maintained;
e. providing a bath of water below said member of a depth sufficient to partially support said member and subjecting said bath water to a recirculation and cooling treatment; and
f. delivering cooled sulphur in a stage of solidification from the surface of said movable member.

3,885,921
PREPARING PURIFIED MACROMOLECULAR SOLUBLE PRUSSIAN BLUE

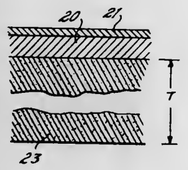
Yoshio Matsumoto, Fujisawa; Michiko Shirai, Tokyo; Hiroko Saito, Yokohama; Takeshi Kawashima, and Yuzuru Sakabe, both of Tokyo, all of Japan, assignors to Kitazato Gakuen, Tokyo, Japan

Filed Feb. 1, 1973, Ser. No. 328,652
Int. Cl. B01d *21/01*; **C01c** *3/12*
U.S. Cl. 23—300 **4 Claims**

1. A method of preparing a reagent for determining the void volume of a gel column, which comprises purifying a crude aqueous solution of Soluble Prussian Blue to remove inorganic substances of smaller molecular size from an inorganic macromolecular metal complex compound by admixing a concentrated aqueous solution of a member selected from the group consisting of KCl KBr and $(NH_4)_2SO_4$ with the crude solution, thus causing macromolecular particles of the Soluble Prussian Blue, $KFE^{II}Fe^{III}(CN)_6$, to precipitate out of the crude solution, and separating the precipitated macromolecular particles from the resultant mixture to obtain purified Soluble Prussian Blue.

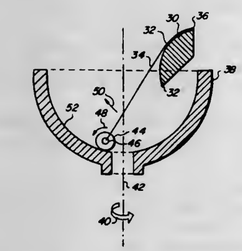
3,885,922

3,885,922
PRESSURE VESSEL AND BIMETALLIC COMPONENTS
Royal David Thomas, Jr., Narberth, and James E. Norcross, Media, both of Pa., assignors to Arcos Corporation, Philadelphia, Pa.
Continuation-in-part of Ser. No. 237,021, May 22, 1972, abandoned, which is a division of Ser. No. 74,974, Sept. 24, 1970, Pat. No. 3,696,228. This application Apr. 25, 1974, Ser. No. 464,065
Int. Cl. B32b *15/00*
U.S. Cl. 29—191 **4 Claims**



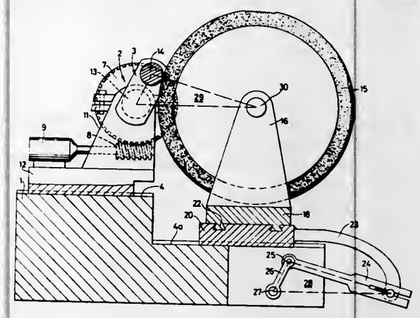
1. A heavy-walled multi-layer metallic vessel comprised of a corrosion resisting surface layer, a structural layer bonded thereto, and a plurality of increments of weld deposited layer bonded to the structural layer, in which said corrosion resisting layer is of an alloy or metal selected from the class consisting of AISI 300 series, AISI 400 series, nickel, nickel alloys, Copper Development Classification Alloys, aluminum, aluminum alloy, titanium, titanium alloy, zirconium, zirconium alloy, a refractory metal, a noble metal and a cobalt base alloy; the said structural layer is from a steel selected from the class consisting of mild carbon steels, medium carbon steels, high carbon steels, low alloy steels and medium alloy steels; and said weld deposited layer is selected from the class consisting of mild carbon steel weld metal, high carbon steel weld metal, low alloy steel weld metal and medium alloy steel weld metal, the weld deposited layer having the dendritic grain structure and metallurgical properties characteristic of electroslag deposited metal.

3,885,923
GENERATION OF CURVED SURFACES ON A WORKPIECE
Leo F. Polak, Van Nuys, and Bernard E. Kalensher, Altadena, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Apr. 11, 1974, Ser. No. 460,256
Int. Cl. B24b *13/00*
U.S. Cl. 51—33 W **6 Claims**



1. A method for generating a predetermined contour on a surface of a workpiece supported on a member comprising the steps of:
providing a template having a curved surface which corresponds to the contour to be generated on the surface of said workpiece, an elongated flexible member being affixed to one end of said template curved surface and extending along the curved surface, a first contour forming member being affixed to the other end of said elongated member,
moving said contour forming member into contact with a surface of said workpiece, and
moving said elongated member in a direction away from said curved surface of said template while maintaining said elongated member in an extended position and while said workpiece is rotated, whereby said predetermined contour is generated on said workpiece surface.

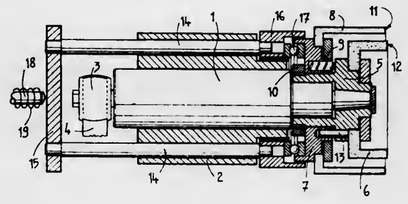
3,885,924
CRANKSHAFT GRINDING MACHINE
Kurt Marowsky, Offenbach/Main, Germany, assignor to Friedrich Schmaltz GmbH, Offenbach/Main, Germany
Filed June 24, 1974, Ser. No. 482,803
Claims priority, application Germany, July 2, 1973, 2333661
Int. Cl. B24b *5/42*
U.S. Cl. 51—50 R **5 Claims**



1. A grinding machine for grinding a crankshaft having a main bearing pin and a crank pin arranged to revolve around the main bearing pin during rotation of the crankshaft, the machine comprising
1. means for mounting the crankshaft for rotation about the axis of the main bearing pin,
2. a grinding wheel mounted for movement in relation to the crankshaft and for rotation about an axis substantially parallel to the axis of rotation of the main bearing pin of the crankshaft,
3. a slide means supporting the grinding wheel for reciprocation in relation to the crankshaft in a direction perpendicular to the axes of rotation, and
4. a crank drive operatively connected to the slide means for reciprocating the slide means,
a. the lengths of the cranks of the crankshaft and of the crank drive being identical and
b. the crank drive including a push rod connected to the slide means, the length of the push rod being identical to the distance between the axis of the crank pin and the axis of rotation of the grinding wheel.

3,885,925
METHOD FOR THE SHARPENING OF FOUR FACES DRILLS AND SHARPENING MACHINE FOR CARRYING OUT THIS METHOD
Alexander Tatar, 68 Department of Haut Rhin, Hagenthal-le-Bas, France
Filed Oct. 17, 1973, Ser. No. 407,131
Claims priority, application Switzerland, Oct. 23, 1972, 15461/72
Int. Cl. B24b *5/36*
U.S. Cl. 51—122 **5 Claims**

1. Method for sharpening a four faced drill having pairs of cutting and clearance faces, the sharpening being effected with two grinding wheels respectively having grinding surfaces of different grain roughnesses, said method comprising the steps of: positioning the grinding wheels relative to each other such that only the wheel with the rougher grain is operable on a drill face, positioning the drill relative to the wheels to present a clearance face thereof for sharpening, urging the drill to pass opposite the two grinding wheels in one direction such that the clearance face thereof contacts only the rougher grain wheel, next positioning the wheels relative to each other such



that both wheels are operable on a drill face, re-positioning the drill relative to the wheels to present a cutting face thereof for sharpening, and moving the drill in a direction opposite to said one direction such that the cutting face of the drill contacts first the rougher grain wheel and immediately thereafter the thinner grain wheel to finish the sharpening of the cutting face of the drill.

3,885,926
MODIFIED CALCIUM CHLORIDE BRINE DESICCANT
Francis S. Manning; Paul Buthod; Robert A. Hodgson, and Ibrahim Bagci, all of Tulsa, Okla., assignors to Maloney-Crawford Tank Corporation, Tulsa, Okla.
Filed June 26, 1974, Ser. No. 483,211
Int. Cl. B01d *53/02, 53/14*
U.S. Cl. 55—29 **1 Claim**

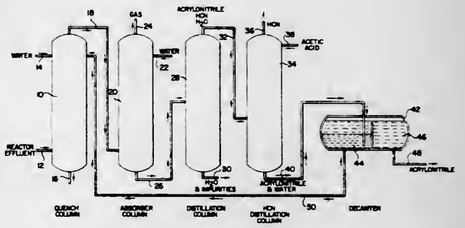
1. The method of dehydrating gaseous petroleum hydrocarbons by passing them through a solution of 100 parts of 50 weight percent calcium chloride plus 15 parts magnesium nitrate.

3,885,927
PROCESS FOR REMOVING CARBON DIOXIDE FROM GAS STREAMS
John Delano Sherman, Chappaqua, and Ronald Jay Ross, Upper Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Feb. 5, 1974, Ser. No. 439,711
Int. Cl. B01d *53/02*
U.S. Cl. 55—68 **3 Claims**

1. Process for removing carbon dioxide from gas streams which comprises providing a gas stream comprising nitrogen and carbon dioxide, said gas stream containing not more than about 1000 ppm by volume of carbon dioxide, passing said gas stream through an adsorption zone at a temperature of from −40°F to + 120°F at a pressure of from about 6 to 170 atmospheres and at a feed rate of from 5000 to 5,000,000 standard cubic feet per hour, said adsorption zone containing the barium cation form of zeolite X in which the BaO/Al_2O_3 molar ratio is at least 0.90, whereby the carbon dioxide is selectively adsorbed and the effluent from the adsorption zone is substantially free of carbon dioxide.

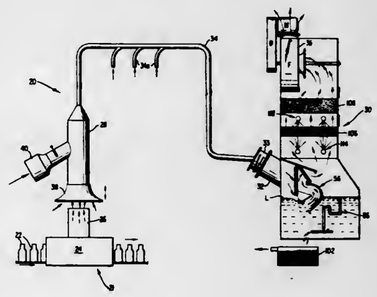
3,885,928
ACRYLONITRILE AND METHACRYLONITRILE RECOVERY AND PURIFICATION SYSTEM
Hsin Chih Wu, Parma, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio
Filed June 18, 1973, Ser. No. 371,043
Int. Cl. B01d *47/02*
U.S. Cl. 55—85 **6 Claims**

1. In the process for the recovery and purification of acrylonitrile or methacrylonitrile obtained by the ammoxidation of propylene or isobutylene wherein
a. the reactor effluent is directly contacted with an aqueous stream to cool the gases in a quench column;
b. the acrylonitrile and HCN are recovered in the form of an aqueous solution;
c. some of the water and impurities are removed by distillation to form a concentrated aqueous mixture of acrylonitrile and HCN;



d. the aqueous mixture of acrylonitrile and HCN is distilled in an HCN distillation column to remove the HCN in an overhead stream; and
e. a side stream in the HCN distillation column are fed to a decanter where an aqueous layer and an organic layer are formed, the improvement comprising
removing the aqueous layer from the decanter and recycling the aqueous layer to the quench column where it is directly contacted with the reactor effluent.

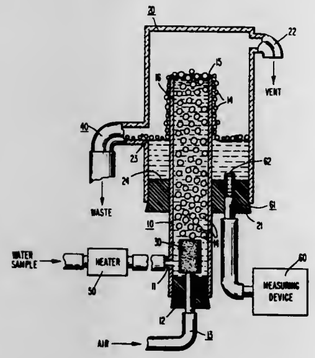
3,885,929
METHOD AND APPARATUS FOR CLEANING EXHAUST GAS
Richard S. Lyon, Carroll, Ohio, and Ralph L. Lyon, Wheaton, Ill., assignors to United McGill Corporation, Columbus, Ohio
Division of Ser. No. 171,686, Aug. 13, 1971, Pat. No. 3,789,109. This application Oct. 26, 1973, Ser. No. 410,206
Int. Cl. B01d *47/02*
U.S. Cl. 55—87 **51 Claims**



1. A method of cleaning a hot polluted gas comprising spraying a liquid into the hot gas to rapidly cool the gas, passing the cooled gas into a first scrubbing stage in which the gas is directed through the upper portion of a liquid bath and is vigorously mixed with liquid from the bath as it flows through a tortuous, scroll type passageway, with at least some of the pollutants and liquids entrained in the gas separating from the gas and falling into the bath as the gas leaves the scroll type passageway, then passing the gas through a second scrubbing stage formed by a scrubber pad which intersects the flow path of the gas, and continously wetting the scrubber pad

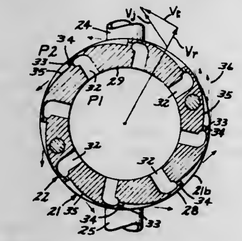
to enhance separation of the remaining pollutants from the gas as it passes through the pad.

3,885,930
APPARATUS FOR REMOVING AIR-IN-EXCESS-OF-SATURATION FROM WATER SAMPLES TO BE MEASURED
Carl C. Scheerer, 1442 Heather Ln., West Chester, Pa. 19380
Filed Apr. 30, 1974, Ser. No. 465,534
Int. Cl. B01d *19/00*
U.S. Cl. 55—196 **6 Claims**



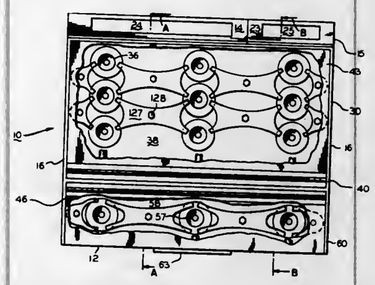
1. Apparatus adapted for use in removing air-in-excess-of-saturation from a water sample to be measured, comprising:
an air-sweep container, having an inlet through which the water sample to be measured enters, and having an outlet through which the water sample to be measured exits;
an air-release stone, positioned within said air-sweep container such that air bubbles emanating from said air-release stone sweep through the entirety of a water sample present within said air-sweep container;
a separation container, positioned so as to receive combined water sample, air bubble effluent from the outlet of said air-sweep container, adapted to permit the floatable separation of the air bubbles from the water sample; and
overflow withdrawal means, attached to said separation container, through which the separated air bubbles are withdrawn from said separation container, thereby resulting in a water sample within said separation container free of air-in-excess-of-saturation.

3,885,931
VORTEX FORMING APPARATUS AND METHOD
Robin E. Schaller, Burnsville, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 261,602, June 12, 1972, abandoned. This application May 30, 1974, Ser. No. 474,364
Int. Cl. B04c *3/00*
U.S. Cl. 55—261 **8 Claims**



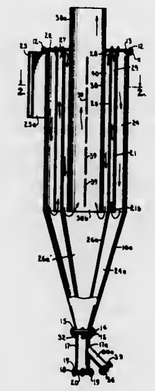
1. Apparatus for inertially separating particles from a fluid medium, comprising:
a. a chamber having an inlet for a flow of particle carrying fluid, and an outlet;
b. a ring-like vortex forming member mounted in said chamber between said inlet and outlet, having a central opening and an outer periphery, passage means including a plurality of spaced nozzles leading from said central opening to said outer periphery, and conduit means connected to said central opening for supplying high pressure fluid to said nozzles;
c. said nozzles being positioned in said vortex forming member to discharge a ring of high velocity jets of fluid outwardly into said chamber generally perpendicular to the flow of the particle carrying fluid and generally tangentially with respect to said periphery to impose a vortex flow on the flow of particle carrying fluid and submit the particles to centrifugal force, permitting separation thereof;
d. each of said nozzles comprising a straight, orifice of length no greater than its diameter configured to restrict the flow of fluid and generate a jet of substantially sonic velocity when supplied with fluid at a suitable pressure; and
e. said periphery of said vortex forming member having curved ramp surface means formed adjacent each nozzle to enhance the Coanda effect on each said jet to enhance attachment of the jet to said periphery of the vortex forming member.

3,885,932
DUST FILTRATION SYSTEM
Lionel G. Moore, Jr., and Thomas P. Flynn, both of Milwaukee, Wis., assignors to Super Products Corporation, Milwaukee, Wis.
Filed Jan. 10, 1974, Ser. No. 432,243
Int. Cl. B01d *46/44*
U.S. Cl. 55—314 **7 Claims**



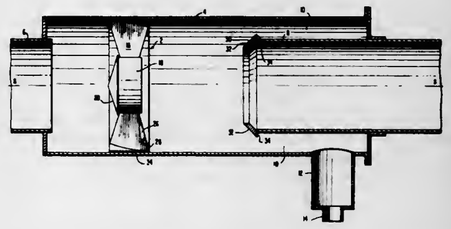
1. A vacuum loading or cleaning device comprising:
a material receiving chamber, said chamber including inlet means and outlet means,
vacuum pump means connected to said chamber outlet means for creating a vacuum in said chamber and for drawing a high velocity air stream from said chamber inlet means through said chamber to said chamber outlet means,
filter means interposed between said chamber and said pump means for filtering fine particulate material from the air stream passing from said chamber to said pump means, said filter means comprising:
a housing having two inlet means coupled with said chamber outlet means and a housing outlet means coupled to said vacuum pump means,
air stream directing means within said housing defining two air stream flow paths through said housing, one of said flow paths connecting one of said housing inlet means to said housing outlet means and the other of said flow paths connecting the other of said housing inlet means to said housing outlet means,
filters in said housing for filtering fine particulate material from the air stream passing through said housing, said filters comprising a first and a second portion, said first portion and said second portion of said filters being arranged in said housing for filtering in series the air stream passing through said first flow path, said second flow path bypassing said first portion of said filters but including said second portion of said filters means for selectively controlling the air flow from said chamber outlet means to said housing outlet means through one of said flow paths.

3,885,933
CLASSIFYING CENTRIFUGAL SEPARATOR
David H. Putney, Shawnee Mission, Kans., assignor to Stratford Engineering Corporation, Kansas City, Mo.
Filed Sept. 20, 1974, Ser. No. 507,667
Int. Cl. B01d *45/12*
U.S. Cl. 55—397 **4 Claims**



1. A classifying separator for removing entrained particles from gaseous materials comprising:
a vertical outer vessel shell having an upper cylindrical portion and closed at the top thereof and tapered downwardly at the bottom thereof to form a first restricted bottom discharge opening for the removal of solids;
a first cylindrical sleeve concentrically positioned within the first vessel and spaced inwardly thereof with its upper end fixed in an air sealing relation to the top of the first vessel and its lower end free therewithin, whereby to provide a first circular annulus between the shell and first sleeve open at its lower end;
a vertical inner vessel shell having an upper cylindrical portion concentrically positioned within said first sleeve and spaced inwardly thereof, said inner shell tapered downwardly at the bottom thereof to form a restricted air sealed bottom discharge for said inner vessel;
the inner vessel shell spaced downwardly from the top of the outer shell to provide a continuous, circumferential gap thereover for passage inwards thereof of gas and gas entrained solids;
the inner shell and first sleeve providing therebetween a second circular annulus open at its lower end;
a second cylindrical sleeve concentrically positioned within the second shell and spaced inwardly therefrom and above the tapered portion of said inner vessel whereby to provide a third circular annulus between said inner vessel shell and second sleeve open at its lower end;
the upper end of said second sleeve penetrating the outer vessel shell top closure to provide a gas discharge outlet;
an inlet connected tangentially into the upper portion of said outer vessel shell for introducing gases and entrained solids to the first annulus, and substantially vertically oriented slotted passageways in the walls of the first and second sleeves for removing solids from the gaseous materials passing through the second annulus and inner sleeve, respectively.

3,885,934
CENTRIFUGAL TUYERE FOR GAS SEPARATOR
Ralph Eads, and Charles Langdon Campbell, both of Houston, Tex., assignors to Heat/Fluid Engineering Corporation, Tulsa, Okla.
Continuation-in-part of Ser. No. 177,251, Sept. 2, 1971, abandoned. This application June 19, 1973, Ser. No. 371,426
Int. Cl. B01d *45/12*
U.S. Cl. 55—457 **9 Claims**

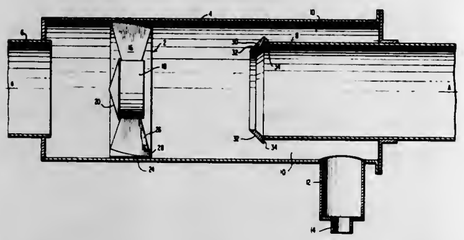


1. A centrifugal tuyere for removing entrained liquids from a gas stream, comprising,
a plurality of blades extending radially with respect to the central longitudinal axis of the tuyere, each of said blades having upstream and downstream faces which are inclined with respect to planes which lie perpendicular to the central longitudinal axis of the tuyere to impart a rapid helical motion to the gas stream deflected thereby, each of said blades having a leading edge at its upstream end and a trailing edge at its downstream end,
each blade having a lip extending along its trailing edge,
said lip projecting in an upstream direction therefrom to make an acute angle with said blade to trap liquid which is on the blade and lead the trapped liquid radially outwardly on the blade, said lip terminating at a point radially inwardly of the outer edge of the blade to provide the outer end of the blade with an unobstructed liquid draining space located to permit liquid trapped by the lip to be released from the blade to impinge upon and flow along the inner wall of a vessel housing the tuyere.

3,885,935
CENTRIFUGAL APPARATUS FOR SEPARATING ENTRAINED LIQUIDS FROM A GASEOUS STREAM
Dale E. Nutter, Tulsa, Okla., assignor to Heat/Fluid Engineering Corporation, Tulsa, Okla.
Filed June 19, 1973, Ser. No. 371,425
Int. Cl. B01d *45/12*
U.S. Cl. 55—457 **13 Claims**

1. In a centrifugal separator having a central longitudinal axis and a tuyere provided with a plurality of radiating blades extending from the central axis; each of said blades having a leading edge, a trailing edge, a root end, a tip end, and upstream and downstream faces which are inclined with respect to the central longitudinal axis and to planes lying perpendicular thereto, whereby a gaseous stream passing through the separator is given a helical motion to throw entrained particles of liquid radially outwardly; the improvement which comprises a deflector, means locating said deflector forwardly of the upstream faces of the blades in the path of the gaseous stream, said deflector having an upstream face which terminates at its periphery in an edge positioned directly upstream of the upstream faces of the blades to release liquid from the deflector onto the upstream faces of the blades, said deflector

being devoid of any liquid supporting surface extending downstream from said deflector edge, said deflector having a downstream face which is located upstream of said blades, each of said blades having its root end located entirely downstream of the deflector and radially inward of the deflector edge, each of said blades having its leading edge extending radially from



a point located downstream of the deflector and radially inward of the deflector edge to a point which is radially beyond the deflector and is at the outer periphery of the tuyere, said downstream face adjacent to said deflector edge being spaced from the root ends of the blades to prevent the flow of liquid along and adjacent to the root ends for consequent reentrainment.

3,885,936

HEAT EXCHANGERS

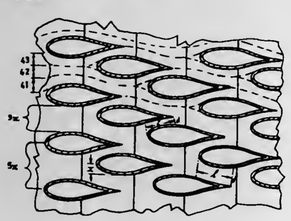
Gerald John Nicholson Limebeer, Johannesburg, South Africa, assignor to Basil Gilbert Alfred Lund, Johannesburg, South Africa, a part interest

Filed Feb. 21, 1973, Ser. No. 334,215

Claims priority, application South Africa, Mar. 1, 1972, 72/1381

Int. Cl. F28f *1/02, 13/06*

U.S. Cl. 62—304 **13 Claims**



1. A heat exchanger comprising a multiplicity of tubes extending between tube sheets for a first fluid to flow in the tubes and a second fluid to flow past the tubes in a direction normal to an aperture plane, and in which:

a. the tubes are in a plurality of rows parallel to the aperture plane and parallel to one another;

b. each tube is of a symmetrical aerofoil section with a cuspate trailing edge, with its chord plane normal to the aperture plane, is formed within a continuous aerofoil shape from end to end so that there are no heat transfer surfaces extending into the path of the second fluid, and has a fineness ratio between 6:1 and 2:1;

c. the tubes are so shaped and rows of tubes are so positioned that the nose of a tube in a trailing row of tubes intercallates between the trailing edges of pairs of tubes in the leading row so that between adjacent trailing and leading tubes passages of substantially constant width along their lengths in the direction of flow of the second fluid are formed:

d. each row is off-set with respect to the row leading it to such an extent that the constant width passage to one side of a tube is substantially twice the width of the constant width passage to the other side of it.

3,885,937

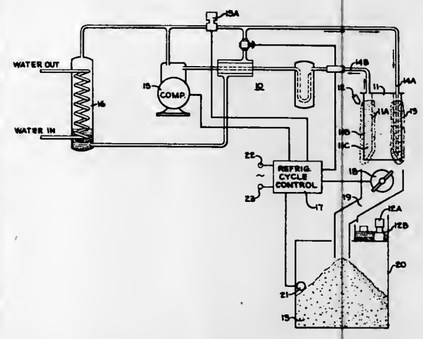
ICE MACHINE CONTROL MECHANISM

Russel W. Norris, 1911 Chaparral, Houston, Tex. 77043

Filed Jan. 12, 1973, Ser. No. 323,209

Int. Cl. F25c *1/12*

U.S. Cl. 62—137 **2 Claims**



1. In an ice making machine having a double walled cylindrical evaporator on which ice is formed from water deposited on the evaporator, a closed loop refrigeration system including a timer for providing a freezing cycle for such water and a harvest cycle for the ice formed on said evaporator, an ice crusher located below said evaporator for crushing ice as it falls from the evaporator during said harvest cycle, an ice bin for collection and storage of said ice and having a thermostat which includes a sensing element and a switch element connected to shut off power to said refrigeration system for sensing the level of said ice in said bin to provide a stop signal for stopping the further making of ice on said evaporator until the ice in the bin has fallen below a predetermined level, the improvement comprising, means for causing the in process cycle of freezing, harvesting, and crushing the ice to be completed when said stop signal is provided prior to the end of a freeze cycle, said means comprising a control switch shunting said switch element, said control switch including the contacts of a relay connected so that said contacts are closed during the freeze cycle irrespective of the state of said thermostat switch element.

3,885,938

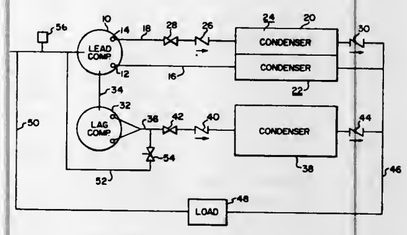
REFRIGERATION SYSTEM WITH CAPACITY CONTROL

Carlos R. Ordonez, Staunton, Va., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 18, 1974, Ser. No. 434,756

Int. Cl. F25b *41/00*

U.S. Cl. 62—196 **9 Claims**



1. The combination of a refrigeration system including an unloadable, hermetic shell, multi-cylinder compressor having an always loaded discharge port and an unloadable discharge port, and a non-unloading, hermetic shell, multi-cylinder compressor, said shells of said compressors being connected

to receive suction gas returned from said system and being in open communication with each other, a condenser arrangement including a split condenser coil having one part connected by a first line to said always loaded discharge port, and another part connected by a second line to said unloadable discharge port, and another condenser connected by third line means to the discharge of said non-unloading compressor, and means to effect isolation from the remainder of said refrigeration system, of the inlet and outlet of said another part of said split condenser during operation of said unloadable compressor in an unloaded mode, and of the inlet and outlet of said another condenser during periods of non-operation of said non-unloading compressor.

3,885,939

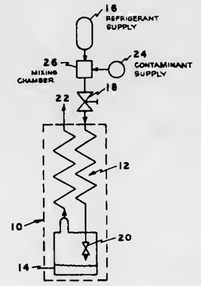
CRYOSTAT CONTROL

Arvel Dean Markum, San Juan Capistrano, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Apr. 25, 1974, Ser. No. 464,078

Int. Cl. F25b *43/00*

U.S. Cl. 62—474 **1 Claim**



1. In combination:

a cryostat including a coiled tube heat exchanger;

a high pressure refrigerant gas supply to provide a refrigerant to said cryostat, said refrigerant comprising a mixture of 16% Freon-14 and 84% Freon-23; and

means to introduce a contaminant into the refrigerant for said cryostat, said contaminant comprising 10 parts per million by weight water vapor, said contaminant having a solidification point above that of the refrigerant to alternately freeze and melt in the coiled tube heat exchanger of said cryostat to reduce the flow of refrigerant through said cryostat.

3,885,940

FIBER TORATION; METHOD AND EQUIPMENT

Marcel Levecque, Saint-Gratien; Jean A. Battigelli, and Dominique Plantard, both of Rantigny, all of France

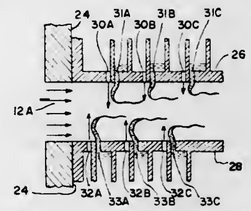
Filed Apr. 24, 1973, Ser. No. 353,984

Claims priority, application France, Mar. 30, 1973, 73.11525

Int. Cl. C03b *37/04*

U.S. Cl. 65—5 **28 Claims**

6. A method for making glass fibers from molten glass, comprising establishing a gaseous blast, delivering molten glass to a glass supply slot arranged adjacent a boundary of the blast, and causing the glass to be delivered from said slot at a plurality of zones spaced along the slot by directing a plurality



of gaseous jets of smaller cross section than the blast through said boundary upstream of the slot.

3,885,941

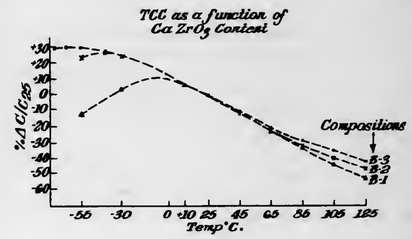
METHOD OF FORMING A GLASS-REACTED-CERAMIC COMPONENT

Galeb H. Maher, Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Mar. 20, 1974, Ser. No. 453,136

Int. Cl. C03c *21/00*

U.S. Cl. 65—18 **6 Claims**



1. A method of making a glass-reacted-ceramic body comprising mixing a major proportion of a finely ground prefired titanate ceramic containing a zirconate and niobium oxide which ceramic matures above 2,000°F, and a minor proportion of a powdered low temperature glass containing cadmium oxide, mixing the powder combination of said ceramic and said glass with a suspension medium, depositing the suspension and firing the deposit in air at between 1,800° and 2,050°F for at least 1 hour at temperature so as to mature said body and cause cadmium ions from said glass to react with said ceramic and to diffuse into the titanate lattice, whereby grain growth in said body is enhanced and the Curie temperature of said body is shifted downwardly.

3,885,942

METHOD OF MAKING A REINFORCED HEAT EXCHANGER MATRIX

Gary Lee Moore, Swanton, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 16, 1973, Ser. No. 333,380

Int. Cl. C03c *23/20;* **C03b** *29/00*

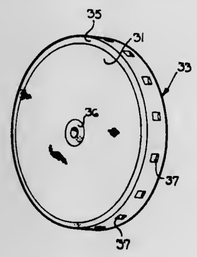
U.S. Cl. 65—33 **7 Claims**

1. The method of making a reinforced heat exchanger matrix product comprising

arranging a plurality of tightly packed axially elongated tubes of a thermally crystallizable glass in a peripherally restraining fixture, each of the tubes having its opposite ends sealed and each defining a central internal chamber containing a heat expansible fluid,

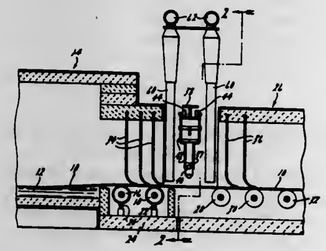
heating the restrained tubes to a temperature above the softening point of the glass tubes, the internal pressure

generated in said chambers thereof during said heating expanding the tubes into a fused integral mass,
opening the opposite ends of the fused tubes to convert their said internal chambers into plural central, internal passages extending through the fused matrix, and provide opposite end faces of said matrix,
filling plural, adjacent, preselected ones of said central tube passages defining two or more end face areas of the fused matrix, said central, internal passages being completely filled throughout the entire axial length thereof, with a finely divided frit of the same thermally crystallizable glass composition as said tubes, and



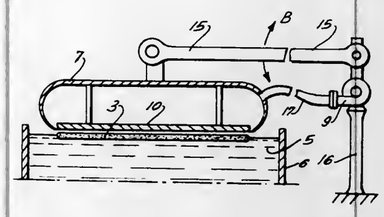
thermally processing the matrix and frit through nucleation and crystallization heat treatment to convert the frit and matrix to a monolith of the low expansion glass-ceramic materials of substantially the same thermal expansion characteristics and provide a preselected, strengthened, integral structural region of said matrix product having said same thermal characteristics as the fused matrix, said heat treatment comprising
heating said matrix and frit material to a temperature of at least 2,100°F at the rate of approximately 100°F per hour, holding said temperature for at least 6 hours, and thereafter cooling the material at the rate of approximately 100°F per hour.

3,885,943
METHOD OF CUTTING GLASS WITH A LASER
Granger K. Chui, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed July 1, 1974, Ser. No. 484,903
Int. Cl. C03b *21/02*
U.S. Cl. 65—97 **5 Claims**



1. A method of cutting glass by use of a focused laser beam which comprises the steps of:
heating a glass sheet having an upper surface and a lower surface to a temperature in the range of from about 1,000°F to about 1,250°F;
developing at least a threshold power level in the focused beam, the laser beam having a wave length above 5 microns;
positioning the focal point of the focused laser beam at a location spaced from one of the surfaces of the glass sheet such that an optimum laser beam spot size is formed on the upper surface of the glass sheet, the beam spot size being such that at normal glass cutting speeds glass vaporization by the laser beam is at a rate faster than the feeding rate of adjacent glass into the space vacated by glass vaporization;
and moving the glass to be cut and annealing laser beam relative to one another at a traverse velocity not exceeding that calculated by the formula $V = P/4.88h^2$, where V is transverse velocity in inches per minute, P is laser power in kilowatts, and h is glass thickness in inches.

3,885,944
METHOD OF MAKING SHEET GLASS
Valentin Stingelin, Aire, Ge, Switzerland, assignor to Battelle Memorial Institute, Carouge/Geneve, Switzerland
Continuation-in-part of Ser. No. 126,789, March 22, 1971, Pat. No. 3,749,563. This application May 21, 1973, Ser. No. 361,942
Claims priority, application Switzerland, Mar. 24, 1970, 4459/70The portion of the term of this patent subsequent to July 31, 1990, has been disclaimed.
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A **5 Claims**

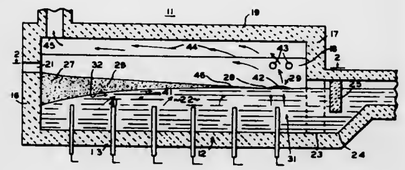


1. A method of producing sheet glass of a thickness less than normal equilibrium thickness, comprising the steps of:
casting a layer of molten glass upon a predetermined surface area of a fluidic support;
placing a solid structure with a flat underside above said surface area with clearance from said layer to define a limited space therebetween;
generating a descending and laterally inwardly converging peripheral gas curtain around said space above at least a portion of said layer while allowing the gas to escape freely into the surrounding atmosphere on all sides, thereby building up in said space an above-ambient dynamic pressure spreading across said portion and reducing its thickness; and
continuously advancing said layer across said space.

3,885,945
METHOD OF AND APPARATUS FOR ELECTRICALLY HEATING MOLTEN GLASS
Vernon Chester Rees, deceased, late of Newark, Ohio (by Bettie Jane Rees, administratrix), and Magnus Laird Froberg, Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Mar. 20, 1974, Ser. No. 452,900
Int. Cl. C03b *5/16*
U.S. Cl. 65—136 **11 Claims**

1. A continous glass melting furnace comprising:
a melting and refining tank having a batch delivery region, a glass refining region undivided from said batch delivery region and spaced across the surface of the glass constituents to be contained therein from said batch delivery region, and a molten glass issuing region in said glass refining region;

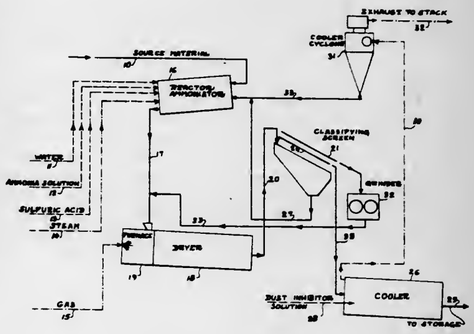
said tank having a first side wall remote from said glass issuing region and in part defining said batch delivery region, and having a second and third side walls extending from said first side wall and in part defining said batch delivery region;
a plurality of batch delivery means located in the batch delivery region for progressively feeding and distributing batch along the entire length of said first wall into said batch delivery region to advance a cover of batch extending between said second and third walls across the surface of the molten glass constituents in said tank toward said molten glass issuing region to a leading edge intersecting a free surface of exposed molten glass, the free surface of exposed batch cover covering a preponderance of the molten glass within said tank;
an array of electrodes extending into the molten glass within said tank and distributed between said batch delivery and glass issuing regions of said tank to provide the preponderance of the heat energy for melting batch materals therein;



a top on said tank extending between said batch delivery and glass issuing regions;
said furnace having a flue port in said batch delivery region above the level attained by batch, and said top defining an open gas flow path from said glass issuing region to said flue port; and
active means for applying heat energy located above the glass constituents only in the region above said glass issuing region, said means being limited in its heating capacity to apply only sufficient heat to said free surface of exposed molten glass to promote release through said free surface of exposed molten glass of gas evolved from said melted material to the atmosphere beneath said top whereby the evolved gas and atmosphere, as it flows toward said flue port, progressively releases heat energy to the upper surface of the mass of batch to preheat the upper surface of said batch and to cool the evolved gas and atmosphere substantially below the melting temperature of the batch prior to its entry into said flue port.

3,885,946
PROCESS FOR REDUCING THE CONCENTRATION OF FERTILIZER PARTICULATES IN EXHAUST STACK GASES
James E. Seymour, Virginia Beach, Va., assignor to Royster Company, Norfolk, Va.
Continuation of Ser. No. 83,105, Oct. 22, 1970, abandoned. This application May 11, 1973, Ser. No. 359,267
Int. Cl. C05c *7/00*
U.S. Cl. 71—30 **25 Claims**

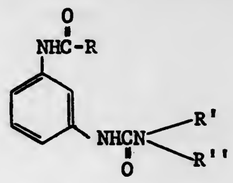
1. In the manufacture of fertilizer compositions, wherein fertilizer particulates are heat dried and air cooled, the process for reducing the emission of fertilizer dust to the atmosphere in the cooling phase of the operation, which comprises spraying the air-borne fertilizer particulates with an aqueous



solution of a nitrogen-containing salt at the intake feed of said cooling phase.

3,885,947
META-ANILIDE UREAS AS ALGICIDAL AGENTS
Don R. Baker, Orinda; Eugene G. Teach, El Cerrito, both of Calif., and Duane R. Arnekley, Antelope, Mont., assignors to Stauffer Chemical Company, Westport, Conn.
Filed Apr. 9, 1973, Ser. No. 349,529
Int. Cl. A01n *9/20*
U.S. Cl. 71—67 **37 Claims**

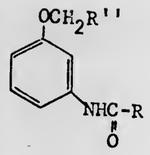
1. The method for inhibiting and preventing algae growth in water, which comprises adding to the algae environment an algicidally effective amount of a compound of the formula



wherein R is selected from the group consisting of alkyl having 1 to 8 carbon atoms, inclusive, haloalkyl having 1 to 4 carbon atoms, inclusive, 2,4-dichlorophenoxymethylene, monochlorophenyl, dichlorophenyl and the sodium salt of pentafluoroethyl; R′ is selected from the group consisting of hydrogen, lower alkyl having 1 to 4 carbon atoms, inclusive, and lower alkoxy having 1 to 4 carbon atoms, inclusive, R″ is lower alkyl having 1 to 4 carbon atoms, inclusive.

3,885,948
META-SUBSTITUTED ETHER ANILIDES AS ALGICIDAL AGENTS
Don R. Baker, Orinda; Eugene G. Teach, El Cerrito, both of Calif., and Duane R. Arneklev, Antelope, Mont., assignors to Stauffer Chemical Company, Westport, Conn.
Filed Jan. 4, 1973, Ser. No. 321,085
Int. Cl. A01n *9/20*
U.S. Cl. 71—67 **28 Claims**

1. The method for inhibiting and preventing algae growth in water, which comprises adding to the algae environment an algicidally effective amount of a compound of the formula



wherein R is selected from the group consisting of alkyl having 1 to 6 carbon atoms, inclusive, and mono- and di-substituted amino, said substituents selected from the group lower alkyl having 1 to 4 carbon atoms, inclusive, alkenyl having 2 to 4 carbon atoms, inclusive, and phenyl; and R'' is selected from the group consisting of alkyl having 1 to 7 carbon atoms, inclusive, alkoxyalkyl having 2 to 6 carbon atoms, inclusive, and alkylcarbonyl having 2 to 6 carbon atoms, inclusive.

3,885,949

METHOD FOR IMPROVEMENT OF CITRUS FRUITS IN QUALITY

Masayuki Ono, Osaka, Japan, assignor to Tanabe Seiyaku Co., Limited, Osaka, Japan

Continuation-in-part of Ser. No. 47,594, June 18, 1970, abandoned. This application Jan. 29, 1973, Ser. No. 327,796
Claims priority, application Japan, June 18, 1970, 45-48752
Int. Cl. A01n *9/00*
U.S. Cl. 71—79 **11 Claims**

1. A method for decreasing the acid content of the fruit of a citrus fruit tree comprising the steps of applying to the foliage of the tree, at the period of ovary enlargement of the fruit, at least one enzyme selected from the group consisting of protease, lipase, naringinase and hesperidinase.

3,885,950

COMPOSITION AND METHOD FOR INFLUENCING THE GROWTH OF PLANTS

Bodo Ehrig; Hermann Wolz, both of Leverkusen, and Claus Hentschel, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 8, 1971, Ser. No. 160,962
Claims priority, application Germany, July 28, 1970, 2037289
Int. Cl. A01n *9/00*
U.S. Cl. 71—85 **13 Claims**

1. Method of increasing, stimulating and promoting the growth of plants which comprises applying to the soil of plants a dispersion comprising a dispersant, and, as an active ingredient, from 50 to 750 grams of an organic polymeric material selected from the group consisting of polybutadiene, a copolymer of butadiene, styrene and acrylic acid, a coplymer of n-butylacrylate, acrylamide, styrene and acrylic acid, a copolymer of butadiene, styrene and metharcylic acid, copolymer of butadiene, stryene and acrylonitrile and a copolymer of n-butylacrylate, acyrlamide, metharcylic acid amide N-methylolmethyl ether, styrene and acrylic acid.

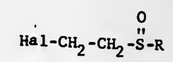
3,885,951

PLANT GROWTH REGULANT COMPOSITIONS CONTAINING 2-HALOETHANESULPHINIC ACID COMPOUNDS

Wolfgang Hofer, Wuppertal-Vohwinkel; Klaus Lurssen, Konigsdorf, and Robert Rudolf Schmidt, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 29, 1972, Ser. No. 230,505
Claims priority, application Germany, Mar. 6, 1971, 21107733
Int. Cl. A01d *9/14*
U.S. Cl. 71—103 **9 Claims**

1. Method of influencing the growth of plants which comprises applying plant growth regulatingly effective amounts of a 2-haloethanesulphinic acid compound of the formula



in which

Hal is halogen, and

R is halogen, hydroxyl, alkoxy or haloalkoxy of from 1 to 8 carbon atoms, or cycloalkoxy of up to 12 carbon atoms.

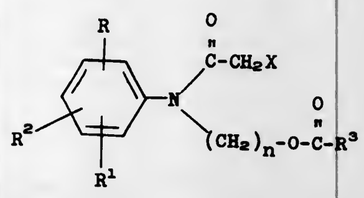
3,885,952

HERBICIDAL 2-HALO-N-(ACYLOXYALKYLENE) ACETANILIDES

John F. Olin, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 204,330, Dec. 2, 1971, Pat. No. 3,832,383, which is a continuation-in-part of Ser. No. 148,894, June 1, 1971, Pat. No. 3,830,829. This application Nov. 30, 1973, Ser. No. 420,724
Int. Cl. A01n *9/24*
U.S. Cl. 71—106 **10 Claims**

1. A herbicidal composition comprising an adjuvant and an effective amount of a compound of the formula:



wherein:

R and R^1 are hydrogen, alkyl or alkoxy having at least 1 and not more than 10 carbons atoms and can be like or unlike,

R^2 is hydrogen, alkyl or alkoxy having at least 1 and not more than 10 carbon atoms, NO_2 or halogen,

R^3 is nitroaryl, hydroxyaryl, and nitro-substituted hydroxyaryl having at least 6 and not more than 24 carbon atoms;

X is chlorine, bromine or iodine, and

n is an integer of 1 or 2.

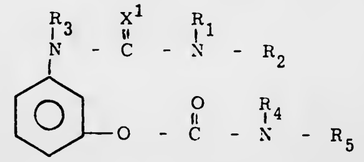
3,885,953

META-UREIDOPHENYL N-HALOALKYL CARBAMATES AS HERBICIDES

Kenneth P. Dorschner, and James A. Albright, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 211,118, Dec. 22, 1971, Pat. No. 3,806,537. This application Jan. 28, 1974, Ser. No. 436,908
Int. Cl. A01n *9/24*
U.S. Cl. 71—106 **9 Claims**

1. A herbicidally effective composition comprising an inert carrier and 1–98% of a carbamate of the formula:



wherein X^1 represent oxygen or sulfur; R_1 and R_3 represent hydrogen or a lower alkyl group, R_2 represents a lower alkyl group, R_4 represents either hydrogen, a lower alkyl group or a halogen-substituted lower alkyl group and R_5 represents a halogen-substituted lower alkyl group.

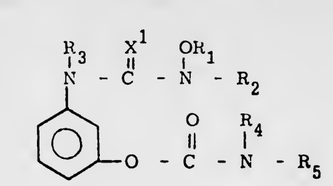
3,885,954

META-3-ALKOXYUREIDOPHENYL N-HALOALKYL CARBAMATES AS HERBICIDES

Kenneth P. Dorschner, and James A. Albright, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 211,111, Dec. 22, 1971, Pat. No. 3,806,536. This application Jan. 28, 1974, Ser. No. 436,909
Int. Cl. A01n *9/24*
U.S. Cl. 71—106 **5 Claims**

1. A herbicidally effective composition comprising an inert carrier and 1–98% of a carbamate of the formula:



wherein X^1 represents either oxygen or sulfur; R_1 and R_2 are the same or different lower alkyl groups, R_3 is a lower alkyl group or hydrogen, R_4 is a lower alkyl group, hydrogen or a halogen-substituted lower alkyl group and R_5 is a halogen-substituted lower alkyl group.

3,885,955

PROCESS FOR THE PRODUCTION OF GOLD POWDER

Klaus Lutz, Bergen-Enkheim, and Manfred Golla, Grossauheim, both of Germany, assignors to Demetron Gesellschaft fur Elektronik-Werkstoffe mbH, Germany

Filed June 10, 1974, Ser. No. 478,037
Claims priority, application Germany, June 8, 1973, 2329352
Int. Cl. C22b *11/04, 11/06*
U.S. Cl. 75—.5 A **14 Claims**

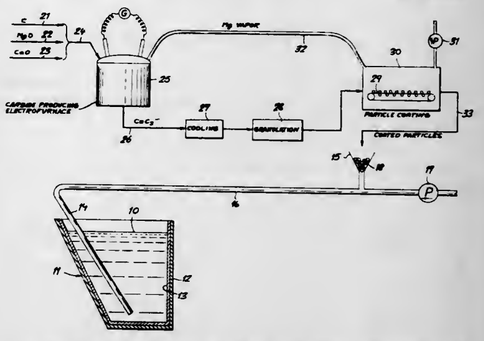
1. A process of preparing gold powder of predetermined particle size, particle shape and specific surface area comprising precipitating chloroauric III acid from an aqueous hydrochloric acid solution thereof with ammonia, preparing a suspension of the precipitate in a liquid without drying and reducing the gold in said suspension to free metal with a reducing agent.

3,885,956

METHOD AND COMPOSITION FOR THE TREATMENT OF FERROUS MELTS AND PROCESS FOR MAKING THE TREATING COMPOSITION

Karl-Heinz Obst; Jurgen Stradtmann, both of Wuelfrath, Germany; Paul Metz, Luxembourg, and Francis Meyer, Esch, Alzette, both of Luxembourg, assignors to Rheinische Kalksteinwerke GmbH, Wulfrath, Germany and Acieries Reunies de Burbach-Eich-Dudelange S.A., ARBED, Luxembourg, Luxembourg

Filed May 21, 1974, Ser. No. 471,908
Int. Cl. C21c *7/00*
U.S. Cl. 75—53 **10 Claims**



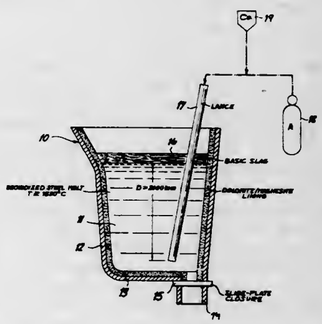
1. A method of desulfurizing a ferrous melt comprising the steps of introducing into said melt particles of a size between 0.3 and 5mm and having a core of calcium carbide coated with a metal sheath of magnesium constituting 5 to 25 percent by weight of the particles.

3,885,957

METHOD FOR THE DESULFURIZATION OF A STEEL MELT

Helmut Richter; Eckehard Forster; Edgar Spetzler; Jochen Wendorff, all of Oberhausen, and Heinrich-Wilhelm Rommerswinkel, Mulheim, Ruhr, all of Germany, assignors to Thyssen Niederrhein AG Hutten-und-Walzwerke, Oberhausen, Germany

Filed Feb. 20, 1973, Ser. No. 333,690
Claims priority, application Germany, Mar. 1, 1973, 2209902
Int. Cl. C21c *7/00*
U.S. Cl. 75—58 **11 Claims**



1. A method of desulfurizing a deoxidized steel melt, comprising the steps of:

covering the deoxidized steel melt with a basic slag layer

covering the deoxidized steel melt with a basic-slag layer containing at most 4 percent by weight FeO;
introducing at a location at least 2,000 mm below the surface of the deoxidized steel melt covered with said basic slag layer a stream of a calcium-containing substance in finely divided form in a neutral carrier gas;
maintaining the temperature of said melt during the introduction of said calcium-containing substance thereto at at least 1,530°C,
maintaining said molten steel in contact with a lining containing at least 70 percent by weight aluminum oxide during introduction of the calcium-containing substance thereto; and
the introduction of said calcium-containing substance is carried out so that said steel melt contains at least 0.015 percent by weight aluminum.

3,885,958
METHOD OF PRODUCING CHROMIUM CONTAINING ALLOYS

Gunnar Grunbaum; John Erik Wallen; John Kjell Gustafsson, and Gustaf Widmark, all of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Dec. 21, 1973, Ser. No. 427,094
Claims priority, application Sweden, Dec. 29, 1972, 17146/72
Int. Cl. C21c 7/04; C22c 39/14
U.S. Cl. 75—58 6 Claims

1. Method of producing a chromium-containing alloy having very low contents of nitrogen and carbon not amounting, in toto, to more than 0.01 percent by weight, which comprises melting a charge containing at least 1 percent by weight of carbon and consisting essentially of a chromium-containing initial material together with a base metal and desired alloying elements;
adding to the melt a nitridable member of the group consisting of aluminum and aluminum alloys, in an amount corresponding to at least 3 percent by weight of said melt, thereby converting nitrogen to aluminum nitride in the form of a constitutent of the resulting slag; and
thereafter refining the molten charge by oxidizing caroon and residual aluminum and removing slag containing aluminum nitride and aluminum oxide.

3,885,959
COMPOSITE METAL BODIES

Frank Arthur Badia, Ringwood, N.J., and Pradeep Kumar Rohatgi, Bethlehem, Pa., assignors to The International Nickel Company, Inc., New York, N.Y.

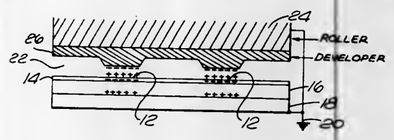
Continuation-in-part of Ser. No. 715,937, March 25, 1968, abandoned, which is a continuation-in-part of Ser. No. 644,429, May 25, 1967, abandoned, which is a continuation-in-part of Ser. No. 585,097, Oct. 7, 1966, abandoned. This application May 10, 1971, Ser. No. 141,991
Int. Cl. C22c 21/00
U.S. Cl. 75—138 21 Claims

1. A new and improved cast aluminum base alloy, said alloy containing at least about 0.6 percent by weight of uncombined graphitic carbon in the form of graphite particles of at least about 5 but not greater than about 2,000 microns average cross-section size, about 5 to 25% silicon, up to about 25% tin, up to about 15% copper, up to about 15% magnesium, up to about 20% zinc, up to about 10% nickel with the proviso that when the nickel content is at least 4% the total percentage of nickel plus silicon does not exceed 20%, up to about 8% cobalt, up to about 5% manganese, up to about 1.5% iron, up to about 1% chromium, and the balance essentially aluminum, said graphite particles having been introduced into a molten bath of the aluminum-base alloy in the form of metal coated particles, the metal coating being effective to have imparted compositional stability to the base alloy in the molten condition.

3,885,960
METHOD OF DEVELOPMENT OF LIQUID ELECTROSTATIC IMAGES USING AN HYDROPHOBIC BARRIER LIQUID

Terry G. Anderson, Pasadena, Calif., assignor to Bell & Howell Company, Pasadena, Calif.

Filed Dec. 11, 1972, Ser. No. 314,212
Int. Cl. G03g 13/10
U.S. Cl. 96—1 LY 18 Claims

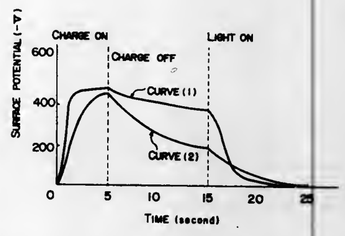


1. A method of development of electrostatic images, which method comprises:
depositing a layer of hydrophobic barrier liquid on a surface bearing a latent electrostatic image, said barrier liquid wetting said surface;
depositing a layer of aqueous developer liquid, containing a major proportion by weight of water and a minor proportion by weight of a surface tension-lowering agent, on said layer of barrier liquid, said liquid developer being immiscible with said barrier liquid and bearing a coloring agent dissolved or dispersed therein having no or low solubility in said barrier liquid;
holding said barrier liquid and developer liquid on said surface until said developer liquid displaces said barrier liquid from the areas of said surface bearing said image and wets said surface areas so as to form a visible image; and
thereafter fixing said visible image on a receptor sheet.

3,885,961
POLYMERIC BINDER MATERIAL FOR USE IN A PHOTOCONDUCTIVE LAYER EMPLOYED IN ELECTROPHOTOGRAPHY

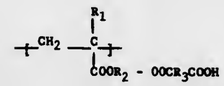
Tadasu Kimura, Tokyo; Tomozo Uchiyama, and Thuneo Kochi, both of Ohtake, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Aug. 1, 1972, Ser. No. 277,061
Int. Cl. G03g 5/08
U.S. Cl. 96—1.5 4 Claims

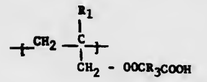


1. A photosensitive material for electrophotography comprising an electrically conductive substrate material and a photoconductive layer provided thereon, characterized in that said photoconductive layer is formed from a resin composition consisting essentially of:
a. a photoconductive powder, and
b. a binder which comprises a mixture of
1. polymer [A] having a glass transition temperature of −20° to 100°C, and a mean molecular weight MW_1, of $500 \leq MS \leq 5000$; and containing a structural unit represented by the following formulas [I] or [II], the $-OOCR_3COOH$ content in said formulas being 0.5–90

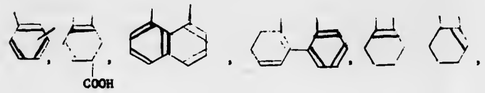
percent by weight, based on the weight of polymer [A]:

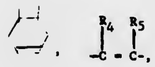

[I]

or

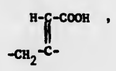

[II]

wherein R_1 is hydrogen or methyl, R_2 is an alkylene radical of 2–8 carbon atoms, a polyethylene glycol residue having 10 or less recurring units or a polypropylene glycol residue having 10 or less recurring units, and R_3 is

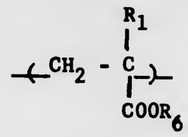




wherein R_4 and R_5 are hydrogen or alkyl of 1–4 carbon atoms, or



and in a major amount
2. polymer [B] having a glass transition temperature of 0 to 60°C and a mean molecular weight MW_2 of 5000 MW_2 50,000 and greater than that of MW_1; and containing 60 percent by weight or less of structural units represented by said formulas [I] or [II] and at least 30 percent by weight of the structural units being represented by the following formula [III]:

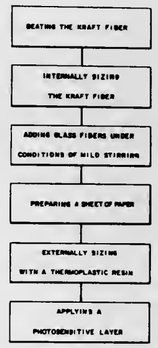

[III]

where R_1 is the same as defined above and R_6 is straight or branched chain alkyl of 1–12 carbon atoms, cycloalkyl or benzyl
said binder containing 0.5–60 percent by weight of $-OOCR_3COOH$.

3,885,962
PHOTOGRAPHIC AND ELECTROPHOTOGRAPHIC MEMBERS WITH GLASS FIBER CONTAINING PAPER SUBSTRATES

Robert H. MacClaren, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 857,430, Sept. 12, 1969, Pat. No. 3,773,513. This application July 16, 1973, Ser. No. 379,683
Int. Cl. G03g 5/00; G03c 1/86
U.S. Cl. 96—1.8 7 Claims



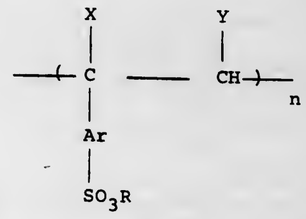
1. A photosensitive member comprising:
a. a cellulose fiber substrate having a thermoplastic resin surface size and containing from about 50 to 80 percent by weight of glass fibers having lengths ranging from 1 to 10 millimeters and diameters ranging from 0.09 to 3 microns, and
b. at least one layer of a photosensitive material contained on the surface of said substrate.

3,885,963
LIGHT ACTIVATING IMAGING PROCESS

Alan R. Monahan, East Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 245,276, April 18, 1972, Pat. No. 3,834,906, which is a continuation-in-part of Ser. No. 816,104, April 14, 1969, abandoned. This application May 29, 1973, Ser. No. 364,991
Int. Cl. G03f 7/02
U.S. Cl. 96—33 1 Claim

1. A light imaging process comprising coating a layer of alkyl esters of polyvinylaryl sulfonic acids, said esters satisfying the formula:



wherein R may be any straight or branched chain alkyl group including halogen substituted groups up to and including ten carbon atoms;
wherein n is an integer having a value of from 10 –>∞;

X and/or Y are hydrogen, halogen, alkyl or halogen substituted alkyl groups;
wherein Ar may be any polynuclear aromatic fused ring hydrocarbon up to and including five benzene rings.
on the surface of a support substrate and exposing said layer to actinic radiation corresponding to a predetermined pattern to produce a translucent image.

3,885,964

PHOTOIMAGING PROCESS USING NITROSO DIMER

George Raymond Nacci, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed May 31, 1974, Ser. No. 476,134
Int. Cl. G03c 5/00, 5/03, 5/10
U.S. Cl. 96—35.1 12 Claims

1. A method for producing an image on a substrate by the process which comprises
a. coating the substrate with a photopolymerizable composition which comprises
1. a nongaseous, ethylenically unsaturated compound capable of forming a high polymer by free-radical initiated chain addition propagation,
2. 3 to 95% by weight, based on the total composition, of an organic polymeric binder having a molecular weight of at least 4000,
3. 1 to 10% by weight, based on the total composition, of an organic, radiation-sensitive, free-radical generating system, and
4. 0.1 to 2% by weight, based on the total composition, of a thermally dissociable nitroso dimer having a dissociation constant of 10^{-2} to 10^{-10} and a dissociation half-life of at leat 30 seconds in solution at 25°C., the weight ratio of nitroso dimer to free-radical generating system being less than 2 to 1,
b. exposing the photopolymerizable coating to radiation having wavelengths essentially limited to 3400 to 8000A through an image-bearing transparency at a temperature of 50°–70°C.,
c. allowing the coating to cool to a temperature below 45°C. to reduce the concentration of nitroso monomer,
d. reexposing a greater portion of the coating, including the portion struck by radiation during the first exposure, to radiation having wavelengths essentially limited to 3400 to 8000A at a temperature below 45°C., and
e. developing the resulting image.

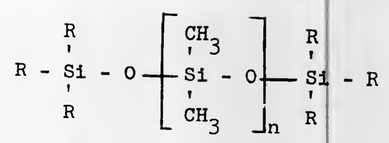
3,885,965

PHOTOTHERMOGRAPHIC ELEMENT, COMPOSITION AND PROCESS

Donald J. Hughes, and Cynthia G. Jones, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 4, 1973, Ser. No. 394,003
Int. Cl. G03c 1/02
U.S. Cl. 96—48 HD 8 Claims

7. A method of developing a latent image in a photothermographic element comprising a support having thereon a photothermographic layer comprising
a. photosensitive silver salt,
b. a polymeric, hydrophobic binder and
c. about 0.001 to about 1.0 percent by weight of said layer of a poly(dimethylsiloxane) having units represented by the formula:



wherein R is an alkyl radical of 1 to 3 carbon atoms or an alkoxy radical of 1 to 2 carbon atoms and *n* is any number from 0 to 2000, comprising heating said element within the range of about 80°C. to about 250°C. until said image is developed.

3,885,966

PHOTOSENSITIVE SILVER HALIDE LAYERS AND PROCESS

Robert F. Gracia, Scituate; Richard A. Laughrey, Woburn, and Paul F. Tuohey, Quincy, all of Mass., assignors to Itek Corp., Lexington, Mass.

Division of Ser. No. 45,927, June 12, 1970, Pat. No. 3,775,114.
This application May 7, 1973, Ser. No. 357,999
Claims priority, application United Kingdom, July 14, 1969, 35290/69; July 14, 1969, 35289/69; July 14, 1969, 35288/69
Int. Cl. G03c 5/26, 1/76, 1/78
U.S. Cl. 96—50 R 18 Claims

1. In a photosensitive medium, the improvement wherein the photosensitive layer comprises silver halide and a binder, said layer being of less than 1 micron thickness deposited on a substrate selected from the group consisting of a hydrophobic photographic film and a paper substrate.

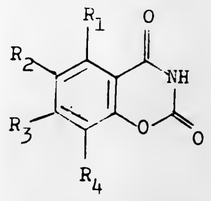
3,885,967

THERMALLY DEVELOPABLE LIGHT-SENSITIVE ELEMENT

Kenji Sashihara; Takao Masuda; Yasuhiro Noguchi, and Tadao Shishido, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 7, 1974, Ser. No. 467,763
Claims priority, application Japan, May 7, 1973, 48-50427
Int. Cl. G03c 1/02, 1/06
U.S. Cl. 96—67 12 Claims

1. A photosensitive material for a thermally developable lightsensitive element which comprises:
a. s silver salt component comprising silver laurate or silver caprate,
b. a catalytic amount of a photosensitive silver halide component comprising a photosensitive silver halide, or a compound which reacts with silver laurate or silver caprate to form a photosensitive silver halide,
c. a reducing agent,
d. a binder, and
e. a toning agent comprising a compound represented by the formula:



wherein R_1, R_2, R_3, and R_4 each represents a hydrogen atom, an alkyl group, an alkoxy group, an aryl group, an acylamido group, a halogen atom, a hydroxyl group or nitro group.

3,885,968

THERMALLY DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Shinpei Ikenoue, and Takao Masuda, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 30, 1974, Ser. No. 474,635
Int. Cl. G03c 1/02, 1/34
U.S. Cl. 96—67 12 Claims

1. A thermally developable light-sensitive material comprising a support having thereon at least one layer containing: (a) silver laurate or silver caprate; (b) a catalytic amount of a light-sensitive silver halide or a compound capable of forming a light-sensitive silver halide by the reaction thereof with said organic silver salt (a); (c) a reducing agent; (d) a binder; and (e) lithium laurate.

3,885,969

PHOTOGRAPHIC MATERIALS WHICH CONTAIN BARRIER LAYERS AND ANTIHALATION LAYERS

Peter Kruck, Cologne, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed June 4, 1973, Ser. No. 366,286
Claims priority, application Germany, June 8, 1972, 2227889
Int. Cl. G03c 1/84
U.S. Cl. 96—84 R 10 Claims

1. A photographic material comprising a support having a pair of converse major surfaces and containing at least one plasticizer, the obverse of said converse surfaces carrying a light-sensitive emulsion layer, the reverse of said converse surfaces carrying a barrier layer comprising a polymer which contains at least one salt of an acetal of vinylalcohol and an aldehyde sulphonic acid, on said barrier layer an antihalation layer, a binder in said antihalation layer for providing a solubility corresponding to complete solubility in a developer of the following composition:

p-aminophenol	50 g
potassium sulfite	500 g
potassium hydroxide	50 g
potassium bromide	20 g
ethylene diaminotetraacetic acid	10 g
Water up to 1000 ml	

having one part by volume of developer to 50 parts by volume of water with 15° DH whereby the antihalation layer may be removed by dissolution during development.

3,885,970

PHOTOGRAPHIC SILVER HALIDE EMULSION WITH SILVER HALIDE GRAINS HAVING ONE TWINNING PLANE

Junji Miyahara, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 13, 1974, Ser. No. 469,136
Claims priority, application Japan, May 11, 1973, 48-52390
Int. Cl. G03c 1/02, 1/06, 1/48, 1/40, 1/72, 1/38, 1/34
U.S. Cl. 96—94 R 7 Claims



1. A photographic silver halide emulsion comprising a dispersing medium containing silver halide crystals of which a proportion of more than 30 percent by weight of the silver halide crystals have only one twinning plane in each crystal and of which the boundary planes with the dispersing medium comprise a (100) plane, a (111) plane or mixed (100) and (111) planes to the total silver halide crystals.

3,885,971

CONTACT SCREEN AND METHOD FOR NONLINEAR TRANSFORMATIONS AND FILTERING IN COHERENT OPTICAL SYSTEMS

Hisatoyo Kato, Minami-Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1973, Ser. No. 384,538
Int. Cl. G03f 5/00
U.S. Cl. 96—116 14 Claims

1. A nonlinear halftone contact screen useful for realizing nonlinear transformations in coherent optical processing systems, said screen being operative in said system to control the amplitude transmittance t_A such that it is proportional to the specific nonlinear function F of exposure E within the exposure range E_1 E E_2, said nonlinear function being expressed as:
$t_A = F(E)$, where E is the normalized exposure in the range
1 E Em, $E = E/E_1$ and $Em = E_2/E_1$
the amplitude transmittance t_A and the fractional area A of a halftone dot being expressed as:
$$t_A^2 = T_w - A(T_w - T_B),$$
where T_w is the intensity transmittance of the transprrent area of a halftone transparency and T_B is the intensity transmittance of the opaque area of a halftone transparency, said screen having an array of dots each of which has a light transmittance profile $D_s(A)$ being expressed as:
$$D_s(A) = \log E$$
which is the density of the halftone screen dot at the edge of the area A.

6. A method of making a nonlinear halftone contact screen as recited in claim 5 wherein the single dot produced in said fabricating step is magnified in size when compared with the size of a dot in said periodic dot structure, said method further comprising the step of photographically reducing the size of the fabricated dot prior to the step of photographically reproducing the dot.

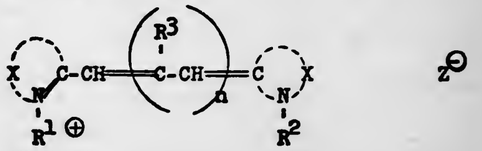
3,885,972

SUPERSENSITIZED DIRECT POSITIVE PHOTOGRAPHIC SILVER SALT EMULSIONS

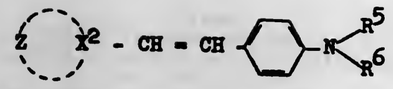
Erik Moisar, Cologne, and Oskar Riester, Leverkusen, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Dec. 18, 1972, Ser. No. 316,048
Claims priority, application Germany, Dec. 22, 1971, 2163676
Int. Cl. G03c 1/10, 1/24, 1/26
U.S. Cl. 96—126 4 Claims

1. A photographic direct-positive material containing at least one direct-positive fogged silver halide emulsion layer, the silver halide grains of said emulsion layer contain electron traps, the said emulsion containing a super-sensitizing combination comprising a symmetrical or unsymmetrical cyanine dye of the following formula:



in which
X = the ring members required for completing a benzooxazole, benzothiazole, benzoselenazole or quinoline ring;
R^1 or R^2 = a saturated or olefinically unsaturated aliphatic group;
R^3 = alkyl with up to 3 carbon atoms, cycloalkyl or phenyl;
n = 0 or 1;
Z^- = any inorganic or organic anion; and a super-sensitizing styryl compound of the following formula:



in which

R^5 and R^6 = hydrogen, a saturated or unsaturated aliphatic group or a cycloaliphatic group;

X^2 and Z = the ring members required for completing a heterocyclic ring selected from the class consisting of thiazole, benzothiazole, naphthothiazole, selenazole, benzoselenazole, naphthoselenazole, oxazole, benzoxazole, naphthoxazole, 3,3-dialkylindolenine, 2-pyrridine, 4-pyrridine, 2-quinoline, 4-quinoline, isoquinoline, diazoline, oxazolone, pyrroline, tetrahydropyridine, thiadiazole, oxadiazole, pyrimidine, triazine, benzothiazine, benzotriazole, pyrimidone, thiopyrimidone, and benzimidazole.

3,885,973

Li_2O-ZnO-P_2O_5-GLASS

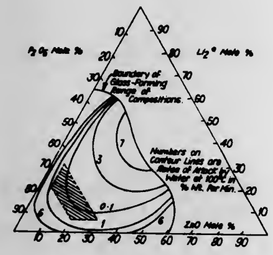
Neil Hunter Ray, and John Nicolas Clayton Laycock, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, Millbank, London, England

Filed May 29, 1973, Ser. No. 364,637

Claims priority, application United Kingdom, June 8, 1972, 26807/72

Int. Cl. C03c *3/16, 3/30*

U.S. Cl. 106—47 R **7 Claims**



1. An inorganic oxide glass composition consisting essentially of

58 to 76 mole % P_2O_5;

5 to 30 mole % ZnO;

5 to 25 mole % Li_2O; and

0 to 10 mole % of one or more alkaline earth metal oxides, and wherein the total of all the above components is at least 99 mole % of the total composition, apart from any water which may be present in the glass in amounts up to 5% by weight of the total composition, the glass having a transformation temperature of not greater than 300°C. and a rate of solution in water at 100°C. of not greater than 1.3% per minute.

3,885,974

SEALING GLASS FOR LASER GLASS

Yoshiyuki Asahara, Kawasaki, and Tetsuro Izumitani, Hino, both of Japan, assignors to Hoya Glass Works, Limited, Tokyo, Japan

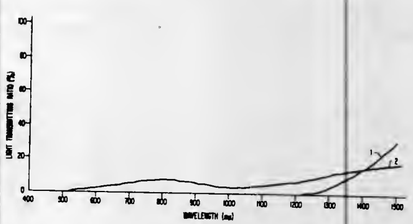
Filed July 30, 1973, Ser. No. 383,743

Claims priority, application Japan, Oct. 9, 1972, 47-101367

Int. Cl. C03c *3/12, 3/16, 3/30*

U.S. Cl. 106—47 Q **3 Claims**

1. A sealing glass for laser glass produced by adding V_2O_5 0–18 mol.%, Fe_2O_3 0–18 mol.%, (V_2O_5+Fe_2O_3 5–18 mol.%), Co_2O_3 0–6 mol.% and NiO 0–7 mol.% to a balancing amount of a base glass consisting of P_2O_5 70–30 mol.%, B_2O_3 0–15 mol.%, Al_2O_3 0–5 mol.%, (P_2O_5+B_2O_3+Al_2O_3 30–70 mol.%), PbO 0–55 mol.%, Tl_2O 0–55 mol.%, ZnO 5–50 mol.%,



(PbO+Tl_2O 20–55 mol.%; PbO+Tl_2O+ZnO 25–60 mol.%) and BaO 0–10 mol.%.

3,885,975

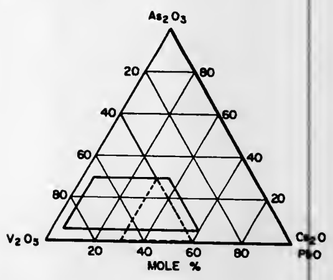
LOW MELTING VANADATE GLASSES

Joseph W. Malmendier, and Joseph E. Sojka, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 247,118, April 24, 1972, Pat. No. 3,837,866. This application May 9, 1974, Ser. No. 468,499

Int. Cl. C03c *3/12*

U.S. Cl. 106—47 R **6 Claims**



1. A low melting vanadate glass having a composition, in weight percent as calculated on the oxide basis in terms of Cs_2O, PbO, As_2O_3, and V_2O_5, consisting essentially of 5–60 percent Cs_2O + PbO, wherein both Cs_2O and PbO are present in amounts greater than incidental impurity levels, 5–45% As_2O_3, and 25–85% V_2O_5, said glass being essentially free from SiO_2, P_2O_5, Al_2O_3, Li_2O, Na_2O, and K_2O.

3,885,976

SOLARIZATION RESISTANT GLASS CONTAINING YTTERBIUM OXIDE

Elias Snitzer, Wellesley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of Ser. No. 55,265, July 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 820,011, April 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 523,565, Jan. 28, 1966, abandoned. This application May 8, 1972, Ser. No. 251,730

Int. Cl. C03c *3/04, 3/30*

U.S. Cl. 106—52 **4 Claims**

4. In a solarization resistant glass composition selected from a group consisting of silicates, phosphates, borates and germanates containing an antisolarization agent, the improvement wherein said antisolarization agent consists of ytterbium oxide in the amount of 0.10 to 35 weight percent of said glass composition and wherein said composition contains as an ingredient to quench the fluorescence of Yb^{3+} ions in the region of 1 micron, an oxide of a transition metal ion in the amount of 0.01 to 5 weight percent of said glass composition selected from the group consisting of Ni^{2+}, Co^{2+}, Cu^{2+}, Fe^{2+} and V^{3+}, whereby the glass composition has non-solarization and non-

fluorescent properties in the visible and near infra-red regions of the optical wavelength spectrum.

3,885,977

ANISOTROPIC CORDIERITE MONOLITH

Irwin M. Lachman, and Ronald M. Lewis, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,862

Int. Cl. C04b *35/18, 35/20*

U.S. Cl. 106—62 **29 Claims**

1. An anisotropic, polycrystalline sintered ceramic product having cordierite as its primary phase and consisting essentially on an analytical oxide basis of 11.5–16.5% RO, 33–41% Al_2O_3 and 46.6–53% SiO_2 and having a coefficient of thermal expansion in at least one direction of less than 11.0×10^{-7} in./in./°C. over the range of 25°–1000°C., and wherein RO consists essentially of one member selected from the group consisting of NiO, CoO, FeO, MnO and TiO_2,

the NiO when selected being less than 25% by weight of the RO,

the CoO when selected being less than 15% by weight of the RO,

the FeO when selected being less than 40% by weight of the RO,

the MnO when selected being less than 98% by weight of the RO,

the TiO_2 when selected being less than 15% by weight of the RO,

and the balance of the RO being substantially all MgO.

3,885,978

INORGANIC COATING COMPOSITION

Kazuo Doi, Osaka; Jun Nakajima, Kyoto; Masahiko Shodai, Takatsuki; Junichi Uchimura, Nishinomiya; Takeaki Wada, and Zenzaburo Shibata, both of Osaka, all of Japan, assignors to Matsushita Electric Works, Limited, Kadoma, Japan

Continuation-in-part of Ser. No. 823,979, May 12, 1969, abandoned. This application Sept. 12, 1973, Ser. No. 396,367

Claims priority, application Japan, May 31, 1968, 43-37247; May 31, 1968, 43-37248; May 31, 1968, 43-37249; May 31, 1968, 43-37250

Int. Cl. C04b *19/00*

U.S. Cl. 106—85 **1 Claim**

1. An inorganic coating composition which comprises (1) a spinel type double oxide of (a) at least one metal selected from the group consisting of Zn, Mg, Ca and Ba and (b) at least one metal selected from the group consisting of Ti, Fe, Sn, Co, Cr, Al and Mn, (2) a binder selected from the group consisting of (a) condensed phosphoric acid metal salts, said metal being Al or a mixture of Al and one or more of Mg, Ca, Cu, Fe, Mn and Zn and (b) phosphates of the formula

$$MO \cdot xP_2O_5 \cdot yH_2O$$

wherein M is Al or a mixture of Al and one or more of Mg, Ca, Cu, Fe, Mn and Zn, the atomic ratio M/P being 0.25 – 1.0, and each of x and y is a real number, and (3) a curing agent selected from the group consisting of $Ca(OH)_2$, alumina cement, portland cement, $CaCl_2$ and $MgCl_2$, the amount of the double oxide being 15 – 70 parts by weight per 100 parts by weight of the phosphate binder and the amount of the curing agent being 1 – 15 parts by weight per 100 parts by weight of the phosphate binder.

3,885,979

CEMENT PRODUCTS

Arturo Rio; Marcello Cerrone, and Alberto Saini, all of Colleferro, Italy, assignors to Societa' Italiana per Azioni per la Produzione di Calci e Cementi di Segni, Rome, Italy

Filed Feb. 11, 1974, Ser. No. 441,661

Claims priority, application Italy, Aug. 6, 1970, 52712A/70; Aug. 8, 1970, 52749A/70

Int. Cl. C04b *7/02*

U.S. Cl. 106—89 **1 Claim**

1. A process for manufacturing cement articles having very high mechanical strength, comprising

a. forming articles of the desired shape from a member selected from the group consisting of mortar or concrete prepared from water and portland cement having a high silicic modulus, pozzolana cement, and a mixture consisting of 50 to 90% by weight of portland cement and 50 to 10% by weight of reactive siliceous material;

b. pre-aging the articles at room temperature;

c. steam curing the articles in an autoclave at a temperature from 150° to 250°C. for 1 to 6 hours; and

d. maintaining the steam cured articles in an anhydrous environment at a temperature from 120° to 350°C. for 1 to 12 hours.

3,885,980

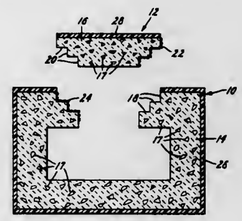
FIRE RESISTANT COMPOSITION

Michael J. Noone, Wayne, Pa., assignor to General Electric Company, Fairfield, Conn.

Filed Apr. 12, 1973, Ser. No. 350,538

Int. Cl. C04b *11/00*

U.S. Cl. 106—109 **2 Claims**



1. A composition of matter protective against temperature up to 1400°C. comprising:

a. gypsum;

b. discrete particulate inclusions therein of magnesium sulphate heptahydrate $M_gSO_4.7H_2O$.

3,885,981

STARCH COMPOSITIONS CONTAINING SALTS OF CERTAIN MONOALKYL FUMARATES AND MALEATES

Paul D. Thomas, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 805,020, March 6, 1969, abandoned, which is a continuation of Ser. Nos. 446,429, April 7, 1965, abandoned, and Ser. No. 661,221, Aug. 17, 1967, abandoned, said Ser. No. , Continuation-in-part of Ser. No. 391,080, is a continuation-in-part of Ser. No. 306,277, Sept. 3, 1963, abandoned. This application July 25, 1973, Ser. No. 382,395

Int. Cl. C08b *25/02, 27/26*

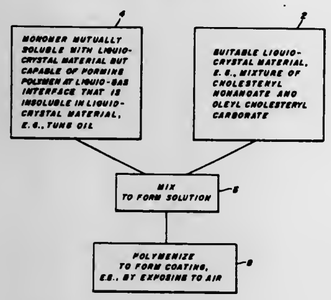
U.S. Cl. 106—210 **4 Claims**

1. A composition comprising starch and from about 0.1% to about 4% by weight based on said starch of a substance selected from the group consisting of the sodium, potassium, calcium and magnesiun salts of monoalkyl fumarates and maleates containing from about 14 to 18 carbon atoms in the alkyl group.

3,885,982
LIQUID CRYSTAL COATING

James L. Ferguson, Kent, Ohio, assignor to G. J. Roush, Seattle, Wash.

Continuation of Ser. No. 737,880, June 18, 1968, abandoned. This application Aug. 17, 1970, Ser. No. 64,602
Int. Cl. C08h 9/00
U.S. Cl. 106—252 4 Claims

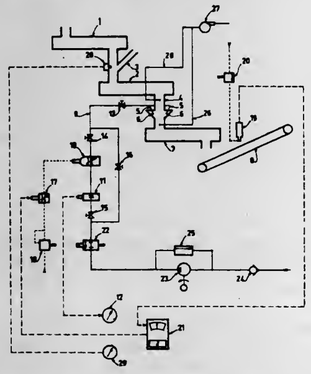


1. As a composition of matter, a mixture consisting essentially of 10 to 80 weight percent of a liquid crystal and 90 to 20 weight percent of a monomer drying oil miscible with the liquid crystal but capable of forming at a liquid-gas interface over the liquid crystal an essentially transparent hard surface polymer coating insoluble in the liquid crystal, the liquid crystal having the property of selective light scattering and being selected from the group consisting of cholesteric-phase liquid crystals and nematic-phase liquid crystals.

3,885,983
METHOD FOR PREPARING CARBONACEOUS PASTES

Roger Bulit, Wambrechies, France, assignor to Aluminum Pechiney, Paris, France

Filed Sept. 27, 1972, Ser. No. 292,518
Claims priority, application France, Sept. 28, 1971, 34750
Int. Cl. C08h 13/00, 17/02, 17/08
U.S. Cl. 106—281 5 Claims



1. A method of preparing, in particulate form, a carbonaceous paste consisting essentially of carbon in admixture with a carbonaceous binder capable of being fluidized by heat, for use of the carbonaceous paste particularly in the manufacture of electrodes, comprising the steps of heating the carbonaceous paste to a pasty state at a temperature considerably above 100°C, introducing said heated carbonaceous paste into a closed space and spraying water in atomized form into contact with the carbonaceous material as it passes through the enclosed space whereby the droplets of water vaporize upon contact with the heated carbonaceous material to break up the carbonaceous material into small and relatively dry fragments while simultaneously cooling the fragments of carbonaceous material, and collecting the cooled fragments of carbonaceous material for removal from the enclosed space.

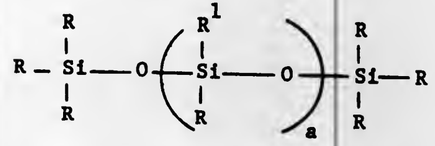
3,885,984
METHYL ALKYL SILICONE THERMOCONDUCTING COMPOSITIONS

John H. Wright, Elnora, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Dec. 18, 1973, Ser. No. 425,815
Int. Cl. C09k 3/02
U.S. Cl. 106—287 SB 13 Claims

1. A composition having high thermoconductance comprising:

i. a methyl alkyl polysiloxane having the formula



wherein R is methyl and R^1 is a monovalent hydrocarbon radical having from four to 16 carbon atoms and being free of aliphatic unsaturation, and a has an average value of from 4 to 40; and

ii. a thickener selected from the group consisting of beryllium oxide, zinc oxide, aluminum oxide and silicon oxide, the amount of said thickener in said composition being at least sufficient to provide a penetration of 350 when measured according to ASTM Test Method 217D.

3,885,985
ADDITIVE FOR IMPROVING HYDRAULIC CEMENT COMPOSITIONS

Frank G. Serafin, Peabody; Robert W. Previte, Lawrence, and Robert F. Stierli, Lexington, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 403,963, Oct. 5, 1973. This application Apr. 1, 1974, Ser. No. 456,715
Int. Cl. C04b 13/24
U.S. Cl. 106—315 10 Claims

1. An additive for hydraulic cement compositions which additive is readily dispersible in water and comprises an oil-in-water emulsion in which the solids portion is comprised of a major proportion of a water-insoluble, water-repelling acid component selected from the group consisting of fatty acids, rosin acids and mixtures thereof, from about 3 to about 30 percent by weight of a set-retarding component for said hydraulic cement, and at least about 0.5 percent by weight of an emulsifier formed by reacting said acid component with a base capable of forming a salt thereof, which salt will maintain a stable emulsion.

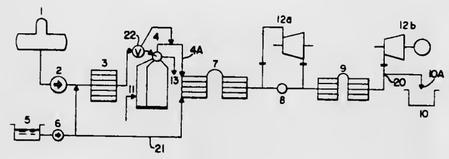
3,885,986
METHOD FOR THE CHEMICAL TREATMENT, LIKE CLEANING OR PICKLING, OF INSTALLATIONS WITH AT LEAST ONE STEAM GENERATOR

Victor Dahm, Winterthur, Switzerland, assignor to Beratherm AG, Zurich, Switzerland

Filed Oct. 19, 1973, Ser. No. 408,199
Int. Cl. B08b 9/06; C23g 1/02
U.S. Cl. 134—3 9 Claims

1. A method for chemically treating, including cleaning, pickling and the like, of installations of the type having at least one steam generator, wherein the steam generator is of the natural circulation kind having substantially vertically directed circulation conduits and operable on the thermosyphon principle during steam generation, said installation being further of the type having a forced through-flow system to which the steam generator is connectible at an intermediate point wherein a first part of said through-flow system is preceded by a feed-water pump and is located ahead of said steam generator in series with the remaining part of said through-flow system which follows said steam generator, said through-flow system parts including at least one parallel pipe system, said method comprising the steps of:

first introducing a treatment liquid into said part of said installation in front of said steam generator and urging said treatment liquid through said part with said pump and filling said steam generator with said treatment liquid from said first part;



injecting a gas into the treatment liquid in the lower zone of the steam generator and thereby reducing the specific weight of such treatment liquid thereat to effect a self-circulation of the treatment liquid within the steam generator;

subsequent to complete filling of the steam generator, forcing a flow with said pump of treatment liquid from the steam generator through the following part of said through flow system;

whereby treatment liquid self-circulates within the steam generator for chemical treatment of the conduits thereof and treatment liquid is forcibly circulated by said pump through the pipe systems of the prior and following parts of the through-flow system.

3,885,987
PROCESS FOR CLEANING AND SANITIZING EAR SETS

Alvin L. Keister, Altadena; Joseph A. Machuszek, Lennox, and Joseph M. Machuszek, Manhattan Beach, all of Calif., assignors to Flight Services Unlimited Inc., El Segundo, Calif.; Flight Services Industries Inc., Bensenville, Ill. and Flight Services Industries Inc., New York, N.Y.

Filed Dec. 13, 1973, Ser. No. 424,554
Int. Cl. B08b 7/04
U.S. Cl. 134—6 8 Claims

1. A process for cleaning and sanitizing ear sets having ear tips, yoke portions, ear set lines, and ear set line portions, comprising in sequence the steps of:

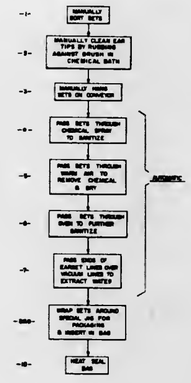
cleaning the ear tips of said sets in a chemical bath,

spraying the ear sets with a liquid chemical spray to sanitize said ear sets,

passing the ear sets through warm air to remove liquid chemical deposited thereon during both the bath cleaning and the spraying and dry the outer portions thereof,

passing the ear sets through an oven heated to a temperature sufficient to effect further sanitization of the ear sets,

passing the ear sets by vacuum and blower lines to extract liquid from inside the ear sets and the ear set lines,



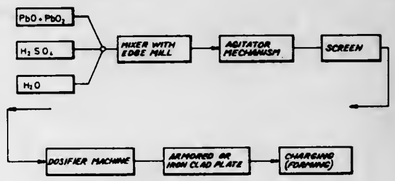
wrapping the ear sets around a jig, and

packaging the ear sets in bags.

3,885,988
METHOD AND APPARATUS FOR FILLING ADJACENT INSULATING TUBES FORMING THE POSITIVE PLATE OF A LEAD-ACID STORAGE BATTERY

Lorenz Bohle, Gerhardt-Hauptmann-Str. 9, 4415 Westkirchen, Germany

Filed Oct. 4, 1973, Ser. No. 403,540
Int. Cl. H01m 35/26
U.S. Cl. 136—27 6 Claims



1. A method of filling a plurality of adjacent porous tubes of a lead acid storage battery with a paste-like mixture having lead oxide therein comprising the steps of:

adding supplementary water to the paste-like mixture to reduce the viscosity to form a suspension of a reduced viscosity with the water serving as a carrier for the paste, injecting the suspension under pressure into the tubes quickly before the supplementary carrier water separates from the suspension and in sufficient quantity to provide the predetermined volume of paste for the battery tubes, and separating the supplementary water from the paste-like mixture and from the suspension.

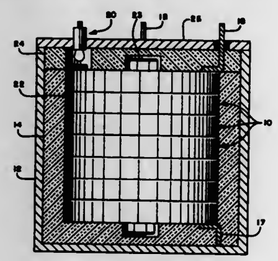
3,885,989
THERMAL BATTERY

Donald M. Bush, Tijeras, N. Mex., assignor to The United States Energy Research and Development Administration, Washington, D.C.

Filed May 30, 1974, Ser. No. 474,549
Int. Cl. H01m 21/14
U.S. Cl. 136—83 T 2 Claims

1. A long-life thermal battery comprising a casing; a plurality of electrochemical cells in said casing, each cell including a calcium anode disc, an electrically conductive heat generat-

ing disc, and a normally solid fusible electrolyte disc sandwiched between said anode and heat generating discs, said electrolyte disc including a homogeneous mixture of a calcium



chromate depolarizer, a silicon dioxide binder, and an electrolyte mixture of potassium chloride, lithium chloride, and calcium hydroxide; and means for igniting said heat generating discs.

3,885,990

GALVANIC CELL

Stanley M. Bloom, Waban, and Arnold Hoffman, Brookline, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 9, 1973, Ser. No. 414,511
Int. Cl. H01m 17/00
U.S. Cl. 136—102 6 Claims

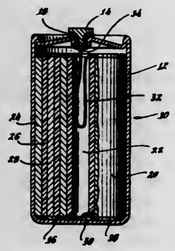
1. A galvanic cell comprising a zinc anode, a cathode and an aqueous electrolyte wherein the electrolyte includes a relatively insoluble mercurous compound which is substantially less soluble than mercuric chloride.

3,885,991

PRIMARY ELECTROCHEMICAL CELL

Joel Roberts Finkel, Wayland, Md., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 28, 1974, Ser. No. 473,460
Int. Cl. H01m 1/02
U.S. Cl. 136—107 12 Claims



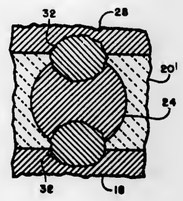
1. A primary cell comprising
an outer case,
an anode,
a cathode,
an electrolyte between and in contact with the anode and the cathode,
the anode, cathode and electrolyte being disposed in the outer case,
a device having essentially unidirectional current flow and low voltage drop in the current flow direction characteristics, being electrically connected to one of the anode and cathode in such a manner that current flow in a recharging direction in the primary cell is prevented so that recharging and reversed polarity operation of the primary cell are precluded, and being disposed within the outer case, and
means for conducting heat away from the device so that the device is protected against heat degradation when high current is passed therethrough.

3,885,992

THERMOCOUPLE AND METHOD OF MAKING SAME

Paul D. Wilcox, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Division of Ser. No. 290,685, Sept. 20, 1972, Pat. No. 3,821,053. This application Jan. 9, 1974, Ser. No. 431,999
Int. Cl. H01v 1/04
U.S. Cl. 136—212 7 Claims



1. A thermoelectric couple comprising an N-type thermoelectric semiconductor material plate, a P-type thermoelectric semiconductor material plate overlying and spaced from said N-type plate with a surface and edges coextensive with and generally parallel to a surface and edges of said N-type plate, an elongated electrically conductive metal member sandwiched between said plates adjacent to and along coextensive edges thereof and thermally joined into interbonded and electrical contact therewith along its length with said coextensive surfaces of said thermoelectric plates to form a thermoelectric junction between said plates along said member length and coextensive edges, and an electrical insulator fused glass layer means for filling space between said coextensive surfaces and around unbonded portions of said conductive member and for bonding said plates and said conductive member together from thermal wetting and cooling of said glass layer means in place simultaneous with thermal joining of said plates and conductive member.

3,885,993

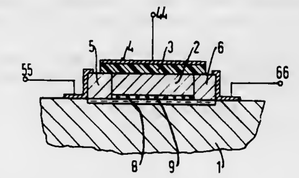
METHOD FOR PRODUCTION OF P-CHANNEL FIELD EFFECT TRANSISTORS AND PRODUCT RESULTING THEREFROM

Jenoe Tihanyi, Neuried, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 22, 1973, Ser. No. 325,616
Claims priority, application Germany, Feb. 21, 1972, 2208083
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 22 Claims

1. A process for the production of a p-channel field effect transistor which includes forming a layer of silicon on a spinel substrate, forming p^+-source and drain regions in said silicon layer with a gate region therebetween, forming an insulating layer over said gate region and overlapping a portion of each of said source and drain regions, forming electrodes on said insulating layer and on a portion of each of said source and

drain regions, at least one of the aforesaid steps being carried out at a relatively high temperature, and finally annealing said



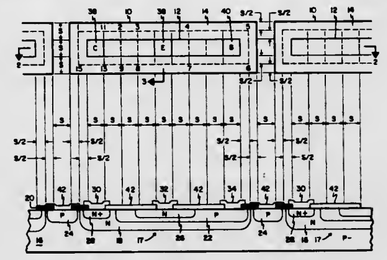
substrate and said silicon layer in a hydrogen atmosphere after all of said high temperature steps have been terminated.

3,885,994

BIPOLAR TRANSISTOR CONSTRUCTION METHOD

Ralph W. Miller, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 25, 1973, Ser. No. 363,995
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 12 Claims



1. A method of fabricating a bipolar transistor in integrated circuit form by a triple deposition process, comprising:
A. forming on a semiconductor substrate surface of first conductivity type a permanent mask from a layer of a first masking material having an inner boundary defining a rectangular opening of predetermined length and width and an outer boundary spaced equidistant from said inner boundary, said inner and outer boundaries defining an annular tolerance region within which must lie edges of subsequent masks of a second material, said first masking material being readily etchable by a first etchant but not by a second etchant;
B. superimposing over said permanent mask a first mask of a second masking material with all four edges thereof lying within said tolerance region so as to mask regions in said substrate surrounding said permanent mask while leaving unmasked the entire area of said substrate lying within said rectangular opening, said second masking material being readily etchable by said second etchant but not by said first etchant;
C. introducing firstly an impurity of second conductivity type through said rectangular opening to form a collector region of second conductivity type within said substrate;
D. superimposing over said permanent mask a second mask of said second masking material with at least one edge thereof crossing said rectangular opening and with the remaining edges thereof lying within said tolerance region so as to partially mask said rectangular opening while leaving unmasked only an area portion of said collector region;
E. introducing secondly an impurity of said first conductivity type into the unmasked area portion of said collector region to form a base region of said first conductivity type within said collector region;
F. superimposing over said permanent mask a third mask of said second masking material with at least three edges thereof crossing said rectangular opening and with the remaining edges thereof lying within said tolerance region so as to partially mask said rectangular opening while leaving unmasked an area portion only of said collector region and an area portion only of said base region; and
G. introducing thirdly an impurity of said second conductivity type into the unmasked area portions of said collector and base regions to form a collector contact region within said collector region and an emitter region within said base region, respectively.

3,885,995

PROCESS FOR CARBURIZING HIGH ALLOY STEELS

Roy J. Cunningham, Turnersville, N.J., and Warren Lieberman, Broomall, Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 10, 1973, Ser. No. 349,715
Int. Cl. C22c 39/14; C23c 11/12
U.S. Cl. 148—6.35 9 Claims

1. A process for carburizing a high alloy steel having a carbon content of 0.05 to 0.3 percent and a chromium content of from 2 to 25 percent or greater comprising:
a. heating the steel at a temperature of 1000°F to 1900°F in an oxidizing atmosphere for a period of time of about 30 minutes to 4 hours and sufficient to form a high temperature oxide on the steel surface; and
b. carburizing the steel containing the high temperature oxide in a gas having a carbon potential of about 0.6 to 15 percent at a temperature of about 1550° to 2100°F.

3,885,996

METHOD OF MAKING BALL STUDS

Michio Abe, Kasugai, Japan, assignor to Tokai TRW & Co. Limited, Japan

Continuation-in-part of Ser. No. 210,799, Dec. 22, 1971, abandoned. This application Jan. 28, 1974, Ser. No. 436,955
Claims priority, application Japan, Dec. 28, 1970, 45-119330
Int. Cl. C21d 1/10; C23c 11/12
U.S. Cl. 148—12.1 11 Claims

1. The method of making a ball stud from a rod-like blank initially containing as essential ingredients 0.13 to 0.18 percent carbon; 0.9 to 1.2 percent chromium, 0.15 to 0.30 percent molybdenum, and the remainder essentially all iron; cold forming one end of the blank into a ball portion; heating the blank to about 800° C, then supplying carburizing gas to the blank while raising the temperature thereof in the range 890° C to 920° C, cutting off the supply of carburizing gas at the end of a preselected time period, while maintaining the temperature essentiaally constant in the aforesaid range for a time about one-third of said preselected time period, to effect diffusion, quenching the blank, reheating the blank in the range 420° C to 500° C, for about 1-½ hours, quenching the blank, rapidly reheating the ball portion only of the stud by high frequency induction in the range 800° C to 850° C; and immediately quenching the reheated ball portion.

3,885,997

METHOD OF PRODUCING A HOT ROLLED AND AGE HARDENED COLUMBIUM-BEARING STEEL PRODUCT

John H. Bucher, and Daniel F. Jancula, both of Pittsburgh, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed June 13, 1974, Ser. No. 479,007
Int. Cl. C21d 7/14
U.S. Cl. 148—12.3 6 Claims

1. A process for producing a killed high strength low alloy steel product having a yield strength in excess of about 80,000 p.s.i. in the hot rolled and age hardened condition, comprising:

a. hot rolling a steel consisting essentially of 0.06 to 0.14 percent carbon, 0.6 to 1.5 percent manganese, 0.07 percent maximum, phosphorous, 0.04 to 0.12 percent columbium, molybdenum in residual quantities, nitrogen in residual quantities, balance iron, at a finishing temperature of from 1550° to 1650°F,

b. collecting said hot rolled steel at a temperature of from 1000° to 1250°F; and

c. age hardening said hot rolled steel by continuously heat treating the steel at a temperature of from 1050° to 1250°F for a time of from 0.5 to 5 minutes so as to increase the yield strength of said hot rolled steel by from about 3,000 to 15,000 p.s.i.

3,885,998

METHOD FOR THE SIMULTANEOUS FORMATION OF SEMICONDUCTOR COMPONENTS WITH INDIVIDUALLY TAILORED ISOLATION REGIONS

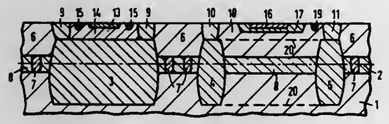
Klaus Reindl, Sherman, Tex., assignor to Siemens Aktiengesellschaft, Munich, Berlin and Erlangen, Germany

Continuation of Ser. No. 95,064, Dec. 4, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 298,013

Claims priority, application Germany, Dec. 5, 1969, 1961247

Int. Cl. H01l 7/36, 27/02

U.S. Cl. 148—175 **2 Claims**



1. Method of producing at least two adjacent semiconductor components each having at least two regions of varying conductance type, the conductance type of the regions of the one semiconductor component being different from those of the other semiconductor component, one region of the one conductance type being surrounded by an insulating zone of the other conductance type electrically insulating the respective semiconductor component, said insulating zone and two regions adjacent said insulating zone forming a parasitic transistor having an electrical amplification lower than the electrical amplification of a normal transistor having a base region that is of said one conductance type; which comprises covering with a masking layer a surface of a semiconductor base member at regions thereof intended for the production of semiconductor components with individually tailored isolation regions; selectively diffusing to produce at least a highly doped annular zone and a second zone into the regions of the semiconductor base member not covered by the masking layer, which zones will form parts of isolating tubs for portions of a subsequently deposited semiconductor layer, removing the masking layer, epitaxially applying semiconductor material of one conductance type to the surface of the semiconductor base member, forming through diffusion and vapor deposition a thin weakly doped zone of the other conductance type at the interface of the epitaxial layer and substrata, said thin zone resulting from the rapid lateral surface diffusion from the highly doped regions, diffusing to produce at least two strongly doped insulating walls so that one insulating wall, the highly doped annular zone and the weakly doped zone define one insulating tub and the other insulating wall and other highly doped zone forms the second different insulating tub.

3,885,999

PLANAR EPITAXIAL PROCESS FOR MAKING LINEAR INTEGRATED CIRCUITS

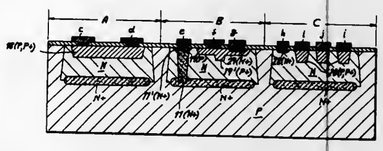
Marzio Fusaroli, Milan, and Alessandro Pecorella, Savona, both of Italy, assignors to Ates Componenti Elettronici S.p.A., Agrate Brianza, Italy

Filed Dec. 12, 1972, Ser. No. 314,475

Claims priority, application Italy, Dec. 15, 1971, 32459/71

Int. Cl. H01l 7/36, 27/04

U.S. Cl. 148—175 **3 Claims**



1. A process for producing integrated circuitry including several juxtaposed units, comprising the steps of:

a. forming, on a substrate of semiconductive silicon of one conductivity type, a plurality of spaced-apart strata with a highly concentrated doping of the opposite conductivity type;

b. epitaxially growing on said substrate a layer of semiconductive silicon of said opposite conductivity type withh less concentrated doping, thereby imbedding said strata between said substrate and said layer; c. thereafter starting a downward growth of barriers between sections of said layer respectively containing said strata by cutting spaced-apart windows in a film of silicon oxide overlying said layer, in intervening regions between said strata, and diffusing impurities of said one conductivity type into said layer through said windows;

d. subsequently cutting a further window in said film above at least one of said sections and diffusing a high concentration of impurities of said opposite conductivity type through said further window to form a web unitary with the underlying stratum simultaneously with the completion of the growth of said barriers into contact with said substrate to isolate said sections from one another;

e. doping selected surface areas of said sections with highly concentrated impurities of said one conductivity type via additional windows formed in said film;

f. thereafter introducing less concentrated impurities of said one conductivity type through said additional windows into enclaves of said sections at said selected surface areas;

g. broadening an additional window formed in step (e) in said one of said sections adjacent said web and thereupon introducing some of said less concentrated impurities of said one conductivity type into said layer through the broadened window to form a stepped enclave;

h. simultaneously letting said highly concentrated and less concentrated impurities of said one conductivity type diffuse to a predetermined depth into said sections to extend said enclaves toward said strata; and

i. applying metallic terminals to said selected surface areas in contact with said enclaves.

3,886,000

METHOD FOR CONTROLLING DIELECTRIC ISOLATION OF A SEMICONDUCTOR DEVICE

Robert L. Bratter, Mahopac, and Arun K. Gaind, Fishkill, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Nov. 5, 1973, Ser. No. 413,095

Int. Cl. H011 7/36, 27/12

U.S. Cl. 148—175 **19 Claims**

1. A method for fabricating a laterally isolated semiconductor device comprising:

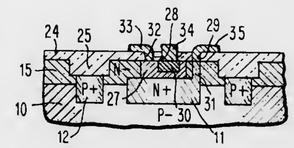
depositing a layer of silicon oxynitride on a surface of a body of silicon;

forming communicating openings in the layer of silicon oxynitride and the body in laterally surrounding relation to a portion of the body;

oxidizing the openings in the layer of silicon oxynitride and the body to form a laterally surrounding dielectric isolation barrier of silicon dioxide in the body while simultaneously converting the layer of silicon oxynitride to a layer of silicon dioxide on the surface of the body;

selecting the index of refraction of silicon oxynitride in conjunction with the thickness of the layer of silicon oxynitride to produce the layer of silicon dioxide of a desired thickness;

and forming an integrated circuit component in the body within the laterally surrounding dielectric isolation barrier.



3,886,001

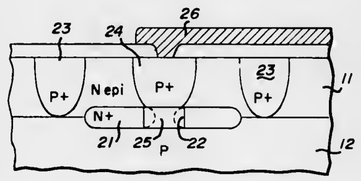
METHOD OF FABRICATING A VERTICAL CHANNEL FET RESISTOR

Robert C. Dobkin, Menlo Park, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 2, 1974, Ser. No. 466,225

Int. Cl. H01l 7/44, 27/02

U.S. Cl. 148—175 **4 Claims**



1. The method for making a channel FET in the substrate of a monolithic integrated circuit device, said substrate being of a first conductivity type, comprising the steps of,

diffusing a buried layer region of a second conductivity type into the device substrate, said buried layer region being band-shaped with an opening therethrough,

growing an epitaxial layer of said second conductivity type on said substrate and over said buried layer,

diffusing an isolation region of said first conductivity type into said epitaxial layer around said buried layer region, diffusing a channel region of said first conductivity type into said epitaxial layer within said isolation region and down through the opening in said buried layer and into said substrate, said channel region diffusion taking place with said isolation region diffusion, and

forming a surface contact with said channel region.

3,886,002

METHOD OF OBTAINING A FUSED, DOPED CONTACT BETWEEN AN ELECTRODE METAL AND A SEMI-CONDUCTOR

Jury Stepanovich Akimov, ulitsa Kosmonavtov, 4, kv. 30; Auli Alexandrovich Galaev, ulitsa Podbelskogo, 6, korpus 7; Semen Samuilovich Gorelik, ulitsa Valovaya, 4-2/44, kv. 8; Boris Izrailevich Gofman, ulitsa 2 Kabelnaga, 10, kv. 53; Vyacheslav Dmitrievich Ermoshin, ulitsa Ilovaiskaya, 6, kv. 4, all of Moscow; Stanislav Konstaninovich Korovin, ulitsa Zelenaga, 18, Domodedovo, Moskovskoi oblasti; Vladimir Vasilievich Naumov, ulitsa Scherbakovskaya 26/30, kv. 202, Moscow; Konstantin Andreevich Preobrazhentsev, ulitsa Narodnogo Opolcheniya, 16, korpus 3, kv. 8, Moscow; Stanislav Vladislavovich Fronk, Sirenevy bulvar, 36, kv. 154, Moscow; Vadim Lvovich Shvartsman, Krasnokazarmennaya ulitsa 3, kv. 323, Moscow; Vladimir Vasilievich Garshenin, Cherkizovskaya ulitsa, 6 korpus 4, kv. 93, Moscow; Oleg Fedorovich Stakhov, Volgogradsky Prospekt, 158, korpus 2, kv. 6, Moscow; Igor Ivanovich Kruglov, 15 Parkovaya ulitsa, 46 korpus 1, kv. 35, Moscow, and Mark Markovich Samokhvalov, ulitsa Krasikova, 8, korpus 2, kv. 48, Moscow, all of U.S.S.R.

Filed June 20, 1973, Ser. No. 371,844

Int. Cl. H01l 7/46

U.S. Cl. 148—180 **13 Claims**

1. A method of producing a fused doped contact between an electrode metal selected from the group consisting of silver, gold and tin and a semi-conductor comprising coating the surface of the semi-conductor essentially with a layer of a transition metal selected from the group consisting of titanium, niobium and zirconium at the reducing temperature of the semi-conductor oxide, coating said layer with a layer of the electrode metal and then with alternating layers of a doping agent and the electrode metal whereby a multilayer structure is formed having a doping agent layers between the electrode metal layers, heating the multilayer structure to a temperature not less than the temperature of the eutectic of "electrode metal-semi-conductor" for a time sufficient to obtain on the surface of the semi-conductor a melt containing the material of the semi-conductor, the electrode metal and the doping agents and to permit diffusion of the doping agent from the melt into the semi-conductor to form a p-n junction, and cooling the semi-conductor to obtain a doped ohmic contact.

3,886,003

METHOD OF MAKING AN INTEGRATED CIRCUIT

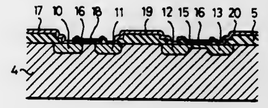
Mikio Takagi, Tokyo; Hajime Kamioka, Hoya; Kazufumi Nakayama, and Chiaki Terada, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Japan

Filed Oct. 3, 1972, Ser. No. 294,580

Claims priority, application Japan, Oct. 4, 1971, 46-77715

Int. Cl. H01l 7/44

U.S. Cl. 148—187 **8 Claims**

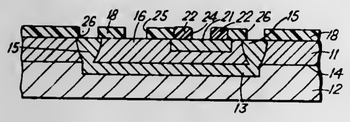


8. The method of manufacturing an integrated semiconductor assembly as claimed in claim 1, including the steps of forming a gate insulator on the surface areas of said substrate intermediate each source and drain and forming a gate electrode on said gate insulators.

3,886,004
METHOD OF MAKING SILICON SEMICONDUCTOR DEVICES UTILIZING ENHANCED THERMAL OXIDATION

Jeffrey Alan Bruchez, Hazel Grove, England, assignor to Ferranti Limited, Hollinwood, Lancashire, England

Filed Feb. 27, 1973, Ser. No. 336,375
Int. Cl. H01l 7/36, 27/04
U.S. Cl. 148—187 8 Claims

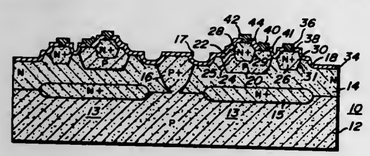


1. An improved method of manufacturing a semiconductor device of the collector-diffusion-isolation type in a semiconductor body comprises the steps of providing a substrate of P conductivity type, forming at least one heavily doped region of N conductivity type adjacent to a selected part of one surface of the substrate, depositing on said surface an extrinsic epitaxial layer of said P conductivity type thereby burying said heavily doped region at the interface of said substrate and said epitaxial layer, forming an isolation barrier of said N conductivity type extending through said epitaxial layer and in contact with the heavily doped buried region, depositing a first silicon oxide layer on the whole of the exposed surface of the epitaxial layer, selectively removing portions of the silicon oxide layer to expose at least one selected region of the epitaxial layer, selectively doping selected regions with phosphorus to form a heavily doped region of said N conductivity type and characterized by the improvement of limiting the deposition of the first silicon oxide layer to form a first oxide layer having thickness less than 3000A thick, subjecting the doped selected regions to steam oxidation to provide a second oxide layer without causing a significant change in the impurity concentration gradients within the semiconductor body wherein the thickness of the silicon oxide layer formed by steam oxidation of the doped regions provides a smoothly graded thickness between the first and the second silicon oxide layers and simultaneously etching apertures through the first and the second silicon oxide layers to expose surface regions of the epitaxial layer.

3,886,005
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Mario E. Cota, Scottsdale, and John F. Osborne, Tempe, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed July 13, 1973, Ser. No. 379,046
Int. Cl. H01l 7/34
U.S. Cl. 148—188 5 Claims



1. A method for making a semiconductor device comprising the steps of:
- depositing a first layer of a doped oxide of silicon of a second conductivity type on a surface of a body of silicon of a first conductivity type;
- forming a first layer of photoresist on said first layer of doped oxide of silicon, said layer of photoresist being patterned to expose the surface of said first layer of doped oxide of silicon;
- subjecting said exposed surface to a first etchant and removing said exposed surface of said first layer of doped oxide of silicon thereby exposing said surface of said body of silicon;
- subjecting said exposed surface of said body of silicon and said first layer of photoresist to a plasma etchant in a reactor for selectively removing in sequence a predetermined thickness of material from said exposed silicon surface to delineate the region of said body of silicon beneath said first layer of doped oxide of silicon and said first layer of photoresist; and
- heating said body of silicon to diffuse doping impurities from said first layer of doped oxide of silicon into said body of silicon to form a region of said second conductivity type therein.

3,886,006
REINFORCED CONSOLIDATED DOUBLE BASE PROPELLANT

Thomas E. Martin, Blountsville, Ala., and John C. Horvath, Radford, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 354,553, April 24, 1973, Pat. No. 3,860,678. This application Oct. 18, 1973, Ser. No. 405,717
Int. Cl. C06c 3/10
U.S. Cl. 149—14 2 Claims

1. A consolidated propellant system comprised of a prior cured double base propellant composition in sheet form that has been softened during a consolidation method whereby said double base propellant composition in sheet form is consolidated with a reinforcing mesh to provide a consolidated propellant system in which said reinforcing mesh has said cured double base propellant composition of uniform thickness on each side thereof, said cured double base propellant composition consisting essentially of in weight percent nitrocellulose from about 48–50, nitroglycerin 38–44, and the balance being trace amounts of 0.1–2.0 of a crosslinking agent, stabilizer, ballistic modifier, catalyst, and procesing aid to enable said cured double base composition to be consolidated with said reinforcing mesh to provide a uniform thickness of propellant on each side of said reinforcing mesh, and said reinforcing mesh being selected from fiber glass, aluminum, copper, and stainless steel.

3,886,007
SOLID PROPELLANT HAVING A FERROCENE CONTAINING POLYESTER FUEL BINDER

Charles S. Combs, Jr., Huntsville, and Charles I. Ashmore, Owens Cross Roads, both of Ala., assignors to Thiokol Corporation, Bristol, Pa.

Division of Ser. No. 730,633, May 20, 1968, abandoned. This application May 9, 1973, Ser. No. 358,568
Int. Cl. C06d 5/06
U.S. Cl. 149—19.2 4 Claims

1. In a solid propellant composition comprising;
- an oxidizer selected from the group consisting of ammonium perchlorate, ammonium nitrate and RDX, a metallic fuel and a polymeric binder, the improvement comprising:
- said binder comprising a ferrocene polyester consisting essentially of the reaction product of 2-butane-1,4-diol and (ferrocenylmethylthio) succinic acid.

3,886,008
BLASTING COMPOSITION FOR USE UNDER HIGH TEMPERATURE CONDITIONS

Melvin A. Cook, Salt Lake City, Utah, assignor to Ireco Chemicals, Salt Lake City, Utah

Continuation of Ser. No. 876,568, Nov. 13, 1969, abandoned. This application Jan. 21, 1974, Ser. No. 434,765
Int. Cl. C06b 1/04
U.S. Cl. 149—41 7 Claims

1. An explosive blasting composition free of water and stable at temperatures as high as from about 100° to about 200°C consisting essentially of in parts by weight:
- 30–70 percent of sodium nitrate
- 0–40 percent of ammonium nitrate
- 2–20 percent of aluminum
- 1–10 percent of solid carbonaceous fuel
- 1–10 percent of an oxygen-containing liquid fuel selected from the group which consists of formamide, dimethylformamide, glycols, and glycol ethers and combinations thereof having a boiling point of at least 140°C.

3,886,009
PROJECTILE CONTAINING PYROTECHNIC COMPOSITION FOR REDUCING BASE DRAG THEREOF

Walter J. Puchalski, Southampton, Pa., assignor to The Government of the United States as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 13, 1973, Ser. No. 424,508
Int. Cl. C06b 1/00
U.S. Cl. 149—43 7 Claims

1. Pyrotechnic composition for reducing drag of a projectile, said projectile having a posterior cavity, said composition disposed in said posterior cavity of said projectile, said composition reducing drag by emitting gases into void rearward said projectile, said void caused by flight of said projectile, said gases substantially filling said void, said pyrotechnic composition comprising by weight 25 to 35 percent magnesium, 47 to 58 percent strontium nitrate, 6 to 12 percent calcium resinate, 1 to 12 percent gelatin.

3,886,010
STABILIZED AND AERATED BLASTING SLURRY CONTAINING THIOUREA AND A NITRITE GASSING AGENT

Gary M. Thornley, Bountiful, and Lex L. Udy, Salt Lake City, both of Utah, assignors to Ireco Chemicals, Salt Lake City, Utah

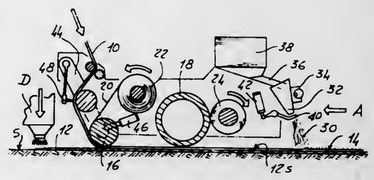
Continuation of Ser. No. 274,236, July 24, 1972, abandoned, which is a continuation of Ser. No. 816,770, April 16, 1968, abandoned. This application July 5, 1973, Ser. No. 376,874
Int. Cl. C06b 1/04
U.S. Cl. 149—60 5 Claims

1. In a blasting composition of the aqueous gel or slurry type employing a decomposable nitrite gassing agent and containing oxidizer salt selected from the group which consists of the ammonium, alkali metal and alkaline earth metal nitrates and the ammonium and alkali metal chlorates and perchlorates, a sufficient amount of fuel of liquid or solid type or both to bring the overall oxygen balance of the composition within the range of +25 to −50 percent, an aqueous fluid phase containing at least part of the oxidizer salt in a concentrated solution, and an organic colloidal galactomannan thickener, the improvement which comprises including thiourea to accelerate decomposition of the nitrite gassing agent while concomitantly stabilizing the thickening effectiveness of the glactomannan thickener.

3,886,011
APPARATUS AND PROCEDURE FOR APPLYING MARKING STRIPES

Ludwig Eigenmann, Vacallo, Canton Ticino, Switzerland

Filed Sept. 14, 1973, Ser. No. 397,245
Int. Cl. B32b 31/12
U.S. Cl. 156—71 15 Claims

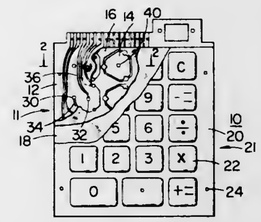


1. In an apparatus for applying traffic lines and markings on a road surface, a combination comprising means for placing a bonding layer on the road surface, said bonding layer having an adhesive upper surface when freshly formed; means including a first and second roller means for applying and pressing a marking tape of a width less than the width of said bonding layer onto said adhesive upper surface while the apparatus travels on the road surface; means for temporarily positioning a protective film intermediate said roller means and said marking tape and adhesive upper surface where said roller means contacts said marking tape and the adjacent uncovered lateral portions of said bonding layer; and means for depositing a layer of powdery material on at least said uncovered lateral portions so as to become embedded in the uncovered portions of said bonding layer to minimize the adhesiveness of said upper surface of the latter.

3,886,012
METHOD OF ASSEMBLY OF KEYBOARD SWITCH BY ULTRASONICS

Laurie F. Slater, Fort Wayne, Ind., assignor to Bowmar Instrument Corporation

Filed Aug. 13, 1973, Ser. No. 387,909
Int. Cl. B32g 31/20
U.S. Cl. 156—73.1 12 Claims



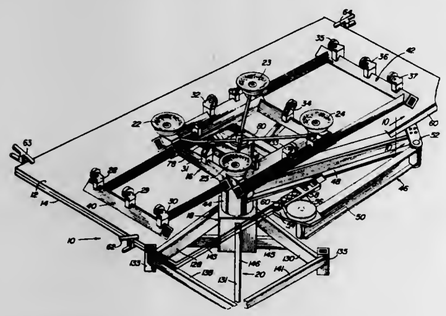
1. The method of assembling a keyboard comprising the steps of:
- a. providing an insulative, planar board having opposite surfaces, one of said surfaces having at least one switch contact thereon,
- b. providing a first sheet of insulating material having opposite surfaces respectively coated with ultrasonically actuatable adhesive material, said first sheet having an opening therein adapted to receive a switch element,
- c. placing one surface of said first sheet on said one surface of said board with said contact exposed to said opening,
- d. placing a second sheet of material which will not bond to said adhesive material on the other surface of said first sheet thereby forming a first sandwich comprising said board and said first and second sheets,

e. placing said first sandwich in ultrasonic welding apparatus and energizing the same thereby to activate said adhesive material on said one surface of said first sheet to bond the same to said one surface of said board,
f. removing said first sandwich from said apparatus and removing said second sheet from said first sheet,
g. placing a switch element in said opening in cooperative relationship with said contact,
h. placing a third sheet of insulating material on said other surface of said first sheet over said switch element thereby forming a second sandwich comprising said board and said first and third sheets,
i. placing said second sandwich in said apparatus and energizing the same thereby to actuate said adhesive material on said other surface of said first sheet to bond the same to said third sheet, and
j. removing the thus bonded second sandwich from said apparatus.

3,886,013
PIVOTED ARM DEVICE FOR ASSEMBLY OF MULTIPLE GLAZED UNITS

George H. Bowser, New Kensington; Renato J. Mazzoni, and John P. Martinec, both of Tarentum, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1973, Ser. No. 384,541
Int. Cl. B32b *31/04;* **E06b** *3/66*
U.S. Cl. 156—109 **1 Claim**

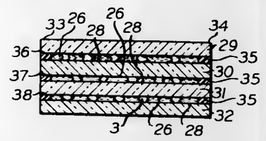


1. A method for assembling window units by inserting a spacer portion of a composite strip between the contiguous peripheral edges of two sheets of glass, pressing a sealant portion of the composite strip against said peripheral edges, folding the lateral edges of said strip over the outside marginal surfaces of said sheets and finishing said lateral edges in a single operation whereby a window unit is assembled in a single pass, the steps of:
securing a first sheet of glass to a horizontal work surface; securing a second sheet on and in alignment with said first sheet;
pivotally mounting a tool support arm for motion in a plane parallel to the space between said first and second sheets; pivotally securing to the free end of said pivotally mounted tool support arm an assembly tool comprising spacer wedge means, feed roll and inserter means and finishing means;
inserting said spacer wecge means between said sheets of glass to separate said sheets a distance sufficient to permit insertion of said spacer portion of said composite strip;
advancing said assembly tool around the peripheral edges of said sheets while feeding said composite strip to said feed roll and inserter means and sequentially pressing said spacer portion of said composite strip by said inserter means into the space between said sheets formed by said spacer wedge, folding the lateral edge portions of said composite strip over the outside marginal surfaces of said glass sheets, and finishing said folded lateral edge portions to space and hermetically seal said window unit in a single operation.

3,886,014
METHOD OF PRODUCTION OF A LIQUID CRYSTAL CELL

Helmut Bayer, Vienna, Austria, assignor to Firma Electrovac Fabrikation Electrotechnischer Spezialartikel Gesellschaft m.b.H., Vienna, Austria

Division of Ser. No. 208,340, Dec. 15, 1971. This application Apr. 16, 1973, Ser. No. 351,526
Claims priority, application Austria, Dec. 21, 1970, 11509/70
Int. Cl. B32b *31/20*
U.S. Cl. 156—145 **6 Claims**



1. A method of producing a liquid-crystal cell comprising the steps of:
a. distributing substantially uniformly over a surface of a first plate grains of a particle size deviating by no more than 6 microns for grains of a particle-size range with an upper limit of 25 microns and deviating by no more than 25% of the upper particle-size limit for grains of a particle size range of more than 25 microns;
b. spacing the grains distributed on said first plate in a single layer with an intergrain spacing appreciably exceeding on the average, the grain size;
c. applying a second plate to said layer of grains on said first plate and covering said second plate with a second layer of grains;
d. repeating steps (a) - (c) to form a stack of plates with respective single layers of grains between successive plates to define respective compartments until the stack attains a predetermined number of plates;
e. heating and applying pressure to said stack of plates to bond the plates of said stack to said grains together;
f. hermetically sealing the pairs of plates defining each compartment together at their respective edge zones while leaving filling and venting openings therealong;
g. cooling said plates;
h. filling each of said compartments with a liquid-crystal material; and
i. hermetically closing said openings.

3,886,015
COMPOSITE THREAD AND PROCESS FOR MAKING THE SAME

Robert F. Turner, 190 Forrest Ln., Menlo Park, Calif. 94025

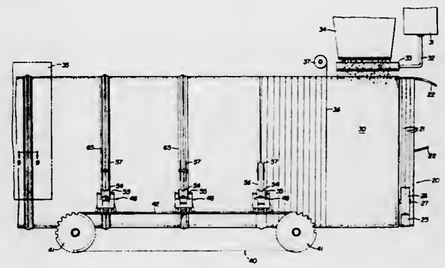
Filed Aug. 23, 1973, Ser. No. 390,720
Int. Cl. D04h *3/16*
U.S. Cl. 156—166 **4 Claims**

1. A process for manufacturing an elongate thread having physical properties different from and substantially superior to the physical properties of the individual components comprising the steps of providing a core having at least one filament, providing a tape of polymeric film having a width greater than the circumference of the filament and a length less than the length of the filament, heating the tape, applying tension to the tape to stretch the tape to a length approximating that of the filament, placing the tape in circumscribing relation to the filament while continuing the tension applying step to form a composite member and to provide an intimate interspersion of the filament within the sheath, and cooling the composite member, whereby said elongate thread has a break strength at least approximately equal to the break strength of said core and tape combined.
4. An elongate thread formed according to the process of claim 3.

3,886,016
METHOD AND APPARATUS FOR MAKING A REINFORCED WALL

Agnar Gilbu, Conroe, Tex., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 29, 1972, Ser. No. 316,593
Int. Cl. B65h *81/00*
U.S. Cl. 156—171 **10 Claims**



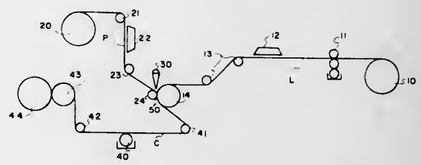
1. In a method of making an exterior peripheral support rib for a cylindrical wall structure having a longitudinal axis, the steps of
1. rotating said wall structure about its longitudinal axis,
2. winding peripherally upon said wall structure a plurality of groups of endless, resin-impregnated reinforcing filaments traversing movable guide elements located at a non-rotatable work station, said groups of filaments being axially spaced from one another along said longitudinal axis, and said filaments being tensioned axially to lie generally tangentially to said wall at the point of filament-wall contact,
3. feeding a pre-fabricated, resin-impregnated elongated rib assembly from said work station into the nip between said tangential filaments and said wall, said filaments under tension pulling said prefabricated rib assembly radially onto said wall structure,
4. continuing to feed said pre-fabricated rib assembly into nip until said wall structure is completely encircled by said prefabricated rib assembly, and
5. continuing the peripheral winding of said filaments upon said pre-fabricated rib assembly to build up a plurality of layers of filaments wound radially thereon at axially spaced portions of said pre-fabricated rib,
6. moving said guide elements relative to said rib assembly during the performance of step 5 to vary the axial spacing of said groups of filaments and
7. concurrently curing the resin of said pre-fabricated rib and of said filament windings.

3,886,017
FIBERBOARD CARTON PRODUCT AND METHOD OF MANUFACTURE

Latane D. Brugh, Jr., and John W. Smith, Jr., both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 207,376, Dec. 13, 1971, Pat. No. 3,802,984. This application Sept. 20, 1973, Ser. No. 398,961
Int. Cl. B65h *81/00*
U.S. Cl. 156—184 **4 Claims**

1. The process of reducing the tendency of a laminated sheet material to curl in the cross-machine direction, said process comprising:
a. producing a laminated sheet by pressing a substantially 7.1 to 21.8 No./ream layer of viscous thermoplastic between a substantially 10 to 16 caliper thickness of substantially 10.0 and 11.6 No./ream/caliper density cellulosic fiber sheet and a substantially 8 to 27 caliper thickness of 8.5 to 9.0 No./ream/caliper density cellulosic fiber sheet formed from unbleached sulphate pulp;

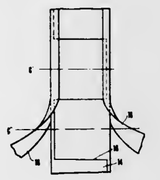


b. applying water substantially exclusively to the unbleached fiber side of said laminated sheet at the rate of 0.9 to 2.5 No./ream;
c. winding successively juxtaposed layers of said sheet into a configuration having straight line surface elements parallel with the cross-machine axis of said sheet; and
d. retaining the configuration of step C for at least 15 minutes.

3,886,018
METHOD OF MANUFACTURING CHIPS FOR AUTOMATIC DISPENSING MACHINE

Koshei Arita, 10, 23, 2-Chome Minamimagome, Ohata-ku, Tokyo, Japan

Division of Ser. No. 212,933, Dec. 28, 1971, Pat. No. 3,760,924. This application Dec. 4, 1972, Ser. No. 311,780
Claims priority, application Japan, July 29, 1971, 46-56355
Int. Cl. B32b *3/04;* **H01c** *1/14*
U.S. Cl. 156—202 **3 Claims**



1. A method of manufacturing inexpensive heat rupturable elements for chips used in automatic dispensing machines from heat rupturable adhesive tape, heat rupturable electric resistance wire and thin metal foils, said method comprising the steps of applying the electric resistance wire to the adhesive surface of the adhesive tape in the form of a rectangular square wave shape arranged along the longitudinal axis of the adhesive tape with the two longitudinally extending parallel side segments of said rectangular square wave shape extending along the opposite side edges of said adhesive tape, bonding the metal foils over the opposite side edges of said adhesive tape and the respective parallel side segments of said rectangular wave shape arrayed resistance wire for providing electric contact thereto, and severing transversely said adhesive tape into elements at points along its length such that at least one transversely extending resistance wire segment is provided for electrically interconnecting the two opposite bonding metal foils and the underlying parallel side segments of the rectangular wave shape arrayed resistance wire.

3,886,019
METHOD OF MAKING LAMINATED CORRUGATED PAPERBOARD

Robert M. Wilkinson, Florissant, Mo., and James R. Lyon, Godfrey, Ill., assignors to Alton Box Board Company, Alton, Ill.

Continuation-in-part of Ser. No. 39,086, May 20, 1970, abandoned. This application Aug. 3, 1972, Ser. No. 277,646
Int. Cl. B31f *1/20;* **C09j** *5/02;* **B32b** *3/28, 29/00*
U.S. Cl. 156—210 **9 Claims**



1. In the art of manufacturing rigid-when-wet corrugated container-board from a preformed web of medium and at least one preformed web of liner, each of which has an obverse face and a reverse face, the processing comprising:

i. surface-treating the reverse face of the liner web by roller application of a controlled amount of a mixture composed of a curable thermosetting resionous material entrained in a vaporizable liquid vehicle, and immediately vaporizing at least a substantial part of the vehicle from the web by heating at a temperature and for a time less than that required to substantially advance the cure of the resinous material therein;

ii. surface-treating both faces of the medium web by roller application of a controlled amount of a mixture composed of curable thermosetting resinous material in a vaporizable liquid vehicle and immediately vaporizing at least a substantial part of the vehicle from the web by heating at a temperature and for a time less than that required to substantially advance the cure of the resinous material therein;

iii. corrugating the surface-treated and vehicle-vaporized medium web;

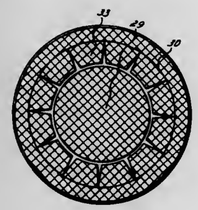
iv. adhesively uniting into a composite board the surface-treated reverse face of the liner web with the crowns of the corrugations accessible at one side of said medium web;

v. thereafter curing the residual resinous material in the composite board.

3,886,020
METHOD OF APPLYING DECALS TO SURFACES OF COMPLEX CURVATURE

Herbert C. Shank, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Aug. 17, 1972, Ser. No. 281,416
Int. Cl. B29c *27/14;* **B44c** *1/00*
U.S. Cl. 156—211 **10 Claims**



1. A method for applying a decal to an article having a curved surface, such as tableware, comprising the steps of:

forming a decal on a backing, the decal-containing area of the backing being surrounded by a non-decal containing area of said backing;

perforating the decal area with lines which extend outwardly toward the periphery of the said decal containing area and which are configured to permit the decal-containing area to conform to the curvature of the surface of the article to which the decal is to be applied;

forming other perforations defining a separable portion which is separable by tearing from the surrounding portion, the separable portion including at least a part of the decal-containing area;

thereafter positioning the decal-containing area, while still attached to the non-decal containing area, in alignment with the article surface to which the decal is to be applied, holding the non-decal containing area taut while imparting to the decal-containing area a different curvature than said non-decal containing area by pressing said decal-containing area toward said curved surface by a plunger having a pressing surface conforming generally to the curvature of the article surface, thereby separating said separable portion from the surrounding portion at said other perforations as an incident to said pressing;

holding the decal-containing area, which includes the area containing both said outwardly extending lines and said separated portions, under pressure and in contact with said article surface to transfer the entirety of said decal-containing area thereto;

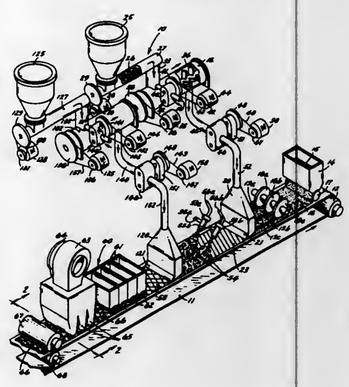
releasing said pressure and removing the held area of the backing from said article surface;

and removing the separated portion of said backing from said article surface.

3,886,021
PROCESS FOR MAKING NON-FELT, LAMINAR ROOFING MATERIAL SUCH AS COMPOSITION SHINGLES AND THE LIKE

Ernst G. Breckenfelder, Elmhurst, Ill., assignor to U.I.P. Engineered Products Corporation, Elk Grove Village, Ill.

Filed Mar. 2, 1973, Ser. No. 337,636
Int. Cl. E04d *5/08;* **B32b** *11/02*
U.S. Cl. 156—246 **10 Claims**



1. A method of producing an asphalt roofing composition comprising the steps of applying a first layer of viscous flowable asphalt onto a continuously moving supporting surface to effect a first layer of plastic asphalt material, blowing a fibrous material onto said first layer of asphalt material while said first layer is in a plastic state, applying over said fibrous coated asphalt material while in a plastic condition a second layer of viscous flowable asphalt to effect a second layer of plastic asphalt material to result in a laminated roofing composition material, positively cooling said laminated composition and removing said composition from said continuously moving supporting surface.

3,886,022
PROCESS FOR PEELING OFF AN ALUMINUM FOIL

Jiri K. Konicek, Perstorp, Sweden, assignor to Perstorp AB, Perstorp, Sweden

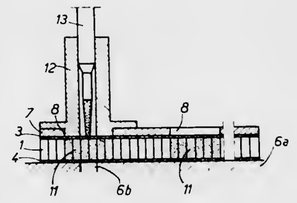
Filed May 24, 1974, Ser. No. 473,081
Claims priority, application Sweden, June 20, 1973, 73086530
Int. Cl. B32b *31/00*
U.S. Cl. 156—247 **1 Claim**

1. Process for peeling off an aluminum foil from a copper layer of a copper-clad, insulating base intended for the production of printed circuits, characterized in that the peeling off is carried out below the surface of an aqueous solution or at a continuous supply of an aqueous solution on the boundary between the copper layer and the aluminum foil.

3,886,023
STRUCTURAL PANELS OF THE SANDWICH TYPE

Henri Deplante, Paris, France, assignor to Avions Marcel Dassault Breguet Aviation, Societe Anonyme Francaise ayant son siege Social, Paris, France

Filed Mar. 30, 1973, Ser. No. 346,285
Claims priority, application France, Mar. 31, 1972, 72.11660
Int. Cl. B31d *3/02*
U.S. Cl. 156—253 **7 Claims**



1. In a method of producing sandwich panels by applying flat coverings, each including plastic material, on both sides of a cellular honeycomb-like structure, the improvement of providing reinforced nodes at selected spaced apart points of the panel for the attachment thereof to a supporting structure, by the steps comprising: while said cellular structure has at least one of its sides uncovered, completely filling each of a plurality of adjoining cells of said structure surrounding each of said points in a zone having the node point as the center thereof with a hardenable fluid resin having good adhesion to the plastic material of the coverings by pouring said resin in liquid state into each of said cells; applying the remaining covering to the cellular structure while plural cells at each such point are filled with said fluid resin; hardening said resin after both said coverings are in place; and thereafter, piercing through the coverings and the filled cellular structure along the axis of each node.

3,886,024
THICK-WALLED, FIBER-REINFORCED COMPOSITE STRUCTURES AND METHOD OF MAKING SAME

Vance A. Chase, Poway, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

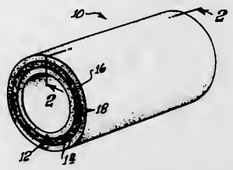
Filed Oct. 12, 1972, Ser. No. 296,998
Int. Cl. F16l *9/14*
U.S. Cl. 156—294 **7 Claims**

7. A method of making a thick-walled, fiber-reinforced composite structure comprising the steps of:

fabricating a plurality of thin-walled, fiber-reinforced resin shells of differing diameter such that said shells, when cured, can be telescoped together to produce a thick-walled structure, said resin in said shells being a high temperature curing resin curable at a temperature between about 300°F and about 350°F, each said shell having a thickness substantially less than the diameter of said thick-walled composite structure and not being greater than about 0.250 in.;

curing said thin-walled shells at the cure temperature for said resin;

interposing a low temperature curing adhesive between confronting surfaces of said cured shells so that the walls



of said cured shells alternate with said adhesive when said cured shells are telescoped together, said adhesive being curable at a temperature below about 150°F;

telescoping said cured shells together to build up a thick-walled composite structure; and

curing said adhesive at a temperature within its low temperature curing range to thereby bond said cured shells together to produce a cured, thick-walled composite structure.

3,886,025
FERRITE HEAD

Jacob Riseman, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1972, Ser. No. 283,614
Int. Cl. C09j *5/00;* **G11b** *5/42;* **H01f** *7/06*
U.S. Cl. 156—325 **4 Claims**

1. In a process for forming a ferrite head having a pair of ferrite members and a glass filled gap therebetween in which said glass filled is formed by positioning said ferrite members so that the gap forming surfaces are opposed to each other and flowing molten glass gapping material into said gap, the improvement which comprises forming a layer of silicon nitride on said members which layer is at least co-extensive with said glass.

3,886,026
LABEL APPLYING APPARATUS

Joseph E. Kienel, Drawer K, Acworth, Ga. 30101

Filed June 1, 1972, Ser. No. 258,818
Int. Cl. B32b *31/20;* **B65b** *13/02*
U.S. Cl. 156—361 **17 Claims**

1. An apparatus for successively applying an elongated label having an adhesive on one surface, to articles intermittently presented thereto by wrapping the ends of the label about each article to apply the label thereto, said apparatus comprising

a labeling station defining a leading end and a trailing end,

means for sequentially feeding labels along a path of

travel to said labeling station and including an endless belt defining an upper surface extending along said path of travel and across said labeling station, drive means for rotating said endless belt, and vacuum means for maintaining a label on said belt during movement along said path of travel and upon reaching said labeling station,

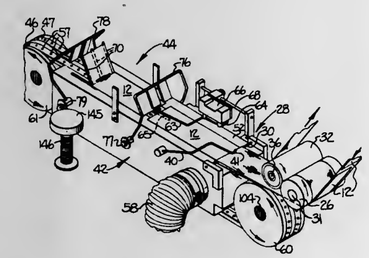
means responsive to each label reaching said labeling station for terminating operation of said feeding means,

means for sequentially lifting the leading and trailing ends of the label positioned at said labeling station and folding such ends about an article positioned to transversely overlie the medial portion of the label and including

a. means positioned at the leading end of said labeling station for at least partially lifting the leading end of each label fed thereto,

b. a vertically movable lift arm positioned immediately below the trailing end of said labeling station,

c. a first arm carried adjacent the trailing end of said labeling station and movable longitudinally along said path of travel,



d. a second arm carried adjacent the leading end of said labeling station and movable longitudinally along said path of travel, and

means for actuating said lifting and folding means upon an article being positioned to transversely overlie the medial portion of the label and including control means for sequentially

a. moving said lift arm upwardly to at least partially lift the trailing end of a label positioned at said labeling station,

b. moving said first arm toward and then away from said second arm to fold the trailing end of a label over the article, and

c. moving said second arm toward and then away from said first arm to fold the leading end of a label over the article,

manually operable switch means for actuating said control means, and

means for reactuating said feeding means to deliver another label to said labeling station upon removal of the article and the applied label from said labeling station.

3,886,027

APPARATUS FOR CONNECTING OBTUSELY ABUTTING EDGES OF ONE OR MORE CUT-OUT PIECES OF MATERIAL IN A THREE-DIMENSIONAL MOULD

Richard Hoffmann, Stetten, Germany, assignor to BIMA Maschinenfabrik GmbH, Hechingen, Germany

Filed Mar. 6, 1973, Ser. No. 338,507

Claims priority, application Germany, Mar. 7, 1972, 2210923

Int. Cl. B29c *3/00*

U.S. Cl. 156—380 **7 Claims**

1. An apparatus for welding a piece of material, comprising:

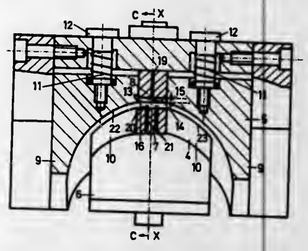
a three-dimensional upwardly convex lower mold;

a lower electrode received in said lower mold substantially in the middle thereof;

a downwardly concave upper mold complementary to said lower mold in shape;

means for lowering the upper mold toward the lower mold;

an upper electrode received in said upper mold at a position corresponding to that of said lower electrode; and



an advancing device for feeding a foil between said upper electrode and a piece of material lying on said lower mold.

3,886,028

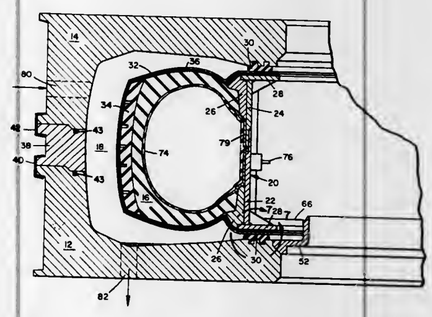
APPARATUS FOR RECAPPING TIRES WITH PRECURED TREAD RUBBER

Herbert B. Hindin, Alamo; Alfred E. Johnson, El Cerrito, and Donald P. Knapp, San Francisco, all of Calif., assignors to Oliver Tire & Rubber Company, Oakland, Calif.

Filed June 14, 1973, Ser. No. 369,975

Int. Cl. B29h *5/04, 17/36*

U.S. Cl. 156—394 **19 Claims**



1. Apparatus for retreading tires with a precured, premolded tread strip wherein a tire assembly is first formed from a tire casing with the precured tread strip placed around a bonding layer on the casing and the assembly is covered with a thin flexible envelope that extends radially inwardly along the sidewalls of the tire casing with an air bleeding means for evacuating trapped air provided between the surface of the tread strip and the flexible envelope, said apparatus comprising:

a. a multi-part rigid shell for holding said tire and precured tread assembly, said shell being generally annular with a U-shaped cross section including end walls and defining a chamber located around the tread strip of the assembly;

b. a generally annular rim means located inside of said shell for supporting said tire and tread assembly and having rim portions that are axially extensible in response to pressure within the tire casing, each said rim portion having an end member adapted to extend adjacent to an inner end wall surface of said shell when said envelope is between said end members of said rim means and said inner walls of said shell;

c. sealing means for providing a fluid-tight seal between the exterior surface of said flexible envelope and the inner

end walls of said shell in the area adjacent said end portions of said rim means;

d. fluid inlet and exhaust means for admitting pressurized fluid within the chamber defined inside of said shell and around said tire assembly; and

e. inlet means on said rim means for allowing the interior of said tire to be pressurized and thereby cause said cylindrical rim portions to extend axially and force said sealing means to seal said chamber around said tire assembly.

3,886,029

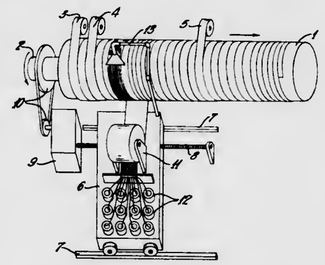
METHOD AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF FIBER REINFORCED PLASTIC PIPES OF VARIABLE WALL THICKNESS

Peder Ulrik Poulsen, Esrum, Denmark, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 217,115, Jan. 12, 1972, Pat. No. 3,788,918. This application Oct. 24, 1973, Ser. No. 409,193

Int. Cl. B65h *81/00;* **B31c** *13/00*

U.S. Cl. 156—429 **10 Claims**



1. In apparatus for the formation of shells of the type having a mandrel which both rotates and is moved axially at a uniform rate to provide two degrees of mandrel movement that are generally at right angles to each other, the improvement comprising: guide means positioned to one side of the mandrel for continuously feeding the materials which produce the shell onto the mandrel in a band having a width greater than said axial rate of mandrel movement; drive means for moving said guide means back and forth generally parallel to one of said degrees of mandrel movement and which synchronizes guide means movement with mandrel movement; and cyclic programming means causing said drive means to move said guide means in one of said degrees of movement at a rate no greater than that of said mandrel to produce one thickness of shell and then move said guide means in the opposite direction to produce a minimum thickness of shell.

3,886,030

WEB SPLICING APPARATUS

Peter Hurst, 619 A, Ashingdon Rd., Rochford, Essex, England

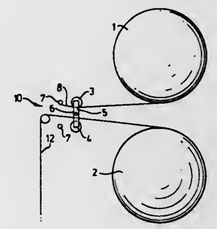
Filed Dec. 4, 1972, Ser. No. 311,678

Claims priority, application United Kingdom, Dec. 6, 1971, 56634/71

Int. Cl. B65h *19/18*

U.S. Cl. 156—504 **3 Claims**

1. Apparatus for splicing a moving web comprising, a pair of parallel web guides which are spaced apart to define between them a single path through which the moving web can pass, a common carrier on which said pair of web guides are mounted, said carrier having a pivot axis spaced laterally between and parallel with said pair of web guides, said carrier being pivotable about said axis to cause orbital movement of the web guides, means adjacent said carrier and spaced from the web guides for releasably holding a second web under tension and adjacent one web guide of the pair of web guides, which second web is stationary and a portion of which is provided with an adhesive coating whereby it can be secured to said moving web, and means connected to pivot said carrier to move said web guides from positions in which the moving web and the second web are mutually remote to positions in which the webs are brought into surface-to-surface contact with one another and the resultant combined web is constrained to follow a sinuous path about said pair of web guides to ensure intimate contact between the two webs, whereupon the second web is released by the tensioning means, the means



for releasably holding the second web under tension being disposed such that the stationary web can be held against either web guide, the arrangement being such that pivoting of the carrier in one direction will effect splicing of the webs when the stationary web is held against one of the web guides and pivoting of the carrier in the other direction will cause splicing of the webs when the stationary web is held against the other of the web guides.

3,886,031

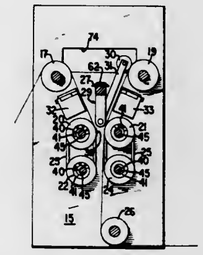
WEB LAP SPLICER

Charles M. Taitel, Parsippany, N.J., assignor to Compensating Tension Controls Inc., Orange, N.J.

Filed June 10, 1974, Ser. No. 477,857

Int. Cl. B65h *19/08*

U.S. Cl. 156—504 **13 Claims**

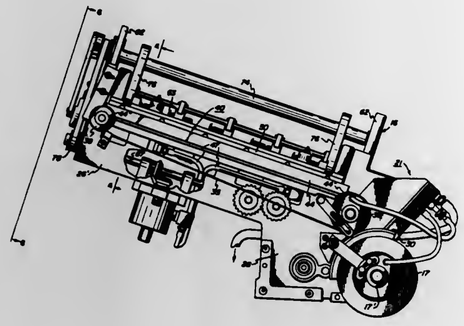


1. Apparatus for splicing the end of web material from a spare supply roll to web material being drawn from a depleting supply roll comprising in combination first and second leading nip rollers and first and second trailing nip rollers spaced from said leading rollers, each of said first and second rollers being normally spaced apart, at least one of said leading rollers and at least one of said trailing rollers being mounted to be moveable toward the other of said leading and trailing rollers, endless conveyor means extending between said first rollers, second endless conveyor means extending between said second rollers, directing the running web between said conveyor means in close proximity to said second leading roller, means for directing the web from said spare roll between said leading rollers and in close proximity to said first leading roller, and means for moving said moveably mounted leading and trailing rollers to bring said leading and trailing rollers together so that the spare web and the running web are pressed together to be joined by a piece of tape applied to the spare web.

3,886,032
ADDRESSING MACHINE LABEL TRANSPORT

Herbert C. Artelt, Jr., Wildwood, Ill., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 36,888, May 13, 1970, abandoned.
This application July 10, 1972, Ser. No. 270,387
Int. Cl. B32b *31/00*
U.S. Cl. 156—521 6 Claims



1. In an article addressing machine adapted for use with uncut labels in the form of a continuous strip arranged in at least two longitudinally extending rows, said machine including addressing means for bringing individual labels into physical contact with said articles, with means for feeding said articles to said addressing means for addressing thereof, the combination of:

means for separating said strip into individual labels for use by said addressing means,

transport means for carrying said labels from said separating means to said article addressing means, said transport means including a movable belt-like conveyor operatively arranged adjacent the discharge side of said separating means so as to receive said labels as they are discharged by said separating means, and vacuum means for releasably tacking said labels to said conveyor belt

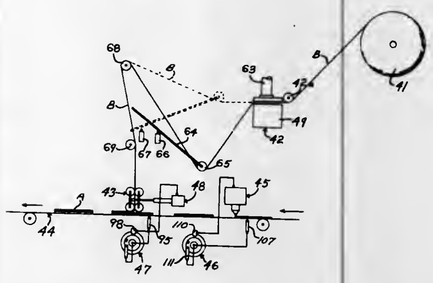
means for feeding said strip forward to said separating means, said separating means including first knife means adapted to cut said strip longitudinally between said label rows as said strip is fed forward to said separating means by said strip feeding means, said spearating means including second knife means downstream of said first knife means for cutting said strip transversely into individual labels, said conveyor belt extending across the discharge side of said second knife means whereby to receive said labels as they are discharged by said second knife means; and

drive means for said addressing machine having means for moving said conveyor belt and said separating means in timed relation with said addressing means, said second knife means being adapted to cut in scissors-like fasion transversely across said label form so that said labels are deposited on said moving conveyor belt in predetermined spaced relationship for use by said addressing means.

3,886,033
METHOD AND APPARATUS FOR APPLYING A CUTTING STRIP TO A CONTAINER

William MacDonald; George Webb, both of Weston, Ontario; Peter Waldburger, Toronto, Ontario, and Robert G. Hughes, Rexdale, Ontario, all of Canada, assignors to Continental Can Company of Canada Limited, Toronto, Ontario, Canada

Filed Nov. 6, 1972, Ser. No. 303,870
Claims priority, application United Kingdom, Feb. 25, 1972, 8778/72
Int. Cl. B32b *31/00*; B31d *5/00*
U.S. Cl. 156—522 10 Claims

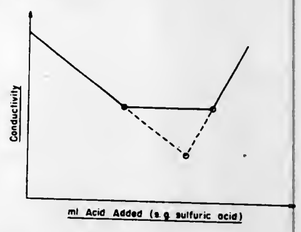


1. An apparatus for applying a flexible cutting strip to a container from a continuous roll which includes means for feeding a continuous strip of a material, conveying means for passing a plurality of containers in line one by one, through an application station, an adhesive extruder located adjacent the conveying means for applying adhesive to one of the continuous strip and a corresponding area on the container, means for cutting a predetermined length of the continuous strip to be applied to the container, means for applying the cut predetermined length of strip to the container with the adhesive at the application station, means for forming a serrated edge continuously along one edge of the strip provided upstream of said cutting means, means coordinating the application of adhesive and means for coordinating the application of the predetermined lengths of strip to each container.

3,886,034
PROCESS FOR DETERMINING THE CONDITIONS NEEDED IN CONTROLLABLY OBTAINING SULFATE PULP HAVING A PREDETERMINED KAPPA NUMBER

Sture Erik Olof Noreus, Husum, Sweden, assignor to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation-in-part of Ser. No. 142,226, May 11, 1971, abandoned. This application Oct. 2, 1973, Ser. No. 402,697
Claims priority, application Sweden, May 15, 1970, 6795/70
Int. Cl. D21c *7/12*
U.S. Cl. 162—49 23 Claims

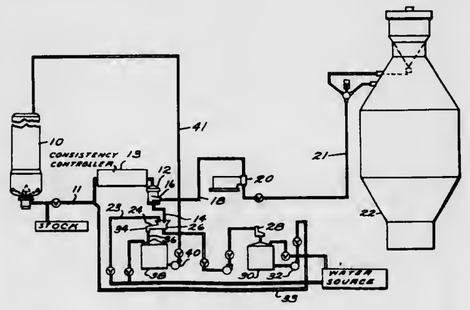


1. A process for determining the conditions needed in controllably obtaining a predetermined degree of delignification and therefore a predetermined Kappa number in the manufacture of sulfate pulp from wood, and then pulping the wood under the conditions thereby determined, using an alkaline pulping liquor comprising an alkali metal hydroxide and an alkali metal sulfide, which comprises taking a sample of alkaline pulping liquor at an early stage in the pulping of the wood to be pulped at which from at least 20 percent up to about 85 percent of the alkali added initially has been consumed, titrating the sample with an acid to the end point at which the conductivity of the sample has decreased to a relatively constant value, determining from the amount of acid added during the titration the alkali concentration at this end point, and from this alkali concentration determining the "H" factor at the desired Kappa value in the finished sulfate pulp, and from the "H" factor determining the pulping time and temperature relationship needed to obtain pulp of this Kappa value, and then pulping the wood at the determined time and temperatures to obtain pulp of this Kappa value.

3,886,035
PROCESS FOR SEPARATING KNOTS FROM PULP

Oliver A. Laakso, Glen Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Filed Mar. 12, 1973, Ser. No. 339,759
Int. Cl. D21c *3/22*
U.S. Cl. 162—55 7 Claims



1. A method for digesting wood chips and knots comprising:

a. immersing the wood chips and knots in a digesting liquor under pressure of from about 150–250 psig to chemically reduce at least some of the wood chips to their constituent fibers;

b. washing the wood chips and knots with water to separate the partially reduced wood chips, fibers and knots from the digesting liquor and to form a pressurized pulp comprising water and partially reduced wood chips, fibers and knots having a solids consistency of about 10–15 percent;

c. separating the partially reduced wood chips and at least most of the fibers from the knots at a solids consistency of about 10–15 percent, and

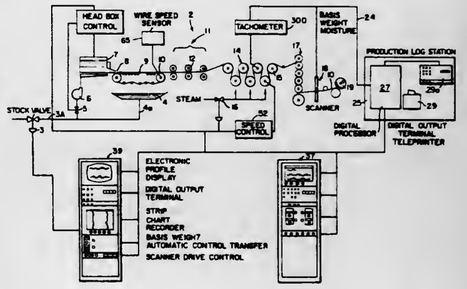
d. passing the partially reduced wood chips and fibers to subsequent treatment.

3,886,036
METHOD OF CONTROLLING A DRIER LIMITED PAPER MACHINE

Erik B. Dahlin, Saratoga, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Continuation of Ser. No. 233,937, March 13, 1972, abandoned. This application May 20, 1974, Ser. No. 471,228
Int. Cl. D21f *1/08*, *7/00*, *9/00*
U.S. Cl. 162—198 1 Claim

1. In a method of controlling a paper machine having a pulp stream flow feeding into a headbox and controlled by a pulp stream valve to thereby control total head, T_H, said headbox being provided with rectifier rollers and a slice that permits pulp to jet onto a moving wire to form a paper sheet and from which the water passing through is collected, mixed with stock from a stock flow line controlled by a stock flow valve and supplied to the pulp stream, said sheet then being passed at a characteristic master speed through a drier section to which steam is supplied in a dryer limited mode, the steps comprising: scanning said sheet after the dryer section and determining a value related to the moisture of said sheet, comparing said measured value with a target value for said moisture content, and utilizing the moisture error signal therefrom to manipulate at substantially every scan said master speed so that said moisture content is maintained within specifications; determining a value related to conditioned weight of said sheet, comparing said measured value with a target value for said conditioned weight, and utilizing the error signal therefrom to manipulate said stock flow valve so that conditioned weight remains within specifications; cross-coupling conditioned weight error signals to master speed and to said moisture error signal so that changes in conditioned weight error signals will not upset moisture, crosscoupling said moisture



error signal to said stock flow so that changes in moisutre error signal will not upset conditioned weight; coupling said moisture error signal modified by said crosscoupled weight error signals to a control loop wherein the total headbox head, T_H, is controlled by manipulating said pulp stream valve, said coupling being such that the jet-to-wire ratio remains constant; coupling said headbox head control loop with said headbox slice such that said slice will be adjusted in response to jet velocity changes to keep the pulp fiber concentration for the sheet constant; detecting the rotational velocity of said rectifier rollers; supplying said detected velocity to a rectifier roller compensation signal generator; generating a rectifier roller compensating signal based on the detected roller velocity such that said compensating signal eliminates pressure differentials at the slice caused by the rotational velocity of said rollers when said compensating signal is supplied to said headbox head control loop; and supplying said rectifier roller compensating signal to said headbox head control loop.

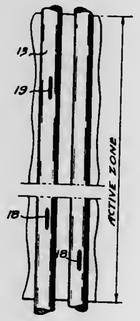
3,886,037
NUCLEAR FUEL PIN CONTROLLED FAILURE DEVICE

Larry D. Schlenker, Idaho Falls, Idaho, assignor to The United States Energy Research and Development Administration, Washington, D.C.

Filed Aug. 17, 1973, Ser. No. 389,287
Int. Cl. G21c *3/06*
U.S. Cl. 176—68 8 Claims

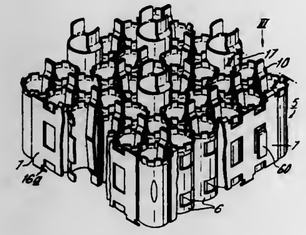
1. A fuel assembly for a water-cooled nuclear reactor including a plurality of parallel, slender elongated fuel pins held together in square array to form a fuel bundle, said fuel pins containing nuclear fuel hermetically sealed with a cladding tube and including means associated with said cladding tubes for rupturing the cladding tubes at a predetermined location said means for rupturing the cladding tubes being all oriented in the same azimuthal direction within the fuel bundle

whereby hydraulic resistance to the flow of emergency core coolant will be minimized in the event a loss-of-coolant acci-



dent causes rupture of the cladding tubes due to build-up of pressure of fission products within the fuel pins.

3,886,038
NUCLEAR REACTOR FUEL ELEMENT ASSEMBLIES
Leonard Fredrick Raven, Crewe, England, assignor to British Nuclear Fuels Limited, Lancashire, England
Filed Jan. 15, 1973, Ser. No. 323,897
Claims priority, application United Kingdom, Jan. 13, 1972, 1758/72; Aug. 1, 1972, 35919/72
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 **2 Claims**



1. A spacer grid for spacing apart a plurality of cylindrical nuclear fuel pins in a stream of coolant flowed over the surface of said pins parallel to the axis thereof, the grid comprising a plurality of cojointed, open ended, cylindrical ferrules, each ferrule having one rim defining part of the downstream face of the grid and its other rim defining part of the upstream face of the grid, positioning means for each ferrule positioning a fuel pin in spaced relation to the inner face of the ferrule said means including a pair of circumferentially spaced, co-planar rigid stop members extending inwardly from the inner face of the ferrule and a spring member also extending inwardly from the inner face of the ferrule with the line of action of the spring member being opposite to and extending between the stop members to urge a fuel pin into engagement with the rigid stop members, said spring member serving to position a fuel pin so that an annular clearance is defined between the pin and the inner wall of the ferrule whereby substantially uniform heat exchange between the fuel pin and the coolant may occur around the part of the circumference of the fuel pin lying within the grid, the said one rim of at least some ferrules being shaped to promote turbulence in the coolant leaving the downstream side of the grid and deflectors for deflecting coolant preferentially into the ferrules located on said other rim of the ferrules defining the upstream edge of the grid.

3,886,039
METHOD FOR PRODUCING L-GLUTAMINE
Fumihiro Yoshinaga, Fujisawa; Takayasu Tsuchida; Kenji Kikuchi, both of Kawasaki, and Shinji Okumura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Dec. 12, 1973, Ser. No. 424,094
Claims priority, application Japan, Dec. 16, 1972, 47-126484
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **2 Claims**

1. A process for producing L-glutamine which comprises culturing a microorganism resistant to at least one sulfa drug of the group consisting of sulfapyridine, sulfathiazole, phthalylsulfathiazole, sulfadiazine, sulfaguanidine, sulfamethazine, sulfamerazine, sulfadimethoxine, sulfamethomidine, sulfamethoxypyridazine, sulfisomidine, sulfisoxazole, acetosulfamine, sulfanylamide, sulfisomezole, sulfaphenazole, sulfamethizole, sulfaethidole, sulfapyrazine, irgafen and irgamide, under aerobic conditions in an aqueous culture medium containing assimilable sources of carbon and nitrogen and inorganic salts necessary for the growth of said miroorganism until L-glutamate accumulates in said medium, and recovering accumulated L-glutamine from said culture medium, said microorganism being Brevibacterium flavum FERM P-1684, Brevibacterium flavum FERM P-2371, Corynebacterium glutamicum FERM P-2372, Corynebacterium glutamicum FERM P-2373 or Microbacterium flavum FERM P-2374.

3,886,040
NOVEL PROCESS FOR PREPARING L-CITRULLINE
Ichiro Chibata; Tetsuya Tosa, both of Osaka; Tadashi Sato, Kyoto, and Kozo Yamamoto, Osaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan
Filed June 25, 1973, Ser. No. 373,497
Claims priority, application Japan, July 3, 1972, 47-66928
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **5 Claims**

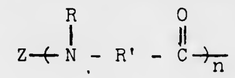
1. A process for preparing L-citrulline or a mixture of L-citrulline and D-arginine which comprises polymerizing at least one acrylic monomer in an aqueous suspension of microbial cells of *Pseudomonas putida* ATCC 4359 to produce immobilized microbial cells thereof, and subjecting said immobilized cells to enzymic reaction with L- or DL-arginine or an organic acid addition salt thereof.

3,886,041
PRODUCTION OF CITRIC ACID BY SUBMERGED FERMENTATION
Adel J. Kabil, Vienna, Austria, assignor to Aktiengesellschaft Jungbunzlauer Spiritusund Chemische Fabrik, Vienna, Austria
Filed Aug. 17, 1972, Ser. No. 281,368
Claims priority, application Austria, Aug. 18, 1971, 7219
Int. Cl. C12d *1/04*
U.S. Cl. 195—36 R **3 Claims**

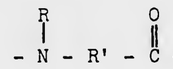
1. In a process for the production of citric acid which comprises the submerged fermentation of a carbohydrate containing material by means of the fungus Aspergillus niger with the addition of an alkaline substance the improvement which comprises added sodium hydroxide to the fermenting medium in portions for maintaining the pH value of the fermentation medium at a value between 1.5 and 2.0, whereby the first addition is made at a time 24 to 36 hours after inoculation.

3,886,042
ACYLATION OF PROTEOLYTIC ENZYMES
Shmaryahu Blumberg; Barton Holmquist, and Bert L. Vallee, all of c/o Biophysics Research Laboratory, Peter Bent Brigham Hospital, Boston, Mass. 021115
Filed Mar. 13, 1974, Ser. No. 450,772
Int. Cl. C07g *7/02*
U.S. Cl. 195—62 **32 Claims**

1. A proteolytic enzyme containing one or more amino acid residues per molecule selected from the group consisting of tyrosyl, lysyl, threonyl, seryl, histidyl, and cysteinyl residues, said enzyme being modified by one or more of said residues being acylated with an acyl group of the formula:



wherein Z is hydrogen or an organo blocking group, each



is an amino acid residue, and n is at least 1.

3,886,043
PROCESS FOR PREPARING PURE PORCINE BETA-TRYPSIN
John Walker, and Borivoj Keil, both of St. Remy Les Chevreuse, France, assignors to Choay S.A., Paris, France
Filed Aug. 22, 1973, Ser. No. 390,340
Claims priority, application France, Aug. 24, 1972, 72.30127; Aug. 14, 1973, 73.29620
Int. Cl. C07g *7/026*
U.S. Cl. 195—66 R **8 Claims**

1. A process of preparing substantially pure porcine β-trypsin, comprising purifying crystallized porcine trypsin by chromatography on sulfonated ion exchangers of a solution of said crystallized porcine trypsin in a tris(hydroxymethyl-)aminomethane buffer which has a resistance greater than 0.21×10^3 Ohm, and collecting substantially pure porcine β-trypsin in the fractions which issue as the last out of the chromatographic separation and which are essentially free of degraded forms of trypsin.

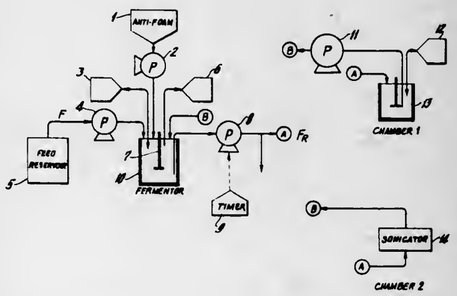
3,886,044
PROCESS OF MAKING CEPHAMYCIN C BY FERMENTATION
Edward Inamine, Rahway, and Jerome Birnbaum, Morganville, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Apr. 25, 1974, Ser. No. 464,007
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 R **14 Claims**

1. In the process for preparing cephamycin C by growing a cephamycin C producing specie of Streptomyces in a nutrient medium, the improvement which comprises the addition of D-lysine or DL-lysine to the nutrient medium.

3,886,045
PROCESS FOR THE ENZYMATIC DETERMINATION OF GLUCOSE WITH A GLUCOSE-OXIDASE/PEROXIDASE ENZYME SYSTEM
Franco Meiattini, Via Montanini 140, Siena, Italy
Filed May 11, 1973, Ser. No. 360,372
Claims priority, application Italy, May 12, 1972, 9480/72
Int. Cl. C12k *1/04*; **C07g** *7/02*
U.S. Cl. 195—103.5 **14 Claims**

1. A process for the enzymatic determination of the amount of glucose present in body fluids which comprises the steps:
   i. adding to a sample of a body fluid an enzymatic system containing glucose-oxidase and peroxidase, to which has been added sodium or potassium ferrocyanide,
   ii. incubating the sample and enzyme system at room temperature whereby the ferrocyanide is converted to ferricyanide equivalent to the amount of glucose present in the sample, and
   iii. reacting the ferricyanide with a reducing system which forms a colored product on oxidation, the color being a measure of the ferricyanide present, said reducing system consisting of a phenolic compound and an aminoantipyrine.

3,886,046
RECYCLE FERMENTATION PROCESS
Thomas Benton Young, Lambertville, N.J., and H. Michael Koplove, Watertown, Mass., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed June 28, 1973, Ser. No. 374,721
Int. Cl. C12b *1/00*; **C12d** *9/00*
U.S. Cl. 195—115 **10 Claims**

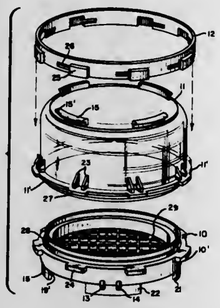


1. A fermentation process which comprises growing microorganisms that produce a useful product in an aerated nutrient medium in an agitated fermentor, continuously and aseptically removing at a predetermined rate broth containing microorganisms and product from said fermentor after the microorganism mass concentration in said fermentor has reached a desired level, destroying the viability of part or all of the microorganisms in said broth in the presence of said useful product under conditions which are not destructive to said product, and continuously recycling said broth containing product and partially or totally non-viable microorganisms to said fermentor such that the specific rate of destruction of microorganisms in said broth is equal to the specific growth rate less the dilution rate of microorganisms in the fermentor.

3,886,047
CULTURE CHAMBER
James Otis Billups, Jr., Del Mar, Calif., assignor to Billups-Rothenberg, Inc., Del Mar, Calif.
Filed Nov. 2, 1973, Ser. No. 412,343
Int. Cl. C12b *1/00*
U.S. Cl. 195—139 **5 Claims**

1. A culture chamber comprising, in combination:

a. a circularly shaped base having a smoothly rounded concave lower interior and upper annular base edge;
b. a circularly shaped lid having a smoothly rounded concave upper interior and lower annular lid edge dimensioned to seat on said base edge; and
c. a locking ring arranged to telescope over the top of said lid to circumferentially surround in overlapping relationship the upper annular base edge and lower annular lid edge, said upper annular base edge including a plurality



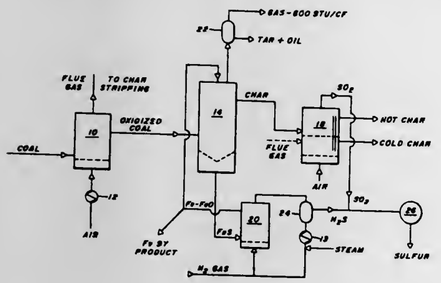
of circumferentially spaced radially extending lips and the lower annular lid edge including a plurality of circumferentially spaced radially extending lips, said locking ring having a plurality of circumferentially spaced pockets and associated slots, the pockets extending radially outwardly from the ring and the slots being formed in adjacent portions of the ring so that the pockets receive the opposed lips, rotation of the locking ring causing the slots to receive circumferentially the lips to thereby lock the base and lid together by means of the locking ring.

3,886,048

DESULFURIZATION OF COAL

Joseph G. Selmeczi, Pittsburgh, and Joseph Vinaty, Aliquippa, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1973, Ser. No. 389,338
Int. Cl. C10b *57/00, 57/04*
U.S. Cl. 201—17 **6 Claims**



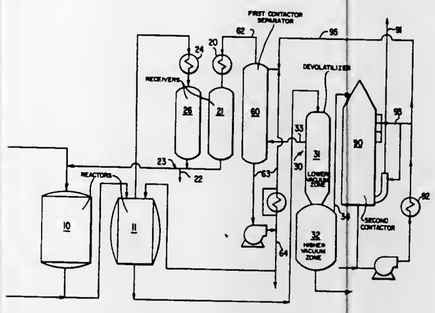
1. The method of carbonizing and desulfurizing coal which has been decaked comprising:
a. heating the decaked coal admixed with a desulfurizing material selected from the group consisting of iron, iron oxide and the mixture thereof, produced from coal pyrites, which desulfurizing material has been regenerated by contact with a hydrogen-containing gas, such that the percentage of the desulfurizing material is between 3 and 30% by weight of the admixture, in a reducing atmosphere between 1,200°–1,700°F for between 5 to 60 minutes to form a partially desulfurized char;
b. separating the desulfurizing material from the resulting char; and
c. subjecting the resulting char to an oxidizing atmosphere at a temperature of between 800–1,100°F, whereby a desulfurized char is produced which contains less than one percent sulfur.

3,886,049

RECOVERY OF ALKENYL-AROMATIC MONOMERS BY FALLING STRAND DEVOLATILIZATION

Wallace G. Bir, Creve Coeur, Mo., and Joseph Novack, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 9, 1973, Ser. No. 339,784
Int. Cl. B01d *3/00;* **C07c** *7/18*
U.S. Cl. 203—9 **12 Claims**



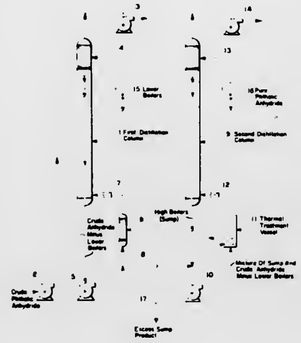
1. A continuous on-line process for recovery of alkenylaromatic monomer, selected from styrene, alkyl substituted styrenes and halogenated styrenes, from a stream containing alkenylaromatic monomer, alkenylaromatic high polymer, alkenylaromatic oligomers, high boiling organic compounds and inert hydrocarbons, and for reducing the concentration of alkenylaromatic oligomers and high boiling organic compounds in said recovered alkenylaromatic monomer, which process comprises the steps of continuously and simultaneously
A. subjecting an alkenylaromatic polymer-monomer melt containing additionally alkenylaromatic oligomers, high boiling organic compounds, and inert hydrocarbons to falling strand devolatilization in at least two consecutive flash vaporization zones maintained at a temperature of from 170° to 280°C and a pressure of from 1 to 200 mm of Hg A, wherein the second vaporization zone is maintained at a lower pressure than the first vaporization zone;
B. contacting in a first contacting and separation zone a stream of vapor from the first flash vaporization zone with a liquid comprising a mixture of alkenylaromatic monomer, alkenylaromatic oligomers, high boiling organic compounds and inert hydrocarbons, whereby the vapor stream exiting said contacting and separation zone has a reduced concentration of oligomers and high boiling organic compounds compared to the entering stream of vapor, separating the resulting vapor from said contacting liquid and removing said resulting vapor stream;
C. directly contacting in a second contacting zone a stream of vapor from the second flash vaporization zone with a liquid having a temperature of less than 25°C. to condense substantially all alkenylaromatic monomer, oligomers, high boiling organic compounds and inert hydrocarbons contained in said vapor stream from the second flash vaporization zone and removing a stream of condensed liquid from said second contacting zone;
D. passing at least a portion of said condensed liquid stream to said first contacting and separation zone as additional contacting liquid; and
E. collecting said contacting liquid from said first contacting and separation zone in a sump region associated with said first zone and circulating said contacting liquid back to said first contacting and separation zone while maintaining a desired level of said contacting liquid in said sump region.

3,886,050

PROCESS FOR THE PREPARATION OF PURE PHTHALIC ANHYDRIDE

Wolfgang Deutner, and Robert Neumann, both of Linz, Donau, Austria, assignors to Chemie Linz AG, Linz, Austria

Filed Aug. 1, 1969, Ser. No. 846,673
Claims priority, application Austria, Aug. 2, 1968, 7534/68; Oct. 31, 1968, 10606/68
Int. Cl. B01d *3/10*
U.S. Cl. 203—80 **3 Claims**



1. A process for purifying crude phthalic anhydride obtained by oxidizing o-xylene or naphthalene with air, which comprises (1) distilling from the crude product, under reduced pressure, components of lower boiling point than phthalic anhydride, (2) adding to the resultant product the sump product of step 4 in an amount of at least 50 parts by weight per part by weight of the crude phthalic anhydride, (3) thermally treating the resultant mixture at a pressure which is at least equal to the vapor pressure of the mixture, thereby preventing boiling of the mixture, and (4) distilling, under reduced pressure, pure phthalic anhydride from the mixture, thus leaving as sump product impurities having a higher boiling point than phthalic anhydride.

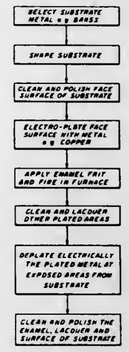
3,886,051

METHOD OF MAKING JEWELRY AND THE LIKE

Patrick J. Albright, 429 Powell Ave., and Joseph P. Roberts, 300 Maple Ave., both of Cresson, Pa. 16630

Filed Nov. 14, 1973, Ser. No. 415,736
Int. Cl. B44c *1/04;* **B23p** *1/02*
U.S. Cl. 204—18 R **10 Claims**

1. A method of supporting a vitreous film upon a substrate including the steps of:
selecting a substrate having an electrically conductive facing surface,
electroplating said facing surface with a metal layer for adherence of a vitreous film,
forming a bounded area of vitreous film upon the electroplated metal layer, and
electrically deplating only the exposed area of the plated metal layer from the substrate by using the bounded area of the vitreous film as a mask to thereby expose areas of said conductive facing surface distinct from said bounded areas of vitreous film, said electrically deplating including



establishing said electrically conductive facing surfaces of the substrate as an electrode.

3,886,052

METHOD OF MAKING A MAGNETIC RECORDING DISC

Robert Samuel Smith, San Jose, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 56,555, July 20, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 331,646
Int. Cl. C23b *5/62*
U.S. Cl. 204—33 **13 Claims**



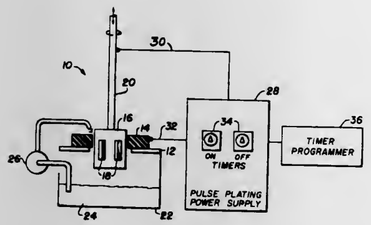
8. A method for producing a magnetic film on an aluminum substrate to form a magnetic information storage member which has information recorded thereon or read therefrom by a magnetic head while moving with respect to said head comprising the steps of
polishing the surface of the aluminum substrate to a smoothness of at least three microinches,
cleaning the polished surface in a soap solution to remove residues and particulate matter,
anodizing the substrate surface in a phosphoric acid solution to remove alloying precipitates from the surface of the aluminum and to form a porous oxide film on said surface, said pores extending through the oxide film surface to the aluminum surface,
plating a film of copper on the oxide film surface from a copper plating bath containing copper sulfate and sulfuric acid,
polishing the surface of said copper film,
etching said copper film in an acid solution,
electroplating a layer of ferromagnetic material on said copper film to form said magnetic film,
and heating said substrate at an elevated temperature for a selected time period to form an oxide layer on the surface of said ferromagnetic layer whereby a thin wear resistant surface is formed on said magnetic film.

3,886,053

PROGRAMMABLE PULSE ELECTROPLATING PROCESS

James M. Leland, 4591 Mt. LaPlatta Pl., San Diego, Calif. 92117

Filed Nov. 1, 1973, Ser. No. 411,962
Int. Cl. C23b 3/06, 5/50, 5/56
U.S. Cl. 204—36 5 Claims



1. The method of controlling the plating hardness in a hone-forming process in which the surface of a metal workpiece is cathodically electroplated in an electrolytic chromium plating solution generating hydrogen at the workpiece surface, with a tool having a honing surface movable relative to and in engagement with the workpiece comprising the steps of:

applying a DC current through said electrolytic solution;

interrupting the flow of current through said solution to provide alternate deposition periods and non-deposition periods of predetermined duration;

gradually decreasing the duration of the non-deposition periods during the plating process;

whereby during the deposition period a layer of chromium is deposited on the work surface simultaneously with the honing operation, and during the non-deposition period a predetermined amount of the hydrogen is allowed to escape to control the hardness of the chromium applied to the surface of the workpiece and to reduce the stress between the plating and the workpiece, the hardness of the plating increasing as the duration of the non-deposition period decreases.

3,886,054

ALKALINE BRIGHT ZINC PLATING

Joseph R. Duchene, Southfield, Mich., and Philip J. De Christopher, Chicago, Ill., assignors to Richardson Chemical Company, Des Plaines, Ill.

Filed Sept. 24, 1973, Ser. No. 400,427
Int. Cl. C23b 5/10, 5/46
U.S. Cl. 204—55 R 30 Claims

1. A bright zinc, cyanide-free electroplating bath comprising an aqueous alkaline solution containing a source of zinc ions, and from about 0.25 to about 5 grams per liter of a quarternized polymeric condensate of an alkylene polyamine having at least one tertiary amino group and a 1,3-dihalo-2-propanol where the mol ratio of the polyamine to the dihalopropanol ranges from about 5.0:1 to 1.75:1, respectively.

2. The electroplating bath of claim 1 wherein the bath contains from about 0.1 to about 5 grams per liter of an aldehyde brightener.

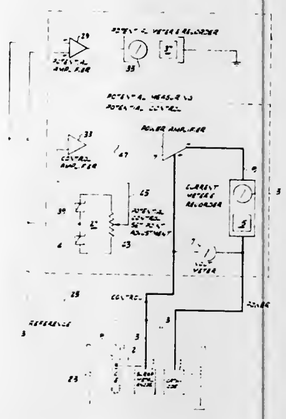
18. The electroplating bath of claim 1 wherein the bath contains from about 0.01 to about 0.2 grams per liter of a heterocyclic compound selected from the group consisting of a 2-mercapto substituted pyridine or pyrimidine.

3,886,055

ELECTROLYTIC SEPARATION OF METALS

Robert Babolan, North Attleboro, and Gardner S. Haynes, Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 12, 1973, Ser. No. 423,948
Int. Cl. C23b 1/00; B01k 3/00
U.S. Cl. 204—146 10 Claims



1. A process for separating a first metal selected from the group consisting of silver, gold and alloys of silver and gold from a composite metal body in which said first metal is adhered as an external layer over a substrate constituted by a second metal selected from the group consisting of ferritic and austenitic stainless steels, the process comprising the steps of:

immersing the body in a solution containing between about 1 and about 10% by weight of an alkali metal cyanide and up to about 10% by weight of an alkali metal hydroxide;

supplying direct current to said body from the positive terminal of a direct current power source whose negative terminal is connected to a second electrode immersed in said solution thereby establishing an electrolytic circuit in which said body is the anode and said second electrode is the cathode;

arranging a saturated calomel standard electrode adjacent said composite metal body for continuously determining the voltage of said anode relative to said standard electrode; and

continuously regulating the voltage applied between said anode and cathode for maintaining the voltage of said anode relative to said standard electrode within the range from −0.6 to +0.5 volts for causing selective removal of said first metal from said body.

3,886,056

PROCESS FOR PRODUCING A HIGH MELTING TEMPERATURE POLYETHYLENE EMPLOYING IRRADIATION AND ORIENTING

Ryozo Kitamaru, 11, Hanazonoenjyoji-cho, Ukyo-ku, Kyoto-shi; Hyon Don Chu, 5-36-8, Honmachi, Koganei-shi, Tokyo-to, and Waichiro Tsuji, 181/16, Manjyojiki-cho, Fukakusa-Okamedani, Fushimi-ku, Kyoto-shi, all of Japan

Filed Nov. 1, 1972, Ser. No. 302,761
Claims priority, application Japan, Nov. 1, 1971, 46-86981
Int. Cl. B01j 1/10, 1/12
U.S. Cl. 204—159.2 8 Claims

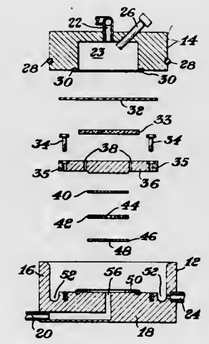
1. A process for producing a high melting temperature polyethylene which comprises irradiating a polyethylene with X-rays, γ-rays or electron beam to a dosage of from 0.2 to 16 Megarads to produce crosslinked polyethylene having a gel content of at least one weight percent, extending the crosslinked polyethylene in at least one direction at a temperature of at least the anisotropic melting point of at least 150°C of the crosslinked polyethylene and cooling the crosslinked polyethylene, said starting polyethylene having a viscosity average molecular weight of from 1×10^5 to 4×10^5 and having a melting point of 137° to 138°C when crystallized isothermally from the melt at a temperature of 130°C.

3,886,057

CELL USEFUL FOR DETERMINING WATER VAPOR TRANSMISSION RATE OR WATER CONTENT

Roger L. Bredeweg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 1, 1971, Ser. No. 111,557
Int. Cl. G01n 27/42
U.S. Cl. 204—195 W 1 Claim



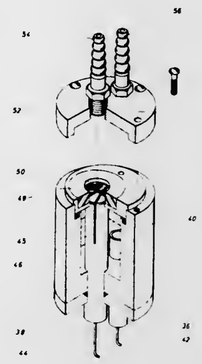
1. A cell for absorbing and electrolyzing water vapor transmitted from a sample used in an apparatus for rapidly determining the water vapor transmission rate through plastic films or like structures and the water content of solid, liquid or gaseous materials, the cell comprising; a hollow body defining an interior space, a removable closure adjacent said interior space for sealably closing said hollow body, a sample support disposed within said interior space, an electrolysis sandwich structure comprising a first electrode support and a first electrode and a second electrode support and a second electrode with a fibrous matrix impregnated with an electrically conductive water absorption material disposed electrically between said first and second electrode, one of said electrode supports and electrodes separating said fibrous matrix from said interior space and having at least one passageway providing open communication between said interior space and said fibrous matrix through which said water vapor is transported into said fibrous matrix, said cell having at least one first elongated hollow providing open communication between said interior space and the exterior of said cell and at least one second elongated hollow providing open communication between said interior space and the exterior of said cell and at least one second elongated hollow providing open communication between said fibrous matrix and the exterior of said cell through which oxygen and hydrogen generated by electrolysis of said water vapor in said fibrous matrix is transported, and a rubber septum for passing a quantity of water into said interior space from a location exterior of said interior space.

3,886,058

GAS SENSING ELECTRODE SYSTEM EMPLOYING HYDROPHILIC WICK

Gabriel G. Barna, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 30, 1973, Ser. No. 383,923
Int. Cl. G01n 27/46
U.S. Cl. 204—195 P 2 Claims



2. An electro-chemical gas detection system, comprising:

a housing defining a chamber, said housing having a bottom wall provided with an aperture therein,

a body of a liquid electrolyte carried by said housing within the chamber defined thereby,

an elongated reference electrode rod in said housing and being partially immersed in said liquid electrolyte body but having at least one end thereof disposed outwardly of said liquid electrolyte body,

an elongated non-porous sensing electrode rod in said housing in spaced relation to said reference electrode rod and being partially immersed in said liquid electrolyte body but having both ends thereof disposed outwardly of said liquid electrolyte body,

one end surface of said non-porous sensing electrode rod comprising a sensing surface to which gas to be monitored is adapted to be exposed,

the end of said non-porous sensing electrode rod opposite from the end thereof on which said sensing surface is provided extending through the aperture in the bottom wall of said housing in liquid-tight sealed relation to the bottom wall of said housing,

cover means closing the top of said housing in liquid-tight sealed relation, said cover means including an inlet passageway in communication with said sensing surface of said non-porous sensing electrode rod for introducing a gaseous body into the interior of the chamber,

meter means electrically connected between said at least one end of said reference electrode rod and the end of said non-porous sensing electrode rod opposite from the end thereof on which said sensing surface is provided,

an elongated hydrophilic porous fiber wick extending transversely across said sensing surface of said non-porous sensing electrode rod and into partial immersion with said liquid electrolyte body for providing a small quantity of the liquid electrolyte across said sensing surface through capillary attraction and absorption by said porous fiber wick of the liquid electrolyte to complete an ohmic connection, said porous fiber wick having a relatively small diametral dimension as compared to the width of said sensing surface and covering only a minor portion of the area of said sensing surface, and

said cover means further including a gas-permeable membrane disposed in said inlet passageway in alignment with

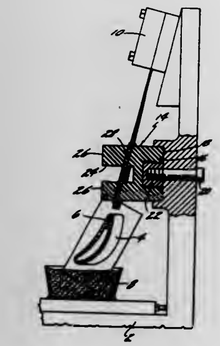
said sensing surface and in spaced relation to said porous fiber wick.

3,886,059

GUIDE FOR ELECTROCHEMICAL DRILLING

Walter E. Mikulski, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 374,610, June 28, 1973, Pat. No. 3,842,480. This application June 25, 1974, Ser. No. 482,954
Int. Cl. B23p 1/12; B01k 3/04; C23b 5/70
U.S. Cl. 204—224 M **5 Claims**



1. A guide to support electrodes for multiple electrochemical drilling including:

a base having a plurality of holes therein in predetermined relation to one another and all normal to the hole to be drilled by the electrode guided therein,

said base having a threaded fitting for attachment to a machine base, and

a plurality of dielectric tubes positioned in said holes for guiding the electrodes,

the inner diameter of the tubes being such as to guide the electrode therein and to permit axial movement of the electrode for the drilling operation.

3,886,060

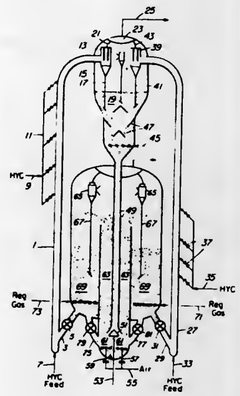
METHOD FOR CATALYTIC CRACKING OF RESIDUAL OILS

Hartley Owen, Belle Mead, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,821
Int. Cl. C01b 33/28; C10g 11/18
U.S. Cl. 208—120 **12 Claims**

1. A method for converting residual oils to lower boiling products which comprises,

passing hot crystalline zeolite catalyst particles to the lower portion of an elongated conversion zone, passing a recycle oil product of residual oil cracking to the lower portion of said conversion zone under conditions to form a suspension with said catalyst particles at a temperature of at least 1,000°F., passing said suspension through said conversion zone providing a recycle oil charge residence time in the range of 0.5 to about 4 seconds, combining a residual oil feed with said suspension in said conversion zone in an amount sufficient to quench said recycle oil conversion, passing the suspension comprising said residual oil feed through said conversion zone at lower temperature cracking conditions for an additional hydrocarbon residence time in the range of 0.5 to 6 seconds, cyclonically separating said suspension into a hydrocarbon phase and a catalyst phase and separately recovering said hydrocarbon phase and said catalyst phase.



3,886,061

TRIMETALLIC HYDROCARBON REFORMING PROCESS

Joseph Edouard Weisang, and Philippe Engelhard, both of Le Havre, France, assignors to Compagnie Francaise de Raffinage, France

Division of Ser. No. 234,875, March 15, 1972, Pat. No. 3,822,221, which is a continuation-in-part of Ser. No. 11,325, Feb. 13, 1970, Pat. No. 3,700,588. This application Dec. 14, 1973, Ser. No. 424,783
Claims priority, application France, Feb. 14, 1969, 69.03646; Mar. 24, 1971, 71.10459The portion of the term of this patent subsequent to Oct. 24, 1989, has been disclaimed.
Int. Cl. C10g 35/08
U.S. Cl. 208—138 **2 Claims**

1. In a process for hydroreforming hydrocarbon feed in the presence of hydrogen at low temperatures, the improvement of which comprises: feeding said hydrocarbon feed over a catalyst comprising of a support of alumina of a specific surface of more than 15 m^2/g, of a pore volume of more than 0.1 cm^3/g and having acid sites, and of metals on the said support, said metals on said catalyst support consisting essentially of:

a. 0.02 to 2 percent of platinum, referred to the total weight of the catalyst;

b. 0.02 to 2 percent of iridium, referred to the total weight of the catalyst;

c. 0.02 to 2 percent of tin, referred to the weight of the catalyst.

3,886,062

METHOD AND APPARATUS FOR FRACTIONATING MULTI-COMPONENT FEEDS

Alfred M. Peiser, Rocky Hill, N.J., and Matthew J. De Pasquale, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

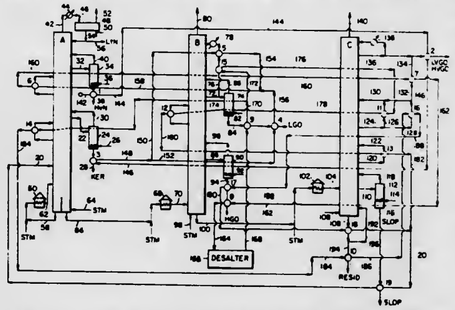
Filed Jan. 14, 1974, Ser. No. 432,913
Int. Cl. B01d 3/14; C10g 7/00
U.S. Cl. 208—354 **11 Claims**

1. In a crude oil distillation process arrangement comprising a pressured and a vacuum distillation zone, the improvement which comprises,

a. providing an intermediate pressure distillation zone between said pressured and said vacuum distillation zones in sequential arrangement,

b. passing a desalted crude oil preheated to a desired elevated temperature by indirect heat exchange with product streams recovered from the combination of distillation zone to a lower portion of said pressured distillation zone, recovering kerosene, heavy naphtha, light naphtha and lower boiling gaseous material separately from said pressure distillation zone above said crude oil charged thereto, recovering a residual oil fraction higher boiling than kerosene from a bottom portion of said pressure distillation zone,

c. heating said recovered residual oil fraction to a higher temperature than its recovered temperature and thereafter passing it to a lower portion of said intermediate pressure distillation zone; separating heavy gas oil, light gas oil and lower boiling material from a higher boiling



residuum material in said intermediate pressure distillation zone,

d. heating said residuum material to a higher temperature than its recovered temperature and thereafter passing it to a lower portion of said vacuum distillation zone; separating light and heavy vacuum gas oil boiling material, separating a slop oil fraction of reduced asphalt content separately from resid material in said vacuum distillation zone; partially cooling resid material recovered from the bottom of said vacuum distillation zone and returning a portion of the cooled resid to a lower portion of said vacuum distillation zone as quench material, and

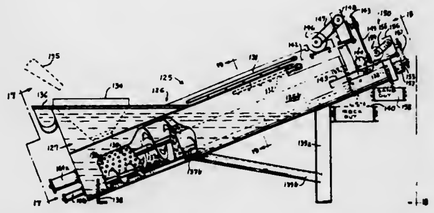
e. providing incremental reboiler heat to a bottom portion of said pressured distillation zone in an amount adequate to accomplish separation of kerosene and lower boiling component from the pressured distillation zone.

3,886,063

WET CONCRETE SEPARATOR

Reinhardt Friesz, 3635 S. Shaver St., Pasadena, Calif. 77504

Continuation-in-part of Ser. No. 1,372, Jan. 8, 1970, Pat. No. 3,695,427. This application Sept. 1, 1972, Ser. No. 285,892
Int. Cl. B03b 7/00
U.S. Cl. 209—44 **31 Claims**



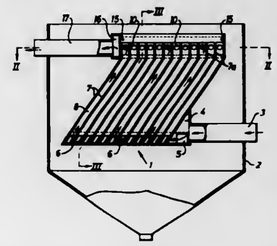
4. A classifying separator comprising a conveyor housing and a receiving and settling tank adapted to receive unpoured rock-gravel, sand and cement slurry in unhardened flowable mixture thereinto, said conveyor housing comprising a lower portion of said tank and extending upwardly from a rear end of said settling tank in inclined position and having therein parallel extending, first and second rotatable helix conveyors with the lower extremities thereof extending into said settling tank, a first outlet provided at the upper end of said conveyor housing for the outward delivery therethrough of rock-gravel from said conveyor housing, and a second outlet provided at the upper end of said conveyor housing for the outward delivery therethrough of said from said conveyor housing, screen means extending across said settling tank intermediate the length of said conveyor housing for inhibiting the settling into the rearward end of said settling tank of rock-gravel started upwardly by said first conveyor, separate means for the respective receipt of rock-gravel and of sand at delivery through respective outlets, and for respective transfer for further disposition, washing means for flushing cement slurry from the sand and rock-gravel being conveyed upwardly and to wash said cement slurry into said settling tank, said screen means defining a barrier to allow cement slurry to flow rearwardly into said settling tank while simultaneously inhibiting the flow of rock-gravel thereinto, said settling tank having an overflow provided in said rear end and an overflow receptacle means disposed to receive the overflow of cement slurry therefrom.

3,886,064

LAMELLAR SEPARATOR

Pentti Einari Kosonen, Saltsjo-Boo, Sweden, assignor to AB Gustavsbergs Fabriker, Germany

Filed Oct. 17, 1972, Ser. No. 298,412
Claims priority, application Sweden, Nov. 12, 1971, 14546/71
Int. Cl. B03b 3/30; B01d 21/00
U.S. Cl. 209—157 **1 Claim**



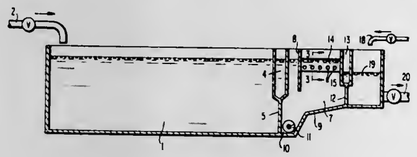
1. Lamellar separator comprising a pair of upwardly extending laterally spaced side walls, a plurality of spaced upwardly oriented lamellae extending transversely between said side walls and forming, in combination with said side walls, a plurality of separator channels, said lamellae disposed obliquely to the horizontal, said side walls having first openings at their lower ends and second openings at their upper ends, said first openings forming inlet openings into each of said channels and said second openings forming outlet openings from each of said channels so that the flow passes upwardly therethrough, a sedimentation basin enclosing said side walls and lamellae and arranged in combination with said side walls and lamellae for separating light impurities such as flocks in a sewerage treatment plant, wherein the improvement comprises regulating plates positioned on said side walls in front of said outlet openings, said regulating plates being adjustable in the vertical direction to provide a uniform distribution of the total flow through said separator channels and to provide a uniform circulating pattern in the individual said channels to compensate for poor alignment of the separator, the upper ends of said lamellae extending vertically upwardly from the remaining portions extending obliquely to the horizontal for reducing the speed of the flow through the upper part of said separator channels so that flow disturbances from said regulating plates are decreased, said regulating plates having apertures therethrough arranged to be vertically adjustably aligned opposite said outlet opening in said side walls and the vertical arrange-

ment of the upper ends of said lamellae increases the width of said separator channels so that said outlet openings in said side walls and said apertures in said regulating plates can be made as large as possible thus affording increased capacities in the lamellar separator.

3,886,065
WASTE WATER TREATMENT PLANT WITH BALANCED LOAD

Stanley E. Kappe, Washington, D.C., and Dick C. Heil, Silver Spring, Md., assignors to Kappe Associates, Inc., Rockville, Md.

Division of Ser. No. 233,521, March 10, 1972, abandoned. This application Feb. 15, 1974, Ser. No. 442,896
Int. Cl. C02c *1/02*
U.S. Cl. 210—15 **2 Claims**



1. A method of balancing the load of a waste water treatment plant which includes an aeration tank and a clarifier tank, comprising feeding waste water to the aeration tank at a flow rate that varies between a maximum and a minimum above and below a predetermined flow rate, withdrawing from the clarifier tank treated waste water at said predetermined flow rate from a predetermined level in said clarifier tank spaced below the top of said clarifier tank, accumulating and storing in the aeration tank and clarifier tank above said level waste water that flows into aeration tank in excess of that which flows into the aeration tank at said predetermined flow rate, withdrawing said waste water at said predetermined flow rate through a plurality of openings at said level, and maintaining the liquid levels in said aeration and clarifier tanks substantially the same.

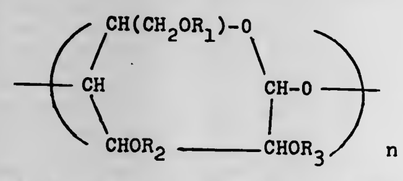
3,886,066
TANNIN TREATMENT FOR NON-POROUS SEMIPERMEABLE MEMBRANES

Carl Chen, Newark, and James Barry Ganci, Wilmington, both of Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Nov. 6, 1972, Ser. No. 303,780
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **16 Claims**

1. A process for separating solvent from an aqueous mixture containing a solute other than aqueous tanning extracts, comprising contacting a nonporous semipermeable membrane selected from

a. A cellulose acetate polymer of the general formula:



wherein R_1, R_2 and R_3 are the same or different and are hydrogen, alkyl of one to eight carbon atoms or CR_4O wherein R_4 is alkyl of one to seven carbon atoms, and n is an integer sufficiently large to provide film forming weight,

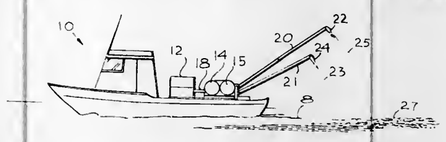
b. Sulfonated poly(phenylene ether), and

c. Sulfonated poly(arylene ether sulfone) with said mixture under permselective separation conditions, said membrane having been treated with a solution of a hydrolyzable tannin in an amount and under conditions which result in an initial reduction in solute passage through the membrane of at least 10%.

3,886,067
PROCESS FOR CONTROLLING OIL SLICKS

Salvatore W. Miranda, P. O. Box 5746, Carmel, Calif. 93921

Filed Feb. 3, 1970, Ser. No. 8,198
Int. Cl. C02b *9/02*; **E02b** *15/04*
U.S. Cl. 210—40 **15 Claims**



1. A method of coagulating oil slicks on water comprising the steps of:

applying to the slick an oleophilic organic resin semi-rigid to rigid foam containing a mixture of water soluble and oil soluble surfactants;

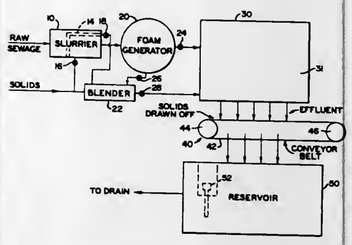
binding the oil on the foam; and

removing the foam from the surface of the water.

3,886,068
SEWAGE DISPOSAL SYSTEM

Robert E. Eron, 3375 34th Street, North, St. Petersburg, Fla. 33713

Continuation-in-part of Ser. No. 233,534, March 10, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 415,142
Int. Cl. B03d *1/02*
U.S. Cl. 210—44 **4 Claims**

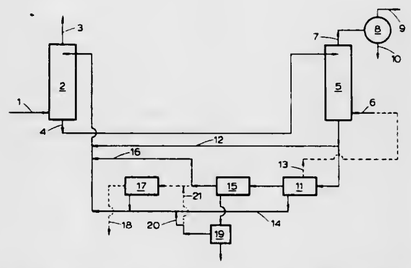


1. A sewage disposal means for treating raw sewage, said system comprising: slurrier means for breaking up solids in the sewage into small particulate matter, connected to a source of raw sewage, said slurrier means including more than one withdrawal means disposed therein for separating said solids not effectively broken up by the action of said slurrier; said slurrier means comprising an output, foaming means for generating a foam interconnected in communicating relation with said slurrier means through said output; said slurrier means comprising at least a first and second withdrawal means, blender means for intermixing additional solids with foam produced by said foaming means interconnected to said slurrier means through both said first and second withdrawal means, said first and second withdrawal means disposed and configured in predetermined relation to said slurrier means whereby solid material of different dimensions is selectively transported to said blender means, a first foam output means interconnected between said foaming means and said blender means, whereby foam may be selectively transported to said blender means, a drain means for collecting output from said blender and said foaming means, a second foam output means interconnected between said foaming means and drain means, blender output means interconnected between said blender means and said drain means; flow control means disposed in fluid communicating and regulating relation with said slurrier means, said foaming means, said blender means and said drain means; whereby sewage under treatment can be selectively directed to said drain means from its source, successively through said slurrier means and said foaming means or alternately, through said blender means dependent upon the existence of solids in said sewage being treated, said disposal means further including aerator means disposed in fluid receiving relation to said drain means, whereby effluent passing through said aerator means from said drain means is purified.

3,886,069
PROCESS FOR PURIFICATION OF AQUEOUS SODIUM CITRATE SOLUTIONS

Olav Erga Trondheim, Eikveien, 7, 7000 Trondheim, Norway

Filed Nov. 19, 1973, Ser. No. 416,767
Claims priority, application Norway, Nov. 24, 1972, 4331/72
Int. Cl. C02b *1/20*
U.S. Cl. 210—46 **10 Claims**



1. A process for purification of an aqueous sodium citrate solution which has been used for absorption of sulphur dioxide and then subjected to a stripping operation to remove the majority of the absorbed sulphur dioxide, comprising the following steps:

A. said solution is evaporated at 80° – 105°C at approximately atmospheric pressure to smaller volume, sodium citrate seed is added thereto, and is kept at 25° – 35°C for at least half an hour to precipitate sodium citrate which is separated off, and

B. the solution remaining after the sodium citrate precipitated in step A has been separated off, is cooled to 15°C or lower to precipitate sodium sulphate which is separated off.

3,886,070
METHOD FOR COMBATTING POLLUTION USING A CHROMIUM COMPLEX

Jean Martineau, and Francois-Joseph Biechler, both of Paris, France, assignors to Seppic, Paris, France

Filed Feb. 16, 1973, Ser. No. 332,803
Claims priority, application France, Feb. 18, 1972, 72.05609
Int. Cl. B01d *11/00*
U.S. Cl. 210—47 **2 Claims**

1. A method of combating the pollution of waters by oily products by forming a paste of the oily products, which paste floats on the surface of the water and is removed therefrom by skimming, said method comprising the steps of:

a. preparing a product comprising a chromium complex anchored to solid particles of a metallic aluminosilicate wherein the chromium complex is coordinated to an acyclic carboxylic acid having at least 7 carbon atoms, by contacting for a period of about 15 minutes from about 5 to 20 parts by weight of solid particles of an aluminosilicate of less than 100 micron average particle size with 1 part by weight of an aqueous alcoholic solution containing from about 20 to 30% by weight of said coordinated chromium complex,

b. heating the mixture to dryness at a temperature of from about 100° to 120° C.,

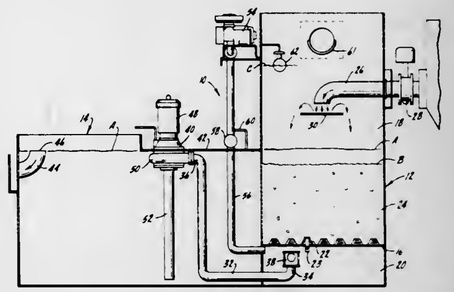
c. distributing from 1 to 4 parts by weight of said dried product over 1 part by weight of said oily product floating on the surface of said waters whereby said oily product forms a paste floating on the surface of the waters,

d. removing said paste from the surface of the water by skimming it therefrom.

3,886,071
FILTER

Frank G. Weis, Kansas City, Mo., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Filed Jan. 29, 1973, Ser. No. 327,381
Int. Cl. B01d *23/26*
U.S. Cl. 210—108 **6 Claims**

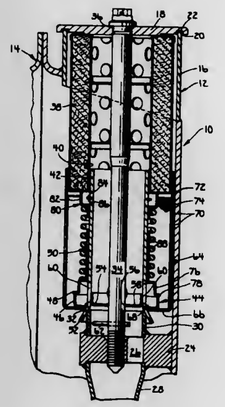


1. A filter for treating liquids, comprising: a filter compartment having a filter bed separating it into an upper inlet chamber and a lower underdrain chamber; an inlet pipe, having a control valve means associated therewith, communicating with said inlet chamber; a backwash storage compartment positioned adjacent said filter compartment; a connecting pipe having a first end extending into said underdrain chamber and a second end in communication with a backwash pump means; said pump means constructed and arranged to permit the flow of filtered liquid from said underdrain chamber through said connecting pipe to pass directly therethrough into said backwash storage compartment; blower means for delivering air through an air supply conduit into said underdrain chamber; control means including a level sensing switch means positioned within said inlet chamber, said control means constructed and arranged for sequentially closing said control valve means, activating said blower means for a period of time, activating said pump means for a period of time and reopening said control valve means, when the liquid in the inlet chamber reaches a predetermined level; said first end of said connecting pipe includes a float valve means associated therewith which permits the passage of liquid therethrough until the level of liquid within said underdrain chamber drops to the level of said float valve means; said air supply conduit communicates with said underdrain chamber at a level above said float valve means such that the air entering said underdrain chamber forces liquid within said chamber through said float valve means and said connecting pipe into said backwash storage compartment until the level drops to the level of said float valve means; and an effluent pipe associated with said backwash storage compartment for removal of filtered liquid therefrom to service.

3,886,072
FILTER RETAINER AND BYPASS VALVE ASSEMBLY

Joseph E. Dezelan; John A. Junck, and Neil W. Kroth, all of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 30, 1973, Ser. No. 355,474
Int. Cl. B01d 27/10
U.S. Cl. 210—130 5 Claims

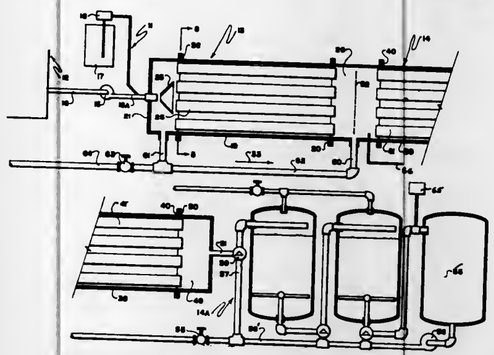


1. A filter assembly comprising:
a housing comprising a housing body and an end cover, and including fluid inlet and outlet means; said inlet means comprising an inlet pipe
an annular filter element within said housing adjacent the end cover;
fluid directing means for directing the fluid from the fluid inlet pipe through the filter element and comprising a tubular member having one end portion thereof surrounding and in contact with said inlet pipe, and the opposite end adjacent the filter element, said one end being flared;
valve means associated with said tubular member and comprising a tubular valving element movable to a first position away from the filter element so that the fluid directing means direct fluid from the fluid inlet pipe through the filter element, and movable away from the first position toward the filter element to allow fluid to flow from the fluid inlet means to the fluid outlet means, bypassing the filter element;
ring means slidably mounted about said tubular member adjacent said opposite end thereof, said tubular valving element; resilient means interposed the valving element and the ring means urging the valve means and the ring means towards opposite ends of said tubular member, with the valving element being urged about said tubular member, means associated with said valve seat member and said flared end of the tubular member to prevent the sliding of said valve seat member and said valving element off said tubular member, retaining means disposed on said tubular member adjacent said opposite end thereof to prevent said ring means from sliding off of the opposite end of said tubular member, the tubular member defining passage means to allow fluid in the tubular member to reach the valving element and valve seat member to subject them to fluid pressure introduced through the fluid inlet pipe to the filter element, the valving element and valve seat member being configured so that the valving element moves toward the filter element upon fluid pressure buildup in the filter element.

3,886,073
SEWAGE AND EFFLUENT TREATING SYSTEM

Raymond P. Briltz, P.O. Box 342, Grenfell, Saskatchewan, Canada

Continuation of Ser. No. 160,473, July 7, 1971, abandoned. This application Apr. 4, 1974, Ser. No. 457,794
Claims priority, application Canada, July 6, 1971, 117411
Int. Cl. B01d 21/08; C02b 1/20
U.S. Cl. 210—136 8 Claims



1. A secondary sewage treatment apparatus comprising in combination means to add a flocculating chemical to said sewage, means to agitate said sewage and said chemical to thoroughly mix same, and means to separate the flocculated material from the liquid effluent, said means to agitate said sewage and said chemical comprising an agitating module, said module including a casing, an intake header at one end of said casing, an outlet baffle chamber at the other end of said casing and a plurality of conduits in said casing communicating between said header and said baffle chamber, each of said conduits including a plurality of baffles extending from the walls thereof to agitate sewage passing therethrough, and a substantially horizontal perforated partition baffle spanning each of said conduits lengthwise and separating each of said conduits into a normal flow agitating portion above said partition baffle and a reverse flow cleaning portion below said partition baffle, said plurality of baffles being located in said normal flow agitating portion, and a hinged, effluent-flow-operated flap valve hinged on the discharge ends of each said conduits for closing off said normal flow agitating portions when effluent is flowing in a direction opposite to the normal direction of flow and for opening said normal flow agitating portion when said effluent is flowing in the normal direction of flow.

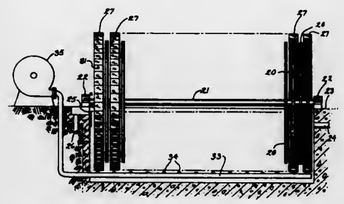
3,886,074
AIR DRIVEN ROTATING BIOLOGICAL CONTACTOR APPARATUS

David G. Prosser, River Hills, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 370,219, June 15, 1973, abandoned. This application June 4, 1974, Ser. No. 475,641
Int. Cl. B01d 21/00
U.S. Cl. 210—150 14 Claims

1. A biological wastewater treatment apparatus, comprising:
a treatment tank having a fluid inlet and a fluid outlet,
a generally circular rotating biological contactor assembly mounted for rotation about a horizontal axis and disposed in said tank for partial submergence in the wastewater in the tank,
a plurality of pockets arrayed along the length of said contactor assembly and disposed at the radially outer surfaces of said contactor assembly, said pockets having a depth which is a minor portion of the radius of said contactor assembly,

a source of oxygen containing gas under pressure, and
a gas conduit leading from said source of gas into said tank and having submerged openings disposed beneath the length of said contactor assembly,



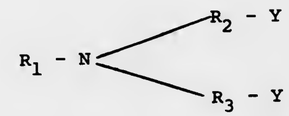
said pockets each opening outwardly in a direction opposite to the direction of rotation of said contactor assembly to trap gas released froom said conduit.

3,886,075
FABRIC SOFTENING COMPOSITION CONTAINING A SMECTITE TYPE CLAY

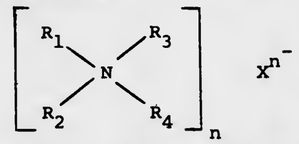
Lowell Watson Bernardino, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 337,331, March 2, 1973, abandoned. This application Apr. 16, 1973, Ser. No. 351,678
Int. Cl. D06m 13/00
U.S. Cl. 252—8.75 4 Claims

1. A fabric softening composition comprising:
a. from about 2 to about 90% by weight of a smectite-type clay having an ion-exchange capacity of at least 50 meq/100 grams;
b. from about 1 to about 40% by weight of a substantially water-insoluble quaternary ammonium antistatic agent of the formula:



wherein R_1 and R_2 represent hydrocarbyl groups containing from about 10 to about 22 carbon atoms, R_3 and R_4 represent hydrocarbyl groups containing from 1 to about 4 carbon atoms, X is an anion and n is an integer from 1 to 3; and
c. from about 1 to about 40% by weight of a compatibilizing agent of the formula:



wherein R_1 represents an alkyl group containing from 1 to about 22 carbon atoms; R_2 and R_3 represent alkyl groups containing from 1 to about 10 carbon atoms or hydrogen, whereby not more than one of the groups R_2 and R_3 can be hydrogen; and Y represents —$CONH_2$; —$CON(R_4)_2$; or —COOH; wherein R_4 represents an alkyl group containing from 1 to about 4 carbon atoms or hydrogen.

3,886,076
PERLITE THERMAL INSULATION PRODUCT AND METHOD OF PRODUCING SAME

Joseph M. Venable, New Braunfels, Tex., assignor to Pamrod, Inc., McQueeny, Tex.

Filed Dec. 22, 1972, Ser. No. 317,693
Int. Cl. C04b 43/02
U.S. Cl. 252—62 12 Claims

1. A method of forming a low density corrosion inhibiting thermal insulation product comprising the steps of:
a. Mixing a wet phase liquid product in a wet phase mixing zone by:
i) Adding about 35–52 percent water;
ii) Adding about 0.33–2.00 percent liquid silicone water repellency material to the water;
iii. Adding about 13.5–21.0 percent of metallic phosphate binder to the product of steps i) and ii);
b. Mixing and agitating in a dry phase mixing zone, about 20.5 to 32 percent expanded perlite having a bulk density from about 2–5 pounds per cubic foot; not more than 6 percent of at least one of sodium tetraborate and sodium silicate; and about 1.0–3.5 percent of an inorganic fiber;
c. Wetting substantially uniformly the product of step b) with the product of step a);
d. Placing the wetted product of step c) in a compression zone to form a desired article; and
e. Curing the molded product in a heating zone at a temperature of at least 500°F. for a period of time sufficient to heat the molded product throughout to a temperature of at least 480°F.

3,886,077
GARNET STRUCTURE FERRIMAGNETIC MATERIAL HAVING A SATURATION MAGNETISATION LESS THAN 1000 GAUSS FOR MICROWAVE APPLICATIONS

Jean Nicolas; Alain Lagrange, and Roland Sroussi, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 30, 1973, Ser. No. 346,245
Claims priority, application France, Mar. 31, 1972, 72.11633
Int. Cl. C04b 35/00
U.S. Cl. 252—62.57 6 Claims

1. Ferrimagnetic polycrystaline garnet structure material having the general formula:

$$Y_{3-3.r-z}Gd_{3.r}\ Ca_z\ Fe_{5-5y-z}\ Al_{5y}\ Sn_z\ O_{12}$$

wherein
0.6 x 0.8
0.02 y 0.12
0.2 z 0.4
said material having a saturation magnetisation less than 1000 gauss.

3,886,078
N-BENZOYLSACCHARIN AS PEROXYGEN BLEACH ACTIVATOR

Frank Fred Loffelman, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

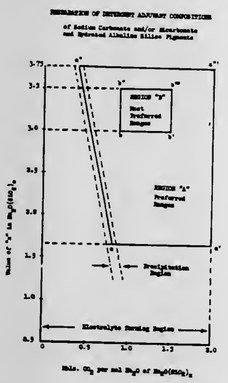
Filed Feb. 28, 1973, Ser. No. 336,655
Int. Cl. C11d 7/54
U.S. Cl. 252—102 6 Claims

1. A bleaching composition comprising hydrogen peroxide or a hydrogen peroxide-releasing compound and an activating amount of N-benzoylsaccharin.

3,886,079
DETERGENT COMPOSITIONS AND DETERGENT ADJUVANT COMBINATIONS THEREOF, AND PROCESSES FOR FORMING THE SAME

Oliver W. Burke, Jr., P.O. Box 2266, Fort Lauderdale, Fla. 33160

Filed Sept. 27, 1971, Ser. No. 184,059
Int. Cl. C11d *3/08, 3/10, 11/00*
U.S. Cl. 252—109 21 Claims



1. A process for preparing a detergent adjuvant combination which comprises:
   a. forming an aqueous solution of water soluble alkali metal silicate,
   b. adding to said solution sufficient reactant selected from the class consisting of carbon dioxide and alkali metal bicarbonate to form therewith a solution of electrolyte selected from the alkali metal carbonates and bicarbonates and a precipitate of alkaline silica pigment therein containing from 0.2 to 40% bound alkali by weight based on the silica of the pigment, and
   c. recovering and essentially drying together the combination of said alkaline silica pigment and at least 25% dry basis, by weight, of the electrolyte resulting from step *b*).

20. A process for preparing a detergent adjuvant combination which comprises:
   a. forming an aqueous solution of water soluble alkali metal silicate,
   b. adding to said solution sufficient reactant selected from the class consisting of carbon dioxide and alkali metal bicarbonate to form therewith a solution of electrolyte selected from the alkali metal carbonates and bicarbonates with a precipitate of alkaline silica pigment therein containing from 0.2 to 40% bound alkali by weight based on the silica of the pigment, and
   c. recovering and essentially drying together the combination of said alkaline silica pigment and at least 25% dry basis, by weight, of the electrolyte resulting from step (*b*), in combination, as a detergent adjuvant combination, said recovery including incorporating said adjuvant combination with detergent material selected from the class consisting essentially of the members of the following groups: Group (I) soaps; Group (II) synthetic anionic detergents; Group (III) non-ionic detergents; and combinations of two or more of said members; in a ratio in the range of 5:95 to 95:5 parts dry basis, by weight, based on the silica content as SiO_2, thereby forming a detergent composition incorporating said detergent adjuvant combination, and
   d. in which the detergent material comprises material selected from the sub-class consisting of the members of Groups (I) and (II) which is formed in the presence of the silica pigment by reaction of the corresponding free acid with alkalinity of the combination resulting from step (*b*).

3,886,080
CHELATING AGENTS COUPLED TO INORGANIC CARRIERS AND METHOD OF PREPARING

Gerald D. Schucker, Corning; Ken F. Sugarvara, Painted Post, and Howard H. Weetoll, Elmira, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 227,204, Feb. 17, 1972, abandoned. This application Sept. 4, 1973, Ser. No. 394,119
Int. Cl. C02b *1/00*
U.S. Cl. 252—176 4 Claims

1. An insoluble composite comprising an inorganic carrier chemically coupled to a chelating agent by means of an intermediate silane coupling agent having a silicon portion and an organic portion wherein the coupling agent is attached to the carrier by means of the silicon portion and attached to the chelating agent through an azo linkage by means of the organic portion of the coupling agent, the chelating agent being selected from the group consisting of 8-hydroxyquinoline, dithizone, neocuproine, O-phenanthroline, and salicylaldoxime.

3,886,081
AQUEOUS BROMINE EMULSIONS

Gary W. Ceska, Coraopolis, Pa., assignor to ARCO Polymers, Inc., Glenolden, Pa.

Filed Dec. 6, 1972, Ser. No. 312,634
Int. Cl. C09k *3/00*
U.S. Cl. 252—182 2 Claims

1. An emulsion of from 15 to 30% bromine in water containing a stabilizer comprising 2 to 4% of an anionic surfactant selected from the group consisting of alkyl aryl sulfonates, organo phosphate esters, sulfated esters of fatty acids, sodium dodecyl diphenyl ether disulfonates, dialkyl esters of succinic acid, and dialkylsulfosuccinates and mixtures thereof.

3,886,082
CERENKOV WAVE-SHIFTING COMPOSITION AND PROCESS

Mark Hyman, Jr., Belmont, Mass., assignor to Pilot Chemicals, Inc., Watertown, Mass.

Continuation of Ser. No. 45,920, June 12, 1970, abandoned. This application Mar. 6, 1972, Ser. No. 232,299
Int. Cl. G01t *1/22*
U.S. Cl. 252—301.2 R 9 Claims

1. A Cerenkov counter medium composition consisting essentially of a base of plastic Cerenkov-radiating light-transmitting material solid at room temperature and of inherent negligible or readily quenchable scintillation characteristics and containing, dispersed throughout the base material, a qunatity from substantially 0.25 percent to thousandths of a percent of relatively low wavelength-absorbing and relatively higher wavelength-re-emitting wave-shifting fluor material, said composition being substantially devoid of additional scintillating material, said plastic base material being selected from the group consisting of polymethyl methacrylate, polycyclo hexyl methacrylate, polyisobutyl methacrylate, their copolymers, polyvinyl toluene, polystyrene, and glass, said fluor being selected from the group consisting of bis-(o-methylstyryl) benzene, p-Bis-[2-(5-phenyloxazolyl)]-benzene, dimethyl p-Bis[2-(5-phenyloxazolyl)]-benzene, 1,1′, 4,4′, -tetraphenylbutadiene, phenylbiphenylyloxadiazole-1,3,4, bis-(phenylstyryl) benzene,Diphenylanthracene, and perylene.

3,886,083
SAFETY INKS AND DOCUMENTS

Herbert Laxer, Franklin Square, N.Y., assignor to American Bank Note Company, New York, N.Y.

Filed May 9, 1974, Ser. No. 468,409
Int. Cl. 283 *8 R*; C09k *1/00*; B44f *1/12*; B42d *15/00*
U.S. Cl. 252—301.2 R 2 Claims

1. A printing ink consisting essentially of coloring matter and a vehicle soluble in water and lower alcohols and lower ketones, said vehicle consisting essentially of glycerine, sorbitol and water, the glycerine being present in an amount in the range 10–30% by weight based on said vehicle, the remaining percentages of sorbitol and water having a weight ratio of about 4:1, said coloring matter including a dye soluble in lower alcohols and lower ketones wherein said lower alcohols and said lower ketones contain not more than 8 carbon atoms per molecule, and a fluorescent pigment which is non-bleachable, insoluble in water and no more than very slightly soluble in said lower alcohols and lower ketones.

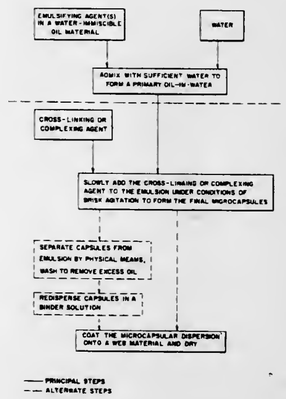
2. A printed document comprising:
   1. an area adapted to be writted upon and sensitive to attempted alteration of written material thereon by either solution, bleaching or erasure;
   2. said area having a background of printed elements including a pattern printed in an ink consisting essentially of coloring matter and a vehicle soluble in water and lower alcohols and lower ketones;
      a. said vehicle consisting essentially of glycerine, sorbitol, and water, the glycerine being present in an amount in the range 10–30% by weight based on said vehicle, the remaining percentages of sorbitol and water having a weight ratio of about 4:1;
      b. said color matter including:
         i. a dye soluble in lower alcohols and lower ketones, wherein said lower alcohols and said lower ketones contain not more than eight carbon atoms per molecule, said dye being bleachable and soluble in water, said dye being at least partly removed by solution or bleaching, and thereby changing the color of the background in response to attempted alteration of written material by solution or bleaching techniques; and
         ii. a fluorescent pigment which is non-bleachable, insoluble in water, and no more than very slightly soluble in said lower alcohols and lower ketones, said pigment having its fluorescence enhanced by removal of the dye during solution or bleaching, and being at least partly removed by erasure, thereby changing the color and flourescent intensity of the background, when viewed under ultraviolet light, in response to attempted alteration of written material by erasure.

3,886,084
MICROENCAPSULATION SYSTEM

Anthony E. Vassiliades, Deerfield, Ill., assignor to Champion International Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 583,046, Sept. 29, 1966, abandoned. This application Aug. 23, 1971, Ser. No. 174,045
Int. Cl. B01j *13/02*; B44d *1/02*
U.S. Cl. 252—316 24 Claims

1. A process for the formation of microcapsules having non-proteinaceous walls, in the absence of coacervation, which comprises the steps of:
   A. forming a primary oil-in-water emulsion, which emulsion comprises a water-immiscible oily material dispersed in the form of microscopic droplets in a colloidal solution of a non-proteinaceous, polymeric emulsifying agent having about the same hydrophil-lipophil balance as the oily material, said emulsifying agent being selected from the group consisting of polyvinyl alcohol, methylcellulose, a copolymer of an ethylenically unsaturated monomer and maleic anhydride, and guar gum; and
   B. forming an impermeable coating around said dispersed oil droplets solely by providing to the emulsion a compound different from said emulsifying agent and reactive therewith to form an impermeable coating, said compound selected from the group consisting of an aldehyde



monomer, polyvinyl alcohol, gum tragacanth, ethanolamine, ethylene diamine, a borate, and methylcellulose under conditions of brisk agitation, said compound reacting with said non-proteinaceous emulsifying agent so as to form a non-proteinaceous impermeable coating around said dispersed oil droplets.

3,886,085
PROCESS FOR PRODUCING FINE OIL-CONTAINING MICROCAPSULES HAVING STRONG PROTECTIVE SHELLS AND MICROCAPSULES PRODUCED THEREBY

Masataka Kiritani; Hiroharu Matsukawa; Akio Watanabe, and Hitoshi Imamiya, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Japan

Filed Aug. 24, 1972, Ser. No. 283,470
Claims priority, application Japan, Aug. 31, 1971, 46-66757
Int. Cl. B01j *13/02*; B44d *1/02*
U.S. Cl. 252—316 11 Claims

1. A process for producing fine oil containing microcapsules having strong protective shells which comprises dissolving in an oily liquid a polyisocyanate adduct having a free isocyanate group, said adduct having both an oleophilic group and a hydrophilic group, said polyisocyanate adduct being an adduct of hexamethylene diisocyanate and trimethylolpropane, an adduct of tolylenediisocyanate and trimethylolpropane, or a xylylene diisocyanate adduct, dispersing or emulsifying said oily liquid containing said polyisocyanate adduct in a polar solvent, adding a polyamine or a polyamine adduct having a free amino group to said polar solvent, and polymerizing polyisocyanate adduct in said oily liquid.

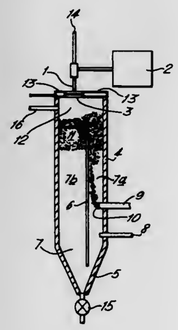
3,886,086
METHOD OF PRODUCING GEL SPHERES AND GELATION APPARATUS

Malcolm Patrick Simpson, Didcot, and Claude Lewis Stockwell, Newbury, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed June 12, 1972, Ser. No. 261,958
Claims priority, application United Kingdom, June 24, 1971, 29781/71
Int. Cl. B01j *13/00*
U.S. Cl. 252—317 4 Claims

1. A method of producing gel spheres comprising introducing droplets of material to be gelled into a column, causing the

droplets to make contact with a gaseous reagent in a region at an upper part of the column, and causing the droplets to contact a liquid reagent in a region at a lower part of the column, the fall of the droplets passing down the upper part



of the column being retarded by a layer of foam provided above the surface of the liquid reagent in the lower part of the column such that the droplets are not disrupted or substantially distorted on contacting the surface of the liquid reagent in the lower part of the column.

3,886,087

PROCESS FOR MAKING AN IMPROVED SOAP POWDER

Jessie Mae Terry, 688 Rockaway Ave., Brooklyn, N.Y. 11212

Filed June 21, 1973, Ser. No. 372,247
Int. Cl. C11d 9/16, 13/20
U.S. Cl. 252—370 4 Claims

1. A process for making a soap powder, consisting essentially of dissolving 10 to 16 parts by weight of sodium hydroxide in 64 to 128 parts by weight water to form an aqueous sodium hydroxide solution, heating and stirring said solution while dissolving 80 to 105 parts by weight of lard therein followed by addition of 8 to 30 parts by weight of sodium tetraborate and 1 to 5 parts by weight coconut oil thereto, heating the resulting admixture with stirring for a period of from about two to about six hours to saponify the mixture, allowing the saponifying mixture to cool to room temperature and to stand at room temperature for a period of from two to four days, and forming the soap product thus obtained into a powder, the glycerine formed during the saponification being retained in the final soap product.

3,886,088

PROCESS FOR THE PREPARATION OF A GRANULAR ACTIVATED CARBON, AND GRANULAR ACTIVATED CARBONS PRODUCED THEREBY

Geert J. DeJong, Boekelo, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed July 30, 1973, Ser. No. 383,668
Claims priority, application Netherlands, Aug. 3, 1972, 7210632
Int. Cl. C01b 31/08
U.S. Cl. 252—422 4 Claims

1. A process for preparing an activated carbon which comprises reacting at a temperature of from −20°C to +300°C cut up or ground synthetic or natural rubber with a member selected from the group consisting of sulphur, sulphuric acid, sulphur trioxide, chlorosulphonic acid and sulphuryl chloride in an amount of 0.05 to 12 parts by weight per part by weight of the rubber and thereafter heating the resulting product at a temperature of 350° to 1000°C until a granular activated carbon is obtained.

3,886,089

DILITHIO ALKANE CATALYST COMPOSITIONS AND METHOD FOR THE PREPARATION THEREOF

William Novis Smith, Jr., Exton, Pa., assignor to Foote Mineral Company, Exton, Pa.

Filed Nov. 14, 1973, Ser. No. 415,729
Int. Cl. C07f 1/02
U.S. Cl. 252—429 R 7 Claims

1. A method for the preparation of dilithioalkane catalyst compositions which comprises: simultaneously reacting an alkyl monohalide and a hydrocarbyl dihalide with powdered lithium in a hydrocarbon solvent under an inert atmosphere at a temperature in the range from about 10°C. to about 100°C., and separating the resulting precipitate containing the dilithioalkane catalyst from the liquid portion of the reaction mixture; the molar ratio of said alkyl monohalide to said hydrocarbyl dihalide being in the range from about 0.3 to about 4:1; said powdered lithium being employed in just less than the stoichiometric amount to react with all of said alkyl monohalide and hydrocarbyl dihalide; said hydrocarbyl dihalide being selected from the group consisting of 1,4-dichlorobutane and hydrocarbyl dihalides having a hydrocarbyl radical selected from the group consisting of straight chain alkyl, cycloalkyl and aralkyl radicals containing from 5 up to about 30 carbon atoms in the alkyl chain, and having two halide atoms which may be the same or different selected from the group consisting of the iodide, bromide and chloride atoms, said halide atoms being attached to the alkyl radical and being at least 5 carbon atoms apart; said alkyl monohalide having an alkyl radical selected from the group consisting of primary and secondary alkyl radicals containing from 3 to about 20 carbon atoms, and a halide atom selected from the group consisting of iodide, bromide and chloride, and forming an alkyl lithium compound soluble in the reaction mixture.

3,886,090

NICKEL AND COBALT CATALYSTS INCLUDING A GROUP IIA AND VIA COMPONENT

Brent J. Bertus, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 230,077, Feb. 28, 1972, Pat. No. 3,784,627. This application Sept. 20, 1973, Ser. No. 399,166
Int. Cl. B01j 11/74, 11/82
U.S. Cl. 252—432 25 Claims

9. A catalyst composition consisting essentially of a calcined admixture of (I) cobalt or nickel oxide, compound convertible to the oxide on calcination, sulfate, selenate, or tellurate, and (II) beryllium, magnesium, calcium, strontium, or barium, oxided, compound convertible to the oxide on calcination, sulfate, selenate, or tellurate; further containing a support, wherein in said catalyst composition said cobalt or nickel represents about 20 to 85 weight percent, said Group IIA represents about 1 to 30 weight percent, and said sulphur, selenium or tellurium, represents about 1 to 40 weight percent, exclusive of said support.

10. The catalyst composition according to claim 9 wherein said support is silica, alumina, boria, titania, zirconia, mixtures thereof, or combinations thereof.

3,886,091

CATALYSTS FOR OXIDATIVE DEHYDROGENATION

Brent J. Bertus, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 225,284, Feb. 10, 1972, Pat. No. 3,793,391. This application Oct. 24, 1973, Ser. No. 409,094
Int. Cl. B01j 11/74, 11/22, 11/82
U.S. Cl. 252—432 15 Claims

1. A composition of matter consisting essentially of a calcined admixture of (I) cobalt oxide, compound of cobalt convertible to the oxide on drying of calcining, or the sulfate, (II) tin oxide, compound of tin convertible to the oxide on drying or calcination, or sulfate, and (III) a Group IIA metal oxide, compound convertible to a Group IIA oxide on calcination, or sulfate, such that in said calcined composition of matter cobalt represents about 10 to 75 weight percent, tin represents about 1 to 50 weight percent, and Group IIA metal represents about 0.5 to 60 weight percent.

4. The catalyst composition according to claim 1 wherein further is included in said catalyst composition a support, and said support is one or more of silica, boria, titania, and zirconia.

3,886,092

PROCESS FOR PRODUCING UNSATURATED CARBOXYLIC ACIDS

Masahiro Wada, Ikeda; Isao Yanagisawa, Osaka; Michikazu Ninomiya, Kobe, and Takashi Ohara, Nishinomiya, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 190,661, Oct. 19, 1971, Pat. No. 3,833,649. This application Sept. 12, 1973, Ser. No. 396,474The portion of the term of this patent subsequent to Nov. 27, 1990, has been disclaimed.
Int. Cl. B01j 11/06
U.S. Cl. 252—443 8 Claims

1. A catalyst adapted for the production of unsaturated carboxylic acids through the vapor phase oxidation of unsaturated aldehydes comprising a catalytic oxide supported on an inert carrier, said catalytic oxide consisting essentially of the recited metal elements in the atomic ratio Mo:V:Cu:Cr:W of 12:2–14:1–6:0–4:0–12 with the proviso that Cr + W is not O, said inert carrier having a surface area not greater than 2 m^2/g and a porosity of 30 to 65%, at least 90% of the pores having a pore diameter in the range of 50 to 1,500 microns.

3,886,093

ACTIVATED CARBON WITH ACTIVE METAL SITES AND PROCESS FOR PRODUCING SAME

Mitchell S. Dimitri, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 14, 1973, Ser. No. 424,844
Int. Cl. C01b 31/08
U.S. Cl. 252—447 9 Claims

1. A process for producing activated carbon containing active metal sites which comprises:

a. mixing a non-sulfonated aqueous lignate solution with an aqueous solution containing a transition metal salt at a mol ratio of 2:1 to 1:1 metal salt to lignate to thereby precipitate a transition metal lignate;
b. recovering said transition metal lignate precipitate;
c. drying said recovered transition metal lignate precipitate;
d. carbonizing said transition metal lignate precipitate at a temperature between 700°F. and 1,800°F.; and
e. activating said carbonized transition metal lignate at a temperature between 1,400°F. and 1,950°F.

2. The process of claim 1 wherein said lignin is alkali lignin.

3. The process of claim 1 wherein said lignin is a hexamethylene tetramine modified lignin.

3,886,094

PREPARATION OF HYDROCARBON CONVERSION CATALYSTS

Joseph Michael Pilato, Silver Spring; John Storey Magee, Jr., Cooksville, and Edwin Wolf Albers, Annapolis, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 22, 1972, Ser. No. 317,606
Int. Cl. B01j 11/40
U.S. Cl. 252—451 5 Claims

1. A process for preparing crystalline alumino silicate containing catalysts which comprises:

a. forming a zeolite precursor reaction mixture containing silica, alumina, sodium hydroxide and water and crystallization initiating amorphous silica-alumina nucleation centers having a particle size below about 0.1 micron;
b. heating said reaction mixture to a temperature of from about 90° to 110°C. for about 15 to 120 minutes to produce about 15 to 100% of the crystalline zeolite theoretically available to said reaction mixture;
c. diluting said reaction mixture with sufficient water to yield a sodium silicate solution concentration of from about 3 to 7% by weight SiO_2 in said reaction mixture;
d. gelling said reaction mixture with a gelling mixture selected from the group consisting of mineral acids, CO_2, aluminium salts and mixtures thereof to produce an amorphous hydrogel composite having crystalline zeolite dispersed therein;
e. ammonium exchanging said composite to lower the Na_2O content thereof to below about 1% by weight;
f. exchanging said ammonium exchanged product with a rare earth salt solution;
g. washing and drying said composite to produce a particulate catalyst.

3,886,095

CATALYST FOR THE REDUCTION OF AUTOMOBILE EXHAUST GASES

James A. Ford, North Haven, Conn., and Sheldon H. Butt, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 342,271, March 16, 1973, Pat. No. 3,810,754. This application Nov. 12, 1973, Ser. No. 414,783
Int. Cl. B01j 11/06, 11/22
U.S. Cl. 252—455 R 17 Claims

1. A composite catalyst for the reduction of automobile exhaust pollution comprising:

A. a nickel alloy substrate containing from 2 to 6% aluminum, from 0.5 to 4% silicon, from 0.001 to 6% chromium, from 0.001 to 0.4% manganese, from 0.001 to 1% magnesium, balance essentially nickel; and
B. a surface layer of copper-nickel alloy on said substrate, having a composition consisting essentially of from 10 to 50% copper and from 50 to 90% nickel, said surface layer having a thickness of from 100 A to 0.05 inches.

3,886,096

OXIDATION AND AMMOXIDATION CATALYST

Tao P. Li, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1973, Ser. No. 320,372
Int. Cl. B01j 11/22
U.S. Cl. 252—456 6 Claims

1. A catalyst system comprising the elements antimony, uranium, iron and tungsten in a catalytic active oxidized state represented by the formula:

$$Sb_aU_bFe_cW_dO_e$$

wherein A is 1 – 10, b is 0.01 – 1, c is 0.01 to 1, d is 0.001 to 0.1 and e is a number taken to satisfy the average valences of the Sb, U, Fe and W in their catalytic active oxidation states, said catalyst system being formed by heating oxides or sulfates of said elements at a temperature in the range of from about 500°C. to 1,150°C. for a time sufficient to form said catalytic active oxidation states.

3,886,097

METHOD FOR MAKING A LOW AVALANCHE VOLTAGE METAL OXIDE VARISTOR

Arthur M. Hossenlopp, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1973, Ser. No. 414,814
Int. Cl. H01c 7/10, 17/00
U.S. Cl. 252—519 5 Claims

1. A method of making nonlinear metal oxide resistors with low avalanche voltage characteristics comprising the steps of: forming a uniform mixture of nonlinear resistor metal oxide powders for pressing into a predetermined shape,

isostatically pressing said mixture under a pressure of about 10,000 – 20,000 pounds per square inch to form an elongated body,

firing said elongated body at a temperature of about 2000° C. to 2300°C. for about 1 - 3 hours to produce a coherent mass having a predetermined nonlinear voltage-ampere characteristic,

transversely sawing said elongated body into a plurality of thin discs, each of which has substantially flat and parallel opposite major faces as formed that are suitable for attachment of electrodes and has a thickness less than about 0.05 inch commensurate with a predetermined avalanche voltage desired, and

attaching electrodes to said opposite major faces of said discs to form a plurality of discrete nonlinear metal oxide resistors that avalanche at a predetermined voltage below about 50 volts.

3,886,098

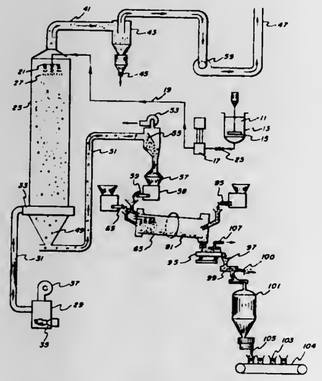
MANUFACTURE OF FREE FLOWING PARTICULATE DETERGENT COMPOSITION CONTAINING NONIONIC DETERGENT

Walter A. DiSalvo, North Arlington; Edward J. Kenney, Bernardsville, and Frank R. Smith, Jr., Plainfield, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 124,111, March 15, 1971, Pat. No. 3,838,072. This application Apr. 15, 1971, Ser. No. 134,324The portion of the term of this patent subsequent to Sept. 20, 1988, has been disclaimed.

Int. Cl. C11d *1/22, 1/83, 11/00*

U.S. Cl. 252—540 **12 Claims**



1. A method of producing a particulate detergent composition which comprises making inorganic salt-containing base particles comprising, on a detergent composition weight basis, at least 5 percent of sodium carbonate, sodium bicarbonate or sodium sesquicarbonate, at least 5 percent and less than 30 percent of sodium silicate, having $Na_2O:SiO_2$ ratio of 1:1.6 to 1:3.4, less than 15 percent of soluble higher alkyl benzene sulfonate detergent, less than 4 percent of nonionic detergent and less than 0.5 percent of sodium carboxymethyl cellulose, with the components of the base particles being such that the subsequently mentioned nonionic detergent is readily sorbed thereby, and distributing over the surfaces of the particles, while they are in motion, from 2 to 20 percent by weight of the detergent composition of a higher alkoxy poly-lower alkoxy lower alkanol containing nonionic detergent wherein said higher alkoxy contains from 10 to 18 carbon atoms, said lower alkoxy and lower alkanol contains from 2 to 3 carbon atoms. the total number of carbon atoms in said poly lower alkoxy lower alkanol being from 20 to 30.

3,886,099

WATER SOLUBLE FLUX REMOVER

Robert M. Hall, Portland, Oreg., assignor to Griffin Bros., Inc., Portland, Oreg.

Continuation of Ser. No. 234,403, March 13, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 414,724

Int. Cl. C11d *3/30*

U.S. Cl. 252—548 **9 Claims**

1. A water soluble solution for removing soldering flux from circuit boards consisting essentially of:

a glycol ether selected from the group consisting of ethylene glycol mono methyl ether, ethylene glycol ethylether, ethylene glycol mono butyl ether, diethylene glycol mono methyl ether, diethylene glycol mono ethyl ether and diethylene glycol mono butyl ether and mixtures thereof;

an amine selected from the group consisting of triethanol amine, diethanol amine, monoethanol amine and morpholine;

an organic acid selected from the group consisting of citric acid, gluconic acid and hydroxyacetic acid, there being at least about 3 mols of said amine present for each mol of said organic acid;

said glycol ether, amine and organic acid being dissolved in water to form a concentrate and being present in said concentrate in proportions which, upon dilution of said concentrate with water, will provide a washing solution containing by weight approximately 1 to 3% of said glycol ether, 1 to 3% of said amine and 0.18 to 0.56% of said acid.

3,886,100

METHOD OF MANUFACTURING POLYMER PARTICLES HAVING UNIFORM CROSS-LINKING AND EXPANDED SHAPED ARTICLES OBTAINED THEREFROM

Yoshizo Yasuda; Itaru Hatano; Yasuyuki Suganuma, and Tomohumi Kameo, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 237,967, March 24, 1972, abandoned. This application June 28, 1974, Ser. No. 484,253

Claims priority, application Japan, Mar. 25, 1971, 46-17713; Mar. 25, 1971, 46-17714; Mar. 25, 1971, 46-17715

Int. Cl. C08f *47/10, 27/00, 29/04*

U.S. Cl. 260—2.5 B **14 Claims**

1. A method of manufacturing polymer particles having uniform cross-linking comprising the steps of suspending in water particles of polyolefin resin, surface active agent, organic peroxide cross-linking agent, and inorganic metallic salt, and heating said suspension system to a temperature sufficient to cause penetration of said cross-linking agent into said particles, and cross-linking reaction.

3,886,101

PHENOLIC ADHESIVES

Vincent F. Felicetta, and Donald E. Wenzel, both of Bellingham, Wash., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed July 8, 1974, Ser. No. 486,414

Int. Cl. C08h *5/02;* **C07g** *1/00;* **B32b** *27/42*

U.S. Cl. 260—17.5 **19 Claims**

1. A thermosetting phenol-aldehyde adhesive composition comprising a water-soluble phenol-aldehyde resin intermixed

with a polymerized lignosulfonate in an amount sufficient to improve the assembly time of the adhesive, said polymerized lignosulfonate being a lignosulfonate reacted with a sufficient amount of a cross-linking agent selected from the group consisting essentially of aliphatic and heterocyclic aldehydes having up to 6 carbon atoms, epichlorohydrin, epibromohydrin, and poly-epoxides having not more than 10 carbon atoms to polymerize the lignosulfonate to the extent that from 30 to 80 percent of the polymerized lignosulfonate is insoluble in a 5 percent sodium carbonate aqueous solution.

3,886,102

RAPID SETTING POLYURETHANES FROM DIOLS AND POLYISOCYANATES PREPARED IN THE PRESENCE OF A MIXTURE OF LIQUID MODIFIERS

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 358,245, May 7, 1973, Pat. No. 3,801,532, which is a continuation-in-part of Ser. No. 205,697, Dec. 7, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 422,802

Int. Cl. C08g *22/16*

U.S. Cl. 260—18 TN **20 Claims**

1. A rigid, non-cellular composition having a density of at least about 1 gram/cc which is demoldable within about 5 minutes after admixture of the components of the composition which is the reaction product of a polyurethane-forming composition comprising

A. a dihydroxyl-containing compound having a hydroxyl equivalent weight of less than about 250;

B. an organic polyisocyanate having an NCO functionality of at least about 2.5;

C. a liquid modifier compound having an atmospheric boiling point of at least about 150°C, with the proviso that a hydroxyl-containing halogenated aliphatic compound when employed as a modifier can have an atmospheric boiling point below 150°C, and which moderates the reaction between components (A), (B), and (D) without substantial reaction therewith, except when a hydroxyl-containing halogenated aliphatic compound is employed it can react with the polyisocyanate, said modifier consisting of a mixture, in any proportion, of at least two members selected, in any combinations, from the group consisting of

1. a fatty acid or fatty oils,
2. organic phosphates, phosphites or phosphonates,
3. cyclic polyethers,
4. aromatic compounds free from ester groups or partially hydrogenated aromatic compounds free from ester groups,
5. halogenated aliphatic compounds failing above about 150°C,
6. hydroxyl-containing halogenated aliphatic compounds falling below about 150°C,
7. cyclic sulfones,
8. organic carbonates, and
9. esters of carboxylic acids, and

D. an organometallic catalyst;

wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1, the quantity of component (C) is from about 10 to about 50 percent by weight of the combined weight of components (A), (B) and (C) with the proviso that when component (C) consists of a mixture of (C-5) and (C-6) the quantity employed is from about 0.2 to about 50; with a further proviso that whenever component (C) contains a hydroxyl-containing halogenated aliphatic compound with either has a boiling point below about 150°C or an OH equivalent weight below about 500, then the quantity of such compound or compounds is not to exceed about 10 percent by weight of the combined weight of Components (A), (B) and (C); and component (D) is present in quantities of from about 0.1 to about 10 percent by weight of the combined weight of components (A), (B) and (C).

3,886,103

METHOD FOR COATING METAL SUBSTRATE WITH A COMPOSITION CONTAINING VINYLIDENE FLUORIDE POLYMER OR VINYL FLUORIDE POLYMER

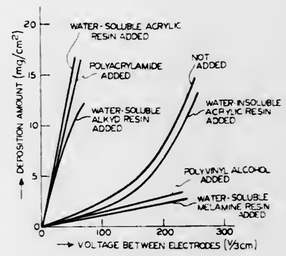
Shun Koizumi, Toyonaka; Takeshi Suzuki, Kyoto, and Chuzo Okuno, Takatshki, all of Japan, assignors to Daikin Kogyo Co. Ltd., Japan

Continuation of Ser. No. 126,062, March 19, 1971, abandoned. This application Sept. 11, 1973, Ser. No. 396,307

Claims priority, application Japan, Mar. 19, 1970, 45-023979

Int. Cl. C09d *3/78, 5/24*

U.S. Cl. 260—22 CB **13 Claims**



1. A coating composition for electro-deposition which comprises 1–30 percent by weight of a powder of a vinylidene fluoride polymer or a vinyl fluoride polymer containing not less than 75 percent percent by weight of vinylidene fluoride or vinyl fluoride monomer units, said powder having a particle size of 0.1 to 100 microns, a mixture of a water soluble organic solvent system capable of forming a film of the said polymer and water wherein the ratio of the organic solvent to water is from 20 : 80 to 90 : 10 by weight and a water-soluble resin, which resin dissociates and is ionized in water and is selected from the group consisting of an acrylic acid resin, an alkyd resin and an acrylic amide resin, said resin being used in an amount of 0.1 to 30 percent by weight of the said polymer.

3,886,104

STABILIZED POLYESTER COMPOSITIONS

Willem F. H. Borman, and Eugene P. Reilly, both of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

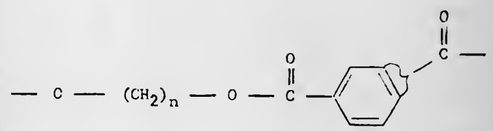
Filed Jan. 5, 1973, Ser. No. 321,267

Int. Cl. C08g *17/00, 51/58*

U.S. Cl. 260—22 EP **24 Claims**

1. A stabilized thermoplastic composition comprising

i. a high molecular weight linear polyester resin normally tending to undergo thermal scission, said resin having repeating units of the general formula



wherein *n* is a whole number of from 2 to 10 and

ii. a stabilizing quantity of an organic compound containing only carbon, hydrogen and oxygen and having at least two internal epoxide groups.

3,886,105
POLYOLEFIN COMPOSITION AND USE OF SAME IN ALKALINE SOLUTIONS

Henry G. Schutze, and Hulen L. Wilder, both of Baytown, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 4, 1972, Ser. No. 278,143
Int. Cl. C08f 19/14
U.S. Cl. 260—23 H 15 Claims



1. Polyolefin resin composition comprising a solid polymer of an alpha monoolefin having 2 to 8 carbon atoms in the molecule containing a compound having a stearate radical a stearate radical unassociated with barium cation and an amount of a water soluble barium compound capable of forming sufficient water insoluble barium stearate soaps with the stearate radical in aqueous alkaline environments to prevent foaming therein caused by stearate radicals unassociated with barium.

3,886,106
STABILIZATION OF POLYBUTADIENE RESIN

Delmar F. Lohr, Jr.; Edward Leo Kay, and Walter Richard Hausch, all of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 16, 1973, Ser. No. 351,692
Int. Cl. C08d 7/10
U.S. Cl. 260—23.7 M 2 Claims

1. A composition curable to a hard resin having enhanced resistance to thermo-oxidative deterioration of its mechanical properties due to the presence of p,p'-dibenzoylquinonedioxime, said composition comprising

	Parts by Weight
A butadiene polymer or copolymer	100
Vinyltriacetoxysilane	0.05–5.0
Silica	100–500
[An aromatic nitroso or a p-quinonedioxime compound of the class consisting of: N(2-methyl-2-nitropropyl)-4-nitrosoaniline, poly-p-dinitrosobenzene. and]	
p,p'-Dibenzoyl-quinonedioxime	0.5–5.0
Calcium stearate	0.5–5.0
Dicumyl peroxide	0.5–6.0.

3,886,107
LOW SHRINK WATER EXTENDED VINYL ESTER RESIN EMULSION

Daniel J. Najvar, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 21, 1973, Ser. No. 343,715
Int. Cl. C08f 33/02, 45/24
U.S. Cl. 260—29.6 WQ 7 Claims

1. A water-in-resin emulsion comprising about 20 to 80 percent of a dispersed aqueous phase, about 80 to 20 weight percent of a continuous resin phase wherein the continuous resin phase is a mixture of a terminally unsaturated vinyl ester resin and a copolymerizable alkenyl aromatic monomer in the respective weight proportions of about 80:20 to 30:70 and about 0.5 to 20 weight percent of a dimensional control agent which is soluble in the resin phase and consists of an interpolymer of a) 1 to 70 weight percent of a monoalkenyl aromatic monomer, b) 1 to 60 percent of an alkyl acrylate or methacrylate, and c) up to 50 percent of a hydroxyalkyl acrylate or methacrylate provided the combined weight of monomers a) and b) is at least 50 percent; and wherein said vinyl ester resin is a reaction product of about equivalent amounts of an unsaturated monocarboxylic acid and a polyepoxide.

3,886,108
PREPARATION OF FLUOROELASTOMER LATEX WITH MIXTURE OF MONO- AND DI-ESTERS OF PHOSPHORIC ACID

Austin Matthew Snow, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 14, 1973, Ser. No. 415,666
Int. Cl. C08f 45/24
U.S. Cl. 260—29.6 F 5 Claims

1. A process for preparing a fluoroelastomer latex which comprises:

A. providing a solution in a volatile water-immiscible inert organic solvent of an elastomeric copolymer of vinylidene fluoride and at least one other ethylenically unsaturated fluorine-containing monomer,

B. forming an aqueous dispersion of said copolymer by mixing under vigorous agitation the solution of step A with an aqueous solution of an anionic surfactant which is a mixture of mono and di esters of phosphoric acid with nonylphenoxypolyethyleneoxyglycol, the weight ratio of monoester to diester in said mixture being about 40:60 to 60:40 and said mixture having an average molecular weight of about 4,000–6,000,

C. removing the organic solvent from the resulting aqueous dispersion by distillation,

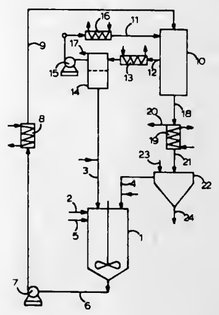
D. creaming the resulting solvent-free latex to form a creamed latex, and

E. separating the creamed latex obtained in step D.

3,886,109
PROCESS FOR PREPARING A LATEX OF A RUBBERY POLYMER FROM A SOLUTION OF THIS POLYMER IN AN ORGANIC SOLVENT

Rudolf van Hardeveld, Geleen, and Jozef L. M. van der Loos, Sittard, both of Netherlands, assignors to Stamicarbon, B. V., Geleen, Netherlands

Filed May 18, 1973, Ser. No. 361,619
Claims priority, application Netherlands, May 18, 1972, 7206711
Int. Cl. C08d 5/00; B01d 12/00, 17/04
U.S. Cl. 260—29.7 EM 15 Claims



1. A process for preparing a latex of a rubbery polymer from a solution of said polymer in an organic solvent therefor comprising:

a. mixing said rubbery polymer solution with water and at least one emulsifier therefor,

b. evaporating said organic solvent such that a foamy product is formed from substantially the total amount of emulsion components,

c. separating said organic solvent in the gaseous state from said foamy product by passing said foamy product into a radially symmetrical space while concurrently flowing tangentially against said foamy emulsion a gas, vapor or gas-vapor mixture fluid flow, thereby producing a rotary flow in said space and subjecting said foamy emulsion to sufficient shearing forces caused by said flow such that said foamy emulsion is broken and said organic solvent is released in a gaseous state;

d. removing the gaseous organic solvent from said radially symmetrical space; and

e. recovering a concentrated aqueous latex solution of said rubbery polymer.

3,886,110
AQUEOUS COATING COMPOSITION

Tadahiro Go, and Takashi Suzuki, both of Kawasaki, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1974, Ser. No. 441,460
Claims priority, application Japan, Feb. 17, 1973, 48-19443
Int. Cl. C08d 5/02; C08f 27/04, 27/08
U.S. Cl. 260—29.7 H 13 Claims

1. An aqueous coating composition comprising a water-soluble or water-dispersible copolymer prepared by addition reacting with at least one α,β-unsaturated dicarboxylic compound a liquid copolymer comprising 90–50% by weight of 1,3-pentadiene units and 10–50% by weight of 1,3-butadiene units and having an average molecular weight of 500–5,000, the liquid copolymer having been prepared by the copolymerization of 1,3-pentadiene and 1,3-butadiene in the presence of a Friedel-Crafts type catalyst, and neutralization of the thus-obtained modified copolymer to make it soluble or dispersible in water.

3,886,111
HARDENABLE COMPOSITIONS

Hikoji Yoshimura, Fujisawa; Yuji Nakagawa; Hiroshi Yaginuma, both of Yokohama, and Atsutane Kimi, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,345
Claims priority, application Japan, Dec. 28, 1972, 48-1044
Int. Cl. C08f 45/36; C08g 51/36
U.S. Cl. 260—31.2 N 9 Claims

1. A hardenable composition comprising (A) a modified polypentadiene containing at least two hydroxyl groups in its molecular structure and of a hydroxyl value of 70 – 250, said modified polypentadiene being obtained by introducing the hydroxyl and acyloxy groups to the unsaturated double bonds of a liquid polypentadiene of a number average molecular weight of 300 – 5,000, said modified polypentadiene containing 0.3 – 1 acyloxy group per hydroxyl group, (b) an organic diisocyanate compound selected from the group consisting of the aliphatic diisocyanate, alicyclic diisocyanate, aromatic diisocyanate and the mixtures of at least two of these compounds, said organic diisocyanate compound is present in an amount such that 0.3 – 4.0 equivalents of the isocyanate groups are present per equivalent of the hydroxyl groups contained in said modified polypentadiene and (c) a solvent which dissolves the modified polypentadiene and, in addition, is inert to the isocyanate group.

3,886,112
POLYVINYL ALCOHOL BASED COMPOSITION AND ARTICLES MADE THEREFROM

John J. Watson, Woodside, and Alice W. Pucknat, New York, both of N.Y., assignors to Polymer Films Inc., Woodside, N.Y.

Filed Dec. 17, 1973, Ser. No. 424,945
Int. Cl. C08f 45/34
U.S. Cl. 260—33.4 R 6 Claims

1. A composition of matter characterized by insolubility in small volumes of water and solubility in larger volumes of same, (comprising) consisting essentially of from 65 to 98 weight % of hot and cold water soluble, partially hydrolized polyvinyl alcohol: the degree of hydrolysis of said alcohol being such as to impart said insolubility and solubility to said composition and being at least 86%; from 0.1 to 35 weight % of at least one plasticizer; and from 0.1% to 5% of a (metal) borate salt (.) of sodium or potassium.

3,886,113
METAL-AMINE COMPLEX ACCELERATOR FOR POLYESTER RESIN CURING

Melville W. Uffner, Glen Mills, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 285,907, Sept. 1, 1972, Pat. No. 3,804,799. This application Feb. 25, 1974, Ser. No. 445,710The portion of the term of this patent subsequent to Apr. 16, 1991, has been disclaimed.
Int. Cl. C08g 51/04
U.S. Cl. 260—40 R 15 Claims

1. A curable polyester mixture comprising:

a. an unsaturated polyester of a dihydric alcohol and an alpha-beta ethylenically unsaturated dicarboxylic acid,

b. ethylenically unsaturated reactive monomer,

c. free radical initiating organic peroxide, and

d. a promoter comprising a triethylene diamine compound at least in part present as a metal coordinated complex with cobalt and manganese salts.

3,886,114
SYNERGISTIC ANTIOXIDANT COMBINATION

Howard C. Beadle, Norwalk, Conn., assignor to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Aug. 24, 1973, Ser. No. 391,235
Int. Cl. C08d 7/10
U.S. Cl. 260—45.7 P 19 Claims

1. A synergistic mixture for protecting natural rubber against heat and oxidation degradation which consists essentially of about 0.50 to 1.75 parts of a phosphite selected from the group consisting of decakis (nonylphenyl)heptakis (dipropylene glycol)octaphosphite, tetrakis(nonylphenyl)polypropylene glycol 425 diphosphite, polyphenyl dipropylene glycol phosphite and mixtures thereof, and about 1.50 to 0.25 parts of a phenol selected from the group consisting of mixed polybutylated bisphenol A, 2,6-di-t-butyl-4-methylphenol, styrenated phenol, 2,2'-methylenebis(4-methyl-6-t-butylphenol), 4,4'-dihydroxydiphenol, 4,4'-thiobis(6-t-butyl-o-cresol), p-t-butylphenol, p-isopropylphenol, p-(1,1,3,3-tetramethylbutyl)phenol, thymol, mixed m- and p-cresol, p-nonylphenol, and mixtures thereof.

3,886,115

STABILIZATION OF SYNTHETIC POLYMERS

Keisuke Murayama; Syoji Morimura; Takao Yoshioka; Hideo Horiuchi; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Ohta, and Hisayou Ohsawa, all of Tokyo, Japan, assignors to Sankyo Company Limited, Japan

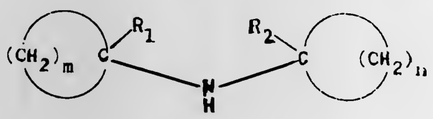
Continuation-in-part of Ser. No. 308,122, Nov. 20, 1972, abandoned. This application May 29, 1974, Ser. No. 474,189

Claims priority, application Japan, Nov. 24, 1971, 46-94278

Int. Cl. C08f *45/60;* **C08g** *51/60*

U.S. Cl. 260—45.9 R **5 Claims**

1. A synthetic polymer composition of a polymer selected from the group consisting of polyethylene, polypropylene, polyamide, polyurethane and polyvinyl chloride stabilized against photo- and thermal deterioration, wherein there is incorporated, in an amount sufficient to prevent said deterioration, at least one secondary amine having the formula



wherein

R_1 and R_2 may be the same or are different and represent —CN, —COOH, —COOM with M being a metal having from 1 to 4 valences, carbamoyl, N-alkyl-substituted carbamoyl where the alkyl substituents have up to 6 carbon atoms, alkoxycarbonyl having from 1 to 8 carbon atoms in the alkoxy moiety, or aryloxycarbonyl having from 6 to 10 carbon atoms in the aryloxy moiety, and

m and *n* individually are an integer of 4 to 5.

3,886,116

OXIDATION RESISTANT POLYMERIC COMPOSITIONS

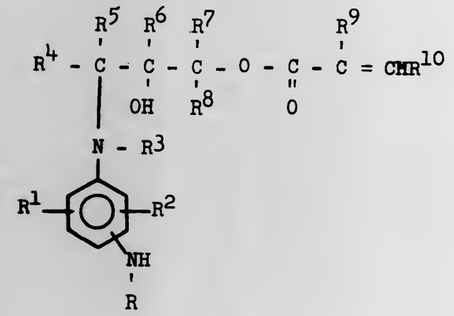
Carl R. Parks, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 153,446, June 15, 1971, Pat. No. 3,817,916. This application Mar. 13, 1974, Ser. No. 450,915

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.85 E **8 Claims**

1. An age resistant polymeric composition comprising a diene polymer susceptible to oxidative degradation, said diene polymer being natural rubber or a synthetic rubber selected from the group consisting of diene homopolymers, copolymers of diene monomers and copolymers of diene monomer and monoolefinic monomer, said diene polymer having incorporated therein a stabilizing amount of at least one compound having the following structural formula



wherein R is selected from the group consisting of alkyl radicals having one to 12 carbon atoms, cycloalkyl radicals having five to 12 carbon atoms, aralkyl radicals having seven to 24 carbon atoms and aryl radicals having six to 24 carbon atoms wherein R^1 and R^2 are selected from the group consisting of hydrogen and alkyl groups having one to four carbon atoms and wherein R^3 is selected from the group consisting of hydrogen, alkyl radicals having one to 12 carbon atoms, cycloalkyl radical having from five to 12 carbon atoms, and aralkyl radicals having seven to 24 carbon atoms, wherein R^4, R^5, R^6, R^7 and R^8 are selected from the group consisting of hydrogen and alkyl radicals having from one to four carbon atoms, wherein R^9 is selected from the group consisting of hydrogen; alkyl radicals having from one to four carbon atoms, carboxymethyl radical and carbalkoxymethyl radicals; and wherein R^{10} is selected from the group consisting of hydrogen; alkyl radicals having from one to four carbon atoms, phenyl and substituted phenyl radicals, alkyl radicals having one to four carbon atoms, alkoxy radicals having one or two carbon atoms, carboxyl radical and carbalkoxy radicals.

3,886,117

ULTRAVIOLET LIGHT STABILIZERS

Reginoldus Havinga, Schalkhaar, and Pieter Dirk Swaters, Lochem, both of Netherlands, assignors to Koninklijke Industrieele Maatschappij Noury and Van Der Lande N.V., Deventer, Netherlands

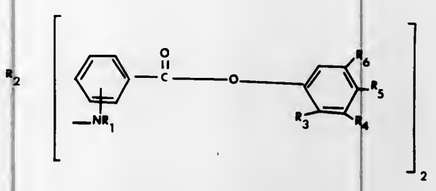
Division of Ser. No. 67,588, Aug. 27, 1970, Pat. No. 3,809,707. This application July 6, 1973, Ser. No. 377,113

Claims priority, application Netherlands, Aug. 28, 1969, 6913138

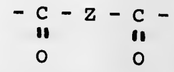
Int. Cl. C08f *45/60;* **C08g** *51/60*

U.S. Cl. 260—45.85 N **11 Claims**

1. A process for preparing a stabilized polymer, consisting essentially of incorporating in the polymer a compound having the general formula:



wherein R_1 represents a hydrogen atom, a lower alkyl group or an acetyl group; R_2 is a carbonyl or a group having the formula:



where Z represents a phenylene group or an alkylidene group having up to 12 carbon atoms; R_3, R_4, R_5 and R_6 are the same or different and each represents a hydrogen atom, a chlorine atom, a hydroxy group, an alkyl or alkoxy group having up to 12 carbon atoms or a phenyl group,

in amount sufficient to stabilize the polymer.

3,886,118

ROOM TEMPERATURE CURABLE COMPOSITIONS

Siegfried Nitzsche; Paul Hittmair; Wolfgang Hechtl; Eckhart Louis, and Ernst Wohlfarth, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Aug. 29, 1973, Ser. No. 392,704

Claims priority, application Germany, Aug. 29, 1972, 2242378

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G **5 Claims**

1. A composition which is stable under anhydrous conditions and is curable at room temperature to an elastomeric solid when exposed to atmospheric moisture which comprises diorganopolysiloxanes having terminal groups which are condensable and a cross-linking agent which is obtained from the reaction of tert-butoxyacetoxysilanes with methyltriacetoxysilane in a weight ratio of 3:7 to 1:9 at a temperature of at least 120°C.

3,886,119

EPOXY END-CAPPED AROMATIC POLYIMIDES

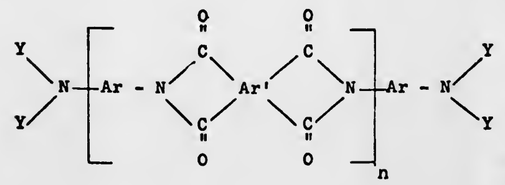
Gaetano F. D'Alelio, South Bend, Ind., assignor to University of Notre Dame du Lac, Notre Dame, Ind.

Filed Aug. 14, 1974, Ser. No. 497,491

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP **9 Claims**

1. An epoxidized aromatic polyimide having the formula

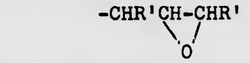


wherein

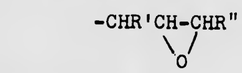
Ar is a divalent aromatic organic radical,

Ar′ is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar′ radical,

each Y is hydrogen or



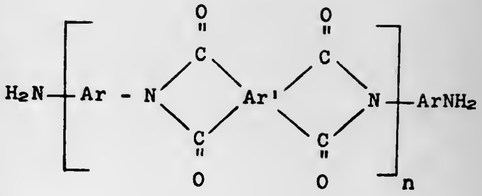
with the proviso that at least one Y is



and in which R′ is hydrogen or a hydrocarbon radical of 1 to 6 carbon atoms, and

n is a positive integer at at least 1.

4. A process for preparing an epoxidized aromatic polyimide comprising: reacting a diamine of the formula



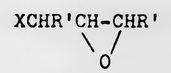
wherein

Ar is a divalent aromatic organic radical,

Ar′ is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar′ radical, and

n is a positive integer of at least 1,

with *n′* moles of an epoxy compound of the formula



wherein

X is halogen,

R′ is hydrogen or a hydrocarbon radical of 1 to 6 carbon atoms, and

n′ is a positive integer of 1 through 4 inclusive,

in the presence of a base at a temperature in the range of between ambient to about 100°C.

3,886,120

PROCESS FOR PREPARING AROMATIC POLYMER AND PRODUCT THEREOF

Norio Yagi; Hiroshi Okai; Makoto Fukuda, and Ikuji Kishi, all of Tokyo, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Japan

Filed July 9, 1974, Ser. No. 486,810

Claims priority, application Japan, July 11, 1973, 48-78142

Int. Cl. C08g *23/00, 25/00*

U.S. Cl. 260—49 **7 Claims**

1. A process for preparing an aromatic polymer, which comprises bulk polymerizing a dialkali metal salt of a diphenol with a dihalogenobenzenoid compound containing an electron withdrawing group in at least one position ortho or para to the halogen atom at 200°–400°C in the absence of a solvent, wherein said dialkali metal salt of the diphenol and said dihalogenobenzenoid compound are polycondensed in the molar ratio range of 2/1 to 1/2.

7. An aromatic polymer is prepared by a process which comprises bulk polymerizing a dialkali metal salt of a diphenol with a dihalogenobenzenoid compound containing an electron withdrawing group in at least one position ortho or para to the halogen atom, at 200°–400°C in the absence of a solvent, wherein said dialkali metal salt of the diphenol and the dihalogenobenzenoid compound are polycondensed in the molar ratio of 2/1 to 1/2.

3,886,121

PROCESS FOR PREPARING AROMATIC POLYETHERS

Norio Yagi; Hiroshi Okai; Makoto Fukuda, and Ikuji Kishi, all of Tokyo, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Japan

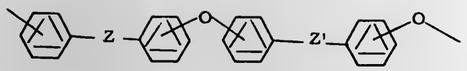
Filed July 30, 1974, Ser. No. 493,053

Claims priority, application Japan, July 30, 1973, 48-85617

Int. Cl. C08g *23/00*

U.S. Cl. 260—49 **9 Claims**

1. A process for preparing an aromatic polymer which comprises heating a condensed oligomer having an average of 1 – 10 units having the formula



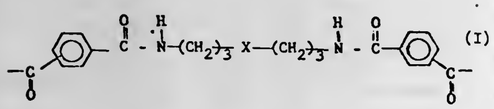
wherein Z represents $-SO_2$ or —CO—, or the rings are directly connected; Z' represents $-SO_2$ or —CO—; and the ether bond is ortho or para to Z or Z'; at 150° – 400°C under a nonreactive atmosphere in the absence of a solvent.

3,886,122
POLYURETHANE ADHESIVE COMPOSITION WITH MINIMAL MOISTURE SENSITIVITY
Hubert Jakob Fabris; David Ross Sponseller, both of Akron; Heinz Uelzmann, Tallmadge, and Arden Everett Schmucker, Alliance, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio
Filed Mar. 11, 1974, Ser. No. 450,012
Int. Cl.² C08G *22/16*
U.S. Cl. 260—75 NP **6 Claims**

1. An adhesive composition prepared by intimately blending (A) a liquid isocyanate-terminated polyurethane prepolymer containing from about 5 to 30 weight percent free isocyanate groups and (B) a liquid cross-linking mixture comprising at least one organic polyhydroxy compound free of isocyanate groups and containing groups having active hydrogen atoms reactive with the isocyanate groups in the prepolymer (A) and a urethane catalyst, the ratio of the total isocyanate-reactive hydrogen atoms in (B) to isocyanate groups in (A) being from about 1.1:1 to 1.9:1, and the ratio of the calculated branching coefficient to the critical branching coefficient of the total system being at least 1.4, where the critical branching coefficient is the reciprocal of $f-1$ and where f is the average functionality of the reacting molecules in (A) and (B) having a functionality higher than 2.

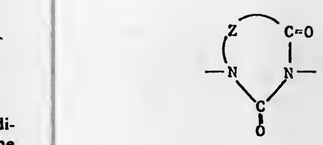
3,886,123
POLYESTERAMIDES BASED ON BIS-AMINOALKYL HYDANTOINS OR DIHYDROURACILS
Jurgen Habermeier, Pfeffingen, and Walter Kunz, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Mar. 13, 1974, Ser. No. 450,932
Claims priority, application Switzerland, Mar. 27, 1973, 4400/73
Int. Cl. C08g *20/30*
U.S. Cl. 260—75 N **6 Claims**

1. A linear, thermoplastic copolyester which contains amide groups and is based on terephthalic acid and/or isophthalic acid and alkanediols containing 2–10 carbon atoms, characterised in that it contains, as the co-component, 5–90 mol %, relative to the total molar quantity of dicarboxylic acid components, of a dicarboxylic acid diamide radical of the formula I



(I)

wherein the two carbonyl groups located on the aromatic ring are in the para- or meta-position to one another and X denotes an organic radical containing the grouping of the formula II

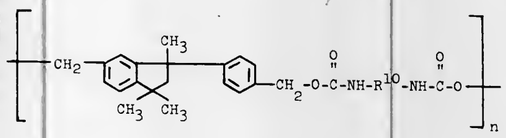


(II)

in which Z denotes an unsubstituted methylene or ethylene or a methylene or ethylene which is substituted by alkyl, cycloalkyl or phenyl.

3,886,124
CONDENSANT AND POLYESTERS AND POLYURETHANES PREPARED FROM HYDROXYMETHYL-PHENYLINDANS
John Charles Wilson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 180,114, Sept. 13, 1971, abandoned. This application Apr. 3, 1973, Ser. No. 347,733
Int. Cl. C08g *22/08*, *22/10*; C03c *1/78*
U.S. Cl. 260—77.5 AP **6 Claims**

1. A film forming polymer having repeating units consisting essentially of:



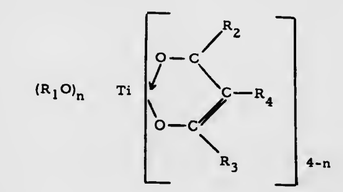
wherein n is a positive integer of at least 15 and R^{10} is selected from the group consisting of alkylene radicals of 2 to 10 carbon atoms, arylene radicals, arylenebisalkylene radicals wherein the alkylene portion has 1 to 6 carbon atoms, cycloalkylene radicals, alkylenebisarylene radicals wherein the alkylene radical contains 1 to 12 carbon atoms, alkylidenebisarylene radicals wherein the alkylidene portion contains 1 to 12 carbon atoms, aralkylene radicals wherein the alkylene portion has 1 to 12 carbon atoms.

3,886,125
POLYMER COMPLEXES
Richard C. Chromecek, Cannan, Conn., assignor to Airwick Industries, Inc., Carlstadt, N.J.
Filed May 12, 1972, Ser. No. 252,823
Int. Cl. C08f *27/04*
U.S. Cl. 260—78.3 UA **8 Claims**

1. A polymer complex particularly suitable as a carrier for active agent consisting essentially of (1) a polymer which is a homopolymer or copolymer comprising a monomer having a hydrophilic functional group and (2) from 0.1 to 90 mol percent, based on the hydrophilic functional groups present in said homopolymer or copolymer, of aluminum, zinc, or zirconium metal bound in complex form, said monomer being selected from the group consisting of hydroxyalkyl esters of α,β-unsaturated carboxylic acids and ethylenically unsaturated monomers containing an amino group, said copolymers further comprising from 0.5 to 60 mol percent of ethylenically unsaturated monomer free of said hydrophilic functional groups.

3,886,126
SOLUTIONS OF PRESSURE-SENSITIVE RESIN SOLUTIONS WITH IMPROVED VISCOSITY AND FLOW
Lawrence W. McKenna, Jr., Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.
Filed Apr. 9, 1973, Ser. No. 349,512
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.73 **4 Claims**

1. An organic solvent solution comprising:
A. a chelate ester of orthotitanic ester having the formula:



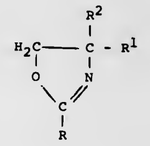
wherein n is an integer of 2 or 3, R_1 is a C_2 to C_{10} alkyl, alkenyl, substituted alkyl or substituted alkenyl group, R_2 is a C_1 to C_6 alkyl, alkoxy, alkenyl or alkenoxy group, R_3 is a C_1 to C_6 alkyl or alkenyl group or a C_6 to C_{10} aryl group and R_4 is hydrogen or a C_1 to C_6 alkyl or alkenyl group, and R_2 and R_3 may be combined as an ethylene or a trimethylene group; and
B. an interpolymer comprising:
1. between 0.5 and 20 weight per cent of at least one monomer selected from the group consisting of N,N-diacetonylacrylamide and N,N-diacetonylmethacrylamide,
2. at least one monomer selected from the group consisting of esters of acrylic acid and methacrylic acid containing from 6 to 20 carbon atoms, and
3. optionally a monomer selected from the group consisting of α-olefins containing from two to 10 carbon atoms, vinyl esters of alkanoic acids containing from three to 10 carbon atoms, ethyl and methyl esters of acrylic and methacrylic acids, acrylonitrile, methacrylonitrile, styrene, and vinyl chloride,
wherein the interpolymer has a weight average molecular weight in the range of 10,000 to 500,000 and a glass transition temperature in the range of −15° to −75°C.;
wherein there are between 0.01 and 4 parts by weight of the chelate ester per 100 parts of interpolymer and wherein the stringiness index of the solution is less than 0.3 inches.

3,886,127
ALKALI METALATED ACETYLENE-CONJUGATED DIENE RANDOM COPOLYMER
Junji Furukawa, Kyoto; Eiichi Kobayashi, and Takahiro Kawagoe, both of Uji, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Sept. 9, 1974, Ser. No. 504,036
Claims priority, application Japan, Sept. 12, 1973, 48-102231
Int. Cl. C08d *3/04*, *3/06*, *3/10*
U.S. Cl. 260—82.1 **10 Claims**

1. An alkali metalated acetylene-conjugated diene random copolymer obtained by reacting an acetylene-conjugated diene random copolymer having an acetylene unit content of 5–60 mol% and a block character P of 0.8–1.2 with an alkali metal or an alkali metal hydrocarbon compound in a solvent at a temperature of −100 ~ +100°C under an inert gas atmosphere.

3,886,128
OXAZOLINE EMULSIFIER IN POLYMERIZATION OF STYRENE AND BUTADIENE
John A. Frump, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.
Filed Oct. 15, 1973, Ser. No. 406,755
Int. Cl. C08f *1/13*
U.S. Cl. 260—84.7 **6 Claims**

1. In a process for the production of a styrenebutadiene copolymer by reacting styrene and butadiene in an emulsion system in the presence of a primary emulsifier and a secondary emulsifier at a temperature of 0° to about 20°C, and coagulating said copolymer by acidifying said emulsion to a pH of about 5, the improvement comprising the step of using as said secondary emulsifier an oxazoline in an amount of about 0.01 to about 0.50% based on the weight of said styrene-butadiene, said oxazoline corresponding to the formula



wherein R is an alkyl group of from three to about 17 carbon atoms and R^1 and R^2 are methyl, ethyl, or hydroxymethyl and can be the same or different.

3,886,129
COPOLYMERS OF VINYL CHLORIDE AND 2-HYDROXYPROPYL ACRYLATE
Dieter Kurz, and Herbert Kandler, both of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany
Filed Feb. 8, 1974, Ser. No. 440,653
Claims priority, application Germany, Feb. 12, 1973, 2306808
Int. Cl. C08f *15/26*
U.S. Cl. 260—86.3 **3 Claims**

1. Copolymers of vinyl chloride and 2-hydroxypropyl acrylate consisting of a copolymer with from 60 to 95% by weight of vinyl chloride monomer units and from 5 to 40% by weight of 2-hydroxypropyl acrylate monomer units, having a K-value of from 20 to 60 measured in cyclohexanone produced by the process comprising the steps of preparing an aqueous phase containing at least one water-soluble free radical polymerization catalyst and at least one oil-in-water emulsifier, continuously adding thereto a mixture of vinyl chloride and 2-hydroxypropyl acrylate in amounts sufficient to give a copolymerizate having from 60 to 95% by weight of vinyl chloride monomer units and from 5 to 40% by weight of 2-hydroxypropyl acrylate monomer units while stirring at a temperature of between 30°C and 80°C at a rate sufficient to maintain the autogeneous pressure of the vinyl chloride, and recovering said copolymer.

3,886,130

3,886,137

3,886,130
CATALYZED PRODUCTION OF HEAT STABLE FIBER-FORMING VINYL CHLORIDE

Drahoslav Lim; Miloslav Kolinsky, and Vaclava Jisova, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved No. 3 Narodni, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 108,567, Jan. 21, 1971, abandoned. This application June 29, 1972, Ser. No. 267,542
Claims priority, application Czechoslovakia, Jan. 21, 1970, 440-70
Int. Cl. C08f *1/42*
U.S. Cl. 260—92.8 R **11 Claims**

1. A method for preparing heat stable fiber forming vinyl chloride polymers comprising the steps of polymerizing monomeric vinyl chloride at a temperature in a range of from about −20°C to about +30°C in the presence of a lithium complex catalyst prepared by reacting an alkyl lithium compound, the alkyl group of which contains from 2 to 16 carbon atoms with at least one compound selected from the group consisting of organometal compounds of Group IV metals and alkoxide metal compounds of Group I through III metals of the Periodic Table of Elements which effects a decrease of basicity and metallation of said alkyl lithium compound.

3,886,131
NUCLEATION OF ISOTATIC POLYSTYRENE

Henry Nelson Beck, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 293,823, Oct. 2, 1972, Pat. No. 3,817,966. This application Mar. 21, 1974, Ser. No. 453,466
Int. Cl. C08f *7/04*
U.S. Cl. 260—93.5 A **1 Claim**

1. An isotactic polystyrene composition, the composition comprising in intimate admixture from about 99.995 to about 95 parts by weight of isotactic polystyrene and from about 0.005 to about 5 parts by weight of 2-hydroxybenzimidazole.

3,886,132
HUMAN PARATHYROID HORMONE

Hollis Bryan Brewer, Potomac, Md., and Claude D. Arnaud, Rochester, Minn., assignors to The Government of the United States Assistant Secretary, Department of Health, Education, and Welfare, Washington, D.C.

Continuation-in-part of Ser. No. 317,702, Dec. 21, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,303
Int. Cl. C07c *103/52*; **C07g** *7/00*; **A61k** *27/00*
U.S. Cl. 260—112.5 **1 Claim**

1. The peptide represented by the L-isomers of:
H_2N-Ser-Val-Ser-Glu-Ile-Gln-Leu-Met-His-Asn-Leu-Gly-Lys-His-Leu-Asn-Ser-Met-Glu-Arg-Val-Gln-Trp-Leu-Arg-Lys-Lys-Lys-Gln-Leu-Val-His-Asn-Phe-R, wherein R is a carboxyl group.

3,886,133
PROCESS FOR PREPARING 3-AMINOPROPYL ESTER OF BLEOMYCINIC ACID AND BLEOMYCINIC ACID INCLUDING AN ACID SALT AND A COPPER COMPLEX THEREOF

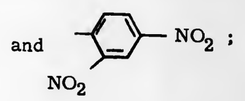
Hamao Umezawa, Tokyo; Tomohisa Takita, Asaka; Akio Fujii, Tokyo, and Takeyo Fukuoka, Omiya, all of Japan, assignors to Zaidon Hojin Biseibutsu Kagaku Kenkyu Kai, Japan

Filed Feb. 20, 1973, Ser. No. 333,629
Claims priority, application Japan, Feb. 17, 1972, 47-16020
Int. Cl. C07c *103/52*; **A61k** *27/00*; **C08h** *1/00*
U.S. Cl. 260—112.5 **13 Claims**

1. A process for preparing a 3-aminopropyl ester of bleomycinic acid or an acid salt thereof which comprises reacting a 3-methyl-mercaptopropylaminobleomycin or an acid salt thereof at the mercapto sulfur atom with a halide compound having the formula:

$$R - X$$

wherein R represents $-CN$, $-CH_2COOH$, $-CH_2COOR_1$, $-CH_2CONH_2$

and 

R_1 represents a lower alkyl group; and X represents a halogen atom in an acidic aqueous medium.

3,886,134
ANALOGUES OF ANGIOTENSIN II

Frank Sipos, Norwich; Donald T. Pals, Oxford, and George S. Denning, Norwich, all of N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Continuation-in-part of Ser. No. 17,920, March 9, 1970, abandoned. This application June 4, 1970, Ser. No. 43,595
Int. Cl.² C07C *103/52*
U.S. Cl. 260—112.5 **14 Claims**

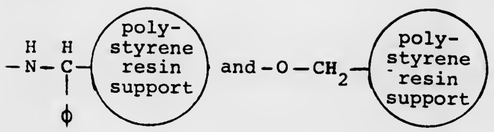
1. A peptide of the formula:
R-L-arginyl-L-valyl-L-tyrosyl-L-valyl-L-histidyl-L-prolyl-R_1 wherein R is hydrogen, succinyl, L-aspartyl, sarcosyl, L-seryl, succinamyl, or D- or L-asparaginyl and R_1 is L-alanine, L- or D-leucine, glycine or L-isoleucine.

3,886,135
P-GLU-D-PHE-TRP-SER-TYR-D-PGL-LEU-ARG-PRO-GLY-H_2 AND INTERMEDIATES

Wayne A. McKinley, Wallingford, and Dimitrios Sarantakis, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 10, 1974, Ser. No. 459,513
Int. Cl. C07c *103/52*; **C07g** *7/00*; **A61k** *27/00*
U.S. Cl. 260—112.5 **5 Claims**

1. A compound selected from the class consisting of
L-p-Glu-D-Phe-L-Trp-L-Ser-L-Tyr-D-Pgl-L-Leu-L-Arg-L-Pro-Gly-NH_2, (I)
R^4-L-p-Glu-L-D-Phe-L-Trp-L-Ser(R^3)-L-Tyr(R^2)-D-Pgl-L-Leu-L-Arg(N^G-R^1)-L-Pro-Gly-X (II)
and non-toxic acid addition salts thereof; wherein
R^1 is a protecting group for the N , N and N nitrogen atoms of arginine selected from the group consisting of nitro, tosyl, benzyloxycarbonyl, adamantyloxycarbonyl and tert-butyloxycarbonyl or R^1 is hydrogen;
R^2 is a protecting group for the phenolic hydroxyl group of tyrosine selected from the group consisting of tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,6-dichlorobenzyl, p-bromobenzyloxycarbonyl and benzyloxycarbonyl or R^2 is hydrogen;
R^3 is a protecting group for the alcoholic hydroxyl group of serine and is selected from the group consisting of acetyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,6-dichlorobenzyl and benzyl or R^3 is hydrogen;
R^4 is selected from the group consisting of hydrogen or an α-amino protecting group;
X is selected from the group consisting of NH_2, OH, O-(lower)alkyl, O-benzyl and an anchoring bond linked to a solid polystyrene resin represented by one of the formula



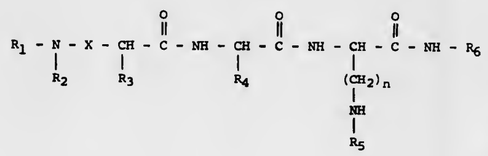
wherein said polystyrene resin is cross linked through the phenyl group on each second carbon atom of the alkyl chain of said polystyrene; with the proviso that at least one of R^1, R^2 and R^3 is other than hydrogen and wherein Pgl means C phenylglycyl.

3,886,136
NEW SUBSTRATES FOR DIAGNOSTIC USE, WITH HIGH SUSCEPTIBILITY TO TRYPSIN AND OTHER PROTEOLYTIC ENZYMES OF THE TYPE PEPTIDE PEPTIDOHYDROLASES

Karl Goran Claeson; Birgitta Gunilla Karlsson, both of Goteborg, and Lars-Gundro Svendsen, Molndal, all of Sweden, assignors to AB Bofors, Bofors, Sweden

Filed Apr. 24, 1973, Ser. No. 354,038
Claims priority, application Sweden, May 2, 1972, 5758/72
Int. Cl. C07c *103/52*; **C07g** *7/00*; **A61k** *27/00*
U.S. Cl. 260—112.5 **19 Claims**

1. Substrate with a high susceptibility to peptide peptidohydrolases which is represented by the formula:



or acid addition salts thereof, where R_1 is selected from the group consisting of hydrogen, an acyl alkyl-carbonyl having 1–12 carbon atoms, a ω-aminoalkyl-carbonyl having 1–12 carbon atoms in a straight chain, cyclohexyl-carbonyl, a ω-cyclohexylalkyl-carbonyl having 1–6 carbon atoms in a straight chain, 4-aminomethyl-cyclohexylcarbonyl, benzoyl, a ω-phenylalkyl-carbonyl having 1–6 carbon atoms in a straight chain, benzenesulphonyl and 4-toluene-sulphonyl; R_2 is selected from the group consisting of hydrogen, phenyl, cyclohexyl and an alkyl having 1–6 carbon atoms; X is selected from the group consisting of methylene and a single bond; R_3 is selected from the group consisting of straight, branched and cyclic alkyl groups having 3–8 carbon atoms; R_4 is selected from the group consisting of straight, branched and cyclic alkyl groups having 3–8 carbon atoms, phenyl and benzyl; n is 3 or 4; R_5 is selected from the group consisting of hydrogen and guanyl; and R_6 is selected from the group consisting of phenyl, nitrophenyl, methylnitrophenyl, naphthyl, nitronaphthyl, quinolyl, and nitroquinolyl.

3,886,137
P-GLU-D-PHE-TRP-SER-TYR-D-LEU-LEU-ARG-PRO-GLY-NH_2 AND INTERMEDIATES

John P. Yardley, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 21, 1973, Ser. No. 417,983
Int. Cl. C07c *103/52*; **C07g** *7/00*; **A61k** *27/00*
U.S. Cl. 260—112.5 **8 Claims**

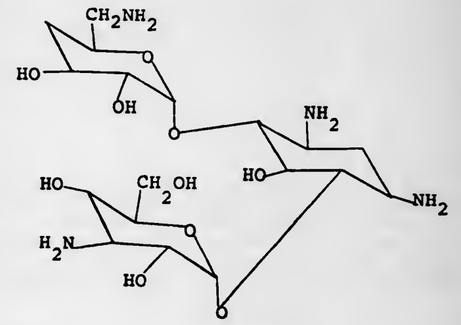
1. A compound selected from the group consisting of
L-p-Glu-D-Phe-L-Trp-L-Ser-L-Tyr-D-Leu-L-Leu-L-Arg-L-Pro-Gly-NH_2
and
R^4-L-P-Glu-D-Phe-L-Trp-L-Ser(R^3)-L-Tyr-(R^2)-D-Leu-L-Leu-L-Arg-(N^G-R^1)-L-Pro-Gly-R
and its non-toxic salts; wherein
R is selected from the class consisting of NH_2, OH, O-(lower)-alkyl and O-benzyl; R^1 is a protecting group for the N δ , N ω and N ω' nitrogen atoms of arginine selected from the class consisting of nitro, tosyl, benzyloxycarbonyl, and adamantyloxycarbonyl; or R^1 is hydrogen;
R^2 is a protecting group for the phenolic hydroxyl group of tyrosine selected from the class consisting of acetyl, tosyl, benzoyl, tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,4 dichlorobenzyl and benzyloxycarbonyl or R^2 is hydrogen;
R^3 is a protecting group for the alcoholic hydroxyl group of serine and is selected from the class consisting of acetyl, tosyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,4 dichlorobenzyl, benzyl and benzyloxycarbonyl; or R^3 is hydrogen;
R^4 is selected from the class consisting of hydrogen or an α-amino protection group, with the proviso that at least one of R^1, R^2 and R^3 is a protecting group.

3,886,138
4'-DEOXYKANAMYCIN A

Takayuki Naito; Susumu Nakagawa, and Yoshio Abe, all of Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Dec. 21, 1973, Ser. No. 427,199
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 K **2 Claims**

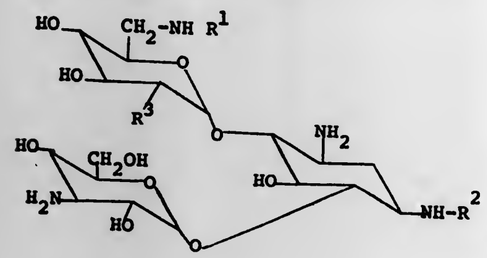
1. The compound having the formula



or a pharmaceutically acceptable nontoxic salt thereof.

3,886,139
DERIVATIVES OF KANAMYCIN
Takayuki Naito; Susumu Nakagawa, and Yoshio Abe, all of Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.
Filed Feb. 23, 1973, Ser. No. 335,210
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 K 7 Claims

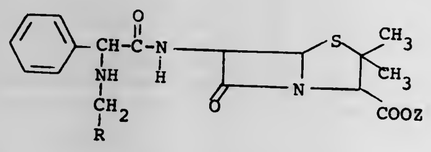
1. A compound having the formula



in which R^1 is H, R^2 is L-(−)-δ-amino-α-hydroxyvaleryl and R^3 is OH or NH_2; or a nontoxic pharmaceutically acceptable salt thereof.

3,886,140
PENICILLIN DERIVATIVES
Bong Kuk Lee, Old Bridge, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed May 30, 1972, Ser. No. 258,028
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 3 Claims

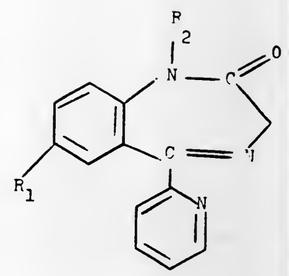
1. A compound of the formula



wherein R is alkyl of up to 7 carbon atoms, cycloalkyl of from 3 to 6 carbon atoms, phenyl, naphthyl, ortho-substituted phenyl, or ortho substituted naphthyl wherein said ortho substituent is halogen, hydroxy, carboxyl, amido, or methoxy; and Z is hydrogen, alkyl of up to 7 carbon atoms, an alkali metal, an alkaline earth metal, dibenzylamine or N,N-dibenzylethylenediamine; and acid addition salts thereof.

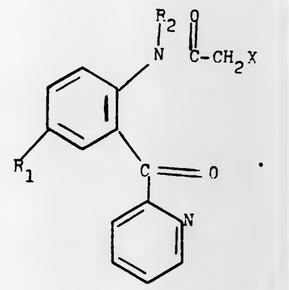
3,886,141
PREPARATION OF 5-PYRIDYL BENZODIAZEPINE UTILIZING HEXAMETHYLENETETRAMINE
George Oswald Chase, Hawthorne, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation of Ser. No. 187,500, Oct. 7, 1971, abandoned. This application July 17, 1972, Ser. No. 272,255
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D 6 Claims

1. A process for preparing a compound of the formula:



I

wherein R_1 is selected from the group consisting of hydrogen and halogen and R_2 is selected from the group consisting of hydrogen
which comprises reacting a compound of the formula:

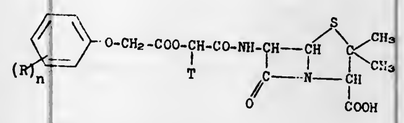


II

wherein X is selected from the group consisting of chlorine, bromine and iodine and R_1 and R_2 are as above with hexamethylenetetramine.

3,886,142
6-ACYL DERIVATIVES OF AMINOPENICILLANIC ACID
Andre Furlenmeier, Basel; Paul Lanz, Muttenz; Karl Vogler, Riehen, and Guido Zanetti, Reinach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Dec. 27, 1972, Ser. No. 318,736
Claims priority, application Switzerland, Jan. 12, 1972, 434/72
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 12 Claims

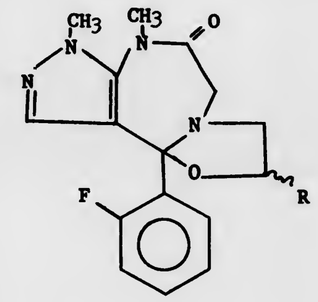
1. A compound represented by the formula



wherein R is halogen, lower alkyl, lower alkoxy, nitro, lower alkoxy-lower alkyl, di-lower alkyl amino, lower alkylsulfonyl amido, bis-lower alkylsulfonylamido or lower alkanoyl-amido, *n* is an integer of 0–2 and T is a C_2–C_5 alkyl group,
pharmaceutically acceptable salts and hydrated forms thereof.

3,886,143
OXAZOLO [3,2-D]PYRAZOLO[4,3-F] [1,4]DIAZEPIN-6(7H)-ONE COMPOUNDS
Ivan C. Nordin, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.
Filed Jan. 21, 1974, Ser. No. 434,817
Int. Cl. C07d *99/02*
U.S. Cl. 260—239.3 T 4 Claims

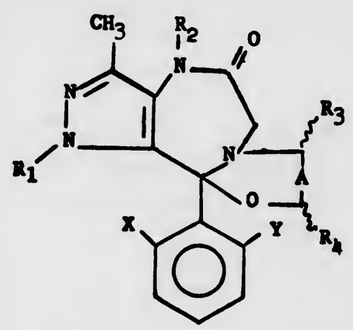
1. A compound of the formula



wherein R is hydrogen, methyl or phenyl.

3,886,144
OXAZOLO(AND OXAZINO)(3,2-D)PYRAZOLO-(3,4-F)(1,4)DIAZEPIN-5(6H)-ONE COMPOUNDS
Ivan C. Nordin, and Horace A. Dewald, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.
Filed Jan. 21, 1974, Ser. No. 434,762
Int. Cl. C07d *99/02*
U.S. Cl. 260—239.3 T 6 Claims

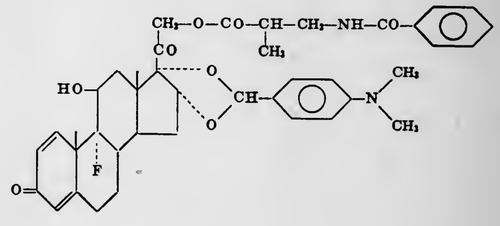
1. A compound of the formula



wherein R_1 is a branched or straight chain hydrocarbon group of from one to four carbon atoms; R_2 and R_3 are selected from the group consisting of hydrogen and methyl; R_4 is selected from the group consisting of hydrogen, methyl, ethyl and phenyl; X and Y are selected from the group consisting of hydrogen and fluorine and A is selected from the group consisting of a single bond and a methylene radical; with the provisio that at least one of R_3 and R_4 is hydrogen; and when A is methylene both R_3 and R_4 are hydrogen.

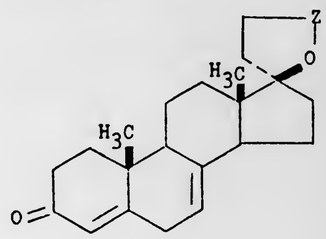
3,886,145
NEW DERIVATIVE OF TRIAMCINOLONE
Enrico Diamanti, Rome, Italy, assignor to Sigma-Tau Industrie Farmaceutiche/Riunite S.p.A., Italy
Filed Apr. 23, 1973, Ser. No. 353,680
Claims priority, application Italy, Apr. 28, 1972, 49946/72
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 D 1 Claim

1. A new derivative of triamcinolone 21-(β-benzoylaminoisobutyryl)- 16α, 17α-(p-dimethylaminobenzyliden) triamcinolone having the following formula:



3,886,146
17-HYDROXY-3-OXO-17α-PREGNA-4,7-DIENE-21-CARBOXYLIC ACID-LACTONE, 4',5'-DIHYDROSPIRO[ANDROSTA-4,7-DIENE-17,2'(3'H)-FURAN]-3-ONE, AND INTERMEDIATES THERETO
Edward A. Brown, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
Filed Mar. 8, 1974, Ser. No. 449,276
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 R 7 Claims

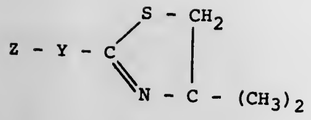
1. A compound of the formula



wherein Z represents carbonyl or methylene.

3,886,147
TRANQUILIZERS
Herbert L. Wehrmeister, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.
Division of Ser. No. 312,075, Dec. 4, 1972, abandoned. This application May 31, 1974, Ser. No. 475,064
Int. Cl. C07d *91/24*
U.S. Cl. 260—240 D 3 Claims

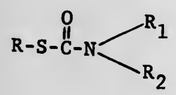
1. A thiazoline compound corresponding to the formula:



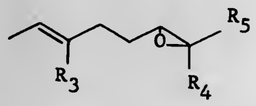
wherein Z is p-methoxyphenyl or p-acetamidophenyl and Y is —CH=CH—.

3,886,148
INSECTICIDAL ACTIVE GERANYL AND CITRONYL AMINE DERIVATIVES AND THEIR EPOXIDES
Ferenc M. Pallos, Walnut Creek, and Julius J. Menn, Saratoga, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.
Division of Ser. No. 172,202, Aug. 16, 1971, abandoned. This application Apr. 30, 1973, Ser. No. 356,024
Int. Cl. C09b *23/00;* **C07d** *1/22*
U.S. Cl. 260—240 H **12 Claims**

1. A compound having the formula:



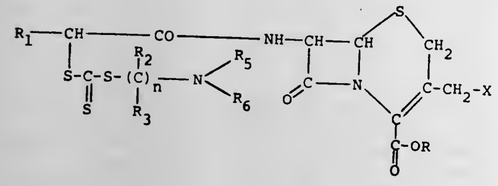
wherein R is selected from the group consisting of cyclohexyl, chlorobenzyl, phenyl and substituted phenyl, wherein said substituents are selected from halogen, alkyl having 1 –4 carbon atoms, methoxy and methylthio; R_1 is hydrogen; R_2 is



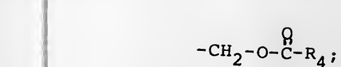
wherein R_3, R_4 and R_5 are methyl.

3,886,149
AMINO SUBSTITUTED DITHIOCARBONYLTHIOACETYL CEPHALOSPORINS
Uwe D. Treuner, Regensburg, and Hermann Breuer, Burgweinting, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed June 1, 1972, Ser. No. 258,686
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **9 Claims**

1. A compound of the formula



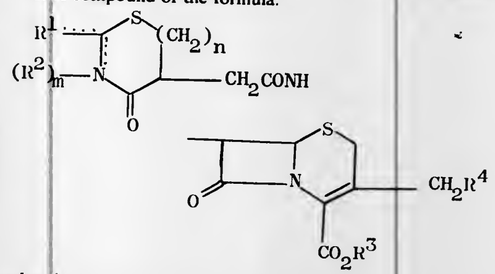
wherein R is hydrogen, lower alkyl, alkali metal, trimethylsilyl or



R_1 is phenyl; R_2, R_3 and R_5 each is hydrogen or lower alkyl; R_4 is lower alkyl, phenyl or phenyl-lower alkyl; R_6 is lower alkyl or R_5 and R_6 together complete one of the unsubstituted heterocyclics piperidino, morpholino, thiamorpholino or piperazino; X is hydrogen, hydroxy or lower alkanoyloxy; and *n* is 1, 2, 3 or 4.

3,886,150
4-OXO-5-THIAZOLINYL(THIAZINYL)ACETAMIDO-CEPHALOSPORANIC
John H. Sellstedt, King of Prussia; Daniel M. Teller, Devon, and Charles J. Guinosso, King of Prussia, all of Pa., assignors to American Home Products Corporation, New York, N.Y.
Filed Apr. 18, 1973, Ser. No. 352,158
Int. Cl. C07d *99/24, 99/16*
U.S. Cl. 260—243 C **20 Claims**

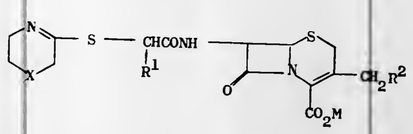
1. A compound of the formula:



wherein
R^1 is a member selected from the group consisting of oxo, (lower)alkylimino, benzylimino, (lower)alkylidenehydrazino, and di(lower)alkylamino radicals;
R^2 is a member selected from the group consisting of hydrogen, benzyl and (lower)alkyl radicals when *m* is 1;
R^3 is a member selected from the group consisting of hydrogen and (lower)alkyl radicals, and an alkali metal cation;
n is one of the integers 0 and 1;
m is one of the integers 0 and 1;
and the dotted lines represent valence bonds based upon the substituent R^1.

3,886,151
7-[2-(HETEROAZINYLTHIO)ACETAMIDO] CEPHALOSPORANIC ACID DERIVATIVES
Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed Mar. 18, 1974, Ser. No. 452,012
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **4 Claims**

1. A compound of the formula:

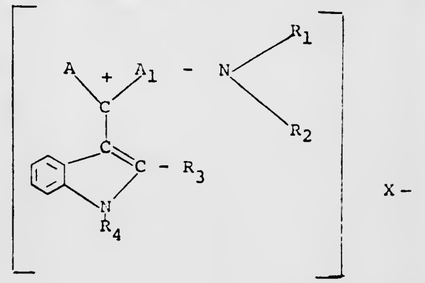


in which
R^1 is a member selected from the group consisting of —H, alkyl of 1 to 3 carbon atoms and phenyl;

R^2 is a member selected from the group consisting of —H and alkanoyloxy of 2 to 6 carbon atoms;
X is one of the groups —O—, —S— or —NH—;
M is a member selected from the group consisting of —H, an alkali metal cation and the ammonium ion; and the pharmaceutically acceptable acid addition salts thereof.

3,886,152
AMINODIARYL-INDOLYLMETHANE DYESTUFFS
Hans Peter Kuhlthau, and Roderich Raue, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany
Continuation of Ser. No. 788,633, Jan. 2, 1969, abandoned. This application Apr. 6, 1972, Ser. No. 241,855The portion of the term of this patent subsequent to Feb. 15, 1989, has been disclaimed.
Int. Cl. C07d *27/5*
U.S. Cl. 260—247.5 FP **15 Claims**

1. A dyestuff having the formula



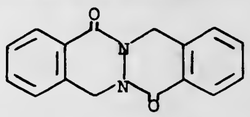
in which
the radicals A and A_1 stand for members of the class phenyl and naphthyl, of which at least one represents naphthyl,
R_1 stands for hydrogen; lower alkyl, hydroxyethyl; chloroethyl; cyanoethyl; benzyl; phenyl; or ethoxyphenyl;
R_2 stands for hydrogen; lower alkyl; hydroxyethyl;
R_3 denotes hydrogen; methyl; phenyl; chlorophenyl;
R_4 stands for hydrogen; lower alkyl; cyanoethyl; benzyl; and the dyestuff may contain a further substituent in the phenyl radical of the indole ring selected from the group consisting of Cl, methyl and ethyl or a further substituent in A and A_1 of the groups Cl, Br, methyl and methoxy; and
X is a largely colorless anionic radical which does not impair the solubility of the dyestuff in an undesirable way.

3,886,153
PURIFICATION OF CYANURIC ACID
Sidney Berkowitz, Highland Park, N.J., assignor to FMC Corporation, New York, N.Y.
Filed Jan. 9, 1974, Ser. No. 431,947
Int. Cl. C07d *55/36*
U.S. Cl. 260—248 A **7 Claims**

1. A process for recovering cyanuric acid as hydrated cyanuric acid which comprises:
digesting crude cyanuric acid in a digestion solution containing a mineral acid;
cooling the digestion solution to precipitate cyanuric acid crystals;
separating the cyanuric acid crystals from the digestion solution;
dispersing the cyanuric acid crystals in a sufficient amount of water at a temperature below about 57°C to remove all but residual traces of digestion solution from the crystals;
agitating the dispersed crystals for about 0.25 to about 5 hours to hydrate the cyanuric acid crystals; and
recovering free-flowing, hydrated, crystalline cyanuric acid free of any hard cement-like masses.

3,886,154
METHOD FOR THE PREPARATION OF PHTHALAZINO (2,3-B) PHTHALAZINE-5(14H), 12(7H)-DIONE
Anacleto Gianantonio, and Antonia Coco, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy
Filed Apr. 18, 1974, Ser. No. 461,837
Claims priority, application United Kingdom, Apr. 27, 1973, 20200/73
Int. Cl. C07d *51/06*
U.S. Cl. 260—250 P **7 Claims**

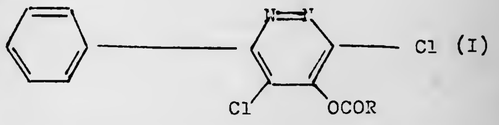
1. A process for preparing phthalazino[2,3-b]-phthalazine-5(14H), 12(7H)-dione of the formula



which comprises the step of reducing with hydrogen in the presence of a hydrogenation catalyst at up to 60 atmospheres pressure or in nacscent form and concomitantly cyclizing a compound selected from the group consisting of phthalaldehydic acid azine, a water-soluble salt or a lower alkyl ester of the said azine, 2-phthalidyl-1(2H)-phthalazinone or 2-(3-phthalimidinyl)-1(2H)-phthalazinone.

3,886,155
3-PHENYL-4;5-DICHLORO PYRIDAZINYL ALKANOATES
Alfred Diskus, Linz/Danube; Rupert Schonbeck, Leonding near Linz/Danube; Engelbert Kloimstein, Eferding, and Hubert Mayr, Leonding near Linz/Danube, all of Austria, assignors to Osterreichische Stickstoffwerke, Linz/Danube, Austria
Filed June 1, 1973, Ser. No. 366,017
Claims priority, application Germany, June 19, 1972, 2229758
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 A **8 Claims**

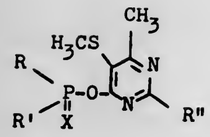
1. A phenylpyridazine having the formula



in which R is selected from the group consisting of alkyl having 1 to 20 carbon atoms, β-chloroethyl and phenyl.

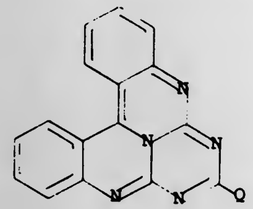
3,886,156
0-(4-METHYL-5-METHYLMERCAPTOPYRIMIDIN-6-YL)(THIONO)-PHOSPHORIC(PHOSPHONIC) ACID ESTERS OR ESTER AMIDES
Wolfgang Hofer, Wuppertal-Elberfeld; Ingeborg Hammann, Cologne; Bernhard Homeyer, Opladen, and Wilhelm Stendel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 28, 1972, Ser. No. 284,379
Claims priority, application Germany, Sept. 4, 1971, 2144392
Int. Cl. C07d *51/40*
U.S. Cl. 260—251 P **7 Claims**

1. An 0-pyrimidyl(thiono)-phosphoric(phosphonic) acid ester or ester amide of the formula:



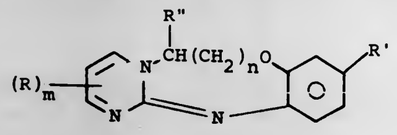
in which:
R is alkyl, alkoxy or alkylamino each with 1 to 6 carbon atoms,
R′ is alkoxy with 1 to 6 carbon atoms,
R″ is alkyl or alkylmercapto each with 1 to 3 carbon atoms, and
X is oxygen or sulfur.

3,886,157
5,6,8,8B,9-PENTAAZANAPHTH[3,2,1-D,E]ANTHRACENE DERIVATIVES
Roland A. E. Winter, Armonk, and Thomas J. Villani, Bronx, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation-in-part of Ser. No. 129,127, March 29, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 336,573
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 F **5 Claims**
1. A compound represented by the formula



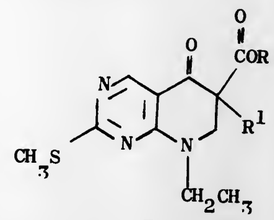
wherein Q is di(lower)alkyl amino having up to six carbon atoms or phenyl.

3,886,158
6H-PYRIMIDO[1,2-C][1,3,5] BENZOXADIAZEPINES
Harry Louis Yale, New Brunswick, N.J., and Ramesh B. Petigara, Lansdale, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed July 26, 1973, Ser. No. 382,803
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 F **4 Claims**
1. A compound of the formula



wherein
m is 1 or 2; when *m* is 1, R occupies either position -4 or -5 of the starting 2-aminopyrimidine, but when R is halogen it occupies only position -5; when *m* is 2, the two R's occupy the 4- and 5-positions of the starting 2-aminopyrimidine, but only one of the two R-substituents can be halogen and it must occupy the 5-position;
R is the same or different and is hydrogen, F, Cl, Br, alkyl of from 1 to 4 carbons, benzyl, phenyl, or monosubstituted phenyl wherein the substituent is F, Cl, Br, I, alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons, or trifluoromethyl with the proviso that R may not be adjacent tertiary alkyl;
R′ is hydrogen, F, Cl, Br, I, alkyl of from 1 to 4 carbons, alkylsulfonyl wherein the alkyl has from 1 to 4 carbons, dialkylamidosulfonyl wherein each alkyl has from 1 to 4 carbons, trifluoromethyl;
n is 0 or 1;
and R″ is hydrogen or alkyl of from 1 to 4 carbons; at least one of R, R′, and R″ being hydrogen;
and pharmaceutically acceptable acid-addition salts thereof.

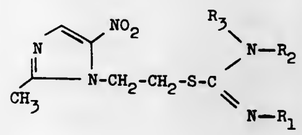
3,886,159
ESTERS OF 6-(SUBSTITUTED)-5,6,7,8-TETRA-HYDRO-8-ETHYL-5-OXO-2-(METHYLTHIO)PYRIDO[2,3-D]PYRIMIDINE-6-CARBOXYLIC ACIDS
Arthur A. Santilli, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed Mar. 29, 1974, Ser. No. 456,403
Int. Cl. C07d *51/40*
U.S. Cl. 260—256.5 **6 Claims**
1. A compound of the formula:



I

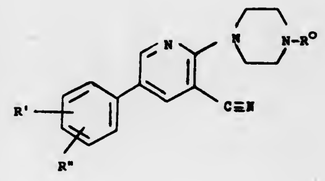
wherein R is lower alkyl and R^1 is methyl or lower alkoxycarbonylmethyl.

3,886,160
2-(2-METHYL-5-NITRO-1-IMIDAZOLYL) ETHYL-2-THIOPSEUDOUREAS
Robert C. Tweit, Wilmette, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
Continuation-in-part of Ser. No. 293,069, Sept. 28, 1972, abandoned. This application Nov. 5, 1973, Ser. No. 412,604
Int. Cl.² C07D *49/36*, *51/40*
U.S. Cl. 260—256.5 R **18 Claims**
1. A compound of the formula



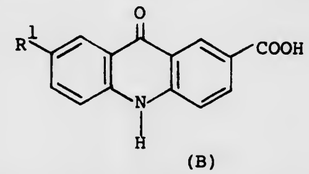
wherein R_3 is hydrogen or lower alkyl containing 1–7 carbon atoms and R_1 and R_2 are hydrogen, lower alkyl containing 1–7 carbon atoms, or R_1 and R_2 together are vinylene, nitrovinylene, or trimethylene or the pharmaceutically acceptable acid addition salts thereof.

3,886,161
2-PIPERAZINO-3-CYANO-5-PHENYL-PYRIDINES
Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.
Continuation-in-part of Ser. No. 98,124, Dec. 14, 1970, Pat. No. 3,717,645, which is a continuation of Ser. No. 42,540, June 1, 1970, Pat. No. 3,660,415. This application Oct. 18, 1972, Ser. No. 298,600
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 H **2 Claims**
1. A compound of the formula:



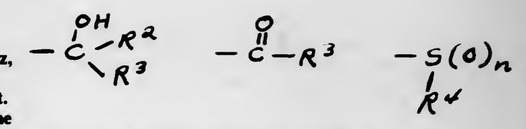
wherein
R^o is hydrogen or alkyl of 1 to 4 carbon atoms, and
each of R′ and R″ is independently hydrogen, halo of atomic weight of from 19 to 80 or alkoxy of 1 to 3 carbon atoms, or
a pharmaceutically acceptable acid addition salt thereof.

3,886,162
ACRIDONE CARBOXYLIC ACIDS AND DERIVATIVES
Jurg R. Pfister, Los Altos; Ian T. Harrison, Palo Alto, and John H. Fried, Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Division of Ser. No. 273,291, July 19, 1972, Pat. No. 3,835,139. This application Mar. 12, 1974, Ser. No. 450,352
Int. Cl. C07d *37/20*
U.S. Cl. 260—279 R **6 Claims**
1. A compound selected from those represented by the following formula:



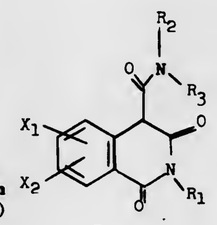
(B)

and the pharmaceutically acceptable, non-toxic lower alkyl and glycerol esters, unsustituted, monoalkyl or dialkyl substituted amides and salts therreof; wherein R^1 is hydroxy and alkanoyloxy of thereof; 1 to 7 carbon atoms, trichloroacetoxy and 2-chloropropionyloxy esters thereof; mercapto; lower alkylthio of from 1 to 5 carbon atoms, trifluoromethyl; or a group selected from those of salts thereof; wherein the formulas:



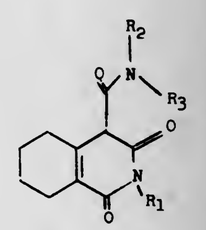
in which R^2 is hydrogen, lower alkyl of from 1 to 5 carbon atoms, or cycloalkyl of from 3 to 6 carbon atoms; R^3 is hydrogen, lower alkyl of from 1 to 5 carbon atoms, cycloalkyl of from 3 to 6 carbon atoms, phenyl, substituted phenyl (in which the substituent is halo, lower alkyl of from 1 to 5 carbon atoms, lower alkoxy of from 1 to 5 carbon atoms, lower alkylthio of from 1 to 5 carbon atoms, trifluoromethyl or cyano); or a monocyclic aromatic heterocyclic group selected from furyl, pyrryl, thienyl, pyridyl, imidazolyl or oxazolyl; *n* is the integer 1 or 2; R^4 is lower alkyl of from one to five carbon atoms when *n* is 1 and R^4 is lower alkyl of from 1 to 5 carbon atoms, hydroxy, amino, monolower alkyl amino of from 1 to 5 carbon atoms, or dilower alkyl amino, wherein each of said lower arkyl groups is of one to five carbon atoms, when *n* is 2.

3,886,163
1,3(2H,4H)-DIOXOISOQUINOLINE-4-CARBOXAMIDES
Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.
Continuation-in-part of Ser. No. 649,462, June 28, 1967, abandoned, and a continuation-in-part of Ser. No. 674,664, Oct. 11, 1967, abandoned. This application Feb. 5, 1971, Ser. No. 113,082
Int. Cl. C07d *35/38*, *35/08*, *35/14*
U.S. Cl. 260—281 **8 Claims**
1. A compound of the formula



I

or



II

wherein:
R_1 is selected from the group consisting of hydrogen; alkyl having from 1 to 6 carbon atoms; alkyl phenyl with up to one substituent selected from the group consisting of fluorine, chlorine, bromine, methoxy, ethoxy and alkyl having up to 3 carbon atoms; and benzyl with up to 1 nuclear substituent selected from the group consisting of fluorine, chlorine, bromine, methoxy, ethoxy and alkyl having up to 3 carbon atoms;
R_2 is selected from the group consisting of hydrogen; primary alkyl having from 1 to 6 carbon atoms;
R_3 is selected from the group consisting of hydrogen; alkyl having from 1 to 6 carbon atoms, allyl; cycloalkyl having from 3 to 6 carbon atoms; polyfluoroalkyl having up to 3 carbon atoms; phenyl having up to 2 substituents each identically selected from the group consisting of fluorine, chlorine, bromine, methoxy, ethoxy, and alkyl having up to 3 carbon atoms, acetyl, trifluoromethyl, or having up to 2 substituents each selected from the group chloro, methyl, methoxy and trifluoromethyl; naphthyl and phenylalkyl having up to 2 carbon atoms in the alkyl moiety with up to 1 nuclear substituent selected from the

group consisting of fluorine, chlorine, bromine, methoxy, ethoxy and alkyl having up to 3 carbon atoms; and

R_2 and R_3, taken together, form a heterocycle selected from the group consisting of pyrrolidine, piperidine, hexamethyleneimine, morpholine;

provided that R_2 always is hydrogen when R_3 is selected from the group consisting of tertiary alkyl, tertiary alkenyl, nitro-substituted phenyl and benzoyl; and

X_1 and X_2 are at the 6 and 7 positions respectively are each identically selected from the group consisting of hydrogen, fluorine, chlorine, bromine, methoxy, ethoxy and alkyl having up to 3 carbon atoms and trifluoromethyl or ether X_1 or X_2 is H and the other is as defined above.

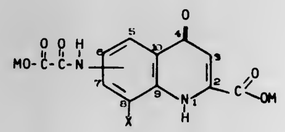
3,886,164

QUINOLYL OXAMIC ACIDS

John B. Wright, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 20, 1972, Ser. No. 316,977
Int. Cl. C07d *33/48*
U.S. Cl. 260—287 R **10 Claims**

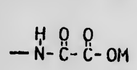
1. A compound of the formula



wherein

M is selected from the group consisting of hydrogen and a non-toxic pharmaceutically acceptable cation;

X is selected from the group consisting of hydrogen, alkyl from one to three carbon atoms, inclusive; alkoxy from one to three carbon atoms, inclusive halogen, and trifluoromethyl with the proviso that when X is hydrogen, the



grouping is limited to the 6 position.

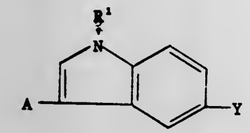
3,886,165

INDOLYLIMIDOYLHETEROCYCLICS

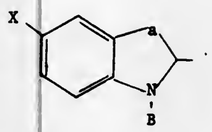
Yao Hua Wu, and Richard P. Ryan, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

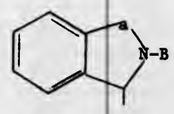
Filed Nov. 13, 1972, Ser. No. 306,065
Int. Cl. C07d *33/50*
U.S. Cl. 260—288 R **23 Claims**

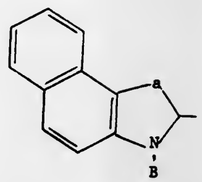
1. An indolyl compound selected from the group consisting of bases having the formula



wherein A is selected from the group consisting of







and B represents the radical



wherein

a is -CH=CH- or $-CH_2CH_2-$;

X is hydrogen or lower alkoxy of 1 to 4 carbon atoms inclusive;

Y is hydrogen or lower alkoxy of 1 to 4 carbon atoms inclusive;

R^1 is hydrogen or lower alkyl of 1 to 4 carbon atoms inclusive;

R^2 is hydrogen;

R^3 is lower alkyl of 1 to 4 carbon atoms inclusive or cycloalkyl of 3 to 6 carbon atoms inclusive;

R^2 and R^3 are joined together to form a pyrrolinyl ring which may be substituted by up to two lower alkyl groups of 1 to 4 carbon atoms inclusive; and

pharmaceutically acceptable non-toxic acid addition salts thereof.

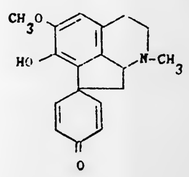
3,886,166

METHOD FOR THE SYNTHESIS OF (±)-GLAZIOVINE

Cesare Casagrande, Como, and Luigi Canonica, Milan, both of Italy, assignors to Siphar S.A., Lugano, Switzerland

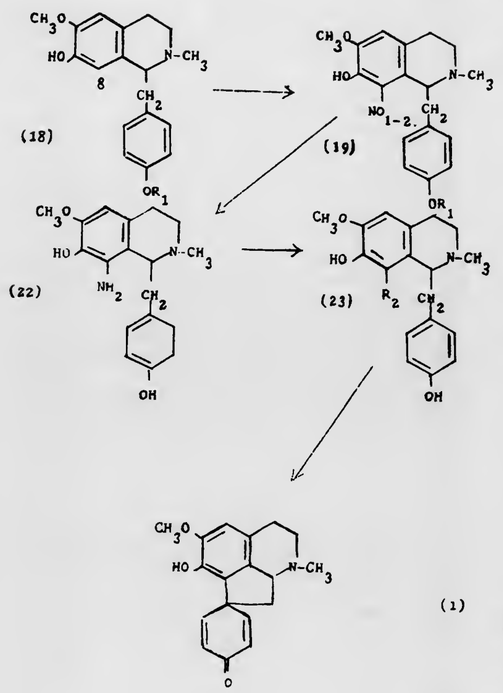
Filed Dec. 19, 1973, Ser. No. 426,185
Claims priority, application Switzerland, Dec. 22, 1972, 18784/72; Feb. 26, 1973, 2774/73
Int. Cl. C07d *35/28*
U.S. Cl. 260—289 R **11 Claims**

1. A method for the synthesis of (±)-glaziovine having the formula



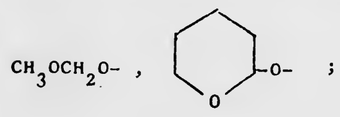
(1)

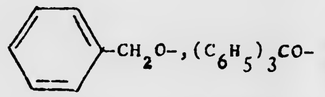
which provides for the following reaction pattern:



(1)

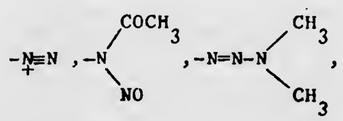
wherein OR_1 is an ether or ester group which can easily be split, such as for example the following ether groups:





or analog groups, or the following ester groups: HCCOO—; CH_3COO—; CH_3SO_3—; C_2H_5O COO— or analog groups; in addition the group which is present in the 8-position of formula (19) can have either a single oxygen atom (—NO), thus representing a nitroso group, or two oxygen atoms ($—NO_2$), thus representing a nitro group, and R_2 is one of the following diazo groups:

—N N,



$-N=N-NHC_6H_5$, $-N=N-C(C_6H_5)_3$,

characterized by comprising the steps of:

a. subjecting either to nitration or nitrosation with either nitrous or nitric acid, respectively, or a derivative thereof, a 4′-O-ether or ester of 1-(p-hydroxybenzyl)-2-methyl-6-methoxy-7-hydroxy-1,2,3,4-tetrahydroisoquinoline of formula (18) selectively to obtain an 8-nitroso-, or an 8-nitro-derivative of formula (19);

b. converting said compound of formula (19) into its corresponding 8-amino-4′-hydroxy compound of formula (22) by reduction of either the nitroso or the nitro group to an amino group and removing the ether or ester group;

c. subjecting to reaction with nitrous acid the compound of formula (22) with the conventional methods in the art to obtain the compound of formula (23);

d. converting the compound of formula (23) into (±)-glaziovine.

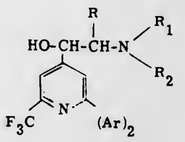
3,886,167

2-ARYL-6-TRIFLUOROMETHYL-4-PYRIDYLCARBINOLAMINE ANTIMALARIALS

Arthur B. Ash, Detroit; Maurice P. LaMontagne, Sterling Heights, and Anica Markovac, Lathrup Village, all of Mich., assignors to The United States Government as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 6, 1974, Ser. No. 448,468
Int. Cl. C07d *29/28*
U.S. Cl. 260—293.52 **7 Claims**

1. Compound of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein $R + R_1$ is - $(CH_2)_4$-, where R_2 is H; and

$(Ar)_2$ is a phenyl ring substituted with at least one trifluoromethyl, chloro, bromo, fluoro or methoxy substituent in the phenyl ring.

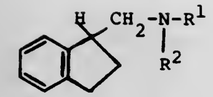
3,886,168

N-SUBSTITUTED 1-AMINOMETHYLINDANES

Walter Himmele, Walldorf; August Amann; Werner Aquila, both of Ludwigshafen; Hubert Giertz, Limburgerhof, and Hardo Siegel, Speyer, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 20, 1972, Ser. No. 273,456
Claims priority, application Germany, July 26, 1971, 2137276
Int. Cl. C07d *29/10*
U.S. Cl. 260—293.62 **3 Claims**

1. A compound of the formula



in which R^1 and R^2 taken together with the nitrogen represent piperidino or piperidino substituted by lower alkyl; and pharmaceutically active salts thereof.

3,886,169
XANTHENYL AND THIAXANTHENYL SEMICARBAZIDES

Stewart Sanders Adams; Bernard John Armitage; Norman William Bristow, and Bernard Vincent Heathcote, all of Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

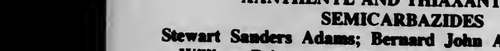
Continuation of Ser. No. 277,360, Aug. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 858,183, Sept. 15, 1969, Pat. No. 3,686,218, which is a continuation-in-part of Ser. No. 662,987, Aug. 23, 1967, Pat. No. 3,644,420. This application Dec. 12, 1973, Ser. No. 423,925

Claims priority, application United Kingdom, Sept. 2, 1966, 39384/66; Apr. 5, 1967, 15692/67; Sept. 27, 1968, 46085/68

Int. Cl. C07d *65/16;* **A61k** *27/00*

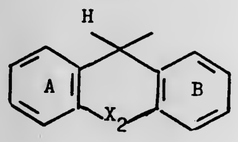
U.S. Cl. 260—293.58 **5 Claims**

1. A compound of formula I



...I

wherein Xn represents the group

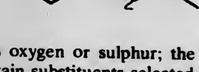


in which X_2 is oxygen or sulphur; the rings A and B may optionally contain substituents selected from halogen, lower alkyl, lower alkoxy and hydroxy;

R_1 is hydroxy, lower alkoxy, lower alkanoyloxy, hydrogen or lower alkyl;

R_2 is hydrogen or lower alkyl; and

R_3 and R_4, together with the nitrogen atom to which they are attached, form a saturated 5 – 7 membered heterocyclic ring, optionally containing an additional hetero group selected from O and



together with pharmaceutically acceptable acid addition salts and pharmaceutically acceptable quaternary salts of compounds of formula I.

3,886,170
5-(3-)SUBSTITUTED-10,11-DIHYDRO-5H-DIBENZ[B,F]AZEPINES

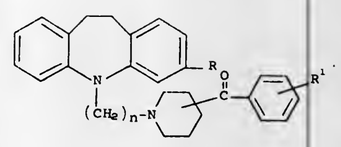
Grover Cleveland Helsley, Pottersville, N.J., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Apr. 22, 1974, Ser. No. 462,944

Int. Cl. C07d *29/26*

U.S. Cl. 260—293.59 **4 Claims**

1. A compound selected from 5-(3-)substituted-10,11-dihydro-5H-dibenz[b,f]azepines having the formula:



wherein;

R is selected from the group consisting of hydrogen, bromine, chlorine, methoxy, trifluoromethyl, sulfamoyl and N,N-dimethylsulfamoyl,

R^1 is selected from the group consisting of hydrogen, lower alkoxy, lower alkyl, trifluoromethyl and halogen having an atomic weight less than 80,

n is a positive integer from 2–4 inclusive, and

non-toxic pharmaceutically acceptable acid addition salts thereof.

3,886,171
1-(BENZAMIDO)PYRIDINIUM SALTS

John Henry Parsons, Saffron Walden, England, assignor to Fisons Limited, London, England

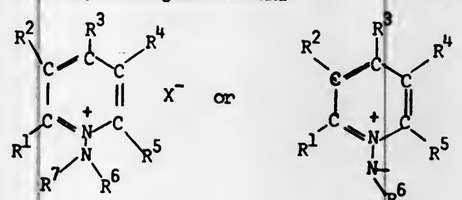
Filed Jan. 5, 1973, Ser. No. 321,476

Claims priority, application United Kingdom, Jan. 5, 1972, 369/72

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 Q **19 Claims**

1. A compound of general formula



(I)

(II)

in which

R^1, R^2, R^3, R^4 and R^5 are the same or different and each represents hydrogen or alkyl of 1 to 4 carbon atoms;

R^6 represents a group of formula COR^{10} in which R^{10} represents phenyl substituted by one or more groups selected from halogen, alkyl of 1 to 4 carbon atoms, nitro and alkoxy of 1 to 4 carbon atoms; phenylalkyl of 7 to 10 carbon atoms; phenylalkyl of 7 to 10 carbon atoms substituted by halogen; cycloalkyl of 3 to 8 carbon atoms;

R^7 represents hydrogen, alkyl of 1 to 4 carbon atoms or benzoyl substituted by halogen; and

X^- represents one equivalent of an acaracidally effective anion.

3,886,172
MANUFACTURE OF BIPYRIDYLIUM SALTS

John Francis Cairns, and John Reginald Case, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 10, 1972, Ser. No. 225,271

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 D **10 Claims**

1. A process for the manufacture of a 1,1'-di(hydroxylalkyl)-4,4'-bipyridylium salt wherein the hydroxyalkyl substituents each contain from 2 to 10 carbon atoms which comprises the steps of:

1. interacting pyridine with an alkali metal in liquid ammonia in the absence of oxygen to yield a solution of the corresponding alkali-metal salt of 1,1',4,4'-tetrahydro-4,4'-bipyridyl;
2. reacting the solution thus obtained with an alkylene oxide containing from 2 to 10 carbon atoms to yield a 1,1'-di(hydroxyalkyl)-1,1',4,4'-tetrahydro-4,4'-bipyridyl or an alkali-metal salt thereof; and
3. oxidising the said 1,1'-di(hydroxyalkyl-1,1',4,4'-tetrahydro-4,4'-bipyridyl or alkali-metal salt thereof.

3,886,173
SUBSTITUTED HEXANITROBIPHENYLS

Joseph C. Dacons, Washington, D.C.; Horst G. Adolph, and Mortimer J. Kamlet, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1963, Ser. No. 334,667

Int. Cl. C07d *31/40;* **C07c** *85/06, 79/12*

U.S. Cl. 260—296 R **4 Claims**

1. The compound which is the dipyridinium salt of dipicric acid.

3,886,174
1-SUBSTITUTED-6-PHENYL-4H-S-TRIAZOLO[4,3-A][1,4]BENZODIAZEPINES

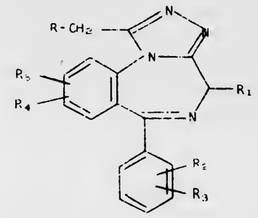
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 201,207, Nov. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 138,278, April 28, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,453The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.

Int. Cl. C07d *57/02*

U.S. Cl. 260—308 R **12 Claims**

1. A 1-substituted 6-phenyl-4H-s-triazolo[4,3-a][1,4]-benzodiazepine of the formula (III):



III

wherein R is selected from the group consisting of cyano, nitro, alkylthio in which the alkyl moiety is of 1 to 3 carbon atoms, inclusive, and —COOR'' in which R'' is alkyl defined as above; wherein R_1 is selected from the group consisting of hydrogen and alkyl, defined as above; and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive, and dialkylamino in which alkyl is defined as above, and the pharmacologically acceptable acid addition salts thereof.

3,886,175
9H-DIBENZO(B,F)-S-TRIAZOLO(4,3-D)(1,4)DIAZEPINES

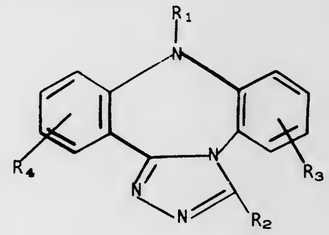
Jackson B. Hester, Jr., Galesburg, and Jacob Szmuszkovicz, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 313,208, Dec. 8, 1972, Pat. No. 3,850,942, which is a continuation-in-part of Ser. No. 277,916, Feb. 22, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,107

Int. Cl. C07d *57/02, 57/04, 99/02*

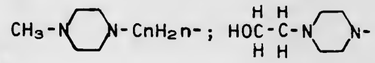
U.S. Cl. 260—308 R **19 Claims**

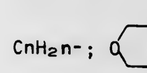
1. A compound selected from the group consisting of compounds of the formula III

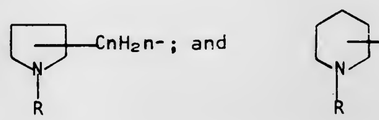


III

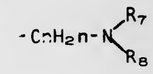
wherein R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbons, inclusive







in which *n* is 1 to 4, inclusive, and R is hydrogen or alkyl defined as above, or R_1 is

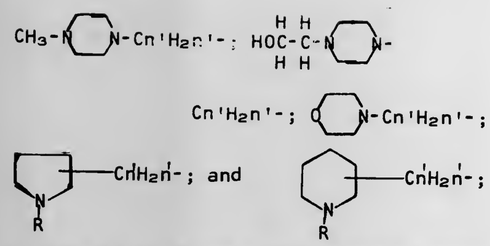


in which n is defined above, r_7 and R_8 are each selected from the group consisting of hydrogen and alkyl as defined above, or

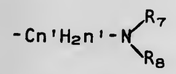


together is pyrrolidino, or piperidino; wherein R_2 is selected from the group consisting of hydrogen, alkyl defined as above, hydroxymethyl,

to thermal cracking at a temperature within the range of 650°, decomposing a compound having the formula:



in which n' is 0 to 4, inclusive, and R is hydrogen or alkyl defined as above, or R_2 is



in which n' is defined above, R_7 and R_8 are each selected from the group consisting of hydrogen and alkyl as defined above, or



together is pyrrolidino, or piperidino; wherein R_3 and R_4 are selected from the group consisting of hydrogen, fluoro, chloro, bromo, nitro, alkyl defined as above, trifluoromethyl, and alkoxy, in which the carbon moiety is of 1 to 3 carbon atoms, inclusive, and the pharmacologically acceptable acid addition salts and N-oxides thereof.

13. 3-(chloromethyl)-9H-dibenzo[b,f]-s-triazolo[4,3-d]-[1,4]diazepine.

17. 3-[2-(Chloroethyl)]-9H-dibenzo[b,f]-s-triazolo[4,3-d][1,4]diazepine.

3,886,176

PROCESS FOR PREPARING IMIDAZOLE-4,5-DICARBOXAMIDE

Yozo Ohtsuka, Kanagawa, Japan, assignor to Sagami Chemical Research Center, Tokyo, Japan

Filed Feb. 26, 1974, Ser. No. 446,087
Claims priority, application Japan, Feb. 26, 1973, 48-22145
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **4 Claims**

1. A process for preparing imidazole-4,5-dicarboxamide which comprises heating diaminomaleonitrile and formic acid in formamide as a reaction medium at a temperature in the range of from about 150°C to about 220°C for a period of from about 10 minutes to about 10 hours in a molar ratio of about 1 to about 4 moles of formic acid per 1 mole of diaminomaleonitrile.

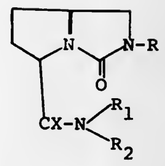
3,886,177

PYRROLO(1,2-C)IMIDAZOLE-3-ONE DERIVATIVES

Luigi Fontanella, Milan, and Emilio Occelli, Parabiago, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

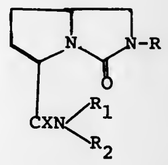
Filed Oct. 26, 1973, Ser. No. 409,984
Claims priority, application Italy, Nov. 3, 1972, 31273/72
Int. Cl.² C07D *49/34*
U.S. Cl. 260—309.7 **6 Claims**

1. A hexahydropyrrolo[1,2-c]imidazole derivative of the formula

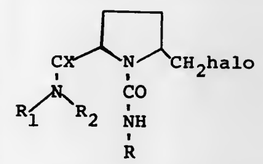


wherein R is a phenyl radical, R_1 and R_2 are independently selected from hydrogen, a lower alkyl, a phenyl and a benzyl radical, and wherein NR_1R_2 is a heterocyclic radical selected from pyrrolidino, morpholino, piperazino and piperidino having 0 to 2 lower alkyl substituent radicals and X represents H_2 or oxygen.

6. A process for preparing a hexahydropyrrolo[1,2-c]imidazole derivative of the formula



which comprises cyclizing a compound of the formula



wherein X is H_2 or O, R is a phenyl radical, R_1 and R_2 are independently selected from hydrogen, a lower alkyl, a phenyl and benzyl radical, and wherein NR_1R_2 is a heterocyclic radical selected from pyrrolidino, morpholino, piperazino and piperidino having 0 to 2 lower alkyl substituent radicals and halo is chloro or bromo, by heating the latter in the presence of a large molar excess of a base selected from amides, carbonates, hydroxides and hydrides of metals of Group I and of the alkaline earth metals of the periodic table in an organic solvent at a temperature between about 5°C. and reflux temperature and recovering as product the pyrrolo[1,2-c]imidazole derivative.

3,886,178

METHOD OF PREPARATION OF INDOLE

Marcel Petinaux; Jacques Metzger; Jean-Pierre Aune, all of Marseille, and Hubert Knoche, Meyzieu, all of France, assignors to Entreprise de Recherches et d'Activities Petrolieres ELF, Paris, France

Filed May 30, 1973, Ser. No. 365,110
Claims priority, application France, June 7, 1972, 72.20404
Int. Cl. C07d *27/56*
U.S. Cl. 260—319.1 **11 Claims**

1. A method of preparation of indole from N-(β-hydroxyethyl) aniline wherein, in a first step, the alcohol function of N-(β-hydroxyethyl) aniline is esterified with a mineral or an organic acid in an organic solvent which is inert with respect to the esterification reaction and at a temperature within the range of 0° to 200°C. and then, in a second step, the ester which has been prepared during the first step is subjected to thermal cracking at a temperature within the range of 650° to 900°C.

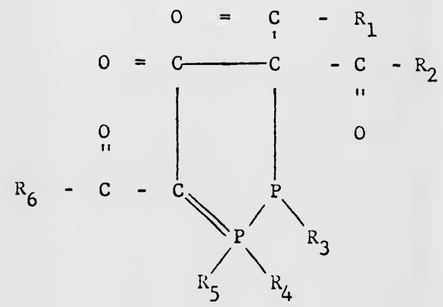
3,886,179

ORGANIC PHOSPHORUS COMPOUNDS CONTAINING AT LEAST ONE PHOSPHORUS ATOM, WHICH MAY BE PRESENT IN THE TRIVALENT STATE, AT LEAST TWO CARBOXYLIC ACID-ESTER GROUPS AND A PHOSPHORUS TO CARBON DOUBLE LINKAGE

Gunter Bergerhoff, Lengsdorf; Bela Tihanyi, Bonn; Jurgen Falbe, Dinslaken; Jurgen Weber, and Werner Weisheit, both of Oberhausen-Holten, all of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen-Holten, Germany

Continuation-in-part of Ser. No. 772,841, Nov. 1, 1968, Pat. No. 3,681,477. This application May 8, 1972, Ser. No. 250,897
Claims priority, application Germany, Nov. 7, 1967, 1668623; Austria, July 15, 1968, 66801/68
Int. Cl. C07d *105/00*
U.S. Cl. 260—326.25 **3 Claims**

1. 1,2-diphosphacyclopentene-(5)-one-(4) of the formula:



wherein:

R_1, R_2, R_5 and R_6 is each an alkoxy group of 1–20 carbon atoms;

R_3 and R_4 is each a pyrrolidine-N radical.

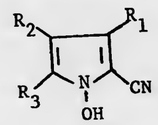
3,886,180

PROCESS FOR THE SYNTHESIS OF N-HYDROXYPYRROLES

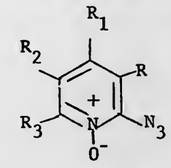
Rudolph Abraham Abramovitch, 480 Woodland Hills, Tuscaloosa, Ala. 35401, and Berkeley Wendell Cue, Jr., 14 B Belmont Apts., Tuscaloosa, Ala. 35401

Filed Mar. 15, 1973, Ser. No. 341,663
Int. Cl. C07d *27/26*
U.S. Cl. 260—326.62 **1 Claim**

1. A process for the production of an N-hydroxypyrrole-2-carbonitrile having the formula:



in which the symbol R_1 represents hydrogen, alkyl, aryl, nitrogen, halogen, or in which R_1 and R_2 or R_2 and R_3 comprise part of a fused ring system which is fused to the pyrrole nucleus between C_3 and C_4 or C_4 and C_5 which comprises thermally decomposing a compound having the formula:



in which the symbols R_1 and R_2 and R_3 have the same meaning as defined and R represents hydrogen; said reaction being carried out in an inert solvent at a temperature of about 80°C to 100°C under an anhydrous atmosphere.

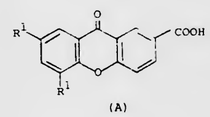
3,886,181

DISUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

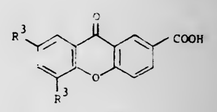
Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 217,300, Jan. 12, 1972, Pat. No. 3,821,251. This application Mar. 12, 1974, Ser. No. 450,351
Int. Cl. C07d *7/44*
U.S. Cl. 260—335 **15 Claims**

1. A compound selected from those represented by the following formulas:



(A)



(C)

wherein each R^1 group is lower alkylthio; and one R^3 group is lower alkylthio and the other is lower alkoxy.

3,886,182

RAPID SETTING NONELASTOMERIC POLYURETHANE COMPOSITIONS PREPARED IN THE PEESENCE OF AN AROMATIC OR PARTIALLY HYDROGENATED AROMATIC COMPOUND

Franciszek Olstowski, Freeport, and Donald B. Parrish, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 366,835, June 4, 1973, which is a continuation-in-part of Ser. No. 179,149, Sept. 9, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,465
Int. Cl. C08g *22/04*
U.S. Cl. 260—33.6 UB **29 Claims**

1. A non-elastomeric, non-cellular, solid polymer having a density of at least about 1 gram/cc and a present elongation of less than 80 resulting from admixture of the components of a composition comprising:

A. a polyether polyol having from 3 to about 8 hydroxyl groups and a hydroxyl equivalent weight between about 75 and about 230,

B. an organic polyisocyanate,

C. a liquid modifier compound having a boiling point above about 150°C selected from the group consisting of aromatic compounds free group ester groups and partially

and the pharmaceutically acceptable, non-toxic esters, amides, and salts thereof;

hydrogenated aromatic compounds and mixtures thereof, and

D. a non-amine-containing catalyst for urethane formation, which is an organo-metal compound;

wherein components (A) and (B) are present in amounts so as to provide an NCO:OH ratio of from about 0.8:1 to about 2:1, component (C) is present in quantities of from about 20 to about 50 percent with the proviso that when component (B) is an NCO-containing prepolymer containing less than about 40% NCO groups by weight, then component (C) is employed in quantities of from about 10% to about 50% by weight of the sum of components (A), (B) and (C); and component (D) is present in quantities of from about 0.01 to about 10 percent by weight of the sum of the weights of components (A), (B) and (C); and wherein said polymer can be demolded within less than about 5 minutes, without the application of an external source of heat, after admixture of said composition.

3,886,183

PROCESS FOR PREPARING POLYCYCLIC 3-FORMYL GAMMA-PYRONE DERIVATIVES

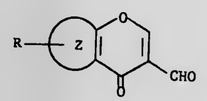
Maximilian von Strandtmann, Rockaway, and Sylvester Klutchko, Hackettstown, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 351,915, April 18, 1973, abandoned. This application June 19, 1974, Ser. No. 480,984

Int. Cl. C07d 7/32

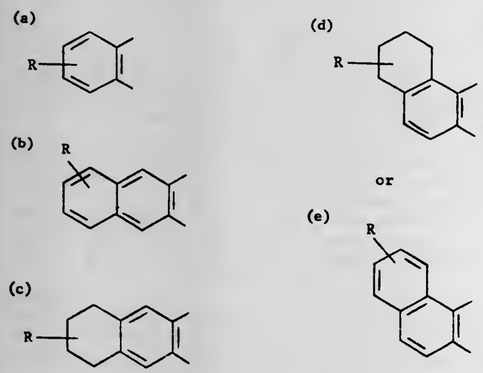
U.S. Cl. 260—345.2 **2 Claims**

1. A process for preparing a compound having the formula I:

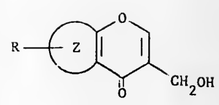


I

wherein R represents hydrogen, halogen, lower alkyl, or lower alkoxy and the Z ring has one of the following structures:



wherein R in formulas (a), (b), (c), (d) and (e) is as defined above, which comprises oxidizing a compound of the formula II:



II

wherein R and the Z ring are as defined above, using an oxidizing agent selected from the group consisting of sodium dichromateglacial acetic acid, concentrated nitric acid, and potassium persulfate.

3,886,184

AMINODIBENZO(B,D)PYRANS

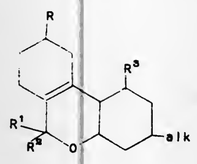
Ken Matsumoto, and Robert A. Archer, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1973, Ser. No. 385,367

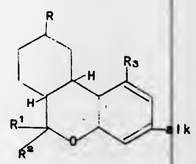
Int. Cl. C07d 7/20

U.S. Cl. 260—345.3 **7 Claims**

1. A compound of the formula of the group consisting of



and



wherein R, R^1 and R^2 are individually hydrogen or methyl, alk is a C_1–C_{10} alkyl group or a C_3–C_8 cycloalkyl group and R^3 is amino, lower alkyl amino, di-lower alkylamino, or lower alkanoyl amino.

3,886,185

NOVEL PROSTAGLANDIN INTERMEDIATES AND PROCESS FOR THE PRODUCTION THEREOF

Francisco S. Alvarez, Sunnyvale, and Albert R. Van Horn, Menlo Park, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 16, 1973, Ser. No. 351,312

Int. Cl. C07d 7/02; C07c 61/06

U.S. Cl. 260—345.9 **5 Claims**

1. A compound selected from the group consisting of (dl)-2-(2-acetoxyethyl-4α-hydroxy-1-oxocyclopent-2-ene and (dl)-2-(2-acetoxyethyl)-4α-tetrahydropyranyloxy-1-oxocyclopent-2-ene.

3,886,186

MONONITRATE ESTERS OF 1,4:3,6-DIANHYDRO-D-GLUCITOL

William Dvonch, Radnor, and Harvey E. Alburn, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 138,805, April 29, 1971, abandoned. This application Aug. 30, 1973, Ser. No. 393,087

Int. Cl. C07d 5/32

U.S. Cl. 260—347.2 **6 Claims**

1. A compound which is 1,4:3,6-dianhydro-D-glucitol, 5-acetate, 2-nitrate.

3,886,187

CONTINUOUS MANUFACTURE OF PROPYLENE OXIDE FROM PROPYLENE CHLOROHYDRINE

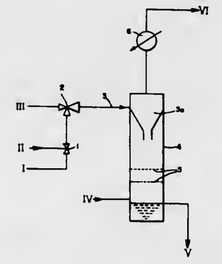
Ernst Bartholome, Heidelberg; Waldemar Koehler, Ludwigshafen; Guenter Stoeckelmann, Roxheim, and Albert May, Ludwigshafen, all of Germany, assignors to Badische Aniline- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 16, 1971, Ser. No. 199,319

Claims priority, application Germany, Nov. 16, 1970, 2056198

Int. Cl. C07d 1/04

U.S. Cl. 260—348.6 **3 Claims**



1. In a process for the continuous manufacture of propylene oxide by reacting a hot aqueous solution of propylene chlorohydrin with hot aqueous alkali, at a reaction temperature of from 70° to 150° C.; stripping the reaction mixture by means of steam; and recovering propylene oxide from the steam phase, the improvement which comprises:

a. mixing the aqueous chlorohydrin with an aqueous alkali solution within 0.1 to 4 seconds by turbulent jet mixing at from 70° to 150°C.

b. injecting the mixture immediately after mixing by means of steam into a tubular reaction zone at such a velocity, that the formed two-phase mixture of steam and liquid has a residence time in the reaction zone of from 0.1 to 1 seconds,

c. conducting the reaction mixture from the reaction zone into the top of a separating column fitted with a dephlegmator, which is kept at such a temperature that only partial condensation occurs, stripping the liquid in the column with steam, which is introduced at the bottom of the column, and

d. recovering propylene oxide from the vapor phase leaving the dephlegmator.

3,886,188

PRODUCTION OF PURE 1-AMINO-4-NITROANTHRAQUINONE-2-CARBOXYLIC ACID

Alfred Schuhmacher, and Gerd Schwantje, both of Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Sept. 20, 1973, Ser. No. 399,174

Claims priority, application Germany, Sept. 27, 1972, 2247347

Int. Cl. C09b 1/22

U.S. Cl. 260—376 **6 Claims**

1. In a process for the production of pure 1-amino-4-nitroanthraquinone-2-carboxylic acid from 1aminoanthraquinone-2-carboxylic acid by reaction with formaldehyde in concentrated sulfuric acid, nitration of the reaction product to form 1,2-dihydro-6-nitro-7,8-diphthaloyl-3,1,4H-benzoxazone-4 followed by hydrolysis of the latter, the improvement which comprises:

precipitating the 1,2-dihydro-6-nitro-7,8-diphthaloyl-3,1,4H-benzoxazone-4 by adding, as the precipitant, water or a mixture of (a) water and (b) an organic solvent selected from the group consisting of alkanols of one or two carbon atoms, glycols and glycol monoalkyl ethers, the content of (b) being up to 30 percent by weight with reference to (a) + (b);

hydrolyzing the isolated precipitate in a reaction mixture consisting essentially of an aqueous solution of an alkali metal carbonate containing at least 1 mole of alkali per mole of benzoxazone; and

precipitating 1-amino-4-nitroanthraquinone-2-carboxylic acid from the resulting solution by acidification.

3,886,189

PROCESS FOR THE CONTINUOUS MANUFACTURE OF GRAFT POLYMERS

Ugo Nistri, Milan; Benito Busti, South Donato Milanese; Gianfranco Valoti, Sesto S. Giovanni; Vito Maron, Milan, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Continuation of Ser. No. 98,081, Dec. 14, 1970, abandoned. This application Dec. 8, 1972, Ser. No. 313,386

Int. Cl.² C08F 1/13

U.S. Cl. 260—880 R **7 Claims**

1. In a continuous graft copolymerization process for forming a graft copolymer of at least one vinyl monomer on an elastomer comprising continuously feeding to a reaction zone reactants comprising at least one vinyl monomer and and elastomer selected from the group consisting of polybutadiene, polyisoprene and a styrenebutadiene copolymer together with an emulsifier, a polymerization initiator and a molecular weight regulator; continuously graft copolymerizing, in homogeneous emulsion, said vinyl monomer onto said elastomer; and continuously recovering product graft copolymer, the improvement which comprises avoiding the formation of congealed material during the continuous process by:

(1) separately preparing an aqueous emulsion of said vinyl monomer containing from 40 to 60 weight percent water, said molecular weight regulator, said emulsifier and said polymerization initiator; and

(2) continuously separately feeding to a first stage of said reaction zone said separately prepared aqueous emulsion and said elastomer in the form of an aqueous latex thereof, maintaining the temperature in said first stage of 65° to 75°C., and regulating the level of discharge from said first stage so that the dwell time is between 1 and 4 hours; and

(3) supplying the product from said first stage to a second stage of said reaction zone arranged in series with said first stage, maintaining the temperature in said second stage, at 65° to 85°C., and regulating the dwell time therein so that the content of unreacted monomer is below 1 percent with respect to latex.

3,886,190

CARBOXY-TERMINATED BUTADIENE-VINYL FERROCENE COPOLYMERS

Samuel F. Reed, Jr., Holland, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 7, 1970, Ser. No. 95,889

Int. Cl. C08d 3/06

U.S. Cl. 260—439 CY **1 Claim**

1. The carboxy-terminated copolymers of butadiene and vinyl ferrocene prepared by the method comprising reacting vinyl ferrocene and the initiator azobis(2-methyl-4 carboxy butyronitrile) in an inert organic solvent with butadiene at a reaction temperature and for a reaction time period sufficient for said reaction to take place after which solvent removal is effected and said copolymers are dried at a suitable drying temperature while under reduced pressure; said inert organic solvent being selected from dioxane and toluene; said reaction

temperature being in the range of about 60° to about 80°C; said reaction time being from about 24 hours to about 120 hours; said drying is accomplished at a suitable temperature in the range of about 70° to about 75°C; said reduced pressure is in the range of about 1 millimeter; said reacting butadiene and vinyl ferrocene in mole ratios from approximately 100:1 to 1:1 to form said copolymers characterized by a molecular weight in the range from about 1,000 to about 10,000, carboxy-end group content of about 0.5 weight percent to about 9 weight percent, and an iron content of about 0.5 weight percent to about 15 weight percent.

3,886,191
CARBOXY-TERMINATED COPOLYMERS OF ISOPRENE AND VINYL FERROCENE

Samuel F. Reed, Jr., Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 8, 1970, Ser. No. 56,015
Int. Cl. C08d *3/10*
U.S. Cl. 260—439 CY **1 Claim**

1. The carboxy terminated-copolymers of isoprene and vinyl ferrocene prepared by the method comprising reacting vinyl ferrocene and a suitable polymerization initiator in an inert organic solvent with isoprene at a reaction temperature and for a reaction time period sufficient for said reaction to take place after which solvent removal is effected and said copolymers are dried at a suitable drying temperature while under reduced pressure; said suitable polymerization initiator being 4,4′-azobis(4-cyanovaleric acid); said inert organic solvent being selected from dioxane and toluene; said reaction temperature being in the range of about 60°C to about 80°C; said reaction time being from about 24 hours to about 120 hours; said drying is accomplished at a suitable temperature in the range of about 70°C to about 75°C and said reduced pressure is in the range of about 1 millimeter; said reacting isoprene and vinyl ferrocene in mole ratios from approximately 100:1 to 1:1 to form said copolymers characterized by a molecular weight in the range from about 1000 to about 10,000, carboxy-end group content of about 0.5 weight percent to about 9 weight percent, and an iron content of about 0.5 weight percent to about 15 weight percent.

3,886,192
CARBOXY-TERMINATED COPOLYMERS OF CHLOROPRENE AND VINYL FERROCENE

Samuel F. Reed, Jr., Holland, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 7, 1970, Ser. No. 95,890
Int. Cl. C08d *3/14*
U.S. Cl. 260—439 CY **1 Claim**

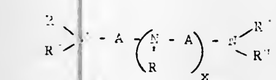
1. The carboxy terminated-copolymers of chloroprene and vinyl ferrocene pprepared by the method comprising reacting vinyl ferrocene and chloroprene in the presence of a suitable polymerization initiator in an inert organic solvent at a reaction temperature and for a reaction time period sufficient for said reaction to take place after which solvent removal is effected and said copolymers are dried at a suitable drying temperature while under reduced pressure; said suitable polymerization initiator being 4,4′-azobis(4-cyanovaleric acid); said inert organic solvent being selected from dioxane and toluene; said reaction temperature being in the range of about 60°C to about 80°C; said reaction time being from about 24 hours to about 120 hours; said drying is accomplished at a suitable temperature in the range of about 70°C to about 75°C and said reduced pressure is in the range of about 1 millimeter; said reacting chloroprene and vinyl ferrocene in mole ratios from approximately 100:1 to 1:1 to form said copolymers characterized by a molecular weight in the range from about 1000 to about 10,000, carboxy-end group content of about 0.5 weight percent to about 9 weight percent, and an iron content of about 0.5 weight percent to about 15 weight percent.

3,886,193
PREPARATION OF AROMATIC COMPOUNDS VIA BENZYNE INTERMEDIATES

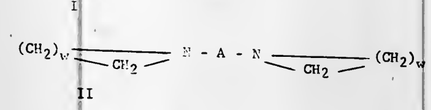
Thomas A. Whitney, Roselle, and Arthur W. Langer, Watchung, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 138,766, April 29, 1971, Pat. No. 3,787,496. This application Oct. 5, 1973, Ser. No. 404,022
Int. Cl. C07j *9/74, 9/28*
U.S. Cl. 260—440 **8 Claims**

1. A process for synthesizing substituted aromatic compounds characterized by the formula $Ar(ZR_2'-_y$, said process comprising reacting a halogenated aromatic compound, formula aromatic compound being one selected from the group consisting of derivatives of benzenes, naphthalenes, anthracenes, pyridines, naphthyridines, phenanthrenes, quinolines, paracyclophanes, quinoxalines, acridines, and binaphthyls, and substituted derivatives thereof, said substituents being ones selected from the group consisting of chlorine, bromine, fluorine, alkyl, dialkylamine and ethers, with the proviso that said substituents have a pK_a greater than 30 and do not undergo metalative decomposition by MZR_2' and do not interfere with the formation of an aryne intermediate, in the presence of excess HZR_2' with an alkali metal compound, having the formular MZR_2', and a tertiary amine selected from the group consisting of tris-(2-C_1–C_4-dialkylaminoethyl) amine, sparteine, C_1–C_4-dialkylbispidins, an amine containing bridgehead nitrogen,



and



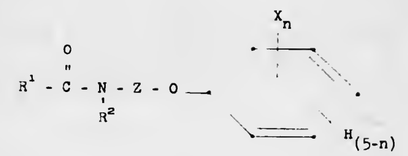
M is Li or Na; R′ is an inert monovalent radical having a pK_a greater than about 30; Z is an element selected from the group consisting of phosphorus and arsenic; y is an integer of 1 to 6 inclusive; R″ are the same or different C_1–C_4 alkyl radicals; x is an integer from 0 to 3 inclusive; w is an integer from 1 to 5; A is a nonreactive radical selected from the group consisting of (1) cycloaliphatic radicals and their lower alkyl derivatives having ring structures containing from 4 to 7 carbon atoms, wherein said radicals are attached to the nitrogen atoms at 1, 2 or 1, 3 positions on the rings, and (2) 1 to 4 methylenic radicals inclusive, wherein each methylenic radical contains 0 to 2 monovalent hydrocarbon radicals of 1 to 6 carbon atoms; Ar is the aryl portion of the aromatic compounds defined hereinabove, at a temperature ranging from −50° to 150°C.

3,886,194
N-PHENOXYALKYL-L-THIOCYANOALKANAMIDES

Alfred A. Levin, Skokie, and Sidney B. Richter, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 826,706, May 21, 1969, abandoned. This application Mar. 20, 1972, Ser. No. 236,299
Int. Cl.² C07C *161/02*
U.S. Cl. 260—454 **2 Claims**

1. A compound of the formula



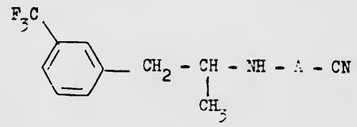
wherein R^1 is lower thiocyanoalkyl; R^2 is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkoxyalkyl, lower chloroalkyl and lower bromoalkyl; Z is an alkylene group of from one to four carbon atoms; X is selected from the group consisting of lower alkyl, lower alkenyl, chlorine, bromine, fluorine, lower alkoxy, lower alkylthio, nitro and di(lower alkyl)amino; and n is an integer from 0 to 3.

3,886,195
1-TRIFLUOROMETHYLPHENYL-2-CYANOALKYLAMINE PROPANE

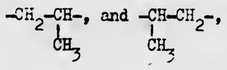
Laszlo Beregi, Boulogne, Seine; Pierre Hugon, Rueil-Malmaison, and Jacques Duhault, Chatou, all of France, assignors to Science-Union et cie, Suresnes, France

Filed Jan. 17, 1973, Ser. No. 324,433
Claims priority, application United Kingdom, Feb. 7, 1972, 5557/72
Int. Cl. C07c *121/78*
U.S. Cl. 260—465 E **5 Claims**

1. A compound selected from the group consisting of:
A. amino propane compounds of the general formula



wherein A is selected from the group consisting of: $—CH_2—$, $—CH_2—CH_2—$,



and

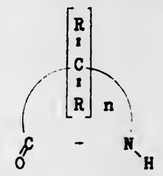
in racemic and optically active forms; and
B. physiologically tolerable acid addition salts thereof.

3,886,196
MAGNESIUM-ALUMINUM-SILICATE-PHOSPHATE CATALYSTS FOR AMMONIALYTIC CLEAVAGE OF LACTAMS TO FORM OMEGA-AMINONITRILES

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 329,557, Feb. 7, 1973, abandoned, which is a continuation of Ser. No. 879,635, Nov. 24, 1969, abandoned. This application Dec. 3, 1973, Ser. No. 420,879
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.2 **17 Claims**

1. A method for the conversion of lactam to the corresponding ω-aminonitrile which comprises contacting at least one lactam with a catalyst composition consisting essentially of magnesium-aluminum-phosphate-silicate on alumina, silica, or an alumina- or silica-containing substrate in the presence of at least about 1 mole of ammonia per mole of lactam converted and at elevated temperatures in the range of about 250° to 700° C sufficient to effect ammonialytic cleavage of said lactam to said ω-aminonitrile,
wherein in said catalyst composition said magnesium-aluminum-phosphate-silicate represents about 0.5 to 99.5 weight percent of said catalyst composition, the mole ratio of magnesium:aluminum ranges from about 99:1 to 1:99, and the mole ratio of silicate:phosphate ranges from about 99:1 to 1:99, such that a balance of cations:anions is effected in said magnesium-aluminum-phosphate-silicate,
wherein said lactam is represented by the formula



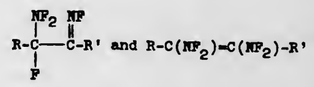
wherein n is an integer of 3 to about 9, R is hydrogen, or is alkyl, cycloal aryl, or combination thereof, having up to about 8 carbon atoms per R group with a maximum of about 10 carbon atoms in all R groups.

3,886,197
ORGANIC NITROGEN-FLUORINE COMPOUNDS AND THEIR PREPARATION

George N. Sausen, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 12, 1961, Ser. No. 137,507
Int. Cl. C07c *121/42, 121/60*
U.S. Cl. 260—465.5 R **20 Claims**

1. A compound of the group consisting of



wherein R and R′ are selected from the group consisting of hydrocarbon, halohydrocarbon, nitrohydrocarbon, carboxyhydrocarbon, halocarbonylhydrocarbyl, cyanohydrocarbyl, hydrocarbyloxycarbonylhydrocarbyl, carbamoylhydrocarbyl, hydrocarbylcarbamoylhydrocarbyl, dihydrocarbylcarbamoylhydrocarbyl, carboxyl, halocarbonyl, cyano, hydrocarbyloxycarbonyl, carbamoyl, hydrocarbylcarbamoyl and dihydrocarbylcarbamoyl, R and R′ each containing 1–12 carbons and being free of ethylenic unsaturation and of halogen of atomic number greater than 17, and, in the second formula, both not being alkyl simultaneously.

3,886,198
PROCESS FOR PREPARING IMINODIACETONITRILE

James E. Philbrook, Nashua, and Jon C. Thunberg, Amherst, both of N.H., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 13, 1973, Ser. No. 424,445
Int. Cl. C07c *121/42, 121/02*
U.S. Cl. 260—465.5 A **8 Claims**

1. A process for preparing iminodiacetonitrile comprising preparing an aqueous mixture of hexamethylenetetramine HCN, and a strong acid selected from the group consisting of sulfuric acid, hydrochloric acid, and nitric acid, the aqueous mixture having a pH of 3–5 and a mole ratio of hexamethylenetetramine to HCN of 1:5–7, passing the aqueous mixture through a tubular reaction zone while maintaining the temper-

ature within the reaction zone at 50°–120°C, residence time in

ature within the reaction zone at 50°–120°C, residence time in the reaction zone being 0.5–20 minutes, and recovering the iminodiacetonitrile.

3,886,199
MANUFACTURE OF DIESTERS OF DICARBOXYLIC ACIDS WITH SUBSTANTIAL WASTE WATER PURIFICATION

Hubert Suter; Rosemarie Berger, both of Ludwigshafen; Hansjoerg Bipp, Limbergerhof; Gert Buerger, Mannheim; Kurt Hauptmann, Hassloch; Otto Kratzer, Bobenheim-Roxheim, and Willi Reimer, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed June 18, 1973, Ser. No. 371,139
Claims priority, application Germany, June 21, 1972, 2230226
Int. Cl. C07c *69/34, 69/80*
U.S. Cl. 260—475 B **6 Claims**

1. In a continuous process for the manufacture of the diester of a dicarboxylic acid by esterification of a dicarboxylic acid component selected from the group consisting of phthalic anhydride, maleic anhydride and acids of the formula HOOC—$(CH_2)_n$—COOH in which n is a whole number of 1 to 8 with an alcohol selected from the group consisting of butanol, n-octanol-1, n-octanol-2, 2-ethylhexanol-1, n-nonyl alcohol, decanol and isodecanol, esterification being carried out with recycling of the alcohol used in excess and in the absence of an esterification catalyst at a temperature of from 150° to 250° C and the reaction mixture being separated from the water of reaction, steamed out and then mixed with an aqueous alkali for separation of the monoester, the resulting aqueous monoester salt solution being acidified for the recovery of the monoester, the improvement which comprises:

treating the aqueous monoester salt solution after acidification with from 0.5 to 1 times its weight of the same alcohol as used in the ester synthesis;

separating the resulting mixture into alcoholic and aqueous phases and then extracting the separated aqueous phase with from 1 to 2 times its weight of the same alcohol;

recycling the alcoholic phase from said separation and said extraction to the esterification reaction;

combining said water of reaction separated from the esterification reaction mixture as a waste water with said aqueous phase resulting from the extraction step; and

removing the alcohol traces which remain in the resulting combined waste water and aqueous phase by blowing steam therethrough.

3,886,200
PROCESS FOR THE PREPARATION OF TEREPHTHALIC ACID DIMETHYLESTER

Ferdinand List; Helmut Alfs; Kurt Wember, all of Marl, and Friedrich-August Orlowski, Haltern, all of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Kreis Recklinghausen, Germany

Filed May 25, 1973, Ser. No. 364,085
Claims priority, application Germany, June 6, 1972, 2227396
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 R **8 Claims**

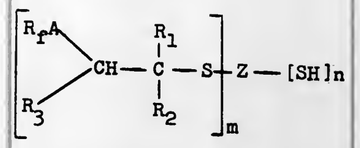
1. Process for the continuous esterification of terephthalic acid with methanol to the production of terephthalic acid dimethyl ester, which comprises bringing together into an original dispersion, at a temperature of from 300° to 350° C., methanol vapor and powdered terephthalic acid and vaporized terephthalic acid dimethyl ester, the latter in an amount ranging from 50 to 100 molar percent based on the amount of powdered terephthalic acid in said original dispersion, and immediately conducting the dispersion through a fixed bed of esterification catalyst in lump form.

3,886,201
PERFLUOROALKYL ESTERS OF MERCAPTO- AND THIO-CARBOXYLIC ACIDS

Robert Allan Falk, New City, and Eduard Karl Kleiner, New York, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

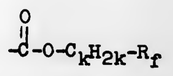
Filed Nov. 17, 1971, Ser. No. 199,715
Int. Cl. C07c *153/07*
U.S. Cl. 260—481 R **12 Claims**

1. A compound of the formula



wherein

R_1, R_2 and R_3 are hydrogen, methyl, R_fA or R_fACH_2 and where at least one of R_1, R_2 and R_3 is R_fA or R_fACH_2, R_f is a perfluoroalkyl group of 2 to 18 carbon atoms, R_fA is



Z is

$C(CH_2OOCCH_2CH_2)_4$
$C(CH_2OOCCH_2)_4$
$CH_3C(CH_2OOCCH_2CH_2)_3$
$CH_3C(CH_2OOCCH_2)_3$
$CH_3CH_2C(CH_2OOCCH_2CH_2)_3$
$CH_3CH_2C(CH_2OOCCH_2)_3$
$—O—CH_2—C—(CH_2OOCCH_2)_3]_2$ or
$—O—CH_2—C(CH_2OOCCH_2CH_2)_3\ ]_2$

k is 1 or 2

m is at least 1 and the sum of $m + n$ is 3, 4 or 6

3,886,202
METHOD FOR DEPOLYMERIZING THERMOPLASTIC RESINS BY LIQUID HEAT TRANSFER MEDIA

Takeichi Tatsumi, Tokyo; Hiroshi Yoshihara, Chiba, and Gaisuke Uesaka, Mihara, all of Japan, assignors to Kabushiki Kaisha Denshikagaki, Hiratsuka, Japan

Continuation-in-part of Ser. No. 144,867, May 9, 1971, abandoned. This application Feb. 12, 1974, Ser. No. 441,804
Claims priority, application Japan, May 19, 1970, 45-42680
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **3 Claims**

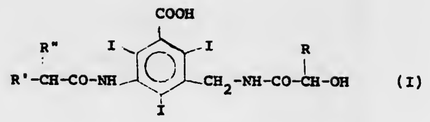
1. A process for thermally decomposing an acrylic resin, characterized in that the acrylic resin is thermally decomposed by bringing it into direct contact with a liquid heat transfer medium consisting of one or more salts of alkali metals.

3,886,203
3-HYDROXYACYL AMINOMETHYL-5-ACYLAMINO-2,4,6-TRIIODOBENZOIC ACID SALTS AS X-RAY CONTRAST AGENTS

Ernst Felder, and Davide Pitre, both of Milan, Italy, assignors to Bracco Industria Chimica, Societa per Axioni, Milan, Italy

Filed June 24, 1974, Ser. No. 482,666
Claims priority, application Switzerland, July 17, 1973, 10449/73
Int. Cl. C07c *103/32*
U.S. Cl. 260—501.11 **7 Claims**

1. A compound which is a 3-hydroxyacylaminomethyl-5-acylamino-2,4,6-triiodobenzoic acid of the formula



(I)

wherein

R and R″ are hydrogen or methyl,
R′ is hydrogen or hydroxyl,
R′ is hydroxyl when R is hydrogen, and
R″ is hydrogen when R′ is hydrogen; or

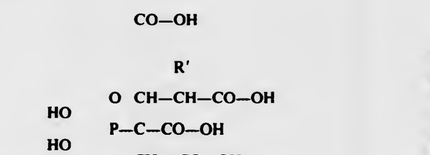
a water-soluble, physiologically tolerated sodium or alkanolamine salt of said acid.

3,886,204
2-PHOSPHONO-BUTANE-1,2,3,4-TETRACARBOXYLIC ACIDS

Hans Geffers, Cologne; Walter Radt; Hartmut Schultz, both of Leverkusen, and Reinhard Schliebs, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 202,564, Nov. 26, 1971, abandoned. This application Feb. 11, 1974, Ser. No. 441,549
Claims priority, application Germany, Dec. 16, 1970, 2061838
Int. Cl. C07f *9/38*
U.S. Cl. 260—502.4 R **2 Claims**

1. 2-phosphono-butane-1,2,3,4-tetracarboxylic acid compounds of the formula



in which

R is hydrogen or lower alkyl, and
R^1 is hydrogen or methyl,

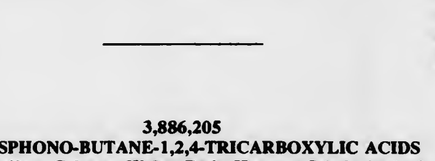
and the alkali metal and ammonium salts thereof.

3,886,205
2-PHOSPHONO-BUTANE-1,2,4-TRICARBOXYLIC ACIDS

Hans Geffers, Cologne; Walter Radt; Hartmut Schulz, both of Leverkusen, and Reinhard Schliebs, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 202,564, Nov. 26, 1971, abandoned. This application Feb. 11, 1974, Ser. No. 441,550
Claims priority, application Germany, Dec. 16, 1970, 2061838
Int. Cl. C07f *9/38*
U.S. Cl. 260—502.4 R **5 Claims**

1. 2-phosphono-butane-1,2,4-tricarboxylic acid compounds of the formula



in which

R^1 is hydrogen or methyl,

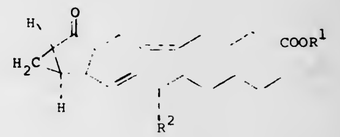
and the alkali metal and ammonium salts thereof.

3,886,206
10,11-METHYLENE-SUBSTITUTED PHOSTAGLANDIN DERIVATIVES

Pierre Crabbe, and Pierre Vogel, both of Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Sept. 8, 1972, Ser. No. 287,242
Int. Cl. C07c *64/74, 61/36*
U.S. Cl. 260—514 D **5 Claims**

1. A compound selected from the group of those represented by the formula:



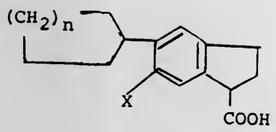
wherein R^1 is hydrogen or lower alkyl; R^2 is selected from the group consisting of hydroxy, methoxy, ethoxy, cyclopentoxy, tetrahydrofuran-2-yloxy, tetrahydropyran-2-yloxy, 4-methoxytetrahydropyran-4-yloxy, a hydrocarbon carboxylic acyloxy group containing from 1 to 12 carbon atoms or a substituted hydrocarbon carboxylic acyloxy having from 1 to 12 carbon atoms wherein the substituent is selected from the group consisting of hydroxy, alkoxy containing up to six carbon atoms, hydrocarbon carboxylic acyloxy containing up to twelve carbon atoms, nitro, amino and halogen; the dotted bond line between the C-5 and C-6 position indicates that the bond joining the C-5 and C-6 position is a saturated ethylene bond or a cis-olefin double bond; and the pharmaceutically acceptable salts of the above compounds wherein R^1 is hydrogen.

3,886,207
PROCESS FOR PRODUCING INDAN-1-CARBOXYLIC ACID DERIVATIVES

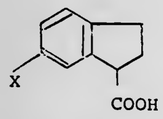
Shoji Kishimoto, Osaka; Tetsuya Aono, Kyoto, and Shunsaku Noguchi, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed June 19, 1973, Ser. No. 371,527
Claims priority, application Japan, June 26, 1972, 47-63902
Int. Cl. C07c *63/44*
U.S. Cl. 260—515 A **10 Claims**

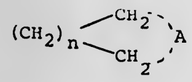
1. A process for producing a compound of the general formula



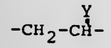
wherein X represents a halogen atom, and n is 1 or 2, or pharmaceutically acceptable salts thereof, which comprises reacting a compound of the general formula:



wherein X is as defined above, with a compound of the general formula:



wherein *n* is as defined above, and A represents —CH=CH— or



and wherein Y represents a halogen atom, hydroxyl group or sulfonic acid residue of the formula —OSO_2—R, wherein R represents a lower alkyl group having up to 4 carbon atoms, phenyl or a phenyl substituted by a lower alkyl group, in the presence of a Friedel-Crafts type catalyst or an inorganic acid.

3,886,208

N-ALKYLATION OF ACYLATED AMINO COMPOUNDS

Eva Birgitta Akerblom, Uppsala, Sweden, assignor to Pharmacia Aktiebolag, Uppsala, Sweden

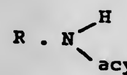
Continuation of Ser. No. 98,855, Dec. 16, 1970, abandoned. This application Dec. 15, 1972, Ser. No. 315,691

Claims priority, application Sweden, Dec. 23, 1969, 17859/69

Int. Cl. C07c *101/54*

U.S. Cl. 260—518 R **7 Claims**

1. In the known process of the N-alkylation of acylated amino compounds of the formula

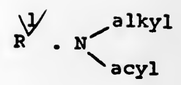


(I)

wherein R represents a member selected from the group consisting of alkyl, aryl and aralkyl groups, said groups being unsubstituted and alkyl, aryl and aralkyl groups, said groups being substituted, and 'acyl' represents a member selected from the group consisting of alkanoyl and benzoyl, by reaction with di-(alkyl)sulfate having the formula

alkyl . O . SO_2 . O . alkyl

wherein 'alkyl' is an alkyl group containing from 1 to 5 carbon atoms, to form a compound of the formula III



(III)

wherein R^1 represents a member selected from the group consisting of the same organic residue as R above, and alkylated R, and 'alkyl' and 'acyl' each have the same significance as above, the improvement which consists of bringing together the reactants with dimethylsulfoxide under alkaline reaction conditions and at a sufficient temperature to substitute the alkyl group of the alkylating agent for the hydrogen of the compound of the formula I.

3,886,209

PROCESS FOR PREPARING ALPHA, OMEGA-DIAMINOCARBOXYLIC ACIDS

Ryoji Kikumoto; Masahiro Ito; Akio Nakamura, and Tatsuo Nomura, all of Kanagawa, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

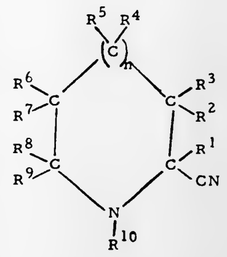
Filed Nov. 20, 1972, Ser. No. 307,900

Claims priority, application Japan, Nov. 19, 1971, 46-92838

Int. Cl. C07c *99/08*

U.S. Cl. 260—534 R **13 Claims**

1. A process for producing an α,ω-diaminocarboxylic acid which comprises contacting a 2-cyano 5- or 6-membered saturated cyclic amine as defined by the following formula (new formula)



wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8 and R^9 each represents hydrogen, a lower alkyl group having 1 to 6 carbon atoms, or a phenyl or lower alkyl substituted phenyl group, R^{10} represents hydrogen or a lower alkyl group and *n* is 0 or 1, at a temperature from 40° to 250°C., with 1–1,000 moles of H_2O, 1–100 moles of NH_3 and 1–50 moles of CO_2, per mole of 2-cyano 5- or 6-membered saturated cyclic amine, to obtain a reaction product containing 5- (ω-aminoalkyl) hydantoin, and hydrolyzing said reaction product.

3,886,210

UREA SYNTHESIS WITH IMPROVED HEAT RECOVERY AND AMMONIUM CARBAMATE RECIRCULATION

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y.

Continuation-in-part of Ser. No. 50,777, June 29, 1970, Pat. No. 3,759,992. This application June 13, 1973, Ser. No. 369,756The portion of the term of this patent subsequent to Sept. 18, 1990, has been disclaimed.

Int. Cl. C07c *127/00*

U.S. Cl. 260—555 A **12 Claims**

1. In an urea synthesis process wherein a first aqueous urea solution comprising urea, ammonium carbamate, ammonia

and water is produced at elevated temperature and elevated pressure,

the improvement which comprises:

a. reducing said pressure of, and heating, said first aqueous urea solution in a first carbamate decomposing zone to decompose from about 10 to about 60 percent by weight of the ammonium carbamate therein to NH_3 and CO_2 gas,

b. then heating said heated first aqueous urea solution in a second carbamate decomposing zone to decompose additional ammonium carbamate to NH_3 and CO_2 gas, and to produce a liquid phase comprising urea, water, residual ammonium carbamate and residual excess ammonia, and a gaseous phase comprising CO_2, NH_3 and H_2O;

c. separating said gaseous phase and said liquid phase;

d. contacting said gaseous phase, urea and fresh CO_2 to form ammonium carbamate in indirect heat exchange with said first aqueous urea solution, whereby heat of reaction released in forming said ammonium carbamate in (d) provides heat for (a), the quantity of urea so contacted being such that the reaction product has a ratio of urea to water of from about 0.1/1 to about 1.6/1.

3,886,211

CARBOXYLIC ACID HYDRAZIDE DERIVATIVES

John Francis Edmund Keenan, Cheadle Hulme, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

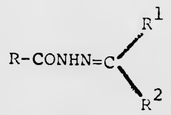
Continuation-in-part of Ser. No. 881,282, Dec. 1, 1969, abandoned. This application Mar. 5, 1970, Ser. No. 16,971

Claims priority, application United Kingdom, Dec. 10, 1968, 58503/68

Int. Cl. C07c *103/30*

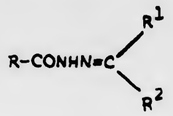
U.S. Cl. 260—561 H **5 Claims**

1. A carboxylic acid hydrazide compound of the formula



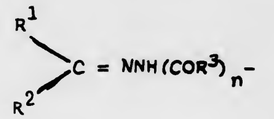
wherein R is an alkyl group having from 1 to 12 carbon atoms, R^1 is hydrogen or an alkyl group having from 1 to 12 carbon atoms, and R^2 represents the group —CH=NNHCOR, wherein R is as defined above.

2. A carboxylic acid hydrazide compound of the formula



I

wherein R represents a group of the formula



II

in which R^1 is hydrogen or an alkyl group having from 1 to 12 carbon atoms, R^2 is an alkyl group having from 1 to 12 carbon atoms, R^3 is an alkylene residue having from 1 to 12 carbon atoms or a vinylene residue, and *n* is 1.

3,886,212

PROCESS FOR PREPARING N,N,N',N'-TETRAACETYL COMPOUNDS

Gerhard Künstle, Raitenhaslach; Hellmuth Spes, Burghausen, and Herbert Siegl, Haiming, all of Germany, assignors to Wacker-Chemie GmbH, 8 Munich 22, Germany

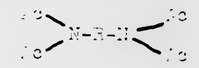
Filed Feb. 11, 1974, Ser. No. 441,200

Claims priority, application Germany, Feb. 19, 1973, 2308119

Int. Cl. C07c *103/44*

U.S. Cl. 260—561 R **8 Claims**

1. In a process for preparing N,N,N',N'-tetraacetyl compounds of the general formula

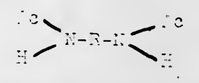


wherein

Ac represents acetyl —$OCCH_3$,

R represents a straight or branch chained alkylene group with 1 – 12 C-atoms, or equals zero;

or R represents substituted or unsubstitured phenylene, benzylidene, cyclohexylidene, naphthylene, diphenylene methane or dicyclohexylidene methane group, by N-acetylation of N,N'-diacetyl compounds of the formula



wherein Ac and R have the meaning indicated above, with ketene in the presence of a catalyst and a solvent, the improvement of using as catalyst an inorganic fluorine compound of an element which is selected from the group consisting of boron, silicon, nitrogen, phosphorus, arsenic, antimony, bismuth, titanium, and vanadium, and a mixture of said elements.

3,886,213

PREPARING AND STORING OF REDUCED COPPER CATALYST

John Allan Fetchin; William Frank Marzluff, and William Austin Barber, all of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sept. 7, 1973, Ser. No. 395,301

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N **18 Claims**

1. In the catalytic hydration of a nitrile with water to produce a corresponding amide wherein the catalysts for said hydration is reduced copper, selected from the group consisting of reduced copper sulfate, reduced Adkins catalyst, Raney copper, and Urushibara copper the improvement wherein the copper catalyst is one that has been separated from the reduction medium and subsequently washed with aqueous alkali metal nitrite solution while the reduced copper catalyst is still freshly reduced.

3,886,214

BENZODIAZEPIN-2-ONES AND PROCESSES FOR THE

bon atoms at temperatures of from 50° to 250°C in the pres-

3,886,214
BENZODIAZEPIN-2-ONES AND PROCESSES FOR THE PREPARATION THEREOF

Joseph Hellerbach, Basel, Switzerland, and Armin Walser, West Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

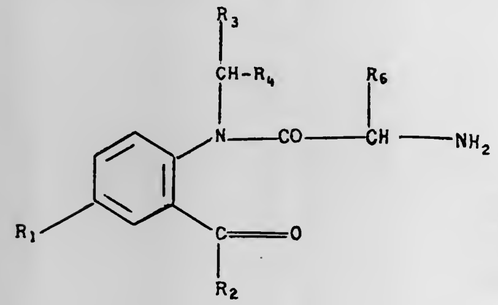
Division of Ser. No. 169,564, Aug. 4, 1971, Pat. No. 3,784,542, which is a continuation-in-part of Ser. No. 10,053, Feb. 9, 1970, abandoned. This application July 9, 1973, Ser. No. 377,880

Claims priority, application Switzerland, Feb. 14, 1969, 2255/69

Int. Cl. C07c *103/32*

U.S. Cl. 260—562 N **2 Claims**

1. A compound of the formula



wherein R_1 signifies halogen or nitro; R_2 signifies phenyl, mono-halo phenyl or pyridyl; R_3 signifies hydrogen, lower alkyl, hydroxy-lower alkyl, halo-lower alkyl, acyloxy-lower alkyl, carbalkoxy, mono-lower alkylamine-lower alkyl, or di-lower alkylamino-lower alkyl; R_4 signifies lower alkoxy, halo-lower alkoxy, amino-lower alkoxy, mono-lower alkylamino-lower alkoxy, di-lower alkylamino-lower alkoxy, hydroxy-lower alkoxy, alkoxy-lower alkoxy, lower alkylthio, loweralkylsulfinyl or lower alkylsulfonyl and R_6 signifies hydrogen or carbalkoxy, R_4 being other than amino-lower alkylamino-lower alkoxy or di-lower-alkylamino-lower alkoxy in case R_3 stands for carbalkoxy.

3,886,215
PROCESS USING METAL SALT-AMINE COMPLEX CATALYSTS FOR THE PREPARATION OF ALPHA BETA-ETHYLENIC KETONES SUCH AS DELTA-CIS-PSEUDO IONONES

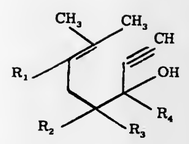
Robert S. Desimone, Willingboro, and Peter S. Gradeff, Andover, both of N.J., assignors to Rhodia, Inc., New York, N.Y.

Filed Feb. 1, 1973, Ser. No. 328,559

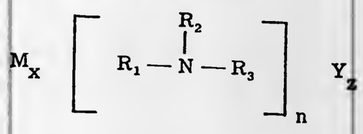
Int. Cl. C07c *45/00*

U.S. Cl. 260—586 C **25 Claims**

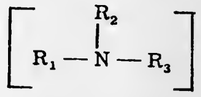
1. A process for preparing cis-Δ^3-pseudo ionones and cis-Δ^3-pseudo-methyl ionones from dehydrolinalool and lower alkyl homologues thereof by condensation with an isopropenyl or isobutenyl lower alkyl ether, comprising condensing dehydrolinalool or a lower alkyl homologue thereof having the formula:



wherein R_1, R_2, R_3, and R_4 are hydrogen or lower alkyl having from one to about four carbon atoms and with an isopropenyl or isobutyl lower alkyl ether in the presence of a metal salt-amine complex catalyst of the formula:



wherein M is a metal selected from the group consisting of copper, chromium and silver, Y is the anion of the salt and is selected from the group consisting of chloride, bromide, iodide, nitrate, and sulphate; x and z are integers selected according to the valence of M and Y, n is a number within the range from about 0.01 to about 50, and



is selected from the group consisting of aliphatic hydrocarbon amines, cycloaliphatic hydrocarbon amines, cycloaliphatic aliphatic hydrocarbon amines, monocarbocyclic aromatic amines, and heterocyclic amines in which two or three of R_1, R_2 and R_3 are taken together to form a heterocyclic ring, which may include nitrogen, oxygen, and sulfur hetero atoms; R_1, R_2 and R_3, taken singly or together, being hydrocarbon groups having from one to about 30 carbon atoms or hydrogen, the condensation being carried out at a reaction temperature within the range from about 80° to about 150°C, thereby obtaining a cis-Δ^3-pseudo ionone or a cis-Δ^3-pseudo methyl ionone.

3,886,216
PROCESS FOR THE PREPARATION OF ALFA BETA-ETHYLENIC KETONES

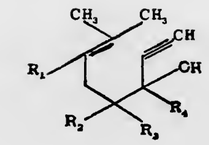
Robert S. DeSimone, Willingboro, and Peter S. Gradeff, Andover, both of N.J., assignors to Rhodia, Inc., New York, N.Y.

Filed Feb. 1, 1973, Ser. No. 328,560

Int. Cl. C07c *49/20*

U.S. Cl. 260—593 R **15 Claims**

1. A process for preparing cis-pseudo ionones and cis-pseudo methyl ionones from dehydrolinalool and lower alkyl or alkenyl derivatives thereof by condensation with an isopropenyl or isobutenyl lower alkyl ether, comprising condensing dehydrolinalool or a lower alkyl or alkenyl derivative thereof having the formula:



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen, lower alkyl and lower alkenyl having from one to about four carbon atoms and an isopropenyl or isobutyl lower alkyl ether in the presence of cupric nitrate at a reaction temperature within the range from about 10° to about 150°C., thereby obtaining a cis-Δ^3-pseudo ionone or a cis-Δ^3-pseudo methyl ionone.

3,886,217
PROCESS FOR THE PREPARATION OF ALPHA, BETA-THYLENIC KETONES SUCH AS DELTA^3-CIS-PSEUDO IONONES

Robert S. Desimone, Willingboro, and Peter S. Gradeff, Andover, both of N.J., assignors to Rhodia, Inc., New York, N.Y.

Filed Feb. 1, 1973, Ser. No. 328,558

Int. Cl. C07c *49/20*

U.S. Cl. 260—593 R **14 Claims**

1. A process for preparing cis-Δ^3-pseudo ionones and cis-Δ^3-pseudo methyl ionones from dehydrolinalool and lower alkyl or alkenyl derivatives thereof by condensation with an isopropenyl or isobutenyl lower alkyl ether, comprising condensing dehydrolinalool or a lower alkyl or alkenyl derivative thereof having the formula:

wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen, lower alkyl and lower alkenyl having from one to about four carbon atoms and an isopropenyl or isobutyl lower alkyl ether in the presence of cupric sulfate at a reaction temperature within the range from about 80° to about 150°C., thereby obtaining a cis-Δ^3-pseudo ionone or a cis-Δ^3-pseudo methyl ionone.

3,886,218
PROCESS FOR THE PRODUCTION OF DIHYDROXYDIPHENYLETHERS

Efim Biller, Fribourg, Switzerland; Fritz-Peter Schmook, Vienna, Austria, and Bernd Haas, Wesseling, Germany, assignors to Union Rheinische Braunkohlen kraftstoff Aktiengesellschaft, 5047 Wesseling, Germany

Filed July 19, 1973, Ser. No. 380,535

Claims priority, application Germany, Aug. 1, 1972, 2237762

Int. Cl. C07c *41/00*

U.S. Cl. 260—613 R **3 Claims**

1. A process for the production of dihydroxydiphenylether, which comprises reacting a hydroquinone or an alkylhydroquinone having one or two alkyl groups with up to 3 carbon atoms at temperatures of from 50° to 250°C in the presence of a natural or synthetic aluminum silicate as catalyst in an inert solvent or a mixtures of solvents selected from the group consisting of dodecane, lower alkyl benzenes, chloro benzenes, diphenylethers, hydrocarbons having 2 or 3 phenyl groups combined with at least 2 methyl or methylene groups and mineral oil fractions of a corresponding boiling range, separating the catalyst from the reaction product, removing the unreacted hydroquinone by co-distillation with the said solvent and recovering the 4,4'-dihydroxydiphenylether by vacuum distillation of the remaining bottom product in the presence of a solvent selected from the group consisting of divinylbenzene, triphenyldiether and mineral oil fractions of a corresponding boiling range, and separating the crystallised ether from the distillate.

3,886,219
PROCESS FOR PREPARING SATURATED ALCOHOLS

Manfred Reich, Marl, Germany, assignor to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

Continuation of Ser. No. 791,178, Jan. 14, 1969, abandoned. This application July 6, 1972, Ser. No. 269,480

Int. Cl. C07c *29/14*

U.S. Cl. 260—638 B **13 Claims**

1. In a process for preparing a saturated alcohol by catalytically hydrogenating at least one member selected from the group consisting of alkenones, alkanones, alkanals, alkenals, alkadienals and mixtures thereof in the vapor phase at a temperature of 100°–220° C. in the presence of a catalyst support consisting of solid silica gel, said support being impregnated with activating metal selected from the group consisting of copper, nickel and mixtures thereof, the content of the activating metal being 1–25% by weight based on the total weight of the support and the activating metal,

the improvement which comprises using said silica gel support having a surface pH of 6–10, said silica gel support being a solid having a surface area of about 100 to 400 m^2/g and a bulk density of about 350 to 600 g/l prior to the impregnation step and retaining essentially the same surface pH of said silica gel support after the catalyst is produced.

3,886,220
AVOIDING POLLUTION BY HF CATALYST RESIDUES

Cecil O. Carter, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 28, 1973, Ser. No. 392,233

Int. Cl. C07c *17/08*

U.S. Cl. 260—653.6 **8 Claims**

1. A process in which a used HF acid alkylation catalyst is treated in two stages to recover the HF values and react recovered HF with olefins to obtain alkyl fluorides which process comprises the steps of:

a. contacting used HF acid catalyst in a first stage stripping zone with a hot hydrocarbon stripping medium under conditions sufficient to form an overhead stream comprising HF, water vapor and hydrocarbon stripping vapor and yield a heavy liquid residue of acid-soluble oil,

b. passing said overhead stream to a second stage stripping zone operated under refluxing conditions to produce a second overhead stream comprising HF and hydrocarbon stripping medium and a bottoms stream comprising condensed water containing HF, and

c. reacting said bottoms stream comprising condensed water containing HF with an olefin under conditions to form an alkyl fluoride.

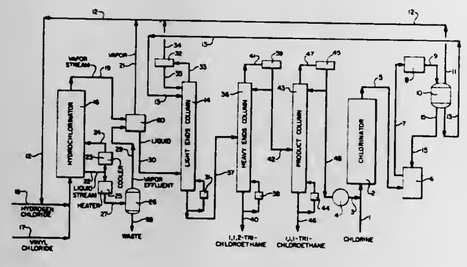
3,886,221
PRODUCTION OF CHLORINATED HYDROCARBONS

Robert B. Agee, Baker, and James E. Davis, Baton Rouge, both of La., assignors to Ethyl Corporation, Richmond, Va.

and a continuation-in-part of Ser. No. 196,803, Nov. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 750,833, Aug. 7, 1968, abandoned. This application Mar. 14, 1974, Ser. No. 451,180

Int. Cl. C07c *17/00*

U.S. Cl. 260—658 R **5 Claims**



1. In a process for producing substantially pure 1,1,1-trichloroethane which includes the concurrent formation of a liquid hydrochlorination product stream and a liquid chlorination product stream, said liquid hydrochlorination product stream being predominantly 1,1-dichloroethane produced in a catalytic hydrochlorination zone by the reaction of vinyl chloride and hydrogen chloride at from about 50° to about 250°F and at a pressure up to 300 psig followed by separation of vapors, polymers and catalyst from the hydrochlorination products; and said liquid chlorination product stream being primarily 1,1,1-trichloroethane and 1,1-dichloroethane produced in a chlorination zone by the reaction of chlorine and 1,1-dichloroethane at from about 600° to about 800°F and at a pressure up to 300 psig followed by removal of vapor from the chlorination product and coincident distilling of said liquid hydrochlorination product stream and said liquid chlorination product stream together in a distillation zone to yield the substantially pure 1,1,1-trichloroethane, the improvement which comprises producing said liquid hydrochlorination product stream for distillation by:

1. withdrawing from the hydrochlorination zone a vapor stream and a liquid stream, the vapor stream containing 1,1-dichloroethane, hydrogen chloride and vinyl chloride, and the liquid stream containing 1,1-dichloroethane, polymer and catalyst;
2. cooling a part of the liquid stream in a cooling zone and recycling this cooled part back to the hydrochlorination zone;
3. heating the remainder of the liquid stream to form a vapor effluent containing 1,1-dichloroethane and a liquid effluent containing polymer and catalyst;
4. separating the liquid effluent from the vapor effluent; and
5. combining the separated vapor effluent and the aforesaid vapor stream in a condensation zone wherein the combined vapors are partially condensed to yield said liquid hydrochlorination product stream which is predominantly 1,1-dichloroethane for said coincident distillation.

3,886,222
PROCESS FOR OBTAINING 1,1,1,2-TETRACHLOROETHANE

Yves Correia, and Jean-Claude Strini, both of Saint-Auban, France, assignors to Rhone-Progil, Courbevoie, France

Continuation of Ser. No. 786,740, Dec. 24, 1968, abandoned. This application Mar. 17, 1972, Ser. No. 235,777

Claims priority, application France, Dec. 29, 1967, 134294/67

Int. Cl. C07c *17/04*

U.S. Cl. 260—658 R **3 Claims**

1. A process for the preparation of 1,1,1,2-tetrachloroethane comprising reacting 1,1-dichloroethylene in the liquid phase in the presence of 1,1,1,2-tetrachloroethane with molecular chlorine at a temperature within the range of 20°–90°C in the absence of light and in the absence of a catalyst, wherein the molar ratio of chlorine to 1,1-dichloroethylene is within the range of 0.8 to 0.95 and wherein the 1,1-dichloroethylene contains less than 0.001% by weight of a stabilizer.

3,886,223
ISOMERIZATION OF ISOPROPYLNAPHTHALENE ALKYLATE MIXTURES

Herbert Rudolph Conrad Kemme, Flemington, and Edward Jonathan Scharf, Somerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 1, 1974, Ser. No. 465,966

Int. Cl. C97c *5/28, 15/24*

U.S. Cl. 260—668 A **2 Claims**

1. A process for increasing the beta isopropylnaphthalene content of a mixture containing essentially naphthalene, alpha and beta isopropylnaphthalene and diisopropylnaphthalene, which comprises contacting said mixture with a rare earth metal exchanged, synthetic, crystalline "Y" type aluminosilicate catalyst at a temperature of from about 200°C. to 325°C., a space velocity of from about 0.1 to 4 hour^{-1}, and a pressure of from about 200 psig to 500 psig, said mixture having an equivalent naphthalene to equivalent propylene ratio of from about 1 to 10.

3,886,224
CONVERSION OF NON-CYCLIC C_3–C_5 ALKANES TO AROMATIC HYDROCARBONS

Maurice M. Mitchell, Jr., Wallingford, Pa., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Division of Ser. No. 324,720, Jan. 18, 1973. This application May 6, 1974, Ser. No. 467,025The portion of the term of this patent subsequent to Apr. 22, 1992, has been disclaimed.

Int. Cl. C07c *3/02*

U.S. Cl. 260—673 **5 Claims**

1. In a method for the single stage conversion of non-cyclic C_3–C_5 alkanes to aromatic hydrocarbons having twice the number of carbon atoms as the alkane converted wherein said alkane is characterized by being capable of being dehydrogenated to an olefin having an allylic hydrogen atom and wherein said alkane is contacted with a physical admixture of particles of supported bismuth oxide dehydrodimerization agent and particles of a chromia-alumina catalyst said contacting being at a temperature in the range of from 570° to 650°C., the improvement comprising employing an essentially non-segregating particulate admixture of said supported bismuth oxide and said chromia-alumina at a weight ratio of supported bismuth oxide to chromia-alumina of about 1:1 said supported bismuth oxide particles and chromia-alumina particles being of substantially the same density and having a mesh size of from 20 to 50 and wherein the weight ratio of chromia-alumina to bismuth oxide alone is about 8.4:1 to 4.6:1.

3,886,225
PROCESS FOR THE CATALYTIC OLIGOMERIZATION OF 1,3-DIOLEFINS TO FORM OPEN-CHAIN COMPOUNDS

Guenther Wilke, and Paul Heimbach, both of Mulheim/Ruhr, Germany, assignors to Studiengesellschaft Kohle GmbH, Mulheim A.D. Ruhr, Germany

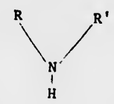
Division of Ser. No. 252,395, May 11, 1972, which is a continuation of Ser. No. 816,159, April 7, 1969, abandoned, which is a continuation of Ser. No. 582,224, Sept. 27, 1966, abandoned. This application Aug. 10, 1973, Ser. No. 387,269

Claims priority, application Germany, Sept. 28, 1965, 24437

Int. Cl. C07c *3/10*

U.S. Cl. 260—677 R **11 Claims**

1. Process of oligomerizing olefins with at least two carbon-carbon double bonds in conjugation to form open chain acyclic oligomeric products thereof which comprises carrying out said oligomerization in the presence of a composition comprising at least one carbonyl free 0-valent nickel complex compound having 1 to 4 electron donor constituents selected from the group consisting of compounds which contain non-benzenoid carbon-carbon unsaturation, alkyl phosphines, aryl phosphines, alkyl phosphites and aryl phosphites, and morpholine or an amine of the formula



wherein R is cycloalkyl or aryl, R′ is hydrogen, alkyl, cycloalkyl or aryl or R and R′ taken together form an alkylene group which, together with said N form a closed ring, wherein said amine is present in said composition in a proportion in excess of any amine bondable to said nickel in said 0-valent complex.

3,886,226
POLYURETHANE COMPOSITION

Kiyotsugu Asai, Kawasaki; Toshihiko Kawabata; Koichi Sakai, both of Tokyo; Kiyo Fukuda, Yokohama; Seiji Nagahisa, Kawasaki, and Toshiyuki Ichikawa, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Feb. 20, 1973, Ser. No. 333,540

Claims priority, application Japan, Mar. 28, 1972, 47-30283

Int. Cl. C08g *22/04*

U.S. Cl. 260—77.5 AM **4 Claims**

1. A polyurethane mixed composition of:

A. polyurethane composition A selected from the group consisting of

1. a polyurethane composition prepared by reacting in a solvent a polyisocyanate, a polyoxytetramethylene glycol or a polyester glycol which has hydroxyl groups at its terminals, a low molecular weight chain-elongating agent and an aminosilane compound, and
2. a polyurethane composition prepared by mixing an adhesive composition prepared by reacting in a solvent an aminosilane compound and an isocyanate, with a polyurethane elastomer prepared by reacting in a solvent a polyisocyanate, a polyoxytetramethylene glycol or a polyester glycol which has hydroxyl groups at its terminals, and a low molecular weight chain-elongating agent; and

B. polyurethane composition B selected from the group consisting of

1. a polyurethane composition prepared by reacting in a solvent a polyisocyanate, a polyoxyalkylene glycol other than polyoxytetramethylene glycols, a low molecular weight chain-elongating agent and an aminosilane compound, and
2. a polyurethane composition prepared by mixing an adhesive composition prepared by reacting in a solvent an aminosilane compound and an isocyanate, with a polyurethane elastomer prepared by reacting in a solvent a polyisocyanate, a polyoxyalkylene glycol other than polyoxytetramethylene glycols and a low molecular weight chain-elongating agent,

wherein each said low molecular weight chain-elongating agent is selected from the group consisting of a glycol, an amino-alcohol, a diamine and mixtures thereof, each said aminosilane is selected from the group consisting of N-β-(aminoethyl)-γ-aminopropyltrimethoxysilane, N-β-(aminoethyl)-γ-aminopropyltriethoxysilane, γ-aminopropyltrimethoxysilane and γ-aminopropyltriethoxysilane and is used in an amount of from 0.01 to 5.0% by weight based on solids content of the polyurethane composition in which it is contained, each said polyisocyanate is selected from the group consisting of 2,4-tolylenediisocyanate, 2,6-tolylenediisocyanate, 4,4-diphenylmethanediisocyanate, 3,3-dimethyl-4,4′-diphenylmethanediisocyanate, 1,5-naphthylenediisocyanate, 1,6-hexamethylenediisocyanate and 4,4′-dicyclohexylmethanediisocyanate and mixtures thereof, and each said isocyanate is selected from the group consisting of a polyisocyanate, a polyphenylene polymethylene polyisocyanate, phenyl isocyanate, o- and p-tolylisocyanates, o- and p-chlorophenyl isocyanates and mixtures thereof, said polyurethane composition B being present in an amount of from 0.0001 to 1 part per part of polyurethane composition A based on solids content.

3,886,227
GRAFTED POLYOLEFINS AS MODIFYING AGENTS FOR UNGRATED POLYOLEFINS

Robert A. VanBrederode, and Robert A. Steinkamp, both of Baytown, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 240,468, April 3, 1972, abandoned. This application Dec. 4, 1972, Ser. No. 311,582

Int. Cl. C08f *29/12*

U.S. Cl. 260—836 **3 Claims**

1. The method of improving the properties, including crystallization rates, of a composition comprising nongrafted crystallizable polypropylene which comprises:

a. incorporating into said crystallizable polypropylene from 0.1 to 15 weight percent of a modifying agent consisting essentially of a grafted polyolefin wherein said graft component comprises 0.1 to 15 weight percent of acrylic acid or glycidyl acrylate,
b. melting said crystallizable polypropylene, and
c. cooling the resulting blend to the temperature of crystallization of said blend and thus forming very small sperulites because of the presence of said modifying agent,

wherein said composition also contains impact components selected from the group consisting of olefin elastomers, polyethylenes and combinations thereof.

3,886,228
POLYURETHANE COMPOSITION CURABLE WITH POLYAMINE/ACID ANHYDRIDE ADDUCT

Justin C. Bolger, Dover, Mass., assignor to Amicon Corporation, Lexington, Mass.

Filed June 3, 1974, Ser. No. 475,763

Int. Cl. C08g *22/04, 30/10, 41/04*

U.S. Cl. 260—858 **17 Claims**

1. A curable polyurethane resin composition comprising a polyisocyanate and as a curing agent therefor a condensation product obtained by reacting, with removal of an equimolecular proportion of water, approximately equimolecular proportions of an amine selected from the group consisting of diethylenetriamine and triethylenetetramine with an anhydride

selected from the group consisting of phthalic anhydride, hexahydrophthalic anhydride, maleic anhydride and succinic anhydride, said condensation product having a melting point from 75° to 130°C., the amount of said condensation product being at least enough to provide primary and secondary amino hydrogen atoms equivalent to the total number of isocyanate groups present.

3,886,229
SHAPED POLYMERIC ARTICLES

Francis Gowland Hutchinson, Lymm; Richard George Cleveland Henbest, Frodshum, and Margaret Kenley Leggett, Northwich, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 60,614, Aug. 3, 1970, abandoned. This application July 17, 1972, Ser. No. 272,715
Claims priority, application United Kingdom, Aug. 21, 1969, 41844/69; May 11, 1970, 22167/70
Int. Cl.² C08G *41/04*
U.S. Cl. 260—859 R **17 Claims**

1. A polymeric product formed from
   a. 5 percent to 95 percent by weight of the precursors of a linear polyurethane consisting of at least one diisocyanate and at least one difunctional compound free from ethylenic unsaturation and containing two groups reactive with isocyanate groups, each unit derived from the difunctional compound in the polymeric product providing an average of not more than 35 in-chain atoms in the macromolecular chains of said product, and said difunctional compound being selected from the group consisting of diols, diacids, and low molecular weight condensates thereof, and
   b. 95 percent to 5 percent by weight of the precursors of a cured polyester resin consisting of
      i. at least one ethylenically unsaturated polyester containing in each molecule at least two groups reactive with isocyanate groups, and
      ii. at least one monomer copolymerizable with the ethylenically unsaturated groups in the polyester, the proportion of ethylenically unsaturated polyester to monomer copolymerizable therewith being in the range 70%:30% to 10%:90% by weight, the molar proportion of isocyanate groups in the diisocyanate to groups reactive with isocyanate groups in the difunctional compound plus groups reactive with isocyanate groups in the ethylenically unsaturated polyester being in the range 0.8:1 to 1.2:1, said polymeric product being formed by a reaction of the precursors of the linear polyurethane together and with the ethylenically unsaturated polyester and by copolymerization of the monomer with the ethylenically unsaturated groups in the polyester.

3,886,230
POLYESTER BLENDS CONTAINING A DI(HYDROXYALKYL) AMINE MODIFIED POLYESTER

Erich Marcus, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 6, 1973, Ser. No. 413,318
Int. Cl. C08g *39/02*
U.S. Cl. 260—860 **22 Claims**

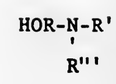
1. A polyester blend of a uniform mixture of:

A. from 2.5 to 25 weight percent of modified polyester and

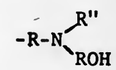
B. from 75 to 97.5 weight percent of fiber-forming conventional polyester of a diol and a dicarboxylic acid; said modified polyester being the condensation product of:

a. a dicarboxylic acid or alkyl ester thereof, and

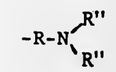
b. a di(hydroxyalkyl)amine having at least three carbon atoms between the hydroxyl group and the nitrogen atom of the formula:



wherein R is a divalent alkylene of from 3 to 8 carbon atoms; R' is an —ROH group or R''; R'' is an alkyl or aralkyl group having from 2 to 8 carbon atoms or a cycloalkyl group having 5 or 6 ring carbon atoms; and R''' is R'', an



group or an



group.

3,886,231
THERMOPLASTIC COMPOSITIONS CONTAINING METHACRYLONITRILE POLYMER

Eric Nield, Ware, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 669,379, Sept. 21, 1967, abandoned. This application July 31, 1973, Ser. No. 384,292
Claims priority, application United Kingdom, Oct. 7, 1966, 45052/66
Int. Cl. C08f *29/56*
U.S. Cl. 260—876 R **6 Claims**

1. A thermoplastic blend of a resin which is a polymer consisting essentially of methacrylonitrile and 0 up to a total of 10% molar of at least one ethylenically unsaturated monomer selected from the group consisting of alkenes, conjugated aromatic olefins, esters of acrylic and methacrylic acids, vinyl esters, and a compatible graft polymer having a diene rubber substrate containing 40 to 100% molar of at least one conjugated diene monomer and from 60 to 0% molar of at leaste one other ethylenically unsaturated monomer copolymerizable therewith and a superstrate which is an acrylonitrile polymer containing 60 to 90% molar of acrylontrile and 40 to 10% of at least one ethylenically unsaturated monomer selected from the group consisting of alkenes, conjugated aromatic olefins, esters of acrylic and methyacrylic acids and vinyl esters, the blend comprising from 1% to 50% by weight of the diene rubber.

3,886,232
PROCESS FOR PRODUCING VINYL CHLORIDE RESIN COMPOSITION

Takashi Tanaka; Haruhiko Yusa, and Susumu Chubachi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 295,577, Oct. 6, 1972, Pat. No. 3,842,144. This application July 17, 1974, Ser. No. 489,836
Claims priority, application Japan, Oct. 7, 1971, 46-78996; May 22, 1972, 47-50549
Int. Cl. C08d *9/10*; C08f *15/00*, *14/00*
U.S. Cl. 260—876 R **4 Claims**

1. A method for producing vinyl chloride resin composition having excellent impact strength, weather resistance, and processability which consists essentially of uniforming blending:

95 to 70 parts by weight of a vinyl chloride polymer selected from the group consisting of homopolymers of vinyl chloride, and copolymers of vinyl chloride containing therein more than 70percent by weight of vinyl chloride, and 5 -

30 parts by weight of a multi-component type resin which is produced by the following steps:

a. preparing a latex of a rubber polymer by polymerizing a monomer mixture selected from the group consisting of a mixture of 40 to 95percent by weight of acrylic acid alkyl ester, 5 to 40percent by weight of butadiene, and 0.1 to 30percent by weight of methylmethacrylate in the presence of from 0.01 to 3percent by weight of crosslinking agent, said polymer latex containing from 50 to 75 parts by weight of said rubber polymer;

b. adding to said latex from 50 to 25 parts by weight of styrene and methylmethacrylate in a ratio of 90 to 10percent by weight of styrene, 10 to 90percent by weight of methylmethacrylate and 0.01 to 3percent by weight of a crosslinking agent copolymerizable with said monomers;

c. dividing said monomer components into first and second grafting components, said first grafting component being composed of styrene and methylmethacrylate with styrene as the principal constituent and containing therein the crosslinking agent, and said second grafting component being composed of methylmethacrylate alone and containing therein the crosslinking agent;

d. adding said first grafting component to said crosslinked copolymer rubber latex to be graft-polymerized thereupon;

e. further adding said second grafting component to said graft-polymerized copolymer latex to be further grafted thereupon and

f. recovering the multi-component type resin from said graft-polymerized latex through the processes of salting out, dehydration and drying.

3,886,233
PROCESS FOR THE PREPARATION OF GRAFT POLYMERS

Marinus J. R. Visseren, Geleen, Netherlands, assignor to Stamicarbon, N.V., Geleen, Netherlands

Filed Apr. 7, 1972, Ser. No. 242,233
Claims priority, application Netherlands, Apr. 10, 1971, 7104841
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R **19 Claims**

1. Process for preparing graft copolymers by polymerizing, in the presence of a radical-forming initiator, at least one monomer selected from the class consisting of:

A. styrene, α-methyl-styrene, monochlorostyrene, dichlorostyrene, ethyl styrene, vinyltoluene, vinyl-xylene, and mixtures thereof;

B. acrylonitrile, methacrylonitrile, methylacrylate, methylmethacrylate, ethylacrylate, ethylmethacrylate, propylacrylate, propylmethacrylate, butylacrylate, butylmethacrylate, 2-ethylhexylacrylate, and mixtures thereof; and

C. mixtures of A and B;

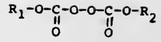
in the presence of a rubber-like largely saturated polymer containing:

i. ethylene, from about 19 to about 73 weight percent;

ii. at least one alkene, having from 3 to 6 carbon atoms, about 23 to about 77 weight percent; and

iii. at least one multiply unsaturated monomer, from about 4 to about 20 weight percent;

said polymerization conducted at a temperature of about 30 to about 230°C and in the presence of a peroxydicarbonate radical-forming initiator of the formula:



wherein R_1 and R_2 are independently hydrocarbon groups having from 1 to 30 carbon atoms either substituted or not.

3,886,234
ADHESIVE RESIN COMPOSITIONS AND ADHESIVE FILMS PRODUCED THEREFROM

Shigenobu Ishihara, and Shoichi Kobayashi, both of Tokyo, Japan, assignors to Showa Denka Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1973, Ser. No. 349,579
Claims priority, application Japan, Apr. 8, 1972, 47-34850; Dec. 1, 1972, 47-119786; Dec. 27, 1972, 47-130059
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R **36 Claims**

1. An adhesive composition consisting essentially of (A) 100 parts by weight of (1) an ethylene-vinyl acetate copolymer or (2) a combination of an ethylene-vinyl acetate copolymer and polyethylene, the vinyl acetate content in (A) being 1 to 35 percent by weight based on the total weight of said copolymer or said combination of the copolymer and polyethylene, (B) 0.05 to 200 parts by weight of at least one unsaturated carboxylic acid which is solid at normal temperature, (C) 0.005 to 10.0 parts by weight of at least one organic peroxide having a decomposition temperature as determined by 10 hour half life of greater than 60°C.

3,886,235
PROCESS FOR PRODUCING VINYL CHLORIDE RESIN COMPOSITION

Takashi Tanaka; Haruhiko Yusa, and Susumu Chubachi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 295,577, Oct. 6, 1972, Pat. No. 3,842,144. This application Mar. 27, 1974, Ser. No. 455,349
Claims priority, application Japan, Oct. 7, 1971, 46-78996; May 22, 1972, 47-50549
Int. Cl. C08d *9/10*; C08f *15/00*, *14/00*
U.S. Cl. 260—880 R **3 Claims**

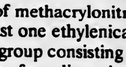
1. A method for producing a multi-component type resin as an impact modifier for blended vinyl chloride resin composition having excellent impact strength, weather-resistance, and processability, which comprises steps of:

a. emulsion-polymerizing in the presence of a polymerization catalyst a monomer mixture selected from the group consisting of a mixture of 60 to 95% by weight or acrylic acid alkyl ester and 5 to 40% by weight of butadiene, and a mixture of 40 to 95% by weight of acrylic acid alkyl ester, 5 to 40% by weight of butadiene, and 0.1 to 30% by weight of methylmethacrylate in the presence of from 0.01 to 3% by weight of a cross-linking agent selected from the group consisting of divinyl benzene, divinyl toluene, ethylene glycol dimethacrylate, diethylene glycol dimethacrylate, and triethylene glycol dimethacrylate to produce a cross-linked copolymer rubber latex;

b. providing monomer component in a quantity of 50 to 25 parts by weight, which component consists of 10 to 90% by weight of styrene, 90 to 10% by weight of methylmethacrylate, and 0.01 to 3% by weight of a cross-linking agent selected from the group consisting of divinyl benzene, divinyl toluene, ethylene glycol dimethacrylate, diethylene glycol dimethacrylate, and triethylene glycol dimethacrylate;

c. dividing said monomer components into first and second grafting components, said first grafting component being composed of styrene and methylmethacrylate with styrene as the principal constituent and containing therein the cross-linking agent, and said second grafting compo-

nent being composed of methylmethacrylate alone and containing therein the cross-linking agent;



to inject fuel into said induction passage, linkage means inter- means to restrict the closing movement of the throttle valve to

nent being composed of methylmethacrylate alone and containing therein the cross-linking agent;
d. adding said first grafting component to 50 to 75 parts by weight of said cross-linked copolyer rubber latex to be graft-polymerized thereupon;
e. further adding said second grafting component to said graft-polymerized copolymer rubber latex to be further grafted thereupon; and
f. recovering the multi-component type resin from said graft-polymerized rubber latex through the process steps of acid depositon, salting-out, dehydration, or desiccation.

3,886,236
HALOGENATED ESTERS OF PHOSPHORUS-CONTAINING ACIDS

Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

Continuation-in-part of Ser. No. 179,543, Sept. 10, 1971, Pat. No. 2,780,144, which is a continuation of Ser. No. 785,335, Dec. 19, 1968, abandoned. This application July 30, 1973, Ser. No. 383,583
Int. Cl. C07f 9/08
U.S. Cl. 260—952 **26 Claims**

1. A phosphorus-halogen-containing compound having a formula selected from the class consisting of

$$CH_2{=}CCOO{-}R{-}O{-}Q{-}(O{-}R{-}CX{=}CXR')_2$$

and

$$CH2CCOO{-}R{-}O{-}Q{-}(O{-}R{-}CX_2CX_2R')_2$$

wherein
Y represents H, CH_3 or Cl;
Q represents

$$>P- \text{ or } -\overset{O}{P}< ;$$

X represents Cl or Br;
R represents a divalent hydrocarbon radical of 1–20 carbon atoms;
R′ represents H, X or R″; and
R″ represents a monovalent hydrocarbon radical of 1–20 carbon atoms.

3,886,237
HALOGENATED PHOSPHONATES

Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

Continuation-in-part of Ser. No. 179,543, Sept. 10, 1971, Pat. No. 3,780,144 which is a continuation of Ser. No. 785,335, Dec. 19, 1968, abandoned. This application July 30, 1973, Ser. No. 383,513
Int. Cl. C07f 9/40, 9/22
U.S. Cl. 260—956 **9 Claims**

1. A phosphorus-halogen-containing compound having the formula

$$X_3C\overset{O}{P}(ORCX{=}CXR')_2$$

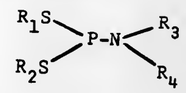
wherein
X represents Cl or Br;
R represents a divalent hydrocarbon radical of 1–20 carbon atoms;
R′ represents H, X or R″; and
R″represents a monovalent hydrocarbon radical of 1–20 carbon atoms.

3,886,238
S,S-DIALKYL-N-SUBSTITUTED PHOSPHOROAMIDODITHIONITES

Francis J. Freenor, III, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 219,559, Jan. 20, 1972, Pat. No. 3,832,424. This application May 2, 1974, Ser. No. 466,433
Int. Cl. C07f 9/24; A01n 9/36
U.S. Cl. 260—959 **9 Claims**

1. Compound of the formula



wherein R_1 and R_2 are independently alkyl of 1 to 8 carbon atoms or alkenyl of 2 to 8 carbon atoms, R_3 is hydrogen or alkyl of 1 to 4 carbon atoms and R_4 is acyl of 2 to 4 carbon atoms.

3,886,239
PROCESS FOR PREPARING TRIS (2-HALOALKYL) PHOSPHITES

Philip M. Pivawer, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

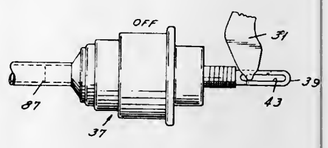
Continuation-in-part of Ser. No. 283,973, Aug. 25, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,386
Int. Cl. C07f 9/08
U.S. Cl. 260—977 **9 Claims**

1. In a process for preparing a tris(2-haloalkyl)phosphite by the reaction of a phosphorus trihalide, in which the halogen is chlorine, bromine or a mixture thereof, with an alkylene oxide having a 1,2-epoxide ring in the presence of a tertiary amine hydrohalide catalyst, the improvement which comprises carrying out said reaction in the presence of ethylene dichloride solvent.

3,886,240
CARBURETOR ACCELERATOR PUMP CONTROL APPARATUS

Frede Baldin, Plymouth, and George Nastas, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,822
Int. Cl.² F02M 7/08
U.S. Cl. 261—34 B **4 Claims**



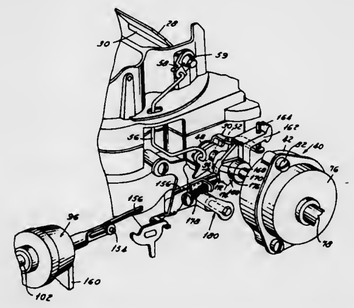
1. In an internal combustion engine having a carburetor including an induction passage, a throttle valve pivotally mounted within said induction passage, an accelerator pump

to inject fuel into said induction passage, linkage means interconnecting said accelerator pump and said throttle valve so that movement thereof results in actuation of the accelerator pump,
a manifold vacuum responsive and temperature sensitive means having a movable element cooperable with said linkage means to limit the displacement thereof in response to throttle valve opening when the sensed temperature exceeds a predetermined magnitude,
said linkage having elements including a first lever movable with said throttle valve,
a second lever that actuates the accelerator pump,
a resilient member and a solid link interconnecting said first and second levers, said resilient member being preloaded so as to act as a solid member until the second lever reaches the end of its travel,
said manifold vacuum responsive and temperature sensitive means including a housing,
said movable element having a slot formed therein extending longitudinally in the direction of movement of said movable element, said movable element being retractable so that said slot is partially received within said housing, said movable element being protracted and said one element of said linkage means being movable within the full length of said slot upon an acceleration when the temperature is below said predetermined magnitude,
said movable element being retracted and said one element of said linkage means being movable within the exposed portion of said slot upon an acceleration when the temperature exceeds said predetermined magnitude.

3,886,241
CARBURETOR COLD ENRICHMENT CONTROL

Phillip A. Schubeck, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 6, 1974, Ser. No. 448,795
Int. Cl. F02m 7/24
U.S. Cl. 261—39 B **13 Claims**

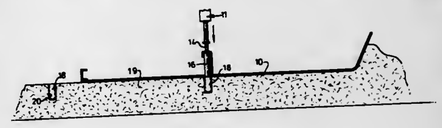


1. A cold engine enrichment control for use in a carburetor having an air/fuel induction passage open at one end to clean air at essentially atmospheric pressure and connected to an engine intake manifold at the opposite other end to be subject to the changes in engine vacuum, a throttle valve mounted for movement across the other end between closed and fully open positions to control the flow of fuel and air through the passage, and a choke valve anterior of the throttle valve mounted for movement across the one end between closed and open inoperative positions to control the flow of air into the passage, the control including first means operably connected to the choke valve and operable above a predetermined temperature upon the engine attaining a running condition to move the choke valve to an open inoperative position to increase airflow and decrease emissions, and second temperature responsive means operably positioned in the path of closing movement of the throttle valve and variably movable as a function of temperature changes independently of the first means to restrict the closing movement of the throttle valve to maintain the throttle valve open to a beyond normal engine idle speed position to increase the flow of the air/fuel mixture, to prevent engine stallings.

3,886,242
METHOD FOR FORMING HOLES IN CONCRETE SLABS AND PAVEMENTS

Matthews McGregor, West Bridgford, England, assignor to Robert McGregor & Sons Limited, Chesterfield, Derkyshire, England

Filed Apr. 23, 1973, Ser. No. 353,360
Claims priority, application United Kingdom, May 1, 1972, 20100/72
Int. Cl. E04b 1/16
U.S. Cl. 264—31 **1 Claim**

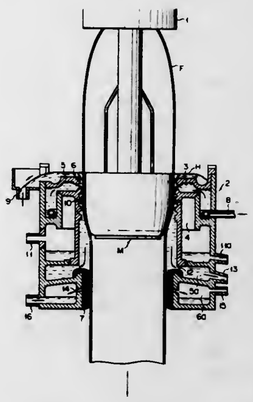


1. A method of forming a hole in a concrete slab or pavement comprising the steps of positioning a finishing plate in overlying contact with wet laid concrete to finish form said slab or pavement, said plate having at least one through aperture, forcing a plug from above the plate through and guided by said aperture into the wet concrete below the plate, and after the concrete has set withdrawing the plug to leave a formed hole in the set concrete.

3,886,243
METHOD AND APPARATUS FOR MANUFACTURING TUBULAR FILM FROM THERMOPLASTIC RESIN

Osamu Uemura; Kiyoshi Fujita, both of Yokohama, and Takeshi Onoda, Hiratsuka, all of Japan, assignors to Showa Kenko K. K., Minato-ku, Tokyo, Japan

Filed Feb. 7, 1973, Ser. No. 330,234
Claims priority, application Japan, Feb. 15, 1972, 47-15251; Feb. 15, 1972, 47-17955
Int. Cl. B29c 17/00
U.S. Cl. 264—40 **9 Claims**



1. A method of manufacturing tubular film from thermoplastic resin comprising:
A. extruding thermoplastic resin through an annular die producing inflated tubular film;

B. conducting said tubular film generally downwardly from said die and simultaneously cooling it externally and internally;

C. sizing the tubular film by applying vacuum around the external surface thereof in a zone substantially immediately before the film begins to crystallize as a result of said cooling;

D. said external cooling of the film comprising:

a. contacting the external surface of said film above said zone with a first stream of cooling liquid that flows countercurrently to the direction of travel of said film,

b. contacting the external surface of said film below said zone with a second stream of cooling liquid that flows cocurrently with the direction of travel of said film,

c. withdrawing said first stream of liquid from contact with the film at a controlled upper level located above said zone,

d. withdrawing said second stream of liquid from contact with said film downstream of said zone,

E. said internal cooling of the film being conducted by contacting the internal surface of said film with a mandrel therein the upper periphery of which is substantially in the plane of said controlled upper level of withdrawal of first stream of liquid; and

F. taking up the resulting tubular film.

3,886,244

METHOD FOR PRODUCING BRICKS FROM RED MUD

Gerhard Bayer, Ludwigshafen-Rheingonheim; Egon Cherdron, Limburgerhof/Palatinate; Manfred Haerter, Neuhofen/Palatinate, and Ernst Hecht, Waldsee/Palatinate, all of Germany, assignors to Gebr. Giulini GmbH, Ludwigshafen (Rhine), Germany

Continuation-in-part of Ser. No. 210,508, Dec. 21, 1971. This application Oct. 10, 1972, Ser. No. 296,316

Claims priority, application Germany, Oct. 12, 1971, 2150677

Int. Cl. C04b *33/32*

U.S. Cl. 264—44 **7 Claims**

1. A method for producing bricks from red mud, comprising mixing filter-wet red mud containing between 35 to 50 weight percent water, based on the wet weight of the red mud, with from 5 to 30 weight percent, based on the dry weight of the red mud, of a water-absorbing substance which is at least one substance selected from the group consisting of fly ash, silica gel, alumina gel, cork, peat, sawdust, coal dust, paper waste and textile waste, then mixing the mixture of red mud and water-absorbing substance with clay to provide a resulting mixture containing 50 to 92 weight percent red mud based on the dry weight of red mud plus clay, plus water-absorbing substance, forming said resulting mixture into raw bricks by extrusion pressing, drying the raw bricks to a residual water content of about 1.2 to 4.0 weight percent, based on the wet weight of the raw brick, with heated gases at a temperature below 70°C, and firing the dried raw bricks at a temperature between 900°– 1,100°C.

3,886,245

METHOD FOR PRODUCING BRICKS FROM RED MUD

Gerhard Bayer, Rheinogonheim; Egon Cherdron, Limburgerhof/Pfalz; Manfred Haerter, Neuhofen/Pfalz, and Ernst Hecht, Waldsee/Pfalz, all of Germany, assignors to Gebr. Giulini GmbH, Ludwigshafen, Germany

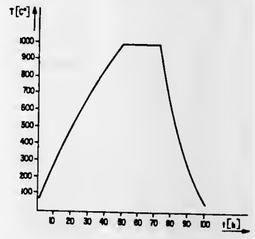
Filed Dec. 21, 1971, Ser. No. 210,508

Claims priority, application Germany, Dec. 22, 1970, 2063028

Int. Cl. C04b *33/04*

U.S. Cl. 264—56 **5 Claims**

1. A method for producing bricks from red mud containing free alkali wherein no softening occurs during firing of the bricks, comprising mixing red mud having a residual water content of 15 to 35 weight-%, based on the weight of dry red mud, with a clay which can chemically bond with and vitrify the free alkali in the red mud to provide a resulting mixture containing 50 to 92 weight-% red mud based on the dry weight of the resulting mixture, forming the resulting mixture at a



water content of 18 to 25 weight-% based on the dry weight of the mixture by extrusion molding into raw bricks, drying the raw bricks with heated gases at a temperature below 70°C, and burning the dried raw bricks at a temperature from 900° to 1,000°C.

3,886,246

METHOD OF PRODUCING A SILICONIZED SILICON CARBIDE ARTEFACT

Peter Kennedy, Preston, and Keith Taylor Scott, Thatcham, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 31, 1972, Ser. No. 302,409

Claims priority, application United Kingdom, Nov. 10, 1071, 52306/71

Int. Cl. C04b *33/32, 35/64*

U.S. Cl. 264—59 **6 Claims**

1. A method of producing a siliconized silicon carbide artefact having a geometric shape formed therein, in which method a green silicon carbide artefact having a geometric shape therein filled with graphite of density at least 0.963 gm/cc is siliconized by contact with silicon and the graphite is then at least in part removed.

3,886,247

METHOD FOR CONVERTING NESTABLE PLASTIC CONTAINERS INTO NON-NESTABLE CONTAINER PRODUCTS

Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

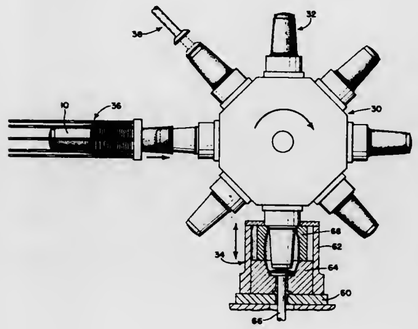
Continuation-in-part of Ser. No. 102,736, Dec. 30, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,301

Int. Cl. B29c *17/04, 17/07*

U.S. Cl. 264—94 **6 Claims**

1. In a process for making a plurality of open-ended non-nestable containers, the steps of forming a plurality of open-ended nestable preform containers of a thermoplastic material and having a stacking means configuration in the side wall of each of said preform containers substantially adjacent the open end of each of said preform containers for preventing jamming of a nested stack of said preform containers, transporting said plurality of said preform containers at ambient temperatures in a nested stack to a remote site, providing a complementary shaped male mold with means for cooperating with the stacking means of one of said preform containers to releasably hold said one of said preform containers when said one of said preform containers is tamped thereon, denesting one of said preform containers from said nested stack and tamping said one of said preform containers on said male mold, heating said one of said preform containers below the stacking means from ambient temperatures to molding temperatures, providing a female blow mold with a non-nestable container configuration, inserting said male mold with said one of said preform containers thereon into said female blow

mold after said one of said preform containers has been heated to said blowing temperatures, and blowing said one of



said preform containers below said stacking means into said non-nestable container.

3,886,248

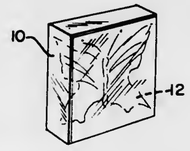
METHOD OF MAKING PLASTIC EMBEDDED SPECIMENS

Donald C. Nicholson, 124-18th St. W. Bldg., Rock Island, Ill. 61201

Division of Ser. No. 850,476, Aug. 15, 1969, Pat. No. 3,596,317. This application June 3, 1971, Ser. No. 149,611

Int. Cl. B29d *3/00*

U.S. Cl. 264—102 **7 Claims**



1. A method of embedding specimens in a thermoplastic resin material which comprises providing a female mold member having a cavity of a size required for producing a plate-like finished product of predetermined size and a male mold member with a punch formation adapted to telescope into the cavity in said female mold member, engaging the mold members sufficiently to close the cavity and preheating the cavity, disengaging the mold members and placing in the cavity a predetermined amount of a granular resin which is adapted to be polymerized from the molten state by application of heat and pressure to form a transparent plate, embedding the desired specimen in said granular resin, engaging the mold members to close the cavity and confine the resin and specimen in the cavity without appreciable pressure on the material, heating the material in the cavity to melt the resin, applying pressure to said molten resin while raising the temperature to polymerize the resin without damage to the specimen, applying vacuum to the cavity to remove excess gases during polymerization, and cooling the material while under pressure so as to harden the resin.

3,886,249

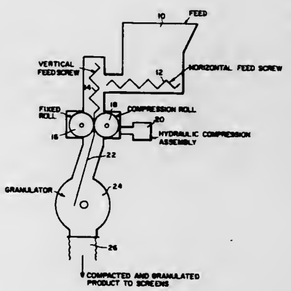
PRODUCTION OF GRANULAR SODIUM DICHLOROISOCYANURATE

James L. Manganaro, New York, N.Y., assignor to FMC Corporation, New York, N.Y.

Filed Mar. 19, 1973, Ser. No. 342,511

Int. Cl. B28b *11/14*

U.S. Cl. 264—118 **1 Claim**



1. In the method of producing granular sodium dichloroisocyanurate from −200 mesh powder in which the powder is fed between two rolls, and one of the rolls is forced against the other with a force of 7,500 ± 50% pounds per linear inch, to produce a continuous sheet of sodium dichloroisocyanurate which is then broken up into granules and sized, the improvement which comprises feeding the powdered sodium dichloroisocyanurate as hydrated material containing 11 to 14% of water of hydration, and free of water not bound as water of hydration whereby the recycle of fines in the process is reduced from a major percentage to a minor percentage.

3,886,250

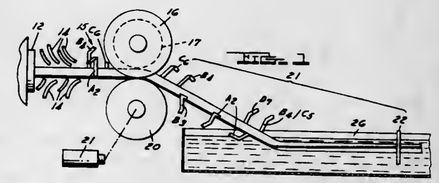
METHOD AND APPARATUS FOR MAKING AN EXTRUDED ARTICLE OF RIGID PLASTIC WITH A GRAINED SURFACE

Edward M. Danko, Detroit, Mich., assignor to Color Custom Compounding, Inc., Detroit, Mich.

Continuation of Ser. No. 119,167, Feb. 26, 1971, abandoned, which is a continuation-in-part of Ser. No. 859,010, Sept. 18, 1969, abandoned. This application Dec. 7, 1972, Ser. No. 312,982

Int. Cl. B29d *7/04, 17/14*

U.S. Cl. 264—177 R **5 Claims**



1. The method of making from a rigid plastic material an article having an embossed finish applied to at least a portion of the surface thereof, comprising the steps of:

extruding the rigid plastic material to a preliminary shape through a die having an extruding aperture which is dimensionally larger than the finished sectional size of the article and which forms the portion of the article to which the embossed finish is to be applied as a planar surface;

cooling the surface of the extruded material to a graining temperature at which the material is formable without permanent sticking to another surface;

passing the extruded material between embossing and positioning roller means, the embossing roller means engaging the planar surface portion of the extrusion, and compensating for dimensional instability of the extruded material by driving at least one of said roller means at a speed such as to draw-down the sectional size of the extruded material between the die and the roller means to approximately finished dimensions at the discharge side of the roller means;

then forming the article to a finished shape, in which the embossed surface portion is non-planar and the embossed finish applied thereto is retained, by directly passing the embossed and sized material to forming means which bring the material to the finished shape while heat is retained in the material from the extruding step, said forming step including passing the material through a forming plate; and,

cooling the material to setting temperature.

3,886,251

METHOD FOR FORMING POLYOXADIAZOLE SERIES RESIN SOLUTION INTO SHAPED ARTICLES

Hideo Sekiguchi, and Kazuo Sadamitsu, both of Yokohama, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 313,797, Dec. 11, 1972, which is a continuation-in-part of Ser. No. 717,961, April 1, 1968, abandoned. This application Sept. 4, 1973, Ser. No. 393,978

Claims priority, application Japan, Apr. 11, 1967, 42-22981; Apr. 11, 1967, 42-22984; Apr. 15, 1967, 42-23981; Apr. 15, 1967, 42-23982

Int. Cl.[2] D01D *5/06*

U.S. Cl. 264—184 **17 Claims**

1. A method for forming a shaped article of polyoxadiazole series resin, which comprises introducing a resin solution of 2 to 15% by weight of polyoxadiazole series resin in sulfuric acid of 78 to 110% by weight concentration through an opening of predetermined cross-section into a coagulating bath selected from the group consisting of:

1. 15 to 68% by weight of aqueous solution of sulfuric acid;
2. 60 to 100% by weight aqueous solution of lower aliphatic carboxylic acid having pka (25°C) of less than 3.8 and selected from the group consisting of formic acid, mono- and polyhaloacetic acids and halopropionic acid;
3. mixed aqueous solution of sulfuric acid and at least one of the above carboxylic acids, in which the quantity of sulfuric acid is 15 to 68% by weight or in which the quantity of said carboxylic acids is more than 60% by weight;
4. a solution of any of the above-described coagulating baths (1) to (3) mixed with less than saturated concentration of at least one inorganic salt selected from the group consisting of sulfates, phosphates, chlorides, and nitrates of ammonium, aluminum, sodium, zinc, magnesium, nickel, iron, copper, potassium, manganese, and ferro-aluminum; and
5. mixed solution of any one of the above-described coagulating baths (1) to (4) and amide compounds selected from the group consisting of formamide, N-methyl formamide, N-ethyl formamide, N-propyl formamide, N-butyl formamide, N,N-dimethyl formamide, N,N-diethyl formamide, N,N-dipropyl formamide, N,N-dibutyl formamide, acetamide, N,N-dimethylacetamide, N,N-diethylacetamide, diacetamide, triacetamide, methylenediacetamide, propionamide, oxalic amide, N-methyl pyrrolidone or salts of these amides with mineral acids, to be coagulated, and then washing the coagulated article with water and allowing it to come into contact with an aqueous solution of at least one of the substances selected from the group consisting of:

1. buffer solution indicating pH 5.0 to pH 12.0 selected from the group consisting of Clark-Lubs' buffer solution, Sorensen's buffer solution, Atkins-Pantin's buffer solution, Mengel's buffer solution and Gomori's buffer solution;
2. amide compounds soluble in water selected from the group consisting of formamide, N-methyl formamide, N-ethyl formamide, N-propyl formamide and n-butyl formamide, N,N-dimethyl formamide, N,N-diethyl formamide, N,N-dipropyl formamide, N,N-dibutyl formamide, acetamide, N,N-dimethylacetamide, N,N-diethylacetamide, diacetamide, triacetamide, methylene diacetamide, propionamide, oxalic amide and N-methylpyrrolidone;
3. amines selected from the group consisting of butylamine, propylamine, diethylamine, triethylamine, ethylenediamine, trimethylenediamine, nonamethylenediamine, piperazine, hexamethylenetetramine, ethanolamine, diethanolamine, triethanaolamine, morpholine, N-methylmorpholine, p-aminophenol, aniline, ethylaniline, dimethylaniline, toludine, pyridine, o-phenylenediamine and α-naphthylamine; and
4. hydroxides, carbonates, bicarbonates, silicates, acetates and phosphates of sodium potassium, lithium, magnesium copper, manganese and zinc,

further washing with water and drying it.

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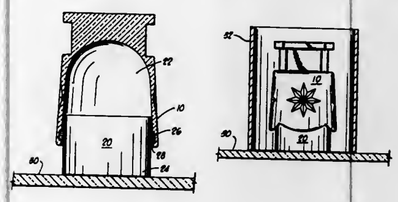
METHOD OF MAKING A WAX CANDLE REPLICA

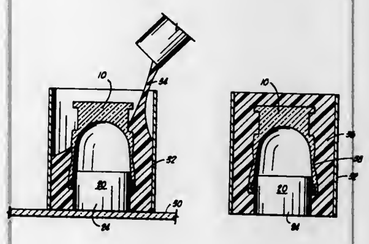
James E. Eker, and Everett Weidner, both of Woodward, Okla., assignors to Pioneer Arts & Crafts, Inc., Woodward, Okla.

Filed Sept. 7, 1973, Ser. No. 395,378

Int. Cl. B29c *1/02*

U.S. Cl. 264—225 **3 Claims**





1. A method of making a wax candle replica of a hollow art master, comprising the following steps:

making a silicone rubber mold having a cavity and having a bottom portion and a top portion, comprising the following steps:

placing a first plug which is fittingly receivable in the hollow of the art master into the hollow so that the first plug protrudes from the hollow;

placing a mother mold around the art master;

pouring uncured silicone rubber mold-forming materials into the mother mold to cover the art master and a portion of the first plug;

allowing the silicone rubber mold-forming material to cure to form the bottom portion of the silicone rubber mold;

removing the first plug from the art master;

placing a second plug into the hollow, said second plug having a first end fittingly receivable by the hollow of the art master and a second end smaller cross-sectionally than the first end, said first end being submerged in the hollow and the second end protruding therefrom;

sliding the mother mold on the cured silicone rubber mold-forming material so that the mother mold is positioned so as to surround a portion of the second plug while continuing to contain a part of the bottom portion of the silicone rubber mold;

pouring uncured silicone rubber mold-forming material into the mother mold so as to cover a portion of the second end of the second plug;

allowing silicone rubber mold-forming material surrounding the second end of the second plug to cure so as to form the top portion of the mold; and,

removing the mother mold from around the bottom portion and the top portion of the silicone rubber mold;

attaching the top portion of the silicone rubber mold onto the bottom portion of the silicone rubber mold;

pouring a molten wax into the mold to partially fill the silicone rubber mold;

allowing the wax to cool while imparting rotatory motion to the silicone rubber mold to cause the wax to solidify in the form of a wax shell against the surface of the cavity;

removing the wax shell from the silicone rubber mold;

pouring a flame consumable material into the wax shell; and,

providing wick means to communicate with the flame consumable material.

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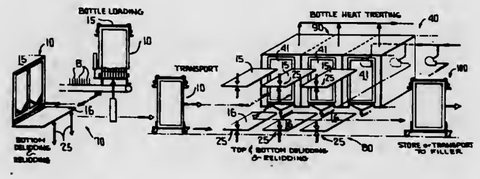
PROCESS FOR HEAT TREATING PLASTIC BOTTLES

Kenneth F. M. Friendship, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,716

Int. Cl. B29c *17/07, 25/00*

U.S. Cl. 264—238 **15 Claims**



1. A process of reducing the creep characteristics of plastic containers comprising the steps of providing a cartridge having upper and lower ends and a plurality of vertically extending transversely interconnected chambers also having upper and lower ends, stacking containers vertically upwardly through the lower ends of the chambers toward the upper ends thereof atop and in contact with each other in an upright position in each chamber, transferring the cartridge into a heat treatment bay, circulating hot air in contact with the plastic containers in a direction upwardly from and through the lower ends through the upper ends in open condition and through and between the chambers for a predetermined period of time and at a predetermined temperature sufficient to reduce the creep characteristics of the plastic containers, and removing the cartridge from the heat treatment bay.

3,886,254

METHOD OF MAKING CERAMIC SINTERED BODY

Hiroshi Tanaka, Yatomi, and Yoshihiro Yamamoto, Komaki, both of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya City, Japan

Filed Sept. 24, 1973, Ser. No. 400,147

Claims priority, application Japan, Oct. 6, 1972, 47-100999

Int. Cl. C04b *35/70*

U.S. Cl. 264—332 **2 Claims**

1. A method of making a ceramic sintered body, comprising preparing a powder-mixture consisting essentially of 40 to 80 percent by weight of alumina 16 to 40 percent by weight of titanium carbide and 4 to 20 percent by weight of titanium and hot pressing the mixture at a temperature of from about 1720° to 1850°C and under a pressure of from about 100 to 300 kg/cm².

3,886,255

DEVICE INCLUDING A PULLEY, A CLUTCH, A RETARDER, AND A BRAKE, IN PARTICULAR FOR HOISTING GEARS

Jean Noly, La Clayette, France, assignor to Potain, Chevilly, Larue (Val de Marne), France

Filed Apr. 20, 1973, Ser. No. 353,175

Claims priority, application France, Apr. 21, 1972, 14944/72

Int. Cl. H02k *49/02*

U.S. Cl. 310—94 **1 Claim**

1. An eddy current coupling device, comprising:

a. a rigid, generally cylindrical housing,

b. a central shaft journaled for rotation in the housing,

c. a double bell rigidly secured to the shaft and having a central web and cylindrical, coaxial, first and second bell skirts integral at their one ends with the web and axially aligned with the shaft,

d. a retarder inductor coil rigidly secured to the housing, surrounding the shaft, and substantially completely disposed within the first bell skirt and defining an air gap therebetween,

e. a driven member rotatably mounted to the shaft,

f. a constant speed drive motor having an output shaft,

g. means drivably coupling the output shaft to the driven member,

h. a driver inductor coil rigidly secured to the driven member, rotatably secured to and surrounding the shaft, and substantially completely disposed within the second bell skirt and defining an air gap therebetween,

i. slip ring means surrounding the shaft and rotatable with the driver inductor coil for delivering electrical energy thereto, and

j. an electromechanical safety brake mounted to the housing and including a brake shoe adapted to bear against

3,886,258

based on the weight of said reaction medium, of a catalyst

3,886,263

j. an electromechanical safety brake mounted to the housing and including a brake shoe adapted to bear against one of the bell skirts upon actuation.

3,886,256

STATOR CORE FOR ROTARY ELECTRIC MACHINES AND METHOD OF MANUFACTURING THE SAME

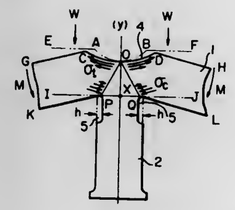
Yasushi Ohuchi, Hitachi; Toshiyuki Ebine, Katsuta; Takefumi Ohwada, and Ryozo Tomozaki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Division of Ser. No. 275,154, July 26, 1972. This application Nov. 30, 1973, Ser. No. 420,571

Claims priority, application Japan, July 30, 1971, 46-56746

Int. Cl. H02k 1/00

U.S. Cl. 310—216 8 Claims



1. A stator core for rotary electric machines, said stator core being in the form of a helically and closely wound steel strip, the inner side of said wound steel strip having equally spaced slots defining a plurality of equally spaced tooth portions, each of said tooth portions having a recess on the opposite edges of the stem portion thereof, each recess extending from the tail portion of its associated tooth to a location intermediate the stem portion of said associated tooth, each recess having a notch extending from said tail portion of its associated tooth to a location intermediate the associated recess, said notches serving to minimize plastic deformation stresses induced at the time of winding said steel strip.

3,886,257

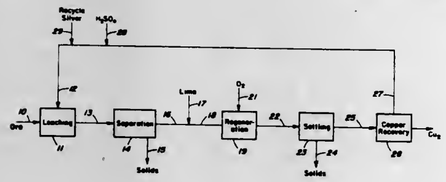
SULFATE LEACHING OF COPPER ORES USING SILVER CATALYST

George J. Snell, Fords, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Nov. 29, 1972, Ser. No. 310,230

Int. Cl. C01g 3/10; C22b 15/08

U.S. Cl. 423—27 22 Claims



1. In a process for the oxidative leaching of copper ores with a leaching solution comprising a member selected from the group consisting of aqueous ferric sulfate, an aqueous mixture of ferric sulfate and sulfuric acid, aqueous sulfuric acid and concentrated sulfuric acid, said oxidative leaching being effected in the presence of molecular oxygen when said member is aqueous sulfuric acid, the improvement comprising:

effecting said leaching in the presence of a catalytic amount of silver, said catalytic amount of silver being at least 25 ppm initially dissolved in said leaching solution.

3,886,258

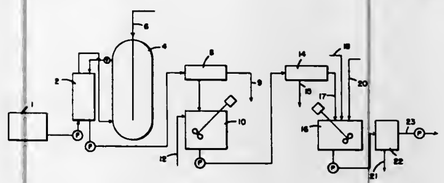
PROCESS OF OBTAINING ZINC OXIDE HAVING IMPROVED FILTERING CHARACTERISTICS AND PRODUCTION OF ZINC SULFATE FROM SAID ZINC OXIDE

John H. Cosgrove, Media, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed July 2, 1971, Ser. No. 159,441

Int. Cl. C01g 9/02, 9/06

U.S. Cl. 423—106 9 Claims



1. A process for improving the filtration characteristics of solids in a dilute aqueous slurry of hydrated zinc oxide which comprises elevating the temperature of said slurry to at least 257°F. under an elevated pressure sufficient to prevent essentially any loss of the water in the slurry and for a time sufficient to decrease the water of hydration content of the hydrated zinc oxide, said time period being at least 5 minutes, and then treating the slurry to recover filterable solids including zinc oxide therefrom.

3,886,259

PROCESS FOR MINERAL REFINING

William L. Nikolai, Jr., Platteville, Wis., and Thomas D. Wheelock, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed July 17, 1972, Ser. No. 272,353

Int. Cl. C01f 1/00, 5/00, 11/00; C01b 25/16

U.S. Cl. 423—166 5 Claims

1. A process employing the recyclic use of sulfur dioxide in the refining of an inorganic calcium material selected from the group consisting of calcium phosphate minerals, calcium carbonate minerals, calcium chloride and calcium nitrate, comprising, in combination, the steps of

providing an aqueous reaction mixture comprising said inorganic material, an aqueous reaction medium, and at least about 0.5 weight percent, based on the weight of said aqueous reaction medium, of a catalyst for the aqueous phase oxidation of sulfur dioxide selected from the group consisting of nitrogen oxides, nitric acid, and ferric nitrate,

introducing sulfur dioxide and oxygen into said aqueous reaction mixture, and

reacting said inorganic material, said sulfur dioxide, and said oxygen in said aqueous reaction medium at an elevated pressure of at least about 30 psig and at a temperature of from about 50°C. to about 70°C. to provide a precipitate of calcium sulfate dihydrate in the form of readily filterable parallelogram-shaped crystals having a length to width ratio of from about 2 to about 3, and to release the anionic moiety of said inorganic material as phosporic acid, carbon dioxide, hydrochloric acid or nitric acid, respectively,

separating said calcium sulfate precipitate from said aqueous reaction medium,

reductively decomposing said calcium sulfate precipitate to provide sulfur dioxide, and

subsequently reacting said sulfur dioxide produced by said reductive decomposition with oxygen and an inorganic calcium compound selected from the group consisting of calcium phosphate minerals, calcium carbonate minerals, calcium chloride and calcium nitrate in an aqueous reaction medium containing at least about 0.5 weight percent,

based on the weight of said reaction medium, of a catalyst selected from the group consisting of nitrogen oxides, nitric acid and ferric nitrate, at an elevated pressure of at least about 30 psig and at a temperature of from about 50°C. to about 70°C. to provide a calcium sulfate dihydrate precipitate in the form of readily filterable parallelogramshaped crystals having a length to width ratio of from about 2 to about 3 and to release the anionic moiety of said inorganic compound.

5. A process in accordance with claim 4 wherein air is employed to supply said oxygen to said reaction.

3,886,260

PROCESS FOR REDUCING NITROGEN OXIDES

Mark Leroy Unland, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 183,227, Sept. 25, 1971, abandoned. This application Dec. 14, 1972, Ser. No. 315,066

Int. Cl. B01d 53/34

U.S. Cl. 423—213.5 18 Claims

1. The process of removing nitrogen oxio from automotive exhaust gases containing a small amount thereof along with carbon monoxide, hydrogen and hydrocarbons, which comprises contacting such gases with a catalyst containing rhodium in catalytically significant amount on a support, in which process an automobile engine is operated richer than necessary to obtain proper exhaust gases stoichiometries for high NO_x conversion, and supplemental air is added to the exhaust prior to contacting the catalyst to obtain proper oxygen content to keep the ammonia production at a very low level but not sufficient to prevent substantially complete reduction of the nitrogen oxides.

3,886,261

ALUMINA AS A COLD-END ADDITIVE

Bruce L. Libutti, Bethayres, Pa., assignor to Betz Laboratories Inc., Trevose, Pa.

Filed Nov. 1, 1973, Ser. No. 412,376

Int. Cl. C01b 17/00; B01j 9/04, 9/08, 9/12, 9/16, 9/20

U.S. Cl. 423—244 4 Claims

1. A method of reducing the amount of sulfur trioxide condensation on, and therefore the amount of sulfuric acid corrosion of, metal parts in contact with flue gases derived from the combustion of sulfur containing fuels which comprises adding to the flue gases at the cold-end of the combustion system where the gases are below 1000°F a particular alumina having a particle size of 260 microns or less, said alumina being added to the gas in an amount from about 0.01 to 0.5 moles of alumina per mole of sulfur trioxide generated.

3,886,262

POTASSIUM ZINC CUPROCYANIDE

Arthur W. McRowe, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 407,863, Oct. 19, 1973. This application Apr. 4, 1974, Ser. No. 457,925

Int. Cl. C01c 3/08

U.S. Cl. 423—364 1 Claim

1. Potassium zinc cuprocyanide of the formula $KZnCu(CN)_4$.

3,886,263

METHOD FOR MANUFACTURE OF HEAT-RESISTANT FIBERS

Akio Shindo; Yoichiro Nakanishi, and Yoshihiro Sawada, all of Osaka, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Feb. 2, 1973, Ser. No. 329,172

Claims priority, application Japan, Feb. 3, 1972, 47-12728; Mar. 23, 1972, 47-29602

Int. Cl. C01b 31/07

U.S. Cl. 423—447 3 Claims

1. In a method for the manufacture of heat-resistant fibers by first heating in an atmosphere at 180°C to 350°C and then in a nonoxidizing atmosphere at a temperature up to 3,000°C an organic fiber selected from the group consisting of acrylic fiber, thermally decomposed polyvinyl chloride pitch fiber and dehydrated polyvinyl alcohol fiber, the improvement which comprises effecting said first heating in an atmosphere containing oxygen gas and an acid gas selected from the group consisting of hydrogen chloride, hydrogen bromide, and phosphorus pentachloride, the acid gas content being in the range of 0.5% to 50% by volume and the oxygen gas content being in the range of 25% to 99.5% by volume.

3,886,264

PROCESS FOR HYDROLYZING ALUMINUM ALKOXIDES USING SULFUROUS ACID

Kenneth L. Lindsay, and Paul Kobetz, deceased, late of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 6, 1972, Ser. No. 305,171

Int. Cl. C01b 17/45, 17/46, 17/62, 17/98

U.S. Cl. 423—512 19 Claims

18. A process for hydrolyzing aluminum alkoxide to produce alcohols and basic aluminum sulfite which comprises:

reacting aluminum alkoxide with sulfurous acid in an aqueous system in proportions of at least about 1.5 mol of sulfurous acid per mol of aluminum alkoxide to form alcohol and an aluminum sulfite solution,

separating the alcohol from the aluminum sulfite solution,

removing a portion of the SO_2 from the aluminum sulfite solution to form an insoluble aluminum sulfite, and

reacting SO_2 removed from the aluminum sulfite solution to form sulfurous acid for the reacting step.

3,886,265

MOUTH CLEANSING PREPARATION

Hans Christer Arvid Evers, Sodertalje, and Max Fischler, Enskede, both of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Filed July 2, 1973, Ser. No. 375,615

Claims priority, application Sweden, June 30, 1972, 8597/72

Int. Cl. A61k 7/16

U.S. Cl. 424—49 5 Claims

1. A composition effective in combatting bad breath consisting essentially of an ene-diol compound selected from the group consisting of ascorbic acid and isoascorbic acid, said compound being present in an amount of at least 10 mg, and an oxidizing agent in the form of a water soluble peroxide selected from the group consisting of alkali metal percarbonates, alkaline earth peroxides and carbamide peroxide, wherein said oxidizing agent is present in an amount corresponding to active oxygen in an amount of at least 1 mg., in each case per peroral dosage unit.

3,886,266
DENTAL TREATMENT
Melvin Goldman, Worcester, and Joseph H. Kronman, Sharon, both of Mass., assignors to National Patent Development Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 117,822, Feb. 22, 1971, abandoned, and a continuation-in-part of Ser. No. 197,966, Nov. 11, 1971, abandoned. This application Nov. 20, 1972, Ser. No. 307,835
Int. Cl. A61k 7/16
U.S. Cl. 424—53 32 Claims

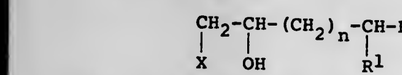
1. The method of treating teeth for the prevention of calculus comprising contacting the teeth with sufficient of an aqueous composition containing N-monochloroglycine at a pH of about 9 to 11.5 to accomplish said purpose.

3,886,267
IRON PREPARATION SUITABLE FOR PARENTERAL INJECTION AND A PROCESS FOR THE PREPARATION THEREOF
Alf-Göran Dahlberg, Nykvarn; Karl Gustav Högberg, Sodertalje; Sven Lindvall, Sodertalje, and Thore Oskar Verner Rydh, Sodertalje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden
Filed Oct. 4, 1972, Ser. No. 294,930
Claims priority, application Sweden, Oct. 6, 1971, 12613/71
Int. Cl.² A61K 27/00
U.S. Cl. 424—78 21 Claims

1. An iron-containing composition suitable for parenteral administration in human and veterinary medicine consisting essentially of an aqueous solution of a complex of iron, said complex containing iron bound to a physiologically innocuous, water swellable polymer which is the reaction product (per mole of component iii below) of

i. about 0.1 to 1.0 moles of at least one hydroxy carboxylic acid selected from the group consisting of arabonic acid, gluconic acid and glucoheptonic acid and salts and lactones derivable therefrom;

ii. about 0.05 to 5 moles of at least one polymerizing agent of the formula



(I)

wherein n is an integer selected from the group consisting of 0, 1, 2, 3, and 4, X is selected from the group consisting of Cl, Br, and I; R^1 is selected from the group consisting of OH, Cl, Br, and I; and R^2 is selected from the group consisting of H, and if R^1 is OH also the radical $—CH_2—X$, wherein X has the meaning specified above, and diepoxides derivable therefrom; and

iii. at least one polyhydric alcohol selected from the class consisting of glycerol, polyglycerols, tetritols, pentitols, hexitols, heptitols, partial alkyl ethers of said polyhydric alcohols wherein the alkyl group contains 1 to 5 carbon atoms, and partial hydroxyalkyl ethers of said polyhydric alcohols wherein the alkyl group contains 1 to 5 carbon atoms,

the polymer components having been reacted in aqueous solution at a temperature between about 20°C and the boiling point of the reaction mixture.

3,886,268
IODOPHOR-STEROID COMPOUND PHARMACEUTICAL COMPOSITIONS
Alfred Halpern, Great Neck, N.Y., assignor to Synergistic, New York, N.Y.
Continuation-in-part of Ser. No. 257,505, May 30, 1972, abandoned. This application Mar. 29, 1974, Ser. No. 456,333
Int. Cl. A61k 17/00, 27/12
U.S. Cl. 424—80 31 Claims

1. A germicidal anti-inflammatory pharmaceutical compound selected from the group consisting of polyvinylpyrrolidone-iodine-cortisone, polyvinyl-pyrrolidone-iodine-cortisone acetate, polyvinylpyrrolidone-iodine-hydrocortisone, polyvinylpyrrolidone-iodine-hydrocortisone acetate, polyvinylpyrrolidone-iodine-prednisone, polyvinylpyrrolidone-iodine-prednisone acetate, polyvinyl-pyrrolidone-iodine-prednisolone, polyvinylpyrrolidone-iodine-prednisolone acetate.

3,886,269
PROCESS FOR PREPARING ODOR AND IRRITATION FREE FORMALDEHYDE DISINFECTANT
Ralph E. Trujillo, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Jan. 30, 1973, Ser. No. 327,982
Int. Cl. A01n 9/24
U.S. Cl. 424—82 4 Claims

1. A method of synthesizing a disinfectant comprising contacting paraformaldehyde with an organic polar solvent selected from the group consisting of ethylene glycol, propylene glycol, and glycerol, said paraformaldehyde being present in an effective amount below 20% by weight of said paraformaldehyde and solvent, heating said paraformaldehyde in said solvent to obtain a clear solution and to effect formation of a stable disinfectant product absent the characteristic odor and irritation of paraformaldehyde.

3,886,270
INTRAVENOUSLY TOLERATED ANTI-DISTEMPER AND ANTI-HEPATITIS VACCINE, ITS PREPARATION AND ITS USE FOR IMMUNIZATION
Othmar Ackermann, Marbach near Marburg, Lahn, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Lahn, Germany
Filed May 24, 1973, Ser. No. 363,413
Claims priority, application Germany, May 26, 1972, 2225548
Int. Cl. C12k 5/00, 7/00
U.S. Cl. 424—89 2 Claims

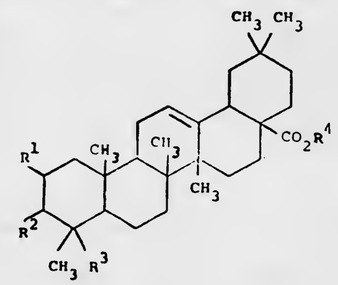
1. In an adjuvant-free intravenously-tolerated vaccine against distemper and *Hepatitis contagiosa canis*, the improvement wherein said vaccine consists essentially of an attenuated distemper virus and a formaldehyde-inactivated, concentrated, ultra-filtered, cell-free *Hepatitis contagiosa canis* virus having a virus titer of $10^{8.5}$ ID_{50}/ml and a complement fixation antigen titer of at least 1:160 in the concentrate versus 1:40 in the preconcentrate.

3,886,271
ANTIFUNGAL ANTIBIOTIC
Ronald Stark, 336 W. 12th St., New York, N.Y. 10010
Continuation of Ser. No. 764,037, Sept. 24, 1968, abandoned, which is a continuation of Ser. No. 600,389, Dec. 9, 1966, abandoned. This application Dec. 29, 1972, Ser. No. 319,491
Int. Cl. A61k 21/00
U.S. Cl. 424—115 2 Claims

1. A process for the production of an anti-fungal antibiotic which comprises cultivating the steptomycedes organism ATCC 21001 in an acqueous nutrient medium under aerobic conditions, until a sufficient amount of anti-fungal action is imparted to said medium, and recovering the anti-fungal antibiotic therefrom.

3,886,272
SAPONIN-CONTAINING SPERMATOCIDAL COMPOSITIONS
Robert M. Parkhurst, Redwood City, and Sidney J. Stolzenberg, Palo Alto, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Continuation-in-part of Ser. No. 384,101, July 30, 1973, abandoned. This application Apr. 5, 1974, Ser. No. 458,164
Int. Cl.² A01N 9/00
U.S. Cl. 424—180 15 Claims

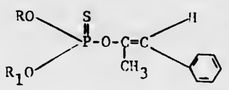
1. As a spermatocide adapted to be introduced into the vagina prior to intercourse and thus prevent the occurrence of pregnancy, a composition comprising at least one spermatocidally active saponin material having the structure



wherein R^1 is hydrogen or hydroxyl, R^2 is a saccharide unit made up of from two to five sugar moieties selected from the group consisting of glucose, xylose, arabinose, galactose and rhamnose, R^3 is methyl or hydroxymethyl and R^4 is hydrogen or a glucose sugar moiety.

3,886,273
CERTAIN THIOPHOSPHATE SYNERGISTS
George B. Large, Pinole, and Leland S. Pitt, Sunnyvale, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.
Division of Ser. No. 328,173, Jan. 31, 1973, Pat. No. 3,830,877. This application Jan. 4, 1974, Ser. No. 430,807
Int. Cl. A01n 9/36
U.S. Cl. 424—200 6 Claims

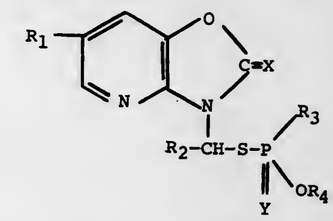
1. An insecticidal composition comprising an insecticidally effective amount of N-(mercaptomethyl)phthalimide-S-(O,O-dimethylphosphorodithioate) and a synergistic amount of a compound having the generic formula



wherein R and R_1 can be the same or different and are lower alkyl having 1 to 4 carbon atoms.

3,886,274
CONTROL OF ANIMAL PESTS WITH 3H-OXAZOL-[4,5-]PYRIDINE-2-ONE ESTERS OF 3-(-O-)OR (-S-)-O,ODI(LOWER ALKYL) PHOSPHATES AND THIOPHOSPHATES
Haukur Kristinsson, Bottmingen, and Kurt Rufenacht, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 156,983, June 25, 1971, Pat. No. 3,808,218, which is a continuation-in-part of Ser. No. 155,604, June 22, 1971, abandoned. This application Jan. 21, 1974, Ser. No. 435,065
Claims priority, application Switzerland, June 26, 1970, 9702/70
Int. Cl. A01n 9/36; A61d 7/00
U.S. Cl. 424—200 16 Claims

1. An insecticidal and acaricidal composition comprising (1) an insecticidally and acaricidally effective amount of a compound of the formula



wherein

R_1 is hydrogen, chlorine, bromine or nitro,

R_2 is hydrogen, methyl, chloromethyl or bromomethyl,

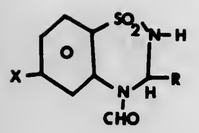
R_3 is alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, alkenyloxy of from 2 to 4 carbon atoms, alkoxy-alkoxy having a total of from 2 to 4 carbon atoms, halogenalkoxy of from 1 to 4 carbon atoms, or phenyl,

R_4 is alkyl of from 1 to 4 carbon atoms, alkenyl of from 2 to 4 carbon atoms, alkoxyalkyl having a total of from 2 to 4 carbon atoms, or halogenalkyl of from 1 to 4 carbon atoms, and

each of X and Y represents oxygen or sulphur, and (2) a carrier.

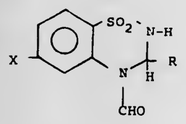
3,886,275
METHOD FOR REDUCING HYPERTENSION BY USE OF DERIVATIVES OF 1,2,4-BENZOTHIADIAZINE-4-CARBOXALDEHYDE-1,1-DIOXIDE
Harry Louis Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Continuation-in-part of Ser. No. 259,111, June 2, 1972, abandoned, which is a division of Ser. No. 11,906, Feb. 16, 1970, Pat. No. 3,691,162. This application Jan. 3, 1974, Ser. No. 430,448
Int. Cl. A61k 27/00
U.S. Cl. 424—246 7 Claims

1. A method of reducing hypertension which comprises administering in dosage form to a host in need thereof from about 1 mg/kg to about 50 mg/kg of a compound of the formula



wherein X is halogen, alkyl of up to 5 carbon atoms, trifluoromethyl or nitro, and R is hydrogen, alkyl or cycloalkyl of up to 8 carbon atoms, or arylalkyl of up to 10 carbon atoms.

7. A composition in dosage form for reducing hypertension which comprises a hypotensive amount of a compound of the formula



wherein X is halogen, alkyl of up to 5 carbon atoms, trifluoromethyl or nitro, and R is hydrogen, alkyl or cycloalkyl of up to 8 carbon atoms, or arylalkyl of up to 10 carbon atoms, in combination with a physiologically acceptable carrier.

3,886,276
1,3-DIHYDRO-3-HYDROXY-5-PHENYL-2H-1,4-BENZODIAZEPIN-2-ONE, SUBSTITUTED DIAMINO ACETATE ESTERS AND THEIR ACID SALTS IN COMPOSITIONS AND METHODS FOR INDUCING A CALMING EFFECT

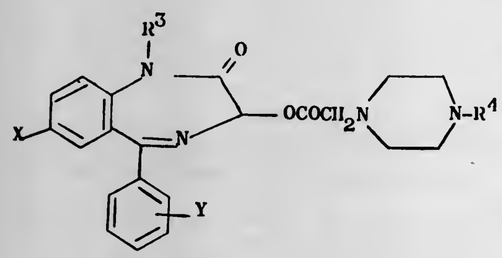
Ronald J. McCaully, Malvern; Abraham Nudelman, Bala Cynwyd, and Stanley C. Bell, Penn Valley, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 223,712, Feb. 4, 1972, which is a continuation-in-part of Ser. No. 129,638, March 30, 1971, abandoned. This application Oct. 29, 1973, Ser. No. 410,741

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **20 Claims**

1. A process for inducing a calming effect in a warm-blooded animal which comprises administering to said animal an effective amount of a compound of the formula:



in which

R^3 is a member selected from the group consisting of hydrogen, (lower)alkyl, ar(lower)alkyl and (lower)alkoxy(lower)alkyl;

R^4 is a member selected from the group consisting of (lower)alkyl and hydroxy(lower)alkyl;

X is a member selected from the group consisting of halogen, cyano, trifluoromethyl, nitro and (lower)alkylthio;

Y is a member selected from the group consisting of hydrogen, halogen, trifluoromethyl, nitro and (lower)alkylthio; now a pharmaceutically acceptable salt thereof.

3,886,277
METHODS OF CONTROLLING DANDRUFF USING 5,7-DICHLORO-8-HYDROXY QUINOLINE

Rudolf Randebrock, Hamburg-Othmarschen; Volker Bollert, Hamburg; Heinz Lukesch, Hamburg-Sasel; Gertrud Muller, Hamburg; Ludwig Rappen, Diusburg-Meiderich, and Friedhelm Galle, Duisberg-Hamborn, all of Germany, assignors to Hans Schwarzkopf GmbH, Hamburg, Germany

Continuation of Ser. No. 100,447, Dec. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 659,613, Aug. 10, 1967, abandoned. This application May 10, 1973, Ser. No. 359,046

Claims priority, application Germany, Feb. 14, 1967, 40231

Int. Cl. A61k *27/00;* **A01n** *9/22*

U.S. Cl. 424—258 **11 Claims**

1. A method of controlling the formation of visible dandruff comprising applying to the hair and scalp of humans affected therewith a composition comprising a non-toxic pharmaceutically acceptable carrier and 5,7-dichlor-8-hydroxy quinoline in an amount sufficient to provide effective anti-dandruff control.

3,886,278
AMMONIUM CARBOXYLATE SEBUM INHIBITION PROCESS

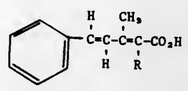
Duane Gordon Gallo, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Filed Aug. 22, 1973, Ser. No. 390,456The portion of the term of this patent subsequent to Aug. 28, 1990, has been disclaimed.

Int. Cl.² A61K *27/00*

U.S. Cl. 424—267 **10 Claims**

1. The process for reducing sebaceous cell sebum production in a mammal in need thereof which comprises contacting said sebaceous cell in the skin of said mammal with an amount effective to reduce sebum production thereby of a pharmaceutically acceptable ammonium or amine salt of a 2-trans-4-trans-pentadienoic acid of the formula



wherein R is hydrogen or lower alkyl of from 1 to 3 carbon atoms inclusive, and wherein the cationic nitrogenous portion of said salt is pharmacologically and toxicologically inert for said mammal in said amount effective to reduce sebum production.

3,886,279
ANTI-INFLAMMATORY ANALGESIC METHOD OF TREATMENT AND COMPOSITION

Magda Huhn; Laszlo Tardos; Eva Somfai; Gabor Resofszki; Vera Kovacs nee Mindler, and Maria Palffy nee Oswald, all of Budapest, Hungary, assignors to Chinoin Gyogyszer- es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Aug. 13, 1973, Ser. No. 387,964

Claims priority, application Hungary, Aug. 24, 1972, CI 1268

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **1 Claim**

1. A method of treating gastric ulcers comprising orally administering to a patient trichloroethyl-1-(p-chlorobenzoyl)-2-methyl-5-methoxy-3-indolyl-acetate in a daily dosage of substantially 90 to 150 mg. and sufficient to ameliorate the condition.

3,886,280
TRIAZOLYL CARBAMATE INSECTICIDES

Beat Boehner, Binningen, and Dag Dawes, Pratteln, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

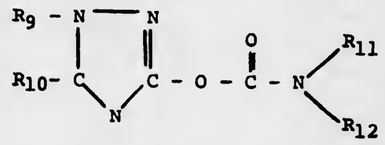
Division of Ser. No. 221,052, Jan. 26, 1972, Pat. No. 3,794,661. This application Oct. 10, 1973, Ser. No. 405,238

Claims priority, application Switzerland, Feb. 4, 1971, 1634/71; Jan. 7, 1972, 274/72

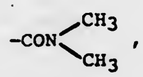
Int. Cl. A01n *9/22*

U.S. Cl. 424—269 **10 Claims**

1. An insecticidal composition comprising an insecticidally effective amount of a compound of the formula



wherein R_9 represents C_1–C_6 alkyl, cyclopentyl or cyclohexyl, R_{10} represents hydrogen, C_1–C_4 alkyl or the groups —$COOCH_3$, —$COOC_2H_5$ or



R_{11} represents hydrogen, methyl or ethyl, and R_{12} represents methyl, ethyl, methoxy or phenyl; together with a suitable carrier therefor.

3,886,281
METHOD AND COMPOSITION FOR INHIBITING THE AFTER EFFECTS OF DRUNKENNESS CAUSED BY CONSUMING ALCOHOLIC BEVERAGES

Benjamin Bilbao, Maspeth, N.Y., assignor to Nolte and Nolte, Jericho, N.Y., a part interest

Continuation-in-part of Ser. No. 189,329, Oct. 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 89,064, Nov. 12, 1970, abandoned. This application Sept. 13, 1973, Ser. No. 396,913

Int. Cl. A61u *27/80*

U.S. Cl. 424—278 **18 Claims**

1. An alcoholic beverage containing paraldehyde in a proportion effective to inhibit the after effects of drunkenness caused by consuming the beverage.

3,886,282
NEMATOCIDAL N-ARYLTHIO S-HYDROCARBYL THIOCARBAMATES

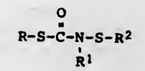
Melancthon S. Brown, deceased, late of Berkeley, Calif., and by Gustave K. Kohn, administrator, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 150,860, June 1, 1971, Pat. No. 3,810,928. This application Feb. 22, 1974, Ser. No. 444,625

Int. Cl. A01n *9/12, 9/20*

U.S. Cl. 424—300 **10 Claims**

1. A method for controlling parasitic nematodes which comprises applying to said nematodes or nematode infested environment a nematocidally effective amount of a compound of the formula



wherein R is alkyl of 1 to 6 carbon atoms, R^1 is alkyl of 1 to 4 carbon atoms and R^2 is phenyl substituted with 0 to 2 chlorine atoms.

3,886,283
FUNGICIDAL CARBOXYLIC ACID NITRILES

Istvan Dory; Laszlo Feuer; Andras Javor, and Gyorgy Matolcsy, all of Budapest, Hungary, assignors to Chinoin Gyogyszer- es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed May 24, 1972, Ser. No. 256,268

Claims priority, application Hungary, May 31, 1971, CI 1120

Int. Cl.² A01N *9/20*

U.S. Cl. 424—304 **1 Claim**

A fungicidal composition containing 0.001 to 10% by weight of the compound α-(3,4-dimethoxyphenyl)-stearic acid nitrile and a carrier therefor.

3,886,284
AMINO DERIVATIVES OF TERRASUBSTITUTED BENZENE COMPOUNDS

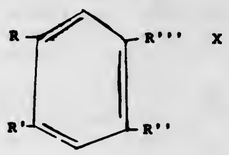
John J. Merianos, Jersey City, and Phillip Adams, Murray Hill, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Division of Ser. No. 298,759, Oct. 18, 1972, which is a continuation-in-part of Ser. No. 291,824, Sept. 25, 1972, which is a continuation-in-part of Ser. No. 130,783, April 2, 1971, Pat. No. 3,821,407. This application May 15, 1973, Ser. No. 360,448The portion of the term of this patent subsequent to June 28, 1991, has been disclaimed.

Int. Cl. A01n *9/00*

U.S. Cl. 424—330 **5 Claims**

1. A method of inhibiting bacteria and fungi which comprises applying to said bacteria and fungi an effective amount of a compound having the structure:



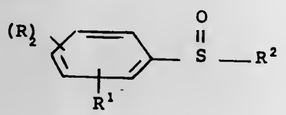
wherein R and R′ are either methyl, or a halogen when R‴ is —CH_2—; or R and R′, taken together, are methylene dioxy; R″ is either methyl or nitro; R‴ is either absent or is —CH_2— or —CH=, and X is the residue of a lower alkyl, mono- or polyamino, or alkanolamino radical.

3,886,285
PHARMACEUTICAL COMPOSITIONS CONTAINING SUBSTITUTED PHENYL SULPHOXIDES AND SULPHONES AND METHOD OF USING SAME

Kenneth Walter Bentley, Willerby, and William Ian Rushworth, Beverley, both of England, assignors to Reckitt & Colman Products Limited, Hull, Yorkshire, England

Division of Ser. No. 201,563, Nov. 21, 1971, Pat. No. 3,804,904. This application Nov. 6, 1973, Ser. No. 413,229
Claims priority, application United Kingdom, Dec. 7, 1970, 58065/70; Dec. 7, 1970, 58066/70
Int. Cl. H61k *27/00*
U.S. Cl. 424—337 **10 Claims**

1. A method for treating hypertension which comprises administering to humans an antihypertensive effective amount of a compound of the formula



wherein R is alkoxy of 1 to 3 carbon atoms; R^1 is H, or alkyl or alkoxy of 1 to 3 carbon atoms and R^2 is alkyl of 1 to 7 carbon atoms, alkenyl or alkynyl of 3 to 5 carbon atoms or hydroxyalkyl of 2 to 3 carbon atoms.

3,886,286
NON-CLOGGING GRANULAR CHLORDANE FORMULATIONS

Leo Trademan, Nile, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 200,597, Nov. 19, 1971, abandoned. This application Sept. 26, 1973, Ser. No. 401,099
Int. Cl. A01n *9/30*
U.S. Cl. 424—352 **5 Claims**

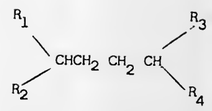
1. A free-flowing, non-clogging granular insecticide composition consisting essentially of an admixture of (a) a granular inert carrier having a particle size range of from about 0.3 to about 3.0 mm and having adsorbed thereon from about 20 to about 40 per cent by weight of the total composition of technical chlordane, and (b) from about 0.5 to about 5.0 per cent by weight of the composition of magnesium stearate or aluminum stearate.

3,886,287
COSMETICS CONTAINING SATURATED, BRANCHED SYNTHETIC HIGHER HYDROCARBON

Susumu Kobayashi; Kenichi Tomita, and Hakuji Katsura, all of Yokohama, Japan, assignors to Shiseido Co., Ltd., Tokyo, Japan

Filed May 24, 1973, Ser. No. 363,372
Claims priority, application Japan, Oct. 6, 1972, 47-100400
Int. Cl.² A61K *7/00*
U.S. Cl. 424—358 **4 Claims**

1. In a method of cosmetically treating human skin comprising application of a non-irritating cosmetic composition comprising conventional cosmetic agents, the improvement which comprises employing as a non-irritating cosmetic base of said cosmetic composition at least one saturated, branched synthetic higher hydrocarbon having 26–48 carbon atoms and having the structural formula:



wherein R_1, R_2, R_3 and R_4 represent an alkyl radical of 2 to 15 carbon atoms respectively, but R_1 differs from R_2 and R_3 differs from R_4.

3,886,288
CHEESE MANUFACTURE USING HIGHLY ACTIVE PROTEOLYTIC ENZYMES

Eldon E. Rice, Palos Park, Ill., and Oreste J. Lantero, Jr., North Fargo, N. Dak., assignors to Swift and Company, Chicago, Ill.

Filed June 15, 1970, Ser. No. 46,536
Int. Cl. A23c *19/02*
U.S. Cl. 426—36 **10 Claims**

1. An improved method for producing a high quality cheese curd having a viable bacterial culture incorporated therein for flavor and texture development utilizing highly active proteolytic enzymes, said method comprising: adding a highly active plant-derived proteolytic enzyme to milk in an amount of about 2 to 40 mgs. per liter of milk, the enzyme being characterized as producing an unstable coagulum when uncontrolled and being one selected from the group consisting of bromelain, papain, ficin and mixtures thereof; totally inactivating said enzyme after a sufficient period of time to alter the protein casein of said milk to paracasein but insufficient to produce excessive hydrolysis of said casein; then adding a bacterial culture after the enzyme has been totally inactivated; and thereafter coagulating the altered casein, said coagulation being characterized by the formation of a stable coagulum with a viable bacterial culture incorporated therein.

3,886,289
FOODSTUFFS CONTAINING 2-(4-HYDROXY-4-METHYLPENTYL) NORBORNADIENE

James Milton Sanders, Eatontown, and Manfred Hugo Vock, Locust, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 17, 1974, Ser. No. 461,703
Int. Cl. A23l *1/26*
U.S. Cl. 426—538 **1 Claim**

1. A process for altering the organoleptic properties of foodstuff which comprises adding thereto 2-(4-hydroxy-4-methylpentyl) norbornadiene in a small but effective amount to alter or impart raspberry flavor.

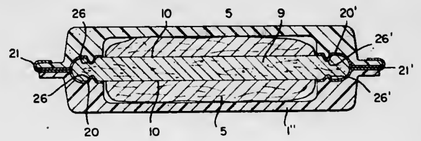
3,886,290
ELECTRODE TYPE COOKING PACKAGE

Ernst Theodore Theimer, Rumson, and Donald Joseph Roslonski, Bricktown, both of N.J., assignors to National Electro-Cook Corporation, East Brunswick, N.J.

Filed Jan. 4, 1973, Ser. No. 320,877
Int. Cl. B65b *25/22*
U.S. Cl. 426—107 **8 Claims**

1. A single packaged unit of food for cooking the food therein consisting essentially of: (a) A solid electrically low conducting food; (b) A single solid electrically high conducting food unit disposed in fixed substantially surface-to-surface contact with and disposed substantially within said low conducting food; said high conducting food having two axially polar high conducting food portions having external surfaces and extending outwardly beyond said low conducting food; (c) a hollow thermally insulating substantially moisture-impervious container containing said unit of food and being capable of fixedly holding in position and maintaining the

original geometry of said unit of food; said container comprising two sections hinged together and having substantially conterminous edges, a first section and a second section articulating said first section, said first section and said second section having mutually substantially continuous co-extensive edges, at least one of said sections having an internal surface designed to fixedly hold said unit of food over a substantial portion of the surfaces of said food when the container is in a closed position; at least one of said container sections having axially polar ends, said axially polar ends having internal axially polar surfaces which are co-extensive with the external surfaces of said axially polar high conducting food portions; at least two separate electrically conducting foil means extending outwardly from said container, each of said electrically conducting foil means having electrically conducting foil ends



external to said container, said foil ends being designed to make electrical contact with the terminals of an electrical energy source when said container is in a closed position, each of said electrically conducting foil means being affixed to one of said internal axially polar surfaces, said electrical conducting foil means being in fixed intimate electrical contact with each of the axially polar external surfaces of said two axially polar high conducting solid food portions when said container is in a closed position, the ratio of the surface area of foil-contacted high conducting food portion to surface area of non-contacted high conducting food portion being from **1:8** up to **1:4**, whereby during the cooking process, the excess heat generated by the passage of electrical current through the solid electrically high conducting food is dissipated into and substantially retained within the electrically low conducting food.

3,886,291
EXPANDED FRIED POTATO SNACK PRODUCT

Miles J. Willard, P.O. Box 2774, Idaho Falls, Idaho 83401

Continuation-in-part of Ser. No. 174,232, Aug. 23, 1971, abandoned, which is a continuation of Ser. No. 789,922, Jan. 8, 1969, abandoned. This application Nov. 24, 1972, Ser. No. 309,509
Int. Cl. A23l *1/10*
U.S. Cl. 426—637 **6 Claims**

1. An expanded fried potato-solids containing snack product which when viewed in transverse cross-section, has a total thickness of between about 0.065 and 0.1 inches and defines a substantially continuous porous interior and a denser substantially non-porous exterior integral with said interior, said denser exterior having a general uniform thickness of between about 0.025 and 0.037 inches, and said porous interior constituting about one-third of said total thickness of the expanded product.

3,886,292
PROCESS FOR REDUCING SHORTENING WHILE MAINTAINING QUALITY CAKES

Leo T. Kissell, Wooster, Ohio; Max M. Hanamoto, Lafayette, Calif., and Charles L. Mehltretter, Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 15, 1974, Ser. No. 443,072
Int. Cl. A21d *13/08*
U.S. Cl. 46—553 **8 Claims**

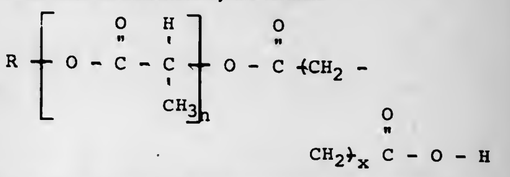
1. Chemically-leavened sweet baked goods containing flour and as the sole shortening, a triglyceride free from any emulsifier, in an amount of 25 to 35% by weight of the flour in said baked good
and which contains about 1 to 4%, based on the weight of shortening, of an additive which is
an ester of a fatty acid containing 12 to 18 carbon atoms with a polyoxyethylene ether of a glycerol glycoside, containing 1 to 2 moles of combined fatty acid per mole thereof, and 5 to 20 moles of combined ethylene oxide per mole thereof.

3,886,293
FOOD PRODUCTS CONTAINING SURFACTANTS

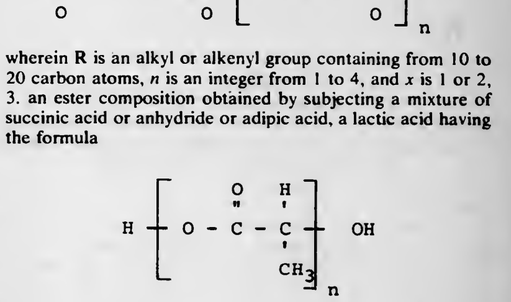
John D. Zech, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Division of Ser. No. 130,465, April 1, 1971, Pat. No. 3,846,479. This application Feb. 8, 1974, Ser. No. 440,939
Int. Cl. A21d *13/08*
U.S. Cl. 426—553 **13 Claims**

1. A food product containing an effective amount of a surfactant composition selected from the group consisting of
1. an ester characterized by the formula



wherein R is an alkyl or alkenyl group containing from 10 to 22 carbon atoms, *n* is an integer from 1 to 4, and *x* is 1 or 2,
2. an ester characterized by the formula



wherein R is an alkyl or alkenyl group containing from 10 to 20 carbon atoms, *n* is an integer from 1 to 4, and *x* is 1 or 2,
3. an ester composition obtained by subjecting a mixture of succinic acid or anhydride or adipic acid, a lactic acid having the formula

wherein *n* is an integer from 1 to 4, and a fatty alcohol to esterification reaction conditions, and
4. a potassium, calcium, or sodium salt of (1), (2), or (3).

3,886,294
CAROTENOID COLORING COMPOSITIONS AND PREPARATION THEREOF

Alexander S. Emodi, West Orange, and Leonard Joseph Scialpi, Parsippany, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 12, 1973, Ser. No. 340,141
Int. Cl. A23l *1/26*
U.S. Cl. 426—540 **10 Claims**

6. A carotenoid coloring composition in powder form dispersible in water to form optically clear aqueous dispersions, said composition consisting of:

A. from about 5% by weight to about 40 percent by weight of a carotenoid ingredient consisting of
1. a sufficient amount of a carotenoid coloring agent to constitute from about 0.1 percent by weight to about 2.0 percent by weight of the total composition;
2. from about 0.1 percent by weight to about 1.0 percent by weight of an antioxidant; and
3. an emulsifier ingredient consisting of:
a. from about 20 percent by weight to about 80 percent by weight of a polysorbate selected from the group consisting of polysorbate 60 and polysorbate 80;
b. from about 5 percent by weight to about 20 percent by weight of a mixture of monoglycerides of low molecular weight coconut fatty acids;
c. from about 5 percent by weight to about 20 percent by weight of a mixture of saturated fractions of coconut oil triglycerides; and
d. from about 0 to about 60 percent by weight of polyoxyethylene (40) stearate wax; and
B. a water-soluble carrier composition consisting of:
1. from about 0.2 percent by weight to about 2.0 percent by weight of a preservative component;
2. from about 0.2 percent by weight to about 2.0 percent by weight of an antioxidant; and
3. a mixture consisting of a sugar and a water-soluble colloid former, either of said components being present in the mixture in a weight ratio not exceeding 3:1.

3,886,295
LOW CALORIE SYNTHETIC SEASONING
Noel I. Burke, Danville, Ill., and Albin F. Turbak, Convent Station, N.J., assignors to Tee-Pak, Inc., Chicago, Ill.
Filed Jan. 4, 1974, Ser. No. 430,966
Int. Cl. A23l *1/22, 1/26*
U.S. Cl. 426—548 **9 Claims**

1. A synthetic seasoning composition having low caloric content which comprises an admixture of a bulking agent consisting of an edible metal salt of cellulose sulfate having a degree of substitution of at least 1.5 and an effective amount of an edible food flavorant present in a proportion of not substantially more than 50 percent by weight.

3,886,296
CANNING PROCESS
Edward M. Brooks, and Chaz W. Houpt, both of Van Nuys, Calif., assignors to Carnation Company, Los Angeles, Calif.
Filed Mar. 22, 1973, Ser. No. 343,930
Int. Cl. A23l *3/00*
U.S. Cl. 426—325 **12 Claims**

1. A process for canning normally low acid or medium acid foods to provide a sterile product in which the taste, texture, appearance and nutritional value of the foods are substantially retained, which comprises blanching normally low acid or medium acid food particles with a hot acidic solution having a temperature and pH sufficient to reduce the overall pH of the food to at least about 5.0, the hot acidic solution being maintained in contact with the food particles for between about 1 to 15 minutes,
contacting said acid blanched food particles with an acidic condiment-containing liquid phase having a pH of below 4.5 in a container so that the acidic condiment-containing liquid phase surrounds the food particles in the container, and reduces the overall pH of said food particles to at least 4.5,
sealing the container,
heat processing the sealed container at a maximum temperature of 212° F. for a maximum period of time of 15 minutes to destroy acid-tolerant microorganisms whereby the contents of the container are rendered sterile without substantial change in the taste, texture, appearance and nutritional value of the food, and
cooling the container.

3,886,297
FLAVOR COMPOSITIONS AND PROCESSES
Thomas H. Parliment, Valley Cottage; William P. Clinton, Monsey, both of N.Y.; Richard Scarpellino, Ramsey, N.J.; Robert J. Soukup, New City, and Martin F. Epstein, Pearl River, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Continuation-in-part of Ser. No. 129,609, March 30, 1971, Pat. No. 3,655,397, which is a continuation-in-part of Ser. Nos. 867,887, Oct. 20, 1969, abandoned, and Ser. No. 857,227, Sept. 11, 1969, abandoned. This application Apr. 11, 1972, Ser. No. 243,055
Int. Cl. A23l *1/26*
U.S. Cl. 426—573 **19 Claims**

1. A process for enhancing the flavor of a non-coffee based foodstuffs comprising adding thereto a compound selected from the group consisting of 2-nonenal, 2-nonenol, lower alkyl acetals of 2-nonenal, esters of organic acids and 2-nonenol in which the carbonyl is not conjugated with a double bond or aromatic ring, and mixtures thereof, said compound being added in an amount sufficient to enhance the flavor of the foodstuff without imparting a fatty flavor.

3,886,298
METHOD FOR PREPARING MEATLIKE FIBERS
John T. Hayes, Jr., North Tarrytown, and Robert Tewey, Dobbs Ferry, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Filed Nov. 24, 1972, Ser. No. 309,328
Int. Cl. A23j *3/00*
U.S. Cl. 426—656 **8 Claims**

1. A process for preparing fibers simulating the muscle of animals or flesh of fish comprising:
a. preparing a mixture of proteinaceous material and water, said proteinaceous material containing above 35 percent heat coagulable protein on a dry basis, a major amount of said protein comprising vegetable protein and the moisture content of the mixture being from 20 percent –49 percent
b. blending the mixture to form a dough;
c. compressing the dough in a chamber formed by the channel of an auger rotating within an outer wall heated to at least 250°F wherein the volume of the channel between flights of the auger is decreased 3/2 or more from feed to discharge of the chamber to degas and densify the dough into a unitary body whereby said dough is simultaneously heated and elongated while under compression into a heat set thermally coagulated fibrous condition
d. forcing the heat set fibrous dough through a die wherein the pressure drop to atmosphere is less than 500 psi causing expansion of the heat set dough while maintaining the fibrous condition thereof
e. recovering an expanded, aligned, fibrous product, said product characterized when dry by having a density of greater than 0.65 g/ml and a hydration of 2g.H_2O/g solids or less when soaked one-half hour in water at 50°C.

3,886,299
PROCESS FOR PREPARING MEATLIKE FIBERS
Alonzo Feldbrugge, New York, N.Y.; Cynthia Travers, Laurel, Md.; William F. Cloud, Spring Valley, and Marshall Rankowitz, Bronx, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Filed Nov. 24, 1972, Ser. No. 309,301
Int. Cl. A23j *3/00*
U.S. Cl. 426—364 **13 Claims**

1. A process for preparing a substantially unpuffed fibrous product simulating the muscle of animals or flesh of fish comprising:
a. preparing a mixture containing above 35 percent by weight heat coagulable protein;

b. adjusting the moisture content of the mixture to 25 – 65 percent;
c. blending the mixture to form a dough having a fibrous character when stretched;
d. compressing the dough in a chamber formed by the channel of a screw rotating within an outer wall heated to at least 250°F wherein the volume of the channel between flights of the screw is decreased 2/1 or more from feed to discharge of the chamber to degas and densify the dough into a unitary body whereby said dough is simultaneously heated and elongated while under compression to a heat set, thermally coagulated fibrous product, having fiber alignment in the direction of the channel;
e. releasing the compression on the product without forcing the product through a die while maintaining a pressure drop below 100 psi thereby causing 20 percent or less puffing of the product and while maintaining the aligned fibrous condition of the product; and
f. recovering the fibrous product.

3,886,300
METHOD FOR PREPARING BLAND CASEINATES
Joanne G. Fujii, Chicago, Ill., assignor to Beatrice Foods Company, Chicago, Ill.
Filed July 28, 1972, Ser. No. 276,169The portion of the term of this patent subsequent to May 13, 1992, has been disclaimed.
Int. Cl. A23j *1/20*
U.S. Cl. 426—656 **22 Claims**

1. A method of producing a bland caseinate comprising preparing a solution of an alkali or alkaline earth caseinate and an alkaline earth salt selected from a nitrate, carbonate, sulfate, acetate and halide, slowly heating the solution to a temperature of at least 140°F. for a period of time sufficient to allow the protein to form a coagulum and separating the coagulum from the mother liquid and washing the coagulum, the caseinate being in the solution in amounts between 1 and 30 w/w percent and the salt being in the solution in amounts of between 20 and 60 w/w percent based on the weight of the caseinate.

3,886,301

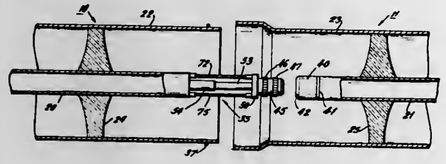
at least one MODEM sharing network as an integral portion

3,886,301

PLUG-IN JOINT FOR HIGH CURRENT CONDUCTORS IN GAS-INSULATED TRANSMISSION SYSTEM

John C. Cronin, Greensburg, and James C. Cron, New Stanton, both of Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Apr. 12, 1974, Ser. No. 460,537
Int. Cl. H01b *9/04*; **H02g** *15/24*; **H01r** *41/00*
U.S. Cl. 174—21 C **11 Claims**



1. A sliding connection joint for connecting adjacent sections of a gas-insulated transmission line; each of said sections of said gas-insulated transmission line comprising a central conductor, a grounded outer housing extending coextensively with said central conductor, insulator means supporting said central conductor within its said grounded outer housing, and a dielectric gas under pressure sealed within said grounded housing; said adjacent sections being aligned end to end with their said central conductors connected to one another and with their said outer housings connected to one another; said connection joint comprising a first cylindrical conductive sleeve mechanically and electrically secured directly to one end of a first conductor of one of said adjacent sections and a second cylindrical conductive sleeve electrically connected to an end of a second conductor of one of said adjacent sections which is adjacent said end of said first conductor; said first and second cylindrical conductive sleeves being telescoped relative to one another and being in contact with one another over at least one annular contact area between their adjacent cylindrical surfaces; flexible mechanical support means connected between said end of said second conductor and said second conductive sleeve for normally physically supporting said second conductive sleeve coaxially with said second conductor and for biasing said second sleeve away from the end of said second conductor; and flexible conductor means electrically connected between said second conductive sleeve and said second conductor, whereby, when said outer housings of said adjacent sections are brought toward one another, said second sleeve is physically presented for sliding, telescoping contact relative to said first sleeve, thereby to electrically connect said first and second conductors, while thermally induced relative movement between said first and second conductors is absorbed by movement of said flexible mechanical support means and said flexible conductor means without sliding motion between said first and second conductive sleeves.

3,886,302

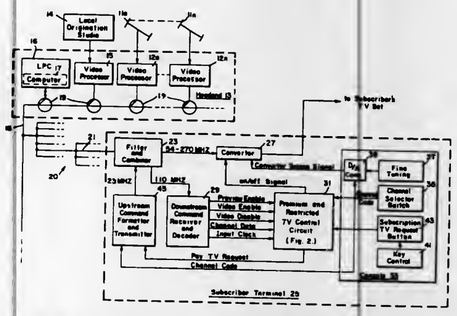
CLOSED CIRCUIT TELEVISION MODEM SHARING SYSTEM

Thomas J. Kosco, Harbor City, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 28, 1974, Ser. No. 437,410
Int. Cl. H04n *1/44*
U.S. Cl. 178—5.1 **8 Claims**

1. A subscriber type television system having a central television program gathering and processing facility, a plurality of subscriber terminals and a cable distribution subsystem linking the facility with the subscriber terminals, the improvement comprising in combination:

at least one MODEM sharing network as an integral portion of the cable subsystem and interposed between said facility and plurality of subscriber terminals for enabling selection of video programs available at the central television program gathering and processing facility servient to the plurality of said terminals, said at least one MODEM sharing network including a data modulator-demodulator for modulation and demodulation of signals communi-



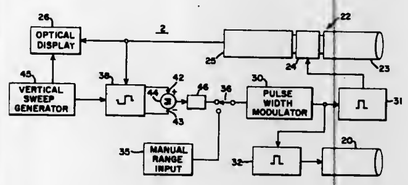
cated in upstream and downstream paths respectively between the subscriber terminals and the facility; and program control means as an integral portion of said at least one MODEM sharing network for enabling selection of at least one of four modes of operation of said system, said plurality of subscriber terminals each being devoid of capability for enabling selection of said at least one of the four modes of operation of said system and also being devoid of said modulator-demodulator.

3,886,303

AUTOMATIC RANGING IN AN ACTIVE TELEVISION SYSTEM

Edwin E. Morris, Clinton, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Oct. 21, 1972, Ser. No. 317,203
Int. Cl. H04n *3/12*
U.S. Cl. 178—6 **6 Claims**



1. An automatically ranged active television system comprising, in combination:
a. a pulsed transmitter;
b. a gated television camera providing a video output;
c. an optical display means coupled to the output of said gated television camera and having a raster scan having upper and lower halves;
d. timing circuitry coupled to synchronize the raster scan of said optical display;
e. a switching circuit having an input coupled to the output of said gated television camera, and having first and second outputs, said switching circuitry being coupled to and synchronized by said timing circuitry such that a signal indicative of the video output of said gated television camera during the upper half of the raster scan is provided at said first output and a signal indicative of the

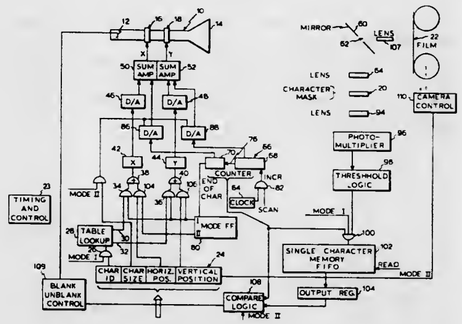
video output of said gated television camera during the lower half of the raster scan is provided at said second output;
f. differential integrating means connected to said first and second outputs of said switching circuit and having an output comprising an error signal indicative of the difference in the video signals provided respectively during the upper and lower halves of the raster scan;
g. a pulse width modulator coupled to the output of said differential integrating means providing an output comprising a range delay signal having a pulse width determined by the error signal;
h. gating means having an input coupled to the output of said pulse width modulator and providing a first gate pulse to said pulse transmitter and a second gate pulse to said gated television camera, said gating means being synchronized by said pulse width modulator such that the second gate pulse is initiated at a time after the initiation of the first gate pulse equal to the width of the range delay signal, whereby the closed loop control of ranging of said active television system is provided.

3,886,304

PHOTOTYPESETTING SYSTEM

Howard Mulder Scott, Moorestown, and William Frederick Schrotz, Cinnaminson, both of N.J., assignors to Information International Inc., Los Angeles, Calif.

Filed June 14, 1973, Ser. No. 369,802
Int. Cl. H04n *5/84*
U.S. Cl. 178—6.7 R **5 Claims**



2. The system of claim 1 wherein said first imaging means includes:
first optical means for imaging said target on said character storage means; and
means for producing orthogonal deflection signals for moving said light spot to a position on said target whereby it is imaged by said first optical means on the unit character area storing said identified character.

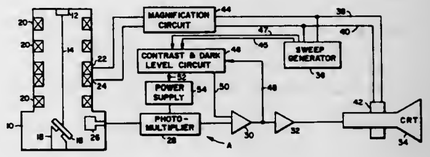
3,886,305

AUTOMATIC CONTRAST AND DARK LEVEL CONTROL FOR SCANNING ELECTRON MICROSCOPES

Nelson C. Yew, Los Altos, and David H. Colby, Fremont, both of Calif., assignors to Etec Corporation, Hayward, Calif.

Filed Apr. 24, 1972, Ser. No. 247,072
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **8 Claims**

1. In a scanning electron microscope having means for emitting an electron beam, means for focusing said electron beam on a specimen, a cathode ray tube having an electron beam internal thereto, scanning means for scanning said electron beams in a raster-like manner, an electron collector disposed adjacent said specimen and video chain means for amplifying the signal of said electron collector to form a video signal intensity modulating the beam of said cathode ray tube, the improvement comprising: detector means for detecting the zero level of the video signal of a video frame, storage means for storing during the subsequent video frame a signal related to the output of said detector means from the previous



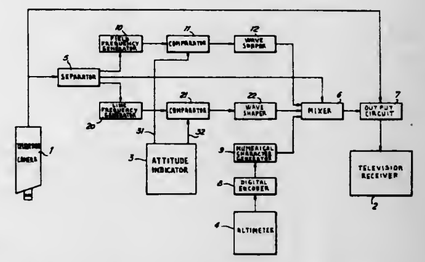
video frame, and control means for controlling the bias of said video chain means in response to the signal in said storage means to control the zero level of the video signal of the subsequent video frame in response to the detected zero level of the video signal of the previous video frame.

3,886,306

SIGHTING APPARATUS FOR HELICOPTERS

Andre Fayard, and Jean-Pierre Couturier, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 17, 1973, Ser. No. 389,312
Claims priority, application France, Aug. 17, 1972, 72.29473; Nov. 17, 1972, 72.40898
Int. Cl. H04n *7/18*; **B64d** *43/00*
U.S. Cl. 178—6.8 **6 Claims**



1. A sighting apparatus for helicopters, comprising: a closed circuit television system including a receiver having a screen, a camera; means for mounting said camera to the lower portion of the helicopter fuselage in such a manner as to furnish on the screen of said receiver an image of a zone located in the vicinity of the helicopter; and further means for the formation, on the image produced on the screen of said receiver, of a first straight line reference mark whose direction remains parallel to one of the axes of said screen and whose position is a function of the pitch angle of the helicopter and of a second straight line reference mark whose direction remains parallel to the other of the axes of said screens and whose position is a function of the roll angle of said helicopter.

3,886,307

ON-OFF SYSTEM FOR TELEVISION RECEIVERS

Wayne Wheeler Evans, Carmel, and Don Edward Christensen, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 11, 1974, Ser. No. 441,487
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.3 R **17 Claims**

10. In a television receiver having channel selection apparatus for selectively conditioning said receiver for reception of signals on one of a plurality of numbered channels, a system for coupling operating power to and removing operating

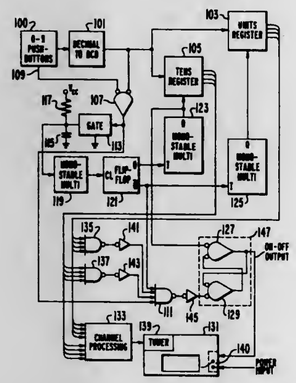
power from a major portion of said television receiver comprising:

bistable means having an input terminal for receiving signals and an output terminal for providing signals in first and second states, said first state corresponding to a receiver power on condition and said second state corresponding to a receiver power off condition;

register means for storing signals representative of first and second digits of a selected channel number;

switching means for providing a signal in response to entry at said channel selection apparatus of said second digit of said selected channel number; and

gating means responsive to the simultaneous presence of predetermined first and second digit representative signals in said register means and said signal from said switching means for setting said bistable means in a second state representative of an off condition.



15. In a television receiver having channel selection apparatus for selectively conditioning said receiver for reception of signals on one of a plurality of numbered channels, a system for coupling power to a major portion of said television receiver comprising:

detecting means for determining the presence of channel number representative signals supplied from said channel selection apparatus;

means coupled to said detecting means for providing a first signal in response to entry at said channel selection apparatus of a first digit of a selected channel number;

bistable means responsive to signals from said last-named means for setting said bistable means in a first state; and

power switching means responsive to said first state condition, for coupling power to the major portion of said television receiver.

3,886,308

FACSIMILE RECEIVER

Matthew J. Costello, Bethel; Donald T. Dolan, Ridgefield; Andre T. Debaudrinaghien, Stamford; Antoon M. Hurkmans, New Milford; Kenneth R. Jasinski, Danbury, and Edward G. Keplinger, Woodbury, all of Conn., assignors to Graphic Sciences, Inc., Danbury, Conn.

Filed Dec. 7, 1972, Ser. No. 312,857

Int. Cl. 346 *139 A;* **H04r** *1/24*

U.S. Cl. 178—7.3 **26 Claims**

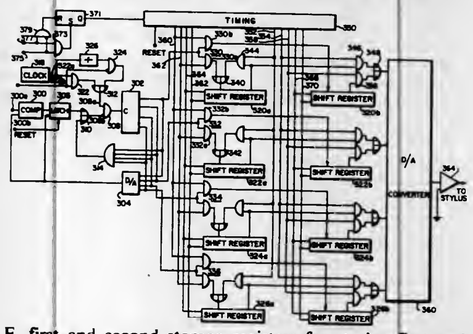
1. a facsimile receiver for reproduction of a document in accordance with analog information obtained from scanning a document line-by-line at a remote transmitter comprising:

A. a writing table having a flat segment for movement of a stylus therealong;

B. means feeding a copy sheet to said writing table;

C. a single stylus mounted to traverse said writing table in straight line motion for reproduction of a document during a portion of its motion;

D. means for converting the analog signal corresponding to each line of scanning to a corresponding digital signal;



E. first and second storage registers for storing first and second successive portions of said digital signal respectively; and

F. means for applying the contents of said register to said stylus in sequence at twice the rate at which said contents were read into said registers when said stylus is in position for writing on said table.

3,886,309

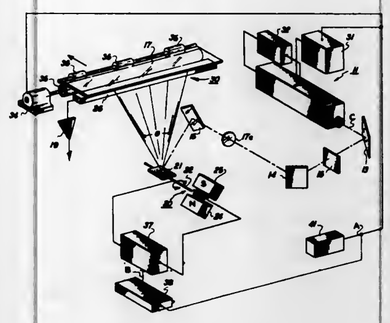
FLAT BED FACSIMILE SCANNERS

Peter John Mason, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 227,939, Feb. 22, 1972, abandoned. This application May 17, 1973, Ser. No. 361,387

Int. Cl. H04n *1/10, 3/02*

U.S. Cl. 178—7.6 **19 Claims**



1. A flat bed scanner for scanning subject copy, said scanner comprising the combination of

means for supplying a substantially collimated beam of light;

an optical path for said light beam;

deflection means in said optical path for sweeping the light beam from end-to-end of a scanning station, whereby a scanning spot of light is projected onto said subject copy while said optical path is varied in length; and

lens means in said optical path for shaping said scanning spot and providing said spot with a depth of focus at least as great as the difference between the longest and shortest lengths of said optical paths so that the spot of light projected onto said subject copy has a substantially constant area.

3,886,310

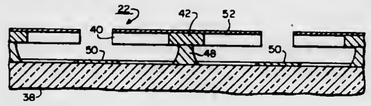
ELECTROSTATICALLY DEFLECTABLE LIGHT VALVE WITH IMPROVED DIFFRACTION PROPERTIES

Jens Guldberg, and Harvey C. Nathanson, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 22, 1973, Ser. No. 390,470

Int. Cl. H04n *3/16;* **H01j** *29/12;* **G02f** *1/28*

U.S. Cl. 178—7.5 D **11 Claims**



1. An electrostatically deflectable light valve system comprising an array of spaced apart, deformable, light reflective elements supported upon a substrate, each of said reflective elements comprising a central core portion supported by a centrally located post member which extends from one side of the reflective elements to the supporting substrate, a plurality of generally planar, symmetrically spaced apart and shaped independently deformable and reflective wing portions extending outwardly from the central core portion, which wing portions are defined by an equal plurality of thin slits provided between said wing portions which slits extend from the central core portion to the outer edge of the wing portions.

3,886,311

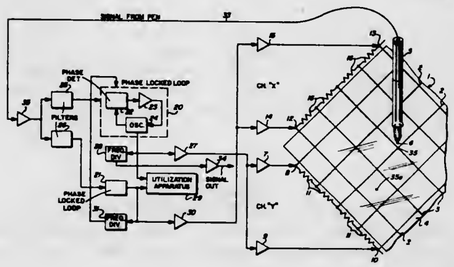
ELECTRICAL WRITING PEN AND SENSOR

James L. Rodgers, Tempe, Ariz., and Joseph L. Tyrrell, Torrence, Calif., assignors to Talos Systems, Inc., Scottsdale, Ariz.

Continuation-in-part of Ser. No. 253,859, May 16, 1972, abandoned. This application Apr. 22, 1974, Ser. No. 463,154

Int. Cl. G08c *21/00;* **H04n** *1/00*

U.S. Cl. 178—18 **10 Claims**



1. An information transmission system including a writing instrument for detecting the information to be transmitted and a writing table with associated electronic circuitry having positions represented by time varying electrostatic field components, said writing instrument comprising, in combination:

a. a pen cartridge containing ink and including a pen point at one end thereof for transferring said ink to a writing surface for effecting a visual record of the path of said pen point;

b. a pen cartridge housing having a longitudinally extending cavity for receiving and supporting said pen cartridge in said housing with said pen point extending from said housing;

c. an electrostatic field pick up element forming a part of said pen point for detecting and re-radiating said electrostatic field components in proximity to the point of contact between said pen point and said writing table;

d. an electrostatic field sensing element secured in said housing adjacent said pen point of said pen cartridge for detecting said electrostatic field components radiated by said pick up element and issuing an output signal in response thereto;

e. signal amplifying means secured to said pen cartridge housing at an end remote from said pen point;

f. electrical conducting means extending uninterrupted substantially the length of said housing and connected to said field sensing element and to said signal amplifying means; and

g. means defining an opening in said cartridge housing extending longitudinally thereof and communicating with said cavity to permit said pen cartridge to be removed and replaced without disconnecting said electrical conducting means.

3,886,312

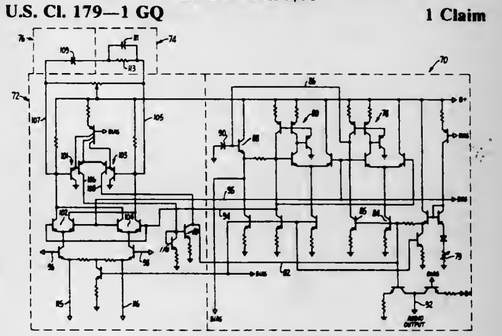
DECODER FOR FOUR CHANNEL RECORD

Louis Dorren, Millbrae, Calif., assignor to Quadracast Systems, Inc., San Mateo, Calif.

Filed Aug. 16, 1973, Ser. No. 388,822

Int. Cl. H04n *5/00*

U.S. Cl. 179—1 GQ **1 Claim**



1. A decoder for a four channel phonograph record of the type wherein there is derived from each side of the groove of said phonograph record a composite signal containing two components, namely a first or audio frequency component containing A plus B information, and having a frequency in the range of 50 Hz to 15 kHz, and a second or R.F. component comprising a carrier with a frequency of about 30 kHz, having an A minus B audio signal frequency modulated thereon, comprising means for separating said second component from said composite signal, and feeding said second component to phase lock loop means including a voltage controlled oscillator, said voltage controlled oscillator having two feedback paths, namely a first feedback path including a low pass filter having a frequency range of from about 0 to 40 Hz, and a second feedback path including a band pass filter having a band pass of from about 50 to 15 kHz, means for extracting an error voltage from at least said second feedback path, said error voltage representing the audio component of said R.F. component representing the A minus B audio signal, and passing said audio component to matrix means together with said A plus B signal and means to obtain from said matrix means a separate A signal and a separate B signal.

3,886,313

VOICE SECURITY METHOD AND SYSTEM

Kenneth M. Branscome, Dallas; William M. Feath, Irving; George E. Goode, Richardson; Kenneth W. Heizer, and Barrie O. Morgan, both of Dallas, all of Tex., assignors to Datotek, Inc., Dallas, Tex.

Filed Sept. 29, 1972, Ser. No. 293,412

Int. Cl. H04m *1/70, 3/16*

U.S. Cl. 179—1.5 S **3 Claims**

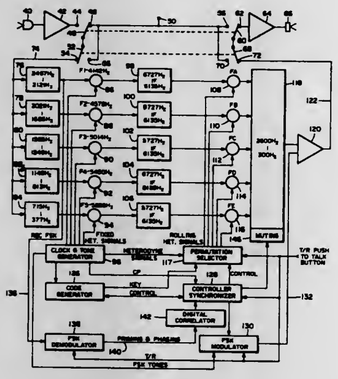
1. A method of determining optimum subsets of a plurality of possible arrangement permutations of frequency sub-bands

of a voice signal for use in a voice scrambler system compris-

of a voice signal for use in a voice scrambler system comprising:

grouping said possible arrangement permutations into a plurality of possible subsets while excluding preselected forbidden arrangement permutations which provide intelligible voice data;

cross-correlating the arrangement permutations of each possible subset;



assigning an articulation index representative of the intelligibility to each arrangement permutation of the possible subsets having the lowest cross-correlation indexes; and determining the subset having the lowest average articulation index as the optimum subset for use in rearranging the order of the frequency sub-bands in a voice scrambler system.

3,886,314

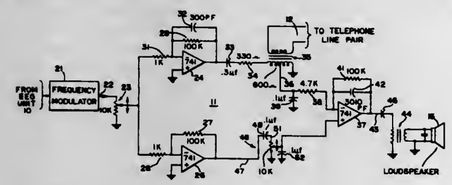
NO HANDS VOICE INSTRUCTION FOR EEG TELEMETERING SYSTEM

John R. Pori, Novato, Calif., assignor to Parallel Data Systems, San Francisco, Calif.

Filed Sept. 20, 1973, Ser. No. 399,241

Int. Cl. H04h *11/06*

U.S. Cl. 179—2 DP **3 Claims**



1. A telemetering system for transmitting multi-channel data over a transmission medium which is a single voice quality communications channel and where said multi-channel data frequency modulates a unique carrier frequency for each data channel for providing a frequency modulated signal for transmission over said communications channel said system including receiving means coupled to said voice channel for demodulating said frequency modulated signal and displaying such multi-channel data for interpretation the improvement in said system comprising: transmitter means for coupling said frequency modulated (FM) signal to said voice communications channel and including first amplifier means for coupling said FM signal to said voice channel and having a gain for amplifying such signal to a predetermined level suitable for transmission over said voice channel; operational amplifier means having an inverting input and a noninverting input; means for coupling voice instruction signals transmitted from said receiving means over said voice channel to one of said inputs; second amplifier means for coupling said FM signal to the other input of said operational amplifier means and having substantially the same gain as said first amplifier means for matching said predetermined level; and loudspeaker means coupled to the output of said operational amplifier for receiving said voice instruction signals said inverting and noninverting inputs nulling out said FM signal.

3,886,315

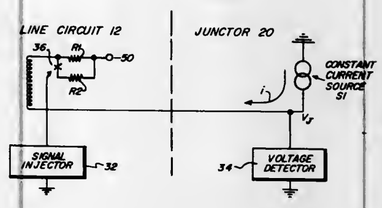
ARRANGEMENT AND METHOD OF SIGNALLING BOTH WAYS THROUGH A TWO WIRE ELECTRONIC JUNCTOR

David Q. Lee, Chicago, and Donald W. McLaughlin, Bolingbrook, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 1, 1973, Ser. No. 402,530

Int. Cl. H04m *7/10;* **H04q** *1/52*

U.S. Cl. 179—18 AH **9 Claims**



1. A communication system comprising a plurality of telephone stations, each including a line circuit, a plurality of junctors and a matrix, said system being a two wire system and using said junctors as a means of connecting any two line circuits together via said matrix, said line circuits each appearing as an inlet on said matrix and each of said junctors having two ports on the outlet of said matrix, the arrangement being such that one of said two wires is used by said junctors to receive information from said line circuits and the other one of said two wires is used by said junctors to transmit information to said line circuits, the sent and received information being direct current signals superimposed on a constant direct current hold level.

3,886,316

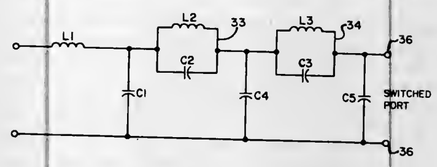
ELECTRIC RESONANT TRANSFER FILTER

Lawrence E. Getgen, Redwood City, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 2, 1973, Ser. No. 337,616

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AA **4 Claims**



1. A lowpass filter suitable for use in a resonant transfer system, having a normally open gate, closed at a sampling frequency (F_s) for the transfer of energy, and comprising:

inductive and capacitive elements connected to approximate a transmission function, $T(j\omega)$, in the resonant transfer mode given by:

$$T(j\omega) = \left[\frac{2}{T_s C}\right]\left[\frac{R(\omega)}{G(j\omega)^2}\right]$$

where

T_s = sampling interval;
C = capacitance seen looking into the switched port of the filter;
$R(\omega)$ = the real part of the impedance looking into the filter from the switched port as a function of frequency ω;
$G(j\omega)$ = the impulse sequence impedance consisting of real part Re $G(j\omega)$ and an imaginary part Im $G(j\omega)$;
ω = the angular frequency for said filter;

such that,

$T(j\omega) = 1$ for $\omega/2\pi < F_s/2$
$T(j\omega) < 1/2$ for $\omega/2\pi = F_s/2$ and
$T(j\omega) = 0$ for $\omega/2\pi > F_s/2$.

3,886,317

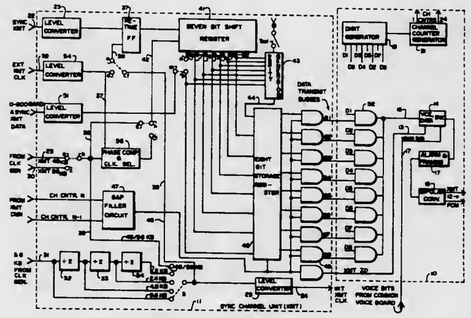
SYNCHRONOUS DATA CHANNEL FOR PULSE CODE MODULATION COMMUNICATIONS SYSTEM

Paul E. Drapkin, Palo Alto, Calif., assignor to Vidar Corporation, Mountain View, Calif.

Filed Dec. 17, 1973, Ser. No. 425,215

Int. Cl. H04j *3/12*

U.S. Cl. 179—15 BY **14 Claims**



1. A pulse code modulation (PCM) communications system for transmitting information from a plurality of channels such system including a framing bit some of said channels being for transmission of voice type data but at least one channel being exclusively for synchronous digital input data from a single external source of data the repetition rate of transmitted pulses being a predetermined clock frequency said system including a channel counter generator for determining said plurality of channels comprising: clock generator means for receiving said clock frequency and for deriving therefrom a signal for timing said synchronous digital data input said clock generator means being responsive to said framing bit for removing at least one bit from said clock frequency for deriving said timing signal; means for connecting said clock generator means to said external source of data to couple said timing signal to said source of data for providing synchronous operation; storage register means for storing said digital data; and gating means responsive to the channel counter generator counting to said one channel for transferring said stored data to a PCM transmit bus.

3,886,318

PROCESS AND APPARATUS FOR SWITCHING PCM SIGNALS FROM A NORMAL TRANSMISSION PATH TO AN EMERGENCY PATH

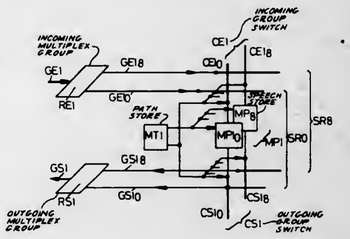
Pierre Charransol; Jacques Hauri, both of Paris, and Serge Robert Fontana, Elancourt, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 31, 1973, Ser. No. 365,430

Claims priority, application France, June 15, 1972, 72.21534

Int. Cl. H04j *3/14*

U.S. Cl. 179—15 BF **2 Claims**



1. A process for switching a signal from transmission over a normal transmission path onto an emergency transmission path parallel to the normal path between the inputs and the outputs of a switching center following receipt of a switching request, comprising the steps of interrupting signal transmission on the emergency path for a time period at least equal to the longest time required for transmission of a signal through a switching center, switching the signal onto the emergency path at the inputs, and connecting the respective outputs of the normal path and of the emergency path to place the normal path and the emergency path in parallel for a time at least equal to the longest time required for transmission of a signal through the center, and operating switching means at the outputs to remove the parallel setting and provide the input signal to the output of the normal transmission path.

3,886,319

EXCHANGE SWITCHING SYSTEM

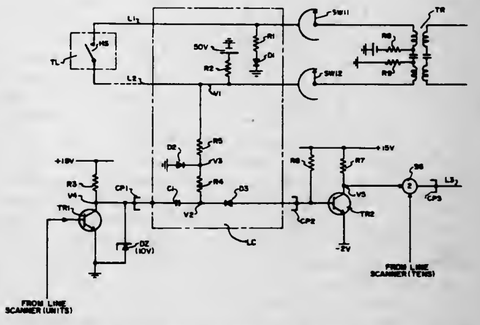
Stephen S. Walker, Walderslade, England, assignor to GTE International Incorporated, Stamford, Conn.

Filed Sept. 28, 1973, Ser. No. 401,758

Claims priority, application United Kingdom, Oct. 16, 1972, 47662/72

Int. Cl. H04m *3/18*

U.S. Cl. 179—18 FA **4 Claims**



1. A two wire telephone exchange switching system including, for monitoring on ON-HOOK or OFF-HOOK (line-looped) condition of an associated subscriber's telephone instrument, a line circuit of the kind employing a scanner driven pulseplus-bias gate for continuous interrogation of the

line condition and including means responsive to the line-looped condition for applying a priming potential to the bias input of said gate, and further including means associated with the supervisory apparatus of the exchange for applying to said line circuit, via line switches when connected to the line wires, a further potential which also serves as a priming potential for the bias input of said gate, there being provided between said line circuit and the bias input of said gate a potential controlled filter means comprising a noise quenching diode connected from a tapping between a line wire and the bias input of said gate to a point of datum potential, in the ON-HOOK condition said diode being reverse-biased and the arrangement being such that in response to application of said further potential from the exchange said diode is forward biased to provide a low impedance path to the scanner noise currents and to divert scanner noise currents from the line wires.

3,886,320
TELEPHONE EXCHANGE SIGNALING SYSTEM

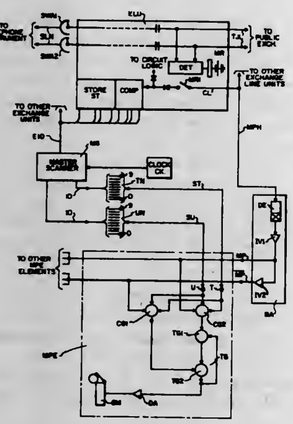
Alan Sutton, Dartford, England, assignor to GTE International Incorporated, Stamford, Conn.

Filed Oct. 15, 1973, Ser. No. 406,724

Claims priority, application United Kingdom, Nov. 10, 1972, 52151/72

Int. Cl. H04q *11/00*

U.S. Cl. 179—18 J **3 Claims**



1. A telephone exchange system including, a plurality of telephone lines; data processing apparatus comprising a plurality of functionally different apparatus units of which each unit includes a store for receiving data presented thereto in a predetermined code and a comparator for detecting coincidence between data stored in said unit and data presented thereto, a data generating means arranged to generate cylically all possible combinations of coded data to be presented to said stores, said generating means being connected to all such stores in order to present the generated data simultaneously thereto, and said generating means further operable to generate address signals cyclically for enabling each of said signal responsive elements; said generating means being connected to all such stores in order to present the generated data simultaneously thereto, means for initially registering data in a store of at least one of said units, and means, included in or associated with each of said units or at least some of said units, for transferring data stored in such a unit to a further one of said units, the said data transferring means comprising means operable when the comparator of said unit detects coincidence between the data being generated at any time and the data stored by the transferring unit, for allotting a store of a further unit to receive the data being generated at this time; the improvement comprising: a signal responsive element, individually associated with each of at least some of the telephone lines served by the exchange, and in which the data processing apparatus of the exchange includes interrogation means individual to each of said apparatus units and responsive to coincidence between receipt by said apparatus unit of a signal to which such a responsive element is to respond and an output signal from the comparator of said apparatus unit, for producing an output signal, all of said signnal responsive elements being connected by way of a common signal highway to the outputs of all of said interrogation means of said apparatus units and means being provided for enabling each of said signal responsive elements in turn, on a time division multiplex basis defined by said data generating means, to respond to an output signal received via said common signal highway.

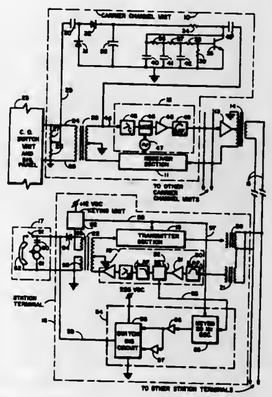
3,886,321
RINGING GENERATOR FOR TELEPHONE STATION TERMINAL

Lester Q. Krasin, and Robert D. McCallum, both of Tulsa, Okla., assignors to Seismograph Service Corporation, Tulsa, Okla.

Filed Nov. 5, 1973, Ser. No. 413,143

Int. Cl. H04m *1/26*; H04q *9/00*

U.S. Cl. 179—84 R **5 Claims**



1. A ringing voltage generator for activating a telephone bell for a carrier telephone station terminal comprising:

an oscillator adapted to oscillate in response to a ringing tone signal;

means cooperating with said oscillator for delaying onset of oscillations for a predetermined time interval following the onset of the tone signal;

means responsive to said oscillator for switching a power supply voltage on and off to form a pulsating current for activating the telephone bell; and

means for disabling the oscillator whenever the station terminal telephone is in an off-hook condition.

3,886,322
FULL ELECTRONIC TWO-WIRE TO FOUR-WIRE CONVERSION CIRCUIT

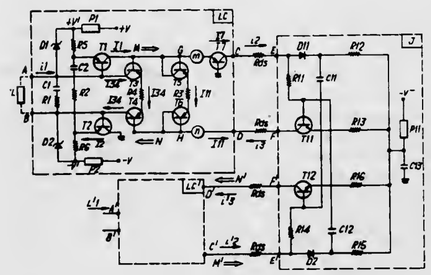
Joël Serge Colardelle, Creteil; Pierre Girard, Paris, and Claude Paul Henri Lerouge, Maurepas, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,385

Claims priority, application France, Oct. 20, 1971, 71.37559

Int. Cl. H04b *1/58*

U.S. Cl. 179—170 NC **6 Claims**



1. An electronic two-wire to four-wire conversion circuit, comprising a switching network, a path through said switching network having a given resistance, a pair of line terminals for receiving a first variable voltage from a subscriber line for transmission of information signals in a first direction away from the subscriber line and for receiving a second variable voltage for transmission of information signals in a second direction toward the subscriber line, a pair of network terminals connecting the switching network to a junctor via two conductors of the switching network respectively assigned to the first and second directions of transmission, the information signals transmitted on said conductors being carried by modulation of a first current in the first direction and by modulation of a second current in the second direction, means including a resistor and a capacitor coupled in series between the line terminals, a pair of intermediate terminals coupled between the line terminals and the network terminals, means including a resistor interconnecting the intermediate terminals, a first complementary differential amplifier coupled between the line terminals and the intermediate terminals, a first current generator coupled between a first one of the intermediate terminals and a first one of the network terminals, means providing a common connection between a second line terminal and a second intermediate terminal, whereby for information signals, current mode operation is set on the network side at the network terminals in the first direction by loading the first current generator with a first resistor and, in the second direction, by supplying a second current from a second current generator connected via a second resistor and the second network terminal to the second intermediate terminal, said second resistor being selected to have a value equivalent to the resistance of the path through the switching network.

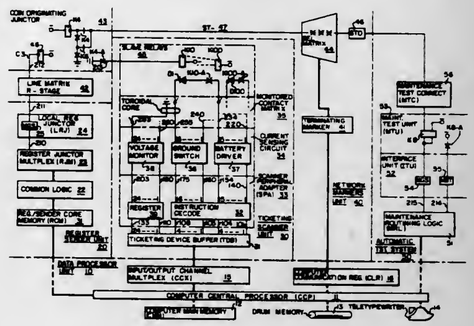
3,886,323
METHOD AND APPARATUS FOR TESTING COMMUNICATIONS SWITCHING SYSTEM SPACE DIVIDED EQUIPMENT SUPERVISORY DEVICES

Howard R. Miller, College Station, Tex., and Leo J. Putchinski, Jr., Wheeling, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 27, 1974, Ser. No. 446,548

Int. Cl. H04m *3/26*

U.S. Cl. 179—175.2 R **6 Claims**



1. In a communication switching system having a switching network for establishing connections between calling and called lines in response to common equipment and having a plurality of space-divided equipment units communicating with the common equipment for performing control operations, the common equipment including scanning means for monitoring the space-divided equipment units, each one of the space-divided equipment units including a supervisory device for generating a supervisory signal and for supplying it to said scanning means, a method of in-circuit testing of space-divided equipment devices, comprising:

providing testing means for controlling one of the space-divided equipment devices under test;

establishing a test connection through the network between said testing means and the device under test;

causing said testing means to control the operation of the device under test and thus to control the generation of its supervisory signal for testing purposes;

causing said scanning means to sense the supervisory signal of the device under test; and

determining whether the device under test is able to operate properly in response to said scanning means.

3,886,324
ADAPTABLE MOUNTING FOR ALTERNATIVE FORMS OF TELEPHONE DIALS

Raymond Charles Hemming, London, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed July 17, 1974, Ser. No. 489,240

Int. Cl. H04m *1/02*

U.S. Cl. 179—178 **4 Claims**

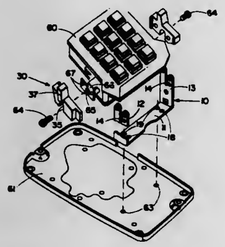
1. An adaptable mounting for alternative forms of dials in telephone sets, comprising:

a bracket for attachment to a base plate and the telephone set, said bracket including a base web and two upstanding spaced apart legs, a slot extending downwardly from a top edge of each leg and a pair of holes adjacent said top edge in each leg, a hole each side of each slot, said holes adapted to receive protrusions on mounting brackets attached to a first form of dial, each slot adapted to receive a screw for attaching said first form of dial, and two pairs of holes in said base web, a first pair in a forward position and a second pair in a rearward position;

means for attaching said bracket to said base plate by one of said two pairs of holes;

a spacer for positioning between said base plate and said base web and having a pair of holes for alignment with said second pair of holes in said base web for mounting said first form of dial;

adaptors for positioning on said bracket, an adaptor on each leg; each adaptor including a rib slideable in said slot in



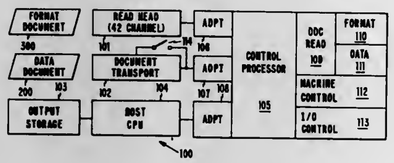
said leg, a further slot extending through the adaptor and a pair of recesses in an inner face, said slot further slot adapted to receive a screw for attaching a second form of dial, said recesses adapted to receive protrusions on said mounting bracket of said second form of dial.

3,886,325

FORMATTING FOR RECORD-CONTROLLED MACHINES

Richard L. Dorr; Georg N. Gaebelein; Donald J. Kostuch, and Malcolm E. Varner, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1973, Ser. No. 352,393
Int. Cl. G06k *7/00*; **G06f** *9/04*
U.S. Cl. 235—61.6 R **54 Claims**



1. A system for reading data indicia on data documents according to an arbitrary format prescribed by a separate format document having preprinted format fields adapted to be marked with format indicia for specifying particular attributes of said data documents, said system comprising:

meanas for collecting indicia on said separate format and data documents, and for producing signals therefrom;

means for differentiating between said preprinted format document and said data documents, and for constructing a format configuration from those of said signals representing said format indicia in accordance with the locations of said format indicia within respective ones of said preprinted format fields;

means for constructing data records for each of said data documents in response both to said format configuration and to those of said signals representing said data indicia; and

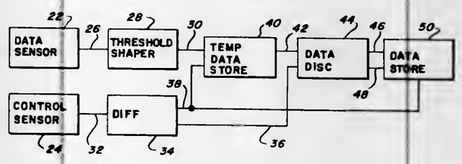
means for transmitting said data records to an output device.

3,886,326

DATA-SENSING VERIFICATION SYSTEM AND METHOD

Edward E. Horvath, and Robert M. Janoski, both of Madison, Wis., assignors to T & T Technology, Inc., McFarland, Wis.

Filed June 8, 1973, Ser. No. 368,332
Int. Cl. G06k *5/00*, *7/14*
U.S. Cl. 235—61.6 E **28 Claims**



1. A data-sensing verification system for indicating the validity of a signal representative of data contained in a marking location on a document having a plurality of control marks associated with said marking location, said data taking the form of the presence or absence of a mark in said marking location, said system comprising:

data-sensing means for sensing data in said marking location and for generating in response to the data sensed a data signal representative thereof, the data signal varying in value as a function of variations in the form of said data;

control mark sensing means for sensing each of said control marks and for generating a plurality of control signals, one in response to the sensing of each control mark; and

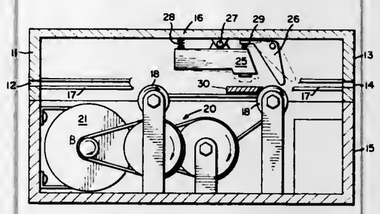
means for sampling said data signal in response to each of said control signals and for generating an indicating output indicative of the validity of said data signal as a function of the existance of a selected relationship between said samples.

3,886,327

CREDIT CARD

Laszlo J. Dobosi, 4317 Markwood La., Fairfax, Va. 22030

Filed Mar. 5, 1974, Ser. No. 448,416
Int. Cl. G06k *7/08*; **G11b** *5/54*, *21/22*; **G06k** *19/00*
U.S. Cl. 235—61.7 B **1 Claim**



1. A credit card utilization system comprising a plurality of credit cards, each credit card bearing an elongate strip of sound recording material, said strip being disposed lengthwise of the credit card and including a recorded code word known only to the owner of the card, and a plurality of card reading devices for reproducing the code word recorded on said strip, said card reading devices each comprising a housing, an inlet slot in a first wall of the housing for receiving a credit card to be read, an outlet slot in a second wall of the housing for discharging a credit card from said card reading device, rotatable wheels within said housing and positioned such that a card introduced into said device is supported on the periphery thereof such that, on rotation of said wheels, said card is transported in a straight path through said housing from said inlet slot to said outlet slot, means for rotating said wheels, sound reproducing means located adjacent said straight path for reproducing the code word recorded on said strip and comprising a sound reproducing head moveably mounted

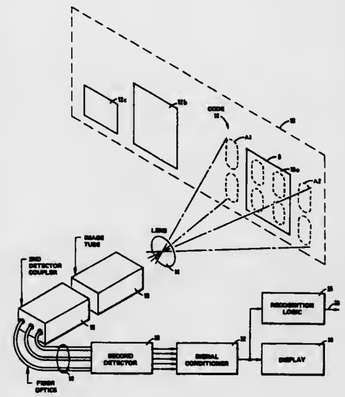
within said housing and moveable between a first position in which the head is spaced from a card in said straight path and a second position in which the head is in sound reproducing association with said strip on a card in said straight path for reproducing said recorded code word, a trigger member actuated by motion of said card in said straight path for moving said sound reproducing head from said first position to said second position for reproducing the code word recorded on said strip, means for biasing said head into said first position, and listening means to permit an operator of the device to listen to the reproduced code word for comparison with a code word given orally by the card owner.

3,886,328

ELECTRO-OPTICAL READER

A. D. Harms, Jr., Winona; Robert B. Hemphill, Dallas; Chris A. Balthrop, Bedford, and Harley D. Peter, Dallas, all of Tex., assignors to E-Systems Inc., Dallas, Tex.

Filed June 1, 1973, Ser. No. 366,190
Int. Cl. G06k *7/10*; **G08c** *9/06*; **G11c** *11/42*
U.S. Cl. 235—61.11 E **27 Claims**



1. A recognition system for reading encoded data carried by an object and moving with respect to a reading station along a travel path, comprising in combination:

first means for receiving energy reflected from the encoded data to provide a first background image area from a first zone at the reading station, a code image area from a second zone at the reading station juxtapositioned the first zone, and a second background image area from a third zone at the reading station juxtapositioned the second zone;

second means for electronically deflecting energy reflected from the encoded data of the three zones at the reading station to said first means;

third means coupled to said first means and responsive to the three image areas to generate a first electrical signal related to said code image area, and a second electrical signal related to said first and second background image areas; and

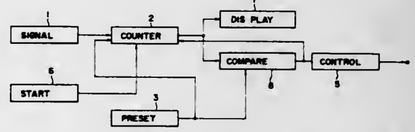
circuit means connected to receive said first and second electrical signals for combining said first and second electrical signals into a series of code related pulses representing the object carried encoded data.

3,886,329

PRESET COUNTER APPARATUS

Hiromitsu Kamiyama, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1974, Ser. No. 433,815
Claims priority, application Japan, Jan. 18, 1973, 48-7389
Int. Cl. H03k *21/36*; **G03b** *27/06*
U.S. Cl. 235—92 SB **6 Claims**



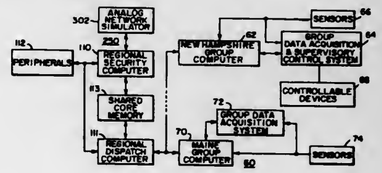
1. A preset counter apparatus comprising a comparator circuit for producing a first control signal when a value to be compared is smaller than a reference value and producing a second control signal when said value to be compared is equal to or greater than said reference signal, a control means actuated by said second control signal from said comparator circuit to control operation of a utilization machine, a preset means to preset a preselected number of said machine operations and supply said preset information to said comparator circuit as said reference value, means operatively interlocked with said machine operations to generate signals represetative of said operations, a counter circuit to count said operation representing signals and apply the count information thereof to said comparator circuit as said value to be compared with said reference value, and a start signal means to supply a machine operation start signal to said counter circuit, wherein said counter circuit is so arranged as to usually hold therein said preset information from said preset means and, upon application of a signal from said start signal means, to clear said preset information and begin to count the number of signal from said operation representing signal means starting from zero state, said counter circuit, upon beginning said count, being maintained in the state in which said preset information is cleared by means of said first control signal from said comparator circuit and, upon receiving said second control signal from said comparator circuit, being restored to said usual state, and at the same time resetting said start signal means to the original state before the operation was initiated.

3,886,330

SECURITY MONITORING SYSTEM AND METHOD FOR AN ELECTRIC POWER SYSTEM EMPLOYING A FAST ON-LINE LOADFLOW COMPUTER ARRANGEMENT

David M. Egelston, Pittsburgh, Pa., and Jerry C. Russell, Minneapolis, Minn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 26, 1971, Ser. No. 175,292
Int. Cl. G06g *7/62*; **H05k** *1/00*
U.S. Cl. 235—151.21 **14 Claims**



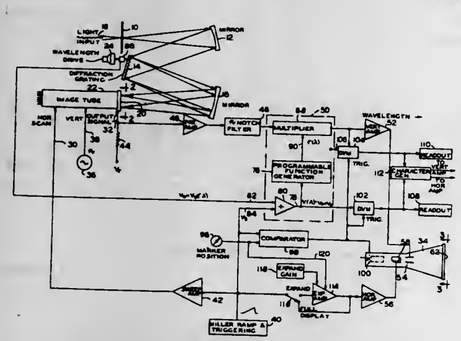
1. A security monitoring system for an electric power system comprising a security loadflow computer including an analog network simulator and a programmed digital computer, means for generating signals representing predetermined on-line system data including at least some unit genera-

tor and tieline power values and at least some bus voltage values, means for applying said data signals to said digital computer, said digitial computer including means for storing said predetermined on-line data, said analog simulator including a plurality of bus DC circuits and line DC circuits interconnected to correspond to the AC network, said digital computer including means for generating representations of bus generation and load currents as a function of predetermined parameters including stored bus power and voltage data, an analog output system, said digital computer further including means for causing said output system to generate phasor current signals representative of the digital computer determined bus generation and load currents, means for applying the phasor bus generation and load current signals to the corresponding bus DC circuits, each of said bus DC circuits including means for responding to line phasor current and bus generation and load phasor input current signals and for generating an output bus voltage phasor signal, each of said line DC circuits including means for responding to the difference between applied bus voltage phasor signals and generating an output line phasor current signal in accordance at least with a representation of the equivalent series branch line impedance, said digital computer further including means for generating representations of bus voltage phasor signals after the generation and load phasor current signals are applied to said DC bus circuits, means for generating representations of bus generation and load current values in successive iterations after a startup iteration as a function of bus voltage values determined in the next preceding iteration, means for converging the iterative process to a solution and for sensing when a solution is reached and means for monitoring representations of predetermined solution parameters and generating alarms under predetermined conditions.

3,886,331
ELECTRONIC SCANNING SPECTROPHOTOMETER SYSTEM

Joseph Philip Schierer, Jr., Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 230,763, March 1, 1972, abandoned. This application Sept. 14, 1973, Ser. No. 397,381
Int. Cl. G01j *3/02*
U.S. Cl. 235—151.3 **21 Claims**



1. A spectrophotometer apparatus in which the improvement comprises:

optical means for separating an input light signal into spacially displaced spectral images of light of different wavelengths and intensities;

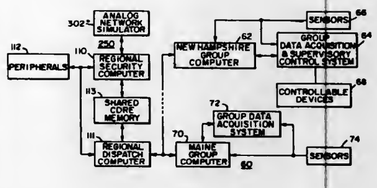
photoelectric detector means for receiving and measuring said spectral images;

scanning means for scanning said spectral images to cause said detector means to produce an electrical analog output signal including spectral intervals having time and amplitude characteristics corresponding to the wavelength and intensity of said spectral images, said scanning means also producing an electrical analog control signal during said scanning; and electronic normalizer means connected to the output of said detector means, including function generator means for changing by different predetermined amounts the amplitudes of the spectral intervals of said analog output signal in response to a predetermined electrical output signal produced by said function generator means when the analog control signal is applied to the input of said function generator means by said scanning means, to compensate for nonuniform spectral response characteristics of said apparatus and to produce a normalized analog output signal whose spectral intervals have amplitudes proportional to the intensities of the corresponding spectral images of the input light signal.

3,886,332
APPLICATION OF BASECASE RESULTS TO INITIATE ITERATIONS AND TEST FOR CONVERGENCE IN A HYBRIDE COMPUTER ARRANGEMENT USED TO GENERATE RAPID ELECTRIC POWER SYSTEM LOADFLOW SOLUTIONS

Jorge E. Petit, Bethel Park, Pa.; Mark K. Enns, Ann Arbor, Mich., and Norman R. Carlson, Export, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 26, 1971, Ser. No. 175,291
Int. Cl. G06g *7/62*; **H05k** *1/00*
U.S. Cl. 235—151.21 **16 Claims**

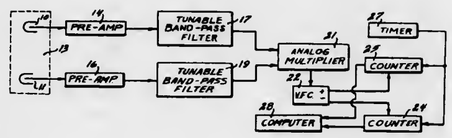


1. A hybrid loadflow computer arrangement comprising a DC analog simulator of an AC network, said simulator including a plurality of bus DC circuits and line DC circuits interconnected to correspond to the AC network, a programmed digital computer including means for generating bus generation and load current values as a function of predetermined parameters including stored bus power and voltage data, an analog output system, said digital computer further including means for causing said output system to generate phasor current signals representative of the digital computer determined bus generation and load current values, means for applying the phasor bus generation and load current signals to the corresponding bus DC circuits, each of said bus DC circuits including means for responding to line phasor current and bus generation and load phasor input current signals and for generating an output bus voltage phasor signal, each of said line DC circuits including means for responding to the difference between applied bus voltage phasor signals and generating an output line phasor current signal in accordance at least with a representation of the equivalent series branch line impedance, said digital computer further including means for generating representations of bus voltage phasor signals after the generation and load phasor current signals are applied to said DC bus circuits, means for generating bus generation and load current values in successive iterations after a startup iteration as a function of bus voltage values determined in the next preceding iteration, means for converging the iterative process to a solution, means for generating specified voltages for the network busses including acquired on-line voltage values for at least some of the busses, means for comparing at least some of the respective computed bus voltage signal representations with the respective specified bus voltages, and means for terminating the iterations and producing a loadflow solution when the bus voltage differences conform to a predetermined standard.

3,886,333
METHOD OF EVALUATING THE PRECISION OF CROSS-SPECTRAL DENSITY MEASUREMENTS OF RANDOM NOISE

Charles E. Cohn, Clarendon Hills, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation-in-part of Ser. No. 265,060, June 21, 1972, abandoned. This application Dec. 21, 1973, Ser. No. 427,393
Int. Cl. G21c *17/00*; **G06g** *7/19*
U.S. Cl. 235—181 **1 Claim**



1. The method of measuring the coherence of first and second noise signals including the steps of:

a. filtering each of said first and second noise signals in first and second band-pass filters respectively, the band of frequencies passed by each of said band-pass filters being the same and further being within the band of frequencies of interest and having a bandwidth narrow enough to give sufficient resolution so that variations in the cross power spectral density function are not smeared and wide enough to give adequate precision;

b. multiplying said filtered first and second noise signals in an analog multiplier to develop a first product signal with said first and second noise signals having the same polarity and a second product signal with said first and second noise signals having opposite polarities;

c. converting said first and second product signals to first and second pulse trains respectively;

d. integrating said first pulse train over a predetermined time period T to develop the parameter A;

e. integrating said second pulse train over said time period T to develop the parameter B; and

f. calculating the coherence γ according to the formula

$$\frac{A}{B} = \frac{2/\pi\,(\gamma \sin^{-1}\gamma + \quad 1-\gamma^2+\gamma)}{2/\pi\,(\gamma \sin^{-1}\gamma + \quad 1-\gamma^2-\gamma).}$$

3,886,334
METHOD AND APPARATUS FOR SIMULATING A CLASS OF AIRCRAFT

Thomas R. Cummings, and William J. Hewitt, both of Binghamton, N.Y., assignors to The Singer Company, New York, N.Y.

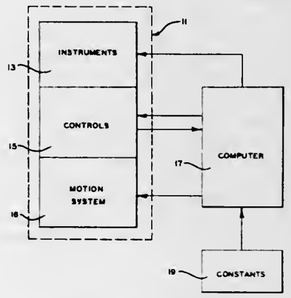
Continuation of Ser. No. 67,358, Aug. 27, 1970, abandoned. This application June 7, 1973, Ser. No. 367,804
Int. Cl. G06g *7/72*
U.S. Cl. 235—184 **12 Claims**

1. Apparatus for simulating in real time any selected vehicle of a predetermined class of vehicles having common operational and physical characteristics, comprising:

a trainee station having simulated controls and instruments for providing outputs representative of a trainee's operation of the simulated controls and for receiving inputs representative of instrument readings;

computing means for receiving and processing said outputs according to motion and engine equations for said class of vehicles, said equations being expressed in terms of vehicle parameters for one vehicle of said class and conversion constants which compensate for differences in performance between said one vehicle and the other vehicles of said class; and

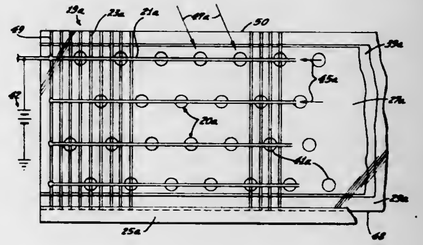
means for providing to said computing means electrical signals representative of values of the conversion constants for any selected vehicle of said class, said computing means employing said electrical signals to process said outputs and produce said inputs, whereby said selected vehicle is simulated.



3,886,335
COLLATED CABLE MATRIX SWITCH

John E. Hendricks, Encino, Calif., assignor to Industrial Electronics Engineers, Inc., Van Nuys, Calif.

Filed Jan. 26, 1973, Ser. No. 327,152
Int. Cl. H01h *13/70*; **G08c** *9/00*
U.S. Cl. 200—1 R **27 Claims**



1. A switch assembly having a plurality of switches for switching an input signal and being adapted for use with a keyboard having a plurality of keys each associated with one of the switches, the keys being aligned in a plurality of rows each extending in a first direction and a plurality of columns each extending in a second direction transverse to the first direction, the assembly comprising:

a first backing member having a substantially planar inner surface and electrical insulating properties;

a plurality of first conductors disposed on the inner surface of the first backing member and each having the input signal thereon, the first conductors extending in the first direction and spaced in electrically insulated relationship to one another;

a second backing member having a substantially planar inner surface and electrical insulating properties;

a plurality of second conductors disposed on the inner surface of the second backing member and extending in a third direction different from the first direction and the second direction and spaced in electrically insulated relationship to one another, at least one particular conductor included among the second conductors on the second backing member and extending in close proximity

to an associated pair of the first conductors on the first backing member at a particular pair of the switches;

portions of at least the second backing member defining an aperture which extends across and interrupts each of the particular conductors to break the electrical continuity of the associated particular conductor between the associated particular pair of the switches;

insulation means disposed in juxtaposition to the inner surface of the first backing member and the inner surface of the second backing member for normally insulating the first conductors from the second conductors, the insulating means defining a plurality of openings between the associated first conductor and the associated second conductor at each of the switches; whereby

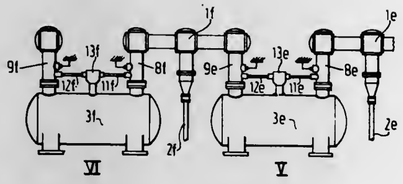
the keys of the keyboard are actuable to move the associated second conductor through the associated opening in the insulation means and into electrical contact with the associated first conductor to switch the input signal from the associated first conductor to the associated second conductor.

3,886,336

METAL CLAD SWITCH GEAR FOR HIGH VOLTAGES

Rintje Boersma, Harmelen, and Gijsbert Waldemar Irik, Bilthoven, both of Netherlands, assignors to COQ B.V., Utrecht, Netherlands

Filed Apr. 11, 1974, Ser. No. 459,939
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 R **4 Claims**



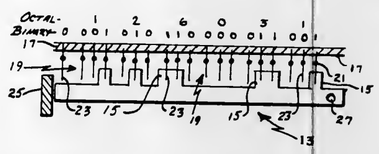
1. Metal clad switch gear for high voltages provided in each phase with single-pole switching sections which are connected in series in a closed ring and junction points for the connection of cables or other network-lines, each switching section extending in said ring between two such junction points and comprising at least two isolator switches with single interruption, a circuit-breaker connected between said isolator switches, two earthing switches cooperating with said isolator switches, connecting conductors interconnecting said isolator switches and said circuit-breaker, driving mechanisms and metal casings surrounding said switches, circuit-breaker and connecting conductors, each isolator switch and each earthing switch including at least one fixed contact and one movable switching contact cooperating therewith, one of the two cooperating contacts of each isolator switch being permanently electrically conductively connected with a junction point and the other one being permanently electrically conductively connected both with a connecting conductor leading to the circuit-breaker and with one of the two cooperating contacts of the earthing switch cooperating with the isolator switch in question, the other contact of said earthing switch being attached to the metal casing surrounding said earthing switch, and the driving mechanisms of the two isolator switches and the two earthing switches of each switching section being so coupled with one another that during each switching operation in a section the two isolator switches thereof are simultaneously brought from their open into their closed and from their closed into their open condition, respectively, and the two earthing switches of said section are simultaneously brought from their closed into their open and from their open into their closed condition, respectively.

3,886,337

TEMPLATES FOR SWITCH SETTING IN COMPUTER CONTROL

Kurt H. Haase, Watertown, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 7, 1973, Ser. No. 413,730
Int. Cl. H01h *43/08*
U.S. Cl. 200—46 **1 Claim**



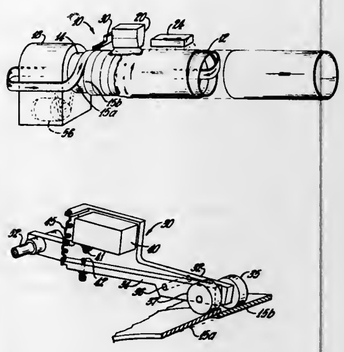
1. Apparatus for simultaneously setting a number of toggle switches in a row on a control panel comprising, a plurality of elongated rectangular templates, a series of teeth on the inward edge of each of said templates and extending inwardly therefrom, said series of teeth contacting the handles of a predetermined group of switches on the control panel, and a guide bar fixedly positioned to slidably contact one end of said template to prevent lateral movement during the setting operation, in combination with a wire ring passing through aligned openings in each of the templates for holding and indexing said plurality of templates in the proper sequential order, and a separation washer positioned on said ring between the first and last of said plurality of templates such that each of the templates can be used individually in the proper sequence without removal from said ring, whereby each template which is positioned in the proper location relative to the switches on the control panel can be provided with upward movement for simultaneously setting to the active position the particular group of switches corresponding to the pattern of teeth on the template.

3,886,338

BAND OVERLAP DETECTOR SWITCH FOR CONTINUOUS RIBBON MANDREL

Terence M. Lokun, Conroe, Tex., and Peder Ulrik Poulsen, Fredensborg, Denmark, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 16, 1974, Ser. No. 433,962
Int. Cl. B65h *25/14*
U.S. Cl. 200—61.13 **2 Claims**



1. A band overlap detecting apparatus for a continuous ribbon mandrel having an endless forming surface provided by

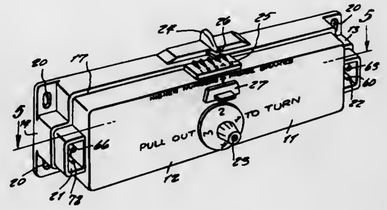
a continuously helically advanceable band helically wound in a plurality of side-by-side convolutions and having electric driving means for the band, comprising a first elongated member having a first end portion in operative engagement with a first one of the convolutions and an opposite second end portion mounted to accommodate pivotal movement of the member about an axis generally parallel to the axis of the helix defined by the helically wound band, a second elongated member spaced from the first member axially of the helix and extending generally parallel to the first member, the second member having a first end portion in operative engagement with a second one of the convolutions immediately preceding the first one operatively engaged by the first member, means mounting the second member on the first member at intermediate portions respectively thereof for pivotal movement of the second member with respect to the first member about an axis generally parallel to the axis of the helix, electric switch means mounted on one of the members and disposed between the mounted second end portion of the first member and the axis of pivotal movement of the second member with respect to the first member, the switch means having a pair of normally open contacts and a depressible actuator closing the contacts when depressed to complete a circuit through the electric driving means for the band, actuator depressing means mounted on the other of the members and engageable with the actuator of the switch means, and biasing means operatively connected to a second end portion of the second member and urging the actuator depressing means and the actuator toward each other to maintain the contacts of the switch means closed during normal operation of the mandrel, the biasing means also urging the first end portion of the second member rotatably about the axis of pivotal movement of the second member and toward the second convolution, whereby upon undesired overlapping of the first convolution by the second convolution, the second member is pivoted against the force of the biasing means to release the actuator and permit the contacts of the switch means to open and interrupt the circuit through the driving means for the band.

3,886,339

SENSING DEVICE FOR AUTOMATIC BRAKE SYSTEM INCLUDING INERTIA SWITCH WITH MAGNETIC HOLDING MEANS

Arthur R. Jubenville, deceased, late of 20 Grist Mill Ln., Halesite, N.Y., and by Irene L. Jubenville, administratrix, 20 Grist Mill Ln., Halesite, N.Y. 11743

Filed Dec. 26, 1973, Ser. No. 427,501
Int. Cl. H01h *35/02, 7/20*
U.S. Cl. 200—61.45 M **30 Claims**



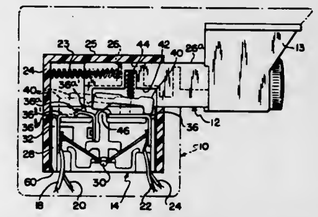
1. An acceleration sensing device comprising an acceleration sensing body, holding means, housing means enclosing said holding means, all means supported thereon and said sensing body in operative relationship, platform means supported on said holding means and forming a rest position normally supporting said acceleration sensing body, first and second switch means supported by said holding means on opposite sides of said platform means, each switch means including two contact means and moveable pole means having a bi-directionally deflectable end portion for closing onto said contact means, lever means forming a predetermined path having two continuous branches each branch extending on opposite sides of said platform means, each branch commencing with a first section adjacent to said platform means having an upwardly inclined concave curved shape followed by a substantially horizontal second section and concluding in a linearally upwardly inclined third section terminating adjacent to the edge of said holding means, the commencing end of each branch being connected to said deflectable end portion of said switch means, said body being moveable along said lever means in response to an acceleration having a component extending along the direction of said path, means biasing said body to normally remain on said rest position so that a predetermined force resulting from the last mentioned acceleration component is required to displace said body, whereby as said body traverses along the lever means said moveable pole means is deflected in one direction to close onto a first one of said contact means as said body engages a first part of said first section and said moveable pole means is deflected in the other direction to close onto the other of said contact means as said body engages the rest of said lever means, and damping means providing a restraining force as said body traverses said lever means.

3,886,340

MEANS FOR POSITIONING A MODULE IN AN ELECTRIC MOTOR CONTROL SWITCH

Robert W. Bittel, 11707 Woodview Boulevard, Parma Heights, Ohio 44130

Filed Aug. 14, 1972, Ser. No. 280,359
Int. Cl. H01h *9/02, 13/08*
U.S. Cl. 200—293 **14 Claims**



1. In a compact electronic switch for controlling an electric power unit comprising, a housing member, a switch module member received in said housing member, and means on said module member coacting with means on said housing member for positioning said module member in predetermined location with respect to said housing member, said means including projecting means comprising a laterally extending cam surface on said module member received in gripped relation between projecting finger means on said housing member.

3,886,341

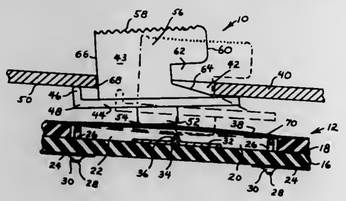
SWITCH OPERATING DEVICE FOR USE WITH AN OVER CENTER DIAPHRAGM SWITCH CONTACT ASSEMBLY WITH CONTACT RAMP CAMMING SURFACE

John W. Forrest, West Acton, Mass., assignor to Bowman/Ali, Inc., Acton, Mass.

Filed May 2, 1973, Ser. No. 356,631
Int. Cl. H01h *9/22*
U.S. Cl. 200—328 **7 Claims**

1. For use in an over center diaphragm switch contact assembly which includes a contact supporting board, a fixed contact, an over center diaphragm contact resiliently deformable from a first position spaced apart from said fixed contact to a second position in electrical contact therewith, and means for making electrical connections thereto, a switch operating device comprising a rigid guide plate fixedly mounted in generally parallel, spaced-apart relationship to said board and diaphragm contact, said plate having an elongated slot therein disposed in registry with said diaphragm contact, and a manually operable knob element having a guide portion positioned between said plate and diaphragm contact and slidably engag-

ing the surface of said plate proximal said diaphragm contact, said guide portion having a width greater than the width of said slot, a nib portion protruding from said guide portion and slidably engaging said diaphragm contact, a tab portion slidably received through said slot for longitudinal movement forwardly and rearwardly therein, and a ramp surface angled forwardly and downwardly from said tab portion to said guide



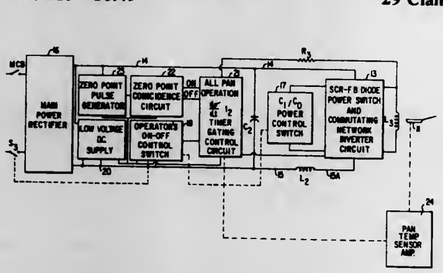
portion, said ramp frictionally, slidably engaging said proximal surface upon longitudinal movement of said tab portion forwardly in said slot thereby causing simultaneous downward movement of said device, said diaphragm contact being operated from said first to said second position thereof in response to said downward movement, said ramp surface frinctionally maintaining said diaphragm contact in said second position.

3,886,342

INDUCTION COOKING UNIT HAVING ALL PAN SAFE OPERATION, WIDE RANGE POWER CONTROL AND LOW START-UP AND SHUT-DOWN TRANSIENTS

Philip H. Peters, Jr., Greenwich, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed Apr. 26, 1973, Ser. No. 354,764
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.49 **29 Claims**



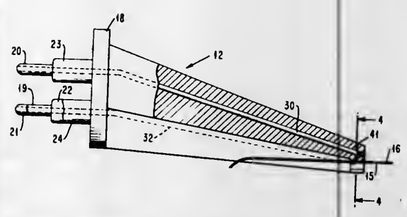
1. An induction heating unit including in combination inverter circuit means comprising gate controlled thyristor means and commutation circuit means coupled together in circuit relationship and excited from a set of power supply terminals, an induction heating coil coupled to and excited by said inverter circuit means in a manner such that the induction heating coil determines at least in part the operating frequency at which the inverter circuit means operates, and gating circuit means coupled to and controlling turn-on of said gate controlled thyristor means, said gating circuit means comprising feed back sensing circuit means coupled to said induction heating coil for deriving a feedback trigger signal synchronized with the frequency of operation of the inverter circuit circuit means, gating signal generator means for generating high frequency signal pulses having a repetition rate determined by the operation frequency for the inverter circuit means and of sufficient energy to insure turn-on of said gate controlled thyristor means, enabling means coupled to and enabling initiation of operation of said gating signal generator means, and alternating current signal coupling circuit means intercoupling said last mentioned enabling means with said feedback sensing circuit means for synchronizing the operation of the gating signal generator means with changes in frequency of the inverter circuit means due to loading and unloading of the induction heating coil.

3,886,343

POLYPHASE ARC STRIPPER

Paul M. Desautels, Poughkeepsie, and Lawrence P. Remsen, Stanfordville, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Oct. 17, 1973, Ser. No. 407,007
Int. Cl. B23p *1/02*
U.S. Cl. 219—68 **7 Claims**



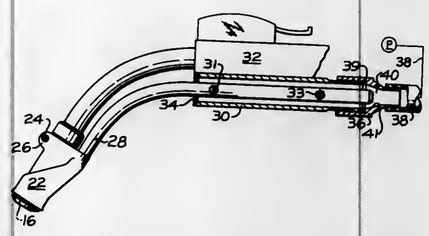
4. Apparatus for stripping insulation from a wire comprising,
at least three electrodes,
electrode supporting means having
a wire receiving space,
means for supporting said electrodes about a point in said space midway between said electrodes,
means for locating a wire at said point,
and having arc transmitting holes between said electrodes and the wire receiving space,
a polyphase power supply connected to said electrodes to produce arcs between pairs of electrodes in a rotating sequence for stripping insulation from a wire at said point.

3,886,344

WELDING FUME EXTRACTOR

John G. Frantzreb, Sr., Peoria, and Robert C. Hansen, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 107,097, Jan. 18, 1971. This application Apr. 25, 1973, Ser. No. 354,193
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 **15 Claims**



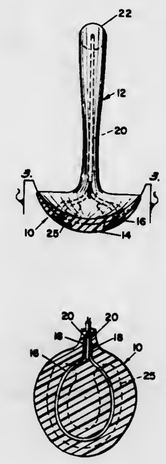
13. In a hand-held light-weight welding gun for use in a welding operation during which smoke and fumes are created, and including an electrical contact member and an associated gun nozzle defining an opening at the forward end thereof through which a shielding gas passes and a weld wire is fed to and contacted with said electrical member to feed electrical current into said wire and produce an arc between the end of said weld wire and a workpiece with the shielding gas surrounding the same, and further including a thermally conductive handle forming a part of said gun remote from said nozzle and being connected to the nozzle by an arcuately curved gooseneck portion; the improvement comprising: means for cooling the handle and simultaneously collecting smoke, fumes, and shielding gas; said means comprising a collecting system including a member having a forward end adjacent to said nozzle opening defining an annular pickup chamber concentric with said nozzle and outwardly-facing orifice means spaced apart from and located rearwardly of said nozzle opening, said member including a rearward end disposed in radially offset relation to said nozzle and providing an exhaust outlet from said chamber; an extraction tube attached to said rearward end of the member in communicating relation with said exhaust outlet leading rearwardly from said pickup chamber; said extraction tube being coextensive with said gun in generally conforming relation to the arcuate underside of said gooseneck portion of the nozzle and at least a portion thereof integral with said handle and in thermal contact therewith; and vacuum suction means operatively connected to said extraction tube and having a capacity considerably greater than the volume of smoke and fumes created by the welding for also drawing ambient air into said collecting system to cool the handle, thereby drawing smoke, fumes, shielding gas and ambient air into said collecting system and simultaneously cooling the handle.

3,886,345

ELECTRICALLY HEATED GRAVY WARMING LADLE

Thelma E. Baisch, P.O. Box 615, Whittier, Calif. 90608

Filed Dec. 20, 1973, Ser. No. 426,820
Int. Cl. H05b *1/00*; **A47j** *43/28*
U.S. Cl. 219—227 **4 Claims**



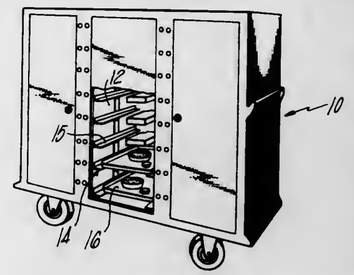
1. A ladle, comprising:
a bowl having a relatively thin free edge and being thicker at the bottom;
an electric heating element in said thicker part;
a handle for the bowl, said handle being inclined upwardly from said bowl;
an electric socket in the handle adjacent its free end;
and electric wires operably connecting the electric heating element with the socket;
a heat retaining metal insert in the bowl adjacent the heating element, said heat retaining insert being heated by the heating element when energized.

3,886,346

REHEATING AND RECONSTITUTION APPARATUS

Peter G. Meyers, Manchester, Conn., assignor to Meyers Systems and Technology, Inc., Manchester, Conn.

Filed Oct. 19, 1973, Ser. No. 407,926
Int. Cl. F27d *11/00*
U.S. Cl. 219—386 **12 Claims**



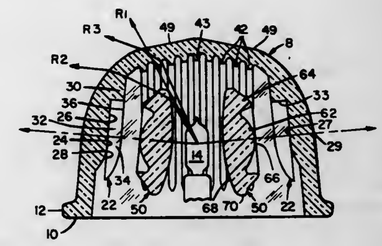
1. Apparatus for heating a material to be heated, including:
first thermoelectric means positioned on a first side of material at a first station to be heated, said first thermoelectric means having opposed hot and cold junctions, the hot junctions of said first thermoelectric means being positioned to serve as a heat source for said first side of the material to be heated;
second thermoelectric means positioned on a second side of the material to be heated, said second thermoelectric means having opposed hot and cold junctions, the cold junctions of said second thermoelectric means being positioned to serve as a heat sink for said second side of the material to be heated; and
infrared heating means positioned adjacent said second thermoelectric means to serve as a heat source for said second side of the material to be heated.

3,886,347

LUMINAIRE

William H. Dorman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 17, 1973, Ser. No. 425,140
Int. Cl. F21v *5/08*
U.S. Cl. 240—1.2 **22 Claims**



1. A refractor in the general shape of two halves symmetric about a plane of symmetry, each of the refractor halves comprising:
a. an end section including an integral Fresnel-type lens; and
b. a center section in the general shape of a transversely elongated semi-frustocone having its base contiguous with the plane of symmetry, the center section including an array of lenticular prisms, the prisms having concave portions and convex portions both lying in planes parallel to the plane of symmetry.

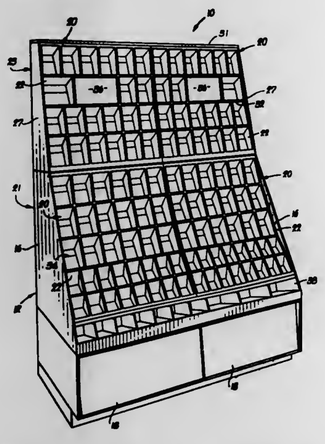
3,886,348
ILLUMINATED PRODUCT DISPLAY FIXTURE FOR EDGE LIGHTING DISPLAYED ARTICLES

Isaac Jonathan, Kansas City, Mo., and John W. Madden, Overland Park, Kans., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.

Continuation-in-part of Ser. No. 361,142, May 17, 1973, Pat. No. 3,821,538. This application May 10, 1974, Ser. No. 468,642

Int. Cl. F21v *33/00*

U.S. Cl. 240—2 AD **9 Claims**



1. An illuminated product display fixture for displaying articles, comprising:

receptacle means having walls presenting at least a pair of inwardly extending, superposed, upper and lower pockets for the reception of articles to be displayed, the bottom wall of said upper pocket being of lesser surface area than that of the adjacent top wall of said lower pocket therebeneath, said top wall being translucent to permit passage of light therethrough;

a light source positioned in spaced relationship behind said receptacle means;

a reflector positioned in spaced relationship behind said light source, the reflector and light source being configured and positioned relative to said receptacle means to cooperatively direct light emanating from said source through said translucent top wall; and

structure for supporting said reflector, light source and receptacle means in article displaying and illuminating disposition.

3,886,349
MECHANICAL CONNECTING DEVICE

Akira Arai, 76, 2 Chome Soshigaya, Setagaya-ku, Tokyo, Japan

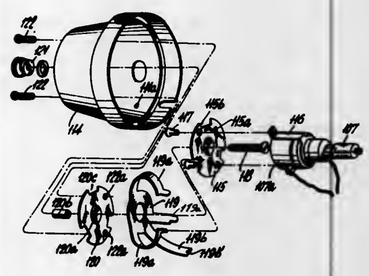
Division of Ser. No. 275,030, July 25, 1972, Pat. No. 3,832,075. This application Mar. 27, 1974, Ser. No. 455,449

Claims priority, application Japan, Aug. 5, 1971, 46-70016

Int. Cl. F21m *13/04*

U.S. Cl. 240—41 L **6 Claims**

1. A projector lamp device comprising a cup shaped shell including a base wall having an opening therein and a forwardly directed peripheral skirt wall, a first plate disposed forwardly of said shell base wall and having an opening therein registering with said base wall opening, a sleeve secured to said first plate in registry with the opening in said first plate and projecting rearwardly through said base wall opening, means supporting said first plate on said shell base wall for angular adjustment of said first plate about angularly related axes, a lamp socket assembly disposed forwardly of said first plate and including a socket rear mounting plate, a spring member having a base section bearing on the front face of said first plate and having an opening registering with said first plate opening and a plurality of angularly spaced curved forwardly outwardly projecting leaf spring fingers extending from



said base section into engagement with peripherally spaced points on said socket rear mounting plate, a screw member secured to said socket rear mounting plate and projecting rearwardly loosely through said sleeve and an adjustable nut engaging said screw member rearwardly of said sleeve.

3,886,350
LIGHT PROJECTOR APPARATUS FOR CONTROLLING PROFILE OF LIGHT PROJECTION

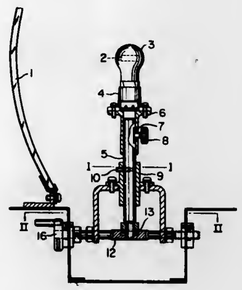
Kiichiro Katsukura; Kazuyoshi Katsukura, both of 14-4, 2-chome, Kamata, Ota-ku, Tokyo, and Taiji Sato, 3048 Hira-Kata, Koshigaya, all of Japan

Filed June 29, 1973, Ser. No. 375,157

Claims priority, application Japan, July 7, 1972, 47-67580

Int. Cl. F21v *19/02*

U.S. Cl. 240—44.2 **5 Claims**



1. A light projector apparatus comprising: a reflector, an electric lamp having a light source within the bulb thereof and located at or near the focus point of the reflector, a rotating means for the electric lamp, the light source being an elongated luminous body rotatable between fixed positions transversely and longitudinally with respect to the surface of the reflector thereby obtaining a different profile of light emission when said rotating means is actuated and the light source is rotated to a new fixed position, and means for fixing the position of the light source with respect to the reflector at a plurality of different positions between the longitudinal and transverse positions.

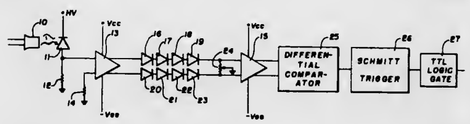
3,886,351
OPTICAL-TO-ELECTRONIC INTERFACE CIRCUIT

Donald N. Williams, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 11, 1974, Ser. No. 449,814

Int. Cl. H01j *39/12*

U.S. Cl. 250—206 **7 Claims**



1. An optical-to-electronic interface circuit comprising:

a photo-responsive means positioned to receive light signals for developing electrical output signals as a function of said light signals;

a first differential amplifier connected to receive said electrical output signals as a first input, and a known fixed reference as a second input for generating first and second output signals having a differential therebetween as a function of the differential between its received inputs; a second differential amplifier;

first and second unidirectional current paths connecting said first and second output signals as inputs to said second differential amplifier; and

a differential comparator connected to receive the output signals of siad second differential amplifier for generating a signal as a function of the difference between said output signals developed by second differential amplifier.

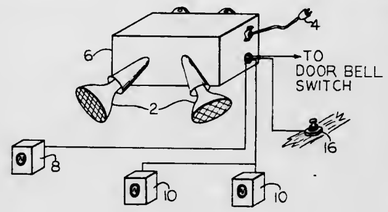
3,886,352
LIGHT AND CHIME CONTROL SYSTEM

Thomas K. Y. Lai, 38 A Niolopa Place, Honolulu, Hawaii 96800

Continuation-in-part of Ser. No. 242,351, April 10, 1972, Pat. No. 3,790,848. This application Oct. 25, 1973, Ser. No. 409,662

Int. Cl. G08g *1/14*; **G10k** *3/00*; **H05b** *41/36*

U.S. Cl. 250—215 **9 Claims**



1. A system for responding to intentionally indicated presence of persons comprising a power source,

a response means connected to the power source for receiving power from the source and performing a discernible response,

a controller connected to the source and to the response means for selectively completing a circuit from the source to the response means, whereby the response means operates,

a time delay means connected to the controller for delaying complete operation of the response means,

intentionally activated indicator means connected to the controller for setting the controller and time delay means in operation upon actuation of the indicator means wherein the intentionally activated indicator means comprises an automobile presence sensing indicator means and a doorbell pushbutton switch mounted along side of a door, wherein the response means comprises door chime means, and wherein the controller comprises a circuit connected between the indicator and the chime for ringing a first tone of a chime and wherein the time delay means comprises an electronic time delay for delaying a ringing of a second tone of a chime thereby to differentiate between indicator means activated by a doorbell pushbutton switch and by the automobile presence sensing indicator.

6. The system for responding to intentionally indicated presence of persons comprising a power source, an intentionally activated indicator means comprising a doorbell pushbutton switch mounted near a door of a house and a response means comprising lights associated with the house, and a controller means comprising an electronic circuit connected to the power source, to the pushbutton and to the lights and including a time delay means for supplying power from the power source to lights associated with the house after a time delay which is consistent with a normal human response to a doorbell, whereby a person pressing a doorbell is aware of a normal human response to the ringing of the doorbell.

3,886,353
AUTOMATIC CONTINUOUS CONTAINER INSPECTING METHOD AND APPARATUS

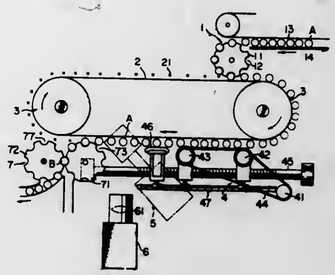
Kazuhisa Shioya, Tokyo, Japan, assignor to Tatibana Works, Limited and Diichi Seiyaku Company, Limited, both of Tokyo, Japan

Filed Dec. 28, 1973, Ser. No. 429,666

Claims priority, application Japan, Dec. 29, 1972, 48-1309; Dec. 29, 1972, 48-1310; Dec. 29, 1972, 48-1311; Dec. 29, 1972, 48-1452

Int. Cl. H01j *39/12*

U.S. Cl. 250—223 B **28 Claims**



1. A continuous container inspecting method comprising the steps of:

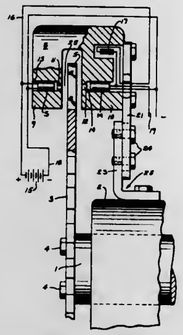
revolving each of the containers which are pervious to light; moving said containers in line continuously;

projecting light to each of the linearly moving containers and detecting flaws on and alien matter in each of the containers by a detecting means provided stationarily and perpendicularly to the direction of movement of the containers and having a wider range of view in the direction of movement of the containers than the container.

3,886,354
ARRANGEMENT FOR OPTICAL SCANNING OF THE SPEED OF A ROTATING DEVICE SUCH AS A VEHICLE WHEEL

Lennart Bror Anders Swidén, Bjornsbacken 32, S-59061 Vreta Kloster, and Waldemar Lester, Bondegatan 11B, S-582-63 Linkoping, both of Sweden

Filed Feb. 1, 1974, Ser. No. 438,729
Claims priority, application Sweden, Feb. 6, 1973, 73015935
Int. Cl. G01d *5/36*
U.S. Cl. 250—233 **2 Claims**



2. In rotational speed information apparatus of the type comprising a light source for producing a substantially constant intensity light emission, and a photoresponsive device which responds to reception of light emission from said source with an electrical output of one level and to non-reception of such emission with an electrical output of another level but which may have unpredictable and unequal inherent delays in its responses to the beginning and ending, respectively, of its reception of such emission, means for causing the output of said photoresponsive device to correspond to the rotational speed of a rotatable member and to consist of pulses at one of said levels alternating with pulses at the other of said levels, the pulses of each level being equal in duration to those of the other level when the rotational speed of said member is constant so that both the frequency and the duration of pulses of each level at all times accurately correspond to the existing rotational speed of said member, the last named means comprising:

A. a disc rotatable about an axis and constrained to rotate with the rotatable member, said disc having an annular zone, concentric to said axis and defined by an inner circle of one radius and an outer circle of larger radius, in which there are circumferentially alternating transparent and opaque areas,
   1. each area of one of said kinds being defined from its circumferentially adjacent areas of the other of said kinds by opposite edges that are parallel to one another and equidistant from said radius to a radius from said axis,
   2. each area of each of said kinds being uniform with all other areas of its kind, and
   3. all of said areas being of equal circumferential extent on a median circle which is concentric to said axis and has a radius intermediate the radii of the inner and outer circles;

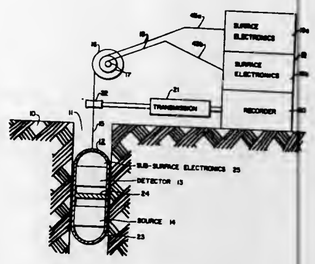
B. supporting means fixing the light source and the photoresponsive device in such alignment with one another as provides for reception by the device of light emissions from the light source and in such spaced apart relationship that said zone of the disc is interposed between them for intermittent interruption of such reception during rotation of the disc; and

C. mounting means confining said supporting means to adjusting motion in directions radial to the disc axis by which the light source and photo-responsive device can be established at the position between the inner and outer circles at which said delays are compensated for by differences between the circumferential extents of the respective kinds of areas, said mounting means providing for fixing the supporting means in any such position of adjustment.

3,886,355
METHOD AND APPARATUS FOR LOGGING WELL BOREHOLES WITH GAMMA RAYS FROM THE INELASTIC SCATTERING OF FAST NEUTRONS

Richard B. Culver, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 146,332, May 24, 1971, Pat. No. 3,787,686. This application Oct. 3, 1972, Ser. No. 294,715
Int. Cl. G01t *1/16*
U.S. Cl. 250—270 **4 Claims**



1. A method of well logging comprising the steps of:
irradiating the formations surrounding an earth borehole with high energy neutrons;
detecting radiations emanating from said formations resulting from said formations being irradiated by said neutrons;
generating a first electrical signal based upon said detected radiations relating to the carbon content of said formations;
generating a second electrical signal based upon said detected radiations relating to the oxygen content of said formations;
generating a third electrical signal based upon said detected radiations relating to the silicon content of said formations;
generating a fourth electrical signal based upon said detected radiations relating to the calcium content of said formations;
generating a fifth electrical signal functionally related to the ratio of said first and second signals;
generating a sixth electrical signal functionally related to the ratio of said third and fourth electrical signals; and
modifying said fifth electrical signal as a function of a characteristic of said sixth electrical signal.

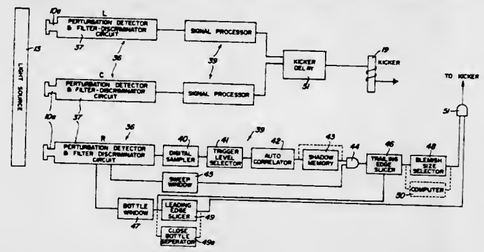
3,886,356
OPTICAL INSPECTION APPARATUS

Thiel J. Gomm, and Stephen E. Price, both of Salt Lake City, Utah, assignors to Inex, Inc., Denver, Colo.

Continuation of Ser. No. 395,944, Sept. 10, 1973, abandoned. This application Oct. 29, 1973, Ser. No. 410,538
Int. Cl. H01j *39/12*
U.S. Cl. 250—223 B **12 Claims**

1. An optical inspection apparatus, comprising in combination:

a housing;
a light source within the housing for illuminating an object capable of transmitting light therethrough;
means for transporting said object through the housing to be inspected therein;
a solid state scanning means adapted to sweep vertically to receive light transmitted through the object, said scanning means having the capability to generate signals having deviations in characteristics proportional to the rate of change in light intensity received therein after passing through said object under inspection;
circuitry means for providing signal suppression except when an item under inspection is in a preferred viewing area, providing thereby a window through which the

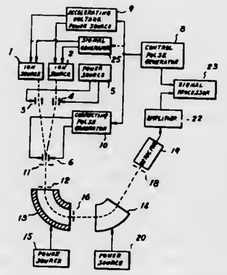


signals from the scanning means are analyzed, said window representing successive portions of the object under inspection wherein the presence of changes in light transmission characteristics are indicative of a defect in the object;
means for analyzing the signal from said circuitry means to determine the presence of a defect in the object under inspection;
timer means for delaying signals transmitted from the analyzing means and for holding said signals a period of time until an object determined to have a defect passes out of the range of the scanning means; and
means for receiving signals from the timer means and for removing the object determined to have a defect from the transporting means.

3,886,357
MULTIPLE ION BEAM TYPE DOUBLE FOCUSING MASS SPECTROMETER

Motohiro Naito, Akishima, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1973, Ser. No. 425,923
Claims priority, application Japan, Dec. 18, 1972, 47-126947
Int. Cl. H01j *39/34*
U.S. Cl. 250—285 **10 Claims**

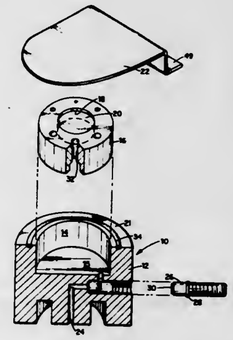


1. In a double focusing mass spectrometer comprising an electrostatic analyzer with adjustable power supply, a magnetic analyzer with adjustable power supply, at least one baffle with an aperture therein between said electrostatic and magnetic analyzers, an ion detector and a plurality of ion sources, the improvement comprising means for guiding the plurality of ion beams emitted from said sources along a common path in a single ion beam to the electrostatic analyzer,
individually adjustable power supplies for each ion source,
adjusting circuit means associated with at least one of the adjustable power supplies for adjusting the ratio of the ion source accelerating voltages and the electric field strength of the electrostatic analyzer, said adjusting circuit means including a control pulse generator for directing the adjusting circuit means for some period of time to pass more than one ion beam to the magnetic analyzer but for that period to pass no more than one ion beam from a given source continually to the magnetic analyzer and to pass the ion beam from at least one source intermittently to the magnetic analyzer, means associated with at least one of the adjustable power supplies for sweeping the ratio of the energy of the ion beams passing the electrostatic analyzer and the magnetic field strength of the magnetic analyzer such that the detector detects time shared multiple signals indicative of the mass to charge ratios of ions comprising the ion beams passed to the magnetic analyzer.

3,886,358
SPECIMEN TRANSFER CONTAINER FOR ION MICROPROBE MASS ANALYZER

John F. McLaughlin, Oak Ridge, and Stephen S. Cristy, Clinton, both of Tenn., assignors to The United States Energy Research and Development Administration, Washington, D.C.

Filed May 23, 1974, Ser. No. 472,929
Int. Cl. G01t *1/16*
U.S. Cl. 250—289 **4 Claims**



1. A specimen holder for use with an ion microprobe mass analyzer to provide for the transfer of a specimen to be analyzed from a specimen-loading facility to a specimen-analyzing chamber exhaustable to a predetermined pressure in said analyzer without exposing the specimen to an atmosphere reactive with the specimen, comprising an open housing having a receptacle at one end thereof for receiving a specimen container through the opening, sealing means at said open end of the housing disposed about said receptacle, removable lid means adapted to be disposed over said receptacle at said one end thereof in a contacting relationship with said sealing means, a passageway projecting into said housing in registry with said receptacle for placing said receptacle in communication with a source of vacuum to a pressure corresponding to said predetermined pressure for evacuating said receptacle and pulling said lid means against said sealing means for enclosing said receptacle, and valve means in registry with said passageway for selectively opening and closing said passageway, with said lid means being affixed to said housing upon

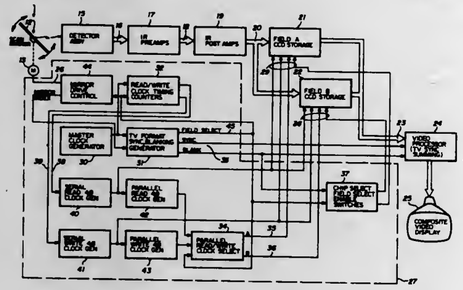
evacuation of said receptacle and closing of said

evacuation of said receptacle and closing of said passageway by said valve means, whereby when said holder is positioned within the analyzer chamber and when said chamber is at said predetermined pressure, the cover is released from said contacting relationship with said sealing means so that the specimen may be analyzed.

3,886,359
TIME INTERVAL COMPRESSION ADDRESS SEQUENTIALLY

Tom F. Cheek, Jr., Dallas, and Thomas R. Patrick, Austin, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 4, 1974, Ser. No. 430,982
Int. Cl. G01t 1/16
U.S. Cl. 250—334 **19 Claims**



1. In an analog data system, the combination which comprises:

a. a signal sampling generating means to generate a set of time spaced samples of each of a plurality of concurrent time-amplitude-variable signals during each of a plurality of successive data periods where said samples are taken at uniform time spaced intervals,

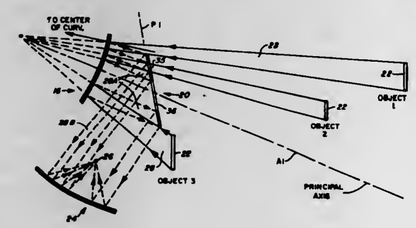
b. two sets of CCD storage means coupled to the signal sampling generating means to alternately store a set of variable amplitude charge packets derived from said samples of said signals, and

c. means alternately to transfer from said CCD storage means as a single data stream for display all the samples of all signals in said storage means in an interval of the order of said data period.

3,886,360
INFRARED INTRUSION DETECTION APPARATUS

Martin H. Reiss, Newton, and Elias E. Solomon, Duxbury, both of Mass., assignors to Gulf & Western Manufacturing Company, New York, N.Y.

Filed Sept. 4, 1973, Ser. No. 394,065
Int. Cl. G01t 1/16
U.S. Cl. 250—338 **14 Claims**



1. Optical apparatus for an infrared intrusion detection system comprising;

a sensing element for providing an electrical signal corresponding to the level of infrared radiation impinging on the element,

a convex reflective surface for receiving the radiation from objects in the field of view and reflecting at least some of the radiation in rays parallel to the principle axis of the convex reflective surface,

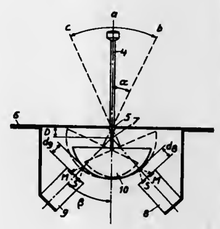
an array of spaced reflective surfaces disposed to receive the rays from said convex surface,

and a collector reflector for receiving radiation reflected from at least one of said reflective surfaces of said array and directing said radiation to said sensing element.

3,886,361
DEVICE FOR CONTACTLESS POSITIONAL INDICATION

Kaj Dennis Georg Wester, Sodertalje, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 19, 1973, Ser. No. 408,158
Claims priority, application Sweden, Oct. 26, 1972, 13838/72
Int. Cl. G01d 5/34
U.S. Cl. 250—338 **5 Claims**

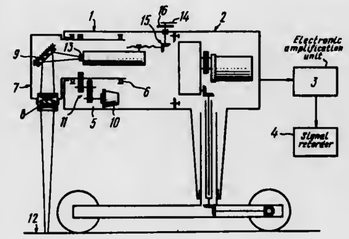


1. Apparatus for indicating the change in the position of a moving body in at least a first plane relative to a reference plane comprising a reflective surface on the body, at least one transmitter of electromagnetic radiation, said transmitter being fixed relative to said reference plane for directing radiation in said first plane to said reflecting surface and two receivers of electromagnetic radiation, each of said receivers including means for generating electrical signals having values related to the intensity of the received radiation, said receivers being fixed relative to said reference plane and positioned to receive radiation reflected from said reflective surface, said receivers being positioned with respect to said reflective surface such that the distances between said receivers and said reflective surface differentially change for translational movements of the body in said first plane whereby such movement of the body in the first plane increases the value of the electrical signal generated by the generating means of one receiver while decreasing the value of the electrical signal generated by the generating means of the other receiver.

3,886,362
METHOD AND APPARATUS FOR THERMAL EXAMINATION OF THE INTERIOR SURFACE OF ANNULAR STATOR PACKS FOR ELECTRICAL MACHINES

Mikhail Mikhailovich Miroshnikov, Ulita Kartashikhina, 31, kv. 65; Evgeny Nikolaevich Mineev, ulitsa Matrosa Zheleznyaka, 19, kv. 4; Konrad Saakovich Karapetian, Krasnaya ulitsa, 53, kv. 5; Roza Nikolaevna Ivanova, ulitsa Grota, 1/3, kv. 5; Vasily Vasilievich Romanov, Naberezhnaya Chernoi rachki, 18, kv. 30; Sergei Nikolaevich Kurnakov, ulitsa Aviatsionnaya 13, kv. 91; Garri Mikhailovich Khutoretsky, Alataiskaya ulitsa, 20, kv. 5; Ivan Ivanovich Elin, Derptsky pereulok, 11, kv. 16; Valentin Mikhailovich Bykov, ulitsa Matrosa Zheleznyaka, 19, kv. 45, and Dmitry Dmitrievich Valchikhin, 10 Linia, 29 kv. 6, all of Leningrad, U.S.S.R.

Filed Apr. 9, 1973, Ser. No. 349,665
Int. Cl. G01t 1/16
U.S. Cl. 250—340 **10 Claims**

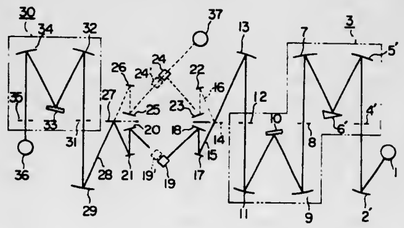


1. A method for examining annular active-steel stator packs for an electric machine comprising heating the active steel of a stator pack, introducing an infrared heat sensor and optical receiver into the bore of the stator pack, uniformly moving said infrared heat sensor and optical receiver along the axis of the stator pack while rotating the optical receiver within the stator pack so that heat radiation is received by the sensor from the entire inner periphery of the cross-section of the stator to provide a continuous examination of the entire inner surface of the stator, and recording the effect of heat radiation received by the sensor to determine the presence of overheated areas of the stator.

3,886,363
SPECTRO FLUORESCENCE AND ABSORPTION MEASURING INSTRUMENT

Yasushi Ohnishi, and Masamichi Tsukada, both of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 17, 1974, Ser. No. 434,236
Claims priority, application Japan, Jan. 20, 1973, 48-8958
Int. Cl. G01n 21/26
U.S. Cl. 250—364 **13 Claims**

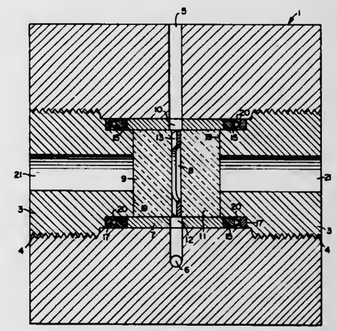


1. A spectrophotofluorometer comprising a light source, a first spectroscope for dispersing light from said light source, a specimen disposed at a position to which exciting light from said first spectroscope is directed, first light beam chopping means arranged between said specimen and said light source for selectively directing exciting light from said first spectroscope to said specimen, a second spectroscope for dispersing secondary light emitted by said specimen due to said exciting light, a detector for detecting the light dispersed by said second spectroscope, second light beam chopping means rotating synchronously with said first light beam chopping means and disposed between said detector and said specimen for selectively directing secondary light emitted by said specimen due to said exciting light to said detector, and a phase variable mechanism for varying the relative rotary phase angle between said first and second light beam chopping means based on the physical and chemical properties of said secondary light emitted by said specimen due to said exciting light.

3,886,364
HIGH PRESSURE INFRARED CELL

Wellington E. Walker, Charleston; Lowell A. Cosby, St. Albans, and Sterling T. Martin, Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 371,352, June 19, 1973, abandoned. This application Mar. 15, 1974, Ser. No. 451,437
Int. Cl. G01m 1/10
U.S. Cl. 250—343 **6 Claims**



1. An infrared cell capable of use in analyzing materials while at high temperatures and pressures and while passing continuously through said cell, comprising an aperture extending through said cell, an inlet for transmitting materials to be analyzed to a point in said cell located within said aperture, an outlet located in said cell for removing such material from said point and thereafter from said cell, a cell block encompassing said aperture and said inlet and outlet, an open metal sleeve located within said aperture having holes mated with said inlet and said outlet into the aperture, two infrared light transmitting windows located in said sleeve having geometric designs conforming to the interior of said sleeve, and being located one on each side of said holes and being spaced from one another by a spacing means, two plugs fitted into and secured in each end of said aperture each of which contains an inner optically flat surface which has been ground and polished to within about one wavelength interference of sodium light and are each in direct contact with a window surface, the inner end portions of each plug having a cross-sectional area normal to the axis of the aperture which is smaller than the internal cross-sectional area of the sleeve, having a geometric shape conforming to the internal shape of the sleeve, and being located within the separate ends of the sleeve, each of said portions being circumscribed by two sealing means, the first sealing means is in direct contact with an end surface of said sleeve and is out of contact with said window, and the second sealing means is removed from the sleeve end surface by the first sealing means and holds the first sealing means in position when the first sealing means is expanded by applied pressure, an infrared light transmitting hole located in each plug, heating means provided in said cell block

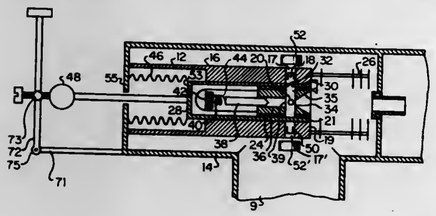
and means in said cell block for controlling and monitoring the temperature in the cell block.

3,886,365

MULTICONFIGURATION IONIZATION SOURCE

William P. Kruger, Los Altos Hills, and John A. Michnowicz, Santa Clara, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 27, 1973, Ser. No. 391,721
Int. Cl. H01b *39/34*
U.S. Cl. 250—423 **10 Claims**



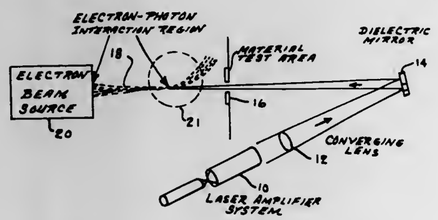
1. A multiconfiguration, multimode ionization source comprising:
a vacuum tight envelope;
a chamber having walls surrounding an internal cavity and mounted within the envelope, said chamber having a plurality of openings;
an electron source disposed exterior to the chamber for supplying electrons to the chamber through a first of said openings;
sample inlet means for supplying a gaseous sample through a second of said openings for reaction with the electrons inside the chamber to create ions, said ions exiting through a third of said openings;
aperture control means for changing the size of the first and third openings for changing the pressure of the sample in the chamber, thereby changing the operating mode of the source from a first to a second ionization mode; and
ion repelling means disposed inside the chamber for repelling ions out of the chamber through the third opening.

3,886,366

COMPTON BACK-SCATTERED RADIATION SOURCE

Sidney W. Kash, Manhattan Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 13, 1973, Ser. No. 350,855
Int. Cl. H01j *37/00*
U.S. Cl. 250—493 **3 Claims**



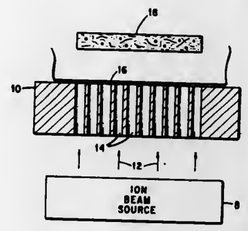
1. A Compton back-scattered radiation apparatus comprising in combination:
a laser amplifier system for producing an intense laser beam of optical photons;
a converging lens positioned in said laser beam's path to focus said laser beam;
a dielectric mirror positioned to reflect said laser beam at an angle equal to the angle of incidence;
an electron beam source for producing a high-energy high-intensity relativistic, electron beam, said electron beam being directed counter to the direction of said laser beam and intersecting said laser beam along its path length;
an interaction region positioned between said electron beam source and said dielectric mirror, said electron beam being in collision with said laser beam within said interaction region, said laser beam photons being increased in energy by being back-scattered by said electron beam and
a target positioned between said interaction region and said dielectric mirror to receive said backscattered laser beam photons, said target having an opening therein; said opening being positioned to allow passage of said reflected laser beam toward said interaction region.

3,886,367

ION-BEAM MASK FOR CANCER PATIENT THERAPY

John G. Castle, Jr., Huntsville, Ala., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 18, 1974, Ser. No. 434,458
Int. Cl. G21f *1/00*
U.S. Cl. 250—505 **3 Claims**



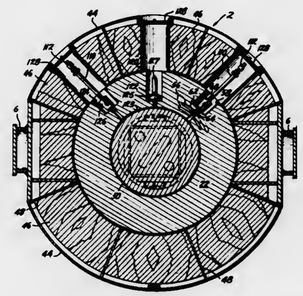
1. A radiation mask for mitigating the surface tissue effects of a radiotherapeutic treatment of embedded tumors in a patient by means of a beam of fast ions from a beam source, comprising:
a block of radiation shielding material positioned in said beam intermediate the patient and said beam source, said block having a surface area larger than the cross section of said beam and a thickness greater than the range of ions of said beam in said shielding material, said shielding material block having a plurality of circular cross section apertures extending therethrough in a direction parallel to the rays of said beam and arranged in an orderly, evenly spaced array, each of said apertures having a diameter (d) and spaced with a wall thickness (w) therebetween defined by $d=w=F\sigma_e$, with f being in the range of from 1 to 2 and where σ_e is the effective dispersion of the ions passing through said apertures at the depth of said embedded tumor to attain sufficient overlap of discrete beam portions passing through adjacent ones of said apertures at the depth of the Bragg peak for said beam source coincident with the tumor region, thereby providing a lateral uniformity of radiation dose over the irradiated area of said tumor while shielding a substantial are of skin and intervening tissue.

3,886,368

SPENT FUEL SHIPPING CASK

Jack D. Rollins; Ralph E. Best, both of Gaithersburg; Robert R. Riggs, Linthicum Heights; Clifford J. Anderson, Buckeystown, all of Md., and Victor J. Barnhart, Boston, N.Y., assignors to Nuclear Fuel Services, Inc., Rockville, Md.

Filed Feb. 27, 1973, Ser. No. 336,191
Int. Cl. G21f *5/00*
U.S. Cl. 250—507 **18 Claims**



1. A shipping cask for spent nuclear fuel assemblies, comprising:
means defining a generally cylindrical enclosure having a closed end and an open end;
gamma ray shielding material surrounding said enclosure;
neutron shielding means extending circumferentially around said gamma ray shielding material comprising means defining a plurality of separate longitudinally extending compartments for bodies of liquid material capable of absorbing neutrons;
pressure relief means for each of said compartments; and
each of said compartments comprising a main portion and a surge tank portion separated therefrom by a partition, a small passageway through said partition, and means at said passageway for holding a body of said liquid in closing relation to said passageway throughout a substantial range of tilting of said cask to thereby prevent air from flowing from said surge tank portion into said main tank portion.

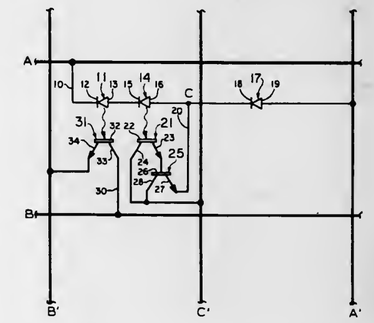
3,886,369

SOLID-STATE GATING CIRCUIT FOR CROSS-POINT SWITCHING

Virgle E. Porter, Sieger, Ill., assignor to The Sippican Corporation, Midlothian, Ill.

Filed Feb. 11, 1974, Ser. No. 441,407
Int. Cl. H01j *39/12*
U.S. Cl. 250—551 **14 Claims**

7. A gating circuit comprising:
control means, having an isolation diode and a light emitting diode for producing light energy when current passes therethrough;
an electrical conductor, susceptible to receiving spurious signals, coupled through said circuit isolation means to said light emitting means;
a by-pass path, having a first photo-sensitive transistor disposed in optical relationship with said light emitting diode for energizing said isolation diode upon receipt of light energy from said light emitting diode; said isolation diode, upon energization, causing current passing through said light emitting diode to be diverted to said by-pass path; and
a signal circuit, electrically isolated from said control means, said by-pass path and said electrical conductor; having a second photo-sensitive transistor disposed in optical relationship with said light emitting diode for electrically closing said signal circuit upon receipt of said light energy from said light emitting diode, whereby said light emitting means are electrically isolated from said



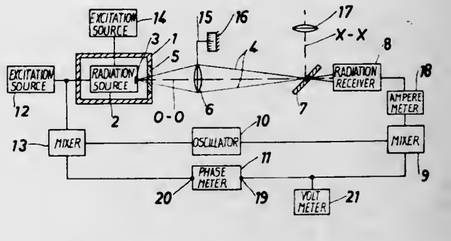
electrical conductor upon energization of said circuit isolation means.

3,886,370

DEVICE FOR MEASURING SEMICONDUCTOR RADIATION SOURCES

Walter Schubert, 36, Emil-Hollein-Strasse; Harry Wendt, 2, Strasse der Gargend, both of Jena, and Reiner Doss, 2 F, Moldaustrasse, Teltow, all of Germany

Filed Nov. 21, 1973, Ser. No. 254,787
Int. Cl. H01j *39/12*
U.S. Cl. 250—552 **8 Claims**

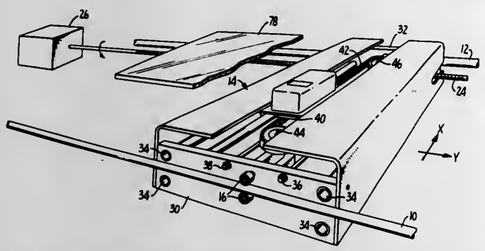


1. A device for measuring the local dependence of the intensity and the delay time of the recombination radiation on the radiation band of a semiconductor radiation source, comprising
a semiconductor radiation source having a radiation surface,
an excitation source for exciting periodic radiation of said semiconductor radiation source,
a radiation receiver for receiving said radiation and transforming the periodic radiation signals into electric signals,
a magnifying optical system,
a diaphragm being radiation transmissive,
said system and said diaphragm being located between said semiconductor radiation source and said radiation receiver,
said system being traversed by said radiation, which images said radiation surface on said diaphragm and has a common optical axis with said radiation surface, said diaphragm and said radiation receiver,
means for producing relative motion between the image of said radiation surface and said diaphragm,
and a phasemeter connected to said radiation receiver and said excitation source for comparison of the phase of the signal in said radiation receiver and the phase of the excitation signal.

3,886,371
OPTICAL CHARACTER READER SCANNING SUPPORT MECHANISM

Lester John Lloyd, Orinda, Calif., assignor to Ball Computer Products, Inc., Oakland, Calif.

Filed Dec. 3, 1973, Ser. No. 421,396
Int. Cl. G01n 21/30
U.S. Cl. 250—567 6 Claims



1. A scanning support mechanism movable in orthogonal X and Y directions comprising a first carriage, means for incrementally moving the first carriage in the Y direction, a second carriage movably mounted on the first carriage, constant speed drive means mounted on the first carriage, and reciprocating means powered by the constant speed drive means for shuttling the second carriage in the X direction, the reciprocating means including a pair of pulleys mounted on the first carriage so as to rotate in a plane substantially parallel to both the X and Y directions, at least one of the two pulleys being driven by the constant speed driving means, a driving belt connected between the two pulleys, Scotch yoke means mounted on the second carriage, and a pin rigidly mounted at one end in the Scotch yoke means and attached at its other end to the driving belt, whereby the rotation of the belt at a constant speed by the constant speed drive means exerts a force on the second carriage through the Scotch yoke means so as to cause the second carriage to shuttle in the X direction.

3,886,372
PRODUCING SIGNALS DENOTING LOCATION OF EDGES OF A FINISHED SURFACE ON A PARTLY FINISHED WORKPIECE

Benkt Sanglert, Jonkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Feb. 25, 1974, Ser. No. 445,429
Claims priority, application Sweden, Feb. 23, 1973, 7302543
Int. Cl. G01b 11/02
U.S. Cl. 250—571 3 Claims

2. Apparatus for scanning an unfinished elongated workpiece that has a substantially flat top surface which terminates at a pair of opposite longitudinally extending edges, to produce signals which are related to the orientation and configuration of said side edges and their spacing from one another, said apparatus comprising:

A. supporting means for holding a workpiece stationary with its top surface horizontal and its length extending in a predetermined direction;

B. photoresponsive detector means mounted in upwardly spaced relation to the supporting means and facing substantially in said direction;

C. means connected with said detector means for causing the same to scan repeatedly along a horizontal path transverse to said direction;

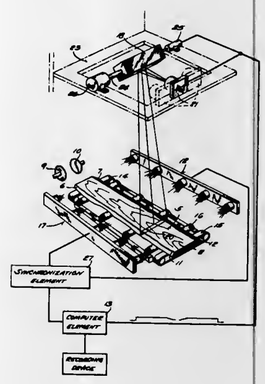
D. reflector means having a reflecting surface;

E. means mounting the reflector means for rotation about an axis which is parallel to said reflecting surface, said axis being

1. horizontal, spaced above said supporting means, and transverse to said direction, and

2. so spaced from the detector in said direction that the reflector means can reflect to the detector means, for scanning thereby, an image of a zone which extends entirely across a workpiece on the supporting means, and which zone moves lengthwise along the workpiece, from one end to the other thereof, as the reflector rotates;

F. means for rotating the reflector at a rate so related to the rate of repetitive scanning that the imaged zone of the workpiece that is scanned by the detector means advances lengthwise along the workpiece from scan to scan; and



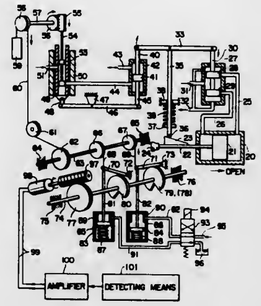
G. means comprising at least a pair of light sources located at opposite sides of said supporting means for illuminating at least that zone of a workpiece which is imaged by the reflector means, at a low angle of incidence to the top surface of the workpiece and alternately from opposite sides thereof in synchronism with scanning by the detector means, so that illumination does not extend beyond each of said edges of the workpiece when the scan reaches the vicinity thereof.

3,886,373
HYDRAULIC MACHINE CONTROL APPARATUS

Masayasu Okada, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 393,916
Claims priority, application Japan, Sept. 4, 1972, 47-87972; Nov. 29, 1972, 47-118981; Jan. 29, 1973, 48-11069; Feb. 12, 1973, 48-16633; Mar. 9, 1973, 48-27002
Int. Cl. F01b 25/00
U.S. Cl. 290—52 11 Claims

1. Control apparatus for hydraulic machines that are arranged so as to receive hydraulic fluid commonly from a single penstock connected at its upper portion to an upper reservoir and connected at the lower regions of the system to a plurality of hydraulic machines by branch penstocks with the provision of a single surge tank common to the hydraulic machines, which hydraulic machines have movable guide vanes for controlling the flow of hydraulic fluid through the machines, respectively, comprising: monitoring means for producing an electric signal in response to transitional operation of at least one of the hydraulic machines; movably mounted cam means; operating means responsive to said electric signal for moving said cam means; and adjusting means responsive to the movement of said cam means for controlling the degree of opening

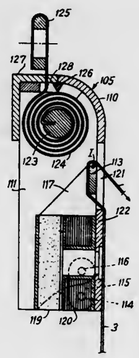


of the guide vanes of at least one of the other hydraulic machines.

3,886,374
LOCKABLE SLIDE FITTING FOR A SAFETY BELT SYSTEM

Andre Lefeuvre, Noisy-le-Roi, France, assignor to Regie Nationale des Usines Renault and Automobiles Peugeot, both of Paris, France

Filed Sept. 7, 1973, Ser. No. 395,158
Claims priority, application France, Feb. 14, 1973, 73.05211; Oct. 5, 1972, 72.35394
Int. Cl. H01h 35/00
U.S. Cl. 307—10 SB 8 Claims

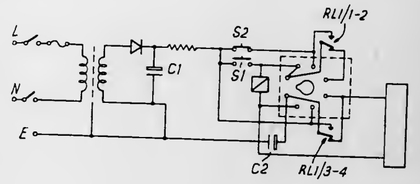


1. A lockable slide fitting for use in a vehicle safety belt system of the "lap and diagonal" type having three points of attachment and comprising a fixed reel device for one end of a shoulder strap which strap may slide through the lockable slide fitting before passing diagonally across the chest of the vehicle occupant to be anchored by its other end in the vicinity of the floor, the said lockable slide fitting comprising a frame, means for attaching the frame to a component of the body of the vehicle, means including a movable cross bar slidably mounted in the frame for movement between a first position in which the strap is locked and a second position and over which the strap may pass, an arm hinged to the frame of the fitting, at least one rod connecting said cross bar to said arm, an armature of ferro-magnetic material supported by said arm, a coil carried fixedly by said frame and co-operating with the armature, and means for connecting said coil to an electric circuit to energize the coil.

3,886,375
COUNTING SYSTEM

Walter Ulo Sirk, Oakham, and Douglas Brian Street, Melton Mowbray, all of England, assignors to The Production Engineering Research Association of Great Britain, Leicestershire, England

Filed Dec. 11, 1973, Ser. No. 423,785
Int. Cl. H01h 35/00
U.S. Cl. 307—112 8 Claims

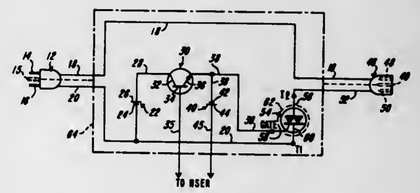


1. A component counting system for a machine tool, comprising: first switch means positioned to detect the presence in the machine of a component to be machined; second switch means arranged to be operated by the machine after initiation of the machine cycle; and a counter to which said first and second switch means are connected so that a count is recorded only if both the first switch means detects the presence of a component and the second switch means is operated.

3,886,376
LOW POWER REMOTE SWITCH DEVICE

Satya Pal Asija, 1641 Cumberland St., Apt. 21, St. Paul, Minn. 55117

Substitute for Ser. No. 804,052, Feb. 27, 1969, abandoned. This application Oct. 23, 1973, Ser. No. 408,663
Int. Cl. H03k 17/00
U.S. Cl. 307—116 3 Claims



1. Apparatus for turning off an electrical appliance as a person falls asleep, which comprises a low power solid state control circuit for controlling higher power control circuit which includes:

a. conductor means including solid state means for connection to a source of electrical energy of a given voltage;

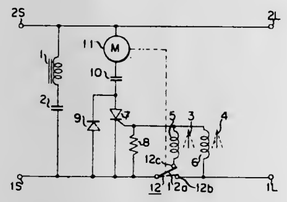
b. output means for connecting the conductor means to an electrical appliance comprising a bi-directional silicon controlled rectifier having a gate and a base; and

c. switch means including solid state means operable at less than the given voltage and joined to the conductor means for controlling flow of electrical energy to the output means, where in the switch means includes a transistor in series with the gate of the bi-directional silicon controlled rectifier, and a plurality of direct current batteries, one battery being connected to the base and one battery being connected to the gate of the bi-directional silicon controlled rectifier, the switch means also including a plurality of conductors, means connecting one conductor to one of the batteries, and means connecting another conductor to the other battery.

3,886,377
CONTROL RECEIVER

Katsumi Taketa, and Kenji Takahashi, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 3, 1973, Ser. No. 385,243
Claims priority, application Japan, Aug. 9, 1972, 47-79655; Aug. 9, 1972, 47-79656
Int. Cl. H01h *47/20*
U.S. Cl. 307—129 **4 Claims**

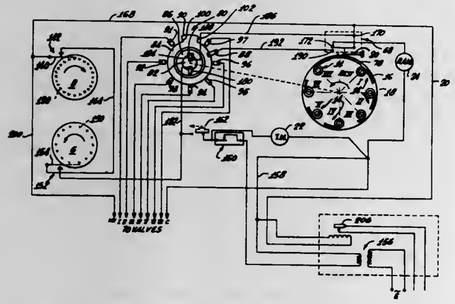


1. A control receiver comprising, in combination, a first electromagnetic coil responsive to a signal having a first predetermined frequency to provide an output voltage thereacross, a second electromagnetic coil responsive to a signal having a second predetermined frequency different from said first frequency to produce an output voltage thereacross, a load circuit to be controlled, switch means connected in said load circuit and having an open position to open said load circuit and connect said first coil to said load circuit, and a closed operating position to close said load circuit and connect said second coil to said load circuit, a switching circuit connected to said first coil and said second coil and rendered conductive by the output from that coil connected by said switch means to the load circuit, and means responsive to the conduction of said switching circuit to change said switch means from one to the other of the open and closed positions.

3,886,378
TIMING UNIT FOR CONNECTING POWER SEQUENTIALLY TO A PLURALITY OF STATIONS

Norman D. Morgan, Pasadena, Calif., assignor to Clemar Manufacturing Corporation, Glendora, Calif.

Filed Nov. 8, 1973, Ser. No. 413,886
Int. Cl. H01h *7/00*
U.S. Cl. 307—141.4 **23 Claims**

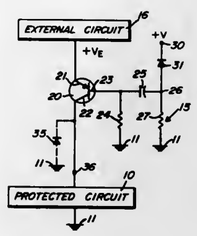


1. A timing unit for connecting power sequentially to each of a number of stations, comprising:
a frame;
a station timer rotationally mounted on said frame, said station timer being divided peripherally into sectors including a number of station sectors each corresponding to one of the stations;
a plurality of individually adjustable cam means each mounted on one of said station sectors, each said cam means dividing the peripheral length of the associated said station sector into first and second cam regions which are selectively variable in relative length;
drive means connected to said frame for rotating said station timer at a timing speed and at an advance speed relatively faster than said timing speed to move said sectors successively past a fixed datum on said frame;
sensing means mounted on said frame for sensing said first and second cam regions as each said station sector passes said datum, said sensing means being connected with said drive means to cause rotation of said station timer at timing speed whenever on of said second cam regions is sensed by said sensing means and at advance speed whenever one of said first cam regions is sensed by said sensing means; and
selector means connected with said station timer and said sensing means for connecting power to each station while the corresponding one of said station sectors is passing said datum for the duration that said second cam region on said corresponding station sector is sensed by said sensing means.

3,886,379
RADIATION TRIGGERED DISCONNECT MEANS

Robert H. Bickley, Scottsdale, and Philip L. Clar, Mesa, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Dec. 13, 1972, Ser. No. 314,895
Int. Cl. H03k *17/00*
U.S. Cl. 307—202 **9 Claims**

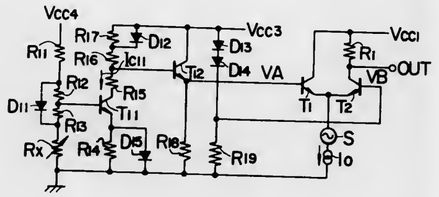


1. Radiation triggered disconnect means for use with a circuit to be protected and a suitable power source for said circuit comprising:
a. a transistor having first, second and control electrodes;
b. means coupling the first and second electrodes of said transistor in a series circuit including the circuit to be protected and the power source for applying power from the power source to the circuit to be protected;
c. bias means connected to the control electrode of said transistor normally biasing said transistor in a saturation mode of operation;
d. semiconductor junction means coupled to a power source in a normally reverse biased orientation and providing a flow of current in response to radiation impinging thereon, said semiconductor junction means being further coupled to the control electrode of said transistor for applying the flow of current to overcome the bias of said bias means and substantially cutoff conduction of said transistor; and
e. second semiconductor junction means coupled in parallel with the circuit to be protected in a normally reverse biased orientation and providing a discharge current path in parallel with the circuit in response to radiation impinging on said second semiconductor junction means.

3,886,380
GAIN CONTROL CIRCUIT

Norio Sobajima, and Kenichi Tonomura, both of Tokyo, Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 11, 1974, Ser. No. 432,518
Claims priority, application Japan, Jan. 12, 1973, 48-5959
Int. Cl. H03k *17/00*
U.S. Cl. 307—237 **8 Claims**

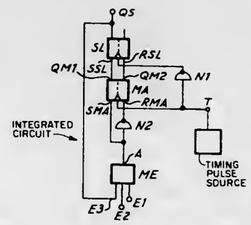


1. In a gain control circuit having a differential amplifier and a variable resistor coupled to an input thereof for controlling the output of said differential amplifier, said differential amplifier comprising emitter-coupled transistors, respective emitters of which are grounded through a signal source, the improvement comprising a transistor circuit, connected between said variable resistor and said input of said differential amplifier, having first and second transistors each having engaged emitter terminal, a base terminal, and a collector terminal, the base emitter terminals of said first transistor being connected to a base-emitter bias circuit including said variable resistor, the collector terminal of said first transistor being coupled to the base terminal of said second transistor, the emitter terminal of said second transistor being connected to said input of said differential amplifier and being grounded through a resistance, the collector terminal of said first transistor being connected to a collector voltage bias circuit containing a non-linear impedance, and the collector terminal of said second transistor being connected to a collector supply voltage.

3,886,381
ELECTRONIC STORAGE CIRCUIT FOR DIGITAL DATA PROCESSING DEVICES WITH HIGH FAULT SAFETY IN PARTICULAR FOR RAILROAD SAFETY SYSTEMS

Heinz-Juergen Lohmann, Braunschweig, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 266,549, June 27, 1972, abandoned.
This application Jan. 30, 1974, Ser. No. 437,912
Int. Cl. G11c *11/34;* **H03k** *3/286*
U.S. Cl. 307—238 **3 Claims**

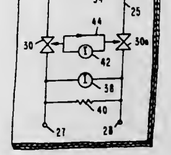


1. An electronic storage circuit with high fault safety for digital data processing of binary switching variables in the form of rectangular signal voltages of a given repetition frequency, comprising:
an RS master flip-flop having a first input, a second input, a first output, and a second output,
an RS slave flip-flop having a third input connected to said first output, a fourth input connected to said second output, and a third output,
a first inverter,
a majority decision circuit having a fourth output connected to said second input and connected via said first inverter to said first input, and having fifth, sixth and seventh inputs, said fifth and sixth inputs receiving said rectangular signal voltages and said seventh input connected to said third output as a feedback input,
a second inverter,
a first timing input for said RS master flip-flop,
a second timing input for said RS slave flip-flop connected to said second inverter, and
means for applying a square wave timing signal to said first timing input and to said second inverter, said timing signal having twice the repetition frequency as said given frequency and the trailing edges of said timing signal coinciding with edges of said signal voltages.

3,886,382
BALANCED SUPERCONDUCTIVE TRANSMISSION LINE USING JOSEPHSON TUNNELLING DEVICES

Robert G. Cain, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1973, Ser. No. 428,974
Int. Cl. H03k *3/38, 17/00*
U.S. Cl. 307—245 **9 Claims**

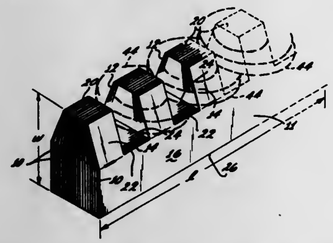


1. In a transmission line having a terminal at each end thereof across which the output is measured;
a plurality of pairs of Josephson tunnelling devices, each Josephson tunnelling device of a pair being located in the transmission line equally distant from opposite end terminals thereof to provide a balanced transmission line, each Josephson tunnelling device having a zero voltage and a finite voltage state;
control means for simultaneously controlling the voltage switching point of each Josephson device of each pair of said Josephson tunnelling devices;
current means for providing electrical current through said transmission line and each of said Josephson tunnelling devices of each pair of devices causing any pair of Josephson tunnelling devices biased by said control means to simultaneously switch into its finite voltage state, thereby causing reflections in the transmission line in a balanced manner so that the transmission line stabilizing time is minimized.

3,886,383
COMPRESSED BACK IRON LINEAR MOTOR LAMINATED CORE

James A. Ross, La Jolla, and James A. Houdyshel, San Diego, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Apr. 1, 1974, Ser. No. 456,620
Int. Cl. H02k 41/02
U.S. Cl. 310—12 14 Claims

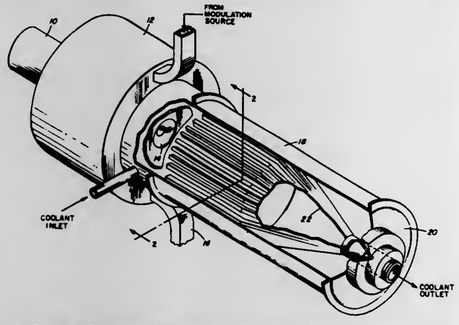


1. An improved laminated core for a linear induction motor employing windings comprising:
a plurality of interleaved laminations of different heights;
a top pole piece portion having an upper face and a bottom back iron portion with a rectilinear tapered transition therebetween, said face has a cross-sectional dimension less than the largest cross-sectional dimension of said back iron portion for concentrating the flux produced by the core.

3,886,384
COLLECTOR ELECTRODE

Raymond P. Tuinila, Beverly, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 4, 1974, Ser. No. 439,180
Int. Cl. H01j 1/00; H01k 1/02
U.S. Cl. 313—39 2 Claims



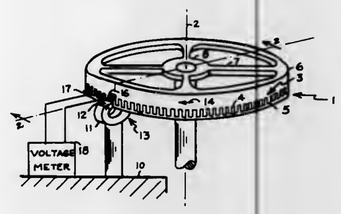
1. In an electron discharge device wherein a beam of electrons is directed toward a collector electrode, an improved collector electrode comprising a hollow substantially cylindrical portion and a hollow conical portion covering one end of such cylindrical portion, both such portions being laminated and consisting of a core layer of a material selected from the group of stainless steel, beryllium, copper and titanium between an inner and an outer layer of oxygen-free high conductivity copper.

3,886,385
RATE OF MOTION DETECTOR

Francesco L. Bacchialoni, 9 Claremont Ave., Arlington, Mass. 02175

Filed Nov. 15, 1972, Ser. No. 306,706
Int. Cl. H02k 21/32
U.S. Cl. 310—152 13 Claims

1. Apparatus for detecting the rate of motion of one body relative to another body comprising in combination,
means supported by one of said bodies for producing a substantially steady magnetic field, at a given area which is fixed relative to said supporting body,
a set of electrical conductors fixed to the other of said bodies including a relatively long electrical conductor which is continuous from one end to the other end thereof and a plurality of relatively short electrical conductors, the short conductors being disposed side by side and each electrically connected at one end only to the long conductor at spaced points therealong,

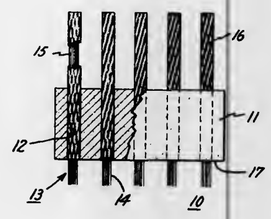


the orientation of he set on said other body being such that the short conductors enter and leave said magnetic field area one after another at a rate proportional to the said relative rate of motion, and
an electrical contact for contacting the other end of at least one of the short conductors at a time while said contacted short conductor is in the magnetic field,
whereby a signal is produced between the contact and the long conductor, said signal being representative of the said rate.

3,886,386
CARBON FIBER CURRENT COLLECTION BRUSH

William B. Hillig, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1973, Ser. No. 384,590
Int. Cl. H02k 13/00
U.S. Cl. 310—251 2 Claims

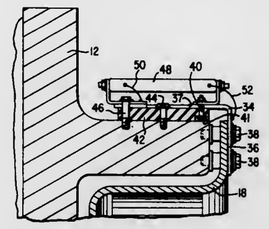


1. A carbon fiber current collection brush comprising a carbon body having a plurality of spaced apertures therethrough, a plurality of elongated carbon fibers positioned in each of the apertures and extending outwardly therefrom in both opposite directions, a flexible braided metallic sheath covering the portion of the fibers within each of the apertures and the portion of the fibers extending outwardly in one direction, and the fibers extending outwardly in the other direction being exposed and being generally of uniform length from the edge of the carbon body.

3,886,387
FLUX SHIELD FOR DYNAMOELECTRIC MACHINES

Peter H. Graham, Schenectady, and Paul Reece, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 384,310, July 31, 1973. This application Dec. 26, 1973, Ser. No. 427,627
Int. Cl. H02k 1/12
U.S. Cl. 310—256 5 Claims

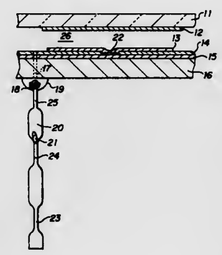


1. In a dynamoelectric machine of the type including a stator core comprising a plurality of laminations held in assembled relation by a number of circumferentially spaced, axially extending keybars secured at each opposite end to a respective end flange; an improved flux shield assembly at each end of the dynamoelectric machine, wherein the improvement comprises:
a. a non-magnetic, annular flux shield of high electrical conductivity spaced from but adjacent to a respective end flange on a side further removed from the stator core;
b. fastening means securing each flux shield to its respective end flange; and,
c. means in combination with said fastening means for electrically insulating each flux shield from its respective end flange.

3,886,388
ALUMINUM RETENTION MAZE AND GETTER

Rigaud B. Paine, Jr., Dallas, and Michael Peshock, Jr., Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 10, 1974, Ser. No. 459,819
Int. Cl. H01j 61/26
U.S. Cl. 313—177 10 Claims

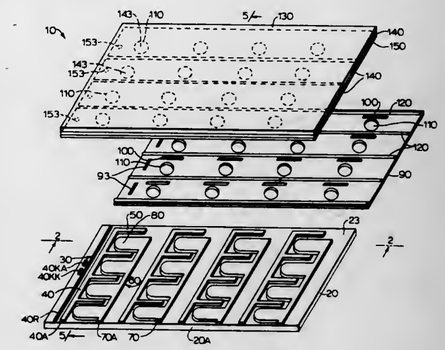


1. In a gas discharge display panel where a display gas with mercury atmosphere is retained in a chamber between display control electrodes, the combination which comprises an aluminum body in surface communication with the atmosphere in said chamber for interacting with said mercury and forming a product to serve as a getter for O_2 and H_2O which evolve during energization of said display.

3,886,389
DISPLAY PANEL

James A. Ogle, Neshanic Station, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 26, 1973, Ser. No. 428,415
Int. Cl. H01j 61/06
U.S. Cl. 313—188 25 Claims

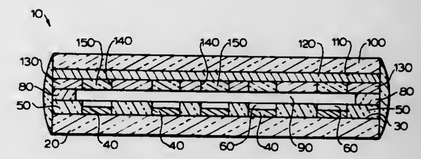


14. A display panel comprising
a gas-filled housing,
a plurality of electrode pairs supported on a surface in said housing and oriented in rows and columns,
said electrodes being operable as cathode electrodes, and
an anode electrode in operative relation with each of said cathode electrode pairs,
said anode being operable with each member of a pair separately to comprise separate ionizable gas cells.

3,886,390
BUTTABLE, GASEOUS DISCHARGE, DISPLAY PANEL INCLUDING ELECTRODES PROVIDING A DOT MATRIX DISPLAY

Thomas C. Maloney, Bernardsville, N.J.; Rudolph A. Cola, Malvern, Pa., and Ronald O. Wescott, Edison, N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 29, 1974, Ser. No. 501,836
Int. Cl. H01j 61/06, 61/42
U.S. Cl. 313—217 5 Claims



1. A display panel comprising
a gas-filled envelope including
a base plate and face plate hermetically sealed together,
a plurality of vertical conductive strips positioned on the top surface of said base plate,
a first layer of insulating material covering said conductive strips and including first apertures disposed in series along each of said conductive strips, each first aperture exposing a dot-like portion of the associated strip which is operable as a cathode electrode, said dot-like cathode electrodes being arrayed in rows and columns,
a second layer of insulated material on said first layer and having a plurality of horizontal slots, each aligned with a row of said cathode electrodes,
a plurality of horizontal strips of transparent conductive material on the inner surface of said face plate, each such

strip overlaying one of said horizontal slots in said second layer, and

an opaque conductive layer on each of said horizontal strips and having a series of second apertures therein,

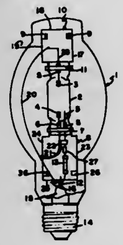
each second aperture exposing a dot-like area of its horizontal strip which is operable as an anode electrode, each such anode electrode being vertically aligned with and in operative relation with one of said cathode electrodes.

3,886,391

HAFNIUM ACTIVATED METAL HALIDE ARC DISCHARGE LAMP

Frederic Koury, Bristol, N.H.; William I. Bamberg, Boston, and William M. Keeffe, Rockport, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Nov. 21, 1973, Ser. No. 418,208
Int. Cl. H01j *17/06, 17/20*
U.S. Cl. 313—218 **3 Claims**



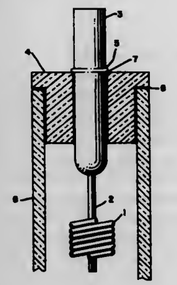
1. A high intensity metal halide arc discharge lamp comprising: an arc tube having sealed ends and containing a fill including mercury and a metal halide; and hafnium activated electrodes disposed within said arc tube, the size of said electrodes being such that during normal operation of the lamp the rate of evaporation of hafnium from said electrodes is about equal to the rate of deposition of hafnium from hafnium halide thereon, thereby ensuring hafnium activation of said electrodes throughout normal lamp life, and wherein the construction of said electrodes is such that their hot spot temperature during normal lamp operation is between about 1825°C and 2325°C.

3,886,392

METHOD OF SEALING ALUMINA ARC TUBE

Nikolaos Barakitis, Haverhill; Edward A. Webb, Reading, and Francis B. Makar, Jr., Beverly, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Feb. 25, 1974, Ser. No. 445,063
Int. Cl. H01j *6/36*
U.S. Cl. 313—220 **1 Claim**



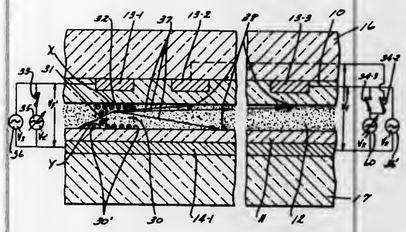
1. An arc tube for a high pressure sodium lamp comprising: an alumina arc tube having a cylindrical alumina plug sealed at each end thereof, each plug having a large and a small diameter section, the small diameter section being inserted into the arc tube and the large diameter being outside the arc tube, the capillary space between the small diameter section and the inner wall of the arc tube being filled with a sealing glass, the capillary space between the large diameter section and the end of the arc tube being filled with a sealing glass, a niobium tube, having a raised peripheral seating ring intermediate its ends, extending through said plug so that said ring is in contact with the outer surface of said plug, said niobium tube being sealed to said plug from said seating ring along the entire length of said plug by a sealing glass, and an electrode disposed on the inner end of said niobium tube.

3,886,393

GAS MIXTURE FOR GAS DISCHARGE DEVICE

David C. Hinson, Whitehouse, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 11, 1972, Ser. No. 279,875
Int. Cl. H01j *7/06, 11/04*
U.S. Cl. 313—223 **5 Claims**



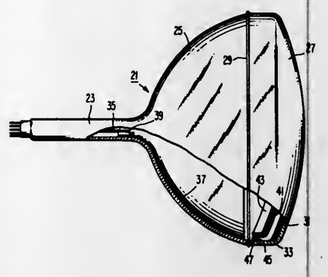
1. In an article of manufacture comprising an AC multiple gas discharge phosphor display device containing an ionizable gaseous medium, the improvement wherein the gaseous medium consists essentially of 20 to 35 percent atoms of argon and 80 to 65 percent atoms of a xenon-based composition, whereby the peak gas discharge currents are decreased and the mean memory margin is increased.

3,886,394

IMAGE DISPLAY EMPLOYING FILTER COATED PHOSPHOR PARTICLES

Steven Alan Lipp, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 4, 1973, Ser. No. 394,094
Int. Cl. H01j *29/18*
U.S. Cl. 313—470 **10 Claims**



1. An image display comprising a luminescent viewing screen and means for selectively exciting areas of said screen to luminescence, said screen comprising a layer of phosphor particles emissive of light in a particular portion of the visible spectrum, said phosphor particles having adhered to their surfaces color filter particles which are transmissive of light in said portion of the visible spectrum, said color filter particles

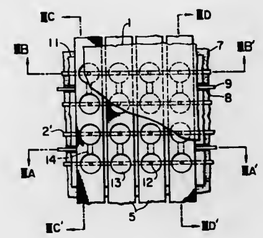
covering between 20 and 80 percent of the surfaces of said phosphor particles.

3,886,395

FLAT, GASEOUS DISCHARGE, PHOSPHOR DISPLAY PANEL WITH OFFSET SUBSIDIARY ELECTRODES

Masakazu Eukushima; Seiichi Murayama, both of Kukubunji; Tsuyoshi Seko, Musashimurayama, and Shinichi Shinada, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed July 29, 1974, Ser. No. 492,730
Claims priority, application Japan, July 27, 1973, 48-84136
Int. Cl. H01j *61/42, 61/54*
U.S. Cl. 313—484 **7 Claims**



1. A flat display panel comprising

a. an insulating substrate provided with a plurality of slots formed in parallel with each other and spaced apart from each other by a predetermined distance, said slots defining subsidiary discharge spaces,

b. a plurality of first electrodes each of which is disposed in each of said plurality of slots, respectively,

c. a plurality of second electrodes disposed upon said insulating substrate adjacent to said slots,

d. a plurality of third electrodes spaced apart from said second electrodes by a predetermined distance, said third electrodes intersecting said second electrodes at predetermined angles, a through hole being formed through said third electrodes at each point at which said third electrodes intersect said second electrodes, the main discharges occurring between said third and second electrodes while the subsidiary discharges occur between said third and first electrodes,

e. a phosphor material disposed within each of the through holes of said third electrodes,

f. a transparent insulating substrate disposed in contact with said third electrodes for hermetically sealing a discharge gas or discharge gas mixture filled into said slots of said insulating substrate and into said through holes of said third electrodes, and

g. each group consisting of at least two of said through holes which are formed in the same third electrode being hydraulically communicated with each other and with one of said slots of said insulating substrate.

3,886,396

FLUORESCENT LAMP WITH PROTECTIVE COATING

Edward E. Hammer, Mayfield Village, and Edward E. Kaduk, Lyndhurst, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 188,096, Oct. 10, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,913
Int. Cl. H01j *61/42*
U.S. Cl. 313—486 **5 Claims**

1. A fluorescent lamp comprising an elongated vitreous tube containing an ionizable medium including mercury vapor and having electrodes sealed into its ends, a coating of phosphor on a major portion of the inside surface of said tube, and a postcoat of finely divided aluminum oxide of submicron size forming a porous discontinuous coating on the particles of said phosphor layer to improve maintenance and reduce end discloration, the quantity of aluminum oxide in said postcoat being but a small fraction of the quantity required to achieve



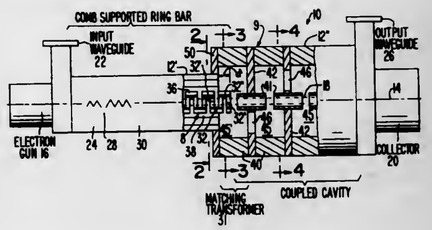
complete coverage of the phosphor particles, the weight of said aluminum oxide postcoat being in the range of 10 to 160 micrograms per square centimeter.

3,886,397

HYBRID SLOW WAVE CIRCUIT

Yukio Hiramatsu, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Jan. 10, 1974, Ser. No. 432,380
Int. Cl. H01j *23/24, 25/34*
U.S. Cl. 315—3.6 **1 Claim**



1. A device for progressively interacting microwave energy with an electron beam comprising:

a. means for projecting a beam of electrons over an elongted beam path;

b. a ring and bar slow wave circuit disposed along said beam path in enegy exchange relationship with said beam;

c. a coupled cavity slow wave circuit disposed along said beam path downstream of said ring and bar circuit and in energy exchange relationship with said beam;

d. said ring and bar circuit being in direct microwave energy exchange relationship with said coupled cavity circuit by protruding into a first cavity of said coupled cavity circuit.

3,886,398

ELECTRON BEAM ELECTRICAL POWER TRANSMISSION SYSTEM

Joseph Feinstein, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Aug. 20, 1973, Ser. No. 389,913
Int. Cl. H01j *25/02*
U.S. Cl. 315—5 **7 Claims**

1. In an electron beam power transmission system for transmitting electrical power from a transmitting location to a remote receiving location:

elongated evacuated envelope means extending from the transmitting location to the receiving location, said receiving location being geographically removed from the transmitting location;

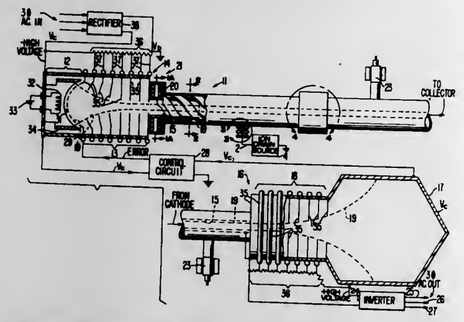
transmitter means at said transmitting location for accelerating and projecting a beam of electrons through said evacuated envelope means from said transmitting location to said receiving location;

receiver means at said receiving location for converting kinetic energy of the beam to electrical power for application to a power load, said receiver means comprising

collector means for collecting the electrons as conduction current;

electrical conductor means interconnecting said receiver means and said transmitter means for returning said conduction current to said transmitter means;

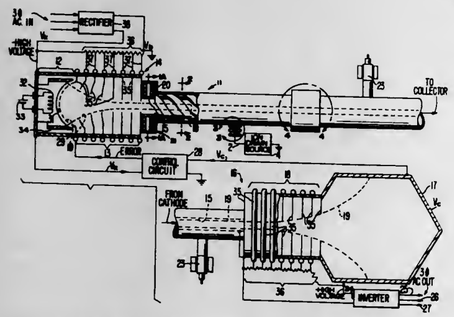
said transmitter means including an electron gun having a cathode emitter for emitting electrons and an electron permeable anode electrode for drawing a stream of emitted electrons from said cathode emitter to form an electron beam emergent from said anode electrode;



means for supplying to said cathode emitter a potential alternating with respect to the potential of said conductor means for causing said gun to produce an electron beam during only every other half-cycle of said alternating potential;

said receiver means including means for developing a potential on said collector means alternating with respect to the potential of said conductor means for converting kinetic energy of the beam to alternating electrical power.

3,886,399
ELECTRON BEAM ELECTRICAL POWER TRANSMISSION SYSTEM
Robert Spencer Symons, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Aug. 20, 1973, Ser. No. 389,914
Int. Cl. H01j *25/02*
U.S. Cl. 315—5 **37 Claims**



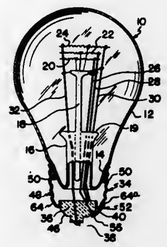
1. In an electron beam power transmission system for transmitting electrical power from a transmitting location to a receiving location remote from the transmitting location:

elongated evacuated envelope means extending from the transmitting location to a geographically removed receiving location;

transmitter means at the transmitting location for forming, accelerating and projecting a beam of electrons over an elongated beam path extending within and along said evacuated envelope from the transmitting location to the receiving location; and

receiver means at the receiving location for converting kinetic energy of the beam to electrical power for application to a power load, comprising, means for decelerating the electrons by an electric field component in the direction of their motion and means for collecting the decelerated electrons as conduction current.

3,886,400
MULTI-FILAMENT LIGHT BULB AND THE LIKE
Gary G. Dill, 28392 Magnolia Dr., North Olmsted, Ohio 44070
Filed May 11, 1973, Ser. No. 359,609
Int. Cl. H01k *1/44, 1/64*
U.S. Cl. 315—64 **13 Claims**





1. In a multi-filament electric light bulb having a sealed glass envelope and a base fixedly attached thereto, said base being adapted for engaging in a receiving socket, and including a plurality of conducting elements arranged in parallel and connected to a respective filament, said base comprising a hollow electrical conducting member and an insulating member disposed in the lower end of said hollow member and projecting outwardly of said lower end thereof, a plurality of spaced stationary contacts mounted generally circumferentially on said insulating member and being exteriorly accessible, each of said contacts being electrically coupled to a respective one of said conducting elements, an electrical conducting selector having free ends and being movably mounted on said base, for generally circumferential movement with respect thereto, said selector at its ends extending interiorly of said base for movably mounting said selector on said base, said selector having a contact portion adapted for engagement with a respective one of said stationary contacts to electrically couple said hollow member to a selected one of said conducting elements, said selector being positioned relative to said base so that said contact portion extends below said hollow member and generally hugs the exterior surface of said base.

3,886,401
APPARATUS FOR ACCELERATING CATHODE HEATING
Peter G. Berg, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed July 1, 1974, Ser. No. 484,539
Int. Cl. H05b *39/00*
U.S. Cl. 315—94 **4 Claims**

1. Apparatus for accelerating the heating of the cathode heater of a cathode ray tube or the like comprising:

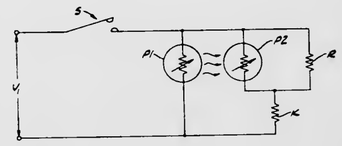
a first self-heating positive temperature coefficient resistor having a relatively low initial resistance which increases abruptly as its temperature rises above a given level;

means for interconnecting said resistor to an electrical power source thereby rapidly to heat it above said given level;

a second self-heating positive temperature coefficient resistor positioned in heat-exchange relationship with said first resistor and having a relatively low initial resistance which increases abruptly as its temperature rises above a given level;

a resistor of substantially fixed resistance shuntconnected with said second self-heating resistor; and

means for interconnecting said shunt-connected resistors in series with the heater of said cathode across an electrical power source adapted to supply power of a substantially constant potential in excess of that required to maintain



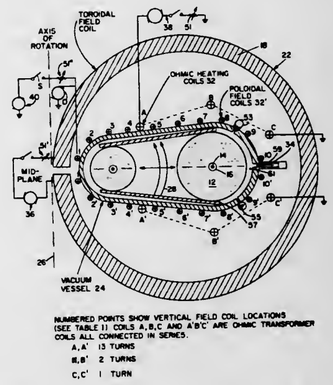
the heater of said cathode at a predetermined temperature;

the resistance of the second self-heating resistor being not substantially more than that of the fixed resistor at temperatures below its aforesaid given level but substantially greater than that of the fixed resistor at temperatures above its aforesaid given level, whereby after power is initially supplied to the cathode heater its potential will be reduced from a level substantially in excess of that required to maintain the heater at said predetermined temperature to a level which maintains the heater at substantially said predetermined temperature as the first and second resistors self-heat thereby to increase and then maintain said second resistor at a temperature above its aforesaid given level.

3,886,402
MAGNETIC PUMPING IN SPATIALLY INHOMOGENEOUS MAGNETIC FIELDS
Harold P. Furth, and Robert A. Ellis, Jr., both of Princeton, N.J., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed May 7, 1974, Ser. No. 467,685
Int. Cl. G21b *13/04*
U.S. Cl. 315—111.7 **9 Claims**

1. Apparatus for heating a toroidally extending plasma column in an ATC having poloidal and toroidal coil means and toroidal containment means, comprising:

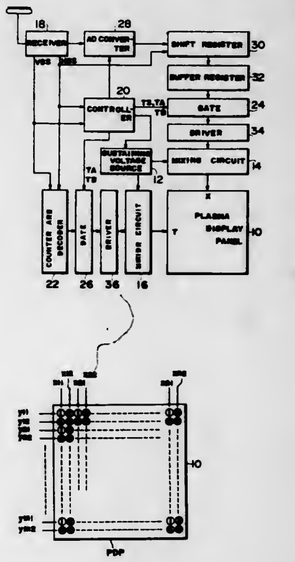
a. means for producing a magnetic field having spaced apart regions of stability and an unstable region therebetween for providing unbalanced biasing forces on the plasma column along the radial axes of the containment means for alternately, periodically and oppositely displacing the plasma column radially back and forth between the regions of stability in the plane of the containment means within a time period t_1 of an average ion-ion collision



time; and

b. means for modulating said poloidal coil means.

3,886,403
BRIGHTNESS MODULATION SYSTEM FOR A PLASMA DISPLAY DEVICE
Kenichi Owaki, Kobe; Shozo Umeda, Kakogawa; Hiroshi Furuta, Akashi; Tadatsugu Hirose, Akashi, and Michihiro Shimuzi, Akashi, all of Japan, assignors to Fujitsu Limited, Japan
Filed Dec. 29, 1972, Ser. No. 319,941
Claims priority, application Japan, Dec. 30, 1971, 47-1464
Int. Cl. H05b *37/00*
U.S. Cl. 315—169 R **11 Claims**



1. A brightness modulation system for producing an image display with selectively controlled brightness level gradations on a plasma display device, said plasma display device having

a plurality of X electrodes and a plurality of Y electrodes disposed to intersect each other with a discharge gas spaced therebetween whereby a plurality of discharge cells is formed at the intersections of the X and Y electrodes, the successive, adjacent electrodes of at least one of said pluralities of X and Y electrodes being arranged in groups and the electrodes of each such group defining corresponding combinations of discharge cells at the intersections thereof with the electrodes of the other of said pluralities of X and Y electrodes, each said combination of discharge cells comprising a display element of the said image display, the corresponding cells of each said combination being selectively and individually controllable to undergo respective, different and predetermined rates of discharge to produce corresponding, different individual brightness levels thereby to provide selective gradations of the brightness level of the display element formed by each such combination of discharge cells, said brightness modulation system comprising:

means for providing a number of different sustain signals corresponding to the number of discharge cells in each said combination thereof and of respectively different repetition rates,

means for supplying said number of different sustain signals to the electrodes of said pluralities of X and Y electrodes corresponding to each said combination of discharge cells, thereby to sustain predetermined, different rates of discharges in the respectively corresponding cells of said combinations of cells,

means for indicating the brightness level gradation to be displayed in each display element of the image display.

means responsive to said indicating means for selecting the cells of the combination thereof corresponding to each display element which, in combination, provide the brightness level gradation for that corresponding display element as indicated by said indicating means,

means for selectively establishing discharges in the cells selected by said selecting means of each said combination thereof, and

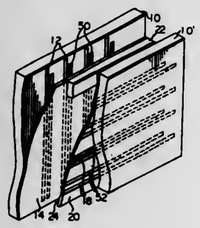
said sustaining means sustaining discharges in those cells of each said combination in which discharges are selectively established by said means for selectively establishing discharges in accordance with the said predetermined different rates of discharges sustained by the respective, different sustain signals, thereby to sustain the gradation of brightness level for each said display element as indicated by said indicating means.

3,886,404

PLASMA DISPLAY

Koichiro Kurahashi, and Hiroshi Tottorik, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 22, 1974, Ser. No. 444,733
Claims priority, application Japan, Feb. 27, 1973, 48-23475
Int. Cl. N05b *41/00*
U.S. Cl. 315—169 TV **6 Claims**



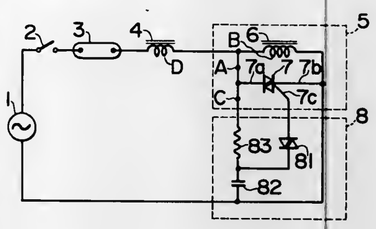
1. A plasma display device comprising, in combination, a first plane, an array of first main electrodes in the form of longitudinally elongated strips disposed in substantially parallel relationships in said first plane, an array of first auxiliary electrodes disposed in said first plane so that each of said first auxiliary electrodes runs in substantially parallel relationship with and adjacent to a different one of said first main electrodes, a second plane disposed in spaced parallel relationship with said first plane to form a discharge gap therebetween, an array of second main electrodes in the form of longitudinally elongated strips disposed in substantially parallel relationship in said second plane to be at a predetermined angle to said array of first main electrodes, an array of second auxiliary electrodes disposed in said second plane so that each of said second auxiliary electrodes runs in substantially parallel relationship with and adjacent to a different one of said second main electrodes, first circuit means for selectively applying a first voltage pulse to the main electrodes of each of said arrays of main electrodes to initiate and terminate an electric discharge thereacross, and second circuit means for successively applying second voltage pulses to said arrays of first and second auxiliary electrodes so as to develope a pulse train including pulses of one polarity alternating pulses of opposite polarity thereacross whereby said electric discharge is followed by electric discharges intermittently caused across those first and second auxiliary electrodes disposed adjacent to the first and second main electrodes applied with said first voltage pulses.

3,886,405

DEVICE FOR OPERATING DISCHARGE LAMPS

Mitsuo Kubo, Osaka, Japan, assignor to Mamiya Koki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1973, Ser. No. 328,654
Claims priority, application Japan, Feb. 7, 1972, 47-13416; Feb. 7, 1972, 47-13417; Mar. 1, 1972, 47-20562
Int. Cl. H05b *41/16*
U.S. Cl. 315—246 **15 Claims**



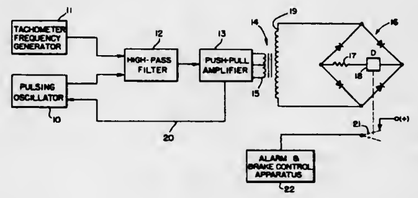
1. A device for operating a discharge lamp comprising: an alternating current power source; a discharge lamp having a rated current value; a low impedance element, said low impedance element being a coil with a relatively few number of turns and relatively small in size; current limiting means comprised of high impedance means and bi-directional means coupled in parallel with said high impedance means for limiting electric current flowing in said discharge lamp to a value below the rated value thereof during a first portion in each half cycle of the alternating current of said power source, said current limiting means being inoperative during the remaining portion of each half cycle and being switched from operative to inoperative states by a control signal, said low impedance element and said current limiting means being connected between said alternating current power source and said discharge lamp; and control signal generating means connected to said current limiting means for applying a control signal to said current limiting means at a predetermined current control changeover point during each half cycle, said predetermined current control changeover point occurring at substantially 90° with respect to current cross-over of each half cycle, whereby said current limiting means become inoperative after the control signal is applied to said current limiting means during each half cycle and the electric current flowing in said discharge lamp increases so that an effective current has said rated value for the half cycle.

3,886,406

OVERSPEED CONTROL SYSTEM FOR A VEHICLE

Robert F. Anderson, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,551
Int. Cl. H01h *47/02*
U.S. Cl. 317—5 **4 Claims**



1. An overspeed control system for a vehicle having a detector relay controlled by outputs of an oscillator and a tachometer frequency generator through a high-pass filter and amplifier wherein the improvement comprises;

a. a step-up transformer having a primary winding energized by output of the amplifier,

b. control means including a full-wave rectifier connected across a resistor and a winding of the detector relay in series for energizing the detector relay by output of an independent secondary winding of the step-up transformer,

c. the resistor having a resistance value several times the resistance of the detector relay winding,

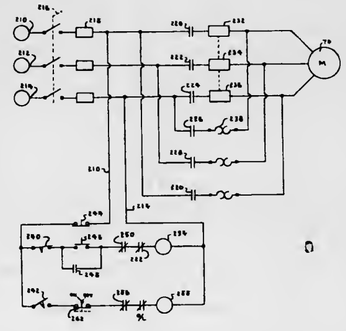
d. whereby the detector relay is quick to respond to de-energization since the shunting effect of the full-wave rectifier is reduced by the series resistor that serves to isolate the relay winding from the rectifier.

3,886,407

REFUSE COMPACTOR SYSTEM

Lester Hans Anderson, 385 Cottage Ave., Glen Ellyn, Ill. 60137

Filed June 21, 1973, Ser. No. 372,252
Int. Cl. H02h *4/085*
U.S. Cl. 317—13 R **3 Claims**



1. A control circuit for a compactor drive motor provided with forward and reverse power circuits, for a cycle operation, comprising:

contactor switch means in said forward and reverse power circuits;

an adjustable current sensitive relay means in said forward power circuit;

a line of said control circuit having a mechanically operable normally closed switch means when said motor is in its forward and rearward drive cycle, and open when said motor has completed its forward drive cycle, and contactor coil means for operating said contactor switch means in said forward power circuit;

another line of said control circuit having a mechanically operable normally closed switch means when said motor is in its forward and reverse drive cycle, and open when said motor has completed its reverse cycle, and contactor coil means for operating said contactor switch means in said reverse power circuit;

said line of said first contactor coil means having a normally closed (contact) switch means operable by said second contactor coil means, and the line of said second contactor coil means having a normally closed (contact) switch means operable by said first contactor coil means;

a second normally closed switch means in said first (mentioned) line operable to open by said current sensitive relay means in said power circuit for forward drive (; and) to abort said forward drive cycle and initiate said reverse drive cycle to completion;

said normally closed switch means in said line of first contactor coil means operable to open by said second contactor coil means when said mechanically operable switch means in said another line is closed and said first mentioned mechanically operable switch means is opened; and

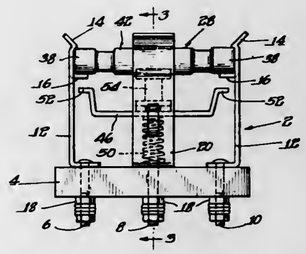
manually operable switch means in said (lines) line of said (first and) second contactor coil means(.) operable to open during said forward drive to stop said motor at its maximum forward drive.

3,886,408

LINE PROTECTOR

Milton A. Klayum, Itasca, and Richard E. Nelson, Arlington Heights, both of Ill., assignors to Reliable Electric Company, Franklin Park, Ill.

Filed Nov. 19, 1973, Ser. No. 417,064
Int. Cl. H02h *3/20*
U.S. Cl. 317—16 **10 Claims**



1. A mounting for a gas tube having three electrodes which are electrically insulated from each other and wherein there is an arc gap within the tube between each of first and second electrodes and a third electrode, said mounting including three terminals electrically insulated from each other, means for removably supporting said gas tube with said three electrodes in electrical contact with each of said terminals respectively, contactor means, resilient means urging said contactor means from a normal location out of electrical contact with the terminals associated with said first and second electrodes to a location of electrical contact with said three terminals, and mechanism preventing said electrical contact of the contactor means with said terminals associated with said first and second electrodes except upon overheating of said gas tube; said mechanism comprising meltable means in the form of a film for heat reception from said gas tube, and cooperating relatively slidable parts rigidly held in fixed positions by said meltable means between said cooperating parts except upon said overheating but relatively slidable upon melting of said meltable means due to said overheating, said parts being

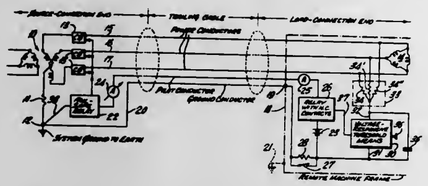
repositionable upon solidification of said meltable means and without replacement thereof to reset said contactor means in its normal location, and at least one of said parts being in force-transmitting engagement with said resilient means and imposing a shear force on said meltable means.

3,886,409

MEANS FOR MONITORING THE SAFETY OF A REMOTE ELECTRICAL GROUND CONNECTION

Leopoldo Scarpino, Indianapolis, Ind., assignor to AMAX Inc., New York, N.Y.

Filed May 9, 1973, Ser. No. 358,468
Int. Cl. H02h *3/16*
U.S. Cl. 317—18 C **21 Claims**



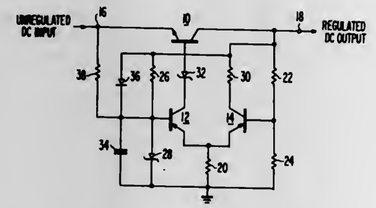
1. Elongate transmission-line means having a source-connection end and a remote load-connection end and comprising power-conductor means, a ground conductor and a pilot conductor; a d-c conducting connection of said power-conductor means to said ground and pilot conductors at the source-connection end; a d-c conducting connection to said power-conductor means at the load-connection end; whereby relatively constant resistance values characterize the d-c conducting paths from the respective load-connection ends of said power-conductor means and of said pilot-conductor means, to said d-c conducting connection at the source-connection end; means for impressing a d-c potential across the full length of said ground conductor, said last-mentioned means including a d-c source in one of said paths and a circuit connection of said one path and said ground conductor at the load-connection ends thereof; and d-c responsive resistance-monitoring means at the load-connection end and including a reference connection to the source-connection end of said ground conductor via the other of said paths, said resistance-monitoring means being also connected to the load-connection end of said ground conductor and thus tracking the instantaneous effective resistance between the source-connection and load-connection ends thereof.

3,886,410

SHORT CIRCUIT PROTECTION APPARATUS FOR A REGULATED POWER SUPPLY

Harold George Seer, Jr., Woodbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 21, 1973, Ser. No. 427,346
Int. Cl. H02h *3/24*
U.S. Cl. 317—31 **9 Claims**



1. In a regulated power supply of the type in which a pair of transistors are arranged in a differential amplifier configuration to compare a substantially constant voltage with a voltage derived at an output terminal of said supply, in providing control signals to a third transistor in a direction to stabilize said output voltage at a predetermined level, the combination therewith of:

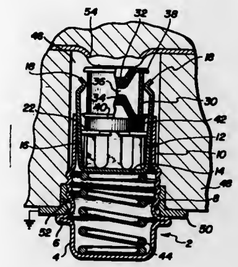
means including a semi-conductor rectifier coupled between said output terminal and one of said pair of transistors to control it to render said third transistor non-conductive when the voltage provided at said output terminal is indicative of a short circuit condition of said power supply.

3,886,411

LINE PROTECTOR HAVING GAS TUBE SURGE ARRESTOR

Milton A. Klayum, Itasca, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Feb. 4, 1974, Ser. No. 439,348
Int. Cl. H02h *9/06*
U.S. Cl. 317—62 **9 Claims**



1. A line protector comprising means forming a circuit that is adapted to be connected between a line and ground to provide overvoltage protection for the line, said circuit comprising, in series, spaced electrodes forming an arc gap and being part of a gas tube, a shunt having means forming an electrical contact with only one of said electrodes, and a tubular cap that telescopically and conductively receives said shunt coaxially therein; a spring in said cap and imposing axial pressure on said shunt in the direction of said gas tube, said shunt having fingers projecting in an axial direction from one end of said cap, said fingers having extremities axially between said electrodes exteriorly of said gas tube and normally out of contact with the other electrode, and said shunt having ledges axially intermediate said extremities and said spring and comprising said means for forming said electrical contact with said one electrode, said last-named means also providing a support for said gas tube at said one electrode.

3,886,412

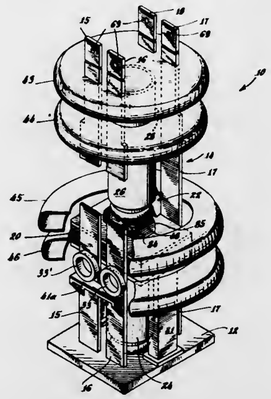
FLEXIBLE SNAKE-LIKE STRING OF COMPONENTS ENCASED IN TUBULAR SHEATH IMMERSED IN OIL

Stanley G. Peschel, Brewster, N.Y., assignor to Hipotronics, Inc., Brewster, N.Y.

Division of Ser. No. 187,688, Oct. 8, 1971. This application Nov. 17, 1972, Ser. No. 307,571
Int. Cl. H05k *5/00*; **H02m** *5/00*
U.S. Cl. 317—99 **5 Claims**

1. A flexible snake-like string for electrically coupling a high voltage terminal with a low voltage terminal comprising a long flexible tubular sheath of high voltage stress resistant plastic having a long tubular bore, a multiplicity of cylindrical electrical cartridge components all of the same size positioned within the bore of said sheath in end-to-end relationship with the ends of successive cartridge components positioned closely adjacent to one another, the ends of successive cartridge components in said bore being flexibly electrically connected for interconnecting all of the cartridge components in series electrical relationship within said long tubular bore while

permitting flexing of said tubular sheath, the diameter of said cartridge components being substantially equal to the internal diameter of said bore, and said tubular sheath containing said series-connected cartridge components being immersed in transformer oil, and said tubular sheath having a lower dielectric constant than said transformer oil but having a higher dielectric strength than said transformer oil, whereby an increased voltage gradient appears across said plastic sheath as compared to said transformer oil, thereby reducing the voltage stress in the transformer oil for protecting the oil from electrical breakdown.

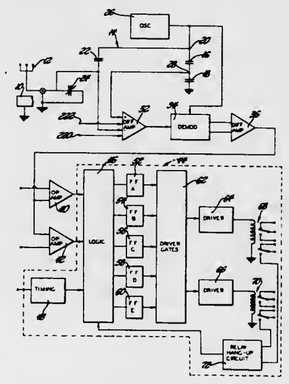


3,886,413

PRESENCE SENSING AND SELF-CHECKING CONTROL SYSTEM

Frederick J. T. Dow, Wolfeboro Falls, N.H., and Dudley B. Hartung, Somerville, Mass., assignors to Xenex Corporation, Woburn, Mass.

Filed Jan. 29, 1973, Ser. No. 327,384
Int. Cl. H01h *47/00*
U.S. Cl. 317—123 **14 Claims**



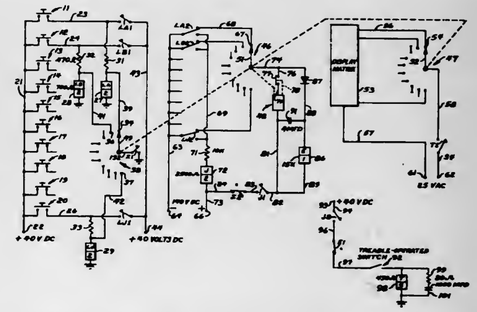
1. A presence detection system of the type comprising sensing means including a sensing element adapted to be disposed adjacent a zone to be monitored and including electrical signal producing means connected with said element, said sensing means having an output adapted to produce a reference signal when said zone is in a normal condition and an intrusion signal when an object intrudes into said zone, and control means having an input connected with the output of said sensing means, said control means including a control circuit and a controller connected thereto, said control circuit being responsive to an intrusion signal to cause actuation of said controller and responsive to a reference signal to cause deactuation thereof, the improvement comprising; self-checking means including timing means, command signal means cyclically operated by the timing means and connected with an input of said control circuit for periodically applying a simulated intrusion signal thereto, said self-checking means also including a logic means having an input connected with a selected point of the control circuit to determine whether a simulated intrusion signal applied to the control circuit is operative to produce a predetermined signal at the selected point in the control circuit during the occurrence of a simulated intrusion signal, said logic means including a self-check bistable element which assumes one state in response to said simulated intrusion signal, gate means having one input connected with the output of the self-check bistable element and having another input connected with a point in said self-checking means having a logic level voltage state indicative of what said one state should be in the absence of a malfunction, said gate means being connected with said controller and being adapted to cause actuation thereof when the bistable element assumes another state in response to said simulated intrusion signal.

3,886,414

DISPATCHING SYSTEM CIRCUIT

Ronald Louis Lach, Arlington Heights, and William Jean Brier, Skokie, both of Ill., assignors to Elec-Tro-Tec, Inc., Elk Grove Village, Ill.

Filed Apr. 10, 1974, Ser. No. 459,549
Int. Cl. H01h *47/00*; **G08g** *1/00*
U.S. Cl. 317—137 **4 Claims**



1. For use in a dispatching system circuit having: a plurality of actuating means each at an associated serving station for producing electrical request signals; a plurality of latching relays each in circuit with an associated one of the actuating means for actuation in response to a request signal produced by the latter; a plurality of instructing means each associated with one of the serving stations, each of the instructing means being operated in response to actuation of an associated latching relay; control switch means for initiating operation of the instructing means; a stepping relay in a circuit for energization thereof and a three group set of stepping switches stepping in unison in response to energization of the stepping relay, each group having plural relay outlet terminals each associated with one of the latching relays; the first group being in a circuit with the stepping relay and the latching relays for controlling the positioning of the set, actuation of each latching relay serving to interrupt the stepping relay circuit for de-energization thereof at a predetermined position; the second group being in circuit with the instructing means for selective energization thereof in accordance with the positioning of the set; the third group being in circuit with the latching relays and being operable to return the latter to their un-actuated positions; the combination comprising: first relay means in a circuit with all of the latching relays to be operated in response to actuation

of any of the latter, operation of said first relay means serving

said corona shield, said lamp being operative to illumi-

a digital computer responsive to inputs from said system, electrical vibration system having semiconductor switching

of any of the latter, operation of said first relay means serving to complete an energizing circuit for the stepping relay to initiate stepping thereof; second relay means in parallel circuit with the stepping relay for simultaneous energization therewith, said first and second relay means cooperating to complete an energizing circuit for the control switch means in response to de-energization of the stepping relay; and third relay means in circuit with the third group for controlling the latter to de-actuate an actuated latching relay following operation of the instructing means associated with the latter; whereby electrical request signals produced by each of the serving stations control operation of the instructing means associated therewith.

3,886,415

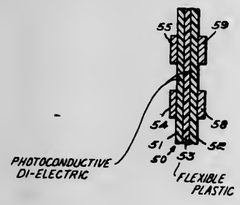
CAPACITOR WITH PHOTO-CONDUCTIVE DIELECTRIC

James E. Genthe, Chelmsford, Mass., assignor to Itek Corp., Lexington, Mass.

Division of Ser. No. 190,296, Oct. 18, 1971, Pat. No. 3,732,100, which is a continuation-in-part of Ser. No. 9,389, Feb. 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 717,502, April 1, 1968, abandoned. This application Nov. 24, 1972, Ser. No. 309,564

Int. Cl. H01g *3/06*

U.S. Cl. 317—258 **4 Claims**



1. An electrical device comprising a base having oppositely facing first and second surfaces formed of photoconductive material of (1) sufficient photosensitivity that upon exposure to actinic light and contact with a physical developer an electrically conductive metal image is produced and (2) possessed of dielectric properties sufficient to make the material suitable as the dielectric layer in an electrical capacitor, a first electrically conductive electrode on said first photoconductive material surface, and a second electrically conductive electrode on said second photoconductive material surface wherein said base comprises an electrically insulating substrate with opposite faces supporting deposited layers of photoconductive material.

3,886,416

METHOD AND APPARATUS FOR ADJUSTING COROTRON CURRENTS

Charles F. Gallo, Jr., Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 7, 1973, Ser. No. 422,632

Int. Cl. G03g *15/02*

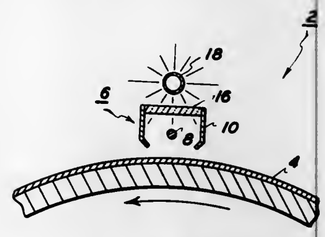
U.S. Cl. 317—262 A **3 Claims**

1. An apparatus for applying electrostatic charge to a photoconductive surface, including:

a corona generator, including a corona electrode operatively disposed within a corona shield, to emit corona current,

a photoconductive surface disposed adjacent to said corona generator to receive said corona current and thus to acquire electrostatic charge when in an insulative condition,

said apparatus including means to establish a steady corona current from said corona electrode to said photoconductive surface, said means including a lamp, integral with said corona shield, said lamp being operative to illuminate said photoconductive surface to render the same



conductive for the establishment of said steady corona current, and said lamp being inoperative to allow said photoconductive surface to acquire electrostatic charge.

3,886,417

METHOD AND APPARATUS FOR CONTROLLING MULTIPLE SUSPENSION CRANES

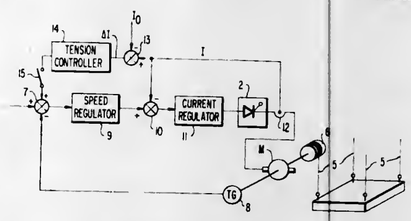
Koichi Niwa, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki-shi, Kanagawa, Japan

Filed Mar. 28, 1974, Ser. No. 455,828

Claims priority, application Japan, Mar. 28, 1973, 48-35401

Int. Cl. H02p *7/68*

U.S. Cl. 318—7 **3 Claims**



1. A method for controlling a multiple suspension crane system of the type which includes a set of four independently controllable crane units or an equivalent set of such crane units for suspending a load by warps connected to four different suspension points on the load, each of the crane units including an electric motor operable to take up the warp of its crane unit and a speed controller for controlling the speed of the electric motor, said method comprising the steps of:

a. determining a permissible range of component load imposed on the specific suspension point nearest the center of gravity of the total load by actually increasing and decreasing the amount of component load on said specific suspension point, and

b. using the mid-value of said permissible range of component load to produce a reference warp tension signal to compensate the speed controller of the specific electric motor operating to take up the warp connected to said specific suspension point.

3,886,418

SET POINT CONTROLLER

Dennis R. Austin, and Wilbern W. McNease, both of Beaumont, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 217,196, Jan. 12, 1972, abandoned. This application Nov. 5, 1973, Ser. No. 413,026

Int. Cl. G05b *15/02*

U.S. Cl. 318—15 **2 Claims**

1. A control system comprising a plurality of analog control devices each responding to an analog control signal comprising:

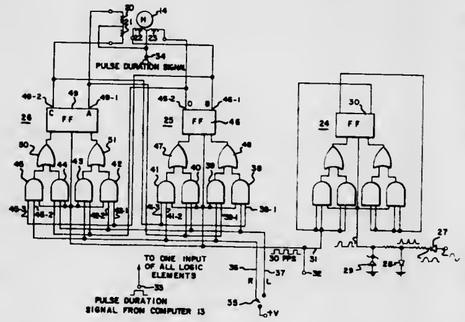
a digital computer responsive to inputs from said system, said computer producing a plurality of set point signals including a variable pulse width signal representative of a change in at least one of said inputs, and continuous raise or lower signals controlling the direction of control of each of the devices and persisting until a predetermined, desired adjustment is accomplished;

a plurality of set point controllers, each of said set point controllers being responsive to one of said set point signals, each of said set point controllers including:

an incremental step motor comprising a plurality of windings and a rotor, selective energization of the windings of said motor causing incremental rotation of the rotor of said motor;

a potentiometer including a rotatable shaft coupled to said motor for producing an analog control signal as an output in response to rotation of the rotor of said motor;

two bi-stable flip-flops each having two outputs and a set and a reset input, one output of each flip-flop being connected to one side of each of the windings of said motor,



the other output of each flip-flop being connected to the other side of each of said motor windings, said variable pulse width signal being applied to energize said flip-flops only during the time duration of said pulse, each of said flip-flops being of the toggle type having two enable inputs and a toggle input,

a source of clock pulses, the source in each set point controller being synchronized to the frequency of the same local line power, said source of clock pulses being applied to the toggle inputs of said flip-flops, and

two AND gates connected through an OR gate to each of the set and reset inputs of each flip-flop, the output of said flip-flops being connected to the inputs of said AND gates to determine the switching sequence when said raise signal is present and in a second switching sequence when said lower signal is present, whereby the same pulse width signal produces the same analog control signal in different controllers because of the synchronization of each controller to the same line power frequency and because the same logic circuitry is used in both a raise and a lower sequence.

3,886,419

ELECTRICAL REFRIGERATING COMPRESSOR

Morikazu Omura, and Masao Okuda, both of Tokyo, Japan, assignors to Sawafuji Electric Company, Ltd., Japan

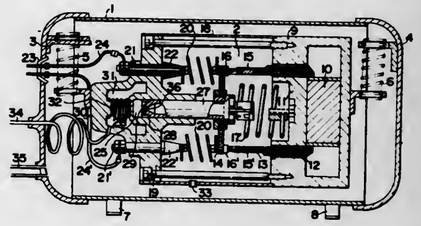
Filed Apr. 10, 1974, Ser. No. 459,652

Claims priority, application Japan, Apr. 14, 1973, 48-42429; Mar. 20, 1974, 49-31752

Int. Cl. H02k *33/00*

U.S. Cl. 318—132 **27 Claims**

1. An electrical machine comprising a vibration type compressor including a mechanical vibration system having a drive coil with at least one spring resonant with the drive coil, an electrical vibration system having semiconductor switching elements of the type with a control electrode for switching-control according to variable factors of the electrical vibration system in relation to the vibration of the drive coil, and a control transformer of unsaturated core type for controlling the on and off of the semiconductor switching elements, the



electrical vibration system being constructed and arranged to operate at the natural vibration cycle of the mechanical vibration system according to the movement of the mechanical vibration system, and at the same time, the electrical vibration system supplying the mechanical vibration system with electric power necessary to operate the mechanical vibration system.

3,886,420

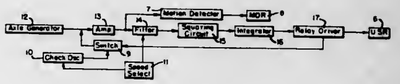
FREQUENCY RESPONSIVE SPEED CONTROL APPARATUS

William K. Butler, and J. Donald Hughson, both of Rochester, N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,674

Int. Cl. H02p *5/00*

U.S. Cl. 318—327 **12 Claims**



1. Speed sensing apparatus for sensing speed in excess of a selectable predetermined speed comprising,

signal source means producing signals at a frequency proportional to vehicle speed,

signal combining means connected to said signal source means,

a high-pass filter connected to said signal combining means, said filter having a cut-off frequency selectable and proportional to said predetermined speed,

bistable output means, connected to the output of said filter, and operated to one state in response to a signal from said filter, and operated to said other state in response to the absence of a signal from said filter,

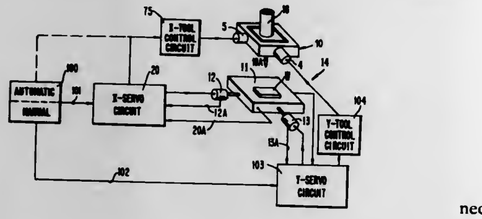
a check oscillator tuned to a selectable frequency slightly higher than said cut-off frequency of said filter,

switch means controlled by said bistable output means to pass signals from check oscillator when said bistable output means is in said one state,

said switch means connected between said check oscillator and said signal combining means

said signal combining means suppressing signals from said signal source means when said check oscillator signals are applied to said signal combining means by said switch means.

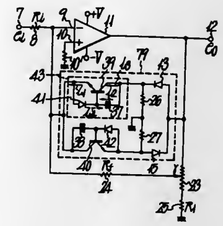
3,886,421
PRECISION TOOL AND WORKPIECE POSITIONING APPARATUS WITH RINGOUT DETECTION
Javathu K. Hassan, Hopewell Junction; Carl V. Rabstejnek, Wappingers Falls, and Anthony D. Wutka, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 10, 1973, Ser. No. 395,502
Int. Cl. G05b 11/18
U.S. Cl. 318—593 **11 Claims**



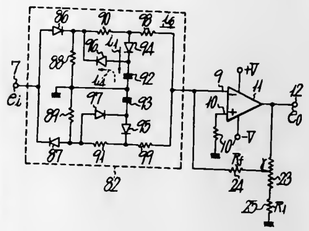
1. Apparatus for positioning first and second elements in a precise predetermined relationship one to the other, said apparatus comprising: positioning means for positioning said first element into a predetermined site, a control means having a signal output indicating the desired position of said first element relative to said second element from a fixed reference; position indicating means to provide a signal indication of the actual position of said first element at any one time relative to said reference; comparing means having an output signal responsive to the difference between the signal output of said control means and the signal output of said position indicating means; and position drive means to drive said positioning means in response to said difference signal until said first element is within said predetermined site; and means for stopping said positioning means upon said difference signal reaching a predetermined value such as to indicate that said first element is within said site; gate means, ring out detection means operatively coupled to said position indicating means for determining the rate of change of the position of said first element, and means connecting said ring out detection means to said gate means; said ring out detection means including means for supplying a first signal input to said gate means upon the rate of change of the position of said first element arriving at a predetermined value; and second positioning means responsive to said difference signal for positioning said second element in a precise location relative to said first element.

3,886,422
SERVO APPARATUS
Isao Masuzawa, Tokyo; Shin-ichi Kawada, Yokohama; Yoichi Hirokawa, Kamakura, and Masatoshi Sato, Tokyo, all of Japan, assignors to Kabushikikaisha Tokyo Keiki, Tokyo, Japan
Division of Ser. No. 258,388, May 31, 1972, Pat. No. 3,793,576. This application Jan. 28, 1974, Ser. No. 437,057
Int. Cl. G05b 6/02
U.S. Cl. 318—621 **6 Claims**

1. A servo apparatus comprising a drive unit for positioning a controlled element, a relay like actuator with its output connected to the input of said drive unit, a first feedback generator driven by said drive unit, a summing device receiving an input command signal and an input from said first feedback generator, an operational amplifier with its output connected to the input of said relay like actutor and its input connected to said summing device, a resistive feedback path connected between the output and input of said operational amplifier, a second feedback path device connected between the output and input of said operational amplifier and comprising a transistor and a capacitor, said capacitor being connected at its one terminal to the first electrode of said transistor and at its other terminal to the output of said operational amplifier, the second electrode of said transistor being connected to the input of said operational amplifier, and the third electrode of said transistor being connected through a unilateral current device to the output of said operational amplifier.

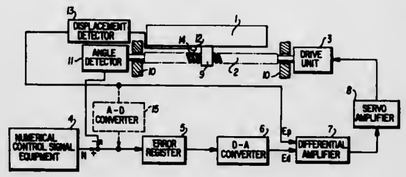


3,886,423
SERVO APPARATUS
Isao Masuzawa, Tokyo; Shin-ichi Kawada, Yokohama; Yoichi Hirokawa, Kamakura, and Masatoshi Sato, Tokyo, all of Japan, assignors to Kabushikikaisha Tokyo Keiki, Tokyo, Japan
Division of Ser. No. 258,388, May 31, 1972, Pat. No. 3,793,576. This application Jan. 28, 1974, Ser. No. 437,069
Int. Cl. G05b 6/02
U.S. Cl. 318—621 **5 Claims**



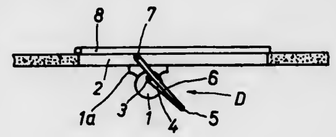
1. A servo apparatus comprising a drive unit for positioning a controlled element, a relay like actuator with its output connected to the input of said drive unit, a first feedback generator driven by said drive unit, a summing device receiving an input command signal and an input from said first feedback generator, an operational amplifier with its output connected to the input of said relay like actuator a resistive feedback path connected between the output and input of said operational amplifier, and an input circuit with its output connected to the input of said operational amplifier and its input connected to the output of said summing device, said input circuit comprising a diode, first, second and third resistors, a capacitor, and a second diode, said first diode being connected between the output of said summing device and the connection point of said first and second resistors, the other end of said first resistor being grounded, the other end of said second resistor being connected to the input of said operational amplifier through said third resistor, said capacitor being charged through said second resistor to provide a delay time constant for the input thereto, the charge stored in said capacitor being discharged through said first resistor and said second diode.

3,886,424
CONTROL SYSTEM HAVING ACTUAL BACKLASH COMPENSATING APPARATUS
Naomi Hoshina, Yokohama, and Etsuji Suzuki, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan
Filed Mar. 14, 1972, Ser. No. 234,611
Claims priority, application Japan, Sept. 10, 1971, 46/70228
Int. Cl. G05b 11/01
U.S. Cl. 318—630 **7 Claims**



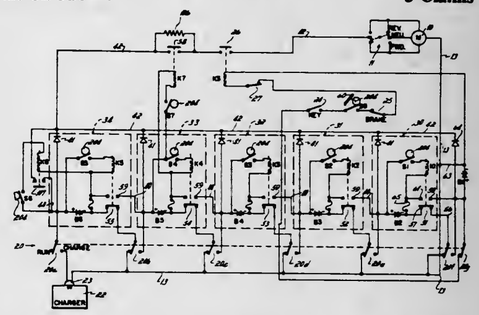
1. A backlash compensating apparatus for a screw driven system comprising:
a worktable,
a drive screw,
a nut,
a drive unit for driving said worktable so as to linearly travel in accordance with said drive screw and said nut,
rotation angle detecting means for generating a signal corresponding to the angle through which said drive screw is made to rotate by said drive unit,
a servo system for determining the position of the worktable by collating said output signal from said rotation angle detecting means with a predetermined input value,
a displacement detector coupled to said worktable to directly mechanically detect a position of said drive screw relative to a position of said worktable to thereby detect errors in the positioning thereof caused by backlash between a starting position of said worktable and a starting position of said drive screw, and
means for correcting said backlash in accordance with output signals from said displacement detector by correcting the input signals to said drive unit.

3,886,425
DRIVE MECHANISM FOR OPENING AND CLOSING DOORS OR THE LIKE
Bruno E. Weiss, Liestal, Switzerland, assignor to Magnetic Elektromotoren AG, Liestal, Switzerland
Filed Nov. 21, 1972, Ser. No. 308,371
Claims priority, application Switzerland, Nov. 29, 1971, 17349/71; Sept. 22, 1972, 13849/72
Int. Cl. H02f 3/00
U.S. Cl. 318—468 **11 Claims**



1. An electro-mechanical drive mechanism for opening and closing a door or the like, comprising:
a. a drive unit including a blockable, reversible, continuously switched-on electric motor and having an output drive shaft;
b. a drive lever connected to said output drive shaft;
c. a coupling member hingedly connected to the drive lever and the door; and
d. resiliently flexible stop means associated with said output drive shaft to limit the range of rotational movement of said output drive shaft to less than one complete revolution and resiliently to block said electric motor in two terminal positions.

3,886,426
BATTERY SWITCHING CIRCUIT
Lester Alvin Daggett, Palos Verdes Peninsula, Calif., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio
Filed Mar. 16, 1973, Ser. No. 342,213
Int. Cl. H02j 7/00; H02p 7/00, 7/20
U.S. Cl. 320—7 **5 Claims**



1. A battery interconnection circuit for applying different voltages from a plurality of batteries across a load while maintaining substantially uniform current drain from the batteries, comprising, in combination:
a common positive lead and a common negative lead with the load being connectable across said common positive lead and said common negative lead;
a plurality of batteries each with a positive and a negative battery terminal, each for supplying direct current power;
a unidirectional current conducting element connected between each respective positive battery terminal and said common positive lead, to permit current to flow from each said positive battery terminal to said common positive lead;
an input terminal associated with each said battery;
a plurality of switches, each switch connected to a respective negative battery terminal, each such switch providing a connection between the respective negative battery terminal and alternately the respective input terminal or directly to said common negative lead;
a direct electrical connection from each positive battery terminal but one to the input terminal associated with another of said batteries, each such input terminal being connected only to one said positive battery terminal, there being one input terminal associated with one battery and one positive battery terminal of another battery which are not so connected;
an additional battery having a positive terminal and a negative terminal, the negative terminal of said additional battery being connected directly to said common negative lead and the positive terminal of said additional battery being connected directly to said one input terminal;
a further unidirectional current conducting element connected between the positive terminal of said additional battery and said positive common lead to permit current to flow only from said additional battery to said common positive lead;
selective switch closing means for closing in sequence various combinations of said switches to provide a series of different connections of said batteries ranging from a completely parallel connection to a completely series connection to provide a range of voltages across the load while maintaining a substantially uniform current drain from each said battery; and

a short circuit means for providing a direct electrical connection between said one positive battery terminal and said common positive lead only when each said switch is operative to provide an electrical connection between a respective negative battery terminal and a respective input terminal.

3,886,427

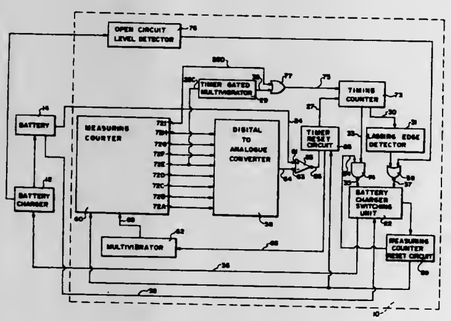
BATTERY CHARGER CONTROL CIRCUIT

Ronald Edwin Long, Lincoln, Nebr., assignor to Lester Electrical of Nebr., Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 298,344, Oct. 17, 1972, Pat. No. 3,794,905. This application Jan. 2, 1974, Ser. No. 430,091

Int. Cl. H02j *7/04*

U.S. Cl. 320—22 **15 Claims**



1. Apparatus for controlling the charging of a battery, comprising:

input means for carrying a signal representing the potential of a battery;

measuring means for generating a plurality of energy-level digital signals indicating energy levels of the battery;

timer means for determining when the time between certain of said energy-level digital signals exceed a predetermined maximum time;

control means for selectively reducing and increasing the rate of charging of the battery;

said control means including logic means for causing said control means to reduce the rate of charging of the battery when said time between said certain energy-level digital signals exceeds said predetermined maximum time during a charging run;

said measuring means including a first counter and pulse-generator means for applying pulses to said first counter, whereby said first counter counts said pulses;

said first counter including a plurality of different order first output means;

said timer means including a second counter having an input terminal for receiving pulses for the counting thereof and a plurality of different order second output means;

one of the first output means of said first counter being connected to the input of said timer means, whereby said timer begins time periods under the control of said control means;

said control means including means for increasing the rate of charging of the battery when at least one of said first and said second counters counts to a predetermined one of said output means while said battery charger is not going through a charging run.

3,886,428

ELECTRONIC CONTROL SYSTEM FOR BATTERY CHARGERS

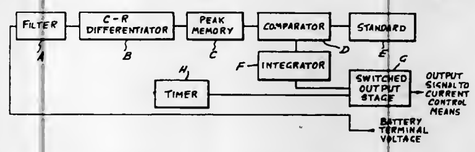
James Adrian Macharg, Bancroft House, Melbury Rd., Newcastle-Upon-Tyne, England

Filed May 14, 1974, Ser. No. 469,763

Claims priority, application United Kingdom, May 17, 1973, 23535/73

Int. Cl. H02j *7/10*

U.S. Cl. 320—39 **16 Claims**



1. An electronic control system for a battery charger including: means for switching on and off the charging current at repetitive intervals in order to provide an open-circuit terminal voltage during the "off" periods; means for providing a signal for controlling the magnitude of the charging current; means for extracting the resultant "I.R Drop" at the battery terminals; means for differentiating the rate of decay of the open circuit terminal voltage of the battery at the said repetitive intervals; means for deriving a voltage which is some function of the differential at the repetitive intervals; means for comparing this voltage derived from the differential with a standard voltage; and means utilizing the difference between said two voltages in order to modify the control signal whereby the magnitude of the charging current is controlled.

3,886,429

DIRECT-DIRECT SYMMETRICAL CONVERTER POWER PACK

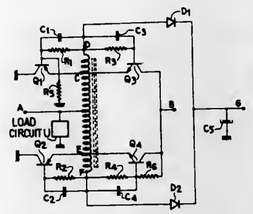
Gilbert Maillard, and Jean Morisset, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 17, 1974, Ser. No. 434,304

Claims priority, application France, Jan. 23, 1973, 73.02270

Int. Cl. H02m *3/14*

U.S. Cl. 321—2 **5 Claims**



1. A direct-direct symmetrical converter power pack having an input for being coupled to a supply source having a voltage having either one of two predetermined different absolute values and an output and comprising: a converter formed by a transformer having two end terminals, said transformer comprising a winding with a centre tap and further taps; at least one rectifier circuit coupled to said two end terminals of said transformer and comprising an output forming the output of said power pack, a switching circuit comprising first and second terminals, first, second, third and fourth transistors, each having a control electrode and first and second further electrodes, four biasing circuits respectively coupled to said control electrodes of said first, second, third and fourth transistors, said first further electrodes of said first and second transistors being coupled to said first terminal, and said second further electrodes of said first and second transistors being symmetrically coupled to said winding relatively to said centre-tap, said first further electrodes of said third and fourth transistors being coupled to said second terminal and said second further electrodes of said third and fourth transistor being symmetrically coupled to said winding relatively to said centre-tap, said first terminal and said centre-tap forming a first input of said converter, said first and second terminals forming a second input of said converter; and a selector device for connecting said input of said power pack either to said first input or to said second input of said converter depending upon the value of said voltage for maintaining at a constant value the voltage at said output of said power pack.

3,886,430

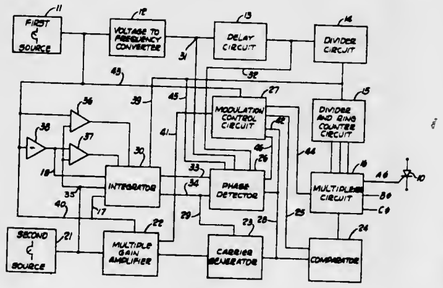
PHASE AND FREQUENCY SYNCHRONIZING CIRCUIT

Udo H. Meier, Lucerne, Switzerland, assignor to Reliance Electric Company, Cleveland, Ohio

Filed Dec. 6, 1973, Ser. No. 422,301

Int. Cl. H02m *1/08*

U.S. Cl. 321—9 A **12 Claims**



1. An apparatus for synchronizing a first wave form and a second wave form to have a given frequency and phase relation, comprising in combination:

a circuit for establishing the first wave form;

a circuit for establishing the second wave form;

detector means for providing an output of the difference from the given frequency relation of the first and second wave forms;

phase modifying means connected between said detector means and one of said circuits for modifying the phase of the second wave form to synchronize the first and second wave forms at the given phase relation;

integrator means connected to said detector means for storing a correction signal in accordance with said output of said detector means;

and means for applying said correction signal to one of said circuits for modifying the frequency of said second wave form to synchronize the first and second wave forms at the given frequency relation.

3,886,431

SYNCHRONIZING CIRCUIT HAVING AN INFINITE NUMBER OF RATIOS

Udo H. Meier, Lucerne, Switzerland, assignor to Reliance Electric Company, Cleveland, Ohio

Filed Dec. 6, 1973, Ser. No. 422,303

Int. Cl. H02m *1/08*

U.S. Cl. 321—9 A **6 Claims**

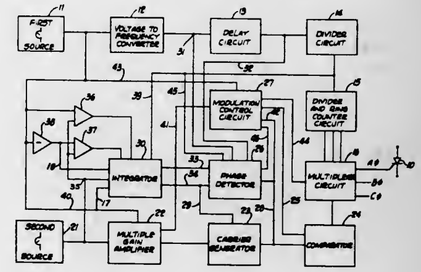
1. An apparatus for synchronizing a first wave form with a second wave form, comprising in combination:

a first circuit for establishing a variable frequency first wave form;

a second circuit for establishing a second wave form at a nominal frequency;

said nominal frequency providing a first integral ratio of said nominal frequency to a given frequency of the first wave form;

means including integrator means for varying the second wave form frequency in accordance with the first wave form frequency to maintain said first integral ratio;



and ratio change means including reset means for resetting said integrator means for re-establishing the second wave form at said nominal frequency resulting in a second integral ratio of the second wave form to the first wave form frequency when the variation of the second wave form frequency reaches a predetermined boundary.

3,886,432

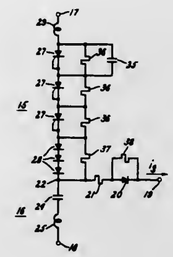
OVERVOLTAGE PROTECTIVE CIRCUIT FOR HIGH POWER THYRISTORS

Dante E. Piccone, Philadelphia, and Istvan Somos, Lansdowne, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Feb. 21, 1974, Ser. No. 444,605

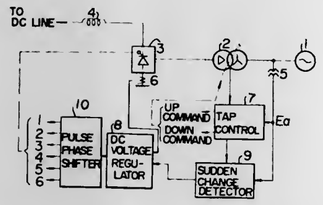
Int. Cl. H02h *7/14*

U.S. Cl. 321—11 **9 Claims**



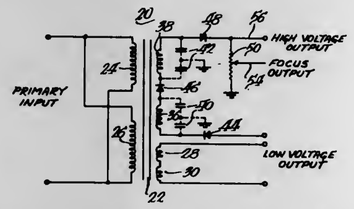
5. For triggering a high-power thyristor, a circuit including overvoltage sensing means connected in series with a capacitor between main terminals of the thyristor and means for coupling the juncture of said sensing means and said capacitor to the control means of the thyristor, whereby the thyristor is triggered when said sensing means switches from a blocking state to a current conducting state in response to forward bias voltage across said main electrodes rising to a predetermined threshold magnitude which is lower than the breakover level of said main thyristor, wherein the improvement comprises means associated with said overvoltage sensing means for relatively reducing said threshold magnitude of forward bias voltage as the rate of rise thereof increases.

3,886,433
CONVERTER CONTROL SYSTEM WITH TAPPED TRANSFORMER PROVIDING CONSTANT NO-LOAD SECONDARY VOLTAGE
Atsumi Watanabe, Hitachi, Japan, assignor to Hitachi, Ltd., Japan
Filed Aug. 8, 1973, Ser. No. 386,561
Claims priority, application Japan, Aug. 21, 1972, 47-80866
Int. Cl. H02m 7/12; G05f 5/00
U.S. Cl. 321—18 **4 Claims**



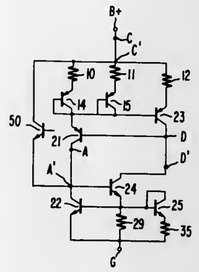
1. In a converter control system applied to a system comprising a converter connected to a DC line and a tapped transformer for connecting said converter to an AC system; the improvement comprising a circuit for generating a reference voltage varying with the position of said tap of said transformer, a circuit for generating a voltage proportional to the primary voltage of the transformer, first means for comparing the voltages of said two circuits and controlling the position of the tap of said transformer, a circuit for generating a voltage corresponding to the controlling delay angle required for maintaining constant the terminal voltage on the DC side of said converter depending on the value of direct current flowing in said converter, a circuit for generating a voltage corresponding to the controlling delay angle required for maintaining constant the extinction angle of said converter depending on the value of the direct current flowing in said converter, and second means for selecting one of the voltages generated by last-mentioned two circuits and applying a firing pulse or a controlling delay angle corresponding to said selected voltage to said converter.

3,886,434
FLYBACK TRANSFORMER
Louis W. Schreiner, Palatine, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.
Filed Sept. 7, 1973, Ser. No. 395,284
Int. Cl. H02m 7/06; H01f 27/40
U.S. Cl. 321—27 R **6 Claims**



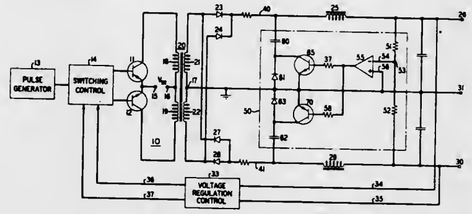
1. A transformer assembly for generating deflection voltage waveforms in a television receiver, said waveforms being inherently subject to harmonic oscillations caused by distributed capacitance in said transformer, said transformer comprising:
a U-shaped ferromagnetic core having an intermediate section and first and second generally parallel outer legs,
a generally rectangular ferromagnetic core segment bridging said outer legs to complete a single window magnetic circuit;
a primary winding having first and second segments;
a split high voltage winding having first and second segments;
a pair of low voltage bobbins carrying said primary segments surrounding and extending along and immediately adjacent to said first and second core legs respectively for substantially the entire length of said window and a pair of high voltage bobbins carrying said first and second high voltage segments respectively and surrounding said low voltage bobbins for substantially the entire length of said window;
voltage rectifier means connected in series with said high voltage winding segments and intermediate the terminating ends of said high voltage winding.

3,886,435
V_{BE} VOLTAGE VOLTAGE SOURCE TEMPERATURE COMPENSATION NETWORK
Steven Alan Steckler, Clark, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Aug. 3, 1973, Ser. No. 385,271
Int. Cl. G05f 1/58
U.S. Cl. 323—4 **19 Claims**



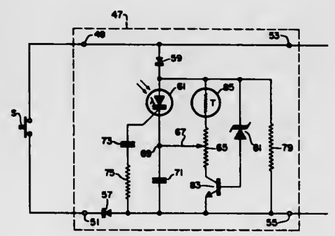
1. A current regulator which supplies a substantially constant current over a substantial range of operating temperatures, comprising:
a source of temperature dependent voltage, said temperature dependent voltage being proportional to the voltage established across a semiconductor P-N junction structure in the conductive state;
first resistance means coupled in parallel with said source of temperature dependent voltage for drawing current equal to the voltage applied thereacross divided by the resistance of said first resistance means; and
serially coupled P-N junction structure and second resistance means coupled in parallel with said source of temperature dependent voltage and said first resistance means such that the potential across said serially coupled P-N junction structure and second resistance means equals the potential across said source of temperature dependent voltage, the current in said serially coupled P-N junction structure and second resistance means thereby having a temperature coefficient which is proportional to the negative of the temperature coefficient of current in said first resistance means for substantially compensating for said temperature coefficient of current in said first resistance means over a substantial range of operating temperature.

3,886,436
REGULATOR TO CONTROL TRACKING OF DUAL OUTPUT CONVERTER
James Carroll Wadlington, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 6, 1974, Ser. No. 440,066
Int. Cl. G05f 1/60; H02m 3/32
U.S. Cl. 323—8 **7 Claims**



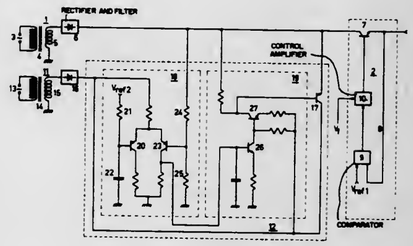
1. In a converter circuit including dual output means comprising rectifier means and filter means,
a tracking regulator comprising,
means to monitor the output signal ratio of the dual output means,
energy storage means coupled to said dual output means at a junction of said rectifier means and said filter means,
charging control means responsive to said means to monitor to control the charging of said energy storage means, and gating means connected in series with said energy storage means, said gating means responding to a voltage induced by said filter means to discharge the energy stored in said energy storage means into at least one of said dual output terminals to maintain the desired output signal ratio.

3,886,437
STABLE THRESHOLD CIRCUIT
Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Division of Ser. No. 134,214, April 15, 1971, Pat. No. 3,793,556. This application Aug. 6, 1973, Ser. No. 385,835
Int. Cl. H05b 41/36
U.S. Cl. 323—8 **1 Claim**



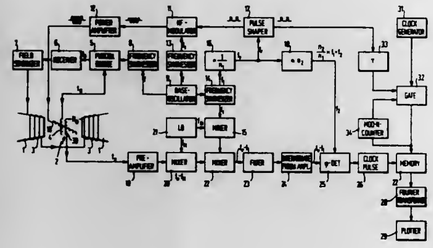
1. A circuit comprising first and second input terminals for connection to a source of supply voltage,
threshold signal means for providing a threshold signal derived from said supply voltage and comprising voltage divider means having first, second, and pick-off terminals, including a first impedance means connected between said first terminal and said pick-off terminal of said voltage divider means and a second impedance means connected between said pick-off terminal and said second terminal of said voltage divider means,
said first terminal of said voltage divider means being connected to said first input terminal,
switching means having first, second and control terminals, said first terminal of said switching means being connected to said second terminal of said voltage divider means, and said second terminal of said switching means being connected to said second input terminal,
a voltage responsive switching device connected between said first input terminal and said control terminal of said switching means,
storage means connected between said pick-off terminal and said second input terminal, and
third impedance means connected between said first and second input terminals, said voltage responsive switching device being responsive to said supply voltage for rendering said switching means conductive, whereby said storage means stores a charge representative of the threshold signal voltage at said pick-off terminal, said voltage responsive device being further responsive to predetermined changes in said supply voltage for rendering said switching means non-conductive, thereby substantially preventing said predetermined changes in said supply voltage from affecting the charge on said storage means.

3,886,438
VOLTAGE-REGULATED POWER SUPPLY UNIT
Antonius Fredericus Mattias Bouman, Hengelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands
Filed Sept. 24, 1973, Ser. No. 399,857
Claims priority, application Netherlands, Sept. 26, 1972, 7212971
Int. Cl. G05f 1/56, 1/64
U.S. Cl. 323—22 T **10 Claims**



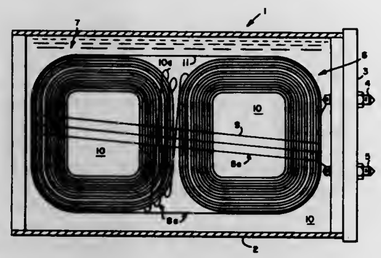
1. Voltage-regulated power supply unit a first and second voltage source producing a fluctuating d.c. voltage, a first and second regulator connected to the first and second voltage sources, respectively, a feedback circuit connected to the output of said first regulator, which feedback circuit comprises a first comparator providing a control voltage related to the difference between the output voltage of said first regulator and a first fixed reference voltage for regulating the output voltage, means including a power transistor whereby the second regulator establishes a connection between the second voltage source and the first regulator during the time when the second regulator is registering a voltage generated by the first voltage source, which voltage is below the sum value of the required minimum operating voltage of the first-regulator and said output voltage, for the purpose of maintaining a d.c. voltage which is at least equal to said sum value and to be supplied to the first regulator, and a differential amplifier which supplies a control voltage to said power transistor which is derived from the difference voltage between the voltage applied to the input of the first regulator and a second fixed reference voltage.

3,886,439
METHOD OF SEPARATING BROAD AND NARROW LINES OF A FREQUENCY SPECTRUM
Günther Rudi Laukien, Am Silberstreifen, 7501, Forchheim, Germany
Continuation-in-part of Ser. No. 147,652, May 27, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,453
Claims priority, application Germany, July 30, 1970, 2037761
Int. Cl. G01n *27/78*
U.S. Cl. 324—.5 R **8 Claims**



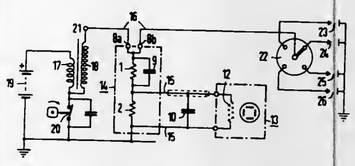
1. A method of separating broad and narrow lines of a frequency spectrum in the same frequency range in spin resonance spectrometry, comprising the steps of:
exciting all of the oscillations of the spectrum at the same time in a given substance;
selectively recording those oscillations corresponding to only one of said broad and narrow lines in the form of an interference signal by recording the oscillations produced in said substance during only a selected portion of the time interval during which said all of the oscillations of the spectrum are produced; and
subjecting said interference signal to Fourier analysis.

3,886,440
PROTON PRECESSION MAGNETOMETER SENSOR
Mark Edward Berry, Mountain View, and Thomas R. Tullsen, San Jose, both of Calif., assignors to GeoMetrics, Sunnyvale, Calif.
Filed Oct. 23, 1973, Ser. No. 408,267
Int. Cl. G01r *33/08*
U.S. Cl. 324—.5 E **10 Claims**



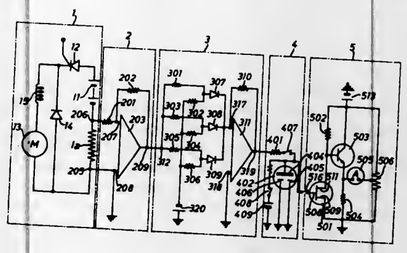
1. In a proton precession magnetometer having a housing for containing a proton-ladened fluid, a sensor comprising:
a plurality of turns of multi-strand wire forming a main coil means for increasing the signal-to-noise ratio of said sensor; and
means for mounting said main coil means within said housing.

3,886,441
ADAPTER FOR COUPLING A MEASURING INSTRUMENT TO AN ELECTRICAL IGNITION SYSTEM
Hans-Werner Kranz, and Herbert Lucke, both of Regensburg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed July 6, 1973, Ser. No. 376,940
Claims priority, application Germany, July 11, 1972, 2234055
Int. Cl. G01r *13/42*
U.S. Cl. 324—15 **3 Claims**



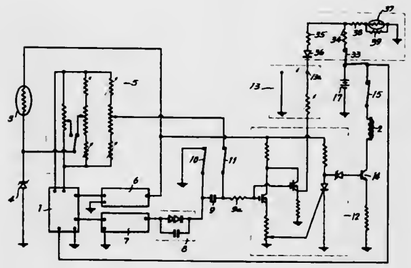
1. An electrical adapter apparatus for coupling an electronic measuring instrument to the ignition system of an internal combustion engine, comprising:
an ohmic voltage divider, including a pair of resistors coupled in series for dividing a voltage signal;
an electrically conductive member comprising an annular ring, disposed about and spaced apart from one of said resistors of said voltage divider, and coupled in series to both of said resistors of said divider;
electrically conductive contact members, coupled to said voltage divider resistors and said conductive member, for transmitting a signal representative of the ignition voltage to the electronic measuring instrument;
a conductive base member coupled to said one of said voltage divider resistors and to one of said contact members;
an electrically conductive bridge member coupled to said annular ring and said base member;
a conductive plate member having a curved end portion disposed adjacent said annular ring and said resistors and coupled to the other one of said contact members; and
a curved shield member, mounted on said plate member adjacent said voltage divider resistors.

3,886,442
BATTERY STATE-OF-CHARGE INDICATOR
Takewo Chiku, Toyota; Shin Yamamoto, and Mikio Huruhashi, both of Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, Japan
Filed Apr. 12, 1974, Ser. No. 460,466
Claims priority, application Japan, Apr. 16, 1973, 48-43463
Int. Cl. G01n *27/42*
U.S. Cl. 324—29.5 **10 Claims**



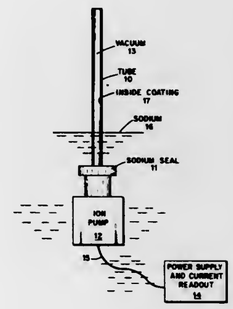
1. An actual state-of-charge indicator for a secondary battery comprising:
a detecting means for detecting a discharging current exerting within an electric load circuit driven by said battery;
a compensation means for converting the discharging current to a compensated current substantially satisfying an equation $I=nI_B^n$, the characters I and 1_B being the compensated current and the discharging current respectively, and the constants m and n being experimentally defined by the changes of the known fully charged capacity of said battery in relation to the changes of the discharging current to satisfy Peukert Equation;
an integration means for storing an ampere-hour corresponding with said known fully charged battery capacity therein and detecting an actual state-of-charge of said battery by means of a difference between an ampere-hour integrated therein from said compensated current and said stored ampere-hour; and
an indicating means for reading said actual state-of-charge of said battery.

3,886,443
ELECTRIC CAMERA SHUTTER WITH VOLTAGE CHECKING CIRCUIT
Seinan Miyakawa, Tokyo, and Mitsuhiko Shimoda, Niiza, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan
Division of Ser. No. 251,764, May 9, 1972, Pat. No. 3,766,116. This application May 29, 1973, Ser. No. 364,741
Claims priority, application Japan, May 13, 1971, 46-37734; May 19, 1971, 46-39721; May 19, 1971, 46-39722
Int. Cl. G01r *27/42*; **G03b** *17/18*
U.S. Cl. 324—29.5 **4 Claims**



1. In a camera, circuitry for automatically determining the extent to which film in the camera is exposed, a voltage source, a main switch connected between said voltage source and said circuitry for transmitting voltage from said voltage source to said circuitry when said main switch is closed, meter means electrically connected with said circuitry for providing information with respect thereto, checking circuit means for checking the condition of said voltage source, said checking circuit means consisting of components which are entirely separate from said circuitry so that none of the components of said checking circuit means are in common with components of said circuitry, and including electronic thermal compensating means for thermally compensating the checking circuit means, said checking circuit means being operatively connected with said meter means for indicating at said meter means the condition of said voltage source, and a normally open switch electrically connected between said checking circuit means and said voltage source to be closed, when said main switch is open, for connecting said checking circuit means between said voltage source and said meter means so that the latter will give a reading indicating the condition of said voltage source.

3,886,444
HYDROGEN DETECTOR FOR SODIUM COOLED REACTORS
Prodyot Roy, Saratoga, and Douglas N. Rodgers, San Jose, both of Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Feb. 7, 1974, Ser. No. 440,627
Int. Cl. G01n *27/00, 7/10*
U.S. Cl. 324—33 **3 Claims**

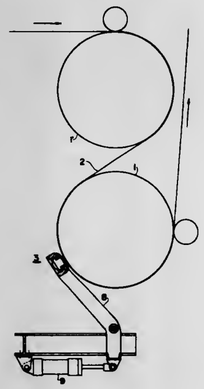


1. In a hydrogen detector for measuring hydrogen concentration in liquid sodium comprising a thin-walled diffusion tube constructed from material selected from the group consisting of nickel and stainless steel, ion pump means connected to create a vacuum within said diffusion tube, and power supply and current readout means connected to said ion pump means; the improvement comprising a thin layer of refractory metal selected from the group consisting of tungsten and molybdenum coated on inner wall surfaces of said diffusion tube for controlling the rate of permeation of hydrogen in surrounding liquid sodium through said diffusion tube.

3,886,445
METHOD AND APPARATUS FOR ELECTROMAGNETIC DETECTION OF WELDS IN METAL STRIPS INCLUDING PRESSING MEANS FOR THE STRIP
Iwane Chiba, Fukuyama; Toshihiro Mori, Yokohama, and Noboru Yamazaki, Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 17, 1973, Ser. No. 407,108
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **14 Claims**

1. A method of detecting the welds in a metal strip comprising the steps of:
tightly winding a moving metal strip comprised of shorter metal strips welded together around a set of bridle rolls for detecting the welds in said metal strip,
locating a detector of the non-contact electromagnetic induction type in the vicinity of said metal strip wound on a bridle roll, said detector including a holder member extending in the direction of the width of the strip and having a plurality of sensors fixedly mounted on said holder member in a row in the direction of the width of the strip, a plurality of protector elements projecting from said holder member adjacent said sensors, and at least one roller rotatably mounted to said holder member in the vicinity of said sensors and projecting from said holder member past the outermost surface of said sensors which face said strip,
pressing said at least one roller against the surface of said strip on said bridle roll for maintaining a substantially constant predetermined gap between said plurality of sensors and the surface of said metal strip and maintain-

ing said sensors in a fixed position for electromagnetic detection of said welds, and



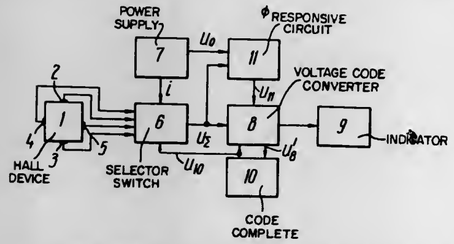
selectively separating said sensors away from said surface of said metal strip to cease said detection of welds.

3,886,446

DIGITAL INDICATOR OF THE ELECTROMOTIVE FORCE OF A HALL-EFFECT DEVICE WHICH ELIMINATES THE INFLUENCE OF THE NON EQUIPOTENTIAL VOLTAGE

Sergei Glebovich Laranov, Brest-Litovsky prospekt, 2, kv. 107; Voldmir Vasilievich Braiko, ulitsa Vernadskogo, 75, kg. 18a; Jury Trofimovich Chigirin, prospekt 40 let Oktyabrya, 100-2, kv. 149, and Vladimir Petrovich Belousov, ulitsa Vernadskogo, 61, kv. 3/1, all of Kiev, U.S.S.R.

Filed Oct. 16, 1972, Ser. No. 297,905
Int. Cl. G01r *33/06*
U.S. Cl. 324—45 **2 Claims**



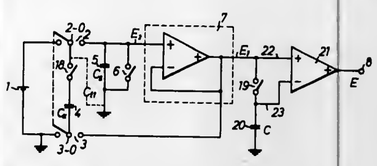
1. A digital indicating instrument for indicating the electromotive force of a Hall-effect device having at least two pairs of opposed electrodes, comprising a selector switch electrically connected with said pairs of said electrodes; a voltage supply source connected to said selector switch to be alternatingly connected to one then to the other of said two pairs of said electrodes by means of said selector switch; a voltage-code converter connected to said selector switch to be alternatingly connected to one then to the other of said two pairs of said electrodes, the voltage source and the voltage-code converter being alternately connected to opposite pairs of electrodes by the connections of the selector switch; a numerical indicator having an input connected to the output of said voltage-code converter; circuit means determining the moment of completion of a coding cycle of said voltage-code converter and generating a signal indicative thereof, the input of said circuit means being connected to said voltage-code converter, the output of said circuit means being connected to said selector switch to switch the connections of the opposite pairs of said electrodes and also to said converter to begin a new coding cycle, the indicator, following the second coding cycle, indicating the electromotive force of the Hall-effect device, while eliminating the influence of non-equipotential voltage.

3,886,447

CAPACITANCE-VOLTAGE CONVERTER

Katsuaki Tanaka, Sagamihara, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha, Japan

Filed May 16, 1973, Ser. No. 360,690
Claims priority, application Japan, May 17, 1972, 47-48102; Dec. 27, 1972, 48-3940; Dec. 27, 1972, 48-3941; Dec. 27, 1972, 48-3942
Int. Cl. G01r *11/52*
U.S. Cl. 324—60 CD **3 Claims**



3. A capacitance-voltage converter, comprising:
a reference voltage source for producing a reference dc voltage;
an impedance converter having a high input impedance and a low output impedance and developing a voltage at the output equal to the voltage at the input thereof;
a first switch connected in series to a capacitor of unknown capacitance to be determined to form a series-connection of the first switch and the measured capacitor;
gang-switches for selectively connecting the terminals of said series-connection to the terminals of the reference voltage source or the input and the output of the impedance converter;
a reference capacitor connected across ground and the input of said impedance converter;
a second switch connected in parallel with the terminals of the reference capacitor for opening or closing the terminals of the reference capacitor;
a second series-connection of a third switch and a voltage-hold capacitor connected across ground and the output of the impedance converter so that the voltage-hold capacitor is connected to the ground;
a differential amplifier having one input connected to the output of the impedance converter and the other input connected to a junction between the voltage-hold capacitor and the third switch; and
output terminal means connected to the output of the differential amplifier for providing an output voltage corresponding to the unknown capacitance.

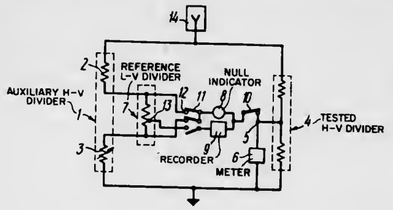
3,886,448

METHOD AND APPARATUS FOR TESTING HIGH-VOLTAGE DIVIDERS

Ivan Fedorovich Drabenko, ulitsa Dimo 9/3, kv. 41, and Ivan Yakovlevich Daniljuk, ulitsa Tolbukhina, 2, kv. 46, both of Kishinev, U.S.S.R.

Filed Nov. 5, 1973, Ser. No. 412,721
Int. Cl. G01r *27/02*
U.S. Cl. 324—63 **2 Claims**

1. A method of testing a high-voltage divider, for example for several hundreds kilovolts, under actual high-voltage working conditions, comprising the steps of comparing the conversion ratio of the divider being tested under actual operating conditions with the conversion ratio of a low-voltage reference voltage divider which is selected to be equal to the rated value of that of the tested divider; connecting an additional voltage divider in parallel with the tested divider and adjusting the conversion ratio of the additional divider to be equal to that of the tested divider; operating both the tested divider and the reference divider under their own working voltages, that across the latter being lower by several orders than that across the former; inserting the reference divider in



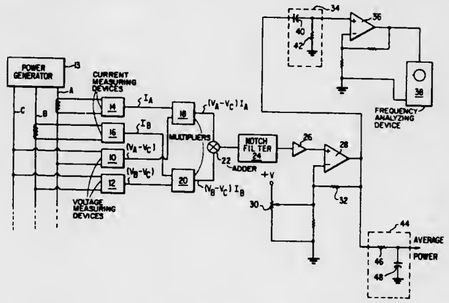
the circuit of the additional divider; then measuring a potential difference between the outputs of the tested divider and the reference divider; and calculating the conversion ratio of the tested divider from the potential difference.

3,886,449

POWER MEASUREMENT CIRCUIT

John F. Wolfinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 6, 1974, Ser. No. 448,606
Int. Cl. G01r *21/00*
U.S. Cl. 324—142 **6 Claims**



1. Apparatus for detecting non-synchronous frequency power oscillations in a power transmission system transmitting power at a synchronous power generating frequency, said apparatus comprising:
first means for generating a first signal representative of total instantaneous power in said transmission system;
second means for removing a frequency component of said first signal corresponding to said power generating frequency;
and third means for removing an average value component from said first signal to produce a second signal representative of power oscillations in said transmission systems at frequencies other than said power generating frequency.

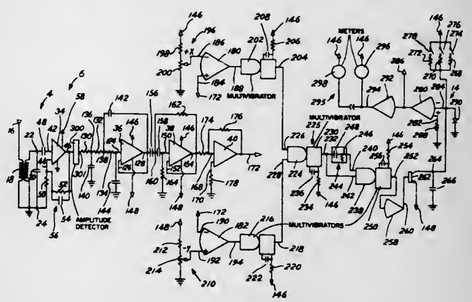
3,886,450

WIRELESS PORTABLE TACHOMETER

Gerald C. Trussell, Chicago, and James R. Caruth, Des Plaines, both of Ill., assignors to Sun Electric Corporation, Chicago, Ill.

Filed Aug. 6, 1973, Ser. No. 386,033
Int. Cl. G01p *3/48*
U.S. Cl. 324—170 **29 Claims**

1. Apparatus for measuring the rate of operation of an internal combustion engine which emits valid electromagnetic radiation signals at a repetition rate corresponding to the rate of operation, comprising, in combination:
antenna input means having a predetermined resonant frequency for producing in response to each of the radiation signals a resonant signal at the resonant frequency having a positive voltage amplitude peak and a negative voltage amplitude peak;
valid signal detection means for generating a control pulse in response to each resonant signal having a positive voltage amplitude peak greater than a predetermined



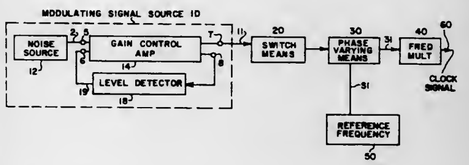
voltage, a negative voltage amplitude peak less than a second predetermined voltage and a time period between the positive and negative voltage amplitude peaks less than a predetermined time so that valid electromagnetic radiation signals are distinguished from noise signals; and output means responsive to the repetition rate of the control pulses for indicating the rate of operation of the engine.

3,886,451

RANDOM PHASE MODULATING TIME BASE AND METHOD TO IMPROVE MEASUREMENT AVERAGING COUNTER RESOLUTION

David C. Chu, Woodside, and John H. Gliever, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 28, 1974, Ser. No. 437,460
Int. Cl. G04f *11/06*
U.S. Cl. 324—186 **16 Claims**

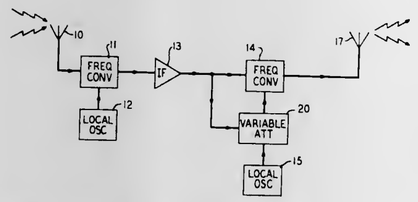


1. A method for improving resolution of a time interval measuring device wherein reference pulses at a constant frequency are counted comprising the steps of:
time varying during a measurement period the phase relationship between an applied signal having a plurality of repetitive intervals to be measured and the reference pulses;
applying the reference pulses to a gate synchronized with the reference pulses;
passing the reference pulses through the gate a plurality of times in response to the applied signal;
counting the number of pulses passed;
averaging the count obtained; and
multiplying the average by a reference pulse period to obtain a time interval measurement.

3,886,452
LINEAR ELECTROMAGNETIC SYSTEMS

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 885,604, Dec. 16, 1969, abandoned. This application Dec. 17, 1973, Ser. No. 425,164
Int. Cl. H04b *7/14*
U.S. Cl. 325—11 **9 Claims**

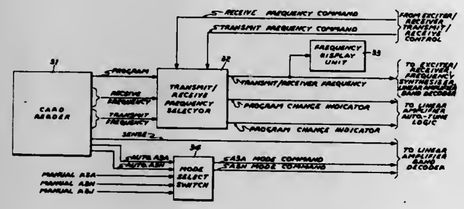


8. A frequency converter comprising:
a veractor diode;
means for applying an input across said diode;
means for applying a local oscillator voltage across said diode;
and means, responsive to the instantaneous amplitude of said input signal, for proportionately varying the instantaneous amplitude of said local oscillator voltage in time phase with the instantaneous amplitude variations of said input signal.

3,886,453
CARD-PROGRAMMED FREQUENCY CONTROL UNIT FOR A TRANSCEIVER

Saverio Michael Quintiliani; Alan Grad Finkel, both of Raleigh, N.C.; Harry Richard Smith, Verona, N.J.; Peter Anthony Damiano, Jr., Raleigh, N.C., and Douglas Michael Spranger, Brooklyn, N.Y., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 18, 1974, Ser. No. 462,054
Int. Cl. H04b *1/50*
U.S. Cl. 325—25 **18 Claims**

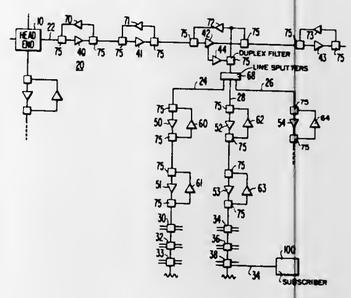


1. A card-programmed frequency control unit for a transceiver comprising:
a housing for said unit including a front panel;
a card reader having an input for cards to be read mounted to and behind said front panel;
a slot in said front panel in registry with said input for said card reader;
a card to be inserted in said slot for reading by said card reader, said card containing thereon a programmed indication selectively representing the transmit or receive mode of operation and a programmed pair of binary coded decimal codewords representing a transmit and receive frequency;
said card reader having a first group of output conductors, a different conductor of said first group of conductors for each of the possible binary bits in the code word representing said transmit frequency and a second group of output conductors, a different conductor of said second group of conductors for each of the possible binary bits in the code word representing said receive frequency;
a third group of output conductors, a different conductor of said third group of conductors for each of the possible binary bits in said codewords representing selectively the transmit or receive frequency; and
a frequency selector circuit coupled between said first and second groups of conductors and said third group of conductors to couple the appropriate conductors of said first group of conductors, as determined by said transmit frequency codeword, to associated conductors of said third group of conductors during said transmit mode and to couple the appropriate conductors of said second group of conductors, as determined by said receive frequency codeword, to associated conductors of said third group of conductors during said receive mode.

3,886,454
CONTROL APPARATUS FOR A TWO-WAY CABLE TELEVISION SYSTEM

Charles Burkhardt Oakley, Princeton, and Hans George Schwarz, Pennington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 13, 1973, Ser. No. 387,600
Int. Cl. H04b *3/04*
U.S. Cl. 325—52 **4 Claims**

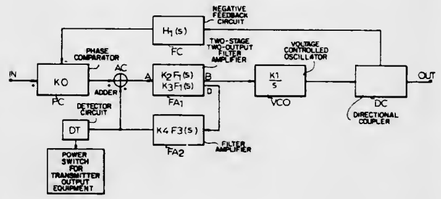


1. In a closed circuit distribution system of the type in which television signals are sent along a transmission line from a central location to a plurality of remote receiver locations for reproduction thereat and in which return signals are also sent along said transmission line back from said remote locations to said central location for processing as part of a two-way communications network, the combination therewith of:
means located between said central and remote locations for electrically disconnecting said central location from selected ones of said remote locations in the presence of return signals below predetermined amplitude levels, including amplifier apparatus having amplitude sensing means responsive to a given threshold, said amplitude sensing means being inhibited by the presence of return signal amplitudes below said given threshold level, but actuated by the presence of return signal amplitude beyond said threshold level to couple said return signals from said remote to said central locations.

3,886,455
PHASE LOCK LOOP INCLUDING AN OSCILLATING SUB-LOOP

Valere G. Jonckheere, Edegem, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 18, 1973, Ser. No. 425,893
Int. Cl. H03b *3/08, 3/14*
U.S. Cl. 325—148 **9 Claims**

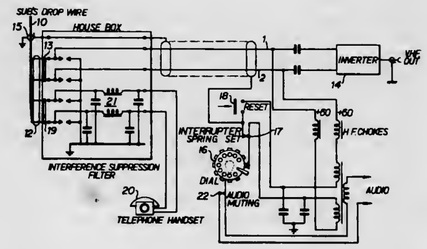


1. A phase lock loop comprising:
a two input phase comparator;
a loop input coupled to one input of said comparator;
a two input adder having one input thereof coupled to the output of said comparator;
a voltage controlled oscillator coupled to the output of said adder;
a feedback circuit coupled between the output of said oscillator and the other input of said comparator; and
a sweep signal generator including
a sub-loop of said phase lock loop coupled between the output of said adder and the other input of said adder, said sub-loop having an oscillatory condition directly controlled by the in-lock and the out-of-lock conditions of said phase lock loop.

3,886,456
WIRED BROADCASTING SYSTEMS PROVIDING TELEPHONE COMMUNICATION

Eric John Gargini, West Drayton, England, assignor to Communications Patents Limited, London, England

Filed Nov. 28, 1972, Ser. No. 310,118
Claims priority, application United Kingdom, Dec. 3, 1971, 56299/71
Int. Cl. H04m *11/08*
U.S. Cl. 325—308 **14 Claims**

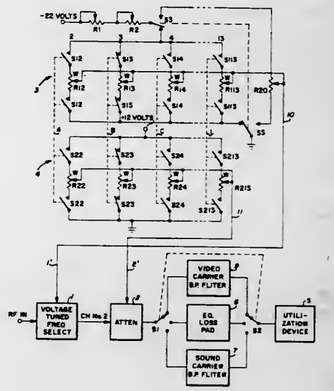


9. A wired broadcasting system in which each of a plurality of subscribers is connected to a programme exchange through the intermediary of a cable with a twisted pair of high frequency conductors suitable for the transmission of high frequency television signals and having associated therewith a twisted pair of intersticial audio frequency conductors suitable for the transmission of audio frequency signals and in which means are provided including a central programme exchange with programme selection means and a telephone exchange, a telephone instrument at the subscribers premises connected to said telephone exchange through said pair of intersticial conductors, and means at said subscribers premises for sending DC signals over at least one of the high frequency conductors to operate said programme selection means having a subscriber's television programme selector switch and including means effecting signalling and control of the subscriber's television programme selector switch at the programme exchange, and means coupled with the subscriber's selector switch disconnecting the telephone circuit during the period required for television programme selection.

3,886,457
LEVEL COMPENSATED FREQUENCY SELECTOR

Danny A. Petaja, 3234 Saint Martins Way, Sebastopol, Calif. 95472

Continuation-in-part of Ser. No. 346,970, April 2, 1973, abandoned. This application Apr. 12, 1973, Ser. No. 350,313
Int. Cl. H04b *1/16;* **H03j** *5/04*
U.S. Cl. 325—399 **10 Claims**



1. In an apparatus including means for selecting and converting a particular channel of a multichannel R.F. input signal to an output signal having a predetermined frequency, a signal level compensating apparatus comprising:
attenuating means coupled to said converting means for selecting one of a plurality of discrete preset attenuation levels each of said levels being associated with a corresponding channel of said multichannel R.F. input signal and for attenuating said output signal in accordance with said selected preset attenuation level; and,
means responsive to said attenuated output signal for indicating the signal level of each of said input channels.

3,886,458
FREQUENCY CONVERTER CIRCUIT WITH INTEGRATED INJECTION CAPACITOR

Shigeo Matsumoto, Sagamihara, Kanagawa-ken; Yukio Tsuda, Atsugi, Kanagawa-ken, and Tadaharu Tsuyuki, Isehara, Kanagawa-ken, all of Japan, assignors to Sony Corporation, Tokyo, Japan

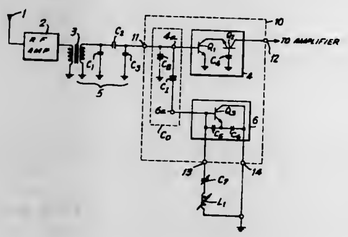
Filed Dec. 6, 1973, Ser. No. 422,131
Claims priority, application Japan, Dec. 12, 1972, 47-142880
Int. Cl. H04b *1/28*
U.S. Cl. 325—439 **5 Claims**

1. A signal converter circuit comprising a mixer circuit having input and output terminals, means for supplying input

signals to be converted to said input terminal of the mixer

6. A frequency divider connected to receive

signals to be converted to said input terminal of the mixer circuit, a local oscillator circuit having an output terminal, a capacitor element formed on a semiconductor substrate and having first and second terminals, said capacitor element providing a main capacitor between said first and second terminals and a stray capacitor between said first terminal and



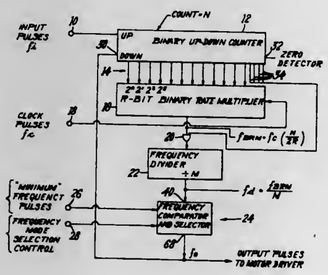
said semiconductor substrate, and means connecting said first and second terminals of the capacitor element to said input terminal of the mixer circuit and to said output terminal of the local oscillator circuit, respectively, so that said main capacitor functions as an injection capacitor for the output of said local oscillator circuit with said stray capacitor being at the side of said injection capacitor toward said mixer circuit.

3,886,459

DIGITAL PULSE RATE RAMPING CIRCUITS

James H. Hufford, Lexington, and Daniel W. Kennedy, Boston, both of Mass., assignors to USM Corporation, Boston, Mass.

Filed Aug. 7, 1973, Ser. No. 386,353
Int. Cl. H03k 1/16
U.S. Cl. 328—34 **1 Claim**



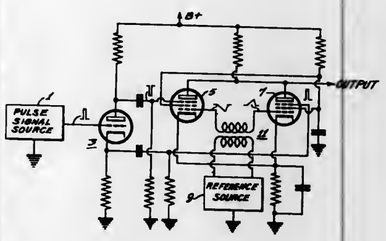
1. A circuit for digitally supplying pulses to the motor driver of a stepping motor, said stepping motor responding to each pulse with a step as long as its acceleration capability is not exceeded, comprising:
   a. A source of pulses;
   b. A reversible counter connected to receive and count the pulses from the source;
   c. A clock oscillator for supplying a train of pulses at a specific frequency;
   d. A pulse rate multiplier connected to receive the clock pulse train and multiply the frequency of said pulse train by a factor directly proportional to the count accumulated in the reversible counter;
   e. A frequency divider connected to receive the modified clock pulse train from the rate multiplier and divide it by a factor suitable to smooth the rate of the modified clock pulse train;
   f. A pulse generator for supplying a train of pulses at a minimum rate;
   g. A comparator connected to receive the pulses from the frequency divider and the minimum pulse rate generator and to pass whichever of said pulses has the higher rate; and
   h. Means to apply the pulses passed by the comparator to the reversible counter to reduce the count therein.

3,886,460

PULSE POSITION DISCRIMINATOR

Robert E. Wilson, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 31, 1951, Ser. No. 239,548
Int. Cl. H03k 5/20, 7/04
U.S. Cl. 328—109 **1 Claim**



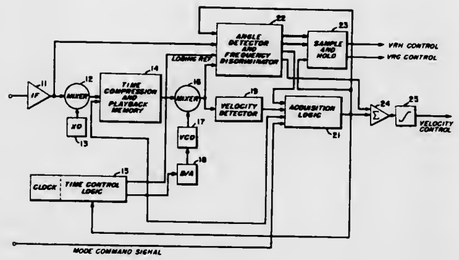
1. A pulse position discriminator comprising, connection means for a source of repetitive pulse signals, means for phase inverting said pulse signals to produce a positive-going pulse signal and a negative-going pulse signal, connection means for a source of repetitive sawtooth reference signals, means for phase inverting said sawtooth signals to produce a positive-going sawtooth signal and a negative-going sawtooth signal, a pair of electron discharge devices having similar grid-anode characteristics and each having cathode, anode, and at least two control electrodes, each of said control electrodes being biased for operation in the linear portions of said characteristics and the gains of said tubes being controllable by the instantaneous potential applied to one of the control electrodes of each of said electron devices the anode electrodes of said discharge devices being connected together, means for applying said positive-going sawtooth signal to a control electrode of one of said discharge devices and for applying said negative-going sawtooth signal to an electrode of the other said discharge device to program the gains of said discharge device in opposing senses, the gains of said discharge devices being equal at the midpoints of said positive and negative going signals, means for applying said positive-going pulse signal to a different control electrode of the discharge device to which said positive-going sawtooth signal is applied and for applying said negative-going pulse signal to a different control electrode of the discharge device to which said negative-going sawtooth signal is applied, and an output circuit connected to said discharge device anode electrodes responsive to application of said pulse and sawtooth signals to said discharge devices for producing output signals having their polarities and amplitudes determined by the timing of said pulse signals with respect to said sawtooth signals.

3,886,461

MISSILE RADAR DOPPLER PROCESSING UNIT

Lloyd J. Hassencahl, Northridge; Leon Chernick, Los Angeles; James N. Jonokuchi, Chatsworth; Joel Katz, Los Angeles, and Richard L. Wooley, Canoga Park, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1972, Ser. No. 230,542
Int. Cl. G01r 23/02; G01s 9/44
U.S. Cl. 328—140 **10 Claims**



1. A data processing system according to claim 1 in which said second detector includes:
   a plurality of band pass filters connected in a parallel relationship and connected to said second mixer;
   first summing amplifier means connected to said plurality of band pass filter means for combining the outputs thereof into a single signal channel;
   a discriminator means effectively connected to said first summing amplifier means and connected to a phase detector; and
   a phase detector means effectively connected to said discriminator and connected to the aforesaid timing control logic means for detecting signals having predetermined relationship with regularly occurring timing signals.

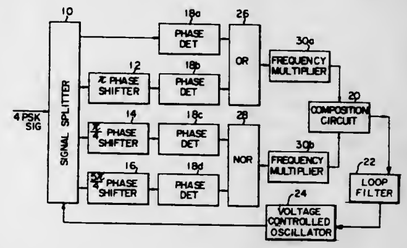
3,886,462

CIRCUIT FOR REPRODUCING REFERENCE CARRIER WAVE

Akira Okano; Yoichi Moritani, and Masahiro Murakami, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,099
Claims priority, application Japan, Dec. 27, 1972, 48-2506
Int. Cl. H04l 27/22
U.S. Cl. 329—104 **4 Claims**

1. A circuit for reproducing a reference carrier wave for a 4 differential phase shift keyed signal, comprising, in combination, a signal splitter circuit for splitting a 4 differential phase shift keyed signal applied thereto into four signal portions, phase shifter means for relatively shifting phases of said four signal portions so that, with respect to a selected one of said signal portions, the remaining three signal portions have phase shifts of π, $\pi/4$ and $5\pi/4$ radians respectively, one phase detector for phase detecting each of the relative phase shifted signal portions, a pair of logic circuits each connected to one pair of the phase detectors producing detected outputs having a phase difference of π radians to switch said detected outputs with a predetermined threshold magnitude, a composition circuit for adding the outputs from said pair of logic circuits,



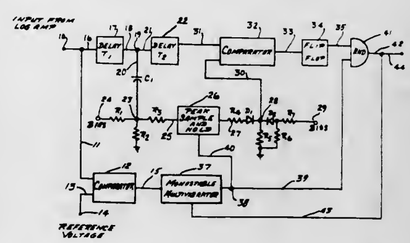
a loop filter coupled to said composition circuit, and a voltage controlled oscillator coupled to said loop filter and to said signal splitter circuit to form a phase locked loop.

3,886,463

PULSE WIDTH DETECTOR CIRCUIT

Samuel J. Caprio, Severna Park, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 9, 1974, Ser. No. 468,328
Int. Cl. H03k 9/08
U.S. Cl. 329—106 **3 Claims**



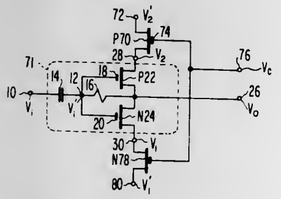
1. A pulse width detector circuit receiving simultaneously as an input pulse the detected output pulse from a logarithmic amplifier and a predetermined reference voltage comprising a first comparator receiving said input pulse and said reference voltage, said first comparator generating a step voltage only when the amplitude of said input pulse exceeds said reference voltage, a monostable multivibrator changing from the stable state to the unstable state upon receiving said step voltage, a peak sample and hold circuit, an AND circuit, the output pulse from said monostable multivibrator being used to reset said peak sample and hold circuit and said AND circuit to process said input pulse, first delay means also receiving said input pulse operating to prevent said input pulse from being processed until said monostable multivibrator resets said peak sample and hold circuit and said AND circuit, second delay means receiving a first predetermined delayed signal from said first delay means to provide a second predetermined delayed signal, voltage divider means, bias voltage means connected to said voltage divider, said voltage divider being adjusted so that said first predetermined delayed signal applied to said peak sample and hold circuit is clamped at a level corresponding to the predetermined percentage of the peak amplitude level at the input to said logarithmic amplifier, said peak sample and hold circuit holding the peak level of the clamped pulse, a second comparator receiving the output signal from said peak sample and hold circuit, said second comparator also receiving a second predetermined delayed signal, said second comparator generating a first positive step voltage only when said second predetermined delayed signal is equal to or greater

than said output signal from said peak sample and hold circuit, flip-flop means receiving said positive step voltage changing the state thereof and generating a second positive step voltage, when the trailing edge of said second delayed signal falls below the voltage of said output signal from said peak sample and hold circuit the output voltage from said second comparator becomes zero causing said flip-flop means to change state thus generating a negative step voltage, the signal from said flip-flop means being a rectangular pulse whose width is equal to pulse width of the signal applied to said logarithmic amplifier, said rectangular pulse appearing at the output of said AND circuit when said first positive step voltage appears at the input thereof.

3,886,464
SELF-BIASED COMPLEMENTARY TRANSISTOR AMPLIFIER

Andrew Francis Gordon Dingwall, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 1, 1973, Ser. No. 365,837
Int. Cl. H03f *3/18*
U.S. Cl. 330—13 **13 Claims**



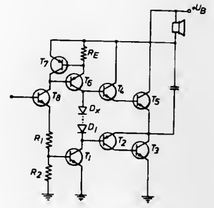
1. In combination:
a complementary field-effect transistor amplifier having an input terminal for receiving an input signal, first and second operating potential terminals for receiving first and second operating potentials, respectively, and an output terminal for producing an output signal;
first and second circuit points for receiving first and second fixed potentials, respectively;
a control voltage input terminal for receiving a control voltage;
a first variable impedance element having a conduction path connected between said first circuit point and said first operating potential terminal and having an impedance controlling electrode direct current conductively coupled to said control voltage input terminal;
a second variable impedance element having a conduction path connected between said second circuit point and said second operating potential terminal and having an impedance controlling electrode direct current conductively coupled to said control voltage input terminal; and feedback means coupling said output terminal to said input terminal for establishing said amplifier in a quiescent operating condition.

3,886,465
CLASS B PUSH-PULL OUTPUT STAGE OF AN AMPLIFIER

Johann Mattfeld, Kirchhausen, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Oct. 16, 1973, Ser. No. 406,939
Claims priority, application Germany, Oct. 27, 1972, 2252666
Int. Cl. H03f *3/26*
U.S. Cl. 330—15 **6 Claims**

1. In an amplifier having a class B push-pull transistor output stage, a driver stage including a driver transistor for triggering said output stage and means for maintaining the collector closed circuit current of the transistors of said output stage independent of temperature fluctuations, and means, including an external load resistance connected in series with the emitter-collector path of said driver transistor across the supply voltage terminals for the amplifier, for maintaining the collector closed circuit current of the transistors of said output stage independent of supply voltage fluctuations, the improvement wherein: said amplifier further includes a signal input transistor having its output connected to the base of said

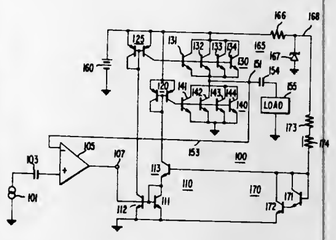


driver transistor and arranged for triggering said driver transistor; said external load resistance comprises the collector-emitter path of an additional transistor provided with an emitter resistor and forming part of a contstant current source; and said constant current source further includes a further transistor having its base emitter path connected in parallel with said emitter resistor, and its emitter collector path connected into the collector path of said transistor arranged for triggering the said driver transistor, the collector of said further transistor being connected to the base of said additional transistor.

3,886,466
BIAS CIRCUITRY FOR STACKED TRANSISTOR POWER AMPLIFIER STAGES

Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 24, 1973, Ser. No. 363,562
Int. Cl. H03f *3/26*
U.S. Cl. 330—15 **18 Claims**

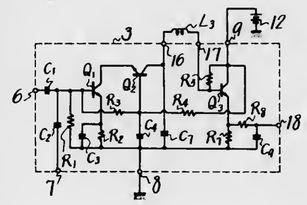


1. A circuit for developing first and second, push-pull output currents responsive to an input current comprising:
first, second, third, and fourth circuit nodes, said first and said second nodes being adapted for connecting to a source of said input current, said first and said third nodes being adapted for connection to a source of bias potential;
first, second, third, fourth and fifth transistors of the same conductivity type, each having a base, an emitter and a collector electrode, and each having a forward current gain of substantially beta, the emitter electrodes of said first and said second and said fourth transistors each being direct current conductively coupled to said first node, the base electrodes of said first and said second transistors each being direct coupled from said second node, said first transistor collector electrode and said third transistor emitter electrode each being direct current conductively coupled to said second node, the collector electrodes of said fourth and said fifth transistors being direct current conductively coupled to said fourth node, said base electrodes of said third and said fifth transistors being direct coupled from said fourth node, said fourth transistor base electrode being direct coupled from said fifth transistor emitter electrode
first and second resistive elements, with similar resistances but relatively beta-dependent and beta-independent, respectively, connected in series between said third and said fourth nodes; and
utilization means connected to the collector electrodes of said second and said third transistors, respectively.

3,886,467
HIGH FREQUENCY AMPLIFIER

Seiichi Watanabe, Tokyo, and Takashi Yoshikawa, Fujisawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 18, 1973, Ser. No. 407,604
Claims priority, application Japan, Nov. 2, 1972, 42-127021
Int. Cl. H03f *3/04*
U.S. Cl. 330—21 **5 Claims**



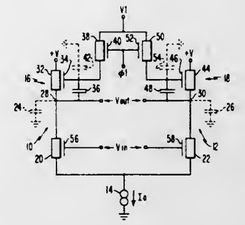
1. A high frequency amplifier comprising:
a. an amplifying circuit having an input terminal and an intermediate output terminal;
b. a transistor having collector, emitter and base electrodes connected in the emitter follower configuration;
c. a power supply terminal connected to the collector electrode of said transistor;
d. a first resistor connected between said power supply terminal and the base electrode of said transistor;
e. a second resistor connected between the emitter electrode of said transistor and a ground;
f. an output terminal connected to the emitter electrode of said transistor; and
g. an impedance matching circuit including a first condenser connected between said intermediate output terminal of said amplifying circuit and said ground and a coil connected between said intermediate output terminal of said amplifying circuit and the base electrode of said transistor, whereby said amplifying circuit and said transistor are connected to each other with proper impedance matching and an operation voltage for said amplifying circuit is supplied from said power supply terminal through said first resistor and said coil.

3,886,468
HIGH GAIN AMPLIFIER

Robert Henry Kruggel, Jericho, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,845
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **10 Claims**

1. An amplifier comprising
first and second controlled current sources having first and second terminals, said first terminals having a common fixed potential,
first and second input dependent current sources,
a constant current source coupled through said first input dependent current source to the second terminal of said

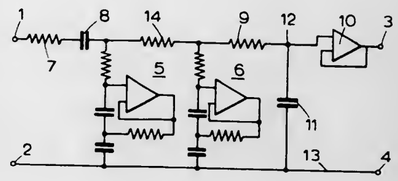


first controlled current source and through said second input dependent current source to the second terminal of said second controlled current source,
means for applying differential signals to said input dependent current sources, and
means coupled to said second terminals for deriving output voltages.

3,886,469
FILTER NETWORKS

John Mortimer Rollett, and David Richard Wise, both of London, England, assignors to The Post Office, London, England

Filed Jan. 10, 1974, Ser. No. 432,174
Claims priority, application United Kingdom, Jan. 17, 1973, 2483/73
Int. Cl. H03f *1/36*
U.S. Cl. 330—107 **4 Claims**

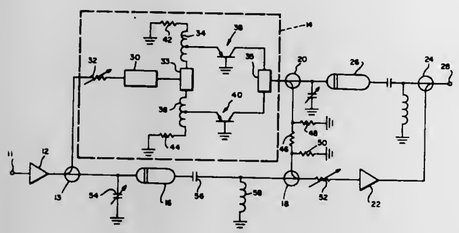


1. An insensitive low-pass filter network comprising an input port including a first and a second input terminal, said first input terminal being connected by way of a first resistor and a first capacitor in series to a first stage of the filter network, said second input terminal being earthed, said first stage being coupled by way of a resistive impedance to one of a plurality of further stages, having a final stage which is coupled by way of a second resistor in series with an input to an output amplifier, and which final stage is coupled to a second capacitor between said input to the output amplifier and the second input terminal, and wherein each stage of the filter network includes a single stage amplifier, having substantially unity gain, and a third resistor connected between an output of the stage amplifier and a junction between a third and a fourth capacitor coupled in series between an input of the stage amplifier and the second input terminal.

3,886,470
FEED-FORWARD AMPLIFIER SYSTEM

William A. O'Neil, Belmont, and George H. Ray, Woburn, both of Mass., assignors to Amplifier Design And Service, Inc., Waltham, Mass.

Filed Dec. 4, 1973, Ser. No. 421,734
Int. Cl. H03f 1/26, 1/00
U.S. Cl. 330—149 15 Claims

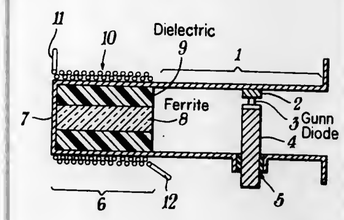


1. A feed-forward amplifier system comprising:
means for applying an input information signal to said amplifier;
a first directional coupler for splitting the input signal;
a main component amplifier for amplifying a portion of the input signal from said directional coupler;
a second directional coupler at the output of said main component amplifier for splitting the amplified information signal;
a third directional coupler for combining the unamplified portion of the input information signal sampled by said first directional coupler and the small portion of the amplified signal from the main component amplifier and said second directional coupler;
an auxiliary component amplifier for amplifying the combined signal from said third directional coupler;
a fourth directional coupler for combining the output from said auxiliary component amplifier and the main portion of the amplified signal from said second directional coupler;
first delay means for delaying the unamplified input information signal between said first and third directional couplers by a predetermined time equal to the delay in the main component amplifier signal path; and
an output terminal coupled to said fourth directional coupler;
said main component amplifier and siad first delay means being part of a sampling loop of said amplifier system; said auxiliary amplifier being part of a correction loop of said amplifier system;
whereby noise and distortion errors injected by said main component amplifier are cancelled by means of the correction loop through said auxiliary amplifier when the auxiliary amplified signal is combined with the main signal at said fourth coupler; and
wherein the output impedance of said main component amplifier is mismatched with respect to the other elements in said feed-forward amplifier system so that signals injected at said output terminal are reflected by said main component amplifier and cancelled by means of said correction loop, thereby matching the output of said feed-forward amplifier system to a transmission line to which said output terminal is connected.

3,886,471
ELECTRONICALLY TUNABLE GUNN OSCILLATOR WITH AUTOMATIC FREQUENCY CONTROL

Massimo Massani, and Giuseppe Di Gesaro, both of Rome, Italy, assignors to Selenia-Industrie Elettroniche Associate S.p.A., Naples, Italy

Continuation-in-part of Ser. No. 291,455, Sept. 22, 1972, abandoned. This application Mar. 7, 1974, Ser. No. 448,865
Claims priority, application Italy, Oct. 5, 1971, 53283/71
Int. Cl. H03b 3/04, 7/14
U.S. Cl. 331—10 4 Claims

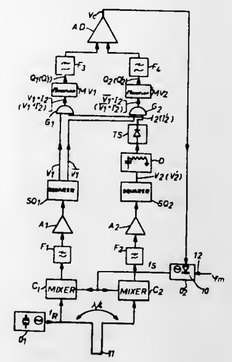


1. A frequency stabilized micro-wave signal source having as active element a semiconductor RF-generator comprising in combination a first portion of waveguide wherein electrically conducting mechanical support means are provided for supporting said semiconductor RF generator and feeding a supply voltage or current thereto; said first portion of waveguide being coupled by a window with a second portion of waveguide constituting a resonant cavity loaded with ferrite supported by a dielectric, further including a coil for producing a magnetic field in which said ferrite is immersed; the voltage or current supply terminal of said semiconductor RF generator being connected to a power supply controlled by a short time constant automatic frequency control circuit, said coil being connected to a long time constant frequency control circuit.

3,886,472
SYSTEM FOR STABILIZING THE OPERATING FREQUENCY OF A FREE-RUNNING OSCILLATOR

Ezio Cottatellucci, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Nov. 12, 1973, Ser. No. 414,830
Claims priority, application Italy, Nov. 10, 1972, 31505/72
Int. Cl. H03b 3/04
U.S. Cl. 331—12 7 Claims



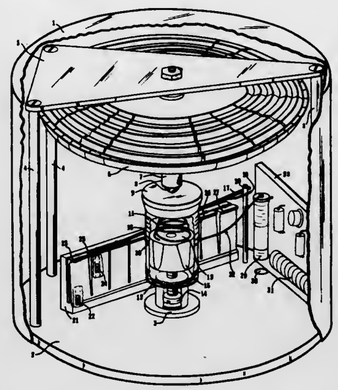
1. A frequency-stabilizing system comprising:

a first oscillator generating a reference frequency;
a voltage-controlled second oscillator having an operating frequency to be clamped to said reference frequency;
first mixer means connected to said oscillators for deriving a first beat frequency from said operating and reference frequencies;
second mixer means connected to said oscillators with interposition of 90°-phase-shifting means in the output of one of said oscillators for deriving a second beat frequency in quadrature with said first beat frequency from said operating and reference frequencies;
binary phase-comparison means connected to said first and second mixer means for generating a first control voltage upon said operating frequency exceeding said reference frequency and for generating a second control voltage upon said reference frequency exceeding said operating frequency; and
circuit means for applying said control voltages to said second oscillator to reduce the difference between said operating and reference frequencies;
said phase-comparison means including a pair of squarers in the outputs of said first and second mixer means for converting said beat frequencies into respective square waves, differentiation means connected to one of said squarers for deriving a spike from one of said square waves at the beginning of every other half-cycle thereof, the other of said squarers having two outputs respectively carrying the other square wave and the complement thereof, a first coincidence gate connected to said differentiation means and to one output of said other of said squarers for receiving said spikes together with the other square wave, a second coincidence gate connected to said differentiation means and to the other output of said other of said squarers for receiving said spikes together with the complement of said other square wave, integrating means for the spikes passed by either of said coincidence gates, and a pair of monostable multivibrators each inserted between one of said coincidence gates and said integrating means, said monostable multivibrators having off-normal periods equal to the minimum cycle length of said beat frequencies.

3,886,473
CAPACITIVE PRESSURE AND DISPLACEMENT TRANSDUCERS

Hans D. Heyck, 38 Sunnyview Dr., Phoenix, Md. 21131

Filed June 13, 1974, Ser. No. 478,975
Int. Cl. G01l 9/12; H01g 5/14; H03b 21/00
U.S. Cl. 331—42 3 Claims

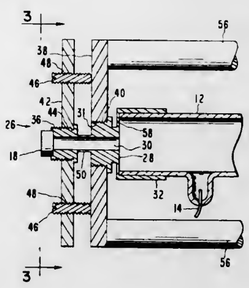


1. In a capacitive transducer for converting a small mechanical displacement into a corresponding electrical signal, the improvement comprising:
a. a displaced mechanical input member representing the quantity being measured;
b. a variable capacitor comprising a metallic cylinder, free to move axially and concentrically but insulated from a stationary piston; the surfaces of said cylinder and said piston being shaped to yield a predetermined nonlinear capacitance to displacement relationship;
c. a means for connecting said mechanical input member axially to said capacitor-cylinder without requiring exact centering, comprising a flat surface perpendicular to said axis on one of said members, and a convex surface on the other member;
d. an elastic member causing said capacitor-cylinder to press lightly against said mechanical input member;
e. a plurality of magnetic members exerting forces upon each other which causes said capacitor-cylinder to remain in mechanical contact with said mechanical input member;
f. a guide restraining said capacitor-cylinder rotationally;
g. a plurality of stationary, individually adjustable vernier capacitor stators with edges facing an axially-slanted metallic edge which is attached to the outer surface of said capacitor-cylinder, thereby forming a plurality of adjustable vernier-capacitors staggered along said displacement-path for trimming the transducer calibration curve in a plurality of locations;
h. a threaded member for adjustment of the insertion depth of said stationary capacitor-piston into said capacitor-cylinder;
i. a plurality of support members controlling the spacing between said mechanical input member and said capacitor-piston, having coefficients of thermal expansion chosen to compensate thermal expansion errors caused by other components.

3,886,474
GAS LASER HAVING AN INTEGRAL OPTICAL RESONATOR WITH EXTERNAL STABILIZING MEANS

Richard A. Hensolt, Portola Valley, and Mark W. Dowley, Palo Alto, both of Calif., assignors to Coherent Radiation, Palo Alto, Calif.

Filed Apr. 30, 1973, Ser. No. 355,710
Int. Cl. H01s 3/08
U.S. Cl. 331—94.5 C 1 Claim



1. A gaseous laser having an integral optical resonator comprising:
a. an enclosure for confining the gaseous laser medium;
b. means for exciting said gaseous laser medium to provide energy levels therein required for laser action;
c. an optical resonator comprising a pair of axially aligned mirrors;
d. means for securing said resonator mirrors to form an integral part of said gas-confining enclosure;
e. mirror mounts for adjustably supporting said resonator mirrors, each of said mirror mounts comprising a pair of tubular members having unequal diameters;

f. means external to said enclosure for providing support to

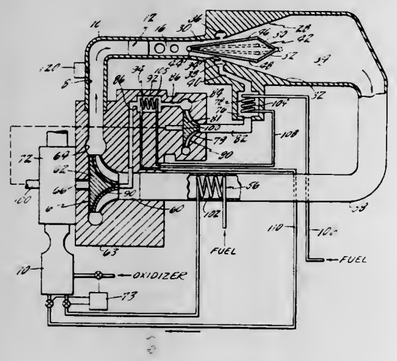
f. means external to said enclosure for providing support to and stabilizing said aligned optical resonator mirrors, and external means comprising a plurality of rods of a material having a low coefficient of thermal expansion extending between said optical resonator mirror supports; and

g. means for allowing expansion of the remainder of said enclosure relative to said stabilized resonator mirrors, said expansion allowing means comprises a diaphragm connecting said pair of tubular members, wherein said resonator mirror is mounted to one of said pair of tubular members, and wherein the other of said tubular members is mounted to said enclosure.

3,886,475
CLOSED CYCLE GAS DYNAMIC LASER

Edward A. Pinsley, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 26, 1973, Ser. No. 336,000
Int. Cl. H01s *3/04*
U.S. Cl. 331—94.5 P **3 Claims**

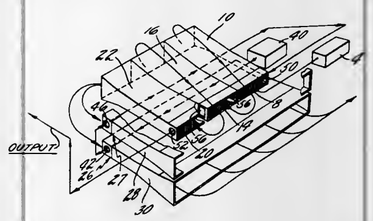


1. A gas dynamic laser device having a closed cycle for the flow of a lasing fluid, said closed cycle including a supersonic nozzle means, a lasing region downstream of said nozzle means, reflecting means in said lasing region to form a lasing cavity, a diffuser means downstream of said lasing region, compressor means for delivering the lasing fluid to said supersonic nozzle and maintaining flow throughout the cycle, means for cooling said compressor means, said means for cooling said compressor means including first passage means for bleeding lasing fluid from said closed cycle, said compressor means having cooling passages therein, said first passage means being connected to said coolant passages, fluid pumping means in said first passage means, a first heat exchanger means located in said first passage means between said fluid pumping means and its connection for bleeding lasing fluid from said closed cycle for cooling said bled fluid, a second heat exchanger means located in said first passage means between said fluid pumping means and said compressor means for removing excess heat added by said fluid pumping means, a reactant supply, second passage means for directing the reactant from said supply to said first heat exchanger means for passage therethrough, third passage means for directing the reactant from said first heat exchanger means to said second heat exchanger means, an expansion turbine being connected to said compressor means for driving it, a combustor for flowing gases through said turbine, said combustor having injection means for receiving reactants, said reactants being a fuel and an oxidizer, fourth passage means for directing the reactant from said second heat exchanger means to the injection means of said combustor.

3,886,476
MULTI-STAGE SYSTEM

Donald L. Witt, and Charles F. Staley, both of North Palm Beach, Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 24, 1968, Ser. No. 733,219
Int. Cl. H01s *1/06, 3/02*
U.S. Cl. 331—94.5 G **10 Claims**

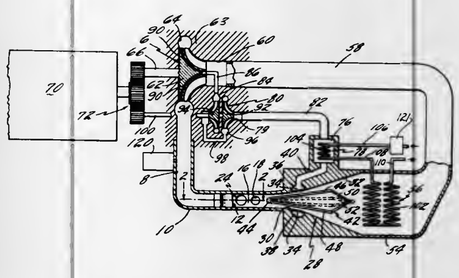


1. A gas dynamic laser device having a plurality of stages for working gas flow, a first stage having first nozzle means for expanding a working gas flow into a first laser cavity and a first diffuser, a second stage having second nozzle means for expanding a working gas flow into a second laser cavity and a second diffuser, said first and second stages being placed side by side with flow therethrough in the same direction, a manifold connecting the outlet of said first diffuser with the inlet of said second nozzle means, means for directing a laser beam through said laser cavities which are located side by side, the sides of said laser cavities adjacent each other being open into each other since the pressure in adjacent laser cavities are maintained equal by sizing said first and second nozzle means.

3,886,477
CLOSED CYCLE DEVICE

Lowell E. Ruby; Donald L. Witt, and Charles F. Staley, all of North Palm Beach, Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 29, 1968, Ser. No. 772,072
Int. Cl. H01s *3/04, 1/06*
U.S. Cl. 331—94.5 G **13 Claims**

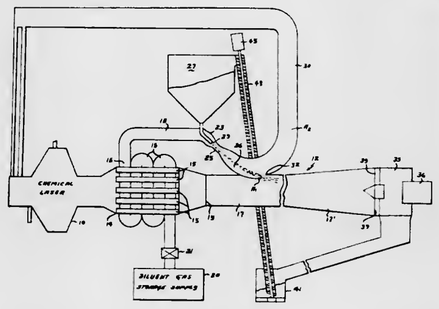


1. A gas dynamic laser device having a closed cycle for the flow of a lasing fluid, said closed cycle including a supersonic nozzle means, a lasing region downstream of said nozzle means, reflecting means in said lasing region to form a lasing cavity, a diffuser means downstream of said lasing region, a heat exchanger downstream of said diffuser means for removing heat from a lasing fluid, compressor means for delivering the lasing fluid to said supersonic nozzle and maintaining flow throughout the cycle, and means for cooling said compressor means including means for directing a coolant fluid to said compressor means at a temperature lower than that of the lasing gas in the cycle at the location of said compressor means.

3,886,478
MULTI-COMPONENT FLOW INJECTOR PUMP FOR A FLOWING GAS LASER WITH LOW OUTPUT PRESSURE

Robert W. Milling, Dayton, Ohio, assignor to The Unites States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 319,590, Dec. 29, 1972, abandoned. This application Nov. 5, 1973, Ser. No. 412,856
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 G **4 Claims**



1. A gas flow pumping system for a laser having a low pressure output flow, comprising: a high pressure diluent carrier gas supply; means for supplying a flow of said carrier gas to said laser; a heat exchanger having a first flow path connected in the gas flow output of the laser; said carrier gas supplying means including means, for passing the gas from said high pressure supply through a second gas flow path through said heat exchanger; means for accelerating the output gas, from the second gas flow path of the heat exchanger, to a supersonic velocity; means for supplying solid particles to the supersonic velocity flow of gas between the heat exchanger and the laser, for accelerating said particles to a high velocity; means for separating said particles from the flow of carrier gas to said laser; means for directing said separated high velocity particles into the output gas flow of the laser to thereby accelerate the output flow of the laser to a high velocity flow by energy exchange from the particles to the laser output flow; means for converting the kinetic energy of the accelerated laser output gas flow to a gas stream pressure increase.

3,886,479
ELECTRODE SYSTEMS FOR GAS DISCHARGE DEVICES PARTICULARLY GAS LASERS

Peter Reginald Pearson, Baldock, England, assignor to National Research and Development Corporation, London, England

Filed Nov. 23, 1971, Ser. No. 201,455
Claims priority, application United Kingdom, Dec. 4, 1970, 57848/70
Int. Cl. H01s *3/22, 3/09*
U.S. Cl. 331—94.5 G **16 Claims**

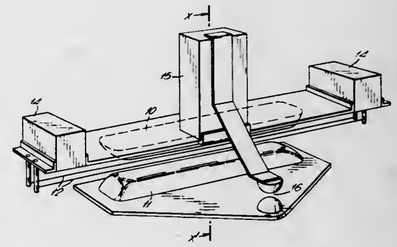
1. In a transverse excitation system for a pulsed high pressure molecular gas laser having a resonant cavity where the transverse excitation system includes:

a. a pair of elongate main discharge electrodes extending longitudinally of said laser cavity and mounted in spaced planes parallel to each other, one of said main discharge electrodes being a cathode, the other of said main discharge electrodes being and anode, each of said main discharge electrodes having active surface portions facing each other, said electrodes defining therebetween a main discharge region for a molecular gas occupying said region; the improvement comprising:

b. at least one elongate conducting auxiliary discharge electrode extending longitudinally of said laser cavity, disposed between said spaced planes but outside said main discharge region, each of said elongate auxiliary discharge electrodes having a constant spatial separation along its length from said cathode, each of said auxiliary discharge electrodes being separated from said main discharge electrodes only by said molecular gas;

c. an electric conducting circuit including an energy limiting means connected between at least one auxiliary discharge electrode and one of said main discharge electrodes;

d. high voltage pulse generating means connected between the said main discharge electrodes;



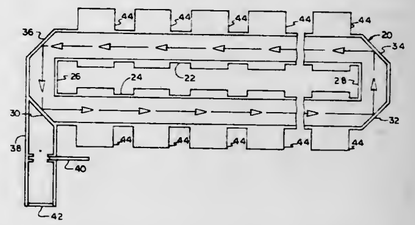
e. said energy limiting means being operative to produce a potential difference between at least one of said auxiliary discharge electrodes and each of said main electrodes on operation of said high voltage pulse generating means;

f. said potential difference between at least one of said auxiliary discharge electrodes and each of said main electrodes being operative to induce an auxiliary discharge between at least one of said auxiliary discharge electrodes and at least one of the main discharge electrodes, said auxiliary discharge serving to ionize molecular gas in the region in which a main discharge takes place prior to the initiation of discharge between the said main discharge electrodes.

3,886,480
METHOD AND APPARATUS FOR OBTAINING VERY HIGH ENERGY LASER PULSES: PHOTON CYCLOTRON

Victor Vali, 752 North 900 West Apt., Salt Lake City, Utah 84116; Reuben S. Krogstad, 2632 S.W. 120th, Seattle, Wash., 98168 and Raymond Goldstein, 1401 N. Los Robles, Pasadena, Calif. 91104

Filed Apr. 12, 1973, Ser. No. 350,408
Int. Cl. H01s *3/08*
U.S. Cl. 331—94.5 C **29 Claims**



1. A method for increasing the energy of laser pulses to very high levels, comprising:

a. arranging a large chamber, the chamber having multiple internal reflecting means to guide a laser beam in a continuous path in the chamber until an escape energy level is reached, the chamber further having an escape exit means which remains closed until opened at an escape energy level of a working unit of a very high energy laser pulse;

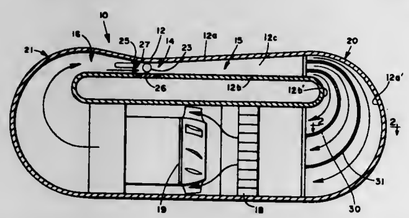
b. arranging multiple spaced laser pumps along the chamber and in communication with the laser beam in the continuous path in the chamber, each laser pump related to an inverted population of a laser energy source;
c. arranging an excitation control system to trigger, in a selected sequence, the multiple spaced laser pumps arranged along the continuous path chamber;
d. placing within the continuous path chamber a laser energy reacting medium; and
e. supplying energy to the excitation control system to timely operate the laser pumps as their respective laser pulse is initiated and thereafter returns to its respective laser inverted population volume which adds a laser energy increment to compensate for reflective losses and to exceed the then occurring laser pulse level to increase the resulting laser pulse to be pumped at the follow on laser inverted population volume, and yet at all times, the laser reacting medium is kept at a level which is below super radiance.

3,886,481

POWER STABILIZED CO_2 GAS TRANSPORT LASER

Jack D. Foster, Los Altos; Russell F. Kirk, Sunnyvale; Frederick E. Moreno, Los Altos, all of Calif., and Samir A. Ahmed, New York, N.Y., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed June 11, 1973, Ser. No. 368,614
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 T **2 Claims**



1. In a high power gas transport laser apparatus comprising a fluid channel, a gas mixture including carbon dioxide in said channel, means for moving and recirculating said gas mixture through said channel, means for producing an electric discharge in said gas mixture transversely of the direction of flow, mirror means optically aligned with said discharge for directing a beam of coherent light therethrough, a heat exchanger in said channel for cooling said gas mixture, said channel being closed and having end sections between said electric discharge and said heat exchanger, said end sections having longitudinally curved walls for changing the direction of flow of the gas mixture, the improvement comprising copper on substantially all of the inner surface of said walls of the end section located downstream from said electric discharge.

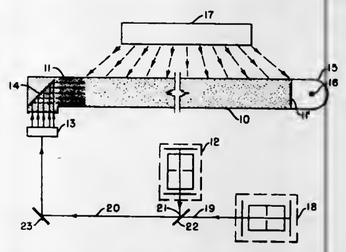
3,886,482

TRAVELING WAVE LASER SYSTEM

David W. Gregg, LaFayette; Ray E. Kidder, Pleasanton, and Arthur T. Biehl, Diablo, all of Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation of Ser. No. 65,758, June 22, 1970, abandoned. This application Sept. 19, 1973, Ser. No. 398,888
Int. Cl. H01s *3/09, 3/02*
U.S. Cl. 331—94.5 G **26 Claims**

1. A method of generating a traveling wave laser pulse comprising the steps of: generating a beam of stimulating radiation; containing in a longitudinal vessel a quantity of gain medium composed of a reactant gaseous mixture capable of producing an exothermic chemical lasing reaction; directing the stimulating radiation longitudinally through the thus contained gain medium; pumping the gain medium in a traveling wave mode creating an amplification zone of population inversion in the gain medium, the stimulating radiation moving with the amplification zone at substantially the velocity of



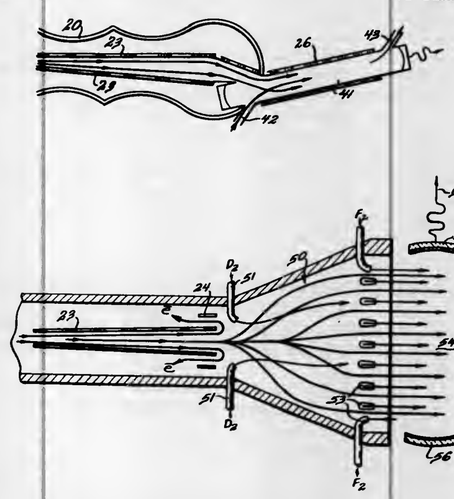
light through the gain medium stimulating a traveling coherent, directed radiation pulse moving with the amplification zone through the thus contained gain medium which is amplified by the stimulated radiation transitions in the amplification zone as it moves through the gain medium.

3,886,483

PLASMA PUMPED LASER

George H. Miley, Champaign, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 31, 1973, Ser. No. 411,556
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 P **11 Claims**



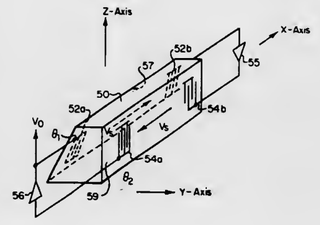
1. A method of pumping the laser active medium of a gas laser system with plasma from a fusion reactor to develop a population inversion in the laser active medium, including the steps of:
a. removing the plasma from a fusion reactor with said plasma including charged particles in the form of an ion fraction and an electron fraction,
b. mixing the laser active medium with a portion of said charged particles to pump said laser active medium and create a population inversion therein,
c. placing said pumped laser active medium in an optical laser cavity to permit a lasing action to take place whereby coherent radiation is developed.

3,886,484

ACOUSTIC SURFACE WAVE DEVICES HAVING IMPROVED PERFORMANCE VERSUS TEMPERATURE CHARACTERISTICS

J. Fleming Dias, and Henry E. Karrer, both of Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 24, 1974, Ser. No. 482,050
Int. Cl. H03b *5/32*
U.S. Cl. 331—107 A **4 Claims**



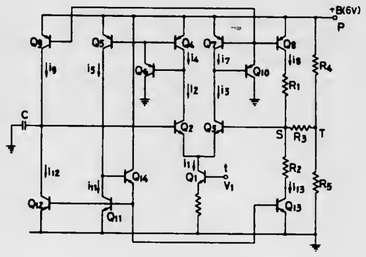
1. An acoustic surface wave delay line comprising:
a substrate of piezoelectric material having a plurality of surface regions of different crystallographic orientations;
at least one transmitting transducer disposed on one of the surface regions for propagating an acoustic surface wave having a first phase-shift response versus ambient temperature characteristic;
at least one receiving transducer disposed on another of the surface regions a predetermined distance from the transmitting transducer for receiving a propagated acoustic surface wave having a second phase-shift response versus ambient temperature characteristic; and
coupling means coupled to the transmitting and receiving transducers for coupling the acoustic surface wave from one of the surface regions to another of the surface regions to provide at the receiving transducer an output signal having a phase-shift response versus ambient temperature characteristic equal to the combination of the first and second phase-shift response versus ambient temperature characteristics.

3,886,485

LINEAR VOLTAGE CONTROLLED OSCILLATOR INCLUDING A TIMING CAPACITOR CHARGED AND DISCHARGED THROUGH CURRENT MIRROR CIRCUITS

Nobuaki Takahashi, Yamato, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 19, 1973, Ser. No. 417,475
Claims priority, application Japan, Nov. 25, 1972, 47-11836
Int. Cl. H03k *3/282*
U.S. Cl. 331—111 **6 Claims**



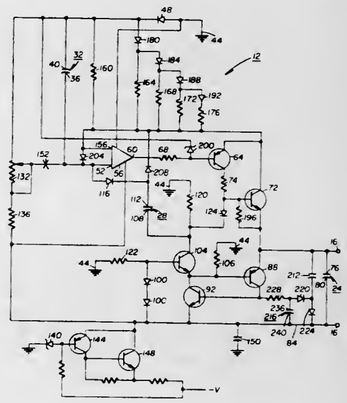
1. A linear voltage controlled oscillator comprising:
a power source;
a pair of transistors having mutually connected emitter electrodes, the base electrode of one of the transistors being connected to a capacitor;
first current-mirror circuit means connected between said power source and the collector electrode of the other of the pair of transistors, said first current-mirror circuit means being coupled to the base electrode of the other of the pair of transistors through a first resistor and also coupled to charge the capacitor during intervals while the other of the pair of transistors is conductive;
second current-mirror circuit means connected between said power source and the collector electrode of said one of the pair of transistors;
third current-mirror circuit means connected between said second current-mirror circuit means and ground, said third current-mirror circuit means being coupled to the base electrode of the other of the transistors through a second resistor and also coupled to discharge the capacitor during intervals while said one of the pair of transistors is conductive;
bias circuit means connected between said power source and ground, said bias circuit means being coupled to the base electrode of the other of the pair of transistors through a third resistor;
a third transistor connected between the emitter electrodes of said pair of transistors and ground, and means responsive to a control voltage for controlling the current through the third transistor and therefore through said pair of transistors, whereby an oscillating frequency is controlled by a charging current to and a discharging current from the capacitor.

3,886,486

OSCILLATOR CIRCUIT FOR GENERATING AN OUTPUT SIGNAL HAVING SUCCESSIVE CYCLES WHICH UNIDIRECTIONALLY VARY IN FREQUENCY

Harry L. Maddox, Reynoldsburg, Ohio, assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 15, 1974, Ser. No. 461,082
Int. Cl. H03k *3/28*
U.S. Cl. 331—111 **20 Claims**



2. In a circuit for generating an output signal the successive cycles of which vary in frequency:
an electrical storage device for cyclically receiving a charge and for generating successive cycles of the output signal having a potential in accordance with the charge stored therein;
means for cyclically changing the charge on the electrical storage device at a controlled rate from a first predeter-

mined level of charge to a second predetermined level of charge, and

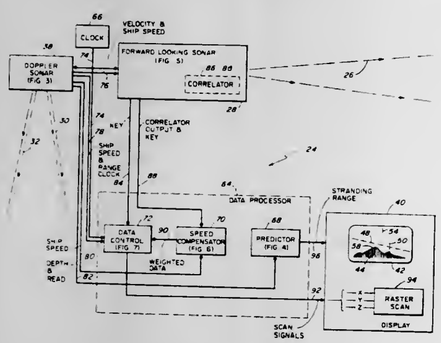
a control circuit, operative upon the charge on the electrical storage device reaching the second predetermined level of charge for changing the charge thereon to the first predetermined level of charge and for unidirectionally varying the rate at which the means for cyclically changing the charge changes the charge on the electrical storage device from the first to the second predetermined levels of charge.

3,886,487

ANTI-COLLISION SONAR SYSTEM

George M. Walsh, Middletown; James W. Cummings; William R. Backman, Jr., both of Portsmouth, and Clifford, Peter J., Barrington, all of R.I., assignors to Raytheon Corporation, Lexington, Mass.

Filed May 31, 1973, Ser. No. 365,819
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R **25 Claims**



1. A sonar system comprising:

a transducer system;

means for positioning said transducer system between two boundaries of a layer of fluid, said transducer system including means for adapting said transducer system to produce a beam of radiant energy wherein the sides of the beam are substantially parallel to said boundaries, said positioning means including means for rotating a beam of energy emanating from said transducer system for directing said beam of radiation between said boundaries; and

means responsive to a speed of movement of said transducer system through said fluid for storing data obtained through the reception of radiant energy by said transducer system.

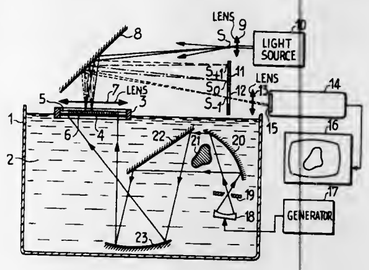
3,886,488

SYSTEM FOR THE REAL TIME VISUALIZATION OF ULTRASONIC IMAGES

Jean Bossaert; Joel Ernvein, and Erich Spitz, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 1, 1973, Ser. No. 356,140
Claims priority, application France, May 5, 1972, 72.16106
Int. Cl. G01s *9/66;* **G01n** *29/04*
U.S. Cl. 340—5 MP **14 Claims**

1. Ultrasonic image conversion system for the real time visualization of an ultrasonic image constituted by a two dimensional distribution of ultrasonic vibrational amplitudes, said system comprising: a vibrating diaphragm positioned for receiving said ultrasonic image, a thin liquid layer overlaying said diaphragm and having a reflective free surface, a periodic array of masking elements extending parallel beneath said free surface for inducing along said free surface a grating of ripples having the pitch of said periodic array, illuminating means for supplying incoherent optical radiation to said free surface, and optical imaging means forming an image of said free surface by selectively receiving at least one of the distinct portions of said incoherent optical radiation diffracted by said grating;



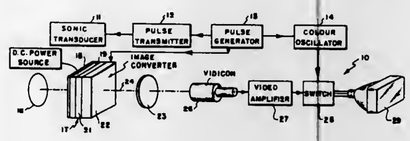
said illuminating means comprising a field lens and a source of incoherent electromagnetic radiation arranged in the focal plane of said lens.

3,886,489

ULTRASONIC IMAGE CONVERTER AND SYSTEM

Charles H. Jones, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 25, 1974, Ser. No. 445,525
Int. Cl. G01s *9/68*
U.S. Cl. 340—5 MP **10 Claims**



1. A system for converting sonic energy patterns into optical images comprising:

A. means for transmitting pulses of sonic energy to sonify an area;

B. means for focusing any sonic energy reflected from said sonified area;

C. means for converting said focused sonic energy to a visual image and comprising a unitized solid-state array including:

a. a transparent supportive substrate;

b. a transparent conductive film deposited on said substrate;

c. a layer of electroluminescent material deposited on said film;

d. an array of N spaced apart conductive pads deposited on said layer;

e. an array of N spaced apart amplifiers, each of said amplifiers having a pair of electrical contact elements, one said pair being in electrical contact with an associated conductive pad, and each of said amplifiers having electrical connector means adapted for connection to a power source;

f. an array of N spaced apart piezoelectric transducers, each of said transducers being in electrical contact with the other of said pair of electrical contact elements on an associated amplifier;

g. a second electrical conductive film positioned over said array of transducers and in electrical contact therewith; and

h. a low loss protective covering deposited over said second conductive film;

D. lens means for focusing said optical output;

E. a television camera tube positioned to receive all of said focused optical output and provide a video signal; and

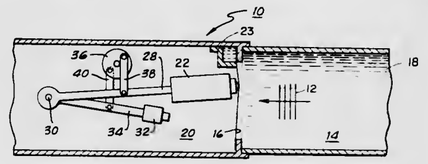
F. means electrically connected to said camera for visually displaying said video signals.

3,886,490

APPARATUS FOR COUPLING AN ARRAY OF ULTRASONIC TRANSDUCERS TO AN ULTRASONIC COMPRESSIONAL IMAGE FIELD AND SCANNING THE IMAGE FIELD

Philip S. Green, Redwood City, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed May 25, 1973, Ser. No. 363,876
Int. Cl. H04b *11/00*
U.S. Cl. 340—5 MP **7 Claims**



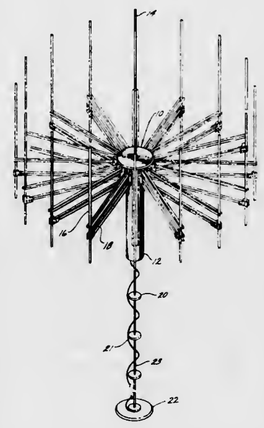
1. In a system for providing a visual representation of a compressional acoustic image field traveling in a fluid medium, an acoustically transparent window located in the path of said compressional acoustic image field and acting to contain said fluid, a transducer array located on the opposite side of said window from said fluid medium and in intimate contact with the said window, whereby the said compressional acoustic image field impinges upon said transducer array and is translated into electrical energy, and a thin layer of coupling liquid on the side of the said window contacted by the said transducer array.

3,886,491

EXPANDABLE SONAR ARRAY

Loren M. Jonkey, Burbank, and Eugene Markus, North Hollywood, both of Calif., assignors to The Bendix Corporation, North Hollywood, Calif.

Filed Sept. 12, 1973, Ser. No. 396,977
Int. Cl. H04b *13/00*
U.S. Cl. 340—9 **7 Claims**



6. In a vehicle-borne sonar system wherein a transducer array is reeled into and out of a body of water at the end of a cable, said array comprising:

a housing fastened to said cable containing electronic equipment, a plurality of deployable projector elements, means deploying said projector elements, and means connecting said projector elements together and to said electronic equipment;

a plurality of hydrophone staves attached to said housing, each stave attachment including a parallelogram linkage wherein one link thereof includes part of an associated stave, said linkage when retracted positioning itself and its associated stave against said housing and when extended supporting said stave a substantial distance outwardly from said housing, a length of each said stave being folded against said housing when said linkages are retracted, and means for rotating said length into axial alignment with the remainder of said stave when said staves are deployed such that each said stave is longer than said housing, said linkages and staves being positively buoyant in water; and

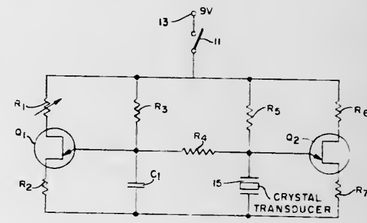
means securing said linkages against said housing until released at a desired depth of said transducer array.

3,886,492

SONIC INSECT REPELLER

Herbert Montgomery White, Carleton Place, Ontario, Canada, assignor to John Joseph Szmigielski, Ontario, Canada, a part interest

Filed Oct. 10, 1972, Ser. No. 296,075
Claims priority, application Canada, Oct. 7, 1971, 124720
Int. Cl. H04b *11/00*
U.S. Cl. 340—15 **8 Claims**



1. A sonic insect repeller comprising oscillator means including a unijunction transistor coacting with a BC circuit for generating an output signal with a sawtooth waveform having a fundamental frequency and having substantially higher harmonics, said signal including noise components at frequencies substantially higher than said fundamental frequencies and occurring only at the peaks of said sawtooth waveform, means for cyclically varying said fundamental frequency over a selected range, and a transducer for converting said signal into a sonic waveform.

3,886,493

ADAPTIVE MONOFREQUENCY PILOT SIGNALS

John B. Farr, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed May 7, 1973, Ser. No. 358,187
Int. Cl. G01v *1/14, 1/26*
U.S. Cl. 340—15.5 TD **18 Claims**

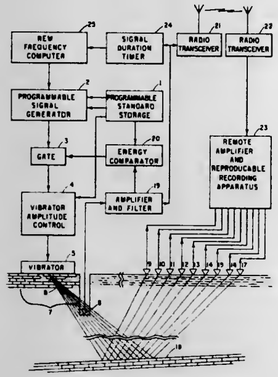
1. In a seismic prospecting method of the type where seismic waves are radiated into the earth from an electronically controllable multifrequency seismic source, the improvement comprising:

a. detecting said seismic waves on a near-field detector located near said seismic source, said near-field detector producing a near-field electrical signal corresponding to the said radiated seismic waves;

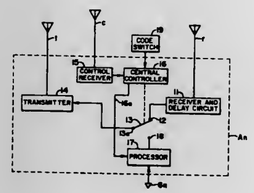
b. comparing a function of said near-field electrical signal with only a part of a predetermined multifrequency control signal; and

c. automatically modifying at least one of the duration

c. automatically modifying at least one of the duration, frequency or amplitude characteristics of said multifrequency control signal when said comparison in step (b) indicates a predetermined ratio thereof has been reached.

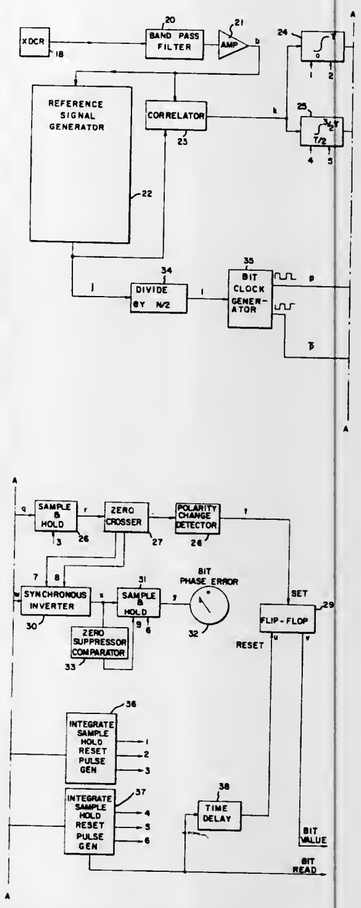


3,886,494
SYSTEM FOR GATHERING AND RECORDING SEISMIC SIGNALS
Richard J. Kostelnicek, and Haines C. Hibbard, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.
Filed Nov. 13, 1972, Ser. No. 306,096
Int. Cl. G01v *1/22*; H04b *7/14*
U.S. Cl. 340—15.5 TS **30 Claims**



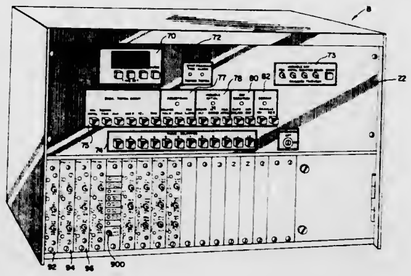
16. For use in a seismic surveying system for deriving indications of seismic energy, apparatus comprising:
radio frequency receiver means for receiving coded signals which include seismic data signals successively occurring at regular time intervals with no two successive data signals having the same frequency;
first means for separating the frequency components of said coded signals and applying the resulting signals on separate signal channels;
second means for converting the signals in said channels into discrete time signals and for delaying said discrete time signals by a predetermined time interval; and
third means including radio frequency transmitter means connected to said second means for producing radio frequency signals of different frequencies dependent on the channel from which a delayed time signal is received thereby such that the signal is of the same frequency as the radio frequency signal applied to the channel.

3,886,495
UPHOLE RECEIVER FOR LOGGING-WHILE-DRILLING SYSTEM
James H. Sexton, Duncanville, and Bobbie J. Patton, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation of Ser. No. 341,014, March 14, 1973, abandoned. This application July 10, 1974, Ser. No. 487,847
Int. Cl. G01v *1/40*
U.S. Cl. 340—18 LD **19 Claims**



1. In a system for logging-while-drilling wherein an acoustic signal is propagated through a liquid each from a downhole transmitter and the acoustic signal is modulated between two phase states in response to digitally coded data bits produced as a function of a downhole condition, and representation of each bit being propagated for a predetermined bit time interval, an improved receiving system for demodulating said acoustic waves comprising:
means responsive to the acoustic signal for producing an output signal representative of the phase and frequency of said acoustic signal,
a reference signal generator responsive to said output signal for producing a reference signal having one phase state, that being one of the phase states of said output signal,
a correlator, said output signal and said reference signal being applied to said correlator to produce a synchronously rectified signal whose polarity is representative of the phase states of said output signal, and
means responsive to said reference signal for sampling said synchronously rectified signal to produce pulses representative of the generated bits and thus of the downhole condition.

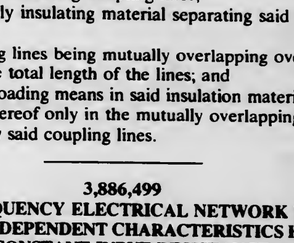
3,886,496
TRAFFIC CONTROLLER EMPLOYING A DIGITAL COMPUTER
Richard A. Spilo, Davenport, Iowa; Frank W. Hill, Moline, and Larry O. Hoffman, Rockford, both of Ill., assignors to Gulf & Western Industries, Inc., New York, N.Y.
Continuation of Ser. No. 289,312, Sept. 14, 1972, abandoned. This application Feb. 20, 1974, Ser. No. 444,122
Int. Cl. G08g *1/00*
U.S. Cl. 340—41 R **45 Claims**



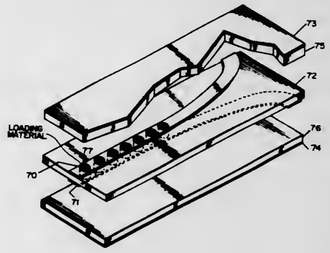
1. In a controller for controlling traffic signals displayed to at least two conflicting movements of traffic through an intersection, said controller including a memory unit to store at separate addresses, separate binary codes each representing a numerical value for use in a selected function of said controller, the improvement comprising: a switching network for manually selecting, from one of said addresses, one of said codes for a selected function; means for decoding said selected code to produce display numerals corresponding to the numerical value at said one address; a visual display means for displaying said display numerals; means for manually changing said display numerals displayed by said visual display means to a new value; means for providing a new code corresponding to said new value; and, means for then storing said new code in said memory unit at said one address.

3,886,497
WAVEGUIDE CIRCULATOR HAVING SINGLE GYROMAGNETIC ELEMENT
Joseph Helszajn, Edinburgh, Scotland, assignor to Microwave Development Laboratories, Inc., Needham-Heights, Mass.
Filed Mar. 15, 1974, Ser. No. 451,510
Claims priority, application United Kingdom, Mar. 26, 1973, 14566/73
Int. Cl. H01p *1/32*
U.S. Cl. 333—1.1 **4 Claims**

1. In a three-port waveguide circulator of the type having
1. three waveguide arms meeting at a common junction,
2. an electrically conductive pedestal situated at the junction and extending into the junction from one waveguide wall,
3. a gyromagnetic element mounted on the pedestal with one face of the gyromagnetic element short-circuited by the pedestal and the other face spaced from the opposite waveguide wall by a dielectric gap, and
4. means to establish a magnetic field of an intensity that affects the gyromagnetic action of the gyromagnetic element, the improvement wherein
a. the gyromagnetic element is centrally situated at the waveguide junction and is substantially one quarter wavelength long at a frequency within the operational band of the circulator, the wavelength being the length in the guide, and the one quarter wavelength being measured at the junction along the extended longitudinal axis of a waveguide arm, and
b. the pedestal extends from an impedance transformer plate disposed upon said one wall, the impedance transformer plate effecting a reduction in the internal height of the waveguide.



3,886,498
WIDEBAND, MATCHED THREE PORT POWER DIVIDER
Joseph A. Mosko, and Robert G. Corzine, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 22, 1974, Ser. No. 490,433
Int. Cl. H01p *5/12*
U.S. Cl. 333—9 **6 Claims**

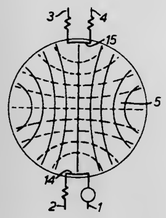


1. A power divider comprising;
electrically conducting coupling lines;
an electrically insulating material separating said coupling lines;
said coupling lines being mutually overlapping over a portion of the total length of the lines; and
microwave loading means in said insulation material in the portion thereof only in the mutually overlapping region, defined by said coupling lines.

3,886,499
HIGH FREQUENCY ELECTRICAL NETWORK WITH FREQUENCY DEPENDENT CHARACTERISTICS HAVING A CONSTANT INPUT RESISTANCE
Ronald Hutchinson, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England
Filed Aug. 3, 1973, Ser. No. 385,291
Claims priority, application United Kingdom, Aug. 5, 1972, 36665/72
Int. Cl. H01p *5/14*
U.S. Cl. 333—10 **10 Claims**

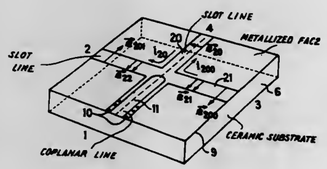
1. A constant resistance electrical network comprising in combination:

a cavity resonator;
a pair of separate couplers disposed within said cavity resonator in electrically insulated relation thereto, and each coupler having the same characteristic resistance;
a first input coaxial line and a first output coaxial line leading to said cavity resonator and each having a center conductor connected to opposite ends of one coupler to form a first coupling loop within said cavity resonator;
a second input coaxial line and a second output coaxial line leading to said cavity resonator and each having a center conductor connected to the opposite end of the other coupler to form a second coupling loop within said cavity resonator;



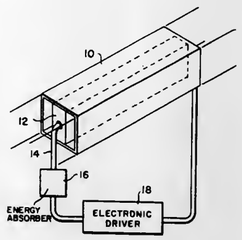
each coupling loop being disposed in a plane transverse to the natural direction of propogation of resonant waves excited within the cavity resonator by said couplers and means terminating each of said output coaxial lines in said characteristic resistance, whereby when energy is applied to either input coaxial line none is reflected thereby and the energy is directed substantially only to the corresponding output coaxial line except when the energy is substantially at the resonant frequency of said cavity resonator whereupon the energy is directed substantially only to the other output coaxial line.

3,886,500
FLAT HYBRID-T STRUCTURE FOR TRANSMITTING WAVE ENERGY
Michel Baril, and Hoang Vu San, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Dec. 5, 1973, Ser. No. 422,103
Claims priority, application France, Dec. 12, 1972, 72.44176
Int. Cl. H01p *5/12*
U.S. Cl. 333—11 **5 Claims**



1. A flat hybrid-T structure comprising a dielectric substrate having a metallized face provided with two throughgoing, intersecting gaps forming a first, a second, a third and a fourth channel meeting at the point of intersection and constituting transmission lines for the propagation of wave energy, said first and fourth channels being mutually decoupled for said wave energy and forming part of one of said gaps, said first channel being a coplanar line, said fourth channel being a slot line decoupled from said coplanar line for said wave energy, said second and third channels being part of the other of said gaps and being of the same structure as one of the channels of said one of said gaps to form with said first and fourth channels a shunt junction and a series junction, respectively, and input means for connecting a source of wave energy to one of said lines.

3,886,501
INSERTION AND DIFFERENTIAL PHASE-TRIM METHOD
Louis J. Lavedan, Jr., Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 3, 1974, Ser. No. 475,719
Int. Cl. H01p *1/32*
U.S. Cl. 333—24.1 **14 Claims**

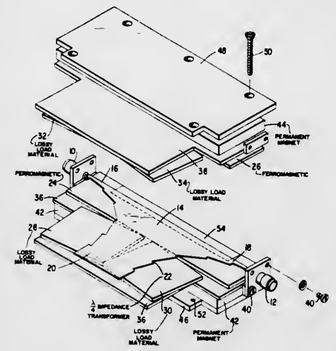


13. An apparatus for shifting the phase of energy propagating through a waveguide comprising:
means with a ferrimagnetic core positioned with said waveguide for shifting the phase of the energy propagating therein;
electrical driving means coupled by a conductor to said phase-shifting means for generating a voltage pulse and applying it by way of said conductor to said phase-shifting means to set its phase shift characteristics; and
energy-absorption means external to said waveguide and surrounding a portion of said coupling conductor for absorbing energy from said voltage pulse as it is applied through said conductor to drive said phase-shifting means in order to decrease the phase-shift characteristics of said phase-shifting means to approximate a predetermined value or set of values.

3,886,502
BROAD BAND FIELD DISPLACEMENT ISOLATOR
Herbert P. Radding, Newark, and George E. Tralle, Los Altos, both of Calif., assignors to RYT Industries, Santa Clara, Calif.
Filed Aug. 6, 1974, Ser. No. 495,284
Int. Cl. H01p *1/32*
U.S. Cl. 333—24.2 **8 Claims**

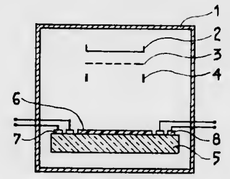
1. A broad band microwave strip-line field displacement isolator comprising:
a conductive planar circuit having three outwardly narrowing legs extending from a common portion with a first and a second of said legs being an input port and an output port respectively, said circuit being symmetrical with respect to an axis extending through said third leg and at least the edge of said circuit extending between and joining said first and said third legs and the edge of said circuit extending between and joining said second and said third legs constituting a series of stepped λ/4 linear tapered impedance transformers;
first and second bodies of gyromagnetic material symmetrically disposed on opposite sides of said conductive circuit and overlying substantially the entire portion of said circuit extending between said input and output ports;
first and second layers of a dielectric load material disposed on opposite sides of said circuit overlying said third leg and coplanar with said first and second bodies of gyromagnetic material respectively;

first and second spaced parallel ground planes overlying said first and second bodies of gyromagnetic material and said first and second layers of load material respectively; and



magnetic field generating means adjacent said first and second layers of gyromagnetic material for biasing same.

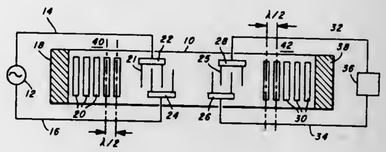
3,886,503
DEVICE FOR STORING HIGH FREQUENCY SIGNALS
Alain Bert, and Gerard Kantorowicz, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Jan. 28, 1974, Ser. No. 437,602
Int. Cl. H03h *9/30;* **G11c** *21/02, 27/00*
U.S. Cl. 333—30 R **2 Claims**



1. A device for storing travelling surface waves comprising, inside a vacuum tight enclosure; a delay line of strongly piezoelectric material having transducers mounted thereon and separated from one another, for transducing high frequency electric signals into acoustic waves and vice-versa, said acoustic waves propagating along a work surface of said line between said transducers; and an electron gun for directing a beam of primary electrons toward said work surface; said work surface of said delay line being covered with a thin layer of electrically insulating material; and said thin layer having deposited on it a plurality of bands parallel to the direction of acoustic wave travel along said line, said bands being made of a material having a high coefficient of secondary emission.

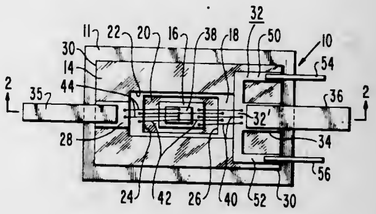
3,886,504
ACOUSTIC SURFACE WAVE RESONATOR DEVICES
Clinto Sylvester Hartmann, and Ronald Carl Rosenfeld, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed May 20, 1974, Ser. No. 471,616
Int. Cl. H03h *9/26, 9/30;* **H01v** *7/00*
U.S. Cl. 333—72 **20 Claims**

1. A surface wave resonator device comprising:
substrate means having at least a surface layer of piezoelectric material.
acoustic surface wave transducer means disposed on said piezoelectric surface of said substrate means and being operable to convert an input electrical signal to acoustic surface waves propagating on said piezoelectric surface of said substrate means, and



means defining first and second reflective grating structures on the piezoelectric surface of said substrate means on opposite sides of said acoustic surface wave transducer means and being responsive to acoustic surface waves generated thereby to provide at least one region on the piezoelectric surface of said substrate means wherein a standing wave resonance condition occurs.

3,886,505
SEMICONDUCTOR PACKAGE HAVING MEANS TO TUNE OUT OUTPUT CAPACITANCE
David Stanley Jacobson, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Apr. 29, 1974, Ser. No. 464,944
Int. Cl. H01p *1/00*
U.S. Cl. 333—84 M **6 Claims**

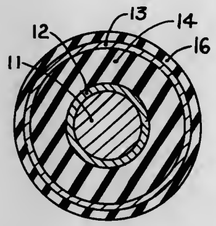


1. A high frequency semiconductor device comprising:
an envelope,
a transistor chip mounted within said envelope,
first, second, and third terminals electrically connected to different portions of said chip,
said first and said second terminals providing means whereby an electrical signal can be introduced into said device, and said second and said third terminals providing means whereby an electrical signal can be extracted from said device,
said third terminal extending exteriorly from said envelope and serially connected to said chip through a first inductance within said envelope, and
a fourth terminal separate from said second terminal extending exteriorly from said envelope and serially connected through a second inductance within said envelope to a point of junction between said third terminal and said first inductance.

3,886,506
MAGNETICALLY ENHANCED COAXIAL CABLE WITH IMPROVED TIME DELAY CHARACTERISTICS

Harold Lorber, Dresher, and Irving Duboff, West Chester, both of Pa., assignors to Hilabs Company, Wilmington, Del.

Filed Mar. 5, 1973, Ser. No. 338,335
Int. Cl. H01p 3/06; H01b 11/14
U.S. Cl. 333—96 **16 Claims**



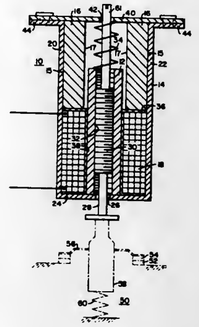
1. In a communication system having means for generating high frequency electro magnetic energy pulses representing intelligence, a coaxial cable for transmitting said pulses, and means for receiving said pulses, said cable comprising in combination:
an electrical center conductor,
a magnetizable material at the outside surface of said center conductor,
said magnetizable material being magnetically oriented to provide a magnetic field which is substantially circumferentially around said center conductor.
electrically insulating dielectric material disposed to cover said center conductor,
an electrical outer conductor formed to provide a shield around said dielectric material,
said center conductor, said outer conductor, and said dielectric material disposed together to form said coaxial cable,
said magnetizable magnetic material being magnetically oriented in a direction to provide a sufficient magnetic field within said coaxial cable to enhance electro magnetic energy pulse propagation velocity,
whereby high frequency electro magnetic pulses from the generating means will travel through said coaxial cable means to said receiving means faster than would occur without said magnetic field.

3,886,507
ADJUSTABLE MAGNETIC LATCH FOR A RELAY

Robert J. Johnston, and Alfred E. Maier, both of Beaver Falls, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 5, 1973, Ser. No. 404,058
Int. Cl. H01f 7/08
U.S. Cl. 335—234 **7 Claims**

1. A latch comprising:
a housing formed of a magnetizable material;
an elongated core formed of a magnetizable material disposed within said housing and being movable between a latched position wherein said core is in contact with said housing and an unlatched position wherein said core is not in contact with said housing;
a magnet disposed within said housing between said housing and said core so as to form a magnetic circuit through said core and said housing when said core is in contact with said housing to securely hold said core to said housing;
said magnet disposed with the north-south pole of said magnet aligned substantially perpendicular to the longitudinal axis of said core;
biasing means for biasing said core towards the latched position;
an electric coil, disposed in said housing, which when energized opposes the magnetic circuit formed through said core by said magnet permitting said core to be moved to the unlatched position;
said housing has a generally U-shaped cross-section with a bight portion connecting the two legs of said U-shaped housing;
said core disposed within said housing for movement along its longitudinal axis between a latched position in engagement with the bight portion of said U-shaped housing and an unlatched position spaced from the bight portion of said U-shaped housing;

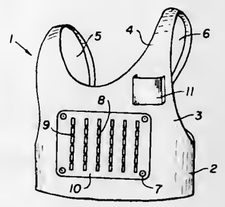


an end plate formed from non-magnetic material connecting the free ends of the legs of said U-shaped housing;
said housing having an opening formed in the bight portion;
a latch arm extending from said core through the opening in the bight portion of said housing;
said latch arm being secured to said core to move in unison with said core;
said core having a longitudinal threaded opening formed therein; and
said latch arm includes a threaded portion which engages the threaded opening formed in said core so that the distance which said latch arm extends from said latch can be varied.

3,886,508
MAGNETIC TOOL HOLDER

Georges Louis Lavrard, Chatellerault, France, assignor to S. A. Manufacture d'Armes et Cycles de Chatellerault, Chatellerault, France

Filed May 13, 1974, Ser. No. 469,405
Claims priority, application France, May 15, 1973, 73.17835
Int. Cl. H01t 7/20
U.S. Cl. 335—285 **10 Claims**



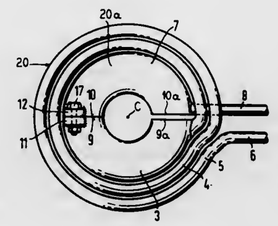
1. A tool holder comprising:

a. a support having a face;
b. a group of permanent magnets on said face,
1. each magnet being not farther than 2 inches from another magnet of said group,
2. said magnets jointly defining an accessible engagement surface having dimensions of length and width greater than 2 inches parallel to said face; and
c. fastening means for fastening said support to a portion of an adult human body remote from the hands of said body.

3,886,509
ADJUSTABLE INDUCTION COIL FOR ZONE MELTING OF SEMICONDUCTOR RODS

Wolfgang Keller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation-in-part of Ser. No. 309,420, Nov. 24, 1972, Pat. No. 3,827,017. This application Jan. 23, 1974, Ser. No. 435,837
Claims priority, application Germany, Feb. 1, 1973, 2304974
Int. Cl. H01f 27/28
U.S. Cl. 336—62 **4 Claims**



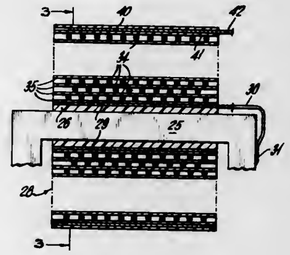
1. An induction heating coil for use in crucible-free zone melt treatment of semiconductor rods comprising a current conducting loop of at least a single turn arranged in a given plane and an insert member extending radially inwardly from said turn, said insert member being composed of at least two annularly shaped portions, one of said portions being permanently attached to said conductive loop, and the other of said portions being permanently attached to a terminal to form a conductive path, each of said portions having an end face in contact with an adjacent end face of another portion, said end faces of the portions being disposed perpendicularly to said plane of the turn, fastening means separably attaching said end faces, and a conduit forming a conductive path through said conducting loop and said annularly shaped portions of said insert for guiding a heat exchange medium therethrough.

3,886,510
HIGH-VOLTAGE INDUCTIVE COIL

Robert E. Canup, Chester, and Earl W. McPeak, Jr., Powhatan, both of Va., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 22, 1973, Ser. No. 390,474
Int. Cl. H01f 27/28
U.S. Cl. 336—70 **12 Claims**

1. High-voltage AC inductive coil, comprising in combination
a large plurality of winding turns beginning at the inside of said coil and including multi-turn layers of an electrical conductor for developing a high-voltage output,
the first turn of said winding turns comprising a unitary strip having a beginning and an ending and extending laterally substantially the entire width of said multiturn layers, said ending overlapping said beginning and being insulated at said area of overlap, and

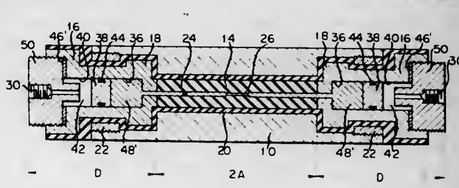


means for connecting a lead conductor to said beginning of the first turn.

3,886,511
SELF-RESTORING CURRENT LIMITING DEVICE

Toshio Miyamoto; Yuichi Wada; Suenobu Hamano; Teijiro Mori; Takeo Inoue, and Takashi Shirasawa, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 24, 1974, Ser. No. 436,385
Claims priority, application Japan, Jan. 25, 1973, 48-10421; Aug. 24, 1973, 48-94996
Int. Cl. H01h 87/00
U.S. Cl. 337—119 **6 Claims**



1. A self-restoring current limiting device, comprising;
a metallic shell having first and second ends; an electric insulator surrounded by and in contact with the inside of said shell and having an opening extending from said first to said second end; a body of current limiting material filling said opening, said material being in a selected one of original, solid and liquid states at room temperature, being responsive to a flow of electric current therethrough in excess of a predetermined magnitude by evaporation of the material, and being self-restoring to its original state when the excess current terminates;
a current terminal block including pressure release means for releasing a pressure of evaporated current limiting material, said pressure release means including a compartment communicating with said opening and filled with an additional amount of current limiting material; a movable piston defining one side of said compartment; and
means for applying a back pressure to said piston.

3,886,512
SPRING AND SHUNT ASSEMBLY FOR CIRCUIT INTERRUPTER

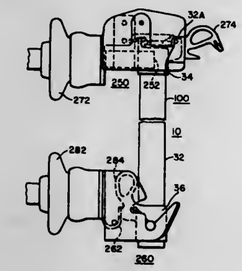
Frank L. Cameron, North Huntingdon, and Robert C. Iandola, Langhorne, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 15, 1974, Ser. No. 470,105
Int. Cl. H01h 71/10
U.S. Cl. 337—178 **10 Claims**

1. A high voltage circuit interrupter comprising a tubular insulating holder, a body of arc extinguishing material dis-

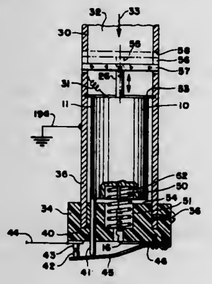
posed inside of and spaced from the ends of the holder and to an overload condition of said thermal actuator for de-

posed inside of and spaced from the ends of the holder and including at least one passageway extending axially therethrough, terminal means disposed adjacent to each end of the holder, an elongated conducting member disposed to extend axially through said passageway, fusible means disposed inside the holder and connected between one end of the conducting member and one of the terminal means, a first conducting member secured to the other terminal means and having a main portion projecting axially into the holder, a spring holder member slidably disposed on the main portion of the first conducting member, a spring connected between the other end of the elongated conducting member and said spring



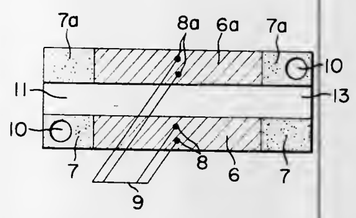
holder member, a flexible helically coiled conductor connected between the main portion of the first conducting member and the other end of the elongated conducting member, and means movably mounted on the first conducting member and coupled to the spring holder member to be actuated by said spring when the fusible means blows for projecting axially beyond the other terminal means, an elongated tubular spring guide attached at one end thereof to said main portion of said first conducting member, said spring being disposed axially within said elongated tubular spring guide, said elongated tubular spring guide cooperating with said spring to prevent said spring from fouling when said fusible means blows.

3,886,513
DE-ENERGIZING SYSTEM FOR THERMAL ACTUATOR
Lynn C. Smith, Willoughby Hills, and Richard G. Huebscher, Mayfield Village, both of Ohio, assignors to Gould Inc., Willoughby, Ohio
Filed Nov. 27, 1973, Ser. No. 419,269
Int. Cl. H01h *37/44*
U.S. Cl. 337—315 **13 Claims**



1. A de-energizing system for a thermal actuator that includes a casing in which a variable volume chamber is defined, a piston movably positioned in said casing, and a thermally expansible material in said chamber that increases pressure therein to move the piston when said thermal actuator is energized, said thermal actuator producing an output force in response to an energy input, comprising a support; means for movably supporting said thermal actuator relative to said support; means for selectively coupling said thermal actuator for energization from an energy source; and means responsive to an overload condition of said thermal actuator for de-energizing the same, said means for de-energizing being responsive to movement of said thermal actuator relative to said support upon occurrence of an overload condition and also being operatively coupled to said means for selectively coupling for controlling the same to de-energize said thermal actuator.

3,886,514
VARIABLE RESISTOR
Shunzo Oka, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 6, 1973, Ser. No. 338,583
Claims priority, application Japan, Mar. 10, 1972, 47-24906
Int. Cl. H01c *9/02*
U.S. Cl. 338—126 **4 Claims**

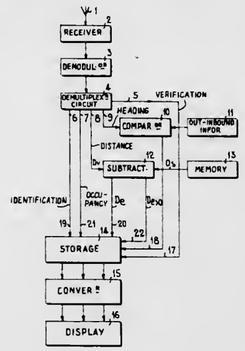


1. A variable resistor comprising
a. a substantially planar base made of an insulating material,
b. a pair of elongated film resistance elements formed on the substantially planar base, said elongated film resistance elements having equal resistances and having the same resistance-to-length characteristics and equal temperature coefficients of resistance,
c. a wiper arm electrically and mechanically bridging sais pair of film resistance elements and movably arranged to slide from one end of the pair of elements to the other while maintaining electrical contact therewith,
d. a first terminal on said planar base and electrically connected to one end of said pair of film resistance elements,
e. a second terminal on said planar base electrically connected to the other of said pair of film resistance elements on an end of the pair of resistance elements opposite the end to which the first terminal is connected,
f. whereby movement of said wiper arm from one end of the pair of resistance elements to the other increases the electrical resistance between the wiper arm and one of the terminals and decreases the resistance between the wiper arm and the other terminal, said increase in electrical resistance being substantially equal to said decrease, and
g. said terminals being electrically connected solely through said film resistance elements and said wiper arm.

3,886,515
AUTOMATIC VEHICLE-MONITORING SYSTEM
Jean Cottin, and Jean Laxaque, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed May 24, 1973, Ser. No. 363,729
Claims priority, application France, May 26, 1972, 72.18883
Int. Cl. G08g *1/12*
U.S. Cl. 340—23 **15 Claims**

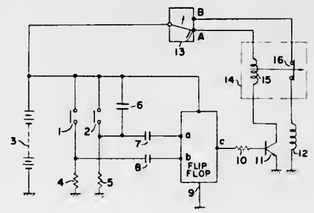
1. A system for automatically monitoring a plurality of surface vehicles equipped with transmitting means for intermittently sending out messages including positional data indicating the distance Dv of the vehicle, along a predetermined route, from a fixed reference point common to all vehicles, comprising:

receiving means located at a transit point along the route of said vehicles for picking up the transmitted messages;
data-supply means at said transit point for indicating the distance Ds thereof from said reference point;
data-supply means at said transit point connected to said receiving means and to said arithmetic means for calculating from said distances Dv and Ds the sign and magnitude of the instantaneous distance De of the vehicle from said transit point;



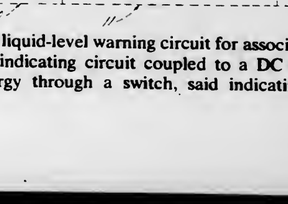
storage means at said transit point connected to said arithmetic means for registering the magnitude of the vehicular distance De in response to a sign of said vehicular distance De indicating that the vehicle is approaching said transit point; and
output means connected to said storage means for revealing the approach of a vehicle.

3,886,516
SEAT BELT OPERATION DETECTOR
Masaru Itoh, and Kosaku Uota, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed July 17, 1973, Ser. No. 380,005
Claims priority, application Japan, July 25, 1972, 47-74507
Int. Cl. B60r *21/10*
U.S. Cl. 340—52 E **4 Claims**



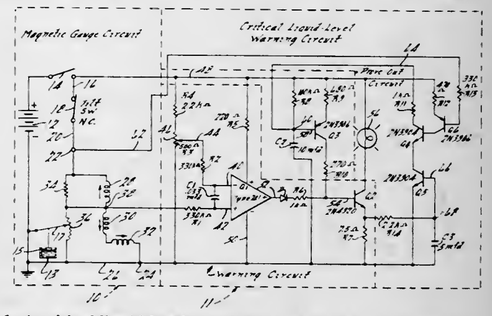
1. A seat belt operation detector for a vehicle having an engine comprising:
a seat switch which is normally open but which closes when a seat in the vehicle is occupied,
a belt switch which is normally open but which closes when a seat belt in the vehicle is utilized.
a flip-flop having first and second inputs and output and which generates a first predetermined signal from its output when a first signal is applied to its first input and which generates a second predetermined signal from its output when a second signal is applied to its second input, means for starting the vehicle engine responsive to the first predetermined signal to prohibit the engine from starting and responsive to the second predetermined signal to permit the engine to start,
means connecting the seat switch between the first input of the flip-flop and a power source,
means connecting the belt switch between the second input of the flip-flop and a power source, and
means connecting the output of the flip-flop to the means for starting the vehicle engine.

3,886,517
VEHICLE FAULT DETECTING AND INDICATING SYSTEM
Toshikazu Ohtake, Okazaki; Koichi Taniguchi; Yasuhiko Sakurai, both of Kariya; Nobumasa Higo, and Jun Ohta, both of Toyota, all of Japan, assignors to Nippondenso Co., Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Kariya-shi, Japan
Filed May 30, 1974, Ser. No. 474,859
Claims priority, application Japan, June 2, 1973, 48-62111
Int. Cl. G08b *19/00*
U.S. Cl. 340—52 F **8 Claims**



1. A fault detecting and indicating system comprising:
a fault detector for detecting a fault in an object of fault detection;
differential relay coil means having a first coil adapted to be deenergized when said fault detector detects a fault, and a second coil wound in a direction opposite to said first coil and normally energized;
means including a magnetic switching element whereby in response to a change of electromagnetic attraction caused by the deenergization of said first coil of said differential relay coil means, said magnetic switching element is turned on to short-circuit said first coil and provide a second energizing circuit; and
an indicator adapted to be actuated by said second energizing circuit to give an indication of fault.

3,886,518
CRITICAL LIQUID-LEVEL WARNING CIRCUIT
Michael Bozoian, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 4, 1974, Ser. No. 430,955
Int. Cl. G08b *21/00*
U.S. Cl. 340—59 **5 Claims**



1. A critical liquid-level warning circuit for association with a liquid-level indicating circuit coupled to a DC source of electrical energy through a switch, said indicating circuit

including a sensing device which provides a voltage which varies between upper and lower voltage limits as a function of a liquid level sensed by said sensing device, said critical liquid-level warning circuit comprising:

an operational amplifier having inverting and non-inverting inputs and having an output, said sensing device being coupled to one of said amplifier inputs to supply said sensing device voltage thereto;

means for providing a critical reference voltage to the other of said inputs to said operational amplifier;

an electrically actuable warning device;

a first transistor having a control electrode and having an output circuit, said first transistor output circuit being connected in series with said warning device and said first transistor control electrode being connected to the output of said operational amplifier;

a capacitor coupled to said output circuit of said first transistor, said capacitor being connected to accumulate a potential difference across it when said first transistor is in a conductive state corresponding to actuation of said warning device;

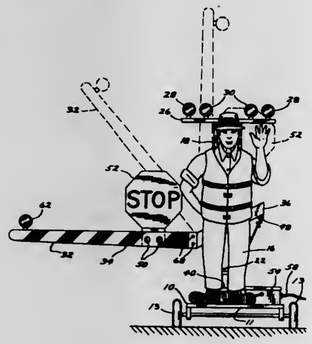
a second transistor having a control electrode and an output circuit, said second transistor output circuit being coupled to said control electrode of said first transistor; and a resistor and a capacitor connected in series, said series-connected resistor and capacitor being connected across said source of electrical energy when said switch is in a closed condition and the junction formed between said resistor and said capacitor being coupled to said control electrode of said second transistor.

3,886,519

PORTABLE TRAFFIC CONTROL DEVICE

Gilbert L. Hovland, Box 450K, Route 2, Wyoming, Minn. 55092

Filed June 27, 1974, Ser. No. 483,522
Int. Cl. B60q *1/00*; **E01f** *9/10*; **G09f** *7/00*
U.S. Cl. 340—135 **8 Claims**



1. A portable roadway traffic control device for selectively alternately blocking a portion of a roadway to be controlled and unblocking said roadway, said device including:

A. a portable platform adapted to be situated adjacent to a roadway to be controlled;

B. a replica of a person mounted on said platform in position to be observable by motorists approaching this platform along the roadway;

C. a traffic control gate pivotally mounted with respect to said replica and said platform to be movable between a first position wherein a portion of said gate extends over at least a portion of the roadway to be controlled and a second position wherein said gate is clear of said roadway;

D. power means to move said gate between said first and second positions; and

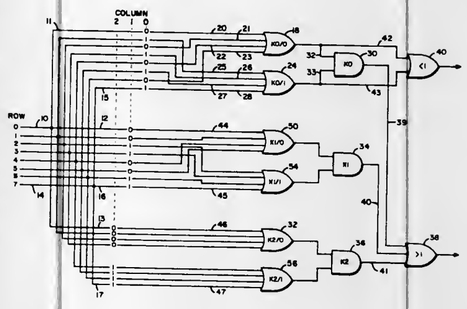
E. control means for controlling said power means.

3,886,520

CHECKING CIRCUIT FOR A 1-OUT-OF-N DECODER

Bruce A. Christensen, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 3, 1974, Ser. No. 457,669
Int. Cl. G06t *11/08*; **H03k** *13/34*
U.S. Cl. 340—146.1 AB **3 Claims**



1. A checking circuit for a 1-out-of-*n* binary decoder where $n = 2^K$, *n* being the number of decoder outputs 0 through *n*-1 that are to be checked on the associated *n* decoder output lines 0 through *n*-1 and *n*, K being positive integers wherein there is utilized for identification of the input lines associated therewith a binary table of *n* rows, 0 through *n*-1, and K columns, 0 through K-1, with a binary 0 or 1 entry at each of the *n*K row-column intersections, said checking circuit comprising:

*n*K separate input lines, said *n*K separate input lines arranged into K sets of n column-associated input lines and *n* sets of K row-associated input lines, each of said *n*K separate input lines associated with and identified by an associated one of said *n*K binary entries of said binary table for being identified either as a 0-associated input line or as a 1-associated input line as determined by the 0 or 1 binary entry at the associated one of said *n*K binary entries;

means parallel intercoupling the K input lines of each of said *n* sets of K row-associated input lines for receiving the associated ones of said *n* decoder outputs;

K pairs of column-associated OR gates, each pair comprised of a 0-associated OR gate and a 1-associated OR gate;

K column-associated AND gates;

a <1 OR gate;

a >1 OR gate;

means coupling the 0-associated input lines and the 1-associated input lines of each of said K sets of *n* column-associated input lines to the 0-associated OR gate and the 1-associated OR gate, respectively, of the associated pair of the K pairs of column-associated OR gates;

means coupling the outputs of each pair of the K pairs of column-associated OR gates to an associated one of the K column-associated AND gates;

means coupling the outputs of the K column-associated AND gates to said >1 OR gate for generating the >1 output signal only when two or more of said n decoder outputs are active;

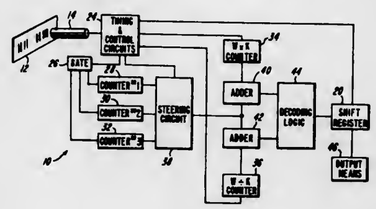
means coupling the outputs of any pair of the K pairs of column-associated OR gates to said <1 OR gate for generating the <1 output signal only when none of said n decoder outputs is active.

3,886,521

CODED RECORD AND METHODS OF AND APPARATUS FOR ENCODING AND DECODING RECORDS

Bruce W. Dobras, Dayton, Ohio, assignor to Monarch Marking Systems, Incorporated, Dayton, Ohio

Division of Ser. No. 239,168, March 29, 1972, Pat. No. 3,784,792. This application Nov. 16, 1973, Ser. No. 416,361
Int. Cl. G06f *11/10*; **G06k** *5/00*
U.S. Cl. 340—146.1 AG **7 Claims**



1. A system for interpreting a record encoded with a series of areas of alternate first and second characteristics in which groups of adjoining areas having like characteristics include plural data bits and at least one redundant code check bit determined with reference to the plural data bits in the same group, said system comprising:

an area-responsive reader,

size-evaluating means coupled to and controlled by the reader for sequentially determining the relative size of areas of the first characteristic in a group and for also separately determining the relative size of areas of the second characteristic in a group, said means including means for generating code values representing the results of each relative size determination for the areas of like characteristic within a group, and

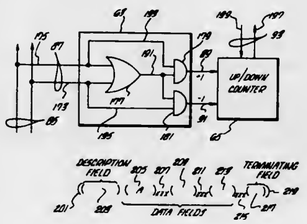
decoding means accepting as an input code values supplied by said size-evaluating means for generating an error signal in response to the receipt of code values which do not correspond to the scanning of valid combinations of data and check bits having like characteristics.

3,886,522

VOCABULARY AND ERROR CHECKING SCHEME FOR A CHARACTER-SERIAL DIGITAL DATA PROCESSOR

Robert S. Barton, Palo Alto; Erwin A. Hauck, Arcadia, and Don M. Lyle, Huntington Beach, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 28, 1974, Ser. No. 447,015
Int. Cl. G06f *11/00*
U.S. Cl. 340—146.1 AB **16 Claims**



1. Error checking means for use in a data processor in which data is commmunicated between various parts of the processor in the form of data structures, each data structure being comprised of a plurality of characters chosen from at least four possible types of characters and each data structure having a format such that the number of a first type of character contained in a data structure has a predetermined relation to the number of a second type of character contained in the data structure, said error checking means comprising:

input means to which the characters of a data structure are applied in a character-serial format,

first detecting means coupled to said input means for detecting the presence of first types of characters contained in an applied data structure,

second detecting means coupled to said input means for detecting the presence of second types of characters contained in an applied data structure, and

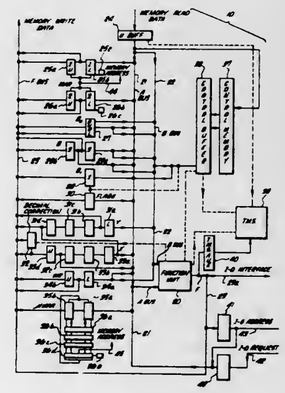
interpreting means including counting means coupled to said first and second detecting means and responsive to the detection of said first and second types of characters for providing an indication of the occurrence of an error based on the relative numbers of said first and second types of characters contained in the data structure.

3,886,523

MICRO PROGRAM DATA PROCESSOR HAVING PARALLEL INSTRUCTION FLOW STREAMS FOR PLURAL LEVELS OF SUB INSTRUCTION SETS

Alisdair Cullen Ferguson, Bathgate; John McGregor, Currie, and Alastair George MacPherson, Linlithgow, all of Scotland, assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 2, 1973, Ser. No. 402,747
Claims priority, application United Kingdom, June 5, 1973, 26717/73
Int. Cl. G06f *9/16*
U.S. Cl. 340—172.5 **21 Claims**



1. A data processing system having a micro instruction syllable memory portion and a processor, said processor comprising:

a plurality of general purpose registers to temporarily store data;

a function unit coupled to said general purpose registers to perform logical operations on data received from said registers;

a control memory coupled to said registers and said function unit and containing control instructions to control data transfers between said general purpose registers and said function unit;

micro instruction fetch means coupled to said micro instruction memory portion to fetch a sequence of micro instruction syllables;

control instruction fetch means coupled to said control memory to fetch individual control instructions in response to respective micro instruction syllables; and

timing means coupled to said micro instruction syllable fetch means and to said control instruction fetch means to cause a sequence of micro instruction syllables to be fetched from said micro instruction memory and a corre-

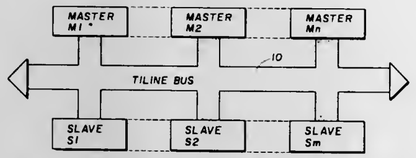
sponding sequence of control instructions to be fetched, of instructions, apparatus associated with each of

sponding sequence of control instructions to be fetched from said control instruction memory where the fetch of a particular control instruction for a preceding micro instruction syllable occurs concurrently with the fetch of the next micro instruction syllable in the sequence of micro instruction syllables.

3,886,524
ASYNCHRONOUS COMMUNICATION BUS

Daren R. Appelt, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 18, 1973, Ser. No. 407,761
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **11 Claims**



1. An asynchronous bus for self-determined priority of communication among master computer devices communicating with slave devices through said bus where a multi bit data channel and a multi bit address channel are time shared by all of said devices, which comprises:

a. a logic circuit in each said master device

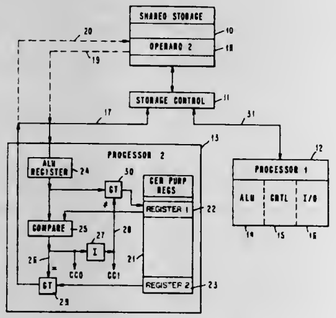
b. three signal lines common to all of said logic circuits in all of said master devices with one of said lines connected in series in the order of assigned priority between said master devices and the other two lines connecting said logic circuits in parallel.

c. means in each said master device to actuate each said logic circuit to limit access to said bus in the order of said priority and to signal availability status of said bus to all of said master devices.

3,886,525
SHARED DATA CONTROLLED BY A PLURALITY OF USERS

Paul J. Brown, Poughkeepsie, and Ronald M. Smith, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,224
Int. Cl. G06f *9/12, 9/18*
U.S. Cl. 340—172.5 **2 Claims**



1. In a data processing system which includes a plurality of users, each of which may require access to the same data in an addressed location of a data store for the purpose of processing the data accessed in accordance with a first program of instructions, apparatus associated with each of the users comprising:

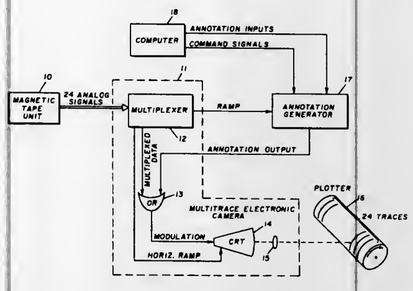
register means, including a first register means for storing the data accessed from the addressed location and, a second register means for storing data resulting from the processing of the data in said first register by the first program; and

replacing means connected to the data store and said register means, including first and second gating means and comparing means, operative subsequent to the processing of the accessed data by the first program of instructions, for comparing by said comparing means the data in the addressed location of the data store and the data from said first register means for producing alternate signals indicating inequality or equality, and for replacing the data in said first register means with the data from the addressed location in the data store by said first gating means upon inequality, or replacing the data in the addressed location of the data store with the processed data from said second register means by said second gating means upon equality.

3,886,526
SEISMIC TRACE ANNOTATION GENERATOR

Clarence G. Smith, Irving, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 14, 1973, Ser. No. 415,925
Int. Cl. G01d *1/00*
U.S. Cl. 340—172.5 **5 Claims**



1. In a seismic data processing system for photographically reproducing seismic data from a plurality of seismic channels in which the electron beam of a cathode-ray tube is intensity modulated one time during each sweep across the face of the cathode-ray tube for each of said seismic channels and a drum recorder which rotates past the face of the cathode-ray tube to photographically record each such sweep of the electron beam, thereby producing a photographic recording of the seismic traces in parallel relationship, the method of annotating the recording with alpha-numeric characters, comprising the steps of:

a. storing a plurality of alpha-numeric characters in the form of digital bit character matrices, such characters to be reproduced in a line across the photographic recording,

b. synchronizing a plurality of clock pulses with each sweep of the electron beam across the face of the cathode-ray tube,

c. modulating the electron beam at the frequency of said clock pulses with the bit information from the first row of each of the stored character matrices to thereby display the first row of each character matrix sequentially across the face of the cathode-ray tube, the electron beam being unmodulated for a predetermined number of clock pulses between the first row of each character matrix to provide for the horizontal character spacing on the recording,

d. producing a photographic recording in side-by-side relationship of each sweep of the electron beam whereby the

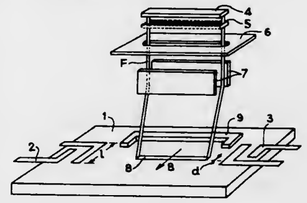
width of each character recorded on the photographic recording is proportional to the frequency of said clock pulses, and

e. repeating steps (c) and (d) for each succeeding row of the character matrices, the recording of the line of characters being complete when the electron beam has been modulated by the bit information contained in the last row of the character matrices.

3,886,527
PIEZOELECTRIC DELAY LINE FOR STORING HIGH FREQUENCY SIGNALS

Alain Bert, and Gerard Kantorowicz, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 26, 1973, Ser. No. 427,572
Int. Cl. G11c *27/00, 13/00*
U.S. Cl. 340—173 CR **9 Claims**



1. A device for storing travelling surface waves comprising, inside a vacuum tight enclosure;

a delay line made of an elongated block of piezoelectric material producing secondary electrons when struck by primary electrons;

two transducers, each one being mounted at an extremity of said elongated block, for transducing high frequency electrical signals into acoustic waves and vice-versa, said acoustic waves propagating between said two transducers along a propagation path defining a substantially rectangular work surface;

an electron gun for emitting a thin beam of primary electrons towards said work surface, said electron gun being designed and controlled for providing for said electron beam a substantially rectangular cross-section smaller than said work surface, in such a way that said electron-beam strikes said work surface along a substantially rectangular impact surface which is a narrow band of said work surface;

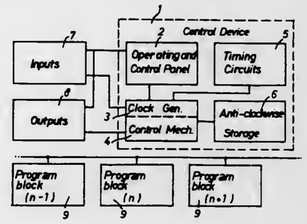
and deflection means for deflecting said electron beam so that said beam substantially sweeps the whole surface of said work surface.

3,886,528
PROGRAMMABLE CONTROL APPARATUS

Jamshed Irani, Oberkulm, and Eduard End, Aarau, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Feb. 25, 1974, Ser. No. 445,638
Claims priority, application Switzerland, Feb. 27, 1973, 2849/73
Int. Cl. G11c *13/00*
U.S. Cl. 340—173 R **16 Claims**

1. A programmable control apparatus for controlling switching devices according to a number of flow diagrams which are interdependent and/or independent of one another, comprising, in combination, a plurality of addressed input stages for the reception of binary input information signals characteristic of the conditions of the switching devices connected therewith; a plurality of addressed output stages with connections for the switching devices for delivering output-information signals characteristic of switching commands; a central unit with which there are connected, via a common address line, said input stages and said output stages; a plurality of addressed program blocks, each having a respective read-out storage for the preserved storage at addressed storage positions of coded command and address information characteristics of the individual steps of a flow diagram, and a respective stepping storage which delivers the address signals for the storage positions of said read-out storage; a common program address line, a common command line and a common stepping-control signal line, said lines interconnecting said program blocks; said central unit containing: a clock generator generating in successive periods a respective predetermined number of time-displaced clock signals which do not overlap one another; a cyclically through-counting program address counter with which there is connected said program address line, a command register with which there is connected said command line, a control logic for the evaluation of decoded command signals, a command decoding circuit for

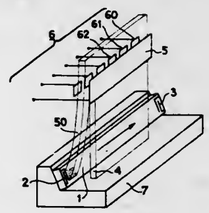


connecting said control logic with said command register, said input stages being connected with said control logic by means of a common input information line, and said output stages by means of a common output information line; and an address storage with random access for the command-dependent storage of program block addresses; each of said program blocks being provided with at least one timing circuit, wherein during each period of the clock signals by means of a first clock signal said program address counter is indexed by one step, by means of a second clock signal said command register is read in, by means of at least one last clock signal according to the momentary program block address there is controlled at least one of said timing circuits provided for the relevant program block, and by means of the remaining clock signals there is controlled said control logic as a function of the read-in command signal, so that during each counting cycle of said program address counter all of said program blocks are sampled, and during each period there is carried out a command.

3,886,529
ELECTRO-ACOUSTIC MEMORY DEVICE

Alain Bert, and Gerard Kantorowicz, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 26, 1973, Ser. No. 427,573
Int. Cl. G11c *11/30, 27/00*
U.S. Cl. 340—173 CR **3 Claims**



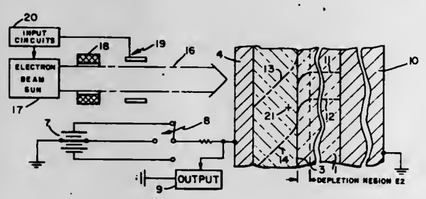
1. An electro-acoustic memory device comprising a piezoelectric substrate; an input and an output transducer mounted thereon at its both ends for transmitting high frequency signals from said input transducer toward said output transducer by

means of elastic waves propagating along the surface of the substrate; means for sweeping said surface with a beam of electrons which interact with said elastic wave and provide a record of said wave by providing a potential distribution on said surface, said sweeping means also subsequently sweeping said surface with a beam of electrons to cancel said potential distribution and stimulate elastic waves propagating on said substrate, and which are a reproduction of the recorded wave; and including means for selectively operating said sweeping means to impinge the electron beam on different zones of said surface disposed side by side in the direction of said wave propagation in a selective fashion and in a preferential order.

3,886,530
SIGNAL STORAGE DEVICE

Ernest E. Huber, Carlisle; Mitchell S. Cohen, Jr., Watertown, and Donald O. Smith, Lexington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 859,097, Sept. 18, 1969, abandoned. This application Aug. 17, 1972, Ser. No. 281,608
Int. Cl. H01j *29/44*
U.S. Cl. 340—173 CR **46 Claims**



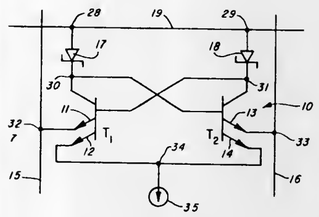
1. A device for detecting stored information represented by stored electrical charge comprising,
- an interface formed between a semiconductor material and an insulator material,
- means for reversibly changing the electric charge stored in a given area of said insulator material adjacent the interface, in representation of said information,
- said electric charge change being sufficient to produce a change in a space charge region in the semiconductor material in registration with the given area in representation of said information,
- signal detecting means coupled to the device for detecting current flow across the interface, and
- means for producing and directing an electron beam into said space charge region in the semiconductor producing a transient current signal in the detecting means representative of said stored information.

3,886,531
SCHOTTKY LOADED EMITTER COUPLED MEMORY CELL FOR RANDOM ACCESS MEMORY

Jon L. McNeill, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 11, 1974, Ser. No. 441,085
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **1 Claim**

1. A memory cell for non-destructive addressing and read-out, said memory cell comprising:
- a pair of sense/write lines also serving as one set of decode lines,
- a voltage line unconnected to said pair of sense/write lines and serving as the other decode line orthogonally related to said one set of decode lines,
- a bistable circuit including first and second transistors having respective collector, base and emitter electrodes connected in cross-coupled relationship,
- each of said emitter electrodes for said first and second transistors including emitter pairs comprising an access/-sense emitter and a store emitter, the store emitters of each emitter pair being connected in common, and the access/sense emitters of each emitter pair being respectively connected to the one of the pair of sense/write lines corresponding thereto,
- a store current source connected to said commonly coupled store emitters for maintaining a standby cell current through said first and second transistors via the store emitters thereof,

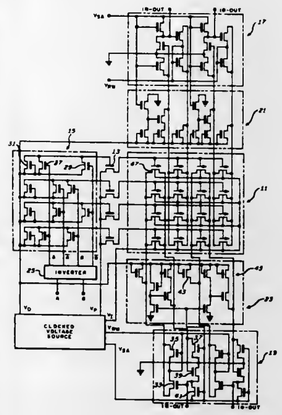


- first and second Schottky diodes respectively connected to the collector electrodes of said first and second transistors at one end thereof and to said voltage line at the other end thereof,
- the base electrode of said first transistor being connected to a junction point between said second Schottky diode and said collector electrode of said second transistor, and
- the base electrode of said second transistor being connected to a junction point between said first Schottky diode and said collector electrode of said first transistor.

3,886,532
INTEGRATED FOUR-PHASE DIGITAL MEMORY CIRCUIT WITH DECODERS

Horst A. R. Wegener, Carlisle, Mass., and Douglas R. Askegard, Minnetonka, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 8, 1974, Ser. No. 467,968
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **9 Claims**



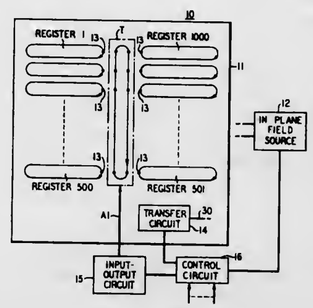
1. A digital memory circuit of the type employing variable threshold insulated gate field effect memory transistors arranged in word rows and bit columns on a common substrate, each of said memory transistors including gate, source and drain electrodes, said circuit comprising:
- a clocked voltage source for supplying READ and WRITE sequential pulse trains to components in said memory circuit,

- word line decoder means,
- individual buffer transistor means for applying gate control voltages from said clocked voltage source to corresponding word rows of memory transistors in response to output signals from said word line decoder means,
- bit line decoder means for selectively intercoupling individual bit columns of said memory array with external utilization circuits,
- said clocked voltage source including means to apply decoder control voltages and substrate control voltages to said word line decoder and said common substrate,
- said word line decoder means including means for turning on all of said buffer transistors in response to a decoder control voltage from said clock voltage source,
- said decoder means further including means response to a received address signal for temporarily retaining a specified buffer transistor in a conducting condition after the termination of a decoder control voltage, said specified transistor being uniquely determined by the value of said address signal, whereby only the addressed word line receives a gate control voltage during such temporary retention times,
- said clock voltage source being arranged to provide gate control voltages and substrate control voltages of opposite polarity during such temporary retention times,
- said clocked voltage source further being arranged to produce gate control and substrate control voltages during a WRITE sequence in which the differential pulse magnitudes are sufficient to shift the conduction threshold of the memory transistors whereby the binary state of the transistors in the word row corresponding to said address signal may be reversed during such temporary retention times.

3,886,533
MAGNETIC DEVICES UTILIZING GARNET EPITAXIAL MATERIAL

William Adam Bonner, Warren; Joseph Edward Geusic, Berkeley Heights, and LeGrand Gerard Van Uitert, Morris Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 380,941, July 20, 1973, abandoned. This application Jan. 23, 1974, Ser. No. 435,678
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **12 Claims**

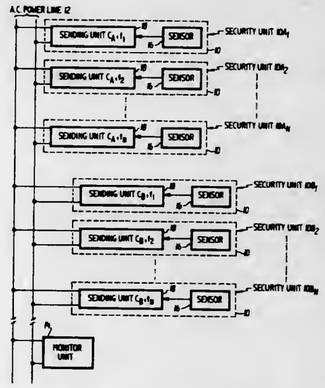


1. Memory device comprising a substrate supporting at least a first epitaxial layer, the said layer being capable of evidencing uniaxial magnetic anisotropy capable of supporting local enclosed regions of magnetic polarization opposite to that of surrounding material and provided with first means for magnetically biasing said layer to stabilize said regions, second means for positioning such oppositely polarized local and enclosed regions, and third means for propagating such local regions, said material being of the garnet structure, characterized in that the composition of the said material of the said first layer may be represented by the atom formula $(Y,La,Lu,Bi)_{3-a-b}R_aM_bFe_{5-c-d-e}(Al,Ga)_c(Si,Ge)_dV_eO_{12}$, where R is one or a combination of Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm and Yb and where R is at least 50 percent Eu; M is at least one of Ca, Sr and Cd; a is from 0.03–0.2 for all except Tb, Dy and Ho for which a is from 0.03–0.1; b is from 0.5–1.5; c is from 0–0.5; d is from 0.5–1.3; and e is from 0–0.5 and herein d is at least equal to $c+e$ (i.e., at least one-half of the ions replacing iron are silicon and/or germanium); the said first layer having a magnetostrictive value which is of negative sign, the said first layer and substrate being mismatched in lattice parameter by an amount expressed as a differential value of the lattice parameter a_o of from 0.005 to 0.017 with the valve of the said lattice parameter being larger for the substrate so as to result in strain induced anisotropy resulting in polarization direction normal to the plane of the said first layer, the total said anisotropy being at least 50 percent due to strain resulting from the said mismatch in the lattice parameter.

3,886,534
SECURITY SYSTEM

Norwood Rosen, Pompano Beach, and Anthony J. Nicolini, Lighthouse Point, both of Fla., assignors to Polar Corporation, Pompano Beach, Fla.

Filed Jan. 8, 1973, Ser. No. 321,933
Int. Cl. G08b *17/06*
U.S. Cl. 340—216 **5 Claims**



1. A security system for use with an a.c. power line connected between a plurality of locations comprising:
- a plurality of security units, each including a sensor for detecting the opening of a portal and a sending unit responsive to said sensor for coupling to the a.c. power line an amplitude modulated radio frequency signal identifying the location of the security unit at which said predetermined condition exists, each of said sending units including:
- a radio frequency oscillator for generating a carrier signal having a predetermined frequency common to a plurality of said sending units, and
- means for amplitude modulating said carrier signal, the combination of the predetermined frequency and the amplitude modulation being unique to each of said security units,
- one of said sending units includes switch means biased to couple said amplitude modulated radio frequency signal to said a.c. power line and manually operable against said bias to uncouple said amplitude modulated signal to said a.c. power line,
- said one sending unit being disposed in sufficient proximity to the portal to permit the manual operation of said switch means simultaneously with the manual opening of the portal to permit the opening of the portal without the coupling of said amplitude modulated signal to said a.c. power line,
- the bias of said switch means being sufficient to couple said amplitude modulated signal to said a.c. power line in the event that the open condition of the portal persists beyond the manual operation of said switch means

so that the natural act of stepping away from the portal upon the forceable entrance of an intruder through the portal couples said condition responsive signal to said a.c. power line; and,

a monitor unit coupled to said a.c. power line at a location remote from said plurality of security units and responsive to the coupling of amplitude modulated radio frequency signals on the a.c. power line for indicating at which of said security units said sensed predetermined condition exists; said monitor unit including a plurality of modules,

each of said modules associated with a predetermined group of said security units having a common carrier frequency different from the carrier frequency of all of the remaining ones of said security units,

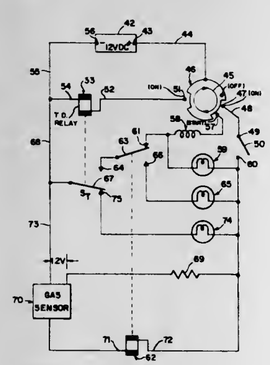
each of said modules having means for indicating at which of the security units in an associated group said predetermined condition exists, and

each of said modules including a plurality of switch means responsive to a different frequency of modulation to actuate said indicating means.

3,886,535
APPARATUS FOR DETECTING FLAMMABLE VAPORS AND CONTROLLING STARTING COIL OF IGNITION SYSTEM

Thomas Cirincione, 144-08 32nd Ave., Flushing, N.Y. 11354

Filed July 19, 1973, Ser. No. 380,755
Int. Cl. G08b *21/00*
U.S. Cl. 340—237 R **8 Claims**



1. Apparatus for detecting the presence of flammable vapors and for controlling the starting coil of the ignition system of an internal combustion engine in accordance with the result thereof, said apparatus comprising:

a. indicating means for indicating the operational status of said ignition system;

b. a source of current for activation of said starter coil;

c. manually operable switch means adapted to couple said source of current to said indicating means in accordance with the selected position of said switch;

d. time delay means directly connected to one terminal of said source of current and being connected solely by said switch means to another terminal of said source of current and providing a first segment of a series current path for said starter coil after a predetermined period of time;

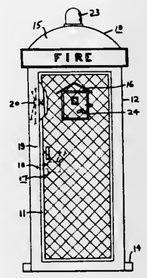
e. means for providing the remaining segment of said series current path for said starter coil; and

f. sensor means exposed to flammable vapors and having a conductive state which is inversely related to the quantum of flammable vapors present for detection, said sensor means being adapted to open said remaining segment of said series current path upon the detection of flammable vapors and to maintain said remaining segment of said series current path completed in the absence of flammable vapors, whereby said indicating means provides at least a visual signal signifying the status of the system as being in a condition selected from (1) warm-up period, (2) ignition-ready, and (3) non-operational, said time delay means providing said segment of the series current path for said starter irrespective of the conductive state of said sensor means.

3,886,536
ALARM BOOTH

Yale M. Mann, 1135 Rydal Rd., Rydal, Pa. 19046

Filed June 27, 1973, Ser. No. 374,248
Int. Cl. G08b *21/00*
U.S. Cl. 342—304 **17 Claims**



1. A personnel detention system for holding captive a person who actuates an alarm circuit, comprising in combination,

a. a primary alarm mechanism having an actuator,

b. an enclosure within which said primary alarm mechanism is mounted, said enclosure having a door through which a person desiring to actuate said alarm may pass, and said enclosure having no other means of ingress or egress,

c. an interference mechanism normally operative to prevent operation of said primary alarm mechanism,

d. an actuatable door lock mechanism operatively associated with said enclosure door,

e. sensing means for sensing whether or not said enclosure door is closed,

f. control means operatively coupled to said interference mechanism, to said sensing means, to said door lock mechanism and to said primary alarm mechanism effective when operated to disable said interference mechanism and permit actuation of said primary alarm mechanism responsive to sensing by said sensing means that said enclosure door is closed, and to normally actuate said door lock mechanism to lock said enclosure door when said primary alarm mechanism is actuated.

3,886,537
ALARM BOOTH

Yale M. Mann, Rydal, and Walter B. Udell, Melrose Park, both of Pa., assignors to Yale M. Mann, Rydal, Pa.

Filed June 28, 1973, Ser. No. 374,399
Int. Cl. G08b *21/00*
U.S. Cl. 340—304 **6 Claims**

1. A personnel detention system for holding captive a person who actuates an alarm circuit, comprising in combination,

a. a primary alarm mechanism having an actuator,

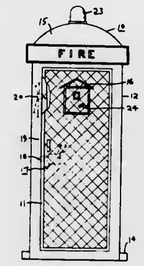
b. an enclosure within which said primary alarm mechanism is mounted, said enclosure having a door through which a person desiring to actuate said alarm may pass, and said enclosure having no other means of ingress or egress,

c. an interference mechanism normally operative to prevent operation of said primary alarm mechanism,

d. an actuatable door lock mechanism operatively associated with said enclosure door,

e. means operative to automatically deactuate said door lock mechanism and unlock said enclosure door after a predetermined time has elapsed from actuation of said lock mechanism,

f. sensing means for sensing whether or not said enclosure door is closed,

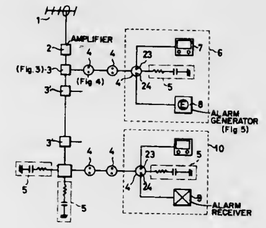


g. control means operatively coupled to said interference mechanism, to said sensing means, to said door lock mechanism and to said primary alarm mechanism effective when operated to disable said interference mechanism and permit actuation of said primary alarm mechanism responsive to sensing by said sensing means that said enclosure door is closed, and to normally actuate said door lock mechanism to lock said enclosure door when said primary alarm mechanism is actuated.

3,886,538
ALARM SENDING AND RECEIVING SYSTEM INCORPORATED IN A CATV SYSTEM

Takeshi Takeuchi, Yokohama, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed May 11, 1973, Ser. No. 359,257
Claims priority, application Japan, May 13, 1972, 47-46888
Int. Cl. G08b *21/00*
U.S. Cl. 340—310 R **5 Claims**

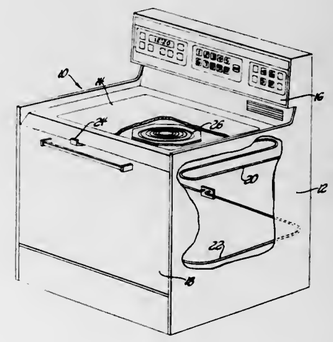


1. An alarm sending and receiving system incorporated in a CATV system which transmits broadcasting signals within one frequency range via a trunk line to a plurality of subscribers, comprising an alarm signal generating means at the subscriber ends of the CATV system for generating an alarm signal in a frequency range lower than said first mentioned frequency range and which can be fully separated from said broadcasting signals, an alarm receiver means adapted to be located at any desirable optionally selected location for receiving the alarm signals from said alarm signal generating means, a bridging means associated with said trunk line and provided with a first coupling circuit means cooperating electromagnetically with said trunk line to pass only said broadcast signals, said bridging means also comprising an input terminal and an output terminal on said trunk line and a first bridging terminal, said first coupling circuit means being operatively associated with said trunk line so as to bridge to said bridging terminal said broadcast signals, said bridging means further comprising a first filter between said first bridging terminal and said output terminal to pass only alarm signals of said lower frequency range, a subscriber's terminal circuit comprising an input terminal and an output terminal on said trunk line, a second coupling circuit means operatively associated with said trunk line to effect an electromagnetic coupling for said broadcast signals, a second bridging terminal, a second filter between said trunk line and said second coupling circuit means operable to pass broadcast signals to said bridging terminal means, an alarm connection terminal, and a third filter between said alarm connection terminal and said trunk line for passing alarm signals and preventing passage of said broadcast signals, whereby actuation of an alarm generating signal at one of said alarm signal generating means provides a closed circuit for the alarm signal only between said actuated alarm signal generating means and said receiver means.

3,886,539
DOMESTIC APPLIANCE CONTROL AND DISPLAY SYSTEM

Robert R. Gould, Jr., Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 318,172, Dec. 26, 1972, Pat. No. 3,819,906. This application Apr. 4, 1974, Ser. No. 457,760
Int. Cl. G08b *5/36*
U.S. Cl. 340—337 **2 Claims**

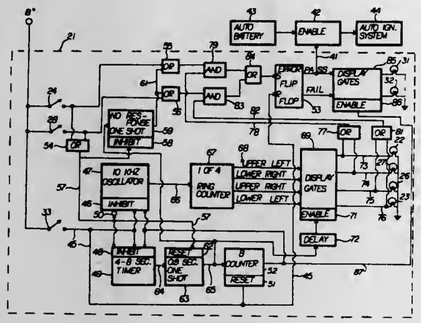


1. A domestic appliance for household operation adapted to be connected to a domestic power supply, said appliance including a plurality of operating elements, a digital control and display panel of planar material imperforate throughout for easy wipe cleanability, display means, said panel including a transparent area through which the user may view said display means, means including said panel forming touch control means for programming said appliance, said touch control means including a plurality of operation selector areas substantially coplanar with said panel and respectively identifiable with each of said plurality of operating elements, said areas being located on the user's side of said panel and user touchable for selecting an operation of one of said plurality of operating elements and for entering a desired operating value for the operation of the operating element selected, power supply control means for controlling the application of said power supply to said operating elements, digital logic means responsive to the user's touch of said touch control means to enable said power supply control means to apply power to a selected one of said operating elements in accordance with the desired operating value entered by the user, and display control means responsive to the selection of the operation of one of said operating elements and to the entering of a desired operating value for enabling said display means to display through said transparent area the operating value entered as a visual feedback to the user.

3,886,540
CONDITION RESPONSIVE CONTROL APPARATUS

E. Donald Sussman, Natick, and Andrew Warner, Weston, both of Mass., assignors to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Sept. 7, 1973, Ser. No. 395,241
Int. Cl. G08b *21/00*
U.S. Cl. 340—279 **11 Claims**



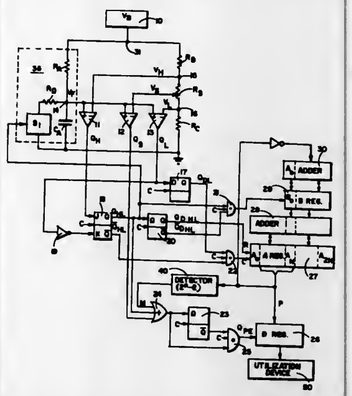
1. Condition responsive control apparatus comprising:
first stimulus means and first manipulable means spacially opposed therewith;
second stimulus means and second manipulable means spacially opposed therewith; wherein said first stimulus means and said first manipulable means are spacially separated from said second manipulable means;
actuation means for actuating either of said stimulus means independently of actuation of the other one of said stimulus means;
output means for indicating a correct response when one of said stimulus means is activated and an operator manipulates, in a preselected manner, the one of said manipulable means that is spacially separated from the one of said stimulus means that is activated; and
response timer means for preventing said output means from indicating a correct response if the operator fails to manipulate the appropriate one of said manipulable means within a preselected response period of time.

3,886,541
EXPONENTIAL RAMP A/D CONVERTER

George A. Watson, Tustin, and John J. Bollinger, Orange, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 25, 1973, Ser. No. 354,298
Int. Cl. H03k *13/16*
U.S. Cl. 340—347 AD **14 Claims**

1. In combination,
ramp signal generating means,
voltage divider means,
comparator means connected to said ramp signal generating means and said voltage divider network in order to produce a signal representative of the relationship between signals produced by said ramp signal generating means and said voltage divider network,
logic means connected to said comparator means to produce an output signal as a function of the signal produced by said comparator means,
recirculating register means for producing an output signal representative of the digital signal, said recirculating register means connected to said logic circuit means to have the operation thereof controlled by the signals produced by said logic circuit means,
said recirculating register means including output register means connected to supply output signals to a utilization device,
first register means connected to selectively supply a portion of the contents thereof to said output register,
first adder means for receiving said portion of the contents of said first register means,

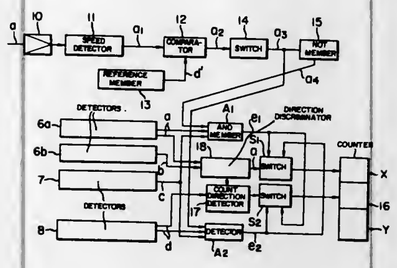


second register means connected to selectively receive the contents of said first adder means where the contents of said first adder means is the sum of the contents of said second register means and said portion of the contents of said first register means, and
second adder means for adding the contents of said first register means to the contents of said second register means and selectively storing same in said first register means.

3,886,542
DEVICE FOR MEASURING DISPLACEMENT

Minoru Ohtsuka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Nov. 7, 1972, Ser. No. 304,358
Claims priority, application Japan, Nov. 11, 1971, 46-90091
Int. Cl. H03k *13/00*; **G06g** *7/00*
U.S. Cl. 340—347 AD **7 Claims**

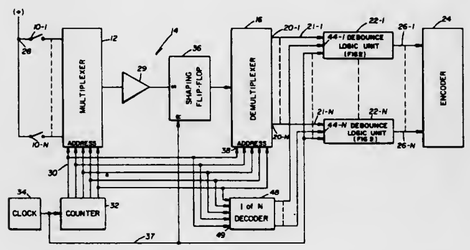


1. A device for measuring displacement of a graduated scale, by counting its graduations moving past a detecting position, comprising, in combination, plural scales, having respective different pitches between their graduations, movable in unison past a graduation detecting position; plural graduation detector means at said graduation detecting position each operatively associated with a different respective scale; at least one of said scales having fine graduations arranged successively in groups each including the same number of fine graduations, and at least another of said scales having coarse graduations each corresponding to a respective group of said fine graduations; a counter having plural digit positions; and switching means connecting said detector means to said counter and operable, responsive to movement of said scales past said graduation detecting position at a relatively low speed, to supply, to the low digit position of said counter, input signals from the detector means operatively associated with said at least one scale, and operable, responsive to movement of said scales past said graduation detecting position at a relatively higher speed, to supply, to a higher digit position of said counter, input signals from the detector means operatively associated with said at least another of said scales.

3,886,543
DEBOUNCE LOGIC FOR KEYBOARD

Robert E. Marin, Park Ridge, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Nov. 29, 1973, Ser. No. 420,124
Int. Cl. H04l *15/06*
U.S. Cl. 340—365 E **15 Claims**



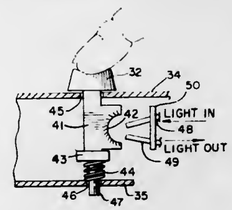
1. Debounce logic for use with a keyboard having a plurality of selectively actuable sequentially scanned keyswitches; each of said keyswitches being operable between a first steady state condition and a second steady state condition and initiating a first signal (A) in response thereto comprising:
first digital storage means receiving said first signal (A) from a selected keyswitch;
first logic means responsive to said first signal (A) and a second signal (B) provided at the output of said first digital storage means and related to the operative condition of said selected keyswitch during a previous scan;
said first logic means supplying a third signal (D, E) to a second digital storage means in response to a predetermined condition of said first (A) and second (B) signals; and
means for synchronizing the stepping of said signals through said first and second digital storage means whereby said second digital storage means provides an output signal (F, G) in response to a steady state condition of said selected keyswitch as indicated by the same operative condition during consecutive scans.

3,886,544
KEYBOARD USING OPTICAL SWITCHING

Leo H. Narodny, Martin's Bay, St. John, Barbados, British W. Indies

Filed June 12, 1974, Ser. No. 478,509
Int. Cl. H04l *15/06*
U.S. Cl. 340—365 P **2 Claims**

1. A terminal for producing coded multi-bit signals comprising,
a. a keyboard having a plurality of character and special purpose keys,
b. a point source of light coupled to a plurality of input bundles of fiber optics, each bundle corresponding to a key, said coupling means including an axicon lens,
c. an ellipsoidal bivalued switch associated with each key, said switch selectively coupling light between an input fiber bundle to an output bundle of fiber optics,
d. for each key, said input fiber bundle and output fiber bundle spaced apart the distance between the foci of said reflector,

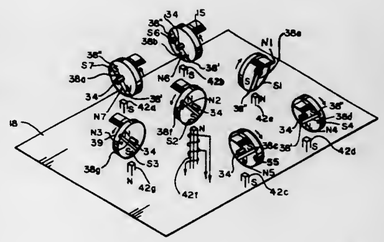


e. said output fiber bundle from each of said keys selectively connected in coded relationship with a plurality of phototransducers,
f. the ends of each fiber optic associated with each phototransducer coupled through an axicon lens onto said phototransducer.

3,886,545
SEGMENTAL READOUT DEVICE HAVING IMPROVED MAGNETIC CIRCUIT COMPONENTS

Alfred Skrobisch, Huntington Station, N.Y., assignor to The Staver Company, Incorporated, Bay Shore, N.Y.

Filed Nov. 12, 1973, Ser. No. 414,749
Int. Cl. G08b *5/26*
U.S. Cl. 340—373 **9 Claims**

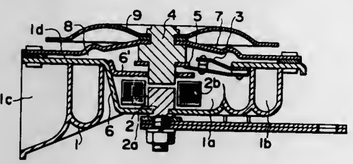


1. A segmental readout device comprising:
a support plate;
seven rotatable indicator members rotatably supported by said support plate each of said indicator members comprising a permanent magnet, said indicator members being disposed in a Figure-"8" spaced array with a group of lateral magnets rotating on axially spaced, parallel vertical axes and another group of centered magnets rotating on axially spaced parallel horizontal axes, each of said magnets having a N and a S pole, with the poles of said lateral magnets being oriented oppositely from the poles of said centered magnets for effectively reducing the magnetic effect of each of said magnets on all adjacent magnets;
a back plate carrying seven magnetic cores on said back plate and extending forwardly to said support plate;
a cylindrical electromagnetic coil mounted on each of said cores for selectively energizing and rotating said indicator members; and
a front window plate supported by said support plate and forwardly thereof said front window plate having seven elongated openings for selectively exposing said indicator members thereat to indicate selected characters.

3,886,546
ELECTRIC HORN

Mitsuru Ueda, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Japan

Filed Apr. 13, 1973, Ser. No. 351,037
Int. Cl. G10k *9/00;* **G08b** *3/00*
U.S. Cl. 340—388 **3 Claims**

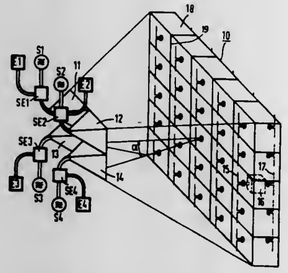


1. An electric horn comprising a vortical acoustic transformer having a sound inlet port, an electromagnet fixedly secured on said transformer at the center thereof, means for energizing said electromagnet, interrupting means for interrupting the energizing current to said electromagnet, a movable armature disposed proximate said electromagnet, said armature being attracted to said electromagnet when energized by said energizing current, a diaphragm having a portion thereof fixedly secured to said transformer and having another portion thereof fixedly secured to said armature, said diaphragm being moved in accordance with the movement of said armature, said diaphragm enclosing the sound inlet port of said transformer, and a vibrator fixedly secured to said diaphragm and said armature on the side of said diaphragm opposite said transformer.

3,886,547
RADAR DEVICE WITH A DIRECTIONAL ANTENNA

Hans Bottenberg, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 38,432, May 18, 1970, abandoned. This application Mar. 19, 1973, Ser. No. 342,459
Int. Cl. G01s *3/74*
U.S. Cl. 343—100 SA **9 Claims**

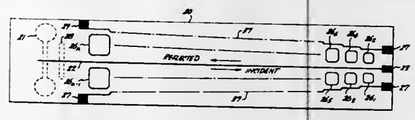


9. A radar system comprising a radar device; a directional antenna associated with said radar device and having a resolved distance resolution and a resolved bandwidth limiting resolution; a plurality of radiators included in said antenna; a central feeding device in said radar device for providing simultaneous transmission of a plurality of radar signals at different frequencies; and a plurality of coupling means for coupling said central feeding device to individual ones of said radiators over different length paths, each of said coupling means including an adjustable phase changer to insure that the path differences of said different frequencies is not greater than 360°, and wherein the number of different frequency radar signals is selected to be as near as possible to a maximum value given by the ratio between the required distance resolution for the radar device as a system parameter and the maximum distance resolution obtainable with the given directional antenna due to radar signals at multiples of 360° arriving from the different individual radiators phase shifted at the target.

3,886,548
RESPONDER FOR USE IN A PASSIVE IDENTIFICATION SYSTEM

Henrie Lionel Majeau, Bellevue, and George Washington Fitzsimmons, Lynnwood, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 12, 1973, Ser. No. 405,743
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.8 R **10 Claims**

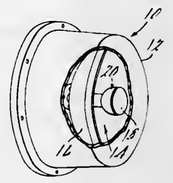


1. A passive responder for use in an identification system using a predetermined range of frequencies for communication between a transceiver and at least one responder, comprising:
first antenna means for receiving a frequency spectrum signal transmitted by said transceiver, which frequency spectrum comprises a series of successive discrete frequencies within said predetermined frequency range;
a first transmission line, connected to said first antenna means, along which first transmission line said received frequency spectrum signal propagates;
a plurality of coupling means comprising directional ring filters aligned axially along said first transmission line and individually tuned so as to facilitate coupling of signal energy of selected frequencies of said frequency spectrum signal into selected coupling means, resulting in signal energy at frequencies other than said selected frequencies propagating further along said first transmission line; and
second antenna means coupled to said first transmission line for transmitting said other frequencies to said transceiver.

3,886,549
INTRUSION DETECTION SYSTEM

James Cheal, Plymouth, and Vincent J. McHenry, Farmington, both of Mich., assignors to Omni Spectra, Inc., Farmington, Mich.

Continuation-in-part of Ser. No. 237,745, March 24, 1972, abandoned. This application June 7, 1973, Ser. No. 367,700
Int. Cl. G01s *9/42;* **G08b** *13/00;* **H01q** *19/14*
U.S. Cl. 343—7.7 **22 Claims**

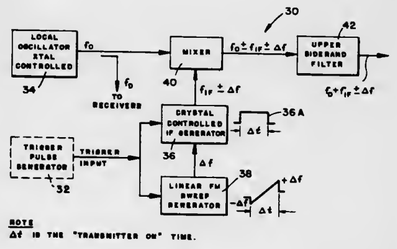


1. An intrusion detecting system comprising:
antenna means for receiving electromagnetic energy including a reflector, a dielectric member having an exposed end surface for removably supporting at least one of a plurality of interchangeable antenna elements of thin metallic material on said end surface and at least partially covering said end surface having a configuration which is the part of or the whole of a circular configuration in a location relative to said reflector so that said received electromagnetic energy is directed by said reflector to said one antenna element, said reflector cooperating with any one of said interchangeable antenna elements for providing a reception pattern of predetermined configuration with the predetermined configuration provided by respective ones of said interchangeable antenna elements substantially differing each from the other to thereby provide substantially differing areas of surveillance of said intrusion detecting system; and
means associated with said antenna means for detecting a low frequency component of said received electromagnetic energy for providing an output signal which is indicative of an intrusion.

3,886,550
DUAL OSCILLATOR

Frank M. Gilleran, Smithtown, and Arlindo Jorge, Glen Cove, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 26, 1969, Ser. No. 854,808
Int. Cl. G01s *7/28*
U.S. Cl. 343—17.2 R **6 Claims**

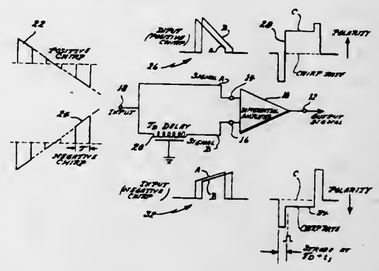


1. A radar system including a transmitter and receiver, comprising:
a local crystal-controlled oscillator for producing a carrier frequency f_0, which is the local oscillator frequency for the transmitter and receiver;
a trigger pulse generator;
a crystal-controlled IF generator, one of whose inputs is connected to the trigger pulse generator, for generating a train of frequencies having a frequency f_{IF}, the train being triggered by and limited in length and time duration Δt by pulses generated by the trigger pulse generator;
a function generator triggered coincidentally with the IF generator by pulses, of the same time duration Δt, from the trigger pulse generator, whose output is connected to the input of the IF generator, for modulating the train of pulses generated by the crystal-controlled IF generator as a function Δf of frequency f;
a mixer whose inputs are the outputs of the local oscillator and the crystal-controlled IF generator, and whose output frequency is $f_0 \pm f_{IF} \pm \Delta f$; and
an upper sideband filter connected to the output of the mixer, for removing all sidebands except those within the frequency range of $f_0 + f_{IF} \pm \Delta f$, this being the transmitter output frequency.

3,886,551
VIDEO SLOPE RATE DETECTOR

Norman G. Hempling, Canoga Park, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 858,755, Sept. 12, 1969, abandoned. This application May 26, 1972, Ser. No. 258,001
Int. Cl. G01s *7/36*
U.S. Cl. 343—18 E **2 Claims**

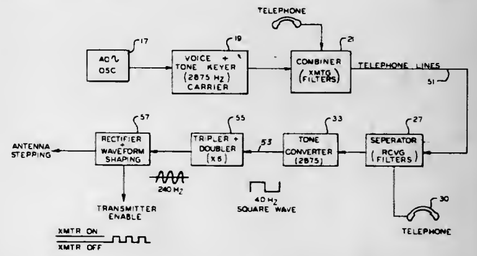


1. A method of measuring the slope and polarity of an applied signal, which comprises:
applying a pulsed input signal to a differential amplifier first input terminal,
delaying said pulsed input signal by a predetermined time and applying it to the second input terminal of said differential amplifier,
processing said pulsed input signal and said delayed pulsed input signal within said differential amplifier to provide an output signal which is an indication of the slope direction and polarity of said pulsed input signal.

3,886,552
SYNCHRONIZATION OF SPLIT SITE LANDING SYSTEMS

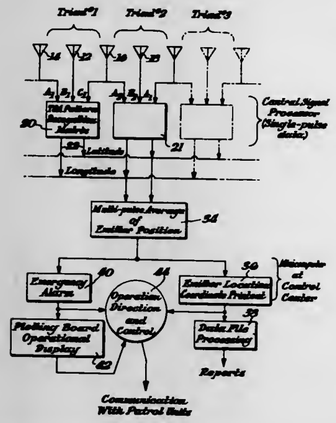
Adolph M. Gluck, Woodcliff Lake, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Apr. 8, 1974, Ser. No. 458,778
Int. Cl. G01s *1/16*
U.S. Cl. 343—108 R **10 Claims**



1. An improved synchronization system for a split site landing system comprising:
a. means to generate a bipolar synchronizing signal;
b. means to encode said synchronizing signal for transmission over a telephone line;
c. a telephone line coupling said encoded signal to at least one of the sites of the split site landing system;
d. means to decode the signal on said line;
e. means to rectify said decoded synchronizing signal so as to use only one of the positive and negative cycles of said synchronizing signal; and
f. means to provide said rectified signal as an antenna stepping signal and transmitter enable signal to the antenna at said site.

3,886,553
COORDINATE LOCATING METHOD AND SYSTEM
John K. Bates, 240 Ridgefield Rd., Endicott, N.Y. 13760
Filed Mar. 15, 1973, Ser. No. 341,729
Int. Cl. G01s 5/04
U.S. Cl. 343—112 R 19 Claims

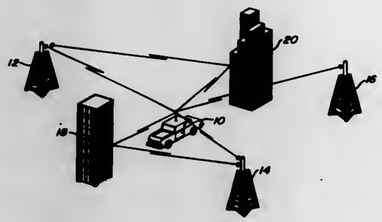


1. A system for locating a point constituting an emitter in a continuous functional space defined by at least a pair of parameters comprising, in combination,

sensor means for receiving manifestations from said emitter, means for encoding said manifestations in terms of relative time delay differences between the manifestations derived from different ones of said sensor means, and

comparator means for comparing the time of arrival pattern of said manifestations with a catalog of stored manifestations corresponding to predetermined sets of relative time difference patterns of said manifestations corresponding to different reference points in said space and providing a discrete output manifestation corresponding to the coarse location of said point in terms of said reference points.

3,886,554
METHOD AND APPARATUS FOR IMPROVING THE ACCURACY OF A VEHICLE LOCATION SYSTEM
William V. Braun, Lauderhill, Fla., and Edward F. Handy, Schaumburg, Ill., assignors to Motorola, Inc., Chicago, Ill.
Filed Apr. 23, 1973, Ser. No. 353,286
Int. Cl. G01s 3/02
U.S. Cl. 343—112 R 16 Claims



1. The method of locating the position of a vehicle comprising the steps of:

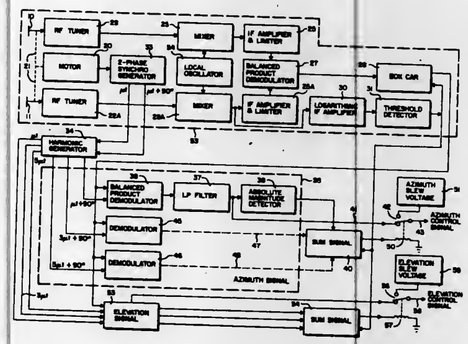
radiating a radio signal from the vehicle in a predetermined radiation pattern;

switching the directivity of said radiation pattern to a predetermined sequence of radiation patterns;

receiving said radio signal in said sequence of radiation patterns at two geographically spaced receiving sites;

comparing the signals received at said two sites to determine the location of said vehicle.

3,886,555
RADIATING TARGET DIRECTION FINDING SYSTEM
Douglas E. Royal, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed June 4, 1973, Ser. No. 366,782
Int. Cl. G01s 5/02, 5/04
U.S. Cl. 343—117 18 Claims



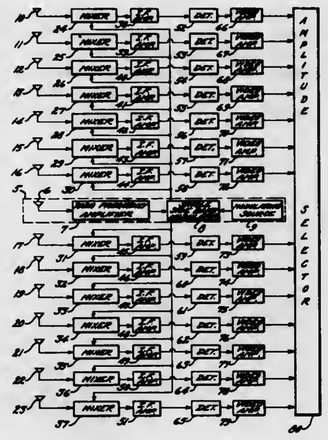
1. The method of determining a direction from a platform to a target radiating a wave by means of a direction sensitive detector of the radiated wave including an antenna assembly, said method comprising the steps of:

a. rotating the detector and the antenna assembly about a predetermined axis of rotation; and

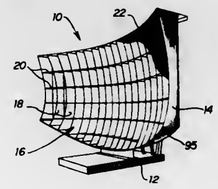
b. comparing, in synchronism with the rotation of the detector and the antenna assembly, to one another the output signals obtained at a plurality of pairs of points diametrically opposite to each other with respect to the axis of rotation to develop a set of difference signals, thereby to provide an error signal from which the direction from the platform to the target may be obtained.

3,886,556
MULTICHANNEL DIRECTION FINDING RECEIVER SYSTEM
Roderic V. Lowman, Greenlawn, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Apr. 22, 1963, Ser. No. 274,876
Int. Cl. G01s 3/28
U.S. Cl. 343—119 6 Claims

2. A non-scanning multichannel direction finding receiver system to determine the direction of the source of an incoming radiant energy signal comprising a master channel including an antenna receiving said incoming radiant energy signal, said master channel operating to amplify and single sideband modulate said incoming radiant signal, and a multiplicity of receiver channels, each of said receiver channels including a mixer connected to an associated antenna to receive said incoming radiant energy signals, said single sideband modulated signal also being received by each of said mixers.



3,886,557
RADAR ANTENNA AND METHOD OF FABRICATING SAME
William E. Townes, Jr., Irving, and Stanley P. Svedeman, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 28, 1973, Ser. No. 420,196
Int. Cl. H01q 15/14
U.S. Cl. 343—912 8 Claims



1. The method of fabricating a radar antenna comprising:

a. rigidly mounting a support means for a back support on a base means;

b. connecting a back support to the support means;

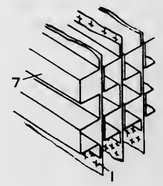
c. forming a plurality of spaced slots and an inwardly contoured surface in a plurality of vertical and horizontal ribs;

d. forming a rigid lattice network by interlocking the slots of a plurality of vertical ribs with the slots of a plurality of horizontal ribs to form a plurality of interconnecting compartments having surfaces defining an inwardly contoured support for a reflector of the radar antenna, and connecting upper and lower retaining members to the vertical ribs;

e. attaching the back support frame to the rigid lattice network; and

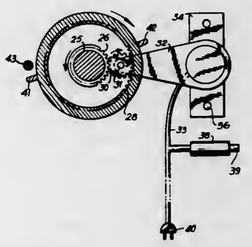
f. connecting a reflector screen to the inwardly contoured support surface of the rigid lattice network to maintain the contoured reflecting surface of the radar antenna.

3,886,558
ARTIFICIAL DIELECTRIC MATERIAL FOR CONTROLLING ANTENNAE PATTERNS
Rex Henry John Cary, and Alexander McKay Munro, both of Malvern, England, assignors to British Secretary of State for Defense, Whitehall, London, England
Filed July 31, 1973, Ser. No. 384,351
Claims priority, application United Kingdom, Aug. 4, 1972, 36445/72
Int. Cl. H01q 1/28
U.S. Cl. 343—708 7 Claims



1. An antenna comprising means for transmitting and receiving electromagnetic waves, a shaped core of cellular dielectric material fixed between two high tensile skins of dielectric material, said shaped core being disposed adjacent said transmitting and receiving means, the cellular material of said core comprising a plurality of continuous sheets of thin dielectric material fixed together to form a plurality of elongated, hollow tubular, cells the walls of which constitute said sheets, the walls of said cells being disposed transverse to the direction of transmission and reception of the electromagnetic waves whereby said waves travel through the side walls of said cells, the longitudinal axes of said tubular cells being parallel to one another, the lengths of different ones of said cells differing from one another to define the shape of said core, the opposing ends of the tubular cells being closed by said high tensile skins which are curved smoothly to conform to the relative positions of the ends of said different length cells thereby to provide a core and skin structure which is itself capable of withstanding structural loads, and the surface of at least some of said dielectric sheets carrying numerous discrete electrical conductors of elongated configuration there on operative to modify the dielectric properties of the shaped core thereby to control the antenna radiation pattern.

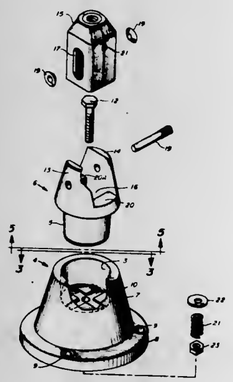
3,886,559
REMOTELY OPERATED TV RECEIVER ANTENNAE
Frank Lanson, Woodbury, and Milton Spirt, Jamaica Estates, both of N.Y., assignors to Milton Spirt, Jamaica Estates, N.Y.
Continuation-in-part of Ser. No. 426,555, Dec. 20, 1973, abandoned. This application Mar. 14, 1974, Ser. No. 451,283
Int. Cl. H01q 3/00
U.S. Cl. 343—726 13 Claims



1. An arrangement for controlling the positioning of antenna, comprising:

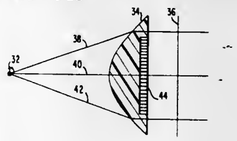
a supporting housing;
a first rotary member supported by said housing and being rotatable with respect to said housing, said first rotary member carrying a first antenna;
a second rotary member rotatable supported on said housing and carrying a second antenna, said second rotary member being substantially concentric with said first rotary member;
a ring gear with internal teeth coupled to said first rotary member;
a spur gear with external teeth coupled to said second rotary member, said ring gear and said spur gear being concentrically rotatable relative to each other;
a pinion gear meshing simultaneously with said spur gear and said ring gear;
an electrical motor with an output shaft drivingly coupled to said pinion gear for rotating said pinion gear when energized, said spur gear rotating in a direction opposite to the direction of rotation of said ring gear when said pinion gear is rotatably driven by said electrical motor so as to rotate said first and second rotary members in opposite directions relative to each other; and
switching means remotely located from said housing and connected to said motor for remotely controlling the operation of said motor and thereby controlling remotely the positioning of said antennae.

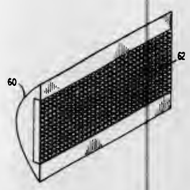
3,886,560
ANTENNA SWIVEL MOUNT
Jack G. Mortensen, Bedford, and John L. Hurst, Forth Worth, both of Tex., assignors to Tandy Corporation, Fort Worth, Tex.
Filed May 31, 1974, Ser. No. 475,158
Int. Cl. H01q *3/02*
U.S. Cl. 343—882 **3 Claims**



1. A mount for an antenna comprising
A base member having a cylindrical socket,
A swivel member having a cylindrical column disposed in the cylindrical socket of the base member, the swivel member having a generally rectangular socket therein in axial alignment with the cylindrical socket,
detent means on the bottom of the cylindrical column and on the floor of the cylindrical socket, engagement of the detent means inhibiting rotation of the swivel member relative to the base member,
resilient means urging the detent means into engagement,
a shaft carried by ears on the swivel member,
a post of generally rectangular configuration disposed between the ears of the swivel member, the shaft extending through a longitudinal slot in the post whereby the post can slide into the generally rectangular socket in the swivel member and be disengaged from that socket,
and means on the post for receiving the base end of an antenna.

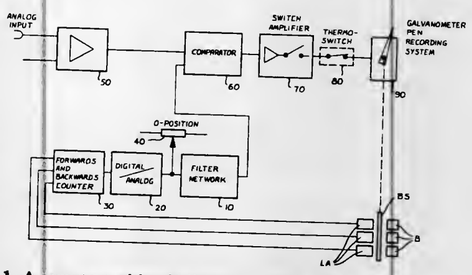
3,886,561
COMPENSATED ZONED DIELECTRIC LENS ANTENNA
John Paul Beyer, Rockville, Md., assignor to Communications Satellite Corporation, Washington, D.C.
Filed Dec. 15, 1972, Ser. No. 315,693
Int. Cl. H01q *15/10*
U.S. Cl. 343—910 **5 Claims**





1. A dielectric lens for radio wave antennas, said lens being formed of a solid natural dielectric material having a zone cut-out therefrom and filled with an artificial dielectric material constructed of parallel metal conductive slats and having an apparent index of refraction $\eta_a{}^1$ at any frequency f defined by:
$\eta_a{}^1 = [1 - (\lambda/\lambda_c)^2]^{1/2}$, where;
λ is the free space wavelength of frequency f; and
λ_c is twice the slat-to-slat spacing of said artificial dielectric.

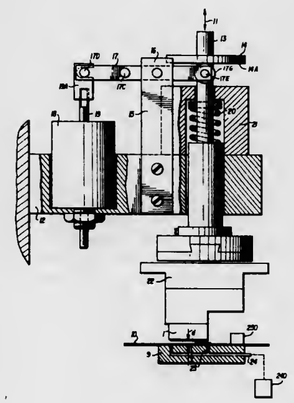
3,886,562
REMOTE POSITION INDICATOR FOR FOLLOW-UP DEVICES IN RECORDING SYSTEMS
Wolfgang Atzinger, and Heinz Reetz, deceased, late of Munich, Germany (by Hildgard Reetz, heir-at-law), assignors to Fritz Schwarzer GmbH, Munich, Germany
Filed Feb. 8, 1974, Ser. No. 440,884
Claims priority, application Germany, Mar. 28, 1973, 2315471
Int. Cl. G01d *3/06*
U.S. Cl. 346—32 **6 Claims**



1. A remote position indicator capable of use in a recording system comprising electrical input signal means for accepting and amplifying an electrical input signal, a rotatable shaft, means for positioning said shaft by converting said signal to rotational motion of said shaft, means connected to said shaft for indicating said position an optical mask affixed to said shaft, said mask containing apertures arranged along separate paths, light source means fixedly positioned relative to motion

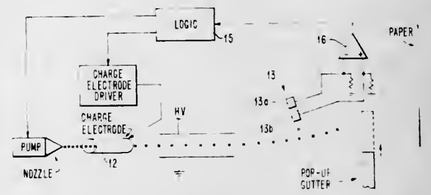
of said shaft for shining light upon said mask and through not more than one of said apertures of each of said paths at a given time as a function of shaft position, means for detecting said shined-through light and for converting said shined-through light to electrical signals, said input signal means including means for counting said electrical signals from each of said paths and responsive to the relative times of occurrence of said feedback electrical signals for increasing and decreasing the total count, means for converting said total count to an analog signal, and means for comparing said analog signal and said electrical input signal for controlling said shaft positioning means.

3,886,563
ELECTROSTATIC PRINTER WITH MOVABLE STYLE
Gabor Forgo; Erwin Meyer, and Karl Moser, all of Zurich, Switzerland, assignors to Zellweger Uster AG, Uster, Switzerland
Division of Ser. No. 272,042, July 14, 1972. This application Aug. 31, 1973, Ser. No. 393,636
Claims priority, application Switzerland, Aug. 16, 1971, 12103/71
Int. Cl. G01d *15/06*
U.S. Cl. 346—74 ES **20 Claims**



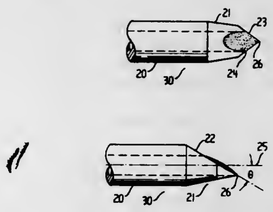
1. An apparatus for producing printed images by electrostatic printing techniques, comprising an electrode arrangement and a counterelectrode serving as a support for a carrier for the reception of a latent electrostatic charge image, and means for carrying out a change in spacing between the electrode arrangement and the carrier during the application of an electrostatic charge image to said carrier in order to cause partial discharges for the formation of the electrostatic charge image to travel through different paths across the space between the electrode arrangement and the carrier to provide a substantially uniform deposit of charges at the carrier and therefore a substantially uniform potential distribution within the confines of the electrostatic charge image to be produced, so as to induce a substantially uniform covering of toner particles over the surface of the electrostatic charge image to thereby improve the quality of the electrostatically printed image.

3,886,564
DEFLECTION SENSORS FOR INK JET PRINTERS
Hugh E. Naylor, III, and Robert A. Williams, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 17, 1973, Ser. No. 389,290
Int. Cl. G01d *13/00*
U.S. Cl. 346—75 **11 Claims**



1. A deflection sensing apparatus for ink jet printers, and the like, comprising:
nozzle means for forming and propelling a stream of ink drops, charging means for selectively charging said ink drops, and deflecting means for deflecting said ink drops in accordance with the charge on said drops in at least one predetermined path;
logic means interconnected with said charging means and operable to activate said charging means to charge selected ones of said drops so that they are deflected by said deflection means in a test path that is displaced from said predetermined path, said drops generally travelling in said test path but being subject to deviation therefrom;
sensor means positioned in a test location downstream from said nozzle means and in proximity to said test path, and positioned for sensor coupling with drops proceeding in said test path, said sensor means comprising a pair of planar sensor plates separated by a reference gap, said reference gap being located directly adjacent said test path whereby passage of ink drops in said test path induces signals representative of charges on said drops in said sensor plates due to coupling bettween said drops and said sensor plates and in accordance with the relative deviation of said drops from said test path with respect to said sensor plates, the passage of drops past said reference gap providing a null indication; and
circuit means comprising a differential amplifier and means interconnecting said sensor plates with said circuit means to develop signals for controlling said ink jet stream.

3,886,565
INJECTION NOZZLE FOR AN INK JET PRINTER
Togo Kojima, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan
Filed May 9, 1974, Ser. No. 468,476
Int. Cl. G01d *15/18*
U.S. Cl. 346—140 **4 Claims**



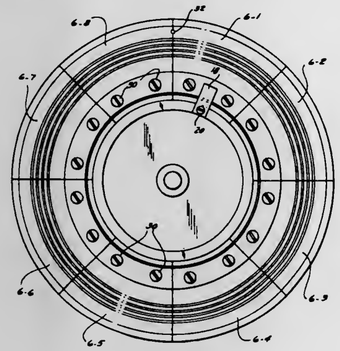
1. An injection nozzle for an ink jet printer, comprising a fine pipe having a longitudinal channel for feeding ink therethrough onto a separately positioned paper under the control of an electric field, one end of said pipe being tapered and cut

away along an oblique plane toward and through the axis thereof to form a leading edge facing said paper, and both sides of said leading edge being further cut away to form a sharply pointed end for concentrating said electric field.

3,886,566
SEGMENTED DISC FOR PHOTOCOMPOSING MACHINES

Louis M. Moyroud, and Robert Bennett, both c/o Photon, Inc., 355 Middlesex Ave., Wilmington, Mass. 01887

Filed May 23, 1973, Ser. No. 363,092
Claims priority, application United Kingdom, May 25, 1972, 24754/72
Int. Cl. B41b *17/32*
U.S. Cl. 354—15 **5 Claims**



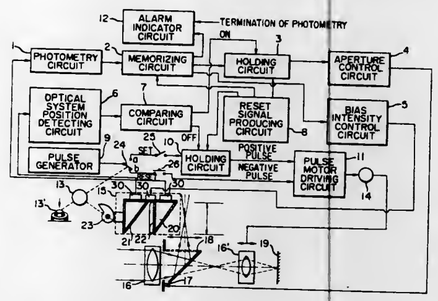
1. In a photographic type composing machine:
a composite matrix disc mounted on a cylindrical hub, said composite matrix disc comprising a plurality of independently interchangeable segments, each of said segments having an opaque surface and an array of transparent characters thereon; a base provided with an arcuate surface having the same curvature as the outside of said hub, said segments being secured to said base in alignment with each other, whereby each character-bearing surface of each segment is automatically centered and positioned in a plane perpendicular to the axis of said hub by the engagement of the matching surfaces of said hub and said arcuate surface of said base; said hub having an annular radially outwardly extending shoulder formed thereon and the base of each of said segments having an edge portion extending generally perpendicularly to its arcuate surface for abutting engagement with said shoulder, whereby all of the segments in said disc are located in the same plane relative to said hub.

3,886,567
OPTICAL SYSTEM POSITION CONTROLLING DEVICE

Seichi Matsumoto, Yokohama; Kazuya Hosoe, Tokyo, and Akio Sunouchi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1973, Ser. No. 389,507
Claims priority, application Japan, Aug. 28, 1972, 47-86063; Nov. 15, 1972, 47-114571
Int. Cl. G03b *3/10*
U.S. Cl. 354—25 **34 Claims**

1. An optical system having a controlling device therefor and comprising:
an image forming fixed optical system for forming an image of the object to be photographed;
a light splitting means for splitting a light beam passed through said image forming fixed optical system from the object to be photographed into a first and second light beam;
an image forming movable optical means disposed behind said light splitting means and having an optical axis in alignment with the optical axis of said first light beam, said image forming movable optical means being movable along its optical axis for varying its focusing position;
a position controlling means for controlling the position of said image forming movable optical means, said position controlling means including a position detecting means for detecting the position of the image of the object formed by said image forming fixed optical system, said detecting means being movable in said second light beam

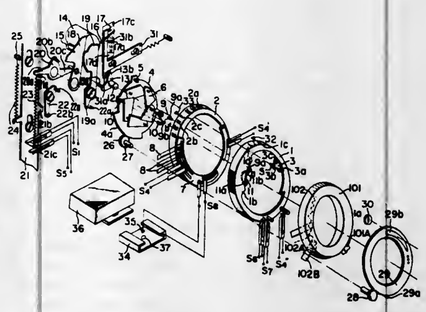


to detect the position of the image of said object in accordance with the brightness of light gathered from the object, an image forming movable optical system shifting means for controlling the movement of said image forming movable optical means, said image forming movable optical system shifting means being controlled by an output signal from said position detecting means,
whereby said image forming movable optical means is moved along its optical axis, so that the object light beam passed therethrough and through said image forming fixed optical system forms the object image at a predetermined position.

3,886,568
PHOTOGRAPHIC CAMERA WITH AUTOMATIC EXPOSURE CONTROL MEANS

Mutsunobu Yazaki, Yokohama; Yukio Mashimo, Tokyo, and Mutsuhide Matsuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 272,979, July 18, 1972, abandoned.
This application Nov. 15, 1973, Ser. No. 416,214
Claims priority, application Japan, July 23, 1971, 46-55517
Int. Cl. G03b *7/16*
U.S. Cl. 354—27 **7 Claims**



1. A photographic camera having automatic exposure control means for controlling exposure during normal photography and flash photography, comprising:

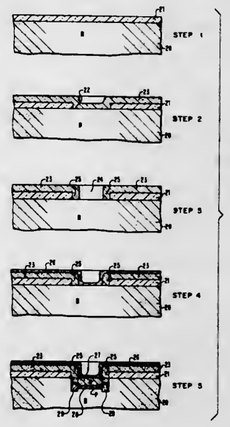
first diaphragm means for adjusting the phototaking aperture;
photoelectric converter means for metering the brightness of an object to be photographed;
second diaphragm means positioned in front of said converter means and mechanically linked to said first diaphragm means to provide an aperture for said converter means proportional to said phototaking aperture;
electronic time limit means for effecting a time limiting operation in response to the output of said photoelectric converter means, said time limit means including a time limiting capacitor, a switching circuit changed over by the voltage of said capacitor, and an electromagnetic means for closing a shutter controlled by the output of said switching circuit;
distance information means for providing an electronic output corresponding to the object distance;
indicator means selectively connected with said photoelectric converter means or the distance information means by a change-over means hereinafter referred to and including an indicating member arranged to be displaced in response to an electric signal;
scanning means for scanning said indicating member, said scanning means being associated with said first diaphragm means to adjust the aperture thereof in accordance with the amount of displacement of said indicating member;
scale means carrying thereon indices for indicating F-number and shutter time by reference to said indicating member; and
change-over means manually operable to provide flash photography and normal photography settings, which is selectively associated directly with the first diaphragm means and thereby with said second diaphragm means only in normal photography to adjust the respective apertures thereof manually to a selected value, whereby said converter means is conditioned to adjust the shutter time in accordance with the selected value of aperture of the first diaphragm means,
said change-over means having electrical switching means for connecting said indicating means with said photoelectric converter means only before shutter release to show the shutter time value and disconnecting it therefrom after shutter release in normal photography and for providing connection of said indicating means with said distance information means and disconnecting it substantially from the converter means to provide a proper aperture value in accordance with an object distance through the scanning means in flash photography.

3,886,569
SIMULTANEOUS DOUBLE DIFFUSION INTO A SEMICONDUCTOR SUBSTRATE

Jagtar S. Basi, Wappingers Falls, and Jagtar S. Sandhu, Fishkill, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 5,076, Jan. 22, 1970, Pat. No. 3,748,198.
This application Mar. 29, 1973, Ser. No. 346,237
Int. Cl. H01l *7/00*
U.S. Cl. 357—54 **3 Claims**

1. A semiconductor structure comprising:
a semiconductor substrate;
a first silicon oxide layer on a surface of said substrate comprising the oxide of a first-type conductivity-determing impurity; and
one or more additional silicon oxide layers, at least one of said additional layers containing the oxide of an opposite-type conductivity-determining impurity, said first-type and said opposite-type impurities having different diffusivity rates in the semiconductor substrate,
the concentration of the oxide of said first-type conductivity-determining impurity and the concentration of the oxide of said opposite-type conductivity-determining impurity being such that upon heating at diffusion temperatures in the order of 1050° C, regions of said first-type and said opposite-type conductivity respectively

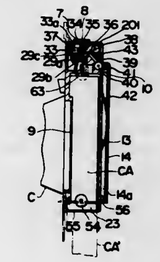


having concentrations of at least 10^{16} atoms/cm^3 will form a junction in the substrate below said first and additional layers.

3,886,570
AUTO-PROCESS CAMERA

Yoshio Asano, Hyogo, and Kinji Ohkubo, Minami Ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-Shi, Japan

Filed Feb. 13, 1974, Ser. No. 442,256
Claims priority, application Japan, Feb. 13, 1973, 48-17709
Int. Cl. G03b *17/50*
U.S. Cl. 354—86 **8 Claims**



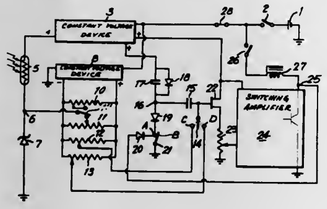
1. An auto-process camera comprising:
a mounting portion for accomodating a film cassette containing a plurality of monosheets to be successively brought to a foremost position for exposure to light through a camera lens,
means for extracting exposed monosheets from said film cassette,
means for simultaneously advancing and processing the exposed monosheets removed from said cassette by said extracting means,
a pocket for accommodating the processed monsheets,
means for directing the processed monosheets from said advancing and processing means into said pocket, said directing means comprising a feed roller means for feeding the processed monosheets into said pocket, and
guide means for receiving the processed monosheets from said advancing and processing means and subsequently

directing exposed monosheets to said feed roller means, said camera further comprising switch means for detecting the feeding of a monosheet by said feed roller means into said pocket and for stopping said feed roller means after a time delay to insure complete insertion of said monosheets into said pocket.

3,886,571
ELECTRIC SHUTTER CONTROLS FOR CAMERAS

Seinan Miyakawa, Tokyo, and Hisao Tanaka, Fukuoka-Machi, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan

Filed Mar. 5, 1974, Ser. No. 448,217
Int. Cl. G03b *7/08, 9/62*
U.S. Cl. 354—234 **14 Claims**

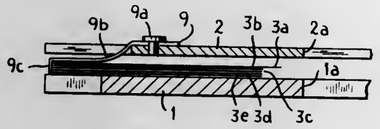


1. In a control circuit for a camera shutter activated by the operation of a shutter release mechanism of the camera, electromagnetic means for closing the shutter to terminate an exposure, energizing circuit means electrically connected to said electromagnetic means and including mechanical switch means operative in response to said shutter release operation for establishing a first exposure time of short duration, switching circuit means electrically interconnected to said electromagnetic means for automatically determining a second exposure time in accordance with exposure determining factors, and a pair of forward-biased diode means connected respectively in said energizing circuit means and said switching circuit means for establishing separate automatic timed control of said electromagnetic means by both said energizing circuit means and said switching circuit means.

3,886,572
SHUTTER ASSEMBLY HAVING MEANS FOR SEQUENTIALLY BRAKING AND STOPPING SHUTTER BLADES

Eiichi Onda, Misato; Mitsuo Koyama, and Tadashi Nakagawa, both of Yotsukaido, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Aug. 27, 1973, Ser. No. 391,528
Claims priority, application Japan, Aug. 25, 1972, 47-98404
Int. Cl. G03b *9/26*
U.S. Cl. 354—252 **7 Claims**

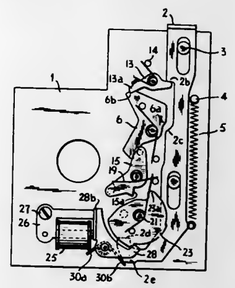


1. A shutter assembly for a camera comprising: means defining a shutter aperture; a plurality of actuatable shutter blades comprising a first group of shutter-opening shutter blades actuatable through a working stroke from an extended position wherein they close said shutter aperture to a retracted position wherein they open said shutter aperture, and a second group of shutter-closing shutter blades actuatable through a working stroke from a retracted position wherein they open said shutter aperture to an extended position wherein they close said shutter aperture; shutter actuating means for sequentially actuating the first and second shutter blade groups to effect first opening and then closing of said shutter aperture thereby defining an exposure; and combined braking-stopping means separate and distinct from said shutter actuating means and having a frictional braking portion and a subsequently effective stopping portion both disposed along the path of travel of the same end portions of the shutter blades within at least one of said first and second shutter blade groups for sequentially braking the motion of said shutter blades by said frictional braking portion as they near completion of their working stroke and effecting precise stoppage of said shutter blades directly by said stopping portion at a predetermined stop position at the end of their working stroke.

3,886,573
ELECTROMAGNETIC CONTROL DEVICE FOR ELECTRICALLY-OPERATED SHUTTER

Masuo Ogihara, and Masanori Watanabe, both of Chiba, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Sept. 10, 1973, Ser. No. 395,589
Claims priority, application Japan, Sept. 11, 1972, 47-105074
Int. Cl. G03b *9/62*
U.S. Cl. 354—258 **3 Claims**



1. In an electrically-operated camera shutter having a shutter-operating mechanism for selectively opening and closing the shutter, a control circuit comprising an electromagnet energized for releasably holding the shutter-operating mechanism in a condition in which the shutter is open and allowing closing of the shutter when de-energized, control means coactive with said shutter-operating mechanism comprising an armature attracted by said electromagnet when energized for releasably holding said shutter-operating mechanism in said open condition, a biasing spring constantly biasing said armature in a direction toward an operative position corresponding to its attracted position thereof when attracted by said electromagnet and resisting closing of said shutter of said shutter-operating mechanism, means operable for initiating opening of the shutter for taking an exposure and for rendering said spring ineffective before said opening of the shutter is initiated.

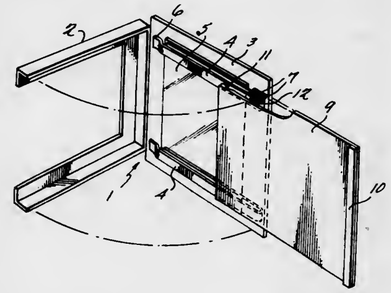
3,886,574
CAMERA AND CARTRIDGE

Jung Hwan Na, 151-22, Hwa Yang Dong, Sung Dong Ku, Seoul, South Korea

Filed Aug. 16, 1973, Ser. No. 389,884
Claims priority, application South Korea, May 21, 1973, 883/73
Int. Cl. G03b *17/26*
U.S. Cl. 354—284 **3 Claims**

1. A film cartridge comprising:
a base plate,
a least one U-shaped clip member attached at one end to said plate and urging a film piece against said plate,
at least one piece of soft material fixed to said plate opposite the U-shaped end of said clip member,

a magnetic frame member of L-shaped cross section side fixed at the end to one side of said base plate and a long side extending parallel to said base plate, said frame member defining an exposure window,
a shieldplate disposed for sliding movement between said frame member and said clip member and having at one

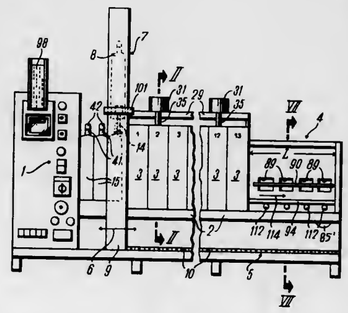


end a handle portion for manually exerting a force to effect said sliding movement and at the other end a stop portion and
at least one stop member on said clip member adjacent said U-shaped end for engaging said stop portion and preventing complete withdrawal of said plate.

3,886,575
APPARATUS FOR TREATING PHOTOGRAPHIC MATERIAL IN CLOSED CASSETTES

Kurt Gall, Welfenstrasse 22, 7 Stuttgart-Birkach, Germany

Filed Sept. 12, 1973, Ser. No. 396,429
Claims priority, application Germany, Sept. 13, 1972, 2244860
Int. Cl. G03d *3/00*
U.S. Cl. 354—311 **20 Claims**

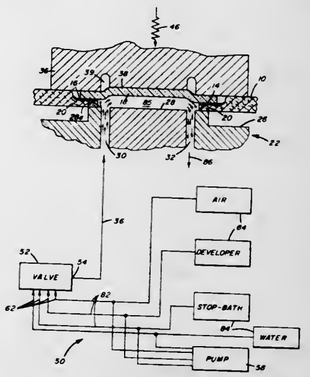


1. An apparatus for treating photographic material comprising:
a plurality of upwardly open vessels arranged in a row for treating of said material with respective liquids;
a film-containing cassette having a closed housing having a bottom formed with at least one liquid-traversable opening affording access of said liquids to said material in said housing,
blocking means for preventing light from entering said housing through said opening and including a plurality of overlapping baffle vanes at said opening, and at least one outwardly open tube at said bottom with an inner end terminating inwardly of said baffle vanes and provided with a spray manifold; and
transport means displaceable along said row of said vessels for immersing said cassette successively therein.

3,886,576
METHOD AND APPARATUS FOR PROCESSING A FILM INSERT ON AN APERTURE CARD

Donald J. Stoffel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 309,311, Nov. 24, 1972, abandoned.
This application Apr. 8, 1974, Ser. No. 459,241
Int. Cl. G03d *5/00*
U.S. Cl. 354—317 **9 Claims**

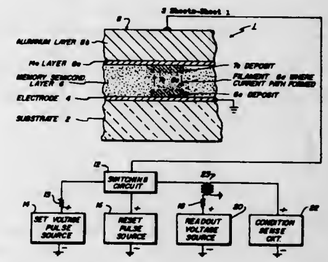


1. Apparatus for processing an exposed photographic emulsion layer on one side of a film member mounted on a compressible aperture card with the emulsion side of the film member facing and overlying the card aperture, said aperture card being normally subject to damage by the wetting effects of contact with a processing liquid, said apparatus comprising:
a. a processing receptacle having a sealing member arranged to contact a portion of such a card bordering the aperture, on the side of the card opposite the film member, to form a processing chamber defined partially by an edge portion of the card bordering the aperture and partially by the exposed emulsion layer;
b. means for compressing such a card against said sealing member to render said aperture-edge portion of the card substantially impervious to processing liquid; and
c. means for supplying processing liquid to said processing chamber to process the exposed emulsion layer of such a card.

3,886,577
FILAMENT-TYPE MEMORY SEMICONDUCTOR DEVICE AND METHOD OF MAKING THE SAME

William D. Buckley, Troy, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sept. 12, 1973, Ser. No. 396,497
Int. Cl. H01l *19/00*
U.S. Cl. 357—2 **18 Claims**



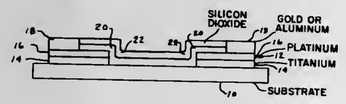
1. A switch device which includes a pair of spaced electrodes between which extends a body of generally amorphous

substantially non-conductive semiconductor material made of a composition of at least two elements, said composition when a set voltage pulse in excess of a given threshold level is applied to said electrodes for a given period becoming conductive as current flows through a filamentous path therein, and when D.C. current pulses of at least a given amplitude and duration are fed through said filamentous path, there can occur in said path migration of the more electropositive element of said composition to the negative electrode and the more electronegative element to the positive electrode, said semiconductor material occupying an area at least several times the size of said filamentous path, said body of amorphous semiconductor material having on the side thereof facing one of the adjacent electrodes a region including the termination point of said filamentous path containing a substantially higher concentration of said element which would normally tend to migrate thereto, the electrode-semiconductor material interface region extending to and making electrical contact with an area of both the adjacent electrode and the semiconductor material which area is at least several times the cross-sectional area of said filamentous path and having sufficient thickness and concentration to effect a stabilized gradient of said element through the semiconductor material in said filamentous path.

3,886,578
LOW OHMIC RESISTANCE PLATINUM CONTACTS FOR VANADIUM OXIDE THIN FILM DEVICES

H. Keith Eastwood, Beaconsfield, Quebec; Barry A. Noval, Cote-St-Luc, Quebec; Marcus Arts, Lonqueuil, Quebec, and Michael Leitner, Dollard Des Ormeaux, Quebec, all of Canada, assignors to Multi-State Devices Ltd., Quebec, Canada

Filed Feb. 26, 1973, Ser. No. 335,651
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 357—4 **8 Claims**



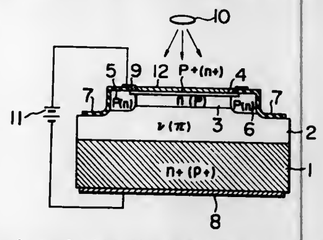
1. A thin film device having a low ohmic contact resistance comprising:
   a. a plate-like substrate of electrically insulating material;
   b. spaced platinum contacts deposited on the surface of said substrate; and
   c. a thin film of vanadium oxide having a thickness of from 1000 to 5000 A deposited over said substrate and bridging a portion of said spaced platinum contacts, said vanadium oxide having an ohmic contact resistance which is lower than 10 ohms and having a good adhesion with said platinum contacts.

3,886,579
AVALANCHE PHOTODIODE

Hirobumi Ohuchi; Tatsuya Kamei; Kiyoshi Tsukuda, and Takuzo Ogawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed July 24, 1973, Ser. No. 382,188
Claims priority, application Japan, July 28, 1972, 47-75095; Sept. 20, 1972, 47-93624
Int. Cl. H01l *29/90, 9/00*
U.S. Cl. 357—13 **10 Claims**

1. An avalanche photodiode comprising:
   a semiconductor body having first and second principal surfaces, which body comprises
   a first semiconductor region of a first conductivity type and a relatively high impurity concentration, one surface of which forms said first principal surface of said body;
   a second semiconductor region of said first conductivity type and an impurity concentration lower than that of said first semiconductor region disposed on said first semiconductor region;
   a third semiconductor region of said first conductivity type and having an impurity concentration lower than that of said first region and higher than that of said second region disposed on said second semiconductor region;
   a fourth semiconductor region of a second conductivity type, opposite said first conductivity type, and having a relatively high impurity concentration, disposed on said third semiconductor region and defining a first PN junction therewith, the surface of said fourth semiconductor region opposite the surface thereof contacting said third semiconductor region forming said second principal surface of said body;
   a fifth semiconductor region of said second conductivity type and having an impurity concentration lower than that of said fourth semiconductor region contacting and surrounding said third and fourth semiconductor regions and having a thickness extending from said second principal surface of said body to beyond the interface of said second and third semiconductor regions and defining a second PN junction with said second and third semiconductor regions, which second PN junction has a breakdown voltage higher than that of said first PN junction;

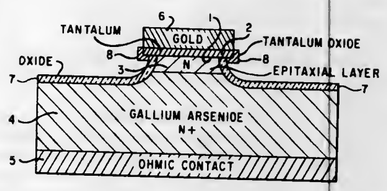


   a first electrode disposed on said first principal surface of said semiconductor body; and
   a second annular-shaped electrode disposed on a peripheral portion of said fourth semiconductor region above said first PN junction, at the second principal surface of said semiconductor body thereby exposing said fourth semiconductor region to light;
   and wherein the thickness of said second semiconductor region between said fifth and first semiconductor regions is larger than the spread of a depletion region within said second region, while the sum of the thickness of said second and third regions is such that said diode has a quantum efficiency exceeding 50 percent for the wavelength of the light which impinges on said diode.

3,886,580
TANTALUM-GALLIUM ARSENIDE SCHOTTKY BARRIER SEMICONDUCTOR DEVICE

Joseph A. Calviello, Kings Park, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 9, 1973, Ser. No. 404,303
Int. Cl. H01l *3/20*
U.S. Cl. 357—15 **1 Claim**

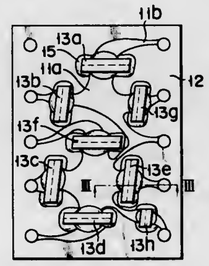


1. A Schottky barrier semiconductor device comprising a body of gallium arsenide, a metal electrode in contact with said body to form therewith a Schottky barrier, and a passivation film covering at least the parts of said body and said electrode in the region of the periphery of said barrier, characterized in that
   a. said electrode is of tantalum,
   b. said passivation film that covers said body is native oxide of gallium arsenide,
   c. said passivation film that covers said electrode is tantalum oxide in contact with said native oxide film in close proximity to the edge of said barrier,
   d. the surface region of gallium arsenide adjacent the periphery of said barrier is approximately perpendicular to the plane of said barrier, and
   e. said tantalum electrode extends along said plane outwardly beyond said barrier periphery.

3,886,581
DISPLAY DEVICE USING LIGHT-EMITTING SEMICONDUCTOR ELEMENTS

Hiroshi Katsumura, Tokyo; Hiroshi Fujita, and Kei Kaneda, both of Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Dec. 21, 1973, Ser. No. 427,216
Claims priority, application Japan, Dec. 28, 1972, 48-3025
Int. Cl. H05b *33/10*
U.S. Cl. 335—17 **11 Claims**



1. A display device comprising an insulation base plate; a plurality of light-emitting semiconductor elements arranged on the base plate in a prescribed pattern, each of said semiconductor elements having a P-N junction and electrodes formed on both surfaces so disposed as to face the P-N junction, said semiconductor elements each being disposed to the base plate with the P-N junction disposed nonparallel to the base plate; an organic electric insulation adhesive layer covering part of the exposed P-N junction plane of the semiconductor element so as to fix it to the base plate; a conductive layer printed on the base plate; and a connector laid on the electric insulation adhesive layer for electrical connection of the electrodes of the semiconductor element to the conductive layer.

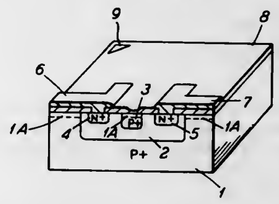
3,886,582
FIELD EFFECT TRANSISTOR

Kazuyoshi Kobayashi, and Katsuhiko Akiyama, both of Atsugi, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 241,310, April 5, 1972, abandoned.
This application Jan. 2, 1974, Ser. No. 430,081
Int. Cl. H01l *11/14*
U.S. Cl. 357—22 **2 Claims**

1. A field effect transistor comprising a substrate of silicon of one conductivity type, a second region of opposite conductivity type diffused into said first region forming a first pn junction therebetween, a third high impurity region of the first conductivity type diffused into said second region forming a second pn junction therebetween and having a thin channel between said first and third regions, opposite end regions of said channel rising to the surface of said substrate and providing source and drain regions of high secondtype impurity concentration, a gate electrode on said third region, a thermally grown silicon dioxide layer formed on the upper surface of said substrate and said second region overlying the surface termination of said first and second pn junctions and leaving at least a portion of said surface of said substrate and said third region free, a low-temperature silicon dioxide glass layer formed on the remaining upper surface portion of said substrate not covered by said thermally grown silicon dioxide

PRIOR ART

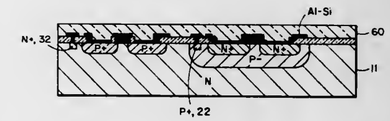


layer including said free surfaces of said substrate and said third region, said low-temperature glass layer also covering said thermally grown layer, a phosphorus-silicon glass layer covering said low-temperature silicon dioxide glass layer, a low-temperature silicon dioxide glass layer cover said phosphorus-silicon glass layer, and a silicon nitride layer covering said low-temperature silicon dioxide glass layer.

3,886,583
INSULATED GATE-FIELD-EFFECT TRANSISTOR

Raymond C. Wang, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 158,723, July 1, 1971, abandoned.
This application Oct. 23, 1973, Ser. No. 408,984
Int. Cl. H01l *11/14*
U.S. Cl. 357—23 **2 Claims**



1. An MOSFET device comprising, in combination P-type substrate, a N-type source region, an N-type drain region and an aluminum-silicon gate electrode therebetween, the threshold voltage of said MOSFET device being at least 0.5 volts less than an otherwise identical MOSFET device having a pure aluminum gate electrode, and aluminum-silicon metal electrode contacts to said source and drain regions of said MOSFET device.

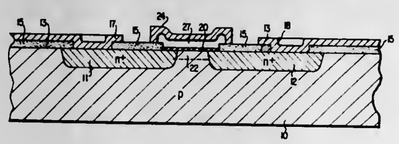
3,886,584
RADIATION HARDENED MIS DEVICES

Koy B. Cook, Jr., Satellite Beach; Jimmy L. Davidson; Joseph D. Gibson, both of Melbourne Beach, and Raymond B. Patterson, III, Eau Gallie, all of Fla., assignors to Harris Corporation, Cleveland, Ohio

Continuation of Ser. No. 92,074, Nov. 23, 1970, abandoned.
This application Jan. 30, 1973, Ser. No. 328,032
Int. Cl. H01l *5/06*
U.S. Cl. 357—23 **6 Claims**

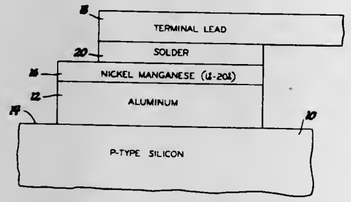
1. An insulated-gate field-effect transistor, comprising
   a silicon body having a preselected conductivity type and having a major planar surface,
   a pair of spaced-apart source and drain regions of opposite conductivity type from said preselected conductivity type, extending into said silicon body from said major surface thereof and defining a channel for charge carriers therebetween closely adjacent said major planar surface, and

a gate electrode overlying said channel and separated from said major planar surface thereat at least in part by a gap, said gate electrode being of generally rectangular shape with long sides and relatively shorter ends, said gate



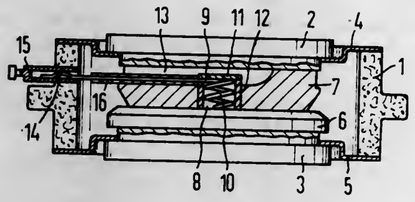
electrode being supported along both of said long sides, said gap remaining of substantially fixed width during operation of said transistor and contributing to the radiation hardening of said transistor.

3,886,585
SOLDERABLE MULTILAYER CONTACT FOR SILICON SEMICONDUCTOR
Mark L. Konantz, and Ronald K. Leisure, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed July 2, 1973, Ser. No. 375,688
Int. Cl. H01l 6/00
U.S. Cl. 357—67 **2 Claims**



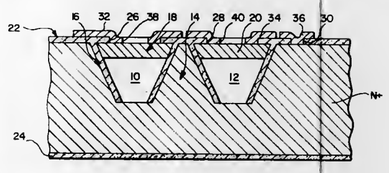
1. An adherent low resistance solderable multilayer electrode on a silicon semiconductor body comprising a semiconductive body of silicon having a surface, a layer of aluminum on said surface in low electrical resistance contact therewith, and a nickel alloy layer on said aluminum layer at least about 3,000 angstroms thick, said nickel alloy layer consisting essentially of nickel and about 1– 20% by weight manganese.

3,886,586
THYRISTOR HOUSING ASSEMBLY
Walter Bahlinger; Werner Egerbacher, and Heinz Martin, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Sept. 14, 1973, Ser. No. 397,403
Claims priority, application Germany, Sept. 21, 1972, 2246423
Int. Cl. H01l 11/00
U.S. Cl. 357—79 **3 Claims**



1. A thyristor with a disc-shaped housing comprising an insulating ring, two metal cover plates connected in gas tight fashion to said ring, a semiconductor element having an ignition electrode, a control line having one end passing into an opening in said housing, and its other end resting on said ignition electrode, a metal plate arranged between one of the cover plates and said semiconductor element, said metal plate having a recess for the other end of said control line, one of the metal housing components having a slot therein in which is arranged at least a part of the control line, in said slot opening into said recess, said recess being provided with an abutment on said metal plate facing said semiconductor element, the end of the control line which rests on said ignition electrode being designed as a coil spring disposed in compression against said igniton electrode and against said abutment, and means for clamping said control line inclcuding said spring to said metal plate including an elastic insulating ring having an outer surface in engagement with the surface of said recess and an inner surface embracing said spring, and an insulating cap between said spring and said abutment.

3,886,587
ISOLATED PHOTODIODE ARRAY
Hugh Crawford Nicolay, Melbourne, Fla., assignor to Harris Corporation, Cleveland, Ohio
Filed July 19, 1973, Ser. No. 380,611
Int. Cl. H01l 15/00
U.S. Cl. 357—49 **5 Claims**

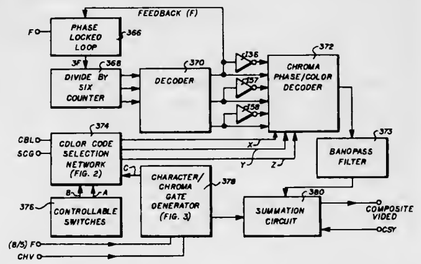


1. A photodiode array comprising:
a semiconductor body of polycrystalline structure of one type conductivity having a planar surface;
a first plurality of spaced apart photosensitive single crystal planar regions of semiconductor material of opposite conductivity type to said one conductivity type, said first plurality of planar regions having a top, bottom and lateral surfaces, said bottom and lateral surfaces being surrounded by said body and said top surface being substantially coplanar with said planar surface;
a corresponding second plurality of single crystal buried regions of semiconductor material of said one conductivity type having a top, bottom and lateral surfaces, said top surfaces of said buried region being adjacent said bottom surface of a corresponding planar region, said lateral surface of said buried region being surrounded by said body and said bottom surface of said buried region being adjacent said body;
a plurality of first insulating barriers extending from said planar surface to said bottom of said second plurality of buried regions and separating said polycrystalline body and said lateral surfaces of said first and second plurality of regions.

3,886,588
CHROMA GENERATOR FOR CHARACTER DISPLAY
James A. Dalke, Bellevue, Wash., assignor to Metro Data Corporation, Seattle, Wash.
Filed Sept. 14, 1973, Ser. No. 397,250
Int. Cl. H04n 9/02
U.S. Cl. 358—82 **5 Claims**

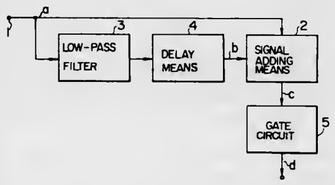
1. A chroma generator suitable for use in a character display system comprising:
frequency generating means for generating a plurality of binary digital signals all at a suitable TV subcarrier frequency but being out of phase with one another;

a chroma phase/color decoder suitable for receiving said plurality of binary digital signals and selecting one of said binary digital signals for application to an output; and,



bandpass filter means connected to the output of said chroma phase/color decoder for eliminating unwanted frequency components from the digital output of said chroma phase/color decoder.

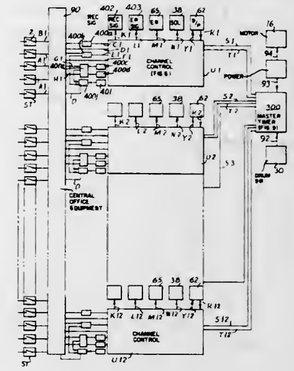
3,886,589
VIDEO RECORDING SYSTEM FOR REDUCING FLICKER IN THE SKIP FIELD MODE
Takuya Nasu, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Japan
Filed Sept. 4, 1973, Ser. No. 394,271
Claims priority, application Japan, Sept. 13, 1972, 47-92668; Nov. 25, 1972, 47-118401; July 13, 1973, 48-79698; July 13, 1973, 48-79699
Int. Cl. H04b 5/78
U.S. Cl. 360—11 **7 Claims**



1. A video recording system comprising a signal terminal to which an original television signal to be recorded is applied, delay means for delaying a portion of said original television signal applied to said signal terminal by an amount equal to a certain integer times a field period of each original television signal, means for producing a mixed television signal by adding a delayed television signal from said delay means to said original television signal, means for successively sampling fields from said mixed television signal, each of said samples being taken at an interval of a certain integer times one field, and means for recording the sampled television fields.

3,886,590
MULTI-MESSAGE ANNOUNCING SYSTEM
Walter P. Walker, Atlanta; Leary W. Smith, Chamblee; Frank H. Cofer, Jr., and Jack E. Lewis, both of Atlanta, all of Ga., assignors to The Audichron Company, Atlanta, Ga.
Continuation of Ser. No. 140,195, May 4, 1971, abandoned.
This application Sept. 11, 1973, Ser. No. 396,155
Int. Cl. G11b 5/54, 5/76, 19/12
U.S. Cl. 360—12 **10 Claims**

1. In a message announcing system, a first message medium for storing a first message, a first message announcing means operative in response to a first operating signal to provide a message output in response to said first message, a second message medium for storing a second message, a second message announcing means operative in response to a second operating signal to provide a message output in response to said second message, a motion means for continuously moving both said first message medium and said second message medium relative to both said first message announcing means and said second message announcing means, a control means operative to provide a first control signal at a first predetermined time in response to said first message medium and said first message announcing means having a predetermined position relative to each other, and also operative to provide a second control signal at a second predetermined time in response to said second message medium and said second message announcing means having a predetermined position relative to each other, and operating means connected to be responsive to said first and second control signals and also responsive to a first message signal and a second message signal, said operating means being operative to supply said first operating signal to said first message announcing means in response to the occurrence of both said first control signal and said first message signal, and being operative to supply said second operating signal to said second message announcing means in response to the occurrence of both said second control signal and said second message signal.



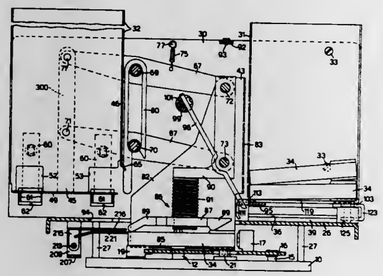
3,886,591
CASSETTE TAPE APPARATUS WITH AUTOMATIC CHANGER
Giuseppe Bettini, Ivrea, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Ivrea (Turin), Italy
Filed May 15, 1973, Ser. No. 360,696
Claims priority, application Italy, May 13, 1972, 68506/72
Int. Cl. G11b 23/12
U.S. Cl. 360—92 **6 Claims**

1. In a cassette tape apparatus having a station at which a cassette containing magnetic tape can be recorded and/or played back, a cassette changer comprising:
a loading magazine wherein cassettes to be used are stacked,
a collecting magazine adapted to stack used cassettes therein, said loading and collecting magazines having horizontal bottom planes adapted to support the lowermost stacked cassette thereon, said station being disposed between said loading and said collecting magazines in a station plane below said bottom planes,
a container movable between said bottom planes and said station plane,
means for moving the movable container to align same with said bottom planes when a used cassette is to be replaced, means coupling the bottom plane of said collecting magazine to said movable container to raise said collecting

magazine as said container moves into said station plane and to lower said collecting magazine as said container moves to said bottom planes wherein the stroke of the bottom plane of said collecting magazine exceeds the thickness of a cassette whereby said bottom planes and said container are aligned when the bottom plane of said collecting magazine is lowered and said container is raised,

means for preventing the used cassettes stacked in said collecting magazine from dropping as the corresponding bottom plane is lowered comprising spring loaded catches mounted to coact with the lowermost one cassette in said collecting magazine to ride on same as the bottom plane of said collecting magazine rises, and

transfer means for simultaneously transferring the lowermost one of the cassettes to be used from said, loading magazine to said container and the used cassette from said movable container to said collecting magazine when



said container is aligned with said bottom plane, said transfer means comprising a slidable transfer plate mounted parallel to said bottom planes for pushing the lowermost one cassette to be used fromt said loading magazine into said container, an oscillatable arm pushing the used cassette from said container into said collecting magazine when actuated and a common drive means for actuating said transfer plate and said oscillatable arm when the bottom plane of said collecting magazine is lowered and said container is raised, said common drive means comprising a carriage, means slidably mounting the carriage for movement through a forward and a return stroke between two extreme positions comprising a fixed guide, a reversible motor for moving the carriage and a first and a second actuatable limit switch actuated in response to said carriage being in said extreme positions for respectively controlling the stopping and the reversing of the motion of said motor.

3,886,592
SAFETY SWITCH DEVICE FOR A MAGNETIC RECORDING AND REPRODUCING APPARATUS OF THE SHEET TYPE

Saburo Kato, Yokohama; Takaji Sue, Tokyo, and Tadanao Itoh, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Sept. 7, 1973, Ser. No. 395,174
Claims priority, application Japan, Sept. 13, 1972, 47-106848[U]
Int. Cl. G11b *19/08*; H01h *9/20*
U.S. Cl. 360—75 **5 Claims**

1. In magnetic recording and reproducing apparatus comprising

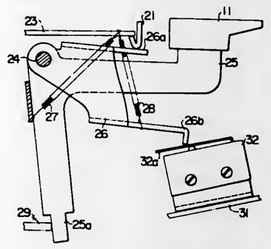
a. a housing having an upper surface for supporting a magnetic recording sheet in a stationary position;

b. means for performing magnetic recording and reproducing operations on a downwardly facing surface of a recording sheet supported on said housing upper surface;

c. manually operable means for actuating said recording and reproducing means; and

d. a plate, having a first end hingedly connected to said housing and a second, free end, said plate being hingedly movable downwardly into and upwardly away from a sheet-holding position for overlying said housing upper surface to hold down a recording sheet disposed thereon; the improvement which comprises:

e. a safety switch for permitting actuation of said recording and reproducing means by said manually operable means only when said safety switch is actuated;



f. a hook projecting downwardly from said plate adjacent the free end thereof;

g. said housing having an opening through which said hook projects when said plate is in sheet-holding position;

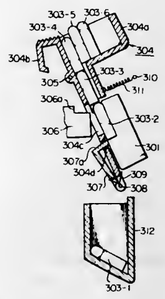
h. a member for engaging said hook within said opening to retain said plate in sheet-holding position; and

i. a lever mounted within and shielded from external manual access by said housing for actuating said safety switch and disposed to be engaged and moved by said hook, when said hook is inserted through said opening, to actuate said safety switch.

3,886,593
DEVICE FOR AUTOMATICALLY INTERCHANGING TAPE CASSETTES IN A TAPE RECORDER

Masaaki Sato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 70,864, Sept. 9, 1970, Pat. No. 3,765,684.
This application June 18, 1973, Ser. No. 371,165
Claims priority, application Japan, Sept. 11, 1969, 44-71625; Sept. 11, 1969, 44-71626
Int. Cl. G11b *23/12*
U.S. Cl. 360—92 **6 Claims**



1. Recording apparatus comprising, in combination:

a. a body portion carrying a spindle rotatable about an axis;

b. a cassette supporting deck axially movable on said body portion between an operative and an inoperative position and adapted releasably to engage a tape cassette for joint movement between said positions, the jointly moving cassette being engaged by said spindle in the operating position of said deck;

c. yieldably resilient means biasing said deck toward said inoperative position;

d. cassette supplying means including

a storing member adapted to receive a stack of tape cassettes, and

2. a chute member communicated with said storing member for receiving a terminal cassette of a stack received in and storing member, said chute member being elongated downward from said storing member toward said deck in the normal operating position of said apparatus for downward movement by gravity of a cassette received in said chute member;

e. limiting means for limiting said downward movement in a predetermined position of said terminal cassette,

1. said chute member being formed with a transverse aperture dimensioned for passage of said deck,

2. said chute member being mounted for pivotal movement toward and away from a first position in which said deck, when in the inoperative position, extends through said aperture into said chute member for engagement with said terminal cassette in said predetermined position of the cassette;

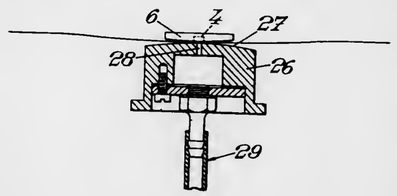
f. operating means for pivoting said chute member toward and away from said first position thereof, and for thereby moving the engaged cassette jointly with said deck into the operative position of said deck when said chute member is pivoted from said first position to a second position thereof by said operating means; and

g. releasing means for releasing said terminal cassette from said limiting means for further movement outward of said chute member.

3,886,594
FLEXIBLE DISC MEMORY DEVICES

Michel Toussan, Ermont, France, assignor to Societe d'Applications Generales d'Electricite et de Mecanique S A G E M, France

Filed July 26, 1973, Ser. No. 382,751
Claims priority, application France, Aug. 7, 1972, 72.28463
Int. Cl. G11b *5/60*
U.S. Cl. 360—102 **12 Claims**

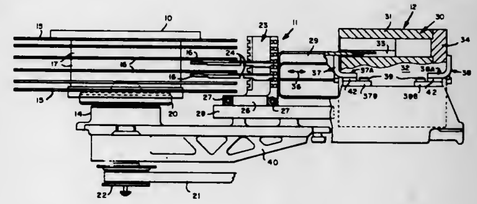


1. Flexible disc memory device, comprising at least one flexible disc cooperating with a rotary drive means and of which one at least of the two surfaces has a coating of magnetic material, and at least one recording and reading head positioned to record information on this magnetic coating and/or to read the information occurring on said magnetic coating, said device comprising a fixed reference part arranged essentially parallel and close to the plane of the flexible disc, said reference part being oriented radially and having a convex surface opposite the corresponding surface of the flexible disc, said convex surface shaped such that a radial plane which includes the axis of rotation of the disc intersects this surface along a straight line and a tangential plane perpendicular to the radial plane intersects this surface along a convex curve, said reference part having a radially extending orifice means on its convex surface, comprising at least one orifice connected to pressurised gas supply means for delivering a gaseous flow in the form of a radially extending curtain directed towards the flexible disc such that the gas impinges on the disc and then flows tangentially along both sides of the reference part, the recording and reading head of said device being situated on the side of the flexible disc opposite from the reference part.

3,886,595
ACTUATOR FOR A DISC DRIVE APPARATUS

Ronald L. Swaim, Sunnyvale; John Cuda, San Jose, and Timothy W. Martin, Los Altos, all of Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

Filed Feb. 13, 1974, Ser. No. 442,071
Int. Cl. G11b *5/48, 25/04*
U.S. Cl. 360—106 **5 Claims**



1. In a data storage apparatus for transferring data to or from a memory device by interaction between a read/write head and the memory device,

a baseplate

means for supporting the memory device on the baseplate, means for supporting the read/write head on the baseplate for movement across the memory device whereby various areas of the memory device and head are permitted to interact for transferring data therebetween,

an actuator for moving the head support means relative to the memory device, and

elastic support means having spaced surfaces fixed respectively to the baseplate and actuator to support the actuator on the baseplate in a manner permitting limited movement between the actuator and baseplate during movement of the head supporting means for positioning the head while limiting the transmission of vibratory forces between the actuator and baseplate.

DESIGN PATENTS

GRANTED MAY 27, 1975

ERRATA

For CLASS	See PATENT NO.
003-019	235,174
048-020	235,227
048-023	235,228
056-004 B	235,229
061-001 Q	235,230
064-011 B	235,231
087-005.00C	235,232

DESIGNS

MAY 27, 1975

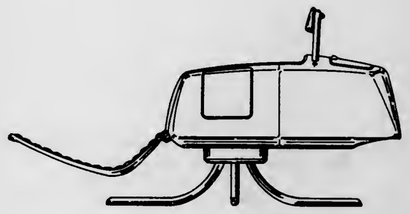
235,174
HEM MARKER
Lee R. Gardner, Elmhurst, N.Y., assignor to Dyno Merchandise Corporation, Elmhurst, N.Y.
Filed Sept. 5, 1973, Ser. No. 394,594
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D3—19



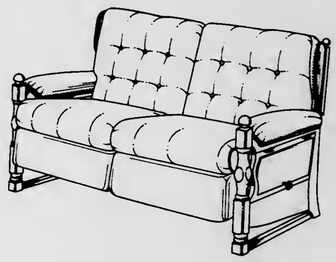
235,175
GLOVE
Leonard Berger, Ridgewood, and Thomas H. P. Jaggers, Jr., Ringwood, N.J., assignors to Rapid-American Corporation, New York, N.Y.
Filed Apr. 29, 1974, Ser. No. 465,379
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—373



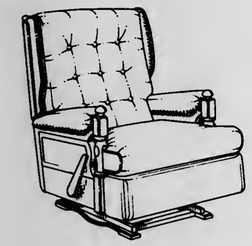
235,176
CHAIR OR SIMILAR ARTICLE
Leonard V. Wheatley, 30 Sutherland Road, Manitou Springs, Colo. 80829
Substituted for abandoned design application Ser. No. 179,603, Sept. 10, 1971. This application Feb. 4, 1974, Ser. No. 439,004
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—12



235,177
SETTEE OR SIMILAR ARTICLE
Morris F. Fisher, Carmel, Ind., assignor to Mohasco Corporation, Amsterdam, N.Y.
Filed July 23, 1973, Ser. No. 382,087
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—46



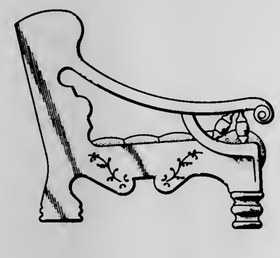
235,178
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Mohasco Corporation, Amsterdam, N.Y.
Filed July 23, 1973, Ser. No. 382,091
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



235,179
CHAIR
Charles Bernard, 18 a 30 Rue Saint Antoine, 93 Montreuil-sous-Bois, France
Filed June 14, 1972, Ser. No. 262,823
Claims priority, application France Jan. 20, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



235,180
CHAIR
Evalin S. Gilbert, 2121 N. Bay Shore Drive, Miami, Fla. 33137
Filed Dec. 22, 1972, Ser. No. 317,364
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68

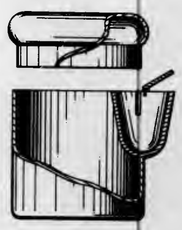


235,181
SUPPORT STANDARD FOR SHELVING
Eugene Brown, Rockville Centre, N.Y., assignor to Barclay Industries, Inc., Lodi, N.J.
Original design application Feb. 25, 1972, Ser. No. 229,622, now Patent No. 231,295. Divided and this application Feb. 14, 1974, Ser. No. 442,475
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114



235,182
SUGAR CONTAINER WITH MEASURING AND DISPENSING SPOUT
Rosewell G. Capron, 5702 Lawndale, Mesa, Ariz. 85205
Filed Feb. 19, 1974, Ser. No. 443,675
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—17

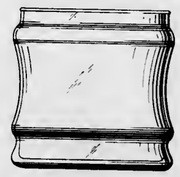




235,183
REUSABLE COFFEE-FILTER
Werner Braun, Sarnen, Switzerland, assignor to Interelectric Aktiengesellschaft
Filed Aug. 15, 1973, Ser. No. 388,555
Claims priority, application Germany Feb. 19, 1973
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47



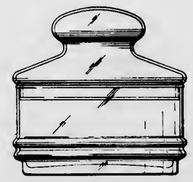
235,184
CANISTER OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 27, 1973, Ser. No. 391,587
Term of patent 14 years
Int. Cl. D9—*02*; D7—*07*
U.S. Cl. D7—79



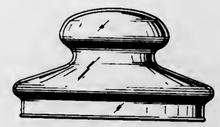
235,185
CANISTER WITH LID OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 27, 1973, Ser. No. 391,613
Term of patent 14 years
Int. Cl. D9—*02*; D7—*07*
U.S. Cl. D7—79



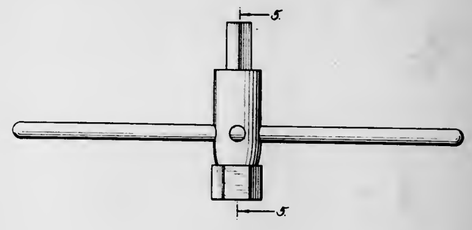
235,186
CANISTER WITH LID OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Oct. 9, 1973, Ser. No. 404,771
Term of patent 14 years
Int. Cl. D9—*02*; D7—*07*
U.S. Cl. D7—79



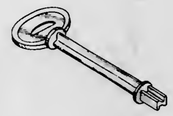
235,187
CANISTER LID OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Oct. 24, 1973, Ser. No. 409,150
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—131



235,188
WRENCH
Franz Palfi, 122 West St., Battle Creek, Mich. 49017
Filed July 2, 1973, Ser. No. 375,627
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—29



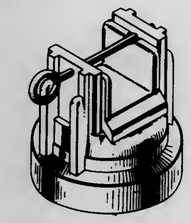
235,189
KEY
Ichiro Tachi, Fujisawa, Japan, assignor to Kabushiki Kaisha Asakusa Gangu, Tokyo, Japan
Continuation of design application Ser. No. 24,709, Aug. 26, 1970, now Patent No. 222,999. This application Aug. 3, 1971, Ser. No. 168,793
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136



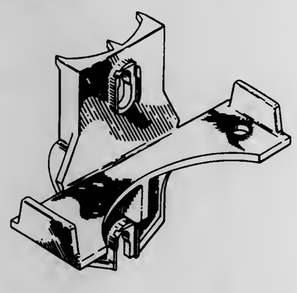
235,190
STRINGING PIN INSULATOR

235,193

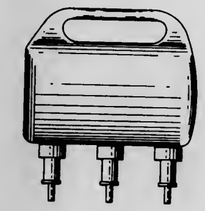
235,190
STRINGING PIN INSULATOR
Arthur W. Ross, Beverly, Mass., assignor to Synthetic Products Manufacturing Corporation, Leominster, Mass.
Filed Mar. 30, 1972, Ser. No. 239,858
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D8—230



235,191
UTILITY POLE SHELF CHANNEL GAIN
Joseph W. Dimicell, 417 Eccles Ave., South San Francisco, Calif. 94080
Continuation-in-part of abandoned design application Ser. No. 273,059, July 19, 1972. This application Nov. 14, 1973, Ser. No. 415,586
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D8—230



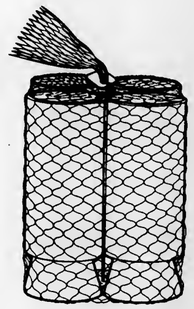
235,192
BATTERY WATER DISPENSER
Robert W. Olsen, Hinsdale, Ill., assignor to Efficiency Dispensers Corporation
Filed Mar. 26, 1973, Ser. No. 344,595
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—53



235,193
FOOD JAR OR THE LIKE
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed July 5, 1973, Ser. No. 376,752
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—140



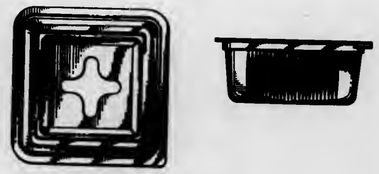
235,194
PACKAGED SET OF BEVERAGE GLASSES
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 20, 1972, Ser. No. 273,393
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—193



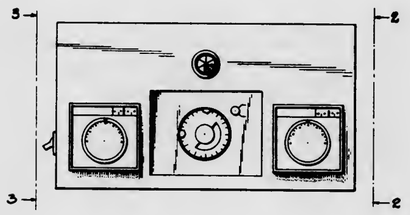
235,195
STORAGE CONTAINER
Norman O. Sauey, Jr., and Robert C. Hazzard, Portage, Wis., assignors to Portage Industries Corporation, Portage, Wis.
Filed Feb. 26, 1973, Ser. No. 336,073
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



235,196
DISPENSING CONTAINER FOR FOLDED DISPOSABLE TOWELS
Kenneth W. Duhy, Mountain Lakes, and John Jones, Jr., Short Hills, N.J., assignors to Pfizer Inc., New York, N.Y.
Filed Nov. 14, 1972, Ser. No. 306,402
Term of patent 14 years
Int Cl. D9—*03*
U.S. Cl. D9—224



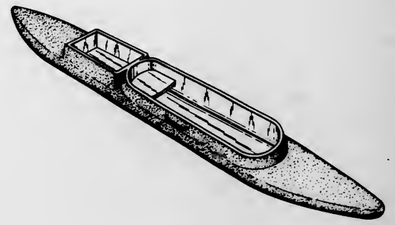
235,197
TIMER CONTROLLED DUAL THERMOSTAT
Walter A. Cross, R.D. 1, Box 203E, Rte. 88, Bristolville, Ohio 44402
Filed Sept. 27, 1973, Ser. No. 401,193
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—51



235,198
AIR DRIVEN AMPHIBIOUS VEHICLE
Brian A. Preston, 8130 Dartmouth, Hanover Park, Ill. 60103
Filed Mar. 26, 1973, Ser. No. 344,823
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—3



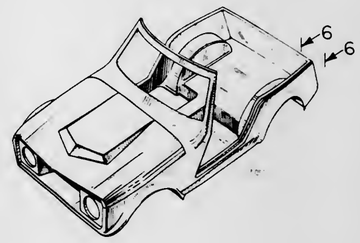
235,199
PIROGUE
Sam E. Schneider, Jr., 124 Ardmore, Shreveport, La. 71105
Filed May 22, 1973, Ser. No. 362,787
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—63



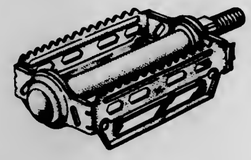
235,200
ROUND PADDLE BOAT
Carl Roberts, 6669 Charing St., Santa Susana, Calif. 93063
Filed July 19, 1973, Ser. No. 380,766
Term of patent 3½ years
Int. Cl. D12—*06*
U.S. Cl. D12—68



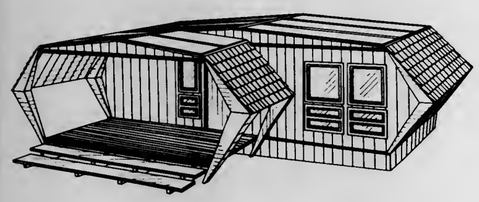
235,201
VEHICLE BODY
Thomas A. Parmley, 7233 Finsbale, Downey, Calif. 90240
Filed Oct. 11, 1973, Ser. No. 405,408
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—87



235,202
REFLECTIVE RAT TRAP PEDAL
Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc.
Continuation-in-part of abandoned design application Ser. No. 320,471, Jan. 2, 1973. This application May 20, 1974, Ser. No. 471,518
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—125



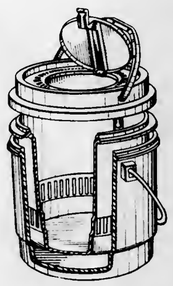
235,203
CABIN
Dennis K. Waldorf, Arkansas City, Kans., assignor to Waldorf Homes, Inc., Arkansas City, Kans.
Filed Oct. 31, 1973, Ser. No. 411,349
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



235,204
PUZZLE TOY
Charles B. Root, Morristown, N.J., assignor to Educational Design Associates
Filed Mar. 26, 1973, Ser. No. 344,737
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



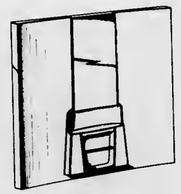
235,205
BAIT BUCKET
Daniel Alan Schwartz, Long Beach, Calif., and Pasquale G. Fasulo, West Farmington, Ohio, assignors to Pendleton Tool Industries, Inc., Fullerton, Calif.
Filed Jan. 2, 1974, Ser. No. 429,756
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



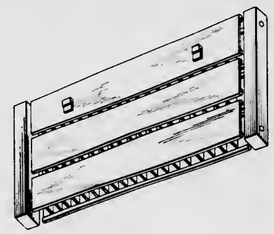
235,206
COUNTER TOP WATER FILTER
Thomas R. Bertrand, Addison, Ill., assignor to P.F.C. Financial Corporation, Elgin, Ill.
Filed June 7, 1973, Ser. No. 367,980
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



235,207
WALL PANEL FOR A BATHTUB
John A. Di Venero and Louis Curcio, Enfield, Conn., assignors to Northwood, Inc., Enfield, Conn.
Filed Sept. 24, 1973, Ser. No. 400,354
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



235,208
HEAT CONVECTOR
Gunnar Olaf Vestergaard Rasmussen, % Hudevad Radiatorfabrik Aktieselskab, Aarslev, Denmark
Filed June 19, 1972, Ser. No. 264,292
Claims priority, application Denmark Dec. 20, 1971
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



235,209
CALCULATOR WITH SLIDING TAMBOUR COVER
Karl T. Baughman, Lake Forest, Ill., assignor to Sears, Roebuck and Co.
Filed Apr. 8, 1974, Ser. No. 458,780
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C

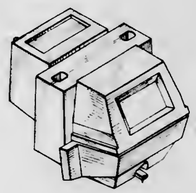


235,210
HEADPHONES
Oliver Hill, London, England, assignor to The Rank Organisation Limited, London, England
Filed Aug. 14, 1972, Ser. No. 280,414
Claims priority, application Great Britain Mar. 15, 1972
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 H

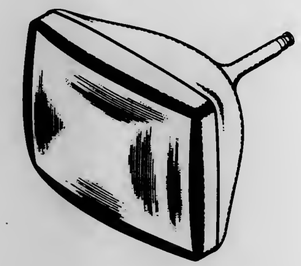




235,211
PHONOGRAPH CARTRIDGE
Robert L. Deschamps, Wheaton, Ill., assignor to Shure Brothers Incorporated, Evanston, Ill.
Filed Apr. 11, 1973, Ser. No. 350,058
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 D



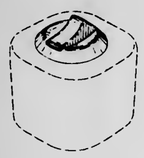
235,212
RECTANGULAR RASTER TELEVISION PICTURE TUBE
William J. Noroski, North Syracuse, and Edmund F. Schilling, Manlius, N.Y., assignors to General Electric Company
Filed Mar. 8, 1973, Ser. No. 339,191
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—14 E



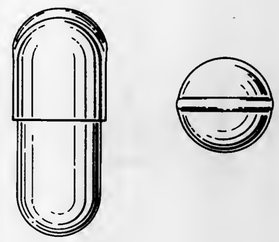
235,213
AMPLIFIER
Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd.
Filed Jan. 8, 1974, Ser. No. 431,739
Claims priority, application Japan Aug. 14, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L



235,214
SWITCH FOR TABLE CIGARETTE LIGHTER
William Retzler, Wickham, England, assignor to Colibri Lighters Limited, London, England
Filed June 4, 1973, Ser. No. 366,567
Claims priority, application Great Britain Dec. 15, 1972
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36



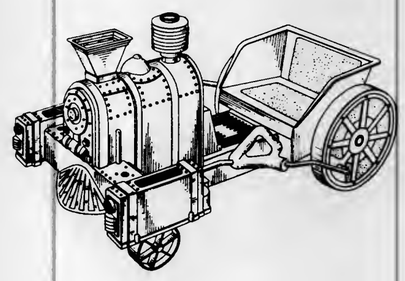
235,215
CAPSULE
Kenneth N. Larsen, Southfield, Mich., assignor to Parke, Davis & Company, Detroit, Mich.
Filed Aug. 3, 1971, Ser. No. 168,801
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D32—3



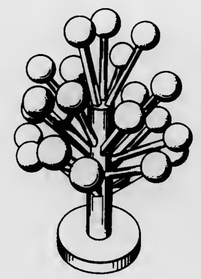
235,216
BALL GAME TARGET
Roy E. Munson, 133 Pine St., Ace, Tex. 77326
Filed Sept. 21, 1973, Ser. No. 399,323
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 PP



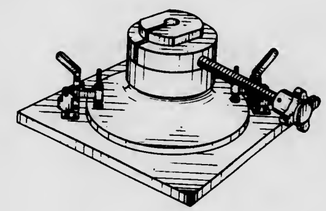
235,217
RIDER PROPELLED VEHICLE
Raymond J. Lohr, Laurie Jay Campbell, and Robert T. Auer, Erie, Pa., assignors to Louis Marx & Co., Inc.
Filed June 14, 1973, Ser. No. 370,065
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



235,218
PUZZLE TOY
Mary Ann Jones, 1611 E. Washington Ave., South Bend, Ind. 46617
Filed Aug. 22, 1973, Ser. No. 390,582
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



235,219
TURBO-TEARDOWN SWIVEL FIXTURE
Claude M. Harper, Westlake Village, Calif., assignor to Roto-Masters, Inc.
Filed Jan. 26, 1973, Ser. No. 327,077
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—13 A



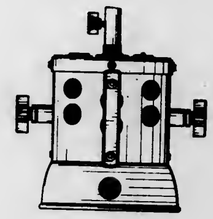
235,220
GUITAR HEAD
Hari Matsuda, Evanston, Ill., assignor to G. Leblanc Corporation, Kenosha, Wis.
Filed June 18, 1973, Ser. No. 370,772
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A



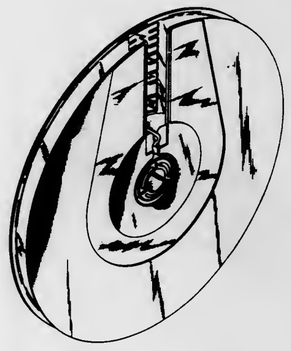
235,221
PHOTOCOPIER CABINET
Yves Cormier, 100 Rue Hoche, 72000 Le Mans, France
Filed Dec. 12, 1973, Ser. No. 424,045
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



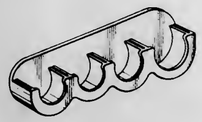
235,222
PHOTO-LAMP
Raymond George Larson, 9731 Rainier Circle, Huntington Beach, Calif. 92646
Filed July 23, 1973, Ser. No. 381,924
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D61—1 F



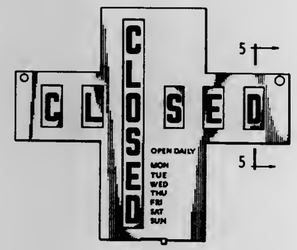
235,223
FILM REEL OR THE LIKE
Dianne Beverley Ainslie and Arthur Hunt, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 22, 1973, Ser. No. 325,287
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 T



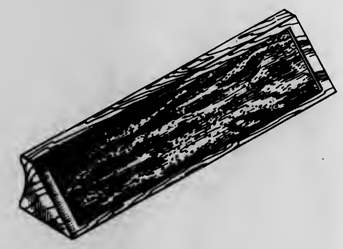
235,224
COIN HOLDER
Curtiss M. Peasley, 25 Boulder Drive, Burlington, Mass. 01803
Filed Apr. 30, 1973, Ser. No. 355,757
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—3 B



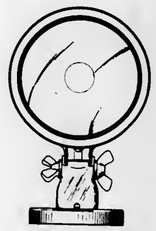
235,225
CHANGEABLE SIGN
Steven Kramar, 4052 W. 26th St., Chicago, Ill. 60623
Filed Nov. 20, 1970, Ser. No. 26,092
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12



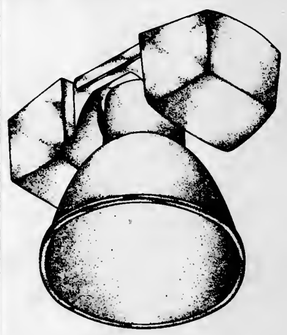
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DESK NAMEPLATE
Paul W. Money, 1701 Country Lane Drive, La Porte, Ind. 46350
Filed July 23, 1973, Ser. No. 381,890
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 F



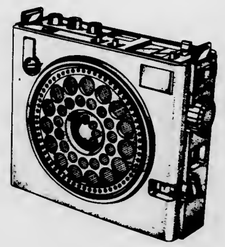
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LIGHT
John M. Cleary, Martinsville, and John P. Mohrhauser, Avon-by-the-Sea, N.J., assignors to Cleary Machinery Co., Inc., Martinsville, N.J.
Filed July 9, 1973, Ser. No. 377,237
Term of patent 14 years
Int. Cl. D26—*02, 03*
U.S. Cl. D48—20 K



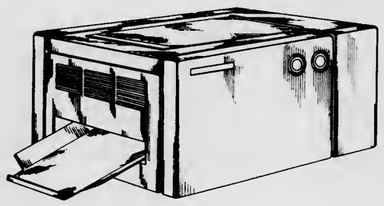
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LIGHTING FIXTURE
Frank Van Steenhoven, Hudson, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed July 23, 1973, Ser. No. 381,654
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 R



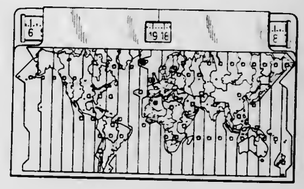
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RADIO RECEIVER
Masanori Hamada, Moriguchi, and Benito Mishiro, Sakai, Japan, assignors to Matsushita Electrical Industrial Co., Ltd.
Filed Oct. 2, 1973, Ser. No. 402,855
Claims priority, application Japan Apr. 11, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



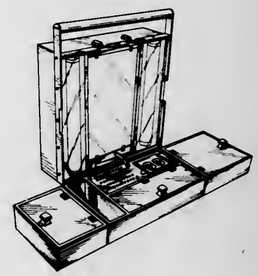
235,230
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Lewis H. Herr, Lansdale, and John S. Kovacs, East Norriton, Pa., assignors to Sperry Univac Division, Sperry Rand Corporation, Blue Bell, Pa.
Filed July 12, 1973, Ser. No. 378,613
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



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Bengt Olof Mellberg, Nybodagatan 10IV, S–17142 Solna, Sweden
Filed May 4, 1973, Ser. No. 357,516
Claims priority, application Sweden Nov. 8, 1972
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D64—11 B



235,232
TRAVEL MAKE-UP CASE
Sidney E. Rickenbaker, P.O. Box 1921, Myrtle Beach, S.C. 29577
Filed Sept. 17, 1973, Ser. No. 397,917
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 C



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TO WHOM

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TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF MAY, 1975

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Addressograph Multigraph Corporation: *See—*
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Baldwin, Brian E., 3,885,560.

Agatani, Katsuzo. Inclinable bed adapted for use to medical care. 3,885,556, Cl. 128-71.000.

Agee, Robert B.; and Davis, James E., to Ethyl Corporation. Production of chlorinated hydrocarbons. 3,886,221, Cl. 260-658.00R.

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Ahmed, Samir A.: *See—*
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Altmann, Jack G. Method and temple apparatus for guiding fabric lengths through textile weaving machines. 3,885,600, Cl. 139-292.000.

Alton Box Board Company: *See—*
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Aluminum Pechiney: *See—*
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Alvarez, Francisco S.; and Van Horn, Albert R., to Syntex (U.S.A.) Inc. Novel prostaglandin intermediates and process for the production thereof. 3,886,185, Cl. 260-345.900.

Amagami, Keizo; Takahashi, Yutaka; Nawa, Motoyuki; Kawabata, Norio; Nishibayashi, Nobuhiko; and Sasada, Katsumi, to Matsushita Electric Industrial Co., Ltd. Hot water controlling device. 3,885,736, Cl. 237-8.00R.

Amann, August: *See—*
Himmele, Walter; Amann, August; Aquila, Werner; Giertz, Hubert; and Siegel, Hardo, 3,886,168.

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Blatt, Leland F. Variable cushion shock absorber. 3,885,776, Cl. 267-34.000.
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Bert, Alain; and Kantorowicz, Gerard, to Thomson-CSF. Electroacoustic memory device. 3,886,529, Cl. 340-173.0CR.
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Bertus, Brent J., to Phillips Petroleum Company. Catalysts for oxidative dehydrogenation. 3,886,091, Cl. 252-432.000.
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Block, Donald P. Control mechanism. 3,885,779, Cl. 251-229.000.
Blom, Sigvard E. Supporting stand preferably adapted for supporting a christmas tree. 3,885,763, Cl. 248-44.000.
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Borst, Gaylord M.; and Meyer, Martin H., to Outboard Marine Corporation. Power trim-tilt system. 3,885,517, Cl. 115-41.0HT.
Borthwick, James; and Morman, James Forrester, to Imperial Chemical Industries Limited. Smoking mixture. 3,885,574, Cl. 131-2.000.
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Bossaert, Jean; Ernvein, Joel; and Spitz, Erich, to Thomson-CSF. System for the real time visualization of ultrasonic images. 3,886,488, Cl. 340-5.0MP.
Bottenberg, Hans, to Siemens Aktiengesellschaft. Radar device with a directional antenna. 3,886,547, Cl. 343-100.0SA.
Bouman, Antonius Fredericus Mattias, to Hollandse Signaalapparaten B.V. Voltage-regulated power supply unit. 3,886,438, Cl. 323-22.00T.
Bouquet, Jean-Claude, to Societe d'Etudes de Machines Thermiques. Device for installing and removing big-end caps of connecting rods on internal combustion engines. 3,885,290, Cl. 29-252.000.
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Bratter, Robert L.; and Gaind, Arun K., to International Business Machines Corporation. Method for controlling dielectric isolation of a semiconductor device. 3,886,000, Cl. 148-175.000.
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Breckenfelder, Ernst G., to U.I.P. Engineered Products Corporation. Process for making non-felt, laminar roofing material such as composition shingles and the like. 3,886,021, Cl. 156-246.000.
Bredeweg, Roger L., to Dow Chemical Company, The. Cell useful for determining water vapor transmission rate or water content. 3,886,057, Cl. 204-195.00W.
Breeden, John F., to Hopeman Brothers, Inc. Waste disposal system. 3,885,835, Cl. 302-39.000.
Breitweg, Peter; Franz, Karl-Heinz; Mayer, Peter; and Wolf, Klaus, to Roland Offsetmaschinenfabrik Faber & Schleicher. Device for applying ink to the inking roller of an offset printing press. 3,885,496, Cl. 101-363.000.
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Breslow, Jeffrey D., to Marvin Glass & Associates. Game apparatus. 3,885,792, Cl. 273-134.00C.
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Brewer, Hollis Bryan; and Arnaud, Claude D., to United States of America, Health, Education, and Welfare. Human parathyroid hormone. 3,886,132, Cl. 260-112.500.
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Brown, Melancthon S., deceased; and by Kohn, Gustave K., administrator, to Chevron Research Company. Nematocidal N-arylthio S-hydrocarbyl thiocarbamates. 3,886,282, Cl. 424-300.000.
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Christian, Fredrick W. Trailer hitch. 3,885,817, Cl. 280-491.00E.

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Cohen, Maxwell L., to Cohen, Milton. Mixing dispenser with a selectively retractable seal to permit intermixing of the ingredients. 3,885,710, Cl. 222-145.000.

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Cook, Melvin A., to Ireco Chemicals. Blasting composition for use under high temperature conditions. 3,886,008, Cl. 149-41.000.

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Malmendier, Joseph W.; and Sojka, Joseph E., 3,885,975.
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Correia, Yves; and Strini, Jean-Claude, to Rhone-Progil. Process for obtaining 1,1,1,2-tetrachloroethane. 3,886,222, Cl. 260-658.00R.

Corzine, Robert G.: *See—*
Mosko, Joseph A.; and Corzine, Robert G., 3,886,498.

Cosby, Lowell A.: *See—*
Walker, Wellington E.; Cosby, Lowell A.; and Martin, Sterling T., 3,886,364.

Cosgrove, John H., to FMC Corporation. Process of obtaining zinc oxide having improved filtering characteristics and production of zinc sulfate from said zinc oxide. 3,886,258, Cl. 423-106.000.

Costa, Robert B.; and Troup, Edward M., to Clemar Manufacturing Corporation. Camming system including a flexible cam of adjustable peripheral length. 3,885,470, Cl. 74-568.00R.

Costello, Anthony C.; Shaffer, Leon L.; and Weatherby, Robert G., to Loopco Industries, Inc. Take-out arbor for a strip accumulator. 3,885,748, Cl. 242-55.000.

Costello, Matthew J.; Dolan, Donald T.; Debaudringhien, Andre T.; Hurkmans, Antoon M.; Jasinski, Kenneth R.; and Keplinger, Edward G., to Graphic Sciences, Inc. Facsimile receiver. 3,886,308, Cl. 178-7.300.

Cota, Marlo E.; and Osborne, John F., to Motorola, Inc. Method of manufacturing semiconductor devices. 3,886,005, Cl. 148-188.000.

Cottatellucci, Ezio, to Societa Italiana Telecomunicazioni Siemens S.p.A. System for stabilizing the operating frequency of a free-running oscillator. 3,886,472, Cl. 331-12.000.

Cottin, Jean; and Laxaque, Jean, to Thomson-CSF. Automatic vehicle-monitoring system. 3,886,515, Cl. 340-23.000.

Cousino, Bernard A., to Cousino Corporation. Storage cell assembly. 3,885,670, Cl. 206-387.000.

Cousino Corporation: *See—*
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Couturier, Jean-Pierre: *See—*
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Cowen, David: *See—*

Cowen, David: *See—*
Rous, Arthur, deceased; Cowen, David; and Eisenstein, Myron, 3,885,729.

Cox, Joe Warren. Self-adjusting stair. 3,885,365, Cl. 52-183.000.

Cox, Roy B., to Burlington Industries, Inc. Overedge seaming. 3,885,509, Cl. 112-441.000.

Crabbe, Pierre; and Vogel, Pierre, to Syntex (U.S.A.) Inc. 10,11-Methylene-substituted phostaglandin derivatives. 3,886,206, Cl. 260-514.00D.

Creech, Evans S.: *See—*
Slaughter, Philip H., 3,885,602.
Slaughter, Philip H., 3,885,603.

Creusot-Loire: *See—*
Chanlon, Gerard, 3,885,444.

Crisp, Chester A.; and Williamson, Herschel M., to Caterpillar Tractor Co. Self-locking piston and rod assembly for a fluid motor or the like. 3,885,461, Cl. 92-258.000.

Cristy, Stephen S.: *See—*
McLaughlin, John F.; and Cristy, Stephen S., 3,886,358.

Cron, James C.: *See—*
Cronin, John C.; and Cron, James C., 3,886,301.

Cronin, John C.; and Cron, James C., to I-T-E Imperial Corporation. Plug-in joint for high current conductors in gas-insulated transmission system. 3,886,301, Cl. 174-21.00C.

Cross, Fred E., Jr., to Highway Equipment & Supply Company. Fluid propelling apparatus employing flexible drive shaft. 3,885,885, Cl. 415-122.000.

Croswell, Thomas L., Jr., to Croswell, Thomas L., Jr. Airplane wing camber control. 3,885,758, Cl. 244-44.000.

Crull, Stanley W., to Sundstrand Corporation. Control for a hydrostatic transmission. 3,885,388, Cl. 60-444.000.

Cubic Industrial Corporation: *See—*
Nelson, Alfred M.; McPherson, Robert G.; and Martin, Maurice S., 3,885,867.

Cuda, John: *See—*
Swaim, Ronald L.; Cuda, John; and Martin, Timothy W., 3,886,595.

Cudmore, Patrick J., to Wane-Rider, Incorporated. Roller skate. 3,885,804, Cl. 280-11.200.

Cue, Berkeley Wendell, Jr.: *See—*
Abramovitch, Rudolph Abraham; and Cue, Berkeley Wendell, Jr., 3,886,180.

Cullen, John R.: *See—*
Byrne, Neil C.; Cullen, John R.; Parker, Richard G.; and Davis, Harry L., 3,885,260.

Culver, Richard B., to Dresser Industries, Inc. Method and apparatus for logging well boreholes with gamma rays from the inelastic scattering of fast neutrons. 3,886,355, Cl. 250-270.000.

Culver Tool & Die Co.: *See—*
Szeliga, Robert, 3,885,411.

Cummings, James W.: *See—*
Walsh, George M.; Cummings, James W.; Backman, William R., Jr.; and Clifford, Peter J., 3,886,487.

Cummings, Thomas R.; and Hewitt, William J., to Singer Company, The. Method and apparatus for simulating a class of aircraft. 3,886,334, Cl. 235-184.000.

Cunningham, Roy J.; and Lieberman, Warren, to Boeing Company, The. Process for carburizing high alloy steels. 3,885,995, Cl. 148-6.350.

Curti, Lucien. Coupling for the assembly of closely jointed tubular elements. 3,885,882, Cl. 403-297.000.

Curtis, Gary Martin, to Illinois Tool Works Inc. Locking staple. 3,885,491, Cl. 85-49.000.

Cushing, Donald S., to General Electric Company. Dishwasher control system. 3,885,580, Cl. 134-57.00D.

Cutler-Hammer, Inc.: *See—*
Calviello, Joseph A., 3,886,580.

D. G. Beyer, Inc.: *See—*
Derrwaldt, Philip A., 3,885,808.

Dacons, Joseph C.; Adolph, Horst G.; and Kamlet, Mortimer J., to United States of America, Navy. Substituted hexanitrobiphenyls. 3,886,173, Cl. 260-296.00R.

Daggett, Lester Alvin, to Eagle-Picher Industries, Inc. Battery switching circuit. 3,886,426, Cl. 320-7.000.

Dahan, Gilbert Mordekhai Ihouda; Schrempp, Jean; and Viannay, Stephane Georges Jean-Marie, to Usinor. Machine for cooling metal sheets or plates. 3,885,581, Cl. 134-122.000.

Dahlberg, Alf-Goran; Hogberg, Karl Gustav; Lindvall, Sven; and Rydh, Thore Oskar Verner, to Astra Lakemedel Aktiebolag. Iron preparation suitable for parenteral injection and a process for the preparation thereof. 3,886,267, Cl. 424-78.000.

Dahlin, Erik B., to Measurex Corporation. Method of controlling a drier limited paper machine. 3,886,036, Cl. 162-198.000.

Dahm, Victor, to Beratherm AG. Method for the chemical treatment, like cleaning or pickling, of installations with at least one steam generator. 3,885,986, Cl. 134-3.000.

Daikin Kogyo Co. Ltd.: *See—*
Koizumi, Shun; Suzuki, Takeshi; and Okuno, Chuzo, 3,886,103.

Daimler-Benz Aktiengesellschaft: *See—*
Forster, Hans-Joachim M.; and Bulow, Manfred, 3,885,456.
Lamm, Heinz; and Kortner, Lothar, 3,885,898.

D'Alelio, Gaetano F., to University of Notre Dame du Lac. Epoxy end-capped aromatic polyimides. 3,886,119, Cl. 260-47.0CP.

D'Alelio, Gaetano F. Halogenated esters of phosphorus-containing acids. 3,886,236, Cl. 260-952.000.

D'Alelio, Gaetano F. Halogenated phosphonates. 3,886,237, Cl. 260-956.000.

Dalferth, Hans Horst. Overload testing of chains. 3,885,428, Cl. 73-143.000.

Dalgleish, Jack Frank; and Lukas, Helmut Hans, to Northern Electric Company Limited. Optical fibre connectors. 3,885,859, Cl. 350-96.00C.

Dalke, James A., to Metro Data Corporation. Chroma generator for character display. 3,886,588, Cl. 358-82.000.

Damiano, Peter Anthony, Jr.: *See—*
Quintiliani, Saverio Michael; Finkel, Alan Grad; Smith, Harry Richard; Damiano, Peter Anthony, Jr.; and Spranger, Douglas Michael, 3,886,453.

Damron, John R. Hunter's tree stand. 3,885,649, Cl. 182-187.000.

Dana Corporation: *See—*
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Danfoss A/S: *See—*
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Daniljuk, Ivan Yakovlevich: *See—*
Drabenko, Ivan Fedorovich; and Daniljuk, Ivan Yakovlevich, 3,886,448.

Danko, Edward M., to Color Custom Compounding, Inc. Method and apparatus for making an extruded article of rigid plastic with a grained surface. 3,886,250, Cl. 264-177.00R.

Darnell, Nolan B.; and Engels, Walter, to Deering Milliken Research Corporation. Yarn feed guide arms. 3,885,279, Cl. 28-1.0CL.

Datotek, Inc.: *See—*
Branscome, Kenneth M.; Feath, William M.; Goode, George E.; Heizer, Kenneth W.; and Morgan, Barrie O., 3,886,313.

Daugherty, Jon: *See—*
Sarno, Jay; Daugherty, Jon; and Schneidinger, Carl, 3,885,502.

Davenport, Alvan F.; Gerken, Ralph F.; and Wiens, Jacob H. Method and device for teaching safe driving. 3,885,324, Cl. 35-11.000.

Davidson, Daniel Fraser, to United Kingdom Atomic Energy Authority. Electromagnetic pumps. 3,885,890, Cl. 417-50.000.

Davidson, Jimmy L.: *See—*
Cook, Koy B., Jr.; Davidson, Jimmy L.; Gibson, Joseph D.; and Patterson, Raymond B., III, 3,886,584.

Davis, Harry L.: *See—*
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Davis, James E.: *See—*
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Davis, Kenneth E.: *See—*
Evancic, Ernest A.; Davis, Kenneth E.; and Blucher, Joseph T., 3,885,488.

Davy, Thomas E.; and Marquess, Gerald E., to Nichols Engineering & Research Corporation. Incinerator systems. 3,885,507, Cl. 110-8.00R.

Dawes, Dag: *See—*
Boehner, Beat; and Dawes, Dag, 3,886,280.

Dawkins, Claude W. Air conditioning system for a motor home vehicle or the like. 3,885,398, Cl. 62-89.000.

Day, Gene F.: *See—*
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Dayco Corporation: *See—*
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Debaudringhien, Andre T.: *See—*
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De Brabander, Jean L., to Ferdinand Van Damme & Zonen. Working glove. 3,885,249, Cl. 2-161.00R.

de Carbon, Christian Bourcier. Level corrector for shock absorbers. 3,885,777, Cl. 267-64.00R.

De Christopher, Philip J.: *See—*
Duchene, Joseph R.; and De Christopher, Philip J., 3,886,054.

Deelman, Gerardus J., to Olvia Smeltzekeringen Fabriek N.V. Method of manufacturing fuses. 3,885,303, Cl. 29-623.000.

Deering Milliken Research Corporation: *See—*
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Habib, Emile E., 3,885,911.

Deibel, Raymond A.; and Kuebler, William F., to Trico Products Corporation. Windshield wiper blade assembly. 3,885,265, Cl. 15-250.420.

Deisenroth, Robert J., to Excel Industries, Incorporated. Closure counterbalance. 3,885,778, Cl. 267-71.000.

DeJong, Geert J., to Akzo N.V. Process for the preparation of a granular activated carbon, and granular activated carbons produced thereby. 3,886,088, Cl. 252-422.000.

De Lavenne, Hubert, to Automobiles Peugeot Regie Nationale des Usines Renault. Locking device in particular for a safety belt. 3,885,812, Cl. 280-150.0SB.

Delerue, Dominique Michel. Hank carrier. 3,885,754, Cl. 242-127.000.

Deluty, Michael E.; and Levine, Morton A., to Deluty, Michael E. Exercising device. 3,885,789, Cl. 272-83.00A.

Demag A.G.: *See—*
Wagener, Elmar; and Jansch, Frantisek, 3,885,741.

Demetron Gesellschaft fur Elektronik Werkstoffe mbH: *See—*
Lutz, Klaus; and Golla, Manfred, 3,885,955.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
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Yagi, Norio; Okai, Hiroshi; Fukuda, Makoto; and Kishi, Ikuji, 3,886,121.

Denning, George S.: *See—*
Sipos, Frank; Pals, Donald T.; and Denning, George S., 3,886,134.

Denzin, Horst, to Francotyp GmbH. Device for feeding adhesive strips to a franking machine. 3,885,482, Cl. 83-241.000.

De Pasquale, Matthew J.: *See—*
Peiser, Alfred M.; and De Pasquale, Matthew J., 3,886,062.

Deplante, Henri, to Avions Marcel Dassault-Breguet Aviation, Societe Anonyme Francaise ayant son siege Social. Structural panels of the sandwich type. 3,886,023, Cl. 156-253.000.

Derrwaldt, Philip A., to D. G. Beyer, Inc. Detachable auxiliary load distributing assembly. 3,885,808, Cl. 280-81.00R.

Desautels, Paul M.; and Remsen, Lawrence P., to International Business Machines Corporation. Polyphase arc stripper. 3,886,343, Cl. 219-68.000.

Deschler, Otto: *See—*
Fischer, Klaus; and Deschler, Otto, 3,885,910.

De Schutter, Camiel R., to Perfect Module Systems, Inc. Building wall panel leveler device. 3,885,361, Cl. 52-122.000.

Designa GmbH: *See—*
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Desimone, Robert S.; and Gradeff, Peter S., to Rhodia, Inc. Process using metal salt-amine complex catalysts for the preparation of alpha beta-ethylenic ketones such as delta-cis-pseudo ionones. 3,886,215, Cl. 260-586.00C.

DeSimone, Robert S.; and Gradeff, Peter S., to Rhodia, Inc. Process for the preparation of alfa beta-ethylenic ketones. 3,886,216, Cl. 260-593.00R.

Desimone, Robert S.; and Gradeff, Peter S., to Rhodia, Inc. Process for the preparation of alpha, beta-ethylenic ketones such as delta^3-cis-pseudo ionones. 3,886,217, Cl. 260-593.00R.

Desjardins, Rene A., to Boeing Company, The. Flexure for bearingless rotor. 3,885,887, Cl. 416-141.000.

Deutner, Wolfgang; and Neumann, Robert, to Chemie Linz AG. Process for the preparation of pure phthalic anhydride. 3,886,050, Cl. 203-80.000.

Devries, Wayne J.: *See—*
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Dewald, Horace A.: *See—*
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Dezelan, Joseph E.; Junck, John A.; and Kroth, Neil W., to Caterpillar Tractor Co. Filter retainer and bypass valve assembly. 3,886,072, Cl. 210-130.000.

Diamanti, Enrico, to Sigma-Tau Industrie Farmaceutiche/Riunite S.p.A. New derivative of triamcinolone. 3,886,145, Cl. 260-239.55D.

Dias, J. Fleming; and Karrer, Henry E., to Hewlett-Packard Company. Acoustic surface wave devices having improved performance versus temperature characteristics. 3,886,484, Cl. 331-107.00A.

Dibbern, John Earl, Jr.: *See—*
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DiChiara, Anthony J. Method of rebuilding a worn cam surface. 3,885,291, Cl. 29-401.000.

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Diehl, Arne J.: *See—*
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Diehl, Roy E., to Ford Motor Company. Road load modulated exhaust gas recirculation system. 3,885,537, Cl. 123-119.00A.

Di Gesaro, Giuseppe: *See—*
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Digital Equipment Corporation: *See—*
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Diichi Seiyaku Company, Limited: *See—*
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Dill, Gary G. Multi-filament light bulb and the like. 3,886,400, Cl. 315-64.000.

Dimitri, Mitchell S., to Westvaco Corporation. Activated carbon with active metal sites and process for producing same. 3,886,093, Cl. 252-447.000.

Dingwall, Andrew Francis Gordon, to RCA Corporation. Self-biased complementary transistor amplifier. 3,886,464, Cl. 330-13.000.

Dini, Mamiliano, to European Rotogravure Association. Method for the examination or inspection of rotogravure printing cylinders or the like. 3,885,422, Cl. 73-67.80S.

DiSalvo, Walter A.; Kenney, Edward J.; and Smith, Frank R., Jr., to Colgate-Palmolive Company. Manufacture of free flowing particulate detergent composition containing nonionic detergent. 3,886,098, Cl. 252-540.000.

Diskus, Alfred; Schonbeck, Rupert; Kloimstein, Engelbert; and Mayr, Hubert, to Osterreichische Stickstoffwerke. 3-Phenyl-4;5-dichloro pyridazinyl alkanoates. 3,886,155, Cl. 260-250.00A.

Dobkin, Robert C., to National Semiconductor Corporation. Method of fabricating a vertical channel FET resistor. 3,886,001, Cl. 148-175.000.

Dobosi, Laszlo J. Credit card. 3,886,327, Cl. 235-61.70B.

Dobras, Bruce W., to Monarch Marking Systems, Incorporated. Coded record and methods of and apparatus for encoding and decoding records. 3,886,521, Cl. 340-146.1AG.

Doepke, Donald G. H.; and Braun, Daniel E., to Briggs & Stratton Corporation. Refueling and ignition grounding device for small engines equipped with a protective hood. 3,885,547, Cl. 123-198.00D.

Doherty, Thomas E.: *See—*
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Dohrendorf, Franz, to Nordischer Maschinenbau Rud. Baader. Method and device for severing the heads of fishes. 3,885,270, Cl. 17-52.000.

Doi, Kazuo; Nakajima, Jun; Shodai, Masahiko; Uchimura, Junichi; Wada, Takeaki; and Shibata, Zenzaburo, to Matsushita Electric Works, Limited. Inorganic coating composition. 3,885,978, Cl. 106-85.000.

Dolan, Donald T.: *See—*
Costello, Matthew J.; Dolan, Donald T.; Debaudringhien, Andre T.; Hurkmans, Antoon M.; Jasinski, Kenneth R.; and Keplinger, Edward G., 3,886,308.

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Dorman, William H., to Corning Glass Works. Luminaire. 3,886,347, Cl. 240-1.200.

Dornier System GmbH: *See—*
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Dorr, Richard L.; Gaebelein, Georg N.; Kostuch, Donald J.; and Varner, Malcolm E., to International Business Machines Corporation. Formatting for record-controlled machines. 3,886,325, Cl. 235-61.60R.

Dorren, Louis, to Quadracast Systems, Inc. Decoder for four channel record. 3,886,312, Cl. 179-1.0GQ.

Dorrough, Vernon R.: *See—*
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Dorschner, Kenneth P.; and Albright, James A., to SCM Corporation. Meta-ureidophenyl n-haloalkyl carbamates as herbicides. 3,885,953, Cl. 71-106.000.

Dorschner, Kenneth P.; and Albright, James A., to SCM Corporation. Meta-3-alkoxyureidophenyl N-haloalkyl carbamates as herbicides. 3,885,954, Cl. 71-106.000.

Dory, Istvan; Feuer, Laszlo; Javor, Andras; and Matolcsy, Gyorgy, to Chinoin Gyogyszer- es Vegyeszeti Termekek Gyara Rt. Fungicidal carboxylic acid nitriles. 3,886,283, Cl. 424-304.000.

Doss, Reiner: *See—*
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Dow, Frederick J. T.; and Hartung, Dudley B., to Xenex Corporation. Presence sensing and self-checking control system. 3,886,413, Cl. 317-123.000.

Dowley, Mark W.: *See—*
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Dowty Mining Equipment Limited: *See—*
Snowden, Eric McIvor; and Walker, John Hirst, 3,885,396.

Drabenko, Ivan Fedorovich; and Daniljuk, Ivan Yakovlevich. Method and apparatus for testing high-voltage dividers. 3,886,448, Cl. 324-63.000.

Drabert Sohne: *See—*
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Drage, David J., to Air Products and Chemicals, Inc. Method and apparatus for crushing and separating scrap material. 3,885,744, Cl. 241-23.000.

Drapkin, Paul E., to Vidar Corporation. Synchronous data channel for pulse code modulation communications system. 3,886,317, Cl. 179-15.0BY.

Dravo Corporation: *See—*
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Dresser Industries, Inc.: *See—*
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Drzewiecki, Tadeusz M., to United States of America, Army. Pure fluid passive square function generator. 3,885,592, Cl. 137-842.000.

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Du Boff, Philip L., to Shelfmaker Products Corporation. Bedspread holder or the like. 3,885,256, Cl. 5-319.000.

Duchene, Joseph R.; and De Christopher, Philip J., to Richardson Chemical Company. Alkaline bright zinc plating. 3,886,054, Cl. 204-55.00R.

Duffy, James J.: *See—*
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Etec Corporation: *See—*

Dunkelberger, Thomas L., to Clark Equipment Company. Magnetic cable takeup device. 3,885,773, Cl. 254-190.00R.
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Snow, Austin Matthew, Jr., 3,886,108.
Dvonch, William; and Alburn, Harvey E., to American Home Products Corporation. Mononitrate esters of 1,4:3,6-dianhydro-d-glucitol. 3,886,186, Cl. 260-347.200.
Dwyer, John Robert; Schrock, Martin Omer; Dibbern, John Earl, Jr.; and Judge, Alfred Herbert, to Black and Decker Manufacturing Company, The. Housing assembly for air compressor and the like. 3,885,892, Cl. 417-234.000.
E. R. Squibb & Sons, Inc.: *See—*
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Eads, Ralph; and Campbell, Charles Langdon, to Heat/Fluid Engineering Corporation. Centrifugal tuyere for gas separator. 3,885,934, Cl. 55-457.000.
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Eaton Corp.: *See—*
Braun, Eugene R.; and Richards, Elmer A., 3,885,447.
Eberhardt, Heinrich. Closure construction for container with lid. 3,885,696, Cl. 215-337.000.
Ebine, Toshiyuki: *See—*
Ohuchi, Yasushi; Ebine, Toshiyuki; Ohwada, Takefumi; and Tomozaki, Ryozo, 3,886,256.
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Ecodyne Corporation: *See—*
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Economou, George J. Process for the reduction of pain in the removal of adhesive tapes and bandages. 3,885,559, Cl. 128-156.000.
Edelberg, Norman L.; and Forsberg, John R., to Helene Curtis Industries, Inc. Heat-assisted permanent waving system. 3,885,577, Cl. 132-7.000.
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Egerer, Herbert; and Carlson, Donald W. Compressed air hose connection. 3,885,819, Cl. 285-93.000.
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Eker, James E.; and Weidner, Everett, to Pioneer Arts & Crafts, Inc. Method of making a wax candle replica. 3,886,252, Cl. 264-225.000.
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Ellithorpe, Ernest Ralph; and Fletcher, Ronald Bruce, to Vennard & Ellipthorpe Ltd. Method for the solidification of molten sulphur. 3,885,920, Cl. 23-293.00S.
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Engel, William T.: *See—*
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Eron, Robert E. Sewage disposal system. 3,886,068, Cl. 210-44.000.
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Evans, Glen R. Internal combustion and steam pressure generator with powered expansion engine. 3,885,390, Cl. 60-531.000.
Evans, Robert J. Self-locking fastener. 3,885,613, Cl. 151-22.000.
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Ewald, Ronald F., to Seaquist Valve Company. Child safety closure for aerosol containers. 3,885,717, Cl. 222-402.110.
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Farnsworth, Robert P.; Hill, Lowell W.; and Wong, Shi-Yin, to Hughes Aircraft Company. Liquid crystal digital reticle. 3,885,861, Cl. 350-160.0LC.
Farr, Glyn Phillip Reginald, to Girling Limited. Brake Adjusters. 3,885,653, Cl. 188-196.00D.
Farr, John B., to Amoco Production Company. Adaptive Monofrequency pilot signals. 3,886,493, Cl. 340-15.5TD.
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Feinstein, Joseph, to Varian Associates. Electron beam electrical power transmission system. 3,886,398, Cl. 315-5.000.
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Felder, Ernst; and Pitre, Davide, to Bracco Industria Chimica, Societa per Axioni. 3-Hydroxyacyl aminomethyl-5-acylamino-2,4,6-triiodobenzoic acid salts as x-ray contrast agents. 3,886,203, Cl. 260-501.110.
Felicetta, Vincent F.; and Wenzel, Donald E., to Georgia-Pacific Corporation. Phenolic adhesives. 3,886,101, Cl. 260-17.500.
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Ferguson, Alisdair Cullen; McGregor, John; and MacPherson, Alastair George, to Burroughs Corporation. Micro program data processor having parallel instruction flow streams for plural levels of sub instruction sets. 3,886,523, Cl. 340-172.500.
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Forgo, Gabor; Meyer, Erwin; and Moser, Karl, to Zellweger Uster AG. Electrostatic printer with movable style. 3,886,563, Cl. 346-74.0ES.

Forrest, John W., to Bowman/Ali, Inc. Switch operating device for use with an over center diaphragm switch contact assembly with contact ramp camming surface. 3,886,341, Cl. 200-328.000.

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Forster, Hans-Joachim M.; and Bulow, Manfred, to Daimler-Benz Aktiengesellschaft. Servo-steering device for vehicles. 3,885,456, Cl. 91-380.000.

Foster, Jack D.; Kirk, Russell F.; Moreno, Frederick E.; and Ahmed, Samir A., to GTE Sylvania Incorporated. Power stabilized CO_2 gas transport laser. 3,886,481, Cl. 331-94.50T.

Foster, Thomas W., to Fiberboard Corporation. Carton with easy opening reclosure. 3,885,732, Cl. 229-51.0TC.

Fouineteau, Gilberte. Domestic appliance for drying vegetables. 3,885,321, Cl. 34-58.000.

Foye, John J., to Kaiser Aluminum & Chemical Corporation. DC casting mold assembly. 3,885,617, Cl. 164-283.000.

Fraioli, Donato M., to Air-Tech Industries Inc. Reinforces inflatable. 3,885,360, Cl. 52-2.000.

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Freese, Lennart Werner, to New-Invent S.A. Telescopic piston-cylinder assembly for hydraulic machines and machinery components. 3,885,459, Cl. 92-119.000.

Frei, Oskar; and Mukherjee, Dilip. Cooled rotor blade for a gas turbine. 3,885,609, Cl. 416-97.000.

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French, John B., to Compac Corporation. Label applicator with retention means for flexible air tubes. 3,885,705, Cl. 221-211.000.

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Friesen, Dietrich P. Method of and apparatus for projecting spliced film or tape. 3,885,864, Cl. 352-204.000.

Friesz, Reinhardt. Wet concrete separator. 3,886,063, Cl. 209-44.000.

Fritz Schwarzer GmbH: *See—*
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Frump, John A., to Commercial Solvents Corporation. Oxazoline emulsifier in polymerization of styrene and butadiene. 3,886,128, Cl. 260-84.700.

Frye, Bruce J. Separable self-securing holding device. 3,885,768, Cl. 248-467.000.

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Fujii, Joanne G., to Beatrice Foods Company. Method for preparing bland caseinates. 3,886,300, Cl. 426-656.000.

Fujikawa, Akira; and Takusagawa, Takashi, to Bridgestone Tire Company Limited. Safety tire. 3,885,614, Cl. 152-340.000.

Fujimori, Masao, to Taiheiyo Coal Mining Co., Ltd. Mining shield-supporter. 3,885,397, Cl. 61-45.00R.

Fujimura, Akira, to Nippon Electric Company, Limited. Transport-direction reversing apparatus for an automatic mail handling system and the like. 3,885,664, Cl. 198-21.000.

Fujinami, Hiroshi: *See—*
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Fujioka, Yoshisato; and Ishizuka, Tetsuro, to Kabushiki Kaisha Yashica. Zoom lens. 3,885,862, Cl. 350-186.000.

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Funahashi, Takaji. Stamping device. 3,885,495, Cl. 101-327.000.

Funtikov, Evgeny Vasilievich: *See—*
Veprintsev, Vladimir Ivanovich; Klyachko, Lev Iosifovich; Kudrya, Nikolai Andreevich; Suslov, Evgeny Ivanovich; Grishin, Gennady Petrovich; Kolchin, Anatoly Vasilievich; Funtikov, Evgeny Vasilievich; Shpak, Vladimir Fedorovich; and Barkov, Vasily Andreevich, 3,885,637.

Furlenmeier, Andre; Lanz, Paul; Vogler, Karl; and Zanetti, Guido, to Hoffmann-La Roche Inc. 6-Acyl derivatives of aminopenicillanic acid. 3,886,142, Cl. 260-239.100.

Furth, Harold P.; and Ellis, Robert A., Jr., to United States of America, Energy Research and Development Administration. Magnetic pumping in spatially inhomogeneous magnetic fields. 3,886,402, Cl. 315-111.700.

Furukawa Electric Co., Ltd., The: *See—*
Sekiguchi, Hideo; and Sadamitsu, Kazuo, 3,886,251.

Furukawa, Junji; Kobayashi, Eiichi; and Kawagoe, Takahiro, to Bridgestone Tire Company Limited. Alkali metalated acetylene-conjugated diene random copolymer. 3,886,127, Cl. 260-82.100.

Furuta, Hiroshi: *See—*
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Furutsu, Takashi, to Koyo Seiko Company Limited. Bearing lubricating device. 3,885,842, Cl. 308-187.000.

Fusaroli, Marzio; and Pecorella, Alessandro, to Ates Componenti Elettonici S.p.A. Planar epitaxial process for making linear integrated circuits. 3,885,999, Cl. 148-175.000.

G. D. Searle & Co.: *See—*
Brown, Edward A., 3,886,146.
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G. J. Roush: *See—*
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G & L Industries, Inc.: *See—*
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G. Siempelkamp & Co.: *See—*
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Gaebelein, Georg N.: *See—*
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Gagnon, Victor J., to American Shoe Machinery Corp. Shoe support for lasting machine. 3,885,263, Cl. 12-142.00R.

Gaind, Arun K.: *See—*
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Galaev, Auli Alexandrovich: *See—*
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Galatha, Matthew J.; and Tynan, Richard F., to International Business Machines Corporation. Document photography system. 3,885,871, Cl. 355-23.000.

Gale, Walter W.; Ashcraft, Thomas L., Jr.; and Saunders, Rhoderick K., to Exxon Production Research Company. Oil recovery process utilizing higher alkyl toluene sulfonate. 3,885,626, Cl. 166-273.000.

Gale, Walter W.: *See—*
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Gali Mallofre, Salvador. Hairdryers. 3,885,322, Cl. 34-100.000.

Gall, Kurt. Apparatus for treating photographic material in closed cassettes. 3,886,575, Cl. 354-311.000.

Galle, Friedhelm: *See—*
Randebrock, Rudolf; Bollert, Volker; Lukesch, Heinz; Muller, Gertrud; Rappen, Ludwig; and Galle, Friedhelm, 3,886,277.

Gallington, Roger W. Balance type angle of attack indicator. 3,885,431, Cl. 73-180.000.

Gallo, Charles F., Jr., to Xerox Corporation. Method and apparatus for adjusting corotron currents. 3,886,416, Cl. 317-262.00A.

Gallo, Duane Gordon, to Mead Johnson & Company. Ammonium carboxylate sebum inhibition process. 3,886,278, Cl. 424-267.000.

Gallo, Mario: *See—*
Melcher, Domenic; and Gallo, Mario, 3,885,427.

Ganci, James Barry: *See—*
Chen, Carl; and Ganci, James Barry, 3,886,066.

Gargini, Eric John, to Communications Patents Limited. Wired broadcasting systems providing telephone communication. 3,886,456, Cl. 325-308.000.

Garrett Corporation, The: *See—*
Boesel, Walter F., 3,885,302.

Garshenin, Vladimir Vasilievich: *See—*
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Gea Luftkuhlergesellschaft Happel GmbH & Co. KG: *See—*
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Gebr. Giulini GmbH: *See—*
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Bayer, Gerhard; Cherdron, Egon; Haerter, Manfred; and Hecht, Ernst, 3,886,245.

Geffers, Hans; Radt, Walter; Schultz, Hartmut; and Schliebs, Reinhard, to Bayer Aktiengesellschaft. 2-Phosphono-butane-1,2,3,4-tetracarboxylic acids. 3,886,204, Cl. 260-502.40R.

Geffers, Hans; Radt, Walter; Schulz, Hartmut; and Schliebs, Reinhard, to Bayer Aktiengesellschaft. 2-Phosphono-butane-1,2,4-tricarboxylic acids. 3,886,205, Cl. 260-502.40R.

Genakis, Joseph M. Pin tumbler lock. 3,885,409, Cl. 70-364.00A.

General Dynamics Corporation: *See—*
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Genthe, James E., to Itek Corp. Capacitor with photo-conductive dielectric. 3,886,415, Cl. 317-258.000.

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Gerken, Ralph F.: *See—*
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Getgen, Lawrence E., to GTE Automatic Electric Laboratories Incorporated. Electric resonant transfer filter. 3,886,316, Cl. 179-15.0AA.

Geusic, Joseph Edward: *See—*
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Gianantonio, Anacleto; and Coco, Antonia, to Gruppo Lepetit S.p.A. Method for the preparation of phthalazino (2,3-B) phthalazine-5(14H), 12(7H)-dione. 3,886,154, Cl. 260-250.00P.

Giangiulio, Clayton. Candle with automatic snuffer. 3,885,905, Cl. 431-34.000.

Gibson, Clarence John; and Kimble, Kenneth, to Kaiser Aerospace & Electronics Corp. Conduit for cryogenic fluid transportation. 3,885,595, Cl. 138-155.000.

Gibson, Joseph D.: *See—*
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Giertz, Hubert: *See—*
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Spiegel, William; Spiegel, Jacob; and Miller, Albert, 3,885,671.

Gilbu, Agnar, to Owens-Corning Fiberglas Corporation. Method and apparatus for making a reinforced wall. 3,886,016, Cl. 156-171.000.

Gilleran, Frank M.; and Jorge, Arlindo, to United States of America, Navy. Dual oscillator. 3,886,550, Cl. 343-17.20R.

Gilley, James E., to Keyes Fibre Company. Packaging tray with juice trapping viewing windows. 3,885,727, Cl. 229-2.500.

Gilley, James E., to Keyes Fibre Company. Packaging tray with upper and lower viewing windows. 3,885,728, Cl. 229-2.500.

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Gluck, Adolph M., to Singer Company, The. Synchronization of split site landing systems. 3,886,552, Cl. 343-108.00R.

Go, Tadahiro; and Suzuki, Takashi, to Nippon Zeon Co., Ltd. Aqueous coating composition. 3,886,110, Cl. 260-29.70H.

Gofman, Boris Izrailevich: *See—*
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Golborn, Peter; and Duffy, James J., to Hooker Chemicals & Plastics Corp. Method of rendering textiles flame retardant with phosphorus containing melamine. 3,885,912, Cl. 8-116.00P.

Goldman, Melvin; and Kronman, Joseph H., to National Patent Development Corporation. Dental treatment. 3,886,266, Cl. 424-53.000.

Goldmann, Bernhard. Elongated, collapsible device. 3,885,881, Cl. 403-291.000.

Goldstein, Raymond: *See—*
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Golla, Manfred: *See—*
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Gomm, Thiel J.; and Price, Stephen E., to Inex, Inc. Optical inspection apparatus. 3,886,356, Cl. 250-223.00B.

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Goodbary, Edgar R., to Unit Rig & Equipment Co. Elevatable cab for vehicles. 3,885,643, Cl. 180-89.00R.

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Goppen, Albert Adolfovich; Nikolaev, Igor Vladimirovich; Vysotsky, Iosif Fadeevich; Zaslavsky, Mikhail Maximovich; Klushin, Nikolai Alexandrovich; Petreev, Anatoly Mikhailovich; Dronova, Lidia Mikhailovna; Lednikov, Anatoly Ivanovich; Grishenkov, Jury Alexandrovich; and Bashlykov, Jury Mikhailovich. Pneumatic hammer. 3,885,634, Cl. 173-104.000.
Gordin, Myron K., to G & L Industries, Inc. Retractible tool holder. 3,885,308, Cl. 30-162.000.
Gorelik, Semen Samuilovich: *See—*
Akimov, Jury Stepanovich; Galaev, Auli Alexandrovich; Gorelik, Semen Samuilovich; Gofman, Boris Izrailevich; Ermoshin, Vyacheslav Dmitrievich; Korovin, Stanislav Konstaninovich; Naumov, Vladimir Vasilievich; Preobrazhentsev, Konstantin Andreevich; Fronk, Stanislav Vladislavovich; Shvartsman, Vadim Lvovich; Garshenin, Vladimir Vasilievich; Stakhov, Oleg Fedorovich; Kruglov, Igor Ivanovich; and Samokhvalov, Mark Markovich, 3,886,002.
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Gould, Robert R., Jr., to General Motors Corporation. Domestic appliance control and display systems. 3,886,539, Cl. 340-337.000.
Gower, Roger L. Hook connector assembly. 3,885,384, Cl. 59-93.000.
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., to Itek Corp. Photosensitive silver halide layers and process. 3,885,966, Cl. 96-50.00R.
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DeSimone, Robert S.; and Gradeff, Peter S., 3,886,216.
Desimone, Robert S.; and Gradeff, Peter S., 3,886,217.
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Green, Cyril Robert, to Medio, Mario D.; and Medio, Grace E. Foot operation for a pump. 3,885,449, Cl. 74-512.000.
Green, David Thomas. Apparatus for producing a vacuum in a test tube. 3,885,549, Cl. 128-2.00F.
Green, Philip S., to Stanford Research Institute. Apparatus for coupling an array of ultrasonic transducers to an ultrasonic compressional image field and scanning the image field. 3,886,490, Cl. 340-5.0MP.
Green, Sanford: *See—*
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Greene, Leonard M., to Safe Flight Instrument Corporation. Vertical speed command instrument. 3,885,430, Cl. 73-179.000.
Gregg, David W.; Kidder, Ray E.; and Biehl, Arthur T., to United States of America, Energy Research and Development Administration. Traveling wave laser system. 3,886,482, Cl. 331-94.50G.
Gregory, Arthur B. Portable livestock feeder/shelter. 3,885,524, Cl. 119-16.000.
Grieger, Gerhard; and Bohrdt, Joaquin, to Siemens Aktiengesellschaft. Fluid actuating device for an electric circuit breaker. 3,885,454, Cl. 91-26.000.
Griffin Bros., Inc.: *See—*
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Grimes, Alton O.; and Pugh, Frank D., to Bendix Corporation, The. Autopilot radio guidance signal circuit including controlled integrator. 3,885,760, Cl. 244-77.00B.
Grishenkov, Jury Alexandrovich: *See—*
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Gross, Daniel M., to Battelle Memorial Institute. Filtering antisolar and heat insulating glass. 3,885,855, Cl. 350-1.000.
Grove, Edward H. Quick couple electric outlet. 3,885,852, Cl. 339-95.00D.
Grove, Hiram D.; and Sauders, Harry A. Boat loading and unloading apparatus. 3,885,689, Cl. 214-450.000.
Groves, Harvey H. Vaginal medicator. 3,885,564, Cl. 128-271.000.
Grunbaum, Gunnar; Wallen, John Erik; Gustafsson, John Kjell; and Widmark, Gustaf, to Sandvik Aktiebolag. Method of producing chromium containing alloys. 3,885,958, Cl. 75-58.000.
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Haase, Kurt H., to United States of America, Air Force. Templates for switch setting in computer control. 3,886,337, Cl. 200-46.000.
Habermann, Helmut, to Societe Europeenne de Propulsion. Magnetic bearing. 3,885,839, Cl. 308-10.000.
Habermeier, Jurgen; and Kunz, Walter, to Ciba-Geigy Corporation. Polyesteramides based on bis-aminoalkyl hydantoins or dihydrouracils. 3,886,123, Cl. 260-75.00N.
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Hadermann, Albert F.; and Waters, Paul F. Apparatus for determining the water content of liquids and gases. 3,885,916, Cl. 23-253.00R.
Hadzimihalis, Theodore M., to Bell & Howell Company. Convertible projector with door actuated mirror. 3,885,868, Cl. 353-71.000.
Haeger, Virgil J. Foldable table and bench assembly. 3,885,829, Cl. 297-159.000.
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Hafner, Otto P. Method of interlocking overlying sheets. 3,885,299, Cl. 29-521.000.
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Hankes, Robert W.; Schramm, Eugene J.; Spiker, James C.; and Tober, Frank T., to Somat Corporation. Waste pulping machine with replaceable shear members. 3,885,745, Cl. 241-46.110.
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Kelch, Heinz; Kirchgessner, Hilmar; and Schuh, Eduard, to Kienzle Apparate GmbH. Tape carrier for record tapes and the like. 3,885,751, Cl. 242-74.100.
Keller, Helmut: *See—*
Kaiser, Anton; Keller, Helmut; and Kugelmann, Adolf, 3,885,304.
Keller, Wolfgang, to Siemens Aktiengesellschaft. Adjustable induction coil for zone melting of semiconductor rods. 3,886,509, Cl. 336-62.000.
Kemme, Herbert Rudolph Conrad; and Scharf, Edward Jonathan, to American Cyanamid Company. Isomerization of isopropylnaphthalene alkylate mixtures. 3,886,223, Cl. 260-668.00A.
Kenju Sangyo Kabushiki Kaisha: *See—*
Sasaki, Fumi, 3,885,489.
Kennedy, Daniel W.: *See—*
Hufford, James H.; and Kennedy, Daniel W., 3,886,459.
Kennedy, James R., to Pacemaker Diagnostic Clinic of American, Inc. Cardiac function monitoring system and method for use in association with cardiac pacer apparatus. 3,885,552, Cl. 128-2.05R.
Kennedy, Peter; and Scott, Keith Taylor, to United Kingdom Atomic Energy Authority. Method of producing a siliconized silicon carbide artefact. 3,886,246, Cl. 264-59.000.
Kenney, Edward J.: *See—*
DiSalvo, Walter A.; Kenney, Edward J.; and Smith, Frank R., Jr., 3,886,098.
Keplinger, Edward G.: *See—*
Costello, Matthew J.; Dolan, Donald T.; Debaudringhien, Andre T.; Hurkmans, Antoon M.; Jasinski, Kenneth R.; and Keplinger, Edward G., 3,886,308.
Kern, Calvin V., to Eltra Corporation. Method and apparatus for leveling a trailer. 3,885,813, Cl. 280-150.500.
Keyes Fibre Company: *See—*
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Khorolsky, Viktor Borisovich: *See—*
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Kidder, Ray E.: *See—*
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Kienel, Joseph E. Label applying apparatus. 3,886,026, Cl. 156-361.000.

Kienzle Apparate GmbH: *See—*
Kelch, Heinz; Kirchgessner, Hilmar; and Schuh, Eduard, 3,885,751.

Kikuchi, Kenji: *See—*
Yoshinaga, Fumihiro; Tsuchida, Takayasu; Kikuchi, Kenji; and Okumura, Shinji, 3,886,039.

Kikuchi, Zenichi; Yamada, Keijyo; and Kimura, Tatuo, to Fujishiken Ltd. Artificial tooth supporter for heat treatment. 3,885,313, Cl. 32-40.00R.

Kikumoto, Ryoji; Ito, Masahiro; Nakamura, Akio; and Nomura, Tatsuo, to Mitsubishi Chemical Industries, Ltd. Process for preparing alpha, omega-diaminocarboxylic acids. 3,886,209, Cl. 260-534.00R.

Kilburg, Ronald J.: *See—*
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Kimberly-Clark Corporation: *See—*
Johnson, Russell L.; Kaczmarzyk, Leonard M.; and Skora, Robert F., 3,885,563.

Kimble, Kenneth: *See—*
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Kimi, Atsutane: *See—*
Yoshimura, Hikoji; Nakagawa, Yuji; Yaginuma, Hiroshi; and Kimi, Atsutane, 3,886,111.

Kimura, Tadasu; Uchiyama, Tomozo; and Kochi, Thuneo, to Mitsubishi Rayon Company, Ltd. Polymeric binder material for use in a photoconductive layer employed in electrophotography. 3,885,961, Cl. 96-1.500.

Kimura, Tatuo: *See—*
Kikuchi, Zenichi; Yamada, Keijyo; and Kimura, Tatuo, 3,885,313.

King, Merrill A.; and Bargas, Daniel, to Levingston-Armadillo, Inc. Prefabricated building structure. 3,885,368, Cl. 52-79.000.

King, Verne W. Golf putting practice apparatus. 3,885,796, Cl. 273-186.00C.

Kirby, Edward: *See—*
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Kirchgessner, Hilmar: *See—*
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Kiritani, Masataka; Matsukawa, Hiroharu; Watanabe, Akio; and Imamiya, Hitoshi, to Fuji Photo Film Co., Ltd. Process for producing fine oil-containing microcapsules having strong protective shells and microcapsules produced thereby. 3,886,085, Cl. 252-316.000.

Kirk, Russell F.: *See—*
Foster, Jack D.; Kirk, Russell F.; Moreno, Frederick E.; and Ahmed, Samir A., 3,886,481.

Kirkpatrick, Alan D.; and Warll, Ronald T. Cylinder cover fastening devices. 3,885,486, Cl. 83-659.000.

Kishi, Ikuji: *See—*
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Yagi, Norio; Okai, Hiroshi; Fukuda, Makoto; and Kishi, Ikuji, 3,886,121.

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Kishimoto, Shoji; Aono, Tetsuya; and Noguchi, Shunsaku, to Takeda Chemical Industries, Ltd. Process for producing indan-1-carboxylic acid derivatives. 3,886,207, Cl. 260-515.00A.

Kissell, Leo T.; Hanamoto, Max M.; and Mehltretter, Charles L., to United States of America, Agriculture. Process for reducing shortening while maintaining quality cakes. 3,886,292, Cl. 46-553.000.

Kita, Yasuo, to Sumitomo Electric Industries, Limited. Mechanical servo means. 3,885,455, Cl. 91-369.00B.

Kitamaru, Ryozo; Chu, Hyon Don; and Tsuji, Waichiro. Process for producing a high melting temperature polyethylene employing irradiation and orienting. 3,886,056, Cl. 204-159.200.

Kitazato Gakuen: *See—*
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Kivlen, John A.; Massey, James E., Jr.; and Martin, James H., Jr., to Exxon Research and Engineering Company. Shield tube supports. 3,885,530, Cl. 122-510.000.

Kiyohara, Takehiko: *See—*
Tsunekawa, Tokuichi; Nakamoto, Soichi; Taguchi, Tetsuya; and Kiyohara, Takehiko, 3,885,880.

Klaue, Hermann. Spreading disc brake with removable shoes. 3,885,650, Cl. 188-71.400.

Klayum, Milton A.; and Nelson, Richard E., to Reliable Electric Company. Line protector. 3,886,408, Cl. 317-16.000.

Klayum, Milton A., to Reliable Electric Company. Line protector having gas tube surge arrestor. 3,886,411, Cl. 317-62.000.

Klebold, Franklin R.; and Bruce, Robert L. New electric prod. 3,885,733, Cl. 231-2.00E.

Kleiner, Eduard Karl: *See—*
Falk, Robert Allan; and Kleiner, Eduard Karl, 3,886,201.

Kloimstein, Engelbert: *See—*
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Klushin, Nikolai Alexandrovich: *See—*
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Knapp, Donald P.: *See—*
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Knapp, Maynard Bill, to Knapp Corporation. Mobile home carrying trailer, 3,885,691, Cl. 214-512.000.

Knell, Harvey A.: *See—*
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Kniff, August A. Towing device. 3,885,815, Cl. 280-402.000.

Knight, Joseph W.; and Gilbert, Kennis W., to Amoco Production Company. Dry land airgun implementation system. 3,885,646, Cl. 181-114.000.

Knoche, Hubert: *See—*
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Knorreck, Peter: *See—*
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Kobayashi, Hisamine, to Shikishima Tipton Mfg. Co., Ltd. Automatic recipro finishing machine. 3,885,354, Cl. 51-7.000.

Kobayashi, Kazuyoshi; and Akiyama, Katsuhiko, to Sony Corporation. Field effect transistor. 3,886,582, Cl. 357-22.000.

Kobayashi, Shoichi: *See—*
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Kobayashi, Susumu; Tomita, Kenichi; and Katsura, Hakuji, to Shiseido Co., Ltd. Cosmetics containing saturated, branched synthetic higher hydrocarbon. 3,886,287, Cl. 424-358.000.

Kobetz, Paul, deceased: *See—*
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Kocher, Hans: *See—*
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Koenig, Elmer A.: *See—*
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Koerber, Marvin A.; and Richitelli, Charles G., to Automation Industries, Incorporated. Stretchable reinforced wrapper for insulated flexible duct. 3,885,593, Cl. 138-128.000.

Kohn, Gustave K., administrator: *See—*
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Koizumi, Shun; Suzuki, Takeshi; and Okuno, Chuzo, to Daikin Kogyo Co. Ltd. Method for coating metal substrate with a composition containing vinylidene fluoride polymer or vinyl fluoride polymer. 3,886,103, Cl. 260-22.0CB.

Kojima, Togo, to Tokyo Shibaura Electric Co., Ltd. Injection nozzle for an ink jet printer. 3,886,565, Cl. 346-140.000.

Kolb, George A.: *See—*
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Kolchin, Anatoly Vasilievich: *See—*
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Kolinsky, Miloslav: *See—*
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Kollander, Alfred A. Tool for scraping and cutting. 3,885,271, Cl. 17-69.000.

Konantz, Mark L.; and Leisure, Ronald K., to General Motors Corporation. Solderable multilayer contact for silicon semiconductor. 3,886,585, Cl. 357-67.000.

Konicek, Jiri K., to Perstorp AB. Process for peeling off an aluminum foil. 3,886,022, Cl. 156-247.000.

Koninklijke Industrieele Maatschappij Noury and Van Der Lande N.V.: *See—*
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Konishiroku Photo Industry Co., Ltd.: *See—*
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Konopka, John P., to Burroughs Corporation. Optical chromatic display for navigational guidance. 3,885,876, Cl. 356-153.000.

Kopczynski, John F. Feed mechanism for bending machine. 3,885,410, Cl. 72-307.000.

Koplove, H. Michael: *See—*
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Korfil, Incorporated: *See—*
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Kortner, Lothar: *See—*
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Kosco, Thomas J., to Hughes Aircraft Company. Closed circuit television modem sharing system. 3,886,302, Cl. 178-5.100.

Kosonen, Pentti Einari, to AB Gustavsbergs Fabriker. Lamellar separator. 3,886,064, Cl. 209-157.000.

Koss, George A.: *See—*
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Kost, Rosemary J. Self-adhering disposable protector. 3,885,247, Cl. 2-55.000.

Kostelnicek, Richard J.; and Hibbard, Haines C., to Exxon Production Research Company. System for gathering and recording seismic signals. 3,886,494, Cl. 340-15.5TS.

Kostuch, Donald J.: *See—*
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Koury, Frederic; Bamberg, William I.; and Keeffe, William M., to GTE Sylvania Incorporated. Hafnium activated metal halide arc discharge lamp. 3,886,391, Cl. 313-218.000.

Kovacs nee Mindler, Vera: *See—*
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Kowalski, Stanley S. Heat dissipating sunshade. 3,885,582, Cl. 135-35.00V.

Koyama, Mitsuo: *See—*
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Koyo Seiko Company Limited: *See—*
Furutsu, Takashi, 3,885,842.

Kranz, Hans-Werner; and Lucke, Herbert, to Siemens Aktiengesellschaft. Adapter for coupling a measuring instrument to an electrical ignition system. 3,886,441, Cl. 324-15.000.

Krasin, Lester Q.; and McCallum, Robert D., to Seismograph Service Corporation. Ringing generator for telephone station terminal. 3,886,321, Cl. 179-84.00R.

Kratzer, Otto: *See—*
Suter, Hubert; Berger, Rosemarie; Bipp, Hansjoerg; Buerger, Gert; Hauptmann, Kurt; Kratzer, Otto; and Reimer, Willi, 3,886,199.

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Krauss, Werner, to Claudius Peters A.G. Moveable loading apparatus for fine granular and pulverized loose solids. 3,885,606, Cl. 141-71.000.

Krebs, Charles H., to Molins Machine Company, Inc. Apparatus for shingling flat sheets. 3,885,781, Cl. 271-3.100.

Kriebel, Anthony R. Method and apparatus for detecting the presence of an oil slick on a water surface. 3,885,418, Cl. 73-61.10R.

Krieks, Hans. Knock-down furniture system. 3,885,845, Cl. 312-265.000.

Kristinsson, Haukur; and Rufenacht, Kurt, to Ciba-Geigy Corporation. Control of animal pests with 3H-oxazol-[4,5-6]pyridine-2-one esters of 3-(-o-)or (-s-)-0,0'di(lower alkyl) phosphates and thiophosphates. 3,886,274, Cl. 424-200.000.

Krogstad, Reuben S.: *See—*
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Kronman, Joseph H.: *See—*
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Krook, Soren Sven Olof, to Gullfiber AB. Device to condition rooms. 3,885,462, Cl. 98-40.0DL.

Kropf, Omer G., to Rockwood, Inc. Camper vehicle with movable top. 3,885,826, Cl. 296-23.00R.

Kroth, Neil W.: *See—*
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Kruck, Peter, to Agfa-Gevaert Aktiengesellschaft. Photographic materials which contain barrier layers and antihalation layers. 3,885,969, Cl. 96-84.00R.

Krueger Metal Products, Incorporated: *See—*
Resch, Richard J.; and Bomber, Robert J., 3,885,766.

Kruger, William P.; and Michnowicz, John A., to Hewlett-Packard Company. Multiconfiguration ionization source. 3,886,365, Cl. 250-423.000.

Kruggel, Robert Henry, to International Business Machines Corporation. High gain amplifier. 3,886,468, Cl. 330-30.00D.

Kruglov, Igor Ivanovich: *See—*
Akimov, Jury Stepanovich; Galaev, Auli Alexandrovich; Gorelik, Semen Samuilovich; Gofman, Boris Izrailevich; Ermoshin, Vyacheslav Dmitrievich; Korovin, Stanislav Konstaninovich; Naumov, Vladimir Vasilievich; Preobrazhentsev, Konstantin Andreevich; Fronk, Stanislav Vladislavovich; Shvartsman, Vadim Lvovich; Garshenin, Vladimir Vasilievich; Stakhov, Oleg Fedorovich; Kruglov, Igor Ivanovich; and Samokhvalov, Mark Markovich, 3,886,002.

Krumme, John F. Vapor deposition apparatus with rotatable ring mask. 3,885,520, Cl. 118-49.100.

Kubo, Mitsuo, to Mamiya Koki Kabushiki Kaisha. Device for operating discharge lamps. 3,886,405, Cl. 315-246.000.

Kuchenbecker, Morris William; and Oppermann, Walter John, to American Can Company. Gypsy moth trap. 3,885,341, Cl. 43-65.000.

Kudrya, Nikolai Andreevich: *See—*
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Kugelmann, Adolf: *See—*
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Kuhlthau, Hans Peter; and Raue, Roderich, to Bayer Aktiengesellschaft. Aminodiaryl-indolylmethane dyestuffs. 3,886,152, Cl. 260-247.5FP.

Kunstle, Gerhard; Spes, Hellmuth; and Siegl, Herbert, to Wacker-Chemie GmbH. Process for preparing N,N,N',N'-tetraacetyl compounds. 3,886,212, Cl. 260-561.00R.

Kunz, Walter: *See—*
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Kurahashi, Koichiro; and Tottorik, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Plasma display. 3,886,404, Cl. 315-169.0TV.

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Kurz, Dieter; and Kandler, Herbert, to Wacker-Chemie GmbH. Copolymers of vinyl chloride and 2-hydroxypropyl acrylate. 3,886,129, Cl. 260-86.300.

L. Schuler GmbH: *See—*
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Laakso, Oliver A., to Kamyr, Inc. Process for separating knots from pulp. 3,886,035, Cl. 162-55.000.

Lach, Ronald Louis; and Brier, William Jean, to Elec-Tro-Tec, Inc. Dispatching system circuit. 3,886,414, Cl. 317-137.000.

Lachman, Irwin M.; and Lewis, Ronald M., to Corning Glass Works. Anisotropic cordierite monolith. 3,885,977, Cl. 106-62.000.

Lagrange, Alain: *See—*
Nicolas, Jean; Lagrange, Alain; and Sroussi, Roland, 3,886,077.

La Haye, Paul G., to Aqua-Chem, Inc. Reduction of pollutants in gaseous hydrocarbon combustion products. 3,885,903, Cl. 431-8.000.

Lai, Thomas K. Y. Light and chime control system. 3,886,352, Cl. 250-215.000.

Lamm, Heinz; and Kortner, Lothar, to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine with unitary or multi-partite sealing bar. 3,885,898, Cl. 418-122.000.

LaMontagne, Maurice P.: *See—*
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Lampkin, John C. Syringe with writing surface. 3,885,562, Cl. 128-218.00R.

Lang, Ernest U., to Dayco Corporation. Helical coil forming machine. 3,885,605, Cl. 140-92.600.

Langer, Arthur W.: *See—*
Whitney, Thomas A.; and Langer, Arthur W., 3,886,193.

Lankheet, Jay A. Wall shell construction. 3,885,364, Cl. 52-169.000.

Lanson, Frank; and Spirt, Milton, to Spirt, Milton. Remotely operated TV receiver antennae. 3,886,559, Cl. 343-726.000.

Lantero, Oreste J., Jr.: *See—*
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Lanz, Paul: *See—*

Lester, Waldemar: *See—*

Louder, Nevitt M.; and Gillingham, Warren G.

Lanz, Paul: *See—*
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Laranov, Sergei Glebovich; Braiko, Voldmir Vasilievich; Chigirin, Jury Trofimovich; and Belousov, Vladimir Petrovich. Digital indicator of the electromotive force of a hall-effect device which eliminates the influence of the non equipotential voltage. 3,886,446, Cl. 324-45.000.

Large, George B.; and Pitt, Leland S., to Stauffer Chemical Company. Certain thiophosphate synergists. 3,886,273, Cl. 424-200.000.

Larsen, Albert Johannes. Device for laying flagstones. 3,885,688, Cl. 214-384.000.

Lauenborg, Jan Tronje. Arrangement relating to ship hulls. 3,885,514, Cl. 114-66.50R.

Laughrey, Richard A.: *See—*
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., 3,885,966.

Laukien, Gunther Rudi. Method of separating broad and narrow lines of a frequency spectrum. 3,886,439, Cl. 324-.50R.

Lavedan, Louis J., Jr., to United States of America, Navy. Insertion and differential phase-trim method. 3,886,501, Cl. 333-24.100.

Lavigne, Vernon W.: *See—*
Bailey, James R.; and Lavigne, Vernon W., 3,885,849.

Lavrard, Georges Louis, to S. A. Manufacture d'Armes et Cycles de Chatellerault. Magnetic tool holder. 3,886,508, Cl. 335-285.000.

Lawler, John K.; and Mitchell, John W., Sr. Dental articulator. 3,885,311, Cl. 32-32.000.

Laxaque, Jean: *See—*
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Laxer, Herbert, to American Bank Note Company. Safety inks and documents. 3,886,083, Cl. 252-301.20R.

Laycock, John Nicolas: *See—*
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LCA Corporation: *See—*
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Le Nickel: *See—*
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Lear Avia Corporation: *See—*
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Lear, William P., to Lear Avia Corporation. Nose wheel steering system. 3,885,759, Cl. 244-50.000.

Lebel, Constantin Erwin; and Karmitz, Pierre Ilie Isidore. Containers for aerosols, gases and the like. 3,885,698, Cl. 220-69.000.

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Lee, Bong Kuk, to E. R. Squibb & Sons, Inc. Penicillin derivatives. 3,886,140, Cl. 260-239.100.

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Lee, Poy. Winter emergency brake system. 3,885,823, Cl. 291-15.000.

Lefeuvre, Andre, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Lockable slide fitting for a safety belt system. 3,886,374, Cl. 307-10.0SB.

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Leihe, Wolfgang. Automatic type setting apparatus for printing units. 3,885,468, Cl. 101-93.180.

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Leitner, Michael: *See—*
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Leland, James M. Programmable pulse electroplating process. 3,886,053, Cl. 204-36.000.

Lemieux, Pierre C. Blacktop cutter attachment. 3,885,833, Cl. 299-36.000.

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Lepakhin, Igor Alexandrovich: *See—*
Shurygin, Alexei Petrovich; Bernadiner, Mikhail Naumovich; Esilevich, Boris Semenovich; Rubinshtein, Georgy Nesanelovich; Shipov, Emanuil Ivanovich; Gubarev, Viktor Georgievich; Lepakhin, Igor Alexandrovich; Tripushkin, Rudolf Rudolfovich; Sharov, Petr Mikhailovich; Lurie, Boris Isaevich; Vodnev, Arkady Dmitrievich; Moshkovich, Alexandr Bentsionovich; Lupanov, Pavel Alexandrovich; Lukoshkin, Viktor Leonidovich, deceased; and Lukoshkina, Tatyana Dmitrievane, administrator, 3,885,906.

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Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique. Fiber toration; method and equipment. 3,885,940, Cl. 65-5.000.

Leveen, Harry H. Wound splints. 3,885,570, Cl. 128-335.000.

Levin, Alfred A.; and Richter, Sidney B., to Velsicol Chemical Corporation. N-phenoxyalkyl-L-thiocyanoalkanamides. 3,886,194, Cl. 260-454.000.

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Levingston-Armadillo, Inc.: *See—*
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Levy, Raymond L., to Varian Associates. Liquid toner concentrate dispenser having a valve responsive to hydrostatic pressure. 3,885,709, Cl. 222-133.000.

Levy, Raymond L.; and Day, Gene F., to Varian Associates. Device for discharging charge accumulated between the recording medium and a photoconductive plate in an electrophotographic recorder. 3,885,870, Cl. 355-14.000.

Lewis, David W.: *See—*
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Li, Tao P., to Monsanto Company. Oxidation and ammoxidation catalyst. 3,886,096, Cl. 252-456.000.

Libit, Sidney M. Childproof closures of the pull-push type. 3,885,712, Cl. 222-153.000.

Libutti, Bruce L., to Betz Laboratories Inc. Alumina as a cold-end additive. 3,886,261, Cl. 423-244.000.

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Lim, Drahoslav; Kolinsky, Miloslav; and Jisova, Vaclava, to Ceskoslovenska akademie ved No. 3 Narodni. Catalyzed production of heat stable fiber-forming vinyl chloride. 3,886,130, Cl. 260-92.80R.

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Lipp, Steven Alan, to RCA Corporation. Image display employing filter coated phosphor particles. 3,886,394, Cl. 313-470.000.

List, Ferdinand; Alfs, Helmut; Wember, Kurt; and Orlowski, Friedrich-August, to Chemische Werke Huls Aktiengesellschaft. Process for the preparation of terephthalic acid dimethylester. 3,886,200, Cl. 260-475.00R.

Lloyd, Lester John, to Ball Computer Products, Inc. Optical character reader scanning support mechanism. 3,886,371, Cl. 250-567.000.

Lodge, Edward H., to Bell and Howell Company. Cassette pusher velocity regulator. 3,885,706, Cl. 221-279.000.

Loffelman, Frank Fred, to American Cyanamid Company. N-benzoylsaccharin as peroxygen bleach activator. 3,886,078, Cl. 252-102.000.

Lohmann, Heinz-Juergen, to Siemens Aktiengesellschaft. Electronic storage circuit for digital data processing devices with high fault safety in particular for railroad safety systems. 3,886,381, Cl. 307-238.000.

Lohr, Delmar F., Jr.; Kay, Edward Leo; and Hausch, Walter Richard, to Firestone Tire & Rubber Company, The. Stabilization of polybutadiene resin. 3,886,106, Cl. 260-23.70M.

Lokun, Terence M.; and Poulsen, Peder Ulrik, to Owens-Corning Fiberglas Corporation. Band overlap detector switch for continuous ribbon mandrel. 3,886,338, Cl. 200-61.130.

Long, Robert Alvin; Lucas, Joel William; Over, William Roderick; and Doty, Donald Sudson, to AMP Incorporated. Harness manufacturing apparatus incorporating harness testing means. 3,885,287, Cl. 29-203.0MW.

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Loopco Industries, Inc.: *See—*
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Lorber, Harold; and Duboff, Irving, to Hilabs Company. Magnetically enhanced coaxial cable with improved time delay characteristics. 3,886,506, Cl. 333-96.000.

Louder, Nevitt M.; and Gillingham, Warren G., to Fisher Scientific Company. Dual beam spectrophotometer utilizing a spectral wedge and bifurcated fiber optic bundle. 3,885,879, Cl. 356-189.000.

Louis, Eckhart: *See—*
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Lowry Development Corporation: *See—*
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Lowry, Robert D., to Lowry Development Corporation. Security caps for containers. 3,885,715, Cl. 222-182.000.

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Lyon, Richard S.; and Lyon, Ralph L., to United McGill Corporation. Method and apparatus for cleaning exhaust gas. 3,885,929, Cl. 55-87.000.

MacClaren, Robert H., to Xerox Corporation. Photographic and electrophotographic members with glass fiber containing paper substrates. 3,885,962, Cl. 96-1.800.

MacDonald, William; Webb, George; Waldburger, Peter; and Hughes, Robert G., to Continental Can Company of Canada Limited. Method and apparatus for applying a cutting strip to a container. 3,886,033, Cl. 156-522.000.

MacDonald, William E.; and Harris, Robert C., Jr., to Interpace Corporation. Method and apparatus of decorating a surface of an article. 3,885,522, Cl. 118-406.000.

Macharg, James Adrian. Electronic control system for battery chargers. 3,886,428, Cl. 320-39.000.

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Machuszek, Joseph M.: *See—*
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Madsen, Jens Hilligso. Underground mining arch gateway system. 3,885,395, Cl. 61-45.00R.

Maffey, Alan Loader, Lord Rugby. Handling of livestock. 3,885,527, Cl. 119-98.000.

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Magnie, Robert L. Carrier device for hanger supported garments. 3,885,723, Cl. 224-45.00T.

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Maillard, Gilbert; and Morisset, Jean, to Thomson-CSF. Direct-direct symmetrical converter power pack. 3,886,429, Cl. 321-2.000.

Majeau, Henrie Lionel; and Fitzsimmons, George Washington, to Boeing Company, The. Responder for use in a passive identification system. 3,886,548, Cl. 343-6.80R.

Makar, Francis B., Jr.: *See—*
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Maloney, Thomas C.; Cola, Rudolph A.; and Wescott, Ronald O., to Burroughs Corporation. Buttable, gaseous discharge, display panel including electrodes providing a dot matrix display. 3,886,390, Cl. 313-217.000.

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Manning, Francis S.; Buthod, Paul; Hodgson, Robert A.; and Bagci, Ibrahim, to Maloney-Crawford Tank Corporation. Modified calcium chloride brine desiccant. 3,885,926, Cl. 55-29.000.

March, Harry V.: *See—*
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Marechal, Claude, to Ciments Lafarge S.A. Appliance to measure out a given volume of powder. 3,885,716, Cl. 222-346.000.

Marin, Robert E., to Teletype Corporation. Debounce logic for keyboard. 3,886,543, Cl. 340-365.00E.

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Masuzawa, Isao; Kawada, Shin-ichi; Hirokawa, Yoichi; and Sato, Masatoshi, to Kabushikikaisha Tokyo Keiki. Servo apparatus. 3,886,423, Cl. 318-621.000.
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Matsumoto, Shigeo; Tsuda, Yukio; and Tsuyuki, Tadaharu, to Sony Corporation. Frequency converter circuit with integrated injection capacitor. 3,886,458, Cl. 325-439.000.
Matsumoto, Yoshio; Shirai, Michiko; Saito, Hiroko; Kawashima, Takeshi; and Sakabe, Yuzuru, to Kitazato Gakuen. Preparing purified macromolecular soluble prussian blue. 3,885,921, Cl. 23-300.000.
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Maurer, Edgar A.; and Diehl, Arne J., to Hoover Company, The. Floor care appliance handle with a button-operated piston and cylinder. 3,885,267, Cl. 15-339.000.
Mavrovic, Ivo. Urea synthesis with improved heat recovery and ammonium carbamate recirculation. 3,886,210, Cl. 260-555.00A.
Mawdsley, Thomas Blackburn; and Whittle, Albert, to Carrington Viyella Limited. Shuttleless weaving looms. 3,885,599, Cl. 139-127.00P.
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Bartholome, Ernst; Koehler, Waldemar; Stoeckelmann, Guenter; and May, Albert, 3,886,187.
Mayer, Peter: *See—*
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Mayr, Hubert: *See—*
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Mazzoni, Renato J.: *See—*
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McBride, Kenneth L. Fire suppressing system. 3,885,631, Cl. 169-11.000.
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Krasin, Lester Q.; and McCallum, Robert D., 3,886,321.
McCaully, Ronald J.; Nudelman, Abraham; and Bell, Stanley C., to American Home Products Corporation. 1,3-Dihydro-3 -hydroxy-5-phenyl-2H-1,4-benzodiazepin-2-one, substituted diamino acetate esters and their acid salts in compositions and methods for inducing a calming effect. 3,886,276, Cl. 424-250.000.
McClain, Andrew J. Apparatus for sorting, carrying and delivering mail or the like. 3,885,668, Cl. 206-73.000.
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McGrath, Colin: *See—*
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Cheal, James; and McHenry, Vincent J., 3,886,549.
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McLaughlin, Donald W.: *See—*
Lee, David Q.; and McLaughlin, Donald W., 3,886,315.
McLaughlin, John F.; and Cristy, Stephen S., to United States of America, Energy Research and Development Administration. Specimen transfer container for ion microprobe mass analyzer. 3,886,358, Cl. 250-289.000.
McNease, Wilbern W.: *See—*
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McNeil Corporation: *See—*
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McNeill, Jon L., to Texas Instruments Incorporated. Schottky loaded emitter coupled memory cell for random access memory. 3,886,531, Cl. 340-173.00R.
McPeak, Earl W., Jr.: *See—*
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McRowe, Arthur W., to B. F. Goodrich Company, The. Potassium zinc cuprocyanide. 3,886,262, Cl. 423-364.000.
McWilliams, Joseph E. Mail bag handling apparatus. 3,885,682, Cl. 214-6.00G.
Mead Johnson & Company: *See—*
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Wu, Yao Hua; and Ryan, Richard P., Jr., 3,886,165.
Measurex Corporation: *See—*
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Medio, Grace E.: *See—*
Green, Cyril Robert, 3,885,449.
Medio, Mario D.: *See—*
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Kissell, Leo T.; Hanamoto, Max M.; and Mehltretter, Charles L., 3,886,292.
Meiattini, Franco. Process for the enzymatic determination of glucose with a glucose-oxidase/peroxidase enzyme system. 3,886,045, Cl. 195-103.500.
Meier, Udo H., to Reliance Electric Company. Phase and frequency synchronizing circuit. 3,886,430, Cl. 321-9.00A.
Meier, Udo H., to Reliance Electric Company. Synchronizing circuit having an infinite number of ratios. 3,886,431, Cl. 321-9.00A.
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Mellert, Arnold, to B & W. Filterfabrik Johannes Weber KG. Prism arrangement. 3,885,863, Cl. 350-196.000.
Mellor, Harrison Clay. Linear bearing having replaceable insert. 3,885,837, Cl. 308-3.00R.
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Hull, James S., 3,885,389.
Menn, Julius J.: *See—*
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Menzel, Klaus, to Bendix Corporation, The. Two-speed mechanical quill feed and spindle drive mechanism for a machine tool. 3,885,635, Cl. 173-146.000.
Menzel, Stanley W. O., to Iplex Plastic Industries Pty. Ltd. Attachment of drip feed devices to hoses or the like. 3,885,742, Cl. 239-272.000.
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Inamine, Edward; and Birnbaum, Jerome, 3,886,044.
Merianos, John J.; and Adams, Phillip, to Millmaster Onyx Corporation. Amino derivatives of terrasubstituted benzene compounds. 3,886,284, Cl. 424-330.000.
Merkin, Eugene, to Union Corporation, The. Protective sleeve for refuse handling apparatus. 3,885,467, Cl. 100-229.00A.
Metro Data Corporation: *See—*
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Metz, Paul: *See—*
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Metzger, Jacques: *See—*
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Mikulski, Walter E., to United Aircraft Corporation. Guide for electrochemical drilling. 3,886,059, Cl. 204-224.00M.
Miley, George H., to United States of America, Energy Research and Development Administration. Plasma pumped laser. 3,886,483, Cl. 331-94.50P.
Miller, Albert: *See—*
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Miller, Calvin L.; and Knell, Harvey A., to Caterpillar Tractor Co. Final drive mounting for a track-type vehicle. 3,885,642, Cl. 180-9.20R.
Miller, Howard R.; and Putchinski, Leo J., Jr., to GTE Automatic Electric Laboratories Incorporated. Method and apparatus for testing communications switching system space divided equipment supervisory devices. 3,886,323, Cl. 179-175.20R.
Miller, Lawrence J.; and Smith, Roger M., to Caterpillar Tractor Co. Tether band for flexible hydraulic hoses. 3,885,816, Cl. 280-421.000.
Miller, Ralph R., III: *See—*
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Milling, Robert W., to United States of America, Air Force. Multicomponent flow injector pump for a flowing gas laser with low output pressure. 3,886,478, Cl. 331-94.50G.
Millmaster Onyx Corporation: *See—*
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Mineev, Evgeny Nikolaevich: *See—*
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Minolta Camera Kabushiki Kaisha: *See—*
Ikeuchi, Takeshi, 3,885,750.
Miranda, Salvatore W. Process for controlling oil slicks. 3,886,067, Cl. 210-40.000.
Miroshnikov, Mikhail Mikhailovich; Mineev, Evgeny Nikolaevich; Karapetian, Konrad Saakovich; Ivanova, Roza Nikolaevna; Romanov, Vasily Vasilievich; Kurnakov, Sergei Nikolaevich; Khutoretsky, Garri Mikhailovich; Elin, Ivan Ivanovich; Bykov, Valentin Mikhailovich; and Valchikhin, Dmitry Dmitrievich. Method and apparatus for thermal examination of the interior surface of annular stator packs for electrical machines. 3,886,362, Cl. 250-340.000.
Mitchell, John W., Sr.: *See—*
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Mitchell, Lester R. Silage spreader. 3,885,684, Cl. 214-17.0CB.
Mitchell, Maurice M., Jr., to Atlantic Richfield Company. Conversion of non-cyclic C_3–C_5 alkanes to aromatic hydrocarbons. 3,886,224, Cl. 260-673.000.
Mitchell, William Eric, to Dunlop Limited. Pneumatic tire wheel rim assembly. 3,885,615, Cl. 152-411.000.
Mitsubishi Chemical Industries, Ltd.: *See—*
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Miyamoto, Toshio; Wada, Yuichi; Hamano, Suenobu; Mori, Teijiro; Inoue, Takeo; and Shirasawa, Takashi, 3,886,511.
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Miyahara, Junji, to Fuji Photo Film Co., Ltd. Photographic silver halide emulsion with silver halide grains having one twinning plane. 3,885,970, Cl. 96-94.00R.
Miyakawa, Seinan; and Shimoda, Mitsuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electric camera shutter with voltage checking circuit. 3,886,443, Cl. 324-29.500.
Miyakawa, Seinan; and Tanaka, Hisao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electric shutter controls for cameras. 3,886,571, Cl. 354-234.000.
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Moeller Mfg. Co., Inc.: *See—*
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Moertel, George B. Threadless slide fastener chains. 3,885,274, Cl. 24-205.16C.
Moertel, George B., to Textron Inc. Slide fastener and method and apparatus for making the same. 3,885,276, Cl. 24-205.16R.

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Mohelnicky, Josef: *See—*
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Moisar, Erik; and Riester, Oskar, to Agfa-Gevaert Aktiengesellschaft. Supersensitized direct positive photographic silver salt emulsions. 3,885,972, Cl. 96-126.000.

Molins Machine Company, Inc.: *See—*
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Montano, Joseph V., to Dresser Industries, Inc. Master link assembly. 3,885,445, Cl. 74-250.00R.

Montgomery, Howard W.; and Stanley, Charles R., to Boeing Company, The. Transportable loader for aircraft. 3,885,685, Cl. 214-38.08B.

Moody, Harold W., Jr.; and Schaefer, Donald D., to Dunham-Bush, Inc. Optimized point of injection of liquid refrigerant in a helical screw rotary compressor for refrigeration use. 3,885,402, Cl. 62-505.000.

Moore, Gary Lee, to Owens-Illinois, Inc. Method of making a reinforced heat exchanger matrix. 3,885,942, Cl. 65-33.000.

Moore, Lionel G., Jr.; and Flynn, Thomas P., to Super Products Corporation. Dust filtration system. 3,885,932, Cl. 55-314.000.

Morenius, Bo Emil Fredrik: *See—*
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Moreno, Frederick E.: *See—*
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Morgan, Norman D., to Clemar Manufacturing Corporation. Timing unit for connecting power sequentially to a plurality of stations. 3,886,378, Cl. 307-141.400.

Mori, Hisataka: *See—*
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Mori, Teijiro: *See—*
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Morine, Richard L.; and Hokes, James J., to Fedco Inc. Guard assembly for endless flexible drive members. 3,885,471, Cl. 74-611.000.

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Morris, Edwin E., to General Electric Company. Automatic ranging in an active television system. 3,886,303, Cl. 178-6.000.

Morrison, Howard J.; and Nix, Donald F., to Marvin Glass & Associates. Balancing toy set. 3,885,342, Cl. 46-22.000.

Morrison, Wallace T., to Stoody Company. Variable flow-control valve. 3,885,769, Cl. 251-5.000.

Morrison, Wilbur J., to Bell and Howell Company. Gripper jaw insert mistake detector. 3,885,780, Cl. 270-56.000.

Mortensen, Jack G.; and Hurst, John L., to Tandy Corporation. Antenna swivel mount. 3,886,560, Cl. 343-882.000.

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Mosko, Joseph A.; and Corzine, Robert G., to United States of America, Navy. Wideband, matched three port power divider. 3,886,498, Cl. 333-9.000.

Moss, James R.; and Wilson, Walter, to Bendix Corporation, The. Control device for rolled material feed. 3,885,747, Cl. 242-75.430.

Motoren-und Turbinen-Union Munich GmbH: *See—*
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Mukherjee, Dilip: *See—*
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Muller, Gertrud: *See—*
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Mullinix, Charles D. Package construction. 3,885,731, Cl. 229-43.000.

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Munch, Otto: *See—*
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Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Horiuchi, Hideo; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, to Sankyo Company Limited. Stabilization of synthetic polymers. 3,886,115, Cl. 260-45.90R.

Murayama, Naohiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pyroelectric element of polymer film. 3,885,301, Cl. 29-592.000.

Murayama, Seiichi: *See—*
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Na, Jung Hwan. Camera and cartridge. 3,886,574, Cl. 354-284.000.

Nacci, George Raymond, to du Pont de Nemours, E. I., and Company. Photoimaging process using nitroso dimer. 3,885,964, Cl. 96-35.100.

Nafziger, Betty O. Closeable, disposable paperboard scoop. 3,885,266, Cl. 15-257.100.

Nagahisa, Seiji: *See—*
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Nagoya, Yoshishige; Takeuchi, Takashi; Murai, Kosuke; and Amano, Hirota, to Pacific Metals Co., Ltd. Closed electric furnace and method for operation thereof. 3,885,908, Cl. 432-1.000.

Naito, Motohiro, to Nihon Denshi Kabushiki Kaisha. Multiple ion beam type double focusing mass spectrometer. 3,886,357, Cl. 250-285.000.

Naito, Takayuki; Nakagawa, Susumu; and Abe, Yoshio, to Bristol-Myers Company. 4'-Deoxykanamycin A. 3,886,138, Cl. 260-210.00K.

Naito, Takayuki; Nakagawa, Susumu; and Abe, Yoshio, to Bristol-Myers Company. Derivatives of kanamycin. 3,886,139, Cl. 260-210.00K.

Najvar, Daniel J., to Dow Chemical Company, The. Low shrink water extended vinyl ester resin emulsion. 3,886,107, Cl. 260-29.6WQ.

Nakagawa, Susumu: *See—*
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Nakamura, Rikuzo; and Kishigami, Hiromu, to Nittoku Metal Industry Co. Ltd.; and Toyo Glass Company Ltd. Glass container testing apparatus. 3,885,421, Cl. 73-94.000.

Nakanishi, Yoichiro: *See—*
Shindo, Akio; Nakanishi, Yoichiro; and Sawada, Yoshihiro, 3,886,263.

Nakayama, Kazufumi: *See—*
Takagi, Mikio; Kamioka, Hajime; Nakayama, Kazufumi; and Terada, Chiaki, 3,886,003.

Narodny, Leo H. Keyboard using optical switching. 3,886,544, Cl. 340-365.00P.

Nastas, George: *See—*
Baldin, Frede; and Nastas, George, 3,886,240.

Nasu, Takuya, to Matsushita Electric Industrial Co., Ltd. Video recording system for reducing flicker in the skip field mode. 3,886,589, Cl. 360-11.000.

Nathanson, Harvey C.: *See—*
Guldberg, Jens; and Nathanson, Harvey C., 3,886,310.

National Electro-Cook Corporation: *See—*
Theimer, Ernst Theodore; and Roslonski, Donald Joseph, 3,886,290.

National Patent Development Corporation: *See—*
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National Research and Development Corporation: *See—*
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National Semiconductor Corporation: *See—*
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Naumov, Vladimir Vasilievich: *See—*
Akimov, Jury Stepanovich; Galaev, Auli Alexandrovich; Gorelik, Semen Samuilovich; Gofman, Boris Izrailevich; Ermoshin, Vyacheslav Dmitrievich; Korovin, Stanislav Konstaninovich; Naumov, Vladimir Vasilievich; Preobrazhentsev, Konstantin Andreevich; Fronk, Stanislav Vladislavovich; Shvartsman, Vadim Lvovich; Garshenin, Vladimir Vasilievich; Stakhov, Oleg Fedorovich; Kruglov, Igor Ivanovich; and Samokhvalov, Mark Markovich, 3,886,002.

Navrat, Leonard F. Dental floss holder. 3,885,579, Cl. 132-92.00R.

Nawa, Motoyuki: *See—*
Amagami, Keizo; Takahashi, Yutaka; Nawa, Motoyuki; Kawabata, Norio; Nishibayashi, Nobuhiko; and Sasada, Katsumi, 3,885,736.

Naylor, Hugh E., III; and Williams, Robert A., to International Business Machines Corporation. Deflection sensors for ink jet printers. 3,886,564, Cl. 346-75.000.

Neavin, William T. Pill dispenser with movable trap chamber and agitator. 3,885,703, Cl. 221-202.000.

Neder, Gunter, to SKF Industrial Trading and Development Company, B.V. Connecting link for the races of ball bearings. 3,885,840, Cl. 308-184.00R.

Nelson, Alfred M.; McPherson, Robert G.; and Martin, Maurice S., to Cubic Industrial Corporation. Microfiche readout apparatus. 3,885,867, Cl. 353-27.000.

Nelson, Richard E.: *See—*
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Neumann, Robert: *See—*
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New-Invent S.A.: *See—*
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New Zealand Inventions Development Authority: *See—*
York, Albert Garnett, 3,885,338.

NGK Spark Plug Co., Ltd.: *See—*
Tanaka, Hiroshi; and Yamamoto, Yoshihiro, 3,886,254.

Nicastro, Lawrence N.; and Munger, John R., to United States of America, Army. Base drag reduction. 3,885,385, Cl. 60-250.000.

Nichols Engineering & Research Corporation: *See—*
Davy, Thomas E.; and Marquess, Gerald E., 3,885,507.

Nicholson, Donald C. Method of making plastic embedded specimens. 3,886,248, Cl. 264-102.000.

Nicolas, Jean; Lagrange, Alain; and Sroussi, Roland, to Thomson-CSF. Garnet structure ferrimagnetic material having a saturation magnetisation less than 1000 gauss for microwave applications. 3,886,077, Cl. 252-62.570.

Nicolay, Hugh Crawford, to Harris Corporation. Isolated photodiode array. 3,886,587, Cl. 357-49.000.

Nicolini, Anthony J.: *See—*
Rosen, Norwood; and Nicolini, Anthony J., 3,886,534.

Nield, Eric, to Imperial Chemical Industries Limited. Thermoplastic compositions containing methacrylonitrile polymer. 3,886,231, Cl. 260-876.00R.

Nihon Denshi Kabushiki Kaisha: *See—*
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Goppen, Albert Adolfovich; Nikolaev, Igor Vladimirovich; Vysotsky, Iosif Fadeevich; Zuslavsky, Mikhail Maximovich; Klushin, Nikolai Alexandrovich; Petreev, Anatoly Mikhailovich; Dronova, Lidia Mikhailovna; Lednikov, Anatoly Ivanovich; Grishenkov, Jury Alexandrovich; and Bashlykov, Jury Mikhailovich, 3,885,634.

Nikolai, William L., Jr.; and Wheelock, Thomas D., to Iowa State University Research Foundation, Inc. Process for mineral refining. 3,886,259, Cl. 423-166.000.

Nilsson, Erik Henning: *See—*
Borg, Sven Christer; Hesson, Christer Ragnar; and Nilsson, Erik Henning, 3,885,678.

Ninomiya, Michikazu: *See—*
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Nippon Electric Company, Limited: *See—*
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Seal Co., Ltd.: *See—*
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Nippon Soken, Inc.: *See—*
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Nippon Zeon Co., Ltd.: *See—*
Go, Tadahiro; and Suzuki, Takashi, 3,886,110.
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Nippondenso Co., Ltd.: *See—*
Ohtake, Toshikazu; Taniguchi, Koichi; Sakurai, Yasuhiko; Higo, Nobumasa; and Ohta, Jun, 3,886,517.
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Nishibayashi, Nobuhiko: *See—*
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Nittoku Metal Industry Co. Ltd.: *See—*
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Nitzsche, Siegfried; Hittmair, Paul; Hechtl, Wolfgang; Louis, Eckhart; and Wohlfarth, Ernst, to Wacker-Chemie GmbH. Room temperature curable compositions. 3,886,118, Cl. 260-46.50G.

Niwa, Koichi, to Fuji Electric Co., Ltd. Method and apparatus for controlling multiple suspension cranes. 3,886,417, Cl. 318-7.000.

Nix, Donald F.: *See—*
Morrison, Howard J.; and Nix, Donald F., 3,885,342.

Nobbs, Mulford J., to Con-Stan Industries, Inc. Foot massage pad. 3,885,555, Cl. 128-25.00B.

Noffsinger, Gerald G. Pocket reel. 3,885,752, Cl. 242-96.000.

Noguchi, Shunsaku: *See—*
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Noguchi, Yasuhiro: *See—*
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Nolte, Albert C., Jr.: *See—*
Trattner, Burton C., 3,885,346.

Nolte and Nolte: *See—*
Bilbao, Benjamin, 3,886,281.

Noly, Jean, to Potain. Device including a pulley, a clutch, a retarder, and a brake, in particular for hoisting gears. 3,886,255, Cl. 310-94.000.

Nomura, Tatsuo: *See—*
Kikumoto, Ryoji; Ito, Masahiro; Nakamura, Akio; and Nomura, Tatsuo, 3,886,209.

Noone, Michael J., to General Electric Company. Fire resistant composition. 3,885,980, Cl. 106-109.000.

Nor-Lo Engineering Co.: *See—*
Jones, Ralph D., 3,885,377.

Norcross, James E.: *See—*
Thomas, Royal David, Jr.; and Norcross, James E., 3,885,922.

Nordin, Elling Harald. Saliva extractor. 3,885,312, Cl. 32-33.000.

Nordin, Ivan C., to Parke, Davis & Company. Oxazolo [3,2-D]pyrazolo[4,3-F] [1,4]diazepin-6(7H)-one compounds. 3,886,143, Cl. 260-239.30T.

Nordin, Ivan C.; and Dewald, Horace A., to Parke, Davis & Company. Oxazolo(and oxazino)(3,2-d)pyrazolo-(3,4-f)(1,4)diazepin-5(6H)-one compounds. 3,886,144, Cl. 260-239.30T.

Nordischer Maschinenbau Rud. Baader: *See—*
Dohrendorf, Franz, 3,885,270.

Norgren Co., C. A.: *See—*
Hall, Robert Lee, 3,885,599.

Norman, Jack Lee, to Norman Industries, Inc. Method and apparatus for forming a tube. 3,885,419, Cl. 72-370.000.

Norris, Edwin E., to General Electric Company. Automatic ranging in an active television system. 3,886,303, Cl. 178-6.000.

North American Rockwell Corporation: *See—*
Bowers, Robert Lee; and Hall, Robert Lee, 3,885,599.
Cooper, Jerry Lee, 3,885,600.
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Hall, Robert Lee; and Bowers, Robert Lee, 3,885,599.
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Hall, Robert Lee; and Wilson, Walter, 3,885,747.
Hall, Robert Lee; Wilson, Walter; and Cooper, Jerry Lee, 3,885,600.
Wilson, Walter; and Hall, Robert Lee, 3,885,747.

Northern Electric Company, Limited: *See—*
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Noreus, Sture Erik Olof, to Mo Och Domsjo Aktiebolag. Process for determining the conditions needed in controllably obtaining sulfate pulp having a predetermined kappa number. 3,886,034, Cl. 162-49.000.

Norris, Russel W. Ice machine control mechanism. 3,885,937, Cl. 62-137.000.

Nortech Laboratories, Inc.: *See—*
Spencer, Jacob J., 3,885,403.

North American Philips Corporation: *See—*
Pedroso, Raul Ismael, 3,885,251.

Northcutt, Michael E. Orthodontic appliance. 3,885,310, Cl. 32-14.00D.

Northern Electric Company Limited: *See—*
Dalgleish, Jack Frank; and Lukas, Helmut Hans, 3,885,859.
Hemming, Raymond Charles, 3,886,324.

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Noval, Barry A.: *See—*
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Nowroski, Alvin P.: *See—*
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Nuclear Fuel Services, Inc.: *See—*
Rollins, Jack D.; Best, Ralph E.; Riggs, Robert R.; Anderson, Clifford J.; and Barnhart, Victor J., 3,886,368.

Nudelman, Abraham: *See—*
McCaully, Ronald J.; Nudelman, Abraham; and Bell, Stanley C., 3,886,276.

Nutter, Dale E., to Heat/Fluid Engineering Corporation. Centrifugal apparatus for separating entrained liquids from a gaseous stream. 3,885,935, Cl. 55-457.000.

Oakes, Thomas Francis, to Bridgewater, Martin, a part interest. Architectural frames. 3,885,371, Cl. 52-475.000.

Oakley, Charles Burkhardt; and Schwarz, Hans George, to RCA Corporation. Control apparatus for a two-way cable television system. 3,886,454, Cl. 325-52.000.

Oberschwabishche Metallwarenfabrik GmbH & Co. KG: *See—*
Vorbach, Jorg L.; and Tess, Peter, 3,885,255.

Obst, Karl-Heinz; Stradtmann, Jurgen; Metz, Paul; and Meyer, Francis, to Rheinische Kalksteinwerke GmbH; and Acieries Reunies de Burbach-Eich-Dudelange S.A., ARBED. Method and composition for the treatment of ferrous melts and process for making the treating composition. 3,885,956, Cl. 75-53.000.

Occelli, Emilio: *See—*
Fontanella, Luigi; and Occelli, Emilio, 3,886,177.

Odier, Jean, to Societe Anonyme Francaise du Ferodo. Brake assembly. 3,885,651, Cl. 188-73.500.

Ogawa, Takuzo: *See—*
Ohuchi, Hirobumi; Kamei, Tatsuya; Tsukuda, Kiyoshi; and Ogawa, Takuzo, 3,886,579.

Ogihara, Masuo; and Watanabe, Masanori, to Seiko Koki Kabushiki Kaisha. Electromagnetic control device for electrically-operated shutter. 3,886,573, Cl. 354-258.000.

Ogle, James A., to Burroughs Corporation. Display panel. 3,886,389, Cl. 313-188.000.

Ohara, Takashi: *See—*
Wada, Masahiro; Yanagisawa, Isao; Ninomiya, Michikazu; and Ohara, Takashi, 3,886,092.

Ohkubo, Kinji: *See—*
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Ohnishi, Yasushi; and Tsukada, Masamichi, to Hitachi, Ltd. Spectro fluorescence and absorption measuring instrument. 3,886,363, Cl. 250-364.000.

Ohsawa, Hisayou: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Horiuchi, Hideo; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Ohsawa, Hisayou, 3,886,115.

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Ohta, Noriyuki: *See—*
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Ohtake, Toshikazu; Taniguchi, Koichi; Sakurai, Yasuhiko; Higo, Nobumasa; and Ohta, Jun, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle fault detecting and indicating system. 3,886,517, Cl. 340-52.00F.

Ohtsuka, Minoru, to Canon Kabushiki Kaisha. Device for measuring displacement. 3,886,542, Cl. 340-347.0AD.

Ohtsuka, Yozo, to Sagami Chemical Research Center. Process for preparing imidazole-4,5-dicarboxamide. 3,886,176, Cl. 260-309.000.

Ohuchi, Hirobumi; Kamei, Tatsuya; Tsukuda, Kiyoshi; and Ogawa, Takuzo, to Hitachi, Ltd. Avalanche photodiode. 3,886,579, Cl. 357-13.000.

Ohuchi, Yasushi; Ebine, Toshiyuki; Ohwada, Takefumi; and Tomozaki, Ryozo, to Hitachi, Ltd. Stator core for rotary electric machines and method of manufacturing the same. 3,886,256, Cl. 310-216.000.

Ohwada, Takefumi: *See—*
Ohuchi, Yasushi; Ebine, Toshiyuki; Ohwada, Takefumi; and Tomozaki, Ryozo, 3,886,256.

Oka, Shunzo, to Matsushita Electric Industrial Co., Ltd. Variable Resistor. 3,886,514, Cl. 338-126.000.

Okabe, Katsuhiko, to Kabushiki Kaisha Koparu. Printing head feeding mechanism for printers. 3,885,661, Cl. 197-16.000.

Okada, Jujiro; and Satoo, Isamu. Method to produce an oval product having oval circumference by cutting process. 3,885,481, Cl. 82-1.00C.

Okada, Masayasu, to Hitachi, Ltd. Hydraulic machine control apparatus. 3,886,373, Cl. 290-52.000.

Okai, Hiroshi: *See—*
Yagi, Norio; Okai, Hiroshi; Fukuda, Makoto; and Kishi, Ikuji, 3,886,120.
Yagi, Norio; Okai, Hiroshi; Fukuda, Makoto; and Kishi, Ikuji, 3,886,121.

Okano, Akira; Moritani, Yoichi; and Murakami, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Circuit for reproducing reference carrier wave. 3,886,462, Cl. 329-104.000.

O'Keefe, Robert F., to Automatic Switch Company. Tunable fluidic oscillator. 3,885,591, Cl. 137-826.000.

Okuda, Masao: *See—*
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Okumura, Shinji: *See—*
Yoshinaga, Fumihiro; Tsuchida, Takayasu; Kikuchi, Kenji; and Okumura, Shinji, 3,886,039.

Okuno, Chuzo: *See—*
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Pivawer, Philip M., 3,886,239.

Olin, John F., to Monsanto Company. Herbicidal 2-halo-N-(acyloxyalkylene) acetanilides. 3,885,952, Cl. 71-106.000.

Oliver Tire & Rubber Company: *See—*
Hindin, Herbert B.; Johnson, Alfred E.; and Knapp, Donald P., 3,886,028.

Olowinski, Edward J.; and Atkinston, Ernest H. Snap-in mounting and mounting assembly. 3,885,767, Cl. 248-204.000.

Olschewski, Armin: *See—*
Ernst, Horst; Brandenstein, Manfred; and Olschewski, Armin, 3,885,658.

Olsen, Daniel H., to Midland Insta-Change Company. Photo frame and the like. 3,885,336, Cl. 40-152.000.

Olstowski, Franciszek, to Dow Chemical Company, The. Rapid setting polyurethanes from diols and polyisocyanates prepared in the presence of a mixture of liquid modifiers. 3,886,102, Cl. 260-18.0TN.

Olstowski, Franciszek; and Parrish, Donald B., to Dow Chemical Company, The. Rapid setting nonelastomeric polyurethane compositions prepared in the peesence of an aromatic or partially hydrogenated aromatic compound. 3,886,182, Cl. 260-33.6UB.

Olvia Smeltzekeringen Fabriek N.V.: *See—*
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Olympus Optical Co., Ltd.: *See—*
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Omni Spectra, Inc.: *See—*
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Omura, Morikazu; and Okuda, Masao, to Sawafuji Electric Company, Ltd. Electrical refrigerating compressor. 3,886,419, Cl. 318-132.000.

Onda, Eiichi; Koyama, Mitsuo; and Nakagawa, Tadashi, to Seiko Koki Kabushiki Kaisha. Shutter assembly having means for sequentially braking and stopping shutter blades. 3,886,572, Cl. 354-252.000.

O'Neal, Robert G.: *See—*
Adachi, Shizuo R.; and O'Neal, Robert G., 3,885,347.

O'Neil, William A.; and Ray, George H., to Amplifier Design And Service, Inc. Feed-forward amplifier system. 3,886,470, Cl. 330-149.000.

O'Neill, Gerald, to Raymond Lee Organization, Inc., The, a part interest. Toy parachute. 3,885,345, Cl. 46-86.00R.

Ono, Komei. Wrench. 3,885,479, Cl. 81-66.00R.

Ono, Masayuki, to Tanabe Seiyaku Co., Limited. Method for improvement of citrus fruits in quality. 3,885,949, Cl. 71-79.000.

Onoda, Takeshi: *See—*
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Oppenhuizen, Simon M.: *See—*
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Opti-Holding AG: *See—*
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Ordonez, Carlos R., to Westinghouse Electric Corp. Refrigeration system with capacity control. 3,885,938, Cl. 62-196.000.

Orlowski, Friedrich-August: *See—*
List, Ferdinand; Alfs, Helmut; Wember, Kurt; and Orlowski, Friedrich-August, 3,886,200.

Orlowski, Gerald J., to Korlow Corporation. Apparatus for breading food objects. 3,885,519, Cl. 118-16.000.

Osbon, William O.: *See—*
Putman, Thomas H.; and Osbon, William O., 3,885,836.

Osborne, John F.: *See—*
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Osenkina, Valentina Anatolievna; Khorolsky, Viktor Borisovich; and Ippolitov, Jury Sergeevich. Apparatus for carrying out continuous physical and chemical processes in fluidized bed of loose material. 3,885,917, Cl. 23-284.000.

Ostbergs Fabriks AG: *See—*
Forslund, Erik Torsten; and Morenius, Bo Emil Fredrik, 3,885,610.

Osterreichische Stickstoffwerke: *See—*
Diskus, Alfred; Schonbeck, Rupert; Kloimstein, Engelbert; and Mayr, Hubert, 3,886,155.

Ostrowsky, Daniel; Jacques, Andre; and Papuchon, Michel, to Thomson-CSF. Holographic coupler for optical waveguides. 3,885,856, Cl. 350-3.500.

Ota, Hiroshi; and Matsuzaki, Tetsuo, to Toyoda-Koki Kabushiki Kaisha. Grinding machine. 3,885,353, Cl. 51-5.00D.

Otabe, Kisaburo: *See—*
Uchida, Tomio; and Otabe, Kisaburo, 3,885,694.

Ott, Jean-Pierre, to Etablissement Vigarex. Structural element. 3,885,369, Cl. 52-340.000.

Otto, Peter H.: *See—*
Winkle, Gunther; Molzer, Peter; Otto, Peter H.; and Zurek, Rudolf, 3,885,505.

Outboard Marine Corporation: *See—*
Borst, Gaylord M.; and Meyer, Martin H., 3,885,517.

Over, William Roderick: *See—*
Long, Robert Alvin; Lucas, Joel William; Over, William Roderick; and Doty, Donald Sudson, 3,885,287.

Overbey, Charles A. Variable flushing control unit attachment for a toilet. 3,885,253, Cl. 4-67.00A.

Owaki, Kenichi; Umeda, Shozo; Furuta, Hiroshi; Hirose, Tadatsugu; and Shimuzi, Michihiro, to Fujitsu Limited. Brightness modulation system for a plasma display device. 3,886,403, Cl. 315-169.00R.

Owen, Hartley, to Mobil Oil Corporation. Method for catalytic cracking of residual oils. 3,886,060, Cl. 208-120.000.

Owen, Robert E. Hydraulically controlled door with tandem crank arms and latches. 3,885,349, Cl. 49-220.000.

Owens-Corning Fiberglas Corporation: *See—*
Gilbu, Agnar, 3,886,016.
Lokun, Terence M.; and Poulsen, Peder Ulrik, 3,886,338.
Poulsen, Peder Ulrik, 3,886,029.
Rees, Vernon Chester, deceased; and Froberg, Magnus Laird, 3,885,945.

Owens-Illinois, Inc.: *See—*
Amberg, Stephen W.; Doherty, Thomas E.; and Heyne, Clarence A., 3,885,825.
Hinson, David C., 3,886,393.
Moore, Gary Lee, 3,885,942.

Pabreza, Robert M., to Excel Industries, Incorporated. Seat pedestal. 3,885,764, Cl. 248-162.000.

Pacemaker Diagnostic Clinic of American, Inc.: *See—*
Kennedy, James R., 3,885,552.

Pacific Metals Co., Ltd.: *See—*
Nagoya, Yoshishige; Takeuchi, Takashi; Murai, Kosuke; and Amano, Hirota, 3,885,908.

Pagel, Warren C., to Minnesota Mining and Manufacturing Company. Bonding film containing polytetramethyleneoxide elastomeric segments and polyepoxide. 3,886,189, Cl. 260-830.00R.

Paine, Rigaud B., Jr.; and Peshock, Michael, Jr., to Texas Instruments Incorporated. Aluminum retention maze and getter. 3,886,388, Cl. 313-177.000.

Palffy nee Oswald, Maria: *See—*
Huhn, Magda; Tardos, Laszlo; Somfai, Eva; Resofszki, Gabor; Kovacs nee Mindler, Vera; and Palffy nee Oswald, Maria, 3,886,279.

Pallos, Ferenc M.; and Menn, Julius J., to Stauffer Chemical Company. Insecticidal active geranyl and citronyl amine derivatives and their epoxides. 3,886,148, Cl. 260-240.00H.

Pals, Donald T.: *See—*
Sipos, Frank; Pals, Donald T.; and Denning, George S., 3,886,134.

Pamrod, Inc.: *See—*
Venable, Joseph M., 3,886,076.

Panteleev, German Borisovich. Installation for assembly of movable system of dynamic loudspeakers. 3,885,285, Cl. 29-203.00D.

Papalardo, William A. Peeling utensil. 3,885,307, Cl. 30-123.500.

Papuchon, Michel: *See—*
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Parallel Data Systems: *See—*
Pori, John R., 3,886,314.

Park, Kwang H., to General Motors Corporation. Piston ring groove for fluorocarbon seal rings. 3,885,460, Cl. 92-249.000.

Parke, Davis & Company: *See—*
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Nordin, Ivan C.; and Dewald, Horace A., 3,886,144.

Parker-Hannifin Corporation: *See—*
Scannell, John B., 3,885,801.

Parker, James Brown; and Hicks, John Evan Philip, to Imperial Chemical Industries Limited. Manufacture of a smoking material. 3,885,575, Cl. 131-2.000.

Parker, Richard G.: *See—*
Byrne, Neil C.; Cullen, John R.; Parker, Richard G.; and Davis, Harry L., 3,885,260.

Parkhurst, Robert M.; and Stolzenberg, Sidney J., to Stanford Research Institute. Saponin-containing spermatocidal compositions. 3,886,272, Cl. 424-180.000.

Parks, Carl R., to Goodyear Tire & Rubber Company, The. Oxidation resistant polymeric compositions. 3,886,116, Cl. 260-45.85E.

Parliment, Thomas H.; Clinton, William P.; Scarpellino, Richard; Soukup, Robert J.; and Epstein, Martin F., to General Foods Corporation. Flavor compositions and processes. 3,886,297, Cl. 426-573.000.

Parr, Lee Roy. Pitching machine. 3,885,790, Cl. 273-26.00E.

Parrish, Donald B.: *See—*
Olstowski, Franciszek; and Parrish, Donald B., 3,886,182.

Parry, David W. Flexible tube winding and emptying device. 3,885,708, Cl. 222-100.000.

Parsons, John Henry, to Fisons Limited. 1-(Benzamido)pyridinium salts. 3,886,171, Cl. 260-295.00Q.

Pataky, Josef. Machining tool. 3,885,282, Cl. 29-98.000.

Patrick, Thomas R.: *See—*
Cheek, Tom F., Jr.; and Patrick, Thomas R., 3,886,359.

Patterson, Raymond B., III: *See—*
Cook, Koy B., Jr.; Davidson, Jimmy L.; Gibson, Joseph D.; and Patterson, Raymond B., III, 3,886,584.

Patton, Bobbie J.: *See—*
Sexton, James H.; and Patton, Bobbie J., 3,886,495.

Pearson, Peter Reginald, to National Research and Development Corporation. Electrode systems for gas discharge devices particularly gas lasers. 3,886,479, Cl. 331-94.50G.

Pecorella, Alessandro: *See—*
Fusaroli, Marzio; and Pecorella, Alessandro, 3,885,999.

Pedroso, Raul Ismael, to North American Philips Corporation. Artificial heart pump or assist. 3,885,251, Cl. 3-1.000.

Peiser, Alfred M.; and De Pasquale, Matthew J., to Mobil Oil Corporation. Method and apparatus for fractionating multi-component feeds. 3,886,062, Cl. 208-354.000.

Peltier, Richard I. Device for providing fluid communication between two sealed vessels. 3,885,607, Cl. 141-329.000.

Pendergast, Daniel O.; Engel, William T.; and Dorrough, Vernon R., to Jet Research Center. Aircraft emergency egress system. 3,885,761, Cl. 244-121.000.

Pengilly, Eric Alexander. Gearing-torque division. 3,885,446, Cl. 74-331.000.

Penhallurick, Mervyn Major; and McGrath, Colin, to Penmac Distributors. Apparatus for slicing and spreading bread. 3,885,463, Cl. 99-450.200.

Penmac Distributors: *See—*
Penhallurick, Mervyn Major; and McGrath, Colin, 3,885,463.

Pennwalt Corporation: *See—*
Lee, Chie-Ying, 3,885,734.
Schaefer, Robert Bey, 3,885,695.

Peres, Anthony R., to Peres Electronic Machines, Inc. Automatic random case sealer. 3,885,372, Cl. 53-75.000.

Peres Electronic Machines, Inc.: *See—*
Peres, Anthony R., 3,885,372.

Perfect Module Systems, Inc.: *See—*
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Permtek, Incorporated: *See—*
Watkins, Lucius D., 3,885,737.

Perstorp AB: *See—*
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Peschel, Stanley G., to Hipotronics, Inc. Flexible snake-like string of components encased in tubular sheath immersed in oil. 3,886,412, Cl. 317-99.000.

Peshock, Michael, Jr.: *See—*
Paine, Rigaud B., Jr.; and Peshock, Michael, Jr., 3,886,388.

Petaja, Danny A. Level compensated frequency selector. 3,886,457, Cl. 325-399.000.

Peter, Harley D.: *See—*
Harms, A. D., Jr.; Hemphill, Robert B.; Balthrop, Chris A.; and Peter, Harley D., 3,886,328.

Petermann, James P.; Dolinar, William E.; and Ehrlich, Stanley V., to Georgia-Pacific Corporation. Machine for manufacturing articles of folded plasterboard. 3,885,725, Cl. 227-66.000.

Peters, Philip H., Jr., to Environment/One Corporation. Induction cooking unit having all pan safe operation, wide range power control and low start-up and shut-down transients. 3,886,342, Cl. 219-10.490.

Petigara, Ramesh B.: *See—*
Yale, Harry Louis; and Petigara, Ramesh B., 3,886,158.

Petinaux, Marcel; Metzger, Jacques; Aune, Jean-Pierre; and Knoche, Hubert, to Entreprise de Recherches et d'Activities Petrolieres ELF. Method of preparation of indole. 3,886,178, Cl. 260-319.100.

Petit, Jorge E.; Enns, Mark K.; and Carlson, Norman R., to Westinghouse Electric Corporation. Application of basecase results to initiate iterations and test for convergence in a hybride computer arrangement used to generate rapid electric power system loadflow solutions. 3,886,332, Cl. 235-151.210.

Petranek, Milan: *See—*
Zahradka, Pavel; Hrabanek, Jiri; and Petranek, Milan, 3,885,404.

Petreev, Anatoly Mikhailovich: *See—*
Goppen, Albert Adolfovich; Nikolaev, Igor Vladimirovich; Vysotsky, Iosif Fadeevich; Zaslavsky, Mikhail Maximovich; Klushin, Nikolai Alexandrovich; Petreev, Anatoly Mikhailovich; Dronova, Lidia Mikhailovna; Lednikov, Anatoly Ivanovich; Grishenkov, Jury Alexandrovich; and Bashlykov, Jury Mikhailovich, 3,885,634.

Petrolite Corporation: *See—*
Redmore, Derek; and Welge, Frederick T., 3,885,913.

Pfeiffer, Peter W., to Hamilton, Colleen B. Starting device for an internal combustion engine. 3,885,544, Cl. 123-179.0SE.

Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc. Acridone carboxylic acids and derivatives. 3,886,162, Cl. 260-279.00R.

Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc. Disubstituted xanthone carboxylic acid compounds. 3,886,181, Cl. 260-335.000.

Pfizer Inc.: *See—*
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Pharmacia Aktiebolag: *See—*
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Philbrook, James E.; and Thunberg, Jon C., to W. R. Grace & Co. Process for preparing iminodiacetonitrile. 3,886,198, Cl. 260-465.50A.

Philco-Ford Corporation: *See—*
Seidler, Helmut G.; and Walker, James T., 3,885,644.

Philibert, Robert A., to General Signal Corporation. Expansion fitting. 3,885,821, Cl. 285-175.000.

Phillips Petroleum Company: *See—*
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Bertus, Brent J., 3,886,091.
Carter, Cecil O., 3,886,220.
Cobb, Raymond L., 3,886,196.

Piccone, Dante E.; and Somos, Istvan, to General Electric Company. Overvoltage protective circuit for high power thyristors. 3,886,432, Cl. 321-11.000.

Pike, Albert. Rotary engine. 3,885,532, Cl. 123-43.00B.

Pilato, Joseph Michael; Magee, John Storey, Jr.; and Albers, Edwin Wolf, to W. R. Grace & Co. Preparation of hydrocarbon conversion catalysts. 3,886,094, Cl. 252-451.000.

Pillard, Marcel T. Residual gas burner with superimposed, increasing size burning chambers. 3,885,919, Cl. 23-277.00C.

Pilot Chemicals, Inc.: *See—*
Hyman, Mark, Jr., 3,886,082.

Pinsley, Edward A., to United Aircraft Corporation. Closed cycle gas dynamic laser. 3,886,475, Cl. 331-94.50P.

Pioneer Arts & Crafts, Inc.: *See—*
Eker, James E.; and Weidner, Everett, 3,886,252.

Pisano, Frank T.: *See—*
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Pitcher, Robert Hazell, to Automotive Products Co., Ltd. Vehicle suspension. 3,885,809, Cl. 280-112.00A.

Pitre, Davide: *See—*
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Pitt, Leland S.: *See—*
Large, George B.; and Pitt, Leland S., 3,886,273.

Pivawer, Philip M., to Olin Corporation. Process for preparing tris (2-haloalkyl) phosphites. 3,886,239, Cl. 260-977.000.

Place, Osmund V.; Hungerford, Philip C., Jr.; and Gereby, John L., to Cardpak Incorporated. Apparatus for securing articles to a display board. 3,885,373, Cl. 53-196.000.

Pladys, Nestor Leon, to British Petroleum Company Limited, The. Floating roof. 3,885,699, Cl. 220-225.000.

Plantard, Dominique: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 3,885,940.

Playart Limited: *See—*
Tong, Duncan, 3,885,344.

Pogonowski, Ivo C., to Texaco Inc. Method of sealing two telescopic pipes together. 3,885,298, Cl. 29-507.000.

Polak, Leo F.; and Kalensher, Bernard E., to Xerox Corporation. Generation of curved surfaces on a workpiece. 3,885,923, Cl. 51-33.00W.

Polar Corporation: *See—*
Rosen, Norwood; and Nicolini, Anthony J., 3,886,534.

Polaroid Corporation: *See—*
Bloom, Stanley M.; and Hoffman, Arnold, 3,885,990.

Pollock, Gordon J. Modular noise abatement enclosure and joint seal. 3,885,362, Cl. 52-122.000.

Polselli, Luigi; and Polselli, Rudolph T. Curb marking gage. 3,885,315, Cl. 33-42.000.

Polselli, Rudolph T.: *See—*
Polselli, Luigi; and Polselli, Rudolph T., 3,885,315.

Polyak, Samuil Moiseevich: *See—*
Shubin, Vladimir Nikolaevich; Polyak, Samuil Moiseevich; and Silantiev, Viktor Sergeevich, 3,885,475.

Polymer Films Inc.: *See—*
Watson, John J.; and Pucknat, Alice W., 3,886,112.

Pori, John R., to Parallel Data Systems. No hands voice instruction for EEG telemetering system. 3,886,314, Cl. 179-2.0DP.

Porter, Virgle E., to Sippican Corporation, The. Solid-state gating circuit for cross-point switching. 3,886,369, Cl. 250-551.000.

Post Office, The: *See—*
Lund, Alfred Ernest; and Holbrook, Kenneth Harry, 3,885,309.
Rollett, John Mortimer; and Wise, David Richard, 3,886,469.

Potain: *See—*
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Potucek, Frank R., to Duo-Fast Corporation. Rotary entry fastener carrier and strip. 3,885,669, Cl. 206-338.000.

Poulsen, Peder Ulrik, to Owens-Corning Fiberglas Corporation. Method and apparatus for the continuous production of fiber reinforced plastic pipes of variable wall thickness. 3,886,029, Cl. 156-429.000.

Poulsen, Peder Ulrik: *See—*
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Powell, James B.; Yeiser, Beverly G.; and Lightner, Joseph R. Apparatus and method for transporting, unloading and processing live poultry. 3,885,525, Cl. 119-17.000.

PPG Industries, Inc.: *See—*
Bowser, George H.; Mazzoni, Renato J.; and Martinec, John P., 3,886,013.

Precision Screen Machines, Inc.: *See—*
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Preobrazhentsev, Konstantin Andreevich: *See—*
Akimov, Jury Stepanovich; Galaev, Auli Alexandrovich; Gorelik, Semen Samuilovich; Gofman, Boris Izrailevich; Ermoshin, Vyacheslav Dmitrievich; Korovin, Stanislav Konstaninovich; Naumov, Vladimir Vasilievich; Preobrazhentsev, Konstantin Andreevich; Fronk, Stanislav Vladislavovich; Shvartsman, Vadim Lvovich; Garshenin, Vladimir Vasilievich; Stakhov, Oleg Fedorovich; Kruglov, Igor Ivanovich; and Samokhvalov, Mark Markovich, 3,886,002.

Previte, Robert W.: *See—*
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Price, Anthony George: *See—*
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Price, Stephen E.: *See—*
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Procter & Gamble Company, The: *See—*
Bernardino, Lowell Watson, 3,886,075.

Production Engineering Research Association of Great Britain, The: *See—*
Sirk, Walter Ulo; and Street, Douglas Brian, 3,886,375.

Prosser, David G., to Autotrol Corporation. Air driven rotating biological contactor apparatus. 3,886,074, Cl. 210-150.000.

Puchalski, Walter J., to United States of America, Army. Projectile containing pyrotechnic composition for reducing base drag thereof. 3,886,009, Cl. 149-43.000.

Pucknat, Alice W.: *See—*
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Pugh, Frank D.: *See—*
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Pullman Incorporated: *See—*
Mundinger, William D.; and Snyder, Richard C., 3,885,506.

Putchinski, Leo J., Jr.: *See—*
Miller, Howard R.; and Putchinski, Leo J., Jr., 3,886,323.

Putman, Thomas H.; and Osbon, William O., to Westinghouse Electric Corp. Acceleration controlled braking system. 3,885,836, Cl. 303-24.00A.

Putney, David H., to Stratford Engineering Corporation. Classifying centrifugal separator. 3,885,933, Cl. 55-397.000.

Quadracast Systems, Inc.: *See—*
Dorren, Louis, 3,886,312.

Quintiliani, Saverio Michael; Finkel, Alan Grad; Smith, Harry Richard; Damiano, Peter Anthony, Jr.; and Spranger, Douglas Michael, to International Telephone and Telegraph Corporation. Card-programmed frequency control unit for a transceiver. 3,886,453, Cl. 325-25.000.

R. T. Vanderbilt Company, Inc.: *See—*
Beadle, Howard C., 3,886,114

Rabstejnek, Carl V.: *See—*
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Radding, Herbert P.; and Tralle, George E., to RYT Industries. Broad band field displacement isolator. 3,886,502, Cl. 333-24.200.

Radt, Walter: *See—*
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Geffers, Hans; Radt, Walter; Schulz, Hartmut; and Schliebs, Reinhard, 3,886,205.

Ralston, Paul Hotchkiss: *See—*
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Randebrock, Rudolf; Bollert, Volker; Lukesch, Heinz; Muller, Gertrud; Rappen, Ludwig; and Galle, Friedhelm, to Hans Schwarzkopf GmbH. Methods of controlling dandruff using 5,7-dichloro-8-hydroxy quinoline. 3,886,277, Cl. 424-258.000.

Ranford, Alan B.: *See—*
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Rank Organisation Limited, The: *See—*
Whitehouse, David John; Mowbray, Melton; and Spragg, Robert Claude, 3,885,318.

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Rappen, Ludwig: *See—*
Randebrock, Rudolf; Bollert, Volker; Lukesch, Heinz; Muller, Gertrud; Rappen, Ludwig; and Galle, Friedhelm, 3,886,277.

Rasenberger, Otto, to L. Schuler GmbH. Apparatus provided at presses for the lifting and conveying of workpieces. 3,885,680, Cl. 214-1.0BB.

Rasmussen, Keith O. Close-coupled articulating headrest. 3,885,831, Cl. 297-410.000.

Raue, Roderich: *See—*
Kuhlthau, Hans Peter; and Raue, Roderich, 3,886,152.

Rauscher, Heinz: *See—*
Michling, Wilhelm; and Rauscher, Heinz, 3,885,656.

Raven, Leonard Fredrick, to British Nuclear Fuels Limited. Nuclear reactor fuel element assemblies. 3,886,038, Cl. 176-78.000.

Ray, George H.: *See—*
O'Neil, William A.; and Ray, George H., 3,886,470.

Ray, Neil Hunter; and Laycock, John Nicolas, to Imperial Chemical Industries Limited. Li_2O-ZnO-P_2O_5-glass. 3,885,973, Cl. 106-47.00R.

Raymond Lee Organization, Inc., The: *See—*
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Raytheon Company: *See—*
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Evans, Wayne Wheeler; and Christensen, Don Edward, 3,886,307.
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Oakley, Charles Burkhardt; and Schwarz, Hans George, 3,886,454.
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Reagan, Paul E., to United States of America, Energy Research and Development Administration. Device for sampling exhaust stack effluent. 3,885,437, Cl. 73-421.50A.

Reckitt & Colman Products Limited: *See—*
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Redmore, Derek; and Welge, Frederick T., to Petrolite Corporation. Method of inhibiting the corrosion of metals in an acidic environment using quaternary ammonium salts of polyepihalohydrin. 3,885,913, Cl. 21-2.70R.

Reece, Paul: *See—*
Graham, Peter H.; and Reece, Paul, 3,886,387.

Reed, Ronald L.; Healy, Robert N.; Stenmark, Donald G.; and Gale, Walter W., to Exxon Production Research Company. Recovery of oil using microemulsions. 3,885,628, Cl. 166-252.000.

Reed, Samuel F., Jr., to United States of America, Army. Carboxy-terminated butadiene-vinyl ferrocene copolymers. 3,886,190, Cl. 260-439.0CY.

Reed, Samuel F., Jr., to United States of America, Army. Carboxy-terminated copolymers of isoprene and vinyl ferrocene. 3,886,191, Cl. 260-439.0CY.

Reed, Samuel F., Jr., to United States of America, Army. Carboxy-terminated copolymers of chloroprene and vinyl ferrocene. 3,886,192, Cl. 260-439.0CY.

Reed Tool Company: *See—*
Childers, John S.; and Mandrell, Clayton C., 3,885,838.

Reekes, James Thomas; and Elliott, Neville Lucas, to Elliott-Lucas Limited. Hand tools. 3,885,359, Cl. 51-328.000.

Rees, Bettie Jane, administratrix: *See—*
Rees, Vernon Chester, deceased; and Froberg, Magnus Laird, 3,885,945.

Rees, Vernon Chester, deceased (by Rees, Bettie Jane, administratrix); and Froberg, Magnus Laird, to Owens-Corning Fiberglas Corporation. Method of and apparatus for electrically heating molten glass. 3,885,945, Cl. 65-136.000.

Reetz, Heinz, deceased: *See—*
Atzinger, Wolfgang; and Reetz, Heinz, deceased, 3,886,562.

Reetz, Hildgard, heir-at-law: *See—*
Atzinger, Wolfgang; and Reetz, Heinz, deceased, 3,886,562.

Regan, Barrie F. Cutting wheel assembly. 3,885,548, Cl. 125-15.000.

Regan, John J. Multi-layered contoured mattress. 3,885,258, Cl. 5-345.00R.

Regie Nationale des Usines Renault: *See—*
Lefeuvre, Andre, 3,886,374.
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Reich, Manfred, to Chemische Werke Huels Aktiengesellschaft. Process for preparing saturated alcohols. 3,886,219, Cl. 260-638.00B.

Reilly, Eugene P.: *See—*
Borman, Willem F. H.; and Reilly, Eugene P., 3,886,104.

Reimer, Willi: *See—*
Suter, Hubert; Berger, Rosemarie; Bipp, Hansjoerg; Buerger, Gert; Hauptmann, Kurt; Kratzer, Otto; and Reimer, Willi, 3,886,199.

Reimer, William A., to GTE Automatic Electric Laboratories Incorporated. Spring clip wire terminating arrangement. 3,885,853, Cl. 339-97.00R.

Reimer, William A., to GTE Automatic Electric Laboratories Incorporated. Loop shaped circuit test point. 3,885,854, Cl. 339-218.00M.

Reindl, Klaus, to Siemens Aktiengesellschaft. Method for the simultaneous formation of semiconductor components with individually tailored isolation regions. 3,885,998, Cl. 148-175.000.

Reiners, Wolfgang, to G. Siempelkamp & Co. Continuous prepress for fiberboard plant. 3,885,901, Cl. 425-371.000.

Reiss, Martin H.; and Solomon, Elias E., to Gulf & Western Manufacturing Company. Infrared intrusion detection apparatus. 3,886,360, Cl. 250-338.000.

Reliable Electric Company: *See—*
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Klayum, Milton A., 3,886,411.

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Remsen, Lawrence P.: *See—*
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Renzi, Peter N., to American Standard, Inc. Heat exchanger structure for a compact boiler and the like. 3,885,529, Cl. 122-367.0PF.

Resch, Richard J.; and Bomber, Robert J., to Krueger Metal Products, Incorporated. Modular seating assembly. 3,885,766, Cl. 248-188.100.

Research Association of British Point, Colour and Varnish Manufacturers, The: *See—*
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Research Corporation: *See—*
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Resofszki, Gabor: *See—*
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Revolution, Inc.: *See—*
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Rheinische Kalksteinwerke GmbH: *See—*
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Rheinstahl Aktiengesellschaft: *See—*
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Rhodia, Inc.: *See—*
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DeSimone, Robert S.; and Gradeff, Peter S., 3,886,216.
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Rice, Eldon E.; and Lantero, Oreste J., Jr., to Swift and Company. Cheese manufacture using highly active proteolytic enzymes. 3,886,288, Cl. 426-36.000.

Richards, Adrian John. Furniture frames. 3,885,765, Cl. 248-188.100.

Richards, Elmer A.: *See—*
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Richardson Chemical Company: *See—*
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Richardson, Edwin A., to Shell Oil Company. Buffer-regulated carbonate acidization. 3,885,630, Cl. 166-307.000.

Richitelli, Charles G.: *See—*
Koerber, Marvin A.; and Richitelli, Charles G., 3,885,593.

Richter, Helmut; Forster, Eckehard; Spetzler, Edgar; Wendorff, Jochen; and Rommerswinkel, Heinrich-Wilhelm, to Thyssen Niederrhein AG Hutten-und -Walzwerke. Method for the desulfurization of a steel melt. 3,885,957, Cl. 75-58.000.

Richter, Sidney B.: *See—*
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Richter, Werner, to Motoren-und Turbinen-Union Munich GmbH. Unshrouded internally cooled turbine blades. 3,885,886, Cl. 415-116.000.

Ricoh Co., Ltd.: *See—*
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Riedel, Dieter, to Drabert Sohne. Method for the continuous decatizing of fabrics. 3,885,262, Cl. 8-149.300.

Riester, Oskar: *See—*
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Riggs, Robert R.: *See—*
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Rio, Arturo; Cerrone, Marcello; and Saini, Alberto, to Societa' Italiana per Azioni per la Produzione di Calci e Cementi di Segni. Cement products. 3,885,979, Cl. 106-89.000.

Riseman, Jacob, to International Business Machines Corporation. Ferrite head. 3,886,025, Cl. 156-325.000.

Rizzo, Robert. Centrifugal bicycle wheel. 3,885,814, Cl. 280-217.000.

Robert Bosch G.m.b.H.: *See—*
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Kaiser, Anton; Keller, Helmut; and Kugelmann, Adolf, 3,885,304.
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Robert McGregor & Sons Limited: *See—*
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Roberts, Joseph P.: *See—*
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Robertson, Jerry D., to Camp Trails Company. Pack frame suspension means. 3,885,722, Cl. 224-25.00A.

Robinson, Madeleine O.; and Burton, Paul F. Educational method and apparatus. 3,885,326, Cl. 35-35.00J.

Rockwell, Adelbert W., Jr., to USM Corporation. Apparatus for generating pulses of fluid pressure. 3,885,554, Cl. 128-24.00R.

Rockwell, Bruce C., to Dana Corporation. Compression molding apparatus. 3,885,909, Cl. 432-122.000.

Rockwell International Corporation: *See—*
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Schaefer, John O., to International Business Machines Corporation. Steerable follower selection mechanism. 3,885,662, Cl. 197-52.000.

Schaefer, Robert Bey, to Pennwalt Corporation. Snap-on safety closure for containers. 3,885,695, Cl. 215-224.000.

Schaller, Robin E., to Donaldson Company, Inc. Vortex forming apparatus and method. 3,885,931, Cl. 55-261.000.

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Scheerer, Carl C. Apparatus for removing air-in-excess-of-saturation from water samples to be measured. 3,885,930, Cl. 55-196.000.

Schell, Friedrich Peter, to Revolution, Inc. Material shaping platform with multiple or exchangeable templates. 3,885,611, Cl. 144-145.00R.

Schell, Friedrich Peter, to Revolution, Inc. Material shaping platform with multiple or exchangeable templates. 3,885,612, Cl. 144-145.00R.

Schertel, Hanns Von; and Munch, Otto, to Supramar AG. Automatic mechanism for preventing cavitation at air fed hydrofoils and flow bodies. 3,885,513, Cl. 114-66.50H.

Schierer, Joseph Philip, Jr., to Tektronix, Inc. Electronic scanning spectrophotometer system. 3,886,331, Cl. 235-151.300.

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Schlenker, Larry D., to United States of America, Energy Research and Development Administration. Nuclear fuel pin controlled failure device. 3,886,037, Cl. 176-68.000.

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Schmalzbauer, Herbert F., to Xerox Corporation. Stripper finger. 3,885,786, Cl. 271-174.000.

Schmermund, Alfred. Device for use in folding a sheet of packaging material. 3,885,374, Cl. 53-234.000.

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Schneider, Clayton J., Jr., to Calspan Corporation. Fail-safe electrical timer. 3,885,501, Cl. 102-70.20R.

Schneider, Walter. Bathroom cabinet, especially for hospitals. 3,885,844, Cl. 312-227.000.

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Schubert, Walter; Wendt, Harry; and Doss, Reiner. Device for measuring semiconductor radiation sources. 3,886,370, Cl. 250-552.000.

Schucker, Gerald D.; Sugarvara, Ken F.; and Weetoll, Howard H., to Corning Glass Works. Chelating agents coupled to inorganic carriers and method of preparing. 3,886,080, Cl. 252-176.000.

Schuermann, Fritz; Muller, Herbert; Boddicker, Horst; and Heusinger, Peter-Paul, to Bergwerksverband GmbH. Method of measuring changes in the area surrounding a mining cavity. 3,885,423, Cl. 73-88.00E.

Schuh, Eduard: *See—*
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Schutz, Richard Adrien; and Exbrayat, Pierre Elisee. Apparatus for sizing textile fibres. 3,885,277, Cl. 28-1.00R.

Schutze, Henry G.; and Wilder, Hulen L., to Exxon Research and Engineering Company. Polyolefin composition and use of same in alkaline solutions. 3,886,105, Cl. 260-23.00H.

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Sebastiani, Ben A. Adjustable stand for electronic calculators or the like. 3,885,762, Cl. 248-13.000.

Seer, Harold George, Jr., to RCA Corporation. Short circuit protection apparatus for a regulated power supply. 3,886,410, Cl. 317-31.000.

Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Linear electromagnetic systems. 3,886,452, Cl. 325-11.000.

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Selmeczi, Joseph G.; and Vlnaty, Joseph, to Dravo Corporation. Desulfurization of coal. 3,886,048, Cl. 201-17.000.
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Smith, Billy N., to B. F. Goodrich Company, The. Segmental friction member for brake or clutch. 3,885,659, Cl. 192-107.00R.
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Huhn, Magda; Tardos, Laszlo; Somfai, Eva; Resofszki, Gabor; Kovacs nee Mindler, Vera; and Palffy nee Oswald, Maria, 3,886,279.
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Sony Corporation: *See—*
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Watanabe, Seiichi; and Yoshikawa, Takashi, 3,886,467.
Yokokura, Kunio, 3,885,798.
Sorkin, Howard, to RCA Corporation. Fabrication of liquid crystal devices. 3,885,860, Cl. 350-160.0LC.
Soukup, Robert J.: *See—*
Parliment, Thomas H.; Clinton, William P.; Scarpellino, Richard; Soukup, Robert J.; and Epstein, Martin F., 3,886,297.
Spanel, Abram N. Hair cutters. 3,885,305, Cl. 30-30.000.
Spencer, Jacob J., to Nortech Laboratories, Inc. Device for use as a hot and cold compress. 3,885,403, Cl. 62-530.000.
Sperry Rand Corporation: *See—*
Christensen, Bruce A., 3,886,520.
Wegener, Horst A. R.; and Askegard, Douglas R., 3,886,532.
Spes, Hellmuth: *See—*
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Spetzler, Edgar: *See—*
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Spiegel, Jacob: *See—*
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Spiegel, William; Spiegel, Jacob; and Miller, Albert, to Gilbreth Company, by said Miller. Carded package. 3,885,667, Cl. 206-45.330.
Spiegel, William; Spiegel, Jacob; and Miller, Albert, to Gilbreth Company. Securement of band to card. 3,885,671, Cl. 206-460.000.
Spier, I. Martin: *See—*
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Spiker, James C.: *See—*
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Spilo, Richard A.; Hill, Frank W.; and Hoffman, Larry O., to Gulf & Western Industries, Inc. Traffic controller employing a digital computer. 3,886,496, Cl. 340-41.00R.
Spirt, Milton: *See—*
Lanson, Frank; and Spirt, Milton, 3,886,559.
Spitz, Erich: *See—*
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Spranger, Douglas Michael: *See—*
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Fisher, Chester Donald, 3,885,665.
Sroussi, Roland: *See—*
Nicolas, Jean; Lagrange, Alain; and Sroussi, Roland, 3,886,077.
Stabilus GmbH: *See—*
Scheben, Hans, 3,885,350.
Stadler, Henry L., to Ford Motor Company. Air-fuel ratio control system for a combustion engine. 3,885,540, Cl. 123-119.00A.
Staebler, Paul J., to Caterpillar Tractor Co. Governor with adjusting means. 3,885,442, Cl. 73-543.000.
Stakhov, Oleg Fedorovich: *See—*
Akimov, Jury Stepanovich; Galaev, Auli Alexandrovich; Gorelik, Semen Samuilovich; Gofman, Boris Izrailevich; Ermoshin, Vya-

cheslav Dmitrievich; Korovin, Stanislav Konstaninovich; Nau-

cheslav Dmitrievich; Korovin, Stanislav Konstaninovich; Naumov, Vladimir Vasilievich; Preobrazhentsev, Konstantin Andreevich; Fronk, Stanislav Vladislavovich; Shvartsman, Vadim Lvovich; Garshenin, Vladimir Vasilievich; Stakhov, Oleg Fedorovich; Kruglov, Igor Ivanovich; and Samokhvalov, Mark Markovich, 3,886,002.

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Witt, Donald L.; and Staley, Charles F., 3,886,476.

Stambler, Abraham M., to Iscar Ltd. Cutting insert with chip control. 3,885,281, Cl. 29-95.00R.

Stamicarbon, B. V.: *See—*
van Hardeveld, Rudolf; and van der Loos, Jozef L. M., 3,886,109.

Stamicarbon, N.V.: *See—*
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Standard Oil Company, The: *See—*
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Stanford Research Institute: *See—*
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Stanley, Charles R.: *See—*
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Stanway, Edward, to United Merchants and Manufacturers, Inc. Apparatus and method for fluid treatment of textile fabric in rope form. 3,885,406, Cl. 68-176.000.

Stark, Ronald. Antifungal Antibiotic. 3,886,271, Cl. 424-115.000.

Statni Vyzkumny ustav Textilni: *See—*
Zmatlik, Josef; Jisa, Miloslav; and Mohelnicky, Josef, 3,885,601.

Staudt, Heinrich; Hofmann, Eberhard; Eckell, Wolfgang; and Knorreck, Peter, to Robert Bosch G.m.b.H. Fuel injection pump for internal combustion engines. 3,885,895, Cl. 417-499.000.

Stauffer Chemical Company: *See—*
Baker, Don R.; Teach, Eugene G.; and Arnekley, Duane R., 3,885,947.
Baker, Don R.; Teach, Eugene G.; and Arneklev, Duane R., 3,885,948.
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Staver Company, Incorporated, The: *See—*
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Stearns, Richard D., to Eastman Kodak Company. Compensation apparatus for improved microfilm code field reading. 3,885,866, Cl. 353-26.000.

Steckler, Steven Alan, to RCA Corporation. V_{BE} Voltage voltage source temperature compensation network. 3,886,435, Cl. 323-4.000.

Steel Construction & Engineering Co. (Notts.) Limited: *See—*
Savory, Frederick Ralph, 3,885,485.

Steinkamp, Robert A.: *See—*
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Stendel, Wilhelm: *See—*
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Stenmark, Donald G.: *See—*
Reed, Ronald L.; Healy, Robert N.; Stenmark, Donald G.; and Gale, Walter W., 3,885,628.

Stern, Hansjoerg, to General Electric Company. Fluidic gauging sensor head having a gas bearing material. 3,885,417, Cl. 73-37.700.

Stern, Philip; Green, Sanford; and Goodbar, Isaac. Automatic kaleidoscope. 3,885,865, Cl. 353-2.000.

Stevens, Arthur William, to Monodex Business Systems Limited. Pockets for articles in sheet form. 3,885,841, Cl. 312-183.000.

Stieler, Scott M.: *See—*
Stieler, William E.; and Stieler, Scott M., 3,885,268.

Stieler, William E.; and Stieler, Scott M. Mounting device for window draperies. 3,885,268, Cl. 16-94.00D.

Stierli, Robert F.: *See—*
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Stiftelsen Institutet for Mikrovagsteknik Vid Teknishka Hogsk-lan i Stockholm: *See—*
Andermo, Nils Ingvar, 3,885,873.

Stingelin, Valentin, to Battelle Memorial Institute. Method of making sheet glass. 3,885,944, Cl. 65-99.00A.

Stockwell, Claude Lewis: *See—*
Simpson, Malcolm Patrick; and Stockwell, Claude Lewis, 3,886,086.

Stoeckelmann, Guenter: *See—*
Bartholome, Ernst; Koehler, Waldemar; Stoeckelmann, Guenter; and May, Albert, 3,886,187.

Stoffel, Donald J., to Eastman Kodak Company. Method and apparatus for processing a film insert on an aperture card. 3,886,576, Cl. 354-317.000.

Stolzenberg, Sidney J.: *See—*
Parkhurst, Robert M.; and Stolzenberg, Sidney J., 3,886,272.

Stone Container Corporation: *See—*
Rous, Arthur, deceased; Cowen, David; and Eisenstein, Myron, 3,885,729.

Stone, James Edward, to Hoffmann-La Roche Inc. Rotating sampling valve. 3,885,439, Cl. 73-422.0GC.

Stoody Company: *See—*
Morrison, Wallace T., 3,885,769.

Stout, Robert K. Method for making cast-in-place concrete structures. 3,885,296, Cl. 29-433.000.

Stradtmann, Jurgen: *See—*
Obst, Karl-Heinz; Stradtmann, Jurgen; Metz, Paul; and Meyer, Francis, 3,885,956.

Stratford Engineering Corporation: *See—*
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Stratienko, Andrew. Adjustable speed gear drive using multiple cone gearing. 3,885,473, Cl. 74-349.000.

Street, Douglas Brian: *See—*
Sirk, Walter Ulo; and Street, Douglas Brian, 3,886,375.

Strini, Jean-Claude: *See—*
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Studiengesellschaft Kohle GmbH: *See—*
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Sturgis, Daniel C., to ICI United States Inc. Explosively actuated compressed disc line cutter. 3,885,484, Cl. 83-580.000.

Styhr, Karsten H.: *See—*
Chaundy, Gerald J.; Ezis, Andre; Goodyear, Michael U.; Howes, Benjamin T.; Johnson, Carl F.; and Styhr, Karsten H., 3,885,294.

Sue, Takaji: *See—*
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Suganuma, Yasuyuki: *See—*
Yasuda, Yoshizo; Hatano, Itaru; Suganuma, Yasuyuki; and Kameo, Tomohumi, 3,886,100.

Sugarvara, Ken F.: *See—*
Schucker, Gerald D.; Sugarvara, Ken F.; and Weetoll, Howard H., 3,886,080.

Sugimoto, Tadashi; Nagai, Tyuirito; and Shimoda, Isao, to Fujitsu Limited. Magnet operating time compensation system. 3,885,469, Cl. 101-93.480.

Sugino, Kenji; Mori, Hisataka; and Yamagata, Hironobu, to Sugino Machine Limited. Automatically revolved washing apparatus. 3,885,740, Cl. 239-227.000.

Sugino Machine Limited: *See—*
Sugino, Kenji; Mori, Hisataka; and Yamagata, Hironobu, 3,885,740.

Suladze, Ippolit Davidovich: *See—*
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Gun, Dmitry Rudolfovich; Kantor, Ilya Solomonovich; Kakhniashvili, Avtandil Semenovich; Topolyansky, Jury Arnoldovich; Suladze, Ippolit Davidovich; and Tsimbler, Jury Abramovich, 3,885,757.

Sulzer Brothers Ltd.: *See—*
Witt, Karel; and Trepp, Christian, 3,885,394.

Sumitomo Electric Industries, Limited: *See—*
Kita, Yasuo, 3,885,455.

Sumner, Elton; and Adams, Aaron W., Jr. Animal feeder construction. 3,885,526, Cl. 119-52.0AF.

Sun Electric Corporation: *See—*
Trussell, Gerald C.; and Caruth, James R., 3,886,450.

Sun Oil Company: *See—*
Berry, Holland J.; and Lewis, David W., 3,885,627.

Sundstrand Corporation: *See—*
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Sunouchi, Akio: *See—*
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Super Products Corporation: *See—*
Moore, Lionel G., Jr.; and Flynn, Thomas P., 3,885,932.

Supramar AG: *See—*
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Suslov, Evgeny Ivanovich: *See—*
Veprintsev, Vladimir Ivanovich; Klyachko, Lev Iosifovich; Kudrya, Nikolai Andreevich; Suslov, Evgeny Ivanovich; Grishin, Gennady Petrovich; Kolchin, Anatoly Vasilievich; Funtikov, Evgeny Vasilievich; Shpak, Vladimir Fedorovich; and Barkov, Vasily Andreevich, 3,885,637.

Sussman, E. Donald; and Warner, Andrew, to United States of America, Transportation. Condition responsive control apparatus. 3,886,540, Cl. 340-279.000.

Suter, Hubert; Berger, Rosemarie; Bipp, Hansjoerg; Buerger, Gert; Hauptmann, Kurt; Kratzer, Otto; and Reimer, Willi, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of diesters of dicarboxylic acids with substantial waste water purification. 3,886,199, Cl. 260-475.00B.

Suter, Mark H., to Ford Motor Company. Engine air pump pressure/-manifold vacuum controlled exhaust gas recirculating control system. 3,885,538, Cl. 123-119.00A.

Sutton, Alan, to GTE International Incorporated. Telephone exchange signaling system. 3,886,320, Cl. 179-18.00J.

Suzuki, Etsuji: *See—*
Hoshina, Naomi; and Suzuki, Etsuji, 3,886,424.

Suzuki, Masahiko, to Casio Computer Co., Ltd. Control device for tabulation printing. 3,885,663, Cl. 197-176.000.

Suzuki, Takashi: *See—*
Go, Tadahiro; and Suzuki, Takashi, 3,886,110.

Suzuki, Takeshi: *See—*
Koizumi, Shun; Suzuki, Takeshi; and Okuno, Chuzo, 3,886,103.

Suzuki, Toshiyuki: *See—*
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Svedeman, Stanley P.: *See—*
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Svendsen, Lars-Gundro: *See—*
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Swaim, Ronald L.; Cuda, John; and Martin, Timothy W., to Information Storage Systems, Inc. Actuator for a disc drive apparatus. 3,886,595, Cl. 360-106.000.

Swartz, Mark. Engine starter control system. 3,885,543, Cl. 123-179.00B.

Swaters, Pieter Dirk: *See—*
Havinga, Reginoldus; and Swaters, Pieter Dirk, 3,886,117.

Swearingen, Edith. Protective storm door. 3,885,348, Cl. 49-171.000.

Swiden, Lennart Bror Anders; and Lester, Waldemar. Arrangement for optical scanning of the speed of a rotating device such as a vehicle wheel. 3,886,354, Cl. 250-233.000.

Swift and Company: *See—*
Rice, Eldon E.; and Lantero, Oreste J., Jr., 3,886,288.

Switchcraft, Inc.: *See—*
Bailey, James R.; and Lavigne, Vernon W., 3,885,849.

Swoboda, John J., Jr.; and Swoboda, Norman L. Raching arm for pipe sections, drill collars, riser pipe, and the like used in well drilling operations. 3,885,679, Cl. 214-1.0BD.

Swoboda, Norman L.: *See—*
Swoboda, John J., Jr.; and Swoboda, Norman L., 3,885,679.

Symmes, Eliot N., to Habi-Chek Corporation. Wrist band including a mercury switch to induce an electric shock. 3,885,576, Cl. 131-170.00A.

Symons, Robert Spencer, to Varian Associates. Electron beam electrical power transmission system. 3,886,399, Cl. 315-5.000.

Synergistic: *See—*
Halpern, Alfred, 3,886,268.

Syntex (U.S.A.) Inc.: *See—*
Alvarez, Francisco S.; and Van Horn, Albert R., 3,886,185.
Crabbe, Pierre; and Vogel, Pierre, 3,886,206.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,886,162.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,886,181.

Szeliga, Robert, to Culver Tool & Die Co. Machine press for forging bolts and the like. 3,885,411, Cl. 72-342.000.

Szmuszkovicz, Jacob: *See—*
Hester, Jackson B., Jr.; and Szmuszkovicz, Jacob, 3,886,175.

T & T Technology, Inc.: *See—*
Horvath, Edward E.; and Janoski, Robert M., 3,886,326.

Taguchi, Tetsuya: *See—*
Tsunekawa, Tokuichi; Nakamoto, Soichi; Taguchi, Tetsuya; and Kiyohara, Takehiko, 3,885,880.

Taiheiyo Coal Mining Co., Ltd.: *See—*
Fujimori, Masao, 3,885,397.

Taitel, Charles M., to Compensating Tension Controls Inc. Web lap splicer. 3,886,031, Cl. 156-504.000.

Takada, Takezo, to Takata Kojyo Co., Ltd. Selectively engageable three point vehicle safety belt. 3,885,811, Cl. 280-150.0SB.

Takagi, Mikio; Kamioka, Hajime; Nakayama, Kazufumi; and Terada, Chiaki, to Fujitsu Limited. Method of making an integrated circuit. 3,886,003, Cl. 148-187.000.

Takahashi, Kenji: *See—*
Taketa, Katsumi; and Takahashi, Kenji, 3,886,377.

Takahashi, Nobuaki, to Victor Company of Japan, Ltd. Linear voltage controlled oscillator including a timing capacitor charged and discharged through current mirror circuits. 3,886,485, Cl. 331-111.000.

Takahashi, Tokuo: *See—*
Utsumi, Isamu; Murakami, Kanae; Murayama, Teruo; and Takahashi, Tokuo, 3,885,915.

Takahashi, Yutaka: *See—*
Amagami, Keizo; Takahashi, Yutaka; Nawa, Motoyuki; Kawabata, Norio; Nishibayashi, Nobuhiko; and Sasada, Katsumi, 3,885,736.

Takata Kojyo Co., Ltd.: *See—*
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Takeda Chemical Industries, Ltd.: *See—*
Kishimoto, Shoji; Aono, Tetsuya; and Noguchi, Shunsaku, 3,886,207.

Taketa, Katsumi; and Takahashi, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Control receiver. 3,886,377, Cl. 307-129.000.

Takeuchi, Takashi: *See—*
Nagoya, Yoshishige; Takeuchi, Takashi; Murai, Kosuke; and Amano, Hirota, 3,885,908.

Takeuchi, Takeshi, to Hochiki Corporation. Alarm sending and receiving system incorporated in a catv system. 3,886,538, Cl. 340-310.00R.

Takita, Tomohisa: *See—*
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Takusagawa, Takashi: *See—*
Fujikawa, Akira; and Takusagawa, Takashi, 3,885,614.

Talos Systems, Inc.: *See—*
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Tanabe Seiyaku Co., Ltd.: *See—*
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Ono, Masayuki, 3,885,949.
Utsumi, Isamu; Murakami, Kanae; Murayama, Teruo; and Takahashi, Tokuo, 3,885,915.

Tanaka, Hiroshi; and Yamamoto, Yoshihiro, to NGK Spark Plug Co., Ltd. Method of making ceramic sintered body. 3,886,254, Cl. 264-332.000.

Tanaka, Hisao: *See—*
Miyakawa, Seinan; and Tanaka, Hisao, 3,886,571.

Tanaka, Katsuaki, to Iwasaki Tsushinki Kabushiki Kaisha. Capacitance-voltage converter. 3,886,447, Cl. 324-60.0CD.

Tanaka, Kenichi, to Kakuichi Mfg. Co., Ltd. Reinforced flexible pipe. 3,885,594, Cl. 138-129.000.

Tanaka, Shoichi. Expandable band. 3,885,383, Cl. 59-79.00R.

Tanaka, Takashi; Yusa, Haruhiko; and Chubachi, Susumu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing vinyl chloride resin composition. 3,886,232, Cl. 260-876.00R.

Tanaka, Takashi; Yusa, Haruhiko; and Chubachi, Susumu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing vinyl chloride resin composition. 3,886,235, Cl. 260-880.00R.

Tanaka, Teruaki, to Yuasa Battery Company Limited. Apparatus for installing battery vent plug. 3,885,289, Cl. 29-204.00R.

Tandy Corporation: *See—*
Mortensen, Jack G.; and Hurst, John L., 3,886,560.

Taniguchi, Koichi: *See—*
Ohtake, Toshikazu; Taniguchi, Koichi; Sakurai, Yasuhiko; Higo, Nobumasa; and Ohta, Jun, 3,886,517.

Tardos, Laszlo: *See—*
Huhn, Magda; Tardos, Laszlo; Somfai, Eva; Resofszki, Gabor; Kovacs nee Mindler, Vera; and Palffy nee Oswald, Maria, 3,886,279.

Tatar, Alexander. Method for the sharpening of four faces drills and sharpening machine for carrying out this method. 3,885,925, Cl. 51-122.000.

Tatibana Works, Limited: *See—*
Shioya, Kazuhisa, 3,886,353.

Tatsumi, Takeichi; Yoshihara, Hiroshi; and Uesaka, Gaisuke, to Kabushiki Kaisha Denshikagaki. Method for depolymerizing thermoplastic resins by liquid heat transfer media. 3,886,202, Cl. 260-486.00R.

Tatum, Harold E. Speed-setting arrangement for car accelerator pedal. 3,885,450, Cl. 74-513.000.

Taylor, Richard Gerald Meade, to Girling Limited. Automatic adjusters for vehicle brakes. 3,885,652, Cl. 188-196.00D.

Teach, Eugene G.: *See—*
Baker, Don R.; Teach, Eugene G.; and Arnekley, Duane R., 3,885,947.
Baker, Don R.; Teach, Eugene G.; and Arneklev, Duane R., 3,885,948.

Teague, Walter Dorwin, Jr., to Columbia Gas System Service Corporation. Infrared burner and apparatus for producing same. 3,885,907, Cl. 431-328.000.

Tee-Pak, Inc.: *See—*
Burke, Noel I.; and Turbak, Albin F., 3,886,295.

Tektronix, Inc.: *See—*
Schierer, Joseph Philip, Jr., 3,886,331.

Teledyne Exploration Company: *See—*
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Teledyne Industries, Inc.: *See—*
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Teleflex Incorporated: *See—*
Horvath, Louis T.; and Farrington, Robert K., 3,885,474.
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Telefonaktiebolaget L M Ericsson: *See—*
Wester, Kaj Dennis Georg, 3,886,361.

Teletype Corporation: *See—*
Marin, Robert E., 3,886,543.

Teller, Daniel M.: *See—*
Sellstedt, John H.; Teller, Daniel M.; and Guinosso, Charles J., 3,886,150.

Tennis, Francis H., to Hydraulic Industries, Inc. Pressure compensating valve mechanism for hydraulic control valves. 3,885,583, Cl. 137-115.000.

Terada, Chiaki: *See—*
Takagi, Mikio; Kamioka, Hajime; Nakayama, Kazufumi; and Terada, Chiaki, 3,886,003.

Terry, Jessie Mae. Process for making an improved soap powder. 3,886,087, Cl. 252-370.000.

Tess, Peter: *See—*
Vorbach, Jorg L.; and Tess, Peter, 3,885,255.

Tetra Tech Incorporated: *See—*
Rossfelder, Andre, 3,885,440.

Tewey, Robert: *See—*
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Texaco Inc.: *See—*
Canup, Robert E.; and McPeak, Earl W., Jr., 3,886,510.
Pogonowski, Ivo C., 3,885,298.

Texas Instruments Incorporated: *See—*
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Baboian, Robert; and Haynes, Gardner S., 3,886,055.
Barna, Gabriel G., 3,886,058.
Berg, Peter G., 3,886,401.
Cheek, Tom F., Jr.; and Patrick, Thomas R., 3,886,359.
Hartmann, Clinto Sylvester; and Rosenfeld, Ronald Carl, 3,886,504.
McNeill, Jon L., 3,886,531.
Paine, Rigaud B., Jr.; and Peshock, Michael, Jr., 3,886,388.
Townes, William E., Jr.; and Svedeman, Stanley P., 3,886,557.

Textron Inc.: *See—*
Moertel, George B., 3,885,276.

Theimer, Ernst Theodore; and Roslonski, Donald Joseph, to National Electro-Cook Corporation. Electrode type cooking package. 3,886,290, Cl. 426-107.000.

Thibeault, Ronald N., to Sola Basic Industries, Inc. Grounding clip with wrap-around tabs. 3,885,847, Cl. 339-14.00R.

Thiokol Corporation: *See—*
Combs, Charles S., Jr.; and Ashmore, Charles I., 3,886,007.

Thomas, Paul D., to Pfizer Inc. Starch compositions containing salts of certain monoalkyl fumarates and maleates. 3,885,981, Cl. 106-213.000.

Thomas, Robert Lee, to Ford Motor Company. Method of making a composite brake drum. 3,885,299, Cl. 29-156.40R.

Thompson, Alan Gordon, to Ford Motor Company. Method of making a composite brake drum. 3,885,299, Cl. 29-156.40R.

Thompson, Ian Gordon, to Ford Motor Company. Method of making a composite brake drum. 3,885,299, Cl. 29-156.40R.

Thompson, Jack Lee, to Ford Motor Company. Method of making a composite brake drum. 3,885,299, Cl. 29-156.40R.

Thompson, Jerry Lee, to Ford Motor Company. Method of making a composite brake drum. 3,885,299, Cl. 29-156.40R.

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76 3,885,407
278 3,885,408
364A 3,885,409

CLASS 71
30 3,885,946
67 3,885,947
3,885,948
79 3,885,949
85 3,885,950
103 3,885,951
106 3,885,952
3,885,953
3,885,954

CLASS 72
307 3,885,410
342 3,885,411
369 3,885,412
385 3,885,413

CLASS 73
1D 3,885,415
1R 3,885,414
16 3,885,416
37.7 3,885,417
61.1R 3,885,418
67.5R 3,885,419
67.8S 3,885,422
70.1 3,885,420
88E 3,885,423
88 3,885,423
94 3,885,421
103 3,885,424
118 3,885,425
136R 3,885,426
141R 3,885,427
143 3,885,428
153 3,885,429
179 3,885,430
180 3,885,431
194EM 3,885,433
194B 3,885,432
3,885,434
290R 3,885,435
339A 3,885,436
421.5A 3,885,437
422GC 3,885,438
3,885,439
425.2 3,885,440
431 3,885,441
543 3,885,442

CLASS 74
5R 3,885,443
60 3,885,444
250R 3,885,445
331 3,885,446
336 3,885,447
349 3,885,473
424.8R Re.28,429
501R 3,885,474
501 3,885,448
512 3,885,449
513 3,885,450
568R 3,885,470
3,885,475
611 3,885,471
863 3,885,476
866 3,885,472

CLASS 75
.5A 3,885,955
53 3,885,956
58 3,885,957
3,885,958
138 3,885,959

CLASS 81
3.1R 3,885,477
3.46R 3,885,478
66R 3,885,479
121R 3,885,480
625 3,885,485

CLASS 82
1C 3,885,481

CLASS 83
241 3,885,482
365 3,885,483
580 3,885,484
625 3,885,485
659 3,885,486
728 3,885,487
835 3,885,488

CLASS 84
1.01 3,885,489
470 3,885,490

CLASS 85
49 3,885,491
53 3,885,492
3,885,956

CLASS 89
1B 3,885,451
1.87 3,885,452
37H. 3,885,453

CLASS 91
26 3,885,454
369B 3,885,455
380 3,885,456
488 3,885,457

CLASS 92
52 3,885,458
119 3,885,459
249 3,885,460
258 3,885,461

CLASS 96
1LY 3,885,960
1.5 3,885,961
1.8 3,885,962
33 3,885,963
35.1 3,885,964
48HD 3,885,965
50R 3,885,966
67 3,885,967
3,885,968
84R 3,885,969
94R 3,885,970
116 3,885,971
126 3,885,972

CLASS 98
40DL 3,885,462

CLASS 99
450.2 3,885,463
605 3,885,464

CLASS 100
47 3,885,465
218 3,885,466
229A 3,885,467

CLASS 101
93.18 3,885,468
93.48 3,885,469
123 3,885,493
181 3,885,494
327 3,885,495
363 3,885,496
382MV 3,885,497
3,885,498

CLASS 102
23 3,885,499
45 3,885,500
70.2R 3,885,501

CLASS 104
53 3,885,502
76 3,885,503
148LM 3,885,505
148MS 3,885,504

CLASS 105
367 3,885,506

CLASS 106
47Q 3,885,974
47R 3,885,973
3,885,975
52 3,885,976
62 3,885,977
85 3,885,978
89 3,885,979
109 3,885,980
210 3,885,981
252 3,885,982
281 3,885,983
287SB 3,885,984
315 3,885,985

CLASS 110
8R 3,885,507

CLASS 112
262 3,885,508
441 3,885,509

CLASS 113
1G 3,885,510

CLASS 114
.5D 3,885,511
39 3,885,512
66.5H 3,885,513
66.5R 3,885,514
235B 3,885,515

CLASS 115
6.1 3,885,516
41HT 3,885,517

CLASS 118
6 3,885,518
16 3,885,519
49.1 3,885,520
105 3,885,521
406 3,885,522

CLASS 119
1 3,885,523
14.03 3,885,528
16 3,885,524
17 3,885,525
52AF 3,885,526
98 3,885,527

CLASS 122
367PF 3,885,529
510 3,885,530

CLASS 123
8.45 3,885,531
43B 3,885,532
44E 3,885,533
117A 3,885,535
117R 3,885,534
119A 3,885,536
3,885,537
3,885,538
3,885,540
119E 3,885,539
148E 3,885,541
3,885,542
3,885,720
179SE 3,885,544
179B 3,885,543
180R 3,885,545
188P 3,885,546
198D 3,885,547

CLASS 125
15 3,885,548

CLASS 128
2F 3,885,549
2R 3,885,550
2.05A 3,885,551
2.05R 3,885,552
24R 3,885,554
24.1 3,885,553
25B 3,885,555
65 3,885,557
71 3,885,556
142.7 3,885,558
156 3,885,559
214R 3,885,560
214 3,885,561
218R 3,885,562
263 3,885,563
271 3,885,564
276 3,885,565
278 3,885,567
287 3,885,566
3,885,568
303.14 3,885,569
335 3,885,570
400 3,885,571
419P 3,885,572
420 3,885,573

CLASS 131
2 3,885,574
3,885,575
170A 3,885,576

CLASS 132
7 3,885,577
88.5 3,885,578
92R 3,885,579

CLASS 134
3 3,885,986

CLASS 161
26 3,885,618

CLASS 195
386 3,886,346

162 3,885,764

3,886,126

CLASS 134
3 3,885,986
6 3,885,987
57D 3,885,580
122 3,885,581

CLASS 135
35V 3,885,582

CLASS 136
27 3,885,988
83T 3,885,989
102 3,885,990
107 3,885,991
212 3,885,992

CLASS 137
115 3,885,583
3,885,584
282 3,885,585
354 3,885,586
391 3,885,587
565 3,885,588
613 3,885,589
3,885,590
826 3,885,591
842 3,885,592

CLASS 138
128 3,885,593
129 3,885,594
155 3,885,595

CLASS 139
28 3,885,596
29 3,885,597
89 3,885,598
127P 3,885,599
292 3,885,600
383R 3,885,601
425A 3,885,602
3,885,603

CLASS 140
3C 3,885,604
92.6 3,885,605

CLASS 141
71 3,885,606
329 3,885,607
354 3,885,608

CLASS 144
34R 3,885,610
145R 3,885,611
3,885,612

CLASS 148
1.5 3,885,993
3,885,994
6.35 3,885,995
12.1 3,885,996
12.3 3,885,997
175 3,885,998
3,885,999
3,886,000
3,886,001
180 3,886,002
187 3,886,003
3,886,004
188 3,886,005

CLASS 149
14 3,886,006
19.2 3,886,007
41 3,886,008
43 3,886,009
60 3,886,010

CLASS 151
22 3,885,613

CLASS 152
340 3,885,614
411 3,885,615

CLASS 156
71 3,886,011
73 3,886,012
73.1 3,886,012
109 3,886,013
145 3,886,014
166 3,886,015
171 3,886,016
184 3,886,017
202 3,886,018
210 3,886,019
211 3,886,020
246 3,886,021
247 3,886,022
253 3,886,023
294 3,886,024
325 3,886,025
361 3,886,026
380 3,886,027
394 3,886,028
429 3,886,029
504 3,886,030
3,886,031
521 3,886,032
522 3,886,033

CLASS 160
215 3,885,616

CLASS 161
26 3,885,619

CLASS 162
49 3,886,034
55 3,886,035
198 3,886,036

CLASS 164
283 3,885,617
305 3,885,618

CLASS 165
26 3,885,619
32 3,885,620
110 3,885,621
179 3,885,622

CLASS 166
.5 3,885,623
57 3,885,624
181 3,885,625
224A 3,885,627
252 3,885,628
273 3,885,626
302 3,885,629
307 3,885,630

CLASS 169
11 3,885,631

CLASS 172
68 3,885,632
3,885,633

CLASS 173
104 3,885,634
146 3,885,635

CLASS 174
15C 3,885,636
21C 3,886,301

CLASS 175
329 3,885,637
390 3,885,638

CLASS 176
68 3,886,037
78 3,886,038

CLASS 177
172 3,885,639

CLASS 178
5.1 3,886,302
6 3,886,303
6.7R 3,886,304
6.8 3,886,305
3,886,306
7.3D 3,886,307
7.3R 3,886,307
7.3 3,886,308
7.5D 3,886,310
7.6 3,886,309
18 3,886,311

CLASS 179
1GQ 3,886,312
1.5S 3,886,313
2DP 3,886,314
15AA 3,886,316
15BF 3,886,318
15BY 3,886,317
18AH 3,886,315
18FA 3,886,319
18J 3,886,320
84R 3,886,321
170NC 3,886,322
175.2R 3,886,323
178 3,886,324

CLASS 180
5R 3,885,640
3,885,641
9.2R 3,885,642
89R 3,885,643
105E 3,885,644

CLASS 181
49 3,885,645
114 3,885,646

CLASS 182
8 3,885,647
178 3,885,648
187 3,885,649

CLASS 188
71.4 3,885,650
73.5 3,885,651
196D 3,885,652
3,885,653
284 3,885,654

CLASS 191
29 3,885,655

CLASS 192
4R 3,885,656
12C Re.28,433
79 3,885,657
98 3,885,658
107R 3,885,659

CLASS 194
9T 3,885,660

CLASS 195
29 3,886,039
3,886,040
36R 3,886,041
62 3,886,042
66R 3,886,043
80R 3,886,044
103.5 3,886,045
115 3,886,046
139 3,886,047

CLASS 197
16 3,885,661
52 3,885,662
176 3,885,663

CLASS 198
21 3,885,664
110 3,885,665

CLASS 200
1R 3,886,335
46 3,886,337
48R 3,886,336
61.13 3,886,338
61.45M 3,886,339
293 3,886,340
328 3,886,341

CLASS 201
17 3,886,048

CLASS 203
9 3,886,049
80 3,886,050

CLASS 204
18R 3,886,051
33 3,886,052
36 3,886,053
55R 3,886,054
146 3,886,055
159.2 3,886,056
195P 3,886,058
195W 3,886,057
224M 3,886,059

CLASS 206
1.7 3,885,666
45.33 3,885,667
73 3,885,668
338 3,885,669
387 3,885,670
460 3,885,671
503 3,885,672

CLASS 208
120 3,886,060
138 3,886,061
354 3,886,062

CLASS 209
1.78 3,885,452
9 3,885,673
44 3,886,063
157 3,886,064

CLASS 210
15 3,886,065
23 3,886,066
40 3,886,067
44 3,886,068
46 3,886,069
47 3,886,070
108 3,886,071
130 3,886,072
136 3,886,073
150 3,886,074

CLASS 211
4 3,885,674
118 3,885,675

CLASS 212
44 3,885,676
59R 3,885,677

CLASS 214
1BB 3,885,678
3,885,680
1BD 3,885,679
1T 3,885,681
6G 3,885,682
17CA 3,885,683
17CB 3,885,684
38BB 3,885,685
77R 3,885,686
372 3,885,687
384 3,885,688
450 3,885,689
506 3,885,690
512 3,885,691
514 3,885,692
516 3,885,693
768 3,885,694

CLASS 215
224 3,885,695
337 3,885,696

CLASS 219
10.49 3,886,342
68 3,886,343
130 3,886,344
227 3,886,345
386 3,886,346

CLASS 220
22 3,885,697
69 3,885,698
225 3,885,699
263 3,885,700
325 3,885,701

CLASS 221
174 3,885,702
202 3,885,703
211 3,885,704
3,885,705
279 3,885,706

CLASS 222
96 3,885,707
100 3,885,708
133 3,885,709
145 3,885,710
146 3,885,711
153 3,885,712
3,885,713
180 3,885,714
182 3,885,715
346 3,885,716
402.11 3,885,717

CLASS 223
66 3,885,718
103 3,885,719

CLASS 224
5E 3,885,721
25A 3,885,722
45T 3,885,723

CLASS 225
77 3,885,724

CLASS 227
66 3,885,725

CLASS 229
1.5R 3,885,726
2.5 3,885,727
3,885,728
40 3,885,729
43 3,885,730
3,885,731
51TC 3,885,732

CLASS 231
2E 3,885,733

CLASS 233
3 3,885,734
25 3,885,735

CLASS 235
61.11E 3,886,328
61.6E 3,886,326
61.6R 3,886,325
61.7B 3,886,327
92SB 3,886,329
151.21 3,886,330
3,886,332
151.3 3,886,331
181 3,886,333
184 3,886,334

CLASS 237
8R 3,885,736

CLASS 239
34 3,885,737
44 3,885,738
124 3,885,739
227 3,885,740
268 3,885,741
272 3,885,742
542 3,885,743

CLASS 240
1.2 3,886,347
2AD 3,886,348
41L 3,886,349
44.2 3,886,350

CLASS 241
23 3,885,744
46.11 3,885,745
279 3,885,746

CLASS 242
55 3,885,748
56A 3,885,749
74 3,885,750
74.1 3,885,751
75.43 3,885,747
96 3,885,752
107.4 3,885,753
127 3,885,754
129.5 3,885,755
195 3,885,756

CLASS 243
19 3,885,757

CLASS 244
44 3,885,758
50 3,885,759
77B 3,885,760
121 3,885,761

CLASS 248
13 3,885,762
44 3,885,763
162 3,885,764
188.1 3,885,765
3,885,766
204 3,885,767
467 3,885,768

CLASS 250
62 3,886,076
206 3,886,351
215 3,886,352
223B 3,886,353
3,886,356
233 3,886,354
270 3,886,355
285 3,886,357
289 3,886,358
334 3,886,359
338 3,886,360
3,886,361
340 3,886,362
343 3,886,364
364 3,886,363
423 3,886,365
493 3,886,366
505 3,886,367
507 3,886,368
551 3,886,369
552 3,886,370
567 3,886,371
571 3,886,372

CLASS 251
5 3,885,769
229 3,885,779
294 3,885,770
298 3,885,771

CLASS 252
8.75 3,886,075
62 3,886,076
62.57 3,886,077
102 3,886,078
109 3,886,079
176 3,886,080
182 3,886,081
301.2R 3,886,082
3,886,083
316 3,886,084
3,886,085
317 3,886,086
370 3,886,087
422 3,886,088
429R 3,886,089
432 3,886,090
3,886,091
443 3,886,092
447 3,886,093
451 3,886,094
455R 3,886,095
456 3,886,096
519 3,886,097
540 3,886,098
548 3,886,099

CLASS 254
26 3,885,772
190R 3,885,773

CLASS 259
165 3,885,774

CLASS 260
2.5B 3,886,100
17.5 3,886,101
18TN 3,886,102
22CB 3,886,103
22EP 3,886,104
23H 3,886,105
23.7M 3,886,106
29.6WQ 3,886,107
29.6F 3,886,108
29.7EM 3,886,109
29.7H 3,886,110
31.2N 3,886,111
33.4R 3,886,112
33.6UB 3,886,113
40R 3,886,114
45.7P 3,886,116
45.85E 3,886,115
45.85N 3,886,117
45.9R 3,886,115
3,886,118
46.5G 3,886,119
47CP 3,886,120
49 3,886,121
3,886,122
75NP 3,886,123
75N 3,886,124
77.5AP 3,886,125
78.3UA 3,886,126
80.73 3,886,127
82.1 3,886,128
84.7 3,886,129
86.3 3,886,130
92.8R 3,886,131
93.5A 3,886,132
112.5 3,886,133
3,886,134
3,886,135
3,886,136
3,886,137
210K 3,886,138
3,886,139
239.1 3,886,140
3,886,142
239.3D 3,886,141
239.3T 3,886,143
3,886,144
239.55D 3,886,145
239.55R 3,886,146
240D 3,886,147
240H 3,886,148
243C 3,886,149
3,886,150
3,886,151
247.5FP 3,886,152
248A 3,886,153
250A 3,886,155
250P 3,886,154
250 3,886,155
251P 3,886,156
256.4F 3,886,157
3,886,158
256.5R 3,886,160
256.5 3,886,159
268H 3,886,161
279R 3,886,162
281 3,886,163
287R 3,886,164
288R 3,886,165
289R 3,886,166
293.52 3,886,167
293.58 3,886,169
293.59 3,886,170
293.62 3,886,168
295Q 3,886,171
296D 3,886,172
296R 3,886,173
308R 3,886,174
309 3,886,176
309.7 3,886,177
319.1 3,886,178
326.25 3,886,179
326.62 3,886,180
335 3,886,181
345.2 3,886,183
345.3 3,886,184
345.9 3,886,185
347.2 3,886,186
348.6 3,886,187
376 3,886,188
439CY 3,886,190
3,886,191
3,886,192
440 3,886,193
454 3,886,194
465E 3,886,195
465.2 3,886,196
465.5A 3,886,198
465.5R 3,886,197
475B 3,886,199
475R 3,886,200
481R 3,886,201
486R 3,886,202
501.11 3,886,203
502.4R 3,886,204
3,886,205
514D 3,886,206
515A 3,886,207
518R 3,886,208
534R 3,886,209
555A 3,886,210
561H 3,886,211
561M 3,886,213
561N 3,886,213
561R 3,886,212
562N 3,886,214
586C 3,886,215
593R 3,886,216
3,886,217
613R 3,886,218
638B 3,886,219
653.6 3,886,220
658R 3,886,221
668A 3,886,222
673 3,886,223
677R 3,886,224
775AM 3,886,225
830R 3,886,226
836 3,886,189
846 3,886,227
858 3,886,228
859R 3,886,229
860 3,886,230
876R 3,886,231
878R 3,886,232
3,886,233
880R 3,886,234
952 3,886,235
956 3,886,236
959 3,886,237
977 3,886,238
3,886,239

CLASS 261
34B 3,886,240
39B 3,886,241

CLASS 264
31 3,886,242
40 3,886,243
44 3,886,244
56 3,886,245
59 3,886,246
94 3,886,247
102 3,886,248
118 3,886,249
177R 3,886,250
184 3,886,251
225 3,886,252
238 3,886,253
332 3,886,254

CLASS 266
77.5AM 3,886,226

CLASS 267
11 3,885,775
34 3,885,776
64R 3,885,777
71 3,885,778

CLASS 270
56 3,885,780

CLASS 271
3.1 3,885,781
10 3,885,782
34 3,885,783
94 3,885,784
174 3,885,785
3,885,786

CLASS 272
1R 3,885,787
55 3,885,788
83A 3,885,789

CLASS 273
26E 3,885,790
131K 3,885,791
134C 3,885,792
158 3,885,793
160 3,885,794
176E 3,885,795
186C 3,885,796

CLASS 274
2 3,885,797
10R 3,885,798

CLASS 277
81P 3,885,799
165 3,885,800
3,885,801
212 3,885,802

CLASS 280
8 3,885,803
11.13H 3,885,805
11.2 3,885,804
33.99B 3,885,806
80R 3,885,807
81R 3,885,808
81 3,885,808
112A 3,885,809
150SB 3,885,811
3,885,812
150B 3,885,810
150.5 3,885,813
217 3,885,814
402 3,885,815
421 3,885,816
491E 3,885,817

CLASS 285
31 3,885,818
93 3,885,819
137R 3,885,820
175 3,885,821

CLASS 290
1R 3,885,822
52 3,886,373

CLASS 291
15 3,885,823

CLASS 294
19R 3,885,824
115 3,885,825

CLASS 296
23R 3,885,826
64 3,885,827

CLASS 297
52 3,885,828
159 3,885,829
193 3,885,830
410 3,885,831

CLASS 299
14 3,885,832
33 3,885,832
36 3,885,833

CLASS 301
9TV 3,885,834

CLASS 302
39 3,885,835

CLASS 303
24A 3,885,836

CLASS 307
10SB 3,886,374
112 3,886,375
116 3,886,376
129 3,886,377
141.4 3,886,378
202 3,886,379
237 3,886,380
238 3,886,381
245 3,886,382

CLASS 308
3R 3,885,837
8.2 3,885,838
10 3,885,839
184R 3,885,840
187 3,885,842
235 Re.28,431

CLASS 310
12 3,886,383
94 3,886,255
152 3,886,385
216 3,886,256
251 3,886,386
256 3,886,387

CLASS 312
31 3,885,843
183 3,885,841
227 3,885,844
265 3,885,845
306 3,885,846

CLASS 313
39 3,886,384
177 3,886,388
188 3,886,389
217 3,886,390
218 3,886,391
220 3,886,392
223 3,886,393
470 3,886,394
484 3,886,395
486 3,886,396

CLASS 315
3.6 3,886,397
5 3,886,398
3,886,399
64 3,886,400
94 3,886,401
111.7 3,886,402
169TV 3,886,404
169R 3,886,403
246 3,886,405

CLASS 317
5 3,886,406
13R 3,886,407
16 3,886,408
18C 3,886,409
18.007 3,886,409
31 3,886,410
62 3,886,411
99 3,886,412
123 3,886,413
137 3,886,414
258 3,886,415
262A 3,886,416
262 3,886,416

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7 3,886,417
15 3,886,418
132 3,886,419
327 3,886,420
468 3,886,425
593 3,886,421
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3,886,423
630 3,886,424
648 3,886,425

CLASS 320
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22 3,886,427
39 3,886,428

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9A 3,886,430
3,886,431
11 3,886,432
18 3,886,433
27R 3,886,434

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8 3,886,436
3,886,437
22T 3,886,438

CLASS 324
.5E 3,886,440
.5R 3,886,439
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29.5 3,886,442
3,886,443
33 3,886,444
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170 3,886,450
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CLASS 325
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25 3,886,453
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308 3,886,456
399 3,886,457
439 3,886,458

CLASS 328
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109 3,886,460
140 3,886,461

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106 3,886,463

CLASS 330
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15 3,886,465
3,886,466
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107 3,886,469
149 3,886,470
207A Re.28,432

CLASS 331
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94.5C 3,886,474
3,886,480
94.5G 3,886,476
3,886,477
3,886,478
3,886,479
3,886,482
94.5P 3,886,475
3,886,483
94.5T 3,886,481
94.5 3,886,475
107A 3,886,484
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9 3,886,498
10 3,886,499
11 3,886,500
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24.2 3,886,502
30R 3,886,503
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96 3,886,506

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234 3,886,507
285 3,886,508

CLASS 336
62 3,886,509
70 3,886,510

CLASS 337
119 3,886,511
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31R 3,885,849
91R 3,885,850
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95D 3,885,852
97R 3,885,853
218M 3,885,854

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5MP 3,886,488
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3,886,490
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15 3,886,492
15.5TD 3,886,493
15.5TS 3,886,494
18LD 3,886,495
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41R 3,886,496
52E 3,886,516
52F 3,886,517
59 3,886,518
135 3,886,519
146.1AB 3,886,520
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146.1AG 3,886,521
172.5 3,886,523
3,886,524
3,886,525
173CR 3,886,527
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3,886,530
173R 3,886,528
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174TF 3,886,533
216 3,886,534
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279 3,886,540
304 3,886,536
3,886,537
310R 3,886,538
337 3,886,539
347AD 3,886,541
3,886,542
365E 3,886,543
365P 3,886,544
365R 3,886,543
373 3,886,545
388 3,886,546

CLASS 343
6.8R 3,886,548
7.7 3,886,549
17.2R 3,886,550
18E 3,886,551
100SA 3,886,547
108R 3,886,552
112R 3,886,553
3,886,554
117 3,886,555
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708 3,886,558
726 3,886,559
882 3,886,560
910 3,886,561
912 3,886,557

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75 3,886,564
140 3,886,565

CLASS 350
1 3,885,855
3.5 3,885,856
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83 3,885,858
96C 3,885,859
160LC 3,885,860
3,885,861
186 3,885,862
196 3,885,863

CLASS 352
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CLASS 353
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26 3,885,866
27 3,885,867
71 3,885,868

CLASS 354
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252 3,886,572
258 3,886,573
284 3,886,574
311 3,886,575
317 3,886,576

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3R 3,885,869
14 3,885,870
23 3,885,871

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28 3,885,873
107 3,885,874
120 3,885,875
153 3,885,876
172 3,885,877
176 3,885,878
189 3,885,879
226 3,885,880

CLASS 357
2 3,886,577
4 3,886,578
13 3,886,579
15 3,886,580
17 3,886,581
22 3,886,582
23 3,886,583
3,886,584
189 3,885,880
226 3,885,880

CLASS 357
2 3,886,577
4 3,886,578
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15 3,886,580
17 3,886,581
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23 3,886,583
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54 3,886,569
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CLASS 360
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12 3,886,590
75 3,886,592
92 3,886,591
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102 3,886,594
106 3,886,595

CLASS 403
291 3,885,881
297 3,885,882

CLASS 404
72 3,885,883

CLASS 415
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116 3,885,886
122 3,885,885

CLASS 416
97 3,885,609
141 3,885,887
175 3,885,888

CLASS 417
50 3,885,890
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234 3,885,892
273 3,885,893
274 3,885,889
295 Re.28,428
477 3,885,894
499 3,885,895

CLASS 418
83 3,885,896
88 3,885,897
122 3,885,898

CLASS 423
27 3,886,257
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213.5 3,886,260
213.8 3,886,260
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364 3,886,262
447 3,886,263
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82 3,886,269
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267 3,886,278
269 3,886,280
274 3,886,279
278 3,886,281
300 3,886,282
304 3,886,283
330 3,886,284
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358 3,886,287

CLASS 425
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169 Re.28,430
219 3,885,900
371 3,885,901

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107 3,886,290
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538 3,886,289
540 3,886,294
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553 3,886,292
3,886,293
3,886,297
637 3,886,291
656 3,886,298
3,886,299
3,886,300

CLASS 431
1 3,885,902
8 3,885,903
11 3,885,904
34 3,885,905
173 3,885,906
328 3,885,907

CLASS 432
1 3,885,908
122 3,885,909

Classification of Designs

D2—	373	235,175		47	235,183		140	235,193	D19—	62	235,204		L	235,213	D56—	1	235,220
D3—	19A	235,174		49	235,185		193	235,194	D22—	22	235,205	D27—	36	235,214		4B	235,229
		235,174		79	235,184		219	235,195	D23—	A	235,206	D32—	3	235,215	D61—	1F	235,222
D6—	12	235,176			235,185		224	235,196		4	235,206	D34—	5PP	235,216		Q	235,221
	46	235,177			235,186	D10—	51	235,197		69	235,207		15AJ	235,217			235,230
	49	235,178		131	235,187	D12—	3	235,198		127	235,208		M	235,218		T	235,223
	59	235,178	D8—	29	235,188		63	235,199	D26—	SC	235,209	D48—	2K	235,227	D64—	11B	235,231
	67	235,179		136	235,189		68	235,200		5C	235,209		20	235,227	D87—	3	235,224
	68	235,180		230	235,190		87	235,201		14D	235,211		23R	235,228		5C	235,232
	114	235,181			235,191		125	235,202		E	235,212		27	235,214	D96—	12F	235,226
D7—	17	235,182	D9—	53	235,192	D13—	1A	235,203		H	235,210	D54—	13A	235,219			235,225

Classification of Plants

P. —	51	3,722	P. —	68	3,723						

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Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
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Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

Patents

1 : 3,885,534	3,885,625	3,886,238	3,885,295	3,885,954	3,885,706
3,885,541	3,885,639	3,886,272	3,885,402	3,886,068	3,885,712
3,886,006	3,885,647	3,886,273	3,885,445	3,886,079	3,885,717
3,886,007	3,885,655	3,886,282	3,885,515	3,886,475	3,885,744
3,886,180	3,885,703	3,886,296	3,885,549	3,886,475	3,885,762
3,886,191	3,885,705	3,886,302	3,885,558	3,886,476	3,885,783
3,886,367	3,885,709	3,886,305	3,885,564	3,886,477	3,885,792
3 : 3,886,402	3,885,718	3,886,312	3,885,591	3,886,534	3,885,797
4 : 3,885,590	3,885,719	3,886,314	3,885,681	3,886,554	3,885,816
3,885,666	3,885,721	3,886,316	3,885,720	3,886,566	3,885,818
3,885,722	3,885,731	3,886,317	3,885,755	3,886,584	3,885,849
3,885,843	3,885,732	3,886,335	3,885,772	3,886,587	3,885,850
3,886,005	3,885,743	3,886,345	3,885,786	13 : 3,885,254	3,885,853
3,886,311	3,885,769	3,886,351	3,885,821	3,885,478	3,885,854
3,886,379	3,885,790	3,886,365	3,885,833	3,885,526	3,885,868
3,886,583	3,885,793	3,886,366	3,885,874	3,885,835	3,885,929
6 : Re.28,429	3,885,801	3,886,371	3,885,875	3,886,026	3,886,021
Re.28,432	3,885,815	3,886,378	3,885,981	3,886,590	3,886,032
3,885,257	3,885,817	3,886,383	3,886,059	15 : 3,885,578	3,886,072
3,885,259	3,885,824	3,886,397	3,886,095	3,886,352	3,886,084
3,885,302	3,885,830	3,886,398	3,886,114	16 : 3,885,248	3,886,146
3,885,310	3,885,831	3,886,399	3,886,125	3,885,329	3,886,194
3,885,311	3,885,847	3,886,426	3,886,163	3,885,339	3,886,247
3,885,314	3,885,852	3,886,427	3,886,213	3,885,375	3,886,253
3,885,323	3,885,861	3,886,440	3,886,213	3,886,037	3,886,286
3,885,324	3,885,867	3,886,444	3,886,239	3,886,291	3,886,288
3,885,347	3,885,870	3,886,451	3,886,308	17 : 3,885,258	3,886,295
3,885,357	3,885,923	3,886,457	3,886,346	3,885,261	3,886,300
3,885,365	3,885,939	3,886,461	10 : 3,885,964	3,885,297	3,886,315
3,885,411	3,885,947	3,886,474	3,886,066	3,885,342	3,886,333
3,885,418	3,885,948	3,886,481	3,886,108	3,885,377	3,886,333
3,885,426	3,885,960	3,886,482	3,886,197	3,885,401	3,886,344
3,885,440	3,885,987	3,886,484	3,886,293	3,885,442	3,886,369
3,885,453	3,885,994	3,886,490	11 : 3,885,385	3,885,448	3,886,407
3,885,470	3,886,001	3,886,491	3,886,065	3,885,461	3,886,408
3,885,512	3,886,015	3,886,498	3,886,173	3,885,477	3,886,411
3,885,518	3,886,024	3,886,502	12 : 3,885,253	3,885,491	3,886,414
3,885,520	3,886,028	3,886,522	3,885,343	3,885,492	3,886,434
3,885,522	3,886,036	3,886,541	3,885,408	3,885,517	3,886,450
3,885,528	3,886,047	3,886,551	3,885,434	3,885,519	3,886,483
3,885,535	3,886,052	3,886,555	3,885,490	3,885,560	3,886,543
3,885,544	3,886,053	3,886,595	3,885,552	3,885,568	3,886,543
3,885,548	3,886,063	8 : 3,885,368	3,885,562	3,885,577	18 : 3,885,300
3,885,553	3,886,067	3,885,368	3,885,660	3,885,584	3,885,351
3,885,555	3,886,115	3,885,431	3,885,670	3,885,622	3,885,697
3,885,569	3,886,115	3,885,640	3,885,711	3,885,642	3,885,778
3,885,586	3,886,131	3,885,723	3,885,739	3,885,649	3,885,787
3,885,595	3,886,148	3,886,437	3,885,760	3,885,669	3,885,826
3,885,608	3,886,162	9 : Re.28,431	3,885,779	3,885,672	3,885,828
3,885,617	3,886,181	Re.28,434	3,885,885	3,885,682	3,885,909
3,885,623	3,886,185	3,885,293	3,885,953	3,885,704	3,886,012

3,886,097	3,885,327	3,885,557			

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